FINAL
FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RVAAP-66 FACILITY-WIDE GROUNDWATER
REPORT ON THE MARCH 2015 SAMPLING EVENT

FORMER RAVENNA ARMY AMMUNITION PLANT
PORTAGE AND TRUMBULL COUNTIES, OHIO

September 21, 2015

GSA Contract Number GS-10F-0293K
Delivery Order W912QR-11-F-0266

Prepared for



U.S. Army Corps of Engineers
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Louisville, Kentucky 40202

Prepared by



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REPORT DOCUMENTATION PAGE

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14. ABSTRACT

This document presents a summary of the facility-wide groundwater monitoring conducted in March 2015. Included in the report are:

• Summary of the groundwater elevations and water level measurements taken for each of the wells sampled.
•Analytical summary tables presenting the analytes detected above the method detection limit for this monitoring event.
• QA/QC and data verification reports for the event.

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Ohio Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
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October 1, 2015

Mr. Mark Leeper
Army National Guard Directorate
ARNGD-ILE Clean Up
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Re: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage
267000859036

Subject: **Ravenna Army Ammunition Plant, Portage/Trumbull Counties. Approval of the RVAAP-66 Draft Facility-Wide Groundwater Report on the March 2015 Sampling Event, Dated September 21, 2015. Ohio EPA ID # 267-000859-036**

Dear Mr. Leeper:

The Ohio Environmental Protection Agency (Ohio EPA) has received the "Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Report on the March 2015 Sampling Event" at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio. This document was received at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on September 22, 2015. The report was prepared for the US Army Corps of Engineers (USACE) Louisville District by Environmental Quality Management, Inc. under Contract Number W912QR-11-F-0266.

This document was reviewed by personnel from Ohio EPA's DERR, pursuant to the Director's Findings and Orders paragraph 39 (b), Ohio EPA considers the document final and approved.

If you have any questions, please call me at (330) 963-1292.

Sincerely,

Kevin M. Palombo, Environmental Specialist
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KP/nvr

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CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Environmental Quality Management, Inc. (EQM) has completed the *Final Facility-Wide Groundwater Monitoring Program Report on the March 2015 Sampling Event.* Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in this project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions, methods, procedures, and materials used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Corps of Engineers policy.

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Director of Quality

Aug 24, 15
Date

John M. Miller
Senior Project Manager

8/25/15
Date

Colleen A. Lear CPG, LG
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8/25/15
Date

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Document Distribution for the
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FWGWMP March 2015 Sampling Event Report
Former Ravenna Army Ammunition Plant

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USACE Technical Manager, Nathaniel Peters	2	3
EQM Project Manager, John Miller	1	1

ARNG – Army National Guard
OHARNG – CRJMTC-ENV – Ohio Army National Guard Camp Ravenna Joint Military Training Center – Environmental
Ohio EPA – NEDO - Ohio Environmental Protection Agency – Northeast District Office
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RVAAP – Ravenna Army Ammunition Plant
USACE – U.S. Army Corps of Engineers
EQM – Environmental Quality Management, Inc.

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LIST OF GENERAL ACRONYMS

ADR	Automated Data Review
amsl	above mean sea level
AOC	Area of Concern
ARNG	Army National Guard
º C	degree Celsius
CCV	continuing calibration verification
CRJMTC	Camp Ravenna Joint Military Training Center
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Laboratory Program
DDE	dichlorodiphenyldichloroethylene
DFFOs	Director's Final Findings and Orders
DoD	Department of Defense
EQM	Environmental Quality Management, Inc.
EPA	Environmental Protection Agency
ft	feet
FWGWMP	Facility-Wide Groundwater Monitoring Program
FWGWMPP	Facility-Wide Groundwater Monitoring Program Plan
FWSAP	Facility-Wide Sampling and Analysis Plan
GC	gas chromatograph
GOCO	Government-Owned, Contractor-Operated
GSA	Government Services Administration
>	greater than
GW	groundwater
HNO_3	nitric acid
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
HPLC	high-performance liquid chromatography
H_2SO_4	sulfuric acid
IDW	Investigation-Derived Waste
IRP	Installation Restoration Program
LCS	laboratory control sample
<	less than
LS	Louisville District Quality Systems Manual Supplement
MCL	Maximum Contaminant Level
MDL	method detection limit
mg/L	milligram per liter
µg/L	microgram per liter
µm	micron
MMRP	Military Munitions Response Program
MRL	method reporting limit
MS	mass spectrometer
MS/MSD	matrix spike/matrix spike duplicate
mw	monitoring well
NaOH	sodium hydroxide
NEDO	Northeast District Office

LIST OF GENERAL ACRONYMS
(continued)

NA	not analyzed
NM	not measured
NO2/NO3	nitrite/nitrate
NS	no standard
NTU	nephelometric turbidity unit
OHARNG	Ohio Army National Guard
%	percent
PBA	Performance Based Acquisition
PCB	polychlorinated biphenyl
PETN	pentaerythritol tetranitrate
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QSM	Quality Services Manual
RCRA	Resource Conservation and Recovery Act
RBC	Risk-Based Cleanup
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
RI	Remedial Investigation
RL	reporting limit
RSL	Regional Screening Level
RVAAP	Ravenna Army Ammunition Plant
SDG	sample delivery group
SRC	Site-Related Contaminant
SSHP	Site Safety and Health Plan
SVOC	semivolatile organic compound
s.u.	standard units
TAL	target analyte list
TOC	top of casing
U.S.	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USP&FO	United States Property and Fiscal Officer
UV	ultraviolet
VOC	volatile organic compound

LIST OF AREA OF CONCERN ACRONYMS

ASY	Atlas Scrap Yard
B12	Building 1200
BKG	Background
CBL	C-Block
CBP	Central Burn Pits
CP	Cobbs Pond
DA2	Demolition Area #2
EBG	Erie Burning Grounds
FBQ	Fuze and Booster Quarry
FWG	Facility-Wide Groundwater
LNW	Landfill North of Winklepeck
LL	Load Line
MBS	Mustard Burial Site
NACA	National Advisory Committee for Aeronautics
NTA	NACA Test Area
RQL	Ramsdell Quarry Landfill
SCF	Sharon Conglomerate Formation
WBG	Winklepeck Burning Grounds

EXECUTIVE SUMMARY

Past Department of Defense (DoD) activities at the former Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio, date to 1940 and include the manufacturing, loading, handling, and storage of military explosives and ammunition. Residual contamination from these early activities at the former RVAAP has been identified in groundwater beneath the facility. Currently, the approximately 21,683-acre facility is primarily used for military training.

The United States (U.S.) Army Corps of Engineers (USACE) is performing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) closure at the former RVAAP under the Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP). The overall goal is to remediate the former RVAAP installation as all of the property has been transferred to the Army National Guard (ARNG) and is being used by the Ohio Army National Guard (OHARNG) as a military training site. One of the activities conducted under the IRP includes monitoring of an extensive network (now 284 wells) of groundwater monitoring wells at the former RVAAP facility. To date, the 284 wells at the facility have been sampled and analyzed a minimum of four quarters.

In 2004, the U.S. Army and the Ohio Environmental Protection Agency (EPA) finalized the FWGWMP Plan, which detailed the requirements of the program for the 243 existing wells. The FWGWMP was initiated in 2005 with three consecutive quarters of FWGWMP well sampling. In addition, five Resource Conservation and Recovery Act (RCRA) wells located at Ramsdell Quarry Landfill (RQLmw-007, RQLmw-008, and RQLmw-009) and Demolition Area 2 (DETmw-003 and DETmw-004) are sampled on a semiannual basis.

The current wells to be sampled and the analytes to be analyzed from each well were approved in the FWGWMPP Addendum dated February 20, 2015. The current Monitoring Well Schedule is presented in Appendix A. This appendix presents the list of the semiannual wells sampled during the March 2015 event.

The following activities were conducted by Environmental Quality Management, Inc. (EQM) during the reporting period:

- Performed groundwater sampling at the 42 wells identified in Appendix A.
- Performed groundwater pH field monitoring at 4 wells.
- Gauged water levels/total depth at the 46 groundwater monitoring wells scheduled for groundwater sampling or pH monitoring at the facility.
- Performed laboratory analysis of all the collected samples.
- Verified, validated, and reduced the laboratory analytical data produced for the event (exclusive of the quality assurance samples analyzed by RTI Laboratories).
- Prepared the Investigation-Derived Waste (IDW) Characterization and Disposal Plan for the IDW collected during monitoring activities.
- Prepared and submitted the monitoring report for the sampling event.

During the March 2015 sampling event, several analytes were detected at levels at/or above their respective Maximum Contaminant Levels (MCLs) and/or United States Environmental Protection Agency (USEPA) Regional Screening Levels [RSLs (January 2015)]. The summary of exceedances is as follows.

Note: J = The identification of the analyte is acceptable, but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision (i.e., the quantitative value is estimated).

Explosive and Propellant Compounds

As shown in Table 3-2, the following explosives or propellants were detected at levels above their corresponding MCLs and/or RSLs (January 2015) during the March 2015 sampling event:

- 2,4,6-Trinitrotoluene – FBQmw-174 (22 µg/L), LL1mw-083 (4.8 µg/L J), LL1mw-084 (12 µg/L J), LL3mw-238 (45 µg/L J). There is no MCL for 2,4,6-trinitrotoluene. The RSL (January 2015) is 2.5 µg/L.

- 2,4-Dinitrotoluene – FBQmw-174 (0.27 µg/L), LL1mw-083 (3.3 µg/L J), LL1mw-084 (1.6 µg/L J), and LL2mw-059 (0.42 µg/L). There is no MCL for 2,4-dinitrotoluene. The RSL (January 2015) is 0.24 µg/L.

- 2,6-Dinitrotoluene – LL1mw-083 (2.2 µg/L J), LL1mw-084 (0.92 µg/L J), and LL3mw-238 (0.29 µg/L J). There is no MCL for 2,6-dinitrotoluene. The RSL (January 2015) is 0.048 µg/L.

- Nitrate-Nitrite – LL12mw-187 (1200 mg/L). The MCL for nitrate-nitrite is 10 mg/L. There is no RSL (January 2015).

- RDX – DETmw-004 (3.2 µg/L), LL1mw-084 (0.92 µg/L J), LL2mw-267 (1.1 µg/L), LL3mw-238 (4.5 µg/L J), WBGmw-006 (41 µg/L), and WBGmw-009 (2.6 µg/L). There is no MCL for RDX. The RSL (January 2015) is 0.7 µg/L.

Inorganic Elements

Several inorganic compounds were detected at levels exceeding the MCLs and/or RSLs (January 2015). These included aluminum, arsenic, cobalt, cyanide, iron, and manganese, in wells from all areas sampled. Table 4-1 in Section 4 presents a summary of all inorganic compounds and the associated wells that had detections exceeding MCLs and/or the RSLs (January 2015).

Volatile Organic Compounds

As shown in Table 3-4, the only VOCs detected at levels exceeding their corresponding MCLs and/or RSLs (January 2015) during the March 2015 sampling event were:

- Carbon tetrachloride – LL10mw-003 (5.9 µg/L). The MCL for carbon tetrachloride is 5.0 µg/L. The RSL (January 2015) is 0.45 µg/L.

- Chloroform – LL10mw-003 (0.64 µg/L B). The MCL for chloroform is 80 µg/L. The RSL (January 2015) is 0.22 µg/L.

Semivolatile Organic Compounds

As shown in Table 3-5, no SVOCs were detected at levels exceeding either their corresponding MCLs or RSLs (January 2015).

Pesticides and Polychlorinated Biphenyls (PCBs)

As shown in Table 3-6, the only pesticide or PCBs detected at levels exceeding either their MCLs or RSLs (January 2015), during the March 2015 sampling event were:

- beta-BHC – FBQmw-174 (0.21 µg/L J), LL3mw-238 (0.11 µg/L), LL3mw-241 (0.026 µg/L J). There is no MCL for beta-BHC. The RSL (January 2015) is 0.025 µg/L.

- Heptachlor – LL1mw-083 (0.044 µg/L B), LL1mw-084 (0.043 µg/L B), LL1mw-086 (0.029 µg/L B), LL3mw-238 (0.038 µg/L B), LL3mw-241 (0.047 µg/L B), and SCFmw-002 (0.066 µg/L B). The MCL for heptachlor is 0.4 µg/L. The RSL (January 2015) is 0.002 µg/L.

Hexavalent Chromium

The analytical results for hexavalent chromium are summarized in Table 3-7. Well LL3mw-244 had a detected concentration for hexavalent chromium of 0.187 µg/L, which is elevated above the RSL (January 2015) of 0.035 µg/L (there is no MCL for hexavalent chromium).

Perchlorate

As shown in Table 3-8, perchlorates were not detected at levels exceeding either their corresponding MCLs or RSLs (January 2015).

SECTION 1
INTRODUCTION

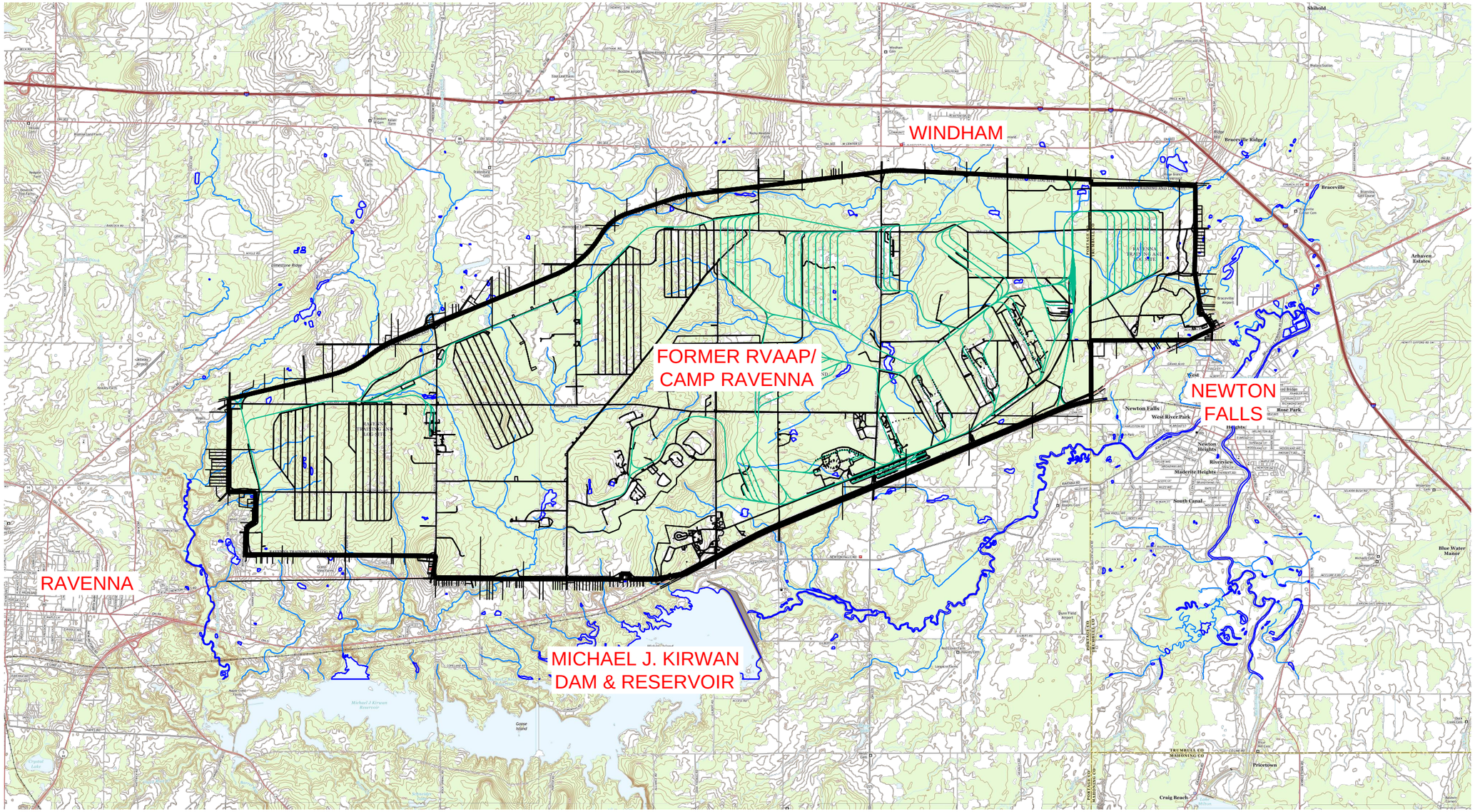
1.1 Facility Description

Past Department of Defense (DoD) activities at the former Ravenna Army Ammunition Plant (RVAAP) date to 1940 and include the manufacturing, loading, handling, and storage of military explosives and ammunition. Until 1999, the former RVAAP was identified as a 21,419-acre installation. The property boundary was resurveyed by the Ohio Army National Guard (OHARNG) over a 2-year period from 2002 and 2003, and the actual total acreage of the property was found to be 21,683.289 acres. All of the former 21,683 acre RVAAP has been transferred to the United States Property and Fiscal Officer (USP&FO) for Ohio for use by the OHARNG. Administrative accountability for all property has been transferred to the Army National Guard (ARNG) with licensure to OHARNG for use as a military training site, Camp Ravenna Joint Military Training Center (CRJMTC). The CRJMTC is in northeastern Ohio within Portage and Trumbull Counties, approximately 4.8 kilometers (3 miles) east-northeast of the city of Ravenna and approximately 1.6 kilometers (1 mile) northwest of the city of Newton Falls (Figure 1-1). The former RVAAP portions of the property are solely located within Portage County. The CRJMTC (inclusive of the former RVAAP) is a parcel of property approximately 17.7 kilometers (11 miles) long and 5.6 kilometers (3.5 miles) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east. Figure 1-1 presents the Former RVAAP/Camp Ravenna Installation Location Map. The CRJMTC is surrounded by several communities: Windham on the north; Garrettsville 9.6 kilometers (6 miles) to the northwest; Newton Falls 1.6 kilometers (1 mile) to the southeast; Charlestown to the southwest; and Wayland 4.8 kilometers (3 miles) to the south. When the former RVAAP was operational CRJMTC did not exist and the entire 21,683-acre parcel was a government-owned, contractor-operated (GOCO) industrial facility. The RVAAP Installation Restoration Program (IRP) encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP, and, therefore, references to the former RVAAP in this document are considered to be inclusive of the historical extent of the former RVAAP, which is inclusive of the combined acreages of the current CRJMTC and former RVAAP, unless otherwise specifically stated.

1.2 Project Description

1.2.1 Historical Monitoring

In 2004, the United States (U.S.) Army and the Ohio Environmental Protection Agency (EPA) finalized the Facility-Wide Groundwater Monitoring Program (FWGWMP) Plan, which details the requirements of the program. The FWGWMP was initiated in 2005 with three consecutive quarters of FWGWMP well sampling. Quarterly sampling has continued through the current monitoring event. The initial FWGWMP wells identified for monitoring were sampled once every quarter, with the exception of the five Resource Conservation and Recovery Act (RCRA)



OHIO

QUADRANGLE LOCATION

Mantua	Garrettsville	Southington
Ravenna	Windham	Newton Falls
Atwater	Deerfield	Lake Milton

8° 40'
154 MILS
MN
GN
0° 2'
1 MILS

UTM GRID AND 2013 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

REV	DESCRIPTION	DATE	APPROVED

REVISIONS

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APPROVED	J. MILLER	01-06-2015
SCALE:	NOT TO SCALE	

FORMER RVAAP / CAMP RAVENNA
PORTAGE AND TRUMBULL COUNTIES, OHIO
INSTALLATION LOCATION MAP

SIZE	PROJECT NO.	DWG NO.	REV
B	030174.0016	FIGURE 1-1	0

wells that include three Ramsdell Quarry Landfill (RQL) wells (RQLmw-007, -008, and -009) and two Demolition Area 2 (DA2) wells (DETmw-003 and DETmw-004). The RQL and DA2 wells are sampled semiannually.

As detailed in the original FWGWMP Plan (FWGWMPP; September 2004), the initial monitoring program consisted of the sampling of 36 wells specified in Table 4-1 of the FWGWMPP. Fourteen of these wells are "Background Wells," and the remaining wells are situated at various Areas of Concern (AOCs) at the former RVAAP. The first sampling event for this project was conducted in April 2005. The final assessment monitoring event for the initial well sampling and analysis was completed in October 2007.

On October 22, 2007, the U.S. Army Corps of Engineers (USACE) submitted to the Ohio EPA the *Preliminary Draft Proposal to Update the Facility-Wide Ground Water Monitoring Program* (USACE, October 2007) at the former Ravenna Army Ammunition Plant. This proposal presented recommendations for modifications to the FWGWMP, the Director's Final Findings and Orders (DFFOs), and the Conceptual Plan in Appendix E of the Findings and Orders as presented below.

Section 3.1.2.2 of the original FWGWMPP (September 2004) establishes a protocol for adding and removing wells from the FWGWMP: "*Future wells installed as part of individual AOC investigations conducted under the ongoing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process at RVAAP will be evaluated for incorporation into the FWGWMP upon completion of at least four quarterly groundwater sampling events to be conducted as part of the Remedial Investigation (RI) phase at each AOC. The frequency of the initial sampling events may be other than quarterly if agreed upon by the Army and Ohio EPA.*" Based on this protocol the USACE notified the Ohio EPA on December 12, 2007 that the wells to be sampled would be changed effective with the January 2008 monitoring event. The Ohio EPA provided concurrence with this change in an email dated January 8, 2008. The Ohio EPA was notified of an additional change on February 27, 2008, increasing the number of wells to be sampled for the April 2008 event. The Ohio EPA was notified on March 21, 2008, that the number of FWGWMP wells to be sampled in April 2008 (and the July 2008, October 2008, and January 2009 events) would be increased to 132 plus the five RCRA wells sampled semiannually (in order to complete four quarters of sampling for each of the 132 wells).

Beginning with the April 2009 sampling event the remaining wells on the list contained in the *Draft Proposal to Update the Facility-Wide Ground Water Monitoring Program* (USACE, October 2007) were sampled.

A revised list of wells to be sampled during 2010-2011 was submitted to the Ohio EPA in early 2010. The list of wells to be sampled, as well as scheduling issues, were discussed with the Ohio EPA in a telephone conference and verified in a subsequent email on May 26, 2010.

Revisions to the list of wells to be sampled and the analytes to be analyzed from each well were discussed with the Ohio EPA in email correspondences in July 2011. For the groundwater monitoring event it was agreed to monitor the wells and analytes presented in the Draft 2010

Addendum to the Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater (USACE, 2010). (Note that this document was withdrawn as a submittal to the Ohio EPA; however, the information presented in that document is still relevant and useful.)

1.2.2 March 2015 Monitoring Event

One of the activities conducted under the IRP includes monitoring of an extensive network (now 284 wells) of groundwater monitoring wells at the former RVAAP facility. To date, 284 current FWGWMP wells at the facility have been sampled and analyzed a minimum of four quarters.

Details of the current program design and requirements are contained in the *Final Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Semiannual Monitoring Addendum* dated August 1, 2013. Additionally, this document supplements the *Final Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Addendum* (FWGWMPP Addendum; EQM, January 2012), which includes three parts that pertain to the proposed work: Part I- Environmental Investigation Services Addendum, Part II- Quality Assurance Project Plan (QAPP) Addendum, and Part III- Site Safety and Health Plan (SSHP) Addendum. Additional details pertaining to performance of field and laboratory activities are contained in the *Final Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio* (FWSAP; SAIC, 2011).

The current wells to be sampled and the analytes to be analyzed from each well were approved in the FWGWMPP Addendum dated February 20, 2015. Note that the first semiannual event for 2015 was delayed until the FWGWMPP Addendum was approved in late February 2015. Normally this event would be conducted in January. The current Monitoring Well Schedule is presented in Appendix A. This appendix presents the list of the semiannual wells sampled during the March 2015 event.

1.3 Scope of Work for the March 2015 Sampling Event

The USACE, under a Government Services Administration (GSA) Performance Based Acquisition (PBA) contract, retained Environmental Quality Management, Inc. (EQM) (Contract No. GS-10F-0293K – Delivery Order W912QR-11-F-0266) to obtain a signed Record of Decision (ROD) for the facility-wide groundwater (RVAAP-66) at the former RVAAP. One objective of this project is to continue monitoring under the RVAAP Facility-Wide Groundwater Monitoring Program. The following tasks were performed during the October 2014 sampling event in accordance with specifications contained in the Semiannual Addendum, FWGWMPP Addendum, the FWSAP, and the Scope of Work written by the USACE:

- Performed groundwater sampling at the 42 wells identified in Appendix A.
- Performed groundwater pH field monitoring at 4 wells.
- Gauged water levels/total depth at the 46 groundwater monitoring wells scheduled for groundwater sampling or pH monitoring at the facility.

- Performed laboratory analysis of all the collected samples.
- Verified, validated, and reduced the laboratory analytical data produced for the event (exclusive of the quality assurance samples analyzed by RTI Laboratories).
- Prepared the Investigation-Derived Waste (IDW) Characterization and Disposal Plan for the IDW collected during monitoring activities.
- Prepared and submitted the monitoring report for the sampling event.

1.4 Report Presentation

This report presents the results of the March 2015 sampling event. The report is structured in the following way:

- Section 1.0 – Introduction.
- Section 2.0 – Description of Project Activities. This section describes project-specific details not contained in the FWSAP, FWGWMPP Addendum, and Semiannual Addendum. Additionally, details are provided on how the tasks described above were performed.
- Section 3.0 – Results of Investigation. The results of the sampling event are summarized, including groundwater elevation measurements, analytical results, and data verification/validation information.
- Section 4.0 – Summary of Results.
- Section 5.0 – References.

- Appendix A – Monitoring Wells Sampled During the March 2015 Groundwater Monitoring Event
- Appendix B – Water-Level Measurements/Field Log Book/Calibration Records/Sample and Purge Records/Daily Quality Control Reports
- Appendix C – Data Verification Reports/Laboratory Data Sheets
- Appendix D – Investigation-Derived Waste Characterization and Disposal Plan
- Appendix E – Reporting Limits that Currently Do Not Meet the RVAAP QAPP Project Action Requirements, MCLs, and/or USEPA RSLs (January 2015)
- Plates

SECTION 2
PROJECT ACTIVITIES

2.1 Groundwater Level Monitoring

Depth to water from the top of the inner casing was measured in 46 wells during the March 2015 sampling event. Water-level measurements were taken with a Herron Dipper-T or Enviro Inspector electronic water-level indicator. The depth to the bottom of the well from the top of the inner casing was also measured with the electronic water-level indicator.

Results of the groundwater level monitoring for all the former RVAAP wells sampled during this monitoring event are presented in Section 3.1 and Appendix C. The monitoring well location map, identified as Plate 1, is included with this report. Potentiometric maps created from groundwater measurements from the former RVAAP monitoring wells in May 2014 are presented on Plates 2, 3, 4, and 5. The potentiometric maps were generated from the May 2014 water-level measurements taken from 284 new and existing facility wells including the six deep Sharon Conglomerate wells. These maps are updated on a yearly basis. The water levels from the individual events are not included in these plates. Additionally, the groundwater elevations from the Sharon Conglomerate wells were evaluated and determined not to be representative of either the Homewood aquifer or the upper portion of the Sharon aquifer. These wells were installed with their screened intervals positioned at the basal portion of the Sharon Conglomerate. Therefore, the groundwater elevations collected from the basal Sharon Conglomerate wells were used to determine the potentiometric contours for these deep wells as presented in Plate 5.

To determine if groundwater elevations of basal Sharon Conglomerate wells (as determined in May 2014) are representative of the Sharon or Homewood Aquifers, the groundwater elevation data were compared. The groundwater elevation of water in the Homewood Aquifer (well LL10mw-003) is more than 80 feet (ft.) higher than the nearest basal Sharon Conglomerate well (well SCFmw-001). This demonstrates that the Homewood aquifer and Sharon Conglomerate are not representative of the same hydraulic unit. If they were in the same hydraulic unit, the water levels would be expected to be much the same.

The groundwater elevations of the five wells from the upper portion of the Sharon Aquifer are 1.52 to 18.78 ft. higher than the five basal Sharon Conglomerate groundwater elevations at the same locations. The average elevation difference is nearly 10 ft. Again, this groundwater elevation difference indicates that the basal Sharon Conglomerate and the upper portion of the Sharon are separate hydraulic units.

Additionally, hydraulic gradients and velocity data were calculated for the various aquifers using the May 2014 groundwater flow data along three flow pathways across the former RVAAP as shown on the Plates. These maps are updated on a yearly basis and are discussed in detail during the annual reporting.

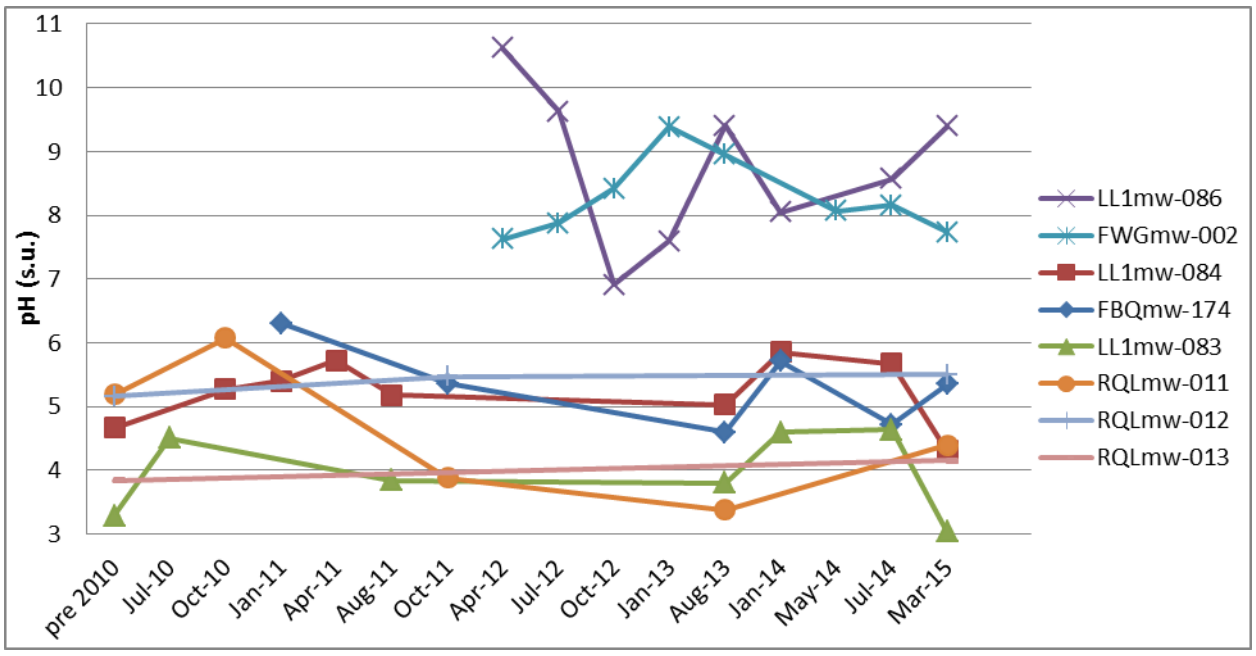
2.2 Groundwater Sampling

All identified monitoring wells were sampled from March 9-25, 2015. Wells were sampled using micropurge techniques or a bailer in accordance with the specifications contained in the approved addendum. The wells were micropurged until certain groundwater parameters (i.e., temperature, specific conductivity, pH, and dissolved oxygen) had stabilized and turbidity readings were less than (<) or equal to 10 nephelometric turbidity units (NTU). If after two hours the turbidity did not reach < or equal to 10 NTUs and the other groundwater parameters were stabilized, sampling started.

The groundwater parameters were measured using a Horiba U-22/U-52 with flow cell or equivalent**.** Groundwater parameter measurements obtained during micropurging are presented in Appendix B. EQM continued purging after the normal stabilization parameters had stabilized (turbidity is not a stabilization parameter) in an attempt to reach turbidity values that < or equal to 10 NTUs. Additionally, the groundwater samples for metals analysis were filtered as part of the FWGWMP sampling, thereby reducing the effect of suspended particles in the groundwater. Filtered metals samples were collected through the bladder pump using an inline 0.45-micron filter emptying directly into pre-preserved sample bottles containing nitric acid. All sampling procedures for the filtered metals were conducted in accordance with the FWSAP.

During the March 2015 event, eight groundwater monitoring wells were monitored for pH measurements outside the typical pH range for natural ground water (i.e., <5 to >9). Some of these wells were on the sampling list others were just for pH field monitoring only. A graph of the pH details is presented in Figure 2-1. The pH monitoring will be reassessed after the July 2015 event. A discussion of the results will be included in the July 2015 monitoring report.

Figure 2-1. pH Chart



Groundwater samples were collected using bladder pump micropurge sampling techniques with the exception of well DETmw-004. This well historically exhibits poor yield. Therefore, EQM used the bailer method for purging and sampling per the Semiannual Addendum. Equipment and sampling details are contained in Appendix B. Groundwater samples were collected in laboratory-supplied containers and stored in iced coolers for shipment in accordance with the specifications presented in the FWSAP, Semiannual Addendum, and FWGWMPP. During the March 2015 sampling, all coolers were received by the laboratory at temperatures within the prescribed tolerance limits.

2.3 Laboratory Analysis

Laboratory analyses on all primary samples and associated quality control (QC) samples were performed by Test America Laboratories, with the exception of hexavalent chromium, which was conducted by ALS Environmental. Table 2-1 presents the analytical methods used to analyze the groundwater samples.

Table 2-1. Analytical Suite of Concerns

Constituents	Method[1]	Preservation
Polychlorinated biphenyls (PCBs)	Gas Chromatograph (GC) – (8082)	Cool, 4º C[3]
Pesticides	GC – (8081A)	Cool, 4º C
Base/Neutrals and Acids (SVOCs)	GC/Mass Spectrograph (MS) SVOCs (8270C)	Cool, 4º C
Volatile Organic Compounds (VOCs)	GC/MS VOCs (8260B)	HCl, Cool, 4º C, pH < 2
Nitroguanidine (Propellant)	Organic compounds by UV/HPLC (8330 modified)	Cool, 4º C
Nitroaromatics & Nitramines (Explosives)	GC SVOCs Explosives (8330)	Cool, 4º C
Nitrocellulose as N(Propellant)	General Chemistry (WS-WC-0050)	Cool, 4º C
Nitrate/Nitrites	General Chemistry (353.2)[2]	H_2SO_4, Cool, 4º C, pH < 2
Perchlorate	Method 6860	0.2 µm filter, Cool, 4º C
Cyanide (Total)	General Chemistry (9012A)	NaOH to pH > 12, Cool, 4º C
Metals (Magnesium, Manganese, Barium, Nickel, Potassium, Silver, Sodium, Vanadium, Chromium, Calcium, Cobalt, Copper, Arsenic, Lead, Selenium)	Inductively Coupled Plasma (6010B)	0.45µm filter, HNO_3, to pH < 2, Cool, 4º C
Metals (Antimony, Iron, Beryllium, Thallium, Zinc, Cadmium, Aluminum)	Inductively Coupled Plasma Mass Spectrometry (6020)	0.45µm filter, HNO_3, to pH < 2, Cool, 4º C
Mercury	Liquid Waste Cold Vapor Technique (7470A)	0.45µm filter, HNO_3, to pH < 2, Cool, 4º C
Hexavalent Chromium	Method 218.6[2]	0.45µm filter, Buffer solution, Cool, 4º C

1 = USEPA SW846
2 = EPA Methods for Chemical Analysis of Water and Waste
3 = degree Celsius
µm = micron

Note that for this event, wells were sampled for specific analytes as identified in the FWGWMPP Addendum. The March 2015 groundwater samples were analyzed for the following parameters depending upon the well as presented in Appendix A: explosives, propellants (nitrocellulose and nitroguanidine), cyanide, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), target analyte list (TAL) metals (filtered), pesticides, and polychlorinated biphenyls (PCBs). Additionally, Nitrate/Nitrites were collected at Load Line 12 wells. Three locations (LL3mw-244, LL12mw-247, and SCFmw-002) were analyzed for hexavalent chromium. Three locations (LL3mw-244, LL12mw-247, and SCFmw-002) were analyzed for perchlorate.

Quality control samples, including duplicates and matrix spike/matrix spike duplicates (MS/MSD) were collected from the following wells:

DA2mw-115 – Duplicate Sample
LL12mw-185– Duplicate Sample (Nitrate Nitrite only)
LL3mw-244 – Duplicate Sample
LL3mw-246 – Duplicate Sample
RQLmw-009 – Duplicate Sample
SCFmw-002 – Duplicate Sample
SCFmw-002 – MS/MSD
LL2mw-271 – MS/MSD (no explosives/propellants)
RQLmw-007 – MS/MSD
LL12mw-185 – MS/MSD (Nitrate Nitrite only)

All samples were picked up from the facility and delivered to the laboratory in a cooler (with wet ice) by a Test America courier under proper chain-of-custody procedures (FWSAP). Hexavalent chromium samples were shipped for analysis to ALS Environmental in Rochester, New York. Laboratory analyses on all quality assurance (QA) samples (i.e., split samples) were performed by RTI Laboratories in Livonia, Michigan. Six QA samples were collected from the same wells where the duplicate samples were collected. All QA samples were shipped in coolers (with wet ice) via overnight delivery service under proper chain-of-custody procedures. Table 2-2 presents, in tabular form, all analyses and associated QA/QC for the March 2015 monitoring event. The Daily Quality Control Reports are presented in Appendix B.

Laboratory results are summarized in Section 3.2. Laboratory data sheets, including chain-of-custodies and QA/QC information, are contained in Appendix C.

2.4 Data Verification/Validation

Data from Test America and ALS were verified in accordance with project specifications by EQM chemists Ms. Angye Dragotta and Mr. Eric Corbin using the Automated Data Review (ADR) software. Data validation/verification is summarized in Section 3.3. The Data Verification/Validation Summary Reports are presented in Appendix C.

2.5 Investigation-Derived Waste

An IDW Report was prepared for the sampling and water-level measurement activities discussed in Section 3. Purge water was collected at each well location in 5-gallon buckets and transferred to 55-gallon drums located inside Building 1036. No more than 9.5 gallons were purged from any well. Instruments and equipment were decontaminated after purging and sampling each monitoring well. Decontamination fluids were collected in a separate 55-gallon drum stored inside Building 1036. Pending analysis of the monitoring well samples, IDW fluids are stored in the 55-gallon drums until disposal. The IDW Report is presented in Appendix D.

Table 2-2. QA Table for March 2015 Sampling Event

	Contractor Laboratory							Government Laboratory		Requested Laboratory Analysis											
Sample Locations	Primary Lab Sample ID	Date	Sample Type	Assoc. QC Dup Number	Assoc. QC Rinsate Number	Assoc. QC Trip Blank Number	MS/ MSD	QA Lab Sample ID	Assoc. QC Trip Blank Number	VOCs	SVOCs 1	SVOCs 1&3	SVOCs 4	Pesticides	PCBs	Explosives & Propellants	Cyanide	Nitrite/Nirate	Filtered Metals	Filtered Cr^{+6}	Filtered ClO_4^-
DA2mw-115	FWGDA2mw-115-0509-GW/GF	3/24/2015	GW	DUP1-0557	EQUIPRinse7-0569			FWGDA2mw-115-0551s-GW/GF			1[A]					1[A]			1[A]		
DETmw-003	FWGDETmw-003C-0510-GW/GF	3/24/2015	GW		EQUIPRinse7-0569	FWGTeam2-Trip				1			1	1	1	1	1		1		
DETmw-004	FWGDETmw-004C-0511-GW/GF	3/23-24/15	GW		--	FWGTeam2-Trip				1			1	1	1	1	1		1		
FBQmw-174	FWGFBQmw-174C-0512-GW/GF	3/23/2015	GW		EQUIPRinse6-0568						1			1		1			1		
FWGmw-002	--	3/12/2015	GW		EQUIPRinse4-0566					field pH monitoring only											
FWGmw-004	FWGFWGmw-004-0513-GW/GF	3/13/2015	GW		EQUIPRinse5-0567						1					1			1		
FWGmw-007	FWGFWGmw-007-0514-GW/GF	3/25/2015	GW		EQUIPRinse8-0570						1					1			1		
FWGmw-011	FWGFWGmw-011-0515-GW/GF	3/24/2015	GW		EQUIPRinse7-0569						1					1			1		
FWGmw-012	FWGFWGmw-012-0516-GW/GF	3/24/2015	GW		EQUIPRinse7-0569						1					1			1		
FWGmw-015	FWGFWGmw-015-0517-GW/GF	3/9/2015	GW		EQUIPRinse1-0563						1					1			1		
FWGmw-016	FWGFWGmw-016-0518-GW/GF	3/9/2015	GW		EQUIPRinse1-0563						1					1			1		
LL10mw-003	FWGLL10mw-003C-0535-GW/GF	3/11/2015	GW		EQUIPRinse3-0565	FWGTEAM4-Trip				1	1								1		
LL12mw-185	FWGLL12mw-185C-0536-GW/GF	3/11/2015	GW	DUP4-0560	EQUIPRinse3-0565			FWGLL12mw-185C-0554s-GW/GF										1[A]	As		
LL12mw-187	FWGLL12mw-187C-0537-GW/GF	3/12/2015	GW		EQUIPRinse4-0566						1					1		1	1		
LL12mw-242	FWGLL12mw-242C-0538-GW/GF	3/12/2015	GW		EQUIPRinse4-0566						1					1		1	1		
LL12mw-245	FWGLL12mw-245C-0539-GW/GF	3/12/2015	GW		EQUIPRinse4-0566						1					1		1	1		
LL12mw-247	FWGLL12mw-247-0540-GW/GF	3/10/2015	GW		EQUIPRinse2-0564		Y				1					1		1[A]	1	1	
LL1mw-064	FWGLL1mw-064C-0519-GW/GF	3/10/2015	GW		EQUIPRinse2-0564						1					1			1		
LL1mw-065	FWGLL1mw-065C-0520-GW/GF	3/10/2015	GW		EQUIPRinse2-0564						1					1			1		
LL1mw-083	FWGLL1mw-083C-0521-GW/GF	3/10/2015	GW		EQUIPRinse2-0564						1			1		1			1		
LL1mw-084	FWGLL1mw-084C-0522-GW/GF	3/10/2015	GW		EQUIPRinse2-0564						1			1		1			1		
LL1mw-086	FWGLL1mw-086-0523-GW/GF	3/10/2015	GW		EQUIPRinse2-0564						1			1		1			1		
LL1mw-087	FWGLL1mw-087-0524-GW/GF	3/9/2015	GW		EQUIPRinse1-0563						1					1			1		
LL1mw-088	FWGLL1mw-088-0525-GW/GF	3/24/2015	GW		EQUIPRinse7-0569						1			1		1			1		
LL2mw-059	FWGLL2mw-059C-0526-GW/GF	3/24/2015	GW		EQUIPRinse7-0569						1					1			1		
LL2mw-060	FWGLL2mw-060C-0527-GW/GF	3/24/2015	GW		EQUIPRinse7-0569						1					1			1		
LL2mw-267	FWGLL2mw-267C-0528-GW/GF	3/11/2015	GW		EQUIPRinse3-0565						1					1			1		
LL2mw-271	FWGLL2mw-271-0529-GW/GF	3/23/2015	GW		EQUIPRinse6-0568		Y				1[A]					1			1[A]		1[A]
LL3mw-238	FWGLL3mw-238C-0530-GW/GF	3/11/2015	GW		EQUIPRinse3-0565						1			1		1			1		
LL3mw-241	FWGLL3mw-241C-0531-GW/GF	3/11/2015	GW		EQUIPRinse3-0565						1			1		1			1		
LL3mw-244	FWGLL3mw-244-0532-GW/GF	3/23/2015	GW	DUP2-0558	EQUIPRinse6-0568			FWGLL3mw-244-0552s-GW/GF			1[A]			1[A]		1[A]			1[A]	1[A]	
LL3mw-246	FWGLL3mw-246-0533-GW/GF	3/23/2015	GW	DUP3-0559	EQUIPRinse6-0568			FWGLL3mw-246-0553s-GW/GF			1[A]					1[A]			1[A]		1[A]
LL7mw-001	FWGLL7mw-001-0534-GW/GF	3/11/2015	GW		EQUIPRinse3-0565	FWGTEAM3-Trip				1	1					1			1		
NTAmw-119	FWGNTAmw-119-0541-GW/GF	3/25/2015	GW		EQUIPRinse8-0570	FWGTeam2-Trip				1		1				1			1		
RQLmw-007	FWGRQLmw-007C-0542-GW/GF	3/12/2015	GW		EQUIPRinse4-0566	FWGTeamRQL-Trip	Y			1[A]			1[A]	1[A]	1[A]	1[A]	1[A]		1[A]		
RQLmw-008	FWGRQLmw-008C-0543-GW/GF	3/12/2015	GW		EQUIPRinse4-0566	FWGTeamRQL-Trip				1			1	1	1	1	1		1		
RQLmw-009	FWGRQLmw-009C-0544-GW/GF	3/12/2015	GW	DUP5-0561	EQUIPRinse4-0566	FWGTeamRQL-Trip		FWGRQLmw-009C-0555s-GW/GF	Tripblank	1[A]			1[A]	1[A]	1[A]	1[A]	1[A]		1[A]		
RQLmw-011	--	3/12/2015	GW		EQUIPRinse4-0566					field pH monitoring only											
RQLmw-012	--	3/12/2015	GW		EQUIPRinse4-0566					field pH monitoring only											
RQLmw-013	--	3/12/2015	GW		EQUIPRinse4-0566					field pH monitoring only											
SCFmw-002	FWGSCFmw-002-0545-GW/GF	3/10/2015	GW	DUP6-0562	EQUIPRinse2-0564		Y	FWGSCFmw-002-0556s-GW/GF			1[A]			1[A]		1[A]			1[A]	1[A]	
SCFmw-004	FWGSCFmw-004-0546-GW/GF	3/11/2015	GW		EQUIPRinse3-0565						1			1		1			1		
WBGmw-006	FWGWBGmw-006C-0547-GW/GF	3/11/2015	GW		EQUIPRinse3-0565						1					1			1		
WBGmw-009	FWGWBGmw-009C-0548-GW/GF	3/11/2015	GW		EQUIPRinse3-0565						1					1			1		
WBGmw-020	FWGWBGmw-020-0549-GW/GF	3/11/2015	GW		EQUIPRinse3-0565						1					1			1		
WBGmw-021	FWGWBGmw-021-0550-GW/GF	3/11/2015	GW		EQUIPRinse3-0565						1					1			1		

SVOCs (1=Nitroaromatics and Phthalates, 2=Phenols, 3=PAHs, and 4=Full RVAAP RCRA suite)

Cr^{+6} = Hexavalent chromium

ClO_4- = Perchlorate

1^A = QA/QC analysis for Split and/or Duplicate collected in addition to parent alliquot.

SECTION 3
RESULTS

3.1 Groundwater Elevations

Groundwater elevations were measured in 46 former RVAAP monitoring wells during March 9-25, 2015. The locations of monitoring wells at the former RVAAP are shown on Plate 1. The water-level measurement field sheets are presented in Appendix B. Additionally, groundwater elevation measurements are also obtained each time a groundwater sample is collected as part of the FWGWMP, although the measurements from the quarterly sampling events are not used to produce the potentiometric maps.

Water-level measurements were measured in accordance with procedures in Section 5.4.3.1 of the *Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio* (SAIC, February 2011). Water-level measurements were made from the top of the inner casing to the top of the groundwater surface using an electronic measuring tape. The depth to the bottom of the well from the top of the inner casing also was measured with the electronic measuring tape. Depth-to-water and groundwater elevations for the former RVAAP wells sampled this quarter are presented in Table 3-1.

The monitoring well location map, identified as Plate 1, is included with this report. Facility-wide groundwater potentiometric maps (Plates 2, 3, 4, and 5) were created based on all the former RVAAP groundwater measurements taken during the May 2014 event and are also included in this report (Plates are located at the end of the report).

Plate 2 shows the potentiometric surface of the unconsolidated aquifer at the facility from May 2014. Groundwater in the unconsolidated aquifer predominantly flows in an eastward direction; however, the unconsolidated zone shows numerous local flow variations influenced by topography and drainage patterns. The local variations in flow direction suggest: (1) groundwater in the unconsolidated deposits is generally in direct hydraulic communication with surface water; and (2) surface water drainage ways may also act as groundwater discharge locations. In addition, topographic ridges between surface water drainage features act as groundwater divides in the unconsolidated deposits. A groundwater mound is evident in the south-central portion of the former RVAAP facility, thereby creating localized radial flow. This feature is the result of a bedrock high associated with the underlying Homewood.

Plate 3 shows the potentiometric surface of the Homewood formation at the facility from May 2014. The Homewood is only found in the western portion of the former RVAAP facility and generally occurs as cap rock. It appears from the limited number of wells that have penetrated this formation that the general flow is to the east-southeast. However, a groundwater mound is present in the vicinity of the Fuze and Booster wells, which produces a localized radial flow pattern in this area of the former RVAAP facility that is at least partially influenced by a buried valley to the north and west. A second groundwater mound is located in the vicinity of the C Block (CBL) wells.

Table 3-1. March 2015 FWGWMP Monitoring Well Measurements

Well	Monitoring Zone	Top of Casing (TOC) Elevation[a] (ft)	Annual Groundwater Elevation (ft) Aug/2013	Semi- Annual Groundwater Elevation (ft) Jan/2014	Semi- Annual Groundwater Elevation (ft) July/2014	Semi- Annual Groundwater Elevation (ft) Mar/2015	Depth to Water below TOC (ft) March/2015	Reported Construction Depth from TOC[a] (ft)	Measured Depth from TOC (ft) Mar/2015	Differential - Reported Construction / Measured Depth (ft) Mar/2015	Description of Bottom March
DA2mw-115	Sharon	1038.08	1031.98	1032.33	1032.28	1032.56	5.52	46.80	46.77	0.03	hard
DET-003	Unconsolidated	1036.81	1027.18	1027.47	1027.31	1027.87	8.94	13.00	15.99	-2.99	hard
DET-004	Unconsolidated	1038.68	1027.80	1028.19	1028.63	1028.66	10.02	12.00	13.80	-1.80	hard
FBQmw-174	Homewood	1139.97	1124.57	1123.94	1124.10	1123.95	16.02	26.20	23.06	3.14	hard
FWGmw-002	Unconsolidated	973.10	949.81	NM	949.44	950.01	23.09	70.05	69.60	0.45	hard
FWGmw-004	Unconsolidated	1037.15	1024.06	1024.71	1022.41	1025.79	11.36	22.60	22.54	0.06	Soft Bottom
FWGmw-007	Unconsolidated	1075.41	1051.69	1051.97	1052.56	1052.69	22.72	32.35	32.15	0.20	hard
FWGmw-011	Unconsolidated	941.61	938.77	939.86	937.98	939.98	1.63	17.80	17.69	0.11	hard
FWGmw-012	Sharon Shale	941.39	940.15	940.81	939.66	941.39	0.00	42.45	42.45	0.00	hard
FWGmw-015	Unconsolidated	1014.51	1009.47	1008.62	1008.72	1010.23	4.28	26.35	26.25	0.10	medium
FWGmw-016	Sharon	1014.39	998.12	998.38	997.65	997.85	16.54	67.50	68.10	-0.60	hard
LL1mw-064	Unconsolidated	935.10	933.89	NM	933.12	933.68	1.42	21.10	21.04	0.06	hard
LL1mw-065	Unconsolidated	944.41	933.65	933.77	932.02	933.01	11.40	23.40	23.14	0.26	hard
LL1mw-083	Sharon	995.20	964.15	963.05	964.30	961.30	33.90	41.70	41.45	0.25	hard
LL1mw-084	Sharon	998.73	971.62	971.28	969.43	968.21	30.52	39.30	39.10	0.20	hard
LL1mw-086	Unconsolidated	940.63	933.56	934.69	932.18	932.81	7.82	77.38	77.74	-0.36	hard
LL1mw-087	Unconsolidated	944.32	939.09	939.16	935.62	940.07	4.25	18.55	18.10	0.45	medium
LL1mw-088	Unconsolidated	938.63	NM	932.71	932.54	934.24	4.39	27.54	27.32	0.22	hard
LL2mw-059	Sharon	966.67	953.84	953.58	953.82	953.52	13.15	21.80	21.85	-0.05	hard
LL2mw-060	Sharon	961.57	952.02	NM	NM	952.09	9.48	21.90	20.76	1.14	hard
LL2mw-267	Sharon	1014.81	1005.87	1005.91	1004.10	1006.17	8.64	22.00	22.10	-0.10	hard
LL2mw-271	Sharon	961.19	NM	950.86	950.94	950.91	10.28	27.80	27.77	0.03	hard
LL3mw-238	Sharon	1006.91	991.77	992.06	989.07	992.07	14.84	22.90	23.37	-0.47	hard
LL3mw-241	Sharon	994.65	985.54	985.80	981.26	984.75	9.90	25.10	25.56	-0.46	hard
LL3mw-244	Sharon	988.78	978.55	979.16	975.74	981.49	7.29	47.25	46.88	0.37	hard
LL3mw-246	Sharon	988.84	NM	968.30	967.46	970.45	18.39	45.66	45.90	-0.24	hard
LL7mw-001	Homewood	1129.64	1109.85	NM	NM	1109.46	20.18	32.20	33.02	-0.82	medium
LL10mw-003	Homewood	1130.28	1110.42	1111.21	1108.97	1109.22	21.06	28.90	28.54	0.36	hard
LL12mw-185	Unconsolidated	981.31	974.96	973.96	975.07	973.98	7.33	23.20	23.61	-0.41	hard
LL12mw-187	Unconsolidated	979.94	971.49	971.90	970.90	970.98	8.96	29.40	29.90	-0.50	soft bottom
LL12mw-242	Unconsolidated	981.20	973.37	973.60	972.32	973.31	7.89	28.30	28.62	-0.32	hard
LL12mw-245	Unconsolidated	980.04	973.03	972.39	970.84	972.71	7.33	30.50	29.84	0.66	hard
LL12mw-247	Unconsolidated	984.25	979.76	979.68	978.50	979.81	4.44	22.60	22.22	0.38	silty/soft
NTAmw-119	Unconsolidated	1080.07	1067.77	1068.24	1068.07	1068.59	11.48	104.60	104.40	0.20	hard
RQLmw-007	Sharon	965.91	960.86	960.13	960.28	959.61	6.30	18.20	18.62	-0.42	hard
RQLmw-008	Sharon	966.08	960.58	959.98	960.27	959.53	6.55	18.50	18.67	-0.17	hard
RQLmw-009	Sharon	964.58	960.18	959.66	959.77	959.14	5.44	18.40	18.56	-0.16	hard
RQLmw-011	Sharon	974.60	955.97	NM	NM	952.42	22.18	34.60	35.32	-0.72	hard
RQLmw-012	Sharon	975.12	957.15	NM	NM	952.57	22.55	32.50	32.62	-0.12	hard
RQLmw-013	Sharon	978.04	956.64	NM	NM	952.38	25.66	36.60	36.43	0.17	hard
SCFmw-002	Sharon Cong.	984.56	965.94	966.20	966.18	965.72	18.84	149.65	149.90	-0.25	hard
SCFmw-004	Sharon Cong.	944.17	944.37	NM	944.37	944.37	-0.20	112.47	112.50	-0.03	hard
WBGmw-006	Unconsolidated	1014.66	1007.03	1008.06	1006.14	1008.97	5.69	20.40	20.20	0.20	hard
WBGmw-009	Unconsolidated	1047.53	1034.45	1034.73	1033.99	1036.02	11.51	24.00	24.10	-0.10	hard
WBGmw-020	Sharon	1044.31	1031.69	1032.96	1031.35	1033.06	11.25	43.80	44.19	-0.39	hard
WBGmw-021	Sharon	1010.92	1001.50	1002.13	1000.79	1002.64	8.28	43.10	43.01	0.09	hard

a = Elevations are in feet above mean sea level (amsl)
NM = New wells added to the sampling schedule, not measured in all quarters
ft = feet
TOC= top of casing
Sharon Cong. = Sharon Conglomerate monitoring zone

Plate 4 shows the potentiometric surface of the upper Sharon formation at the facility from May 2014. The bedrock potentiometric map shows a regional eastward flow direction. However, a groundwater mound is evident in the vicinity of Load Line 2 on Plate 4, thereby creating localized radial flow. In addition, the upper portion of the Sharon is in direct communication with surface water at Sand Creek in the vicinity of Demolition Area #2.

Plate 5 shows the potentiometric surface of the basal Sharon formation from May 2014. Groundwater flow in the conglomeratic sandstone facies is to the east beneath the former RVAAP facilty. The groundwater elevations from the deep Sharon Conglomerate wells were evaluated and determined not to be representative of the water table aquifer. These wells were installed with their screened intervals positioned at the basal portion of the Sharon Conglomerate sandstone.

3.2 Summary of Analytical Results

Summaries of laboratory analytical results are presented in Tables 3-2, 3-3, 3-4, 3-5, 3-6, 3-7 and 3-8. Appendix C presents the Laboratory Data Sheets. A brief summary of the detected compounds and elements are presented in the following sub-sections. The data presented in the tables are the validated and verified data. Data verification and validation is discussed in Section 3.3 and Appendix C.

As part of the ongoing RI for the facility-wide groundwater, detected and validated analytes from the monitoring wells will be subjected to a risk screening process that will be detailed in the *FWGWMP Remedial Investigation/Feasibility Study Work Plan*. As a result reference to the background criteria and the risk evaluation process have been removed from this document.

Additionally, please note the following:

- As discussed in Section 3.3 under the data validation process, data are qualified by EQM's validator following the guidelines and qualifier requirements set forth by the FWSAP, QAPP, and U.S. DoD Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the USACE, Louisville District, Quality Systems Manual Supplement (LS). As a result, the flags designated by EQM sometimes differ from those in the laboratory data sheets. The flags designated by the validator override any flagging of the data by the laboratory. For a complete explanation of the data qualifiers used for each constituent refer to Section 3.3 and the Data Verification Summary Reports found in Appendix C.

- Several analytical methods used to analyze a number of explosives, VOCs, SVOCs, metals, PCBs, and pesticides have reporting limits that currently do not meet the RVAAP QAPP project action requirements, Maximum Contaminant Levels (MCLs) or USEPA Regional Screening Levels (RSLs). The laboratory did not meet the requirements due to the following: 1) the detection limit is a statistically derived number that varies based on analytical method and instrumentation; 2) the RSL is independent from analytical method detection limits and is calculated from EPA toxicity values and exposure

information. Tables listing the reporting limits that currently do not meet the RVAAP QAPP Project Action Requirements, MCLs, and/or RSLs (January 2015) are presented in Appendix E.

- Note that the RSLs used in this report are the most recent available (Janaury 2015). The RSL values reported in the data tables represent the tap water values using TR=1E-6, HQ=1.

3.2.1 Explosives and Propellants

Explosive and propellant compound analytical results are summarized in Table 3-2. The following compounds were detected at concentrations above the MDLs:

- 1,3,5-Trinitrobenzene – LL1mw-083 (5.9 micrograms per liter [µg/L] J), LL1mw-084 (3.2 µg/L J), LL2mw-059 (1.2 µg/L), LL2mw-267 (0.061 µg/L J), LL3mw-238 (19 µg/L J), and LL3mw-241 (2.7 µg/L). There is no MCL for 1,3,5-trinitrobenzene. The RSL (January 2015) is 590 µg/L.

- 1,3-Dinitrobenzene – LL1mw-083 (0.19 µg/L J), LL1mw-084 (0.48 µg/L J), and LL2mw-059 (0.065 µg/L J). There is no MCL for 1, 3-dinitrobenzene. The RSL (January 2015) is 2 µg/L.

- 2,4,6-Trinitrotoluene – FBQmw-174 (22 µg/L), LL1mw-083 (4.8 µg/L J), LL1mw-084 (12 µg/L J), LL2mw-267 (0.38 µg/L), LL3mw-238 (45 µg/L J), and LL3mw-241 (1.8 µg/L). There is no MCL for 2,4,6-trinitrotoluene. The RSL (January 2015) is 2.5 µg/L.

- 2,4-Dinitrotoluene – FBQmw-174 (0.27 µg/L), LL1mw-083 (3.3 µg/L J), LL1mw-084 (1.6 µg/L J), LL2mw-059 (0.42 µg/L), LL2mw-267 (0.18 µg/L), LL3mw-238 (0.071 µg/L J), and LL3mw-241 (0.076 µg/L J). There is no MCL for 2,4-dinitrotoluene. The RSL (January 2015) is 0.24 µg/L.

- 2,6-Dinitrotoluene – LL1mw-083 (2.2 µg/L J), LL1mw-084 (0.92 µg/L J), and LL3mw-238 (0.29 µg/L J). There is no MCL for 2,6-dinitrotoluene. The RSL (January 2015) is 0.048 µg/L.

- 2-Amino-4,6-dinitrotoluene – FBQmw-174 (13 µg/L), LL1mw-083 (13 µg/L J), LL1mw-084 (9.7 µg/L J), LL2mw-059 (0.54 µg/L), LL2mw-060 (0.15 µg/L J), LL2mw-267(1.1 µg/L), LL3mw-238 (7.4 µg/L J), LL3mw-241 (1.4µg/L), LL3mw-244 (0.48 µg/L), and LL3mw-246 (0.38 µg/L)**.** There is no MCL for 2-amino-4,6-dinitrotoluene. The RSL (January 2015) is 39 µg/L.

- 4-Amino-2,6-dinitrotoluene – FBQmw-174 (18 µg/L), LL1mw-083 (21 µg/L J), LL1mw-084 (31 µg/L J), LL2mw-059 (0.54 µg/L), LL2mw-060 (0.13 µg/L), LL2mw-267 (1.0 µg/L), LL3mw-238 (19 µg/L J), LL3mw-241 (1.4 µg/L), LL3mw-244 (0.44 µg/L), and

LL3mw-246 (0.38 µg/L). There is no MCL for 4-amino-2,6-dinitrotoluene. The RSL (January 2015) is 39 µg/L.

- 3-Nitrotoluene – LL3mw-238 (0.12 µg/L J). There is no MCL for 3-nitrotoluene. The RSL (January 2015) is 1.7 µg/L.

- 4-Nitrotoluene – LL1mw-084 (0.71 µg/L J). There is no MCL for 4-nitrotoluene. The RSL (January 2015) is 4.2 µg/L.

- Nitrate-Nitrite – LL12mw-187 (1200 milligrams per liter [mg/L]), LL12mw-242 (0.045 mg/L B), and LL12mw-245 (0.066 mg/L B). The MCL for nitrate-nitrite is 10 mg/L. There is no RSL (January 2015).

- HMX – DETmw-004 (1.5 µg/L), LL1mw-083 (1.0 µg/L J), LL1mw-084 (0.71 µg/L J), LL2mw-059 (0.074 µg/L J), LL2mw-267 (0.77 µg/L), LL3mw-238 (1.1 µg/L J), LL3mw-241 (0.14 µg/L J), WBGmw-006 (7.7 µg/L), and WBGmw-009 (0.93 µg/L). There is no MCL for HMX. The RSL (January 2015) is 1000 µg/L.

- Nitrobenzene – LL3mw-238 (0.098 µg/L J). There is no MCL for nitrobenzene. The RSL (January 2015) is 0.14 µg/L.

- Nitrocellulose – LL12mw-187 (1.2 mg/L J). There is no MCL for nitrocellulose. The RSL (January 2015) is 6.0E+07 mg/L.

- RDX – DETmw-004 (3.2 µg/L), FBQmw-174 (0.43 µg/L), LL1mw-084 (0.92 µg/L J), LL2mw-267 (1.1 µg/L), LL3mw-238 (4.5 µg/L J), LL3mw-241 (0.43 µg/L), LL3mw-244 (0.25 µg/L), LL3mw-246 (0.21 µg/L), WBGmw-006 (41 µg/L), and WBGmw-009 (2.6 µg/L). There is no MCL for RDX. The RSL (January 2015) is 0.7 µg/L.

As shown in Table 3-2, the following explosives or propellants were detected at levels above their corresponding MCLs and/or RSLs (January 2015) during the March 2015 sampling event:

- 2,4,6-Trinitrotoluene – FBQmw-174 (22 µg/L), LL1mw-083 (4.8 µg/L J), LL1mw-084 (12 µg/L J), LL3mw-238 (45 µg/L J). There is no MCL for 2,4,6-trinitrotoluene. The RSL (January 2015) is 2.5 µg/L.

- 2,4-Dinitrotoluene – FBQmw-174 (0.27 µg/L), LL1mw-083 (3.3 µg/L J), LL1mw-084 (1.6 µg/L J), and LL2mw-059 (0.42 µg/L). There is no MCL for 2,4-dinitrotoluene. The (January 2015) is 0.24 µg/L.

- 2,6-Dinitrotoluene – LL1mw-083 (2.2 µg/L J), LL1mw-084 (0.92 µg/L J), and LL3mw-238 (0.29 µg/L J). There is no MCL for 2,6-dinitrotoluene. The RSL (January 2015) is 0.048 µg/L.

- Nitrate-Nitrite – LL12mw-187 (1200 mg/L). The MCL for nitrate-nitrite is 10 mg/L. There is no RSL (January 2015).

- RDX – DETmw-004 (3.2 µg/L), LL1mw-084 (0.92 µg/L J), LL2mw-267 (1.1 µg/L), LL3mw-238 (4.5 µg/L J), WBGmw-006 (41 µg/L), and WBGmw-009 (2.6 µg/L). There is no MCL for RDX. The RSL (January 2015) is 0.7 µg/L.

3.2.2 Inorganic Elements

The analytical results for inorganic elements are presented in Table 3-3. The inorganics detected in the samples included: aluminum, arsenic, barium, cadmium, calcium, chromium, cobalt, copper, cyanide, iron, lead, magnesium, manganese, nickel, potassium, silver, sodium, vanadium, and zinc. The inorganic elements that were detected were compared against elements that are considered as essential nutrients to determine if they are to be considered as Site-Related Contaminants (SRCs). Calcium, magnesium, iron, potassium, and sodium were eliminated as potential SRCs because they are considered essential nutrients.

Several inorganic compounds were detected at levels exceeding the MCLs and/or RSLs (January 2015). Table 4-1 in Section 4 presents a summary of all inorganic compounds and the associated wells that had detections exceeding MCLs and/or the RSLs (January 2015).

Aluminum

- LL1mw-083 (860 µg/L), LL1mw-084 (240 µg/L), LL1mw-087 (340 µg/L), and LL12mw-242 (820 µg/L). The MCL for aluminum is 200 µg/L. The RSL (January 2015) is 20,000 µg/L.

Arsenic

- DETmw-003 (11 µg/L), FWGmw-011 (5.4 µg/L B), FWGmw-012 (3.3 µg/L J), FWGmw-015 (3.6 µg/L J), FWGmw-016 (5.8 µg/L J), LL1mw-064 (3.5 µg/L J), LL1mw-086 (4.4 µg/L J), LL1mw-088 (22 µg/L), LL3mw-244 (3.4 µg/L J), Ll12mw-185 (3.1 µg/L J), Ll12mw-187 (2.9 µg/L J), LL12mw-242 (19 µg/L), LL12mw-247 (7.3 µg/L J), NTAmw-119 (7.8 µg/L B), RQLmw-007 (31 µg/L), RQLmw-008 (7.8 (µg/L J), RQLmw-009 (12 µg/L), SCFmw-002 (16 µg/L), and WBGmw-021 (3.8 µg/L J). The MCL for arsenic is 10 µg /L. The RSL (January 2015) is 0.052 µg/L.

Cobalt

- LL1mw-084 (14 µg/L), LL7mw-001 (6.1 µg/L), LL12mw-187 (11 µg/L), RQLmw-007 (11 µg/L). There is no MCL for cobalt. The RSL (January 2015) is 6 µg/L.

Cyanide

- RQLmw-007 (0.0058 mg/L J). The MCL for cyanide is 0.2 mg/L. The RSL (January 2015) is 0.0015 mg/L.

Iron

- DA2mw-115 (800 µg/L), DETmw-003 (1900 µg/L), FWGmw-011 (5500 µg/L), FWGmw-012 (2300 µg/L), FWGmw-016 (700 µg/L), LL1mw-064 (7300 µg/L), LL1mw-087 (660 µg/L), LL1mw-088 (570 µg/L), LL2mw-059 (110 µg/L J), LL2mw-271 (450 µg/L), LL7mw-001 (9600 µg/L), LL12mw-242 (2000 µg/L), LL12mw-247 (470 µg/L), NTAmw-119 (1200 µg/L), RQLmw-007 (12000 µg/L), RQLmw-008 (23000 µg/L), RQLmw-009 (4100 µg/L), SCFmw-002 (480 µg/L), and WBGmw-020 (3500 µg/L). The MCL for iron is 300 µg/L. The RSL (January 2015) is 11,000 µg/L.

Manganese

- DA2mw-115 (100 µg/L), DETmw-003 (270 µg/L), DETmw-004 (270 µg/L), FBQmw-174 (270 µg/L), FWGmw-007 (330 µg/L), FWGmw-011 (330 µg/L), FWGmw-012 (91 µg/L), FWGmw-015 (650 µg/L), FWGmw-016 (200 µg/L J), LL1mw-064 (120 µg/L J), LL1mw-065 (130 µg/L), LL1mw-083 (570 µg/L), LL1mw-084 (140 µg/L), LL1mw-086 (210 µg/L), LL1mw-087 (110 µg/L), LL1mw-088 (51 µg/L), LL2mw-267 (490 µg/L), LL2mw-271 (140 µg/L), LL7mw-001 (470 µg/L), LL12mw-187 (2100 µg/L), LL12mw-242 (89 µg/L), LL12mw-245 (51 µg/L), LL12mw-247 (140 µg/L), NTAmw-119 (320 µg/L), RQLmw-007 (1800 µg/L), RQLmw-008 (400 µg/L), RQLmw-009 (610 µg/L), SCFmw-002 (72 µg/L J), SCFmw-004 (750 µg/L), WBGmw-020 (270 µg/L), and WBGmw-021 (270 µg/L). The MCL for manganese is 50 µg/L. The RSL (January 2015) is 430 µg/L.

The facility-wide groundwater conditions are currently being evaluated under the remedial investigation/feasibility study. This will include an evaluation of aluminum, manganese, arsenic, cyanide, cobalt, iron, and thallium related to exceedances of MCLs/RSLs. To date there have been no elevated concentrations of the inorganic analytes found in the groundwater that would pose an immediate threat to human health or the environment.

3.2.3 Volatile Organic Compounds

The analytical results for VOCs are summarized in Table 3-4. The following VOCs were detected above the MDL for this sampling event.

- 1,1,1-trichlorethane – LL7mw-001 (5.0 µg/L). The MCL for 1,1,1-trichlorethane is 200 µg/L. The RSL (January 2015) is 8,000 µg/L.

- 1,1-dichloroethane – LL7mw-001 (1.7 µg/L). There is no MCL for 1,1-dichloroethane. The RSL (January 2015) is 2.7 µg/L.

- 1,1-dichloroethene – LL7mw-001 (4.4 µg/L). The MCL for 1,1-dichloroethene is 7.0 µg/L. The RSL (January 2015) is 280 µg/L.

- Carbon tetrachloride – LL10mw-003 (5.9 µg/L). The MCL for carbon tetrachloride is 5.0 µg/L. The RSL (January 2015) is 0.45 µg/L.

- Chloroform – LL10mw-003 (0.64 µg/L B). The MCL for chloroform is 80 µg/L. The RSL (January 2015) is 0.22 µg/L.

As shown in Table 3-4, the only VOCs detected at levels exceeding their corresponding MCLs and/or RSLs (January 2015) during the March 2015 sampling event were:

- Carbon tetrachloride – LL10mw-003 (5.9 µg/L). The MCL for carbon tetrachloride is 5.0 µg/L. The RSL (January 2015) is 0.45 µg/L.

- Chloroform – LL10mw-003 (0.64 µg/L B). The MCL for chloroform is 80 µg/L. The RSL (January 2015) is 0.22 µg/L.

3.2.4 Semivolatile Organic Compounds

The analytical results for SVOCs are summarized in Table 3-5. The following SVOCs were detected above the MDL for this sampling event.

- bis(2-Ethylhexyl)phthalate – FWGmw-011 (2.4 µg/L B), LL1mw-084 (2.0 µg/L J), LL1mw-087 (1.7 µg/L J), LL12mw-247 (1.74 µg/L J).. The MCL for bis(2-ehtylhexyl)phthalate is 6.0 µg/L. The RSL (January 2015) is 5.6 µg/L.

- diethylphthalate – LL3mw-241 (0.93 µg/L J). There is no MCL for diethylphthalate. The RSL (January 2015) is 15,000 µg/L.

As shown in Table 3-5, no SVOCs were detected at levels exceeding either their corresponding MCLs or RSLs (January 2015).

3.2.5 Pesticides and Polychlorinated Biphenyls

The analytical results for pesticides and PCBs are summarized in Table 3-6. The following pesticides and PCBs were detected above the MDL for this sampling event.

- beta-BHC – FBQmw-174 (0.21 µg/L J), LL3mw-238 (0.11 µg/L), LL3mw-241 (0.026 µg/L J). There is no MCL for beta-BHC. The RSL (January 2015) is 0.025 µg/L.

- Endosulfan sulfate – LL3mw-238 (0.018 µg/L J). There is no MCL or RSL (January 2015) for endosulfan sulfate.

- Endrin aldehyde – LL1mw-083 (0.030 µg/L J). There is no MCL or RSL (January 2015) for endrin aldehyde.

- Heptachlor – LL1mw-083 (0.044 µg/L B), LL1mw-084 (0.043 µg/L B), LL1mw-086 (0.029 µg/L B), LL3mw-238 (0.038 µg/L B), LL3mw-241 (0.047 µg/L B), and SCFmw-002 (0.066 µg/L B). The MCL for heptachlor is 0.4 µg/L. The RSL (January 2015) is 0.002 µg/L.

As shown in Table 3-6, the only pesticides and PCBs detected at levels exceeding their corresponding MCLs or RSLs (January 2015) during the March 2015 sampling event were:

- beta-BHC – FBQmw-174 (0.21 µg/L J), LL3mw-238 (0.11 µg/L), LL3mw-241 (0.026 µg/L J). There is no MCL for beta-BHC. The RSL (January 2015) is 0.025 µg/L.

- Heptachlor – LL1mw-083 (0.044 µg/L B), LL1mw-084 (0.043 µg/L B), LL1mw-086 (0.029 µg/L B), LL3mw-238 (0.038 µg/L B), LL3mw-241 (0.047 µg/L B), and SCFmw-002 (0.066 µg/L B). The MCL for heptachlor is 0.4 µg/L. The RSL (January 2015) is 0.002 µg/L.

3.2.6 Hexavalent Chromium

The analytical results for hexavalent chromium are summarized in Table 3-7. Well LL3mw-244 had a detected concentration for hexavalent chromium of 0.187 µg/L, which is elevated above the RSL (January 2015) of 0.035 µg/L (there is no MCL for hexavalent chromium).

Table 3-7. FWGWMP March 2015 Hexavalent Chromium Analytical Results

Sample ID	Well	Date Collected	Concentration
FWGLL3mw-244-0532-GF	LL3mw-244	3/23/2015	**0.187 µg/L**
FWGLL12mw-247-0540-GF	LL12mw-247	3/10/2015	0.02 µg/L U
FWGSCFmw-002-0545-GF	SCFmw-002	3/10/2015	0.02 µg/L U

U The analyte was analyzed for but not detected. The numerical value preceding the U is the associated reporting limit.

Bold The concentration was detected above the MDL.

3.2.7 Perchlorate

During the March 2015 sampling event perchlorates were analyzed at two wells with previous detection of this analyte. Table 3-8 summarizes the results. As shown in Table 3-8 there were no detections elevated above the RSL (14 µg/L) or the MCL [EPA established an Interim Drinking Water Health Advisory of 15 µg/L in water (EPA 2009b)].

Table 3-8. FWGWMP March 2015 Perchlorate Analytical Results

Sample ID	Well	Date Collected	Concentration
FWGLL2mw-271-0529-GF	LL3mw-244	3/23/2015	**0.054 µg/L J**
FWGLL3mw-246-0533-GF	LL12mw-247	3/10/2015	**0.02 µg/L**

Bold The concentration was detected above the MDL.

Table 3-2. FWGWMP March 2015 Explosive and Propellant Analytical Results

Station ID				DA2mw-115	DETmw-003	DETmw-004	FBQmw-174	FWGmw-004	FWGmw-007	FWGmw-011
Sample ID		MCL	USEPA RSL	FWGDA2MW-115-0509-GW	FWGDETMW-003C-0510-GW	FWGDETMW-004C-0511-GW	FWGFBQmw-174C-0512-GW	FWGFWGmw-004-0513-GW	FWGFWGmw-007-0514-GW	FWGFWGmw-011-0515-GW
Date Collected				3/24/2015	3/24/2015	3/23/2015	3/23/2015	3/13/2015	3/25/2015	3/24/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
1,3,5-Trinitrobenzene	µg/L	NS	590	0.052 U	0.051 U	0.050 U	0.050 U	0.051 U	0.051 U	0.051 U
1,3-Dinitrobenzene	µg/L	NS	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2,4,6-Trinitrotoluene	µg/L	NS	2.5	0.10 U	0.10 U	0.10 U	**22**	0.10 U	0.10 U	0.10 U
2,4-Dinitrotoluene	µg/L	NS	0.24	0.10 U	0.10 U	0.10 U	**0.27**	0.10 U	0.10 U	0.10 U
2,6-Dinitrotoluene	µg/L	NS	0.048	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2-Amino-4,6-dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	**13**	0.10 U	0.10 U	0.10 U
2-Nitrotoluene	µg/L	NS	0.31	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
3-Nitrotoluene	µg/L	NS	1.7	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4-Amino-2,6-Dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	**18**	0.10 U	0.10 U	0.10 U
4-Nitrotoluene	µg/L	NS	4.2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
HMX	µg/L	NS	1000	0.052 U	0.051 U	**1.5**	0.050 U	0.051 U	0.051 U	0.051 U
Nitrate-Nitrite as N	mg/L	10	NS	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	µg/L	NS	0.14	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nitrocellulose	mg/L	NS	6.0E+07	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 UJ	1.0 UJ
Nitroglycerin	µg/L	NS	2	0.52 U	0.51 U	0.50 U	0.50 U	0.51 U	0.51 U	0.51 U
Nitroguanidine	µg/L	NS	2000	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
PETN	µg/L	NS	19	0.52 U	0.51 U	0.50 U	0.50 U	0.51 U	0.51 U	0.51 U
RDX	µg/L	NS	0.7	0.052 U	0.051 U	**3.2**	**0.43**	0.051 U	0.051 U	0.051 U
Tetryl	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U

Notes:
µg/L = microgram per liter
mg/L = milligram per liter
NS = no standard
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level (1/15)
MCL = Maximum Contaminant Level
NA = Not Analyzed

Table 3-2. FWGWMP March 2015 Explosive and Propellant Analytical Results

Station ID				FWGmw-012	FWGmw-015	FWGmw-016	LL1mw-064	LL1mw-065	LL1mw-083	LL1mw-084
Sample ID		MCL	USEPA RSL	FWGFWGMW-012-0516-GW	FWGFWGmw-015-0517-GW	FWGFWGmw-016-0518-GW	FWGLL1MW-064C-0519-GW	FWGLL1MW-065C-0520-GW	FWGLL1MW-083C-0521-GW	FWGLL1MW-084C-0522-GW
Date Collected				3/24/2015	3/9/2015	3/9/2015	3/10/2015	3/10/2015	3/10/2015	3/10/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
1,3,5-Trinitrobenzene	µg/L	NS	590	0.051 U	0.051 U	0.052 U	0.050 U	0.051 U	**5.9 J**	**3.2 J**
1,3-Dinitrobenzene	µg/L	NS	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**0.19 J**	**0.48 J**
2,4,6-Trinitrotoluene	µg/L	NS	2.5	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**4.8 J**	**12 J**
2,4-Dinitrotoluene	µg/L	NS	0.24	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**3.3 J**	**1.6 J**
2,6-Dinitrotoluene	µg/L	NS	0.048	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**2.2 J**	**0.92 J**
2-Amino-4,6-dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**13 J**	**9.7 J**
2-Nitrotoluene	µg/L	NS	0.31	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
3-Nitrotoluene	µg/L	NS	1.7	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4-Amino-2,6-Dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**21 J**	**31 J**
4-Nitrotoluene	µg/L	NS	4.2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**0.71 J**
HMX	µg/L	NS	1000	0.051 U	0.051 U	0.052 U	0.050 U	0.051 U	**1.0 J**	**0.71 J**
Nitrate-Nitrite as N	mg/L	10	NS	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	µg/L	NS	0.14	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nitrocellulose	mg/L	NS	6.0E+07	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Nitroglycerin	µg/L	NS	2	0.51 U	0.51 U	0.52 U	0.50 U	0.51 U	0.51 U	0.50 U
Nitroguanidine	µg/L	NS	2000	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
PETN	µg/L	NS	19	0.51 U	0.51 U	0.52 U	0.50 U	0.51 U	0.51 U	0.50 U
RDX	µg/L	NS	0.7	0.051 U	0.051 U	0.052 U	0.050 U	0.051 U	0.051 U	**0.92 J**
Tetryl	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U

Notes:
µg/L = microgram per liter
mg/L = milligram per liter
NS = no standard
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level (1/15)
MCL = Maximum Contaminant Level
NA = Not Analyzed

Table 3-2. FWGWMP March 2015 Explosive and Propellant Analytical Results

Station ID				LL1mw-086	LL1mw-087	LL1mw-088	LL2mw-059	LL2mw-060	LL2mw-267	LL2mw-271
Sample ID		MCL	USEPA RSL	FWGLL1MW-086-0523-GW	FWGLL1MW-087-0524-GW	FWGLL1MW-088-0525-GW	FWGLL2MW-059C-0526-GW	FWGLL2MW-060C-0527-GW	FWGLL2MW-267C-0528-GW	FWGLL2mw-271-0529-GW
Date Collected				3/10/2015	3/9/2015	3/24/2015	3/24/2015	3/24/2015	3/11/2015	3/23/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
1,3,5-Trinitrobenzene	µg/L	NS	590	0.051 U	0.051 U	0.051 U	**1.2**	0.051 U	**0.061 J**	0.051 U
1,3-Dinitrobenzene	µg/L	NS	2	0.10 U	0.10 U	0.10 U	**0.065 J**	0.10 U	0.10 U	0.10 U
2,4,6-Trinitrotoluene	µg/L	NS	2.5	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**0.38**	0.10 U
2,4-Dinitrotoluene	µg/L	NS	0.24	0.10 U	0.10 U	0.10 U	**0.42**	0.10 U	**0.18**	0.10 U
2,6-Dinitrotoluene	µg/L	NS	0.048	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2-Amino-4,6-dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	**0.54**	**0.15 J**	**1.1**	0.10 U
2-Nitrotoluene	µg/L	NS	0.31	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
3-Nitrotoluene	µg/L	NS	1.7	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4-Amino-2,6-Dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	**0.54**	**0.13**	**1.0**	0.10 U
4-Nitrotoluene	µg/L	NS	4.2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
HMX	µg/L	NS	1000	0.051 U	0.051 U	0.051 U	**0.074 J**	0.051 U	**0.77**	0.051 U
Nitrate-Nitrite as N	mg/L	10	NS	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	µg/L	NS	0.14	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nitrocellulose	mg/L	NS	6.0E+07	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U
Nitroglycerin	µg/L	NS	2	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.50 U	0.51 U
Nitroguanidine	µg/L	NS	2000	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
PETN	µg/L	NS	19	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.50 U	0.51 U
RDX	µg/L	NS	0.7	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	**1.1**	0.051 U
Tetryl	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U

Notes:
µg/L = microgram per liter
mg/L = milligram per liter
NS = no standard
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level (1/15)
MCL = Maximum Contaminant Level
NA = Not Analyzed

Table 3-2. FWGWMP March 2015 Explosive and Propellant Analytical Results

Station ID				LL3mw-238	LL3mw-241	LL3mw-244	LL3mw-246	LL7mw-001	LL10mw-003	LL12mw-185
Sample ID		MCL	USEPA RSL	FWGLL3MW-238C-0530-GW	FWGLL3MW-241C-0531-GW	FWGLL3mw-244-0532-GW	FWGLL3mw-246-0533-GW	FWGLL7MW-001-0534-GW	FWGLL10MW-003C-0535-GW	FWGLL12mw-185C-0536-GW
Date Collected				3/11/2015	3/11/2015	3/23/2015	3/23/2015	3/11/2015	3/11/2015	3/11/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
1,3,5-Trinitrobenzene	µg/L	NS	590	**19 J**	**2.7**	0.053 U	0.051 U	0.050 U	NA	NA
1,3-Dinitrobenzene	µg/L	NS	2	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	NA	NA
2,4,6-Trinitrotoluene	µg/L	NS	2.5	**45 J**	**1.8**	0.11 U	0.10 U	0.10 U	NA	NA
2,4-Dinitrotoluene	µg/L	NS	0.24	**0.071 J**	**0.076 J**	0.11 U	0.10 U	0.10 U	0.51 U	NA
2,6-Dinitrotoluene	µg/L	NS	0.048	**0.29 J**	0.10 U	0.11 U	0.10 U	0.10 U	5.1 U	NA
2-Amino-4,6-dinitrotoluene	µg/L	NS	39	**7.4 J**	**1.4**	**0.48**	**0.38**	0.10 U	NA	NA
2-Nitrotoluene	µg/L	NS	0.31	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	NA	NA
3-Nitrotoluene	µg/L	NS	1.7	**0.12 J**	0.10 U	0.11 U	0.10 U	0.10 U	NA	NA
4-Amino-2,6-Dinitrotoluene	µg/L	NS	39	**19 J**	**1.4**	**0.44**	**0.38**	0.10 U	NA	NA
4-Nitrotoluene	µg/L	NS	4.2	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	NA	NA
HMX	µg/L	NS	1000	**1.1 J**	**0.14 J**	0.053 U	0.051 U	0.050 U	NA	NA
Nitrate-Nitrite as N	mg/L	10	NS	N/A	N/A	N/A	N/A	N/A	N/A	110 U
Nitrobenzene	µg/L	NS	0.14	**0.098 J**	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	NA
Nitrocellulose	mg/L	NS	6.0E+07	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA
Nitroglycerin	µg/L	NS	2	0.51 U	0.51 U	0.53 U	0.51 U	0.50 U	NA	NA
Nitroguanidine	µg/L	NS	2000	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	NA	NA
PETN	µg/L	NS	19	0.51 U	0.51 U	0.53 U	0.51 U	0.50 U	NA	NA
RDX	µg/L	NS	0.7	**4.5 J**	**0.43**	**0.25**	**0.21**	0.050 U	NA	NA
Tetryl	µg/L	NS	39	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	NA	NA

Notes:
µg/L = microgram per liter
mg/L = milligram per liter
NS = no standard
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level (1/15)
MCL = Maximum Contaminant Level
NA = Not Analyzed

Table 3-2. FWGWMP March 2015 Explosive and Propellant Analytical Results

Station ID				LL12mw-187	LL12mw-242	LL12mw-245	LL12mw-247	NTAmw-119	RQLmw-007	RQLmw-008
Sample ID		MCL	USEPA RSL	FWGLL12mw-187C-0537-GW	FWGLL12mw-242C-0538-GW	FWGLL12mw-245C-0539-GW	FWGLL12MW-247-0540-GW	FWGNTAmw-119-0541-GW	FWGRQLmw-007C-0542-GW	FWGRQLmw-008C-0543-GW
Date Collected				3/12/2015	3/12/2015	3/12/2015	3/10/2015	3/25/2015	3/12/2015	3/12/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
1,3,5-Trinitrobenzene	µg/L	NS	590	0.051 U	0.050 U	0.051 U	0.052 U	0.052 U	0.051 U	0.050 U
1,3-Dinitrobenzene	µg/L	NS	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2,4,6-Trinitrotoluene	µg/L	NS	2.5	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2,4-Dinitrotoluene	µg/L	NS	0.24	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2,6-Dinitrotoluene	µg/L	NS	0.048	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2-Amino-4,6-dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2-Nitrotoluene	µg/L	NS	0.31	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
3-Nitrotoluene	µg/L	NS	1.7	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4-Amino-2,6-Dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4-Nitrotoluene	µg/L	NS	4.2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
HMX	µg/L	NS	1000	0.051 U	0.050 U	0.051 U	0.052 U	0.052 U	0.051 U	0.050 U
Nitrate-Nitrite as N	mg/L	10	NS	**1200**	**0.045 B**	**0.066 B**	0.019 U	N/A	N/A	N/A
Nitrobenzene	µg/L	NS	0.14	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nitrocellulose	mg/L	NS	6.0E+07	**1.2 J**	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U
Nitroglycerin	µg/L	NS	2	0.51 U	0.50 U	0.51 U	0.52 U	0.52 U	0.51 U	0.50 U
Nitroguanidine	µg/L	NS	2000	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
PETN	µg/L	NS	19	0.51 U	0.50 U	0.51 U	0.52 U	0.52 U	0.51 U	0.50 U
RDX	µg/L	NS	0.7	0.051 U	0.050 U	0.051 U	0.052 U	0.052 U	0.051 U	0.050 U
Tetryl	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U

Notes:
µg/L = microgram per liter
mg/L = milligram per liter
NS = no standard
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level (1/15)
MCL = Maximum Contaminant Level
NA = Not Analyzed

Table 3-2. FWGWMP March 2015 Explosive and Propellant Analytical Results

Station ID				RQLmw-009	SCFmw-002	SCFmw-004	WBGmw-006	WBGmw-009	WBGmw-020	WBGmw-021
Sample ID		MCL	USEPA RSL	FWGRQLmw-009C-0544-GW	FWGSCFMW-002-0545-GW	FWGSCFMW-004-0546-GW	FWGWBGMW-006C-0547-GW	FWGWBGMW-009-0548-GW	FWGWBGMW-020-0549-GW	FWGWBGMW-021C-0550-GW
Date Collected				3/12/2015	3/10/2015	3/10/2015	3/11/2015	3/11/2015	3/11/2015	3/11/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
1,3,5-Trinitrobenzene	µg/L	NS	590	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.050 U	0.050 U
1,3-Dinitrobenzene	µg/L	NS	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2,4,6-Trinitrotoluene	µg/L	NS	2.5	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2,4-Dinitrotoluene	µg/L	NS	0.24	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2,6-Dinitrotoluene	µg/L	NS	0.048	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2-Amino-4,6-dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2-Nitrotoluene	µg/L	NS	0.31	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
3-Nitrotoluene	µg/L	NS	1.7	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4-Amino-2,6-Dinitrotoluene	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4-Nitrotoluene	µg/L	NS	4.2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
HMX	µg/L	NS	1000	0.051 U	0.051 U	0.051 U	**7.7**	**0.93**	0.050 U	0.050 U
Nitrate-Nitrite as N	mg/L	10	NS	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	µg/L	NS	0.14	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nitrocellulose	mg/L	NS	6.0E+07	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Nitroglycerin	µg/L	NS	2	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.50 U	0.50 U
Nitroguanidine	µg/L	NS	2000	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
PETN	µg/L	NS	19	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.50 U	0.50 U
RDX	µg/L	NS	0.7	0.051 U	0.051 U	0.051 U	**41**	**2.6**	0.050 U	0.050 U
Tetryl	µg/L	NS	39	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U

Notes:
µg/L = microgram per liter
mg/L = milligram per liter
NS = no standard
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level (1/15)
MCL = Maximum Contaminant Level
NA = Not Analyzed

Table 3-2. FWGWMP March 2015 Explosive and Propellant Analytical Results

Data Qualifiers

Data qualifier flags are used in an effort to describe the quality of each piece of data for each constituent. These flags are letter codes appended to the numerical data. The following data qualifiers are specified in the USACE Louisville Chemistry Guidelines. For a complete explanation of qualifiers used for each constituent please refer to the Data Verification Summaries in Appendix C.

U The analyte was analyzed for but not detected. The numerical value preceding the U is the associated reporting limit.

J The identification of the analyte is acceptable, but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision (i.e., the quantitative value is estimated). Examples include:
- Results detected above the laboratory MDL but less than the laboratory reporting limit.
- MS/MSD percent recoveries outside the acceptance criteria.
- Laboratory control sample (LCS) percent recoveries outside acceptance criteria.

R Data are considered to be rejected and shall not be used. This flag denotes the failure of quality control criteria such that it cannot be determined if the analyte is present or absent from the sample [e.g., the method reporting limit (MRL) verification standard was below quality control guidelines; associated sample results that were non-detect are unusable].

UJ This flag is a combination of the U and J qualifiers, which indicate that the analyte is not present. The reported value is considered to be an estimated reporting limit (RL).

B The B flag is used for when the analyte is found in the method blank or any of the field blanks. This designation overrides the Contract Laboratory Program (CLP) “B” designation when used by the laboratory as an estimated value for inorganics.

Table 3-3. FWGWMP March 2015 Inorganic Analytical Results

Station ID				DA2mw-115	DETmw-003	DETmw-004	FBQmw-174	FWGmw-004	FWGmw-007	FWGmw-011
Sample ID		MCL	USEPA RSL	FWGDA2MW-115-0509-GF	FWGDETMW-003C-0510-GF	FWGDETMW-004C-0511-GF	FWGFBQmw-174C-0512-GF	FWGFWGmw-004-0513-GF	FWGFWGmw-007-0514-GF	FWGFWGmw-011-0515-GF
Date Collected				3/24/2015	3/24/2015	3/23/2015	3/23/2015	3/13/2015	3/25/2015	3/24/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
Aluminum	µg/L	200	20000	60 U	60 U	60 U	60 U	60 U	**35 J**	60 U
Antimony	µg/L	6.0	7.8	1.0 U	1.0 U	1.0 U	1.0 U	0.33 U	0.81 U	1.0 U
Arsenic	µg/L	10	0.052	10 U	**11**	10 U	10 U	10 U	10 U	**5.4 B**
Barium	µg/L	2000	3800	**22 J**	**46 J**	**54 J**	11 UJ	**21 J**	**17 B**	**29 B**
Beryllium	µg/L	4.0	25	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cadmium	µg/L	5.0	9.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Calcium	µg/L	NS	NS	**100000**	**88000**	**130000**	**5300**	**91000**	**100000**	**57000**
Chromium	µg/L	100	22000	0.86 U	0.56 U	1.3 U	4.0 U	1.8 U	1.7 U	1.6 U
Cobalt	µg/L	NS	6	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.2 U
Copper	µg/L	1300	800	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyanide	mg/L	0.20	0.0015	NA	0.0050 U	0.0050 U	NA	NA	NA	NA
Iron	µg/L	300	11000	**800**	**1900**	100 U	100 U	100 U	**110 J**	**5500**
Lead	µg/L	15	15	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Magnesium	µg/L	NS	NS	**29000**	**32000**	**28000**	**1900 J**	**46000**	**48000**	**12000**
Manganese	µg/L	50	430	**100**	**250**	**1.5 J**	**19**	5.3 UJ	**64**	**330**
Mercury	µg/L	2.0	0.63	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	µg/L	NS	390	0.90 U	5.0 U	1.3 U	**4.1 J**	5.0 U	0.89 U	5.0 U
Potassium	µg/L	NS	NS	**3500 J**	**1800 J**	**1100 J**	**930 J**	**740 J**	**2000 B**	**2100 B**
Selenium	µg/L	50	100	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Silver	µg/L	100	94	5.0 U	5.0 U	5.0 U	5.0 **U**	5.0 U	5.0 U	5.0 U
Sodium	µg/L	NS	NS	**12000**	**12000**	**2600**	**1100**	**4200**	**8200**	**5600**
Thallium	µg/L	2.0	0.20	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Vanadium	µg/L	NS	86	**2.5 J**	4.0 U	4.0 U	4.0 U	4.0 U	2.4 U	4.0 U
Zinc	µg/L	5000	6000	50 U	50 U	50 U	**36 J**	50 U	50 U	50 U

Notes:

µg/L = microgram per liter

mg/L = milligram per liter

NS = no standard

NA = Not Analyzed

Bold = detected compound above the MDL

RSL = USEPA Regional Screening Level (1/15)

MCL = Maximum Contaminant Level

Table 3-3. FWGWMP March 2015 Inorganic Analytical Results

Station ID				FWGmw-012	FWGmw-015	FWGmw-016	LL1mw-064	LL1mw-065	LL1mw-083	LL1mw-084
Sample ID		MCL	USEPA RSL	FWGFWGMW-012-0516-GF	FWGFWGmw-015-0517-GF	FWGFWGmw-016-0518-GF	FWGLL1MW-064C-0519-GF	FWGLL1MW-065C-0520-GF	FWGLL1MW-083C-0521-GF	FWGLL1MW-084C-0522-GF
Date Collected				3/24/2015	3/9/2015	3/9/2015	3/10/2015	3/10/2015	3/10/2015	3/10/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
Aluminum	µg/L	200	20000	60 U	60 U	60 U	60 U	60 U	**860**	**240**
Antimony	µg/L	6.0	7.8	1.0 U	0.39 U	0.38 U	1.0 U	1.0 U	1.0 U	1.0 U
Arsenic	µg/L	10	0.052	**3.3 J**	**3.6 J**	**5.8 J**	**3.5 J**	10 U	10 U	10 U
Barium	µg/L	2000	3800	**21 J**	**9.2 B**	**55 J**	**47 J**	**50 J**	**15 J**	**15 J**
Beryllium	µg/L	4.0	25	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cadmium	µg/L	5.0	9.2	1.0 U	0.51 U	0.42 U	1.0 U	1.0 U	**0.85 J**	**1.7 J**
Calcium	µg/L	NS	NS	**22000**	**280000**	**100000**	**59000**	**82000**	**29000**	**61000**
Chromium	µg/L	100	22000	0.99 U	1.9 U	1.5 U	4.0 U	0.59 U	4.0 U	4.0 U
Cobalt	µg/L	NS	6	**0.96 J**	1.6 U	4.0 U	4.0 U	4.0 U	11 U	**14**
Copper	µg/L	1300	800	10 U	10 U	10 U	10 U	10 U	10 U	**8.5 J**
Cyanide	mg/L	0.20	0.0015	NA	NA	NA	NA	NA	NA	NA
Iron	µg/L	300	11000	**2300**	100 U	**700**	**730**	**64 J**	100 U	100 U
Lead	µg/L	15	15	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Magnesium	µg/L	NS	NS	**5200**	**270000**	**26000**	**10000**	**23000**	**5900**	**3400 J**
Manganese	µg/L	50	430	**97**	**160**	**200**	**120**	**130**	**570**	**140**
Mercury	µg/L	2.0	0.63	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	µg/L	NS	390	1.1 U	2.8 U	5.0 U	5.0 U	5.0 U	**37 J**	**27 J**
Potassium	µg/L	NS	NS	**3400 J**	**3600 J**	**2100 J**	**750 J**	**1200 J**	**2800 J**	**3500 J**
Selenium	µg/L	50	100	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Silver	µg/L	100	94	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Sodium	µg/L	NS	NS	**7000**	**45000**	**11000**	**5300**	**13000**	**9300**	**4800**
Thallium	µg/L	2.0	0.20	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Vanadium	µg/L	NS	86	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Zinc	µg/L	5000	6000	50 U	50 U	50 U	50 U	50 U	**46 J**	**60**

Notes:

µg/L = microgram per liter

mg/L = milligram per liter

NS = no standard

NA = Not Analyzed

Bold = detected compound above the MDL

RSL = USEPA Regional Screening Level (1/15)

MCL = Maximum Contaminant Level

Table 3-3. FWGWMP March 2015 Inorganic Analytical Results

Station ID				LL1mw-086	LL1mw-087	LL1mw-088	LL2mw-059	LL2mw-060	LL2mw-267	LL2mw-271
Sample ID		MCL	USEPA RSL	FWGLL1MW-086-0523-GF	FWGLL1MW-087-0524-GF	FWGLL1MW-088-0525-GF	FWGLL2MW-059C-0526-GF	FWGLL2MW-060C-0527-GF	FWGLL2MW-267C-0528-GF	FWGLL2mw-271-0529-GF
Date Collected				3/10/2015	3/9/2015	3/24/2015	3/24/2015	3/24/2015	3/11/2015	3/23/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
Aluminum	µg/L	200	20000	**33 J**	**340**	60 U	60 U	60 U	60 U	60 U
Antimony	µg/L	6.0	7.8	0.59 U	1.0 U	1.0 U	1.0 U	0.33 U	0.59 U	1.0 U
Arsenic	µg/L	10	0.052	**4.4 J**	10 U	**22**	10 U	10 U	10 U	10 U
Barium	µg/L	2000	3800	**57 J**	25 U	**43 J**	**8.4 J**	**29 J**	**7.8 J**	2.8 U
Beryllium	µg/L	4.0	25	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cadmium	µg/L	5.0	9.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Calcium	µg/L	NS	NS	**43000**	**100000**	**81000**	**27000**	**59000**	**29000**	**63000**
Chromium	µg/L	100	22000	4.0 U	1.6 U	1.1 U	1.1 U	0.69 U	4.0 U	4.0 U
Cobalt	µg/L	NS	6	4.0 U	1.0 U	4.0 U	**1.1 J**	4.0 U	1.7 U	**2.0 J**
Copper	µg/L	1300	800	10 U	10 U	**2.0 J**	10 U	10 U	10 U	10 U
Cyanide	mg/L	0.20	0.0015	NA	NA	NA	NA	NA	NA	NA
Iron	µg/L	300	11000	**220**	**660**	**570**	**110 J**	100 U	**160**	**450**
Lead	µg/L	15	15	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Magnesium	µg/L	NS	NS	**24000**	**29000**	**39000**	**11000**	**7900**	**16000**	**15000**
Manganese	µg/L	50	430	**210**	**110**	**51**	**33**	5.0 U	**490**	**140**
Mercury	µg/L	2.0	0.63	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	µg/L	NS	390	1.3 U	1.3 U	5.0 U	3.6 U	5.0 U	3.0 U	**3.7 J**
Potassium	µg/L	NS	NS	**23000**	**590 J**	**4100 J**	**740 J**	440 U	**560 J**	**8900**
Selenium	µg/L	50	100	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Silver	µg/L	100	94	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Sodium	µg/L	NS	NS	**12000**	**8500**	**26000**	**3400**	**2400**	**18000**	**5400**
Thallium	µg/L	2.0	0.20	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Vanadium	µg/L	NS	86	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 UJ	4.0 U
Zinc	µg/L	5000	6000	50 U	50 U	50 U	50 U	50 U	50 U	50 U

Notes:

µg/L = microgram per liter

mg/L = milligram per liter

NS = no standard

NA = Not Analyzed

Bold = detected compound above the MDL

RSL = USEPA Regional Screening Level (1/15)

MCL = Maximum Contaminant Level

Table 3-3. FWGWMP March 2015 Inorganic Analytical Results

Station ID				LL3mw-238	LL3mw-241	LL3mw-244	LL3mw-246	LL7mw-001	LL10mw-003	LL12mw-185
Sample ID		MCL	USEPA RSL	FWGLL3MW-238C-0530-GF	FWGLL3MW-241C-0531-GF	FWGLL3mw-244-0532-GF	FWGLL3mw-246-0533-GF	FWGLL7MW-001-0534-GF	FWGLL10MW-003C-0535-GF	FWGLL12MW-185C-0536-GF
Date Collected				3/11/2015	3/11/2015	3/23/2015	3/23/2015	3/11/2015	3/11/2015	3/11/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
Aluminum	µg/L	200	20000	60 U	60 U	60 U	60 U	60 U	60 U	NA
Antimony	µg/L	6.0	7.8	1.0 U	0.36 U	1.0 UJ	0.63 U	1.0 U	1.0 U	NA
Arsenic	µg/L	10	0.052	10 U	10 U	**3.4 J**	10 U	10 U	10 U	**3.1 J**
Barium	µg/L	2000	3800	**5.1 J**	**3.1 J**	**16 J**	**16**	**22 J**	5.0 U	NA
Beryllium	µg/L	4.0	25	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA
Cadmium	µg/L	5.0	9.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA
Calcium	µg/L	NS	NS	**54000**	**19000**	**25000**	**24000**	**39000**	**57000**	NA
Chromium	µg/L	100	22000	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**1.6 J**	NA
Cobalt	µg/L	NS	6	4.0 U	4.0 U	4.0 U	4.0 U	**6.1**	4.0 U	NA
Copper	µg/L	1300	800	10 U	10 U	10 U	10 U	10 U	10 U	NA
Cyanide	mg/L	0.20	0.0015	NA	NA	NA	NA	NA	NA	NA
Iron	µg/L	300	11000	100 U	100 U	100 U	100 U	**9600**	100 U	NA
Lead	µg/L	15	15	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	NA
Magnesium	µg/L	NS	NS	**5700**	**6900**	**8200**	**7800**	**13000**	**17000**	NA
Manganese	µg/L	50	430	5.0 U	**1.4 J**	5.0 U	**5.1 B**	**470**	**1.6 J**	NA
Mercury	µg/L	2.0	0.63	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA
Nickel	µg/L	NS	390	5.0 U	5.0 U	**1.2 J**	**1.4 J**	**8.1**	5.0 U	NA
Potassium	µg/L	NS	NS	**2300 J**	**820 J**	**1400 J**	**1400**	**1000 J**	**660 J**	NA
Selenium	µg/L	50	100	10 U	10 U	10 U	10 U	10 U	10 U	NA
Silver	µg/L	100	94	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**0.97 J**	NA
Sodium	µg/L	NS	NS	**2700**	**2900**	**3900**	**3900**	**6800**	**8900**	NA
Thallium	µg/L	2.0	0.20	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	NA
Vanadium	µg/L	NS	86	4.0 UJ	4.0 UJ	4.0 U	4.0 U	4.0 UJ	4.0 UJ	NA
Zinc	µg/L	5000	6000	50 U	50 U	50 U	50 U	**60**	50 U	NA

Notes:

µg/L = microgram per liter

mg/L = milligram per liter

NS = no standard

NA = Not Analyzed

Bold = detected compound above the MDL

RSL = USEPA Regional Screening Level (1/15)

MCL = Maximum Contaminant Level

Table 3-3. FWGWMP March 2015 Inorganic Analytical Results

Station ID				LL12mw-187	LL12mw-242	LL12mw-245	LL12mw-247	NTAmw-119	RQLmw-007	RQLmw-008
Sample ID		MCL	USEPA RSL	FWGLL12mw-187C-0537-GF	FWGLL12mw-242C-0538-GF	FWGLL12mw-245C-0539-GF	FWGLL12MW-247-0540-GF	FWGNTAmw-119-0541-GF	FWGRQLmw-007C-0542-GF	FWGRQLmw-008C-0543-GF
Date Collected				3/12/2015	3/12/2015	3/12/2015	3/10/2015	3/25/2015	3/12/2015	3/12/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
Aluminum	µg/L	200	20000	60 U	**820**	60 U	**27 J**	60 U	60 U	60 U
Antimony	µg/L	6.0	7.8	1.0 U	1.0 U	1.0 U	1.0 U	0.44 U	0.39 U	0.34 U
Arsenic	µg/L	10	0.052	**2.9 J**	**19**	10 U	**7.3 J**	**7.8 B**	**31**	**7.8 J**
Barium	µg/L	2000	3800	**260**	**26 J**	**25 J**	**23 J**	**81 B**	**35 J**	**37 J**
Beryllium	µg/L	4.0	25	1.0 U	1.0 U	1.0 U	1.0 U	0.51 U	1.0 U	1.0 U
Cadmium	µg/L	5.0	9.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.42 J**
Calcium	µg/L	NS	NS	**970000**	**65000**	**150000**	**100000**	**81000**	**87000**	**31000**
Chromium	µg/L	100	22000	1.6 U	1.7 U	0.99 U	4.0 U	1.2 U	2.1 U	0.68 U
Cobalt	µg/L	NS	6	**11**	**0.57 J**	**0.87 J**	4.0 U	4.0 U	**11**	**3.2 J**
Copper	µg/L	1300	800	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyanide	mg/L	0.20	0.0015	NA	NA	NA	NA	NA	**0.0058 J**	0.0050 U
Iron	µg/L	300	11000	100 U	**2000**	**85 J**	**470**	**1200**	**12000**	**23000**
Lead	µg/L	15	15	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.5 J**	5.0 U
Magnesium	µg/L	NS	NS	**290000**	**41000**	**72000**	**53000**	**20000**	**75000**	**69000**
Manganese	µg/L	50	430	**2100**	**89**	**51**	**140**	**320**	**1800**	**400**
Mercury	µg/L	2.0	0.63	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	µg/L	NS	390	**21 J**	**1.6 J**	**2.4 J**	5.0 U	5.0 U	**14 J**	**3.9 J**
Potassium	µg/L	NS	NS	**50000**	**2100**	**3500**	**2300**	**1700 B**	**4900 J**	**1700 J**
Selenium	µg/L	50	100	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Silver	µg/L	100	94	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Sodium	µg/L	NS	NS	**37000**	**32000**	**25000**	**23000**	**7100**	**3500**	**2100**
Thallium	µg/L	2.0	0.20	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Vanadium	µg/L	NS	86	4.0 U	**3.8 J**	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Zinc	µg/L	5000	6000	50 U	50 U	50 U	50 U	50 U	50 U	50 U

Notes:

µg/L = microgram per liter

mg/L = milligram per liter

NS = no standard

NA = Not Analyzed

Bold = detected compound above the MDL

RSL = USEPA Regional Screening Level (1/15)

MCL = Maximum Contaminant Level

Table 3-3. FWGWMP March 2015 Inorganic Analytical Results

Station ID				RQLmw-009	SCFmw-002	SCFmw-004	WBGmw-006	WBGmw-009	WBGmw-020	WBGmw-021
Sample ID		MCL	USEPA RSL	FWGRQLmw-009C-0544-GF	FWGSCFMW-002-0545-GF	FWGSCFMW-004-0546-GF	FWGWBGMW-006C-0547-GF	FWGWBGMW-009-0548-GF	FWGWBGMW-020-0549-GF	FWGWBGMW-021C-0550-GF
Date Collected				3/12/2015	3/10/2015	3/10/2015	3/11/2015	3/11/2015	3/11/2015	
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
Aluminum	µg/L	200	20000	60 U	60 U	60 U	60 U	60 U	60 U	60 U
Antimony	µg/L	6.0	7.8	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Arsenic	µg/L	10	0.052	**12**	**16**	10 U	10 U	10 U	10 U	**3.8 J**
Barium	µg/L	2000	3800	**25 J**	**42 J**	**71 J**	**19 J**	**7.7**	**15 J**	**52 J**
Beryllium	µg/L	4.0	25	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cadmium	µg/L	5.0	9.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Calcium	µg/L	NS	NS	**19000**	**91000**	**160000**	**72000**	**48000**	**32000**	**74000**
Chromium	µg/L	100	22000	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Cobalt	µg/L	NS	6	**1.5 J**	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Copper	µg/L	1300	800	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyanide	mg/L	0.20	0.0015	0.0050 U	NA	NA	NA	NA	NA	NA
Iron	µg/L	300	11000	**4100**	**480**	100 U	100 U	100 U	**3500**	**91 J**
Lead	µg/L	15	15	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Magnesium	µg/L	NS	NS	**14000**	**29000**	**63000**	**24000**	**14000**	**11000**	**19000**
Manganese	µg/L	50	430	**610**	**72**	**750**	**20**	**30**	**270**	**270**
Mercury	µg/L	2.0	0.63	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	µg/L	NS	390	**1.8 J**	5.0 U	5.0 U	5.0 U	5.0 U	1.8 U	5.0 U
Potassium	µg/L	NS	NS	**2500 J**	**2500 J**	**2900 J**	**730 J**	**400 J**	**640 J**	**1300 J**
Selenium	µg/L	50	100	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Silver	µg/L	100	94	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Sodium	µg/L	NS	NS	**1700**	**21000**	**11000**	**6000**	**3800**	**3900**	**4900**
Thallium	µg/L	2.0	0.20	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Vanadium	µg/L	NS	86	4.0 U	4.0 U	4.0 U	4.0 UJ	4.0 UJ	4.0 UJ	4.0 UJ
Zinc	µg/L	5000	6000	50 U	50 U	50 U	50 U	50 U	50 U	50 U

Notes:

µg/L = microgram per liter

mg/L = milligram per liter

NS = no standard

NA = Not Analyzed

Bold = detected compound above the MDL

RSL = USEPA Regional Screening Level (1/15)

MCL = Maximum Contaminant Level

Table 3-3. FWGWMP March 2015 Inorganics Analytical Results

Data Qualifiers

Data qualifier flags are used in an effort to describe the quality of each piece of data for each constituent. These flags are letter codes appended to the numerical data. The following data qualifiers are specified in the USACE Louisville Chemistry Guidelines. For a complete explanation of qualifiers used for each constituent please refer to the Data Verification Summaries in Appendix C.

U The analyte was analyzed for but not detected. The numerical value preceding the U is the associated reporting limit.

J The identification of the analyte is acceptable, but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision (i.e., the quantitative value is estimated). Examples include:
- Results detected above the laboratory MDL but less than the laboratory reporting limit.
- MS/MSD percent recoveries outside the acceptance criteria.
- LCS percent recoveries outside acceptance criteria.

R Data are considered to be rejected and shall not be used. This flag denotes the failure of quality control criteria such that it cannot be determined if the analyte is present or absent from the sample [e.g., the MRL verification standard was below quality control guidelines; associated sample results that were non-detect are unusable].

UJ This flag is a combination of the U and J qualifiers, which indicate that the analyte is not present. The reported value is considered to be an estimated RL.

B The B flag is used for when the analyte is found in the method blank or any of the field blanks. This designation overrides the CLP "B" designation when used by the laboratory as an estimated value for inorganics.

Table 3-4. FWGWMP March 2015 VOC Analytical Results

Station ID				DETmw-003	DETmw-004	LL7mw-001	LL10mw-003
Sample ID		MCL	USEPA RSL	FWGDETMW-003C-0510-GW	FWGDETMW-004C-0511-GW	FWGLL7MW-001-0534-GW	FWGLL10MW-003C-0535-GW
Date Collected				3/24/2015	3/23/2015	3/11/2015	6/11/2015
Sample Type				Grab	Grab	Grab	Grab
1,1,1-Trichloroethane	µg/L	200	8000	1.0 U	0.50 U	**5.0**	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	NS	0.076	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5.0	0.28	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	µg/L	NS	2.7	1.0 U	0.50 U	**1.7**	0.50 U
1,1-Dichloroethene (total)	µg/L	7.0	280	1.0 U	1.0 U	**4.4**	1.0 U
1,2-Dibromoethane	µg/L	NS	0.0075	1.0 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5.0	0.17	1.0 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethene (total)	µg/L	NS	NS	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	5.0	0.44	1.0 U	0.50 U	0.50 U	0.50 U
2-Butanone	µg/L	NS	5600	2.0 U	10 U	10 U	10 U
2-Hexanone	µg/L	NS	38	2.0 U	10 U	10 U	10 U
4-Methyl-2-pentanone	µg/L	NS	1200	2.0 U	10 U	10 U	10 U
Acetone	µg/L	NS	14000	2.0 U	10 U	10 U	10 U
Benzene	µg/L	5.0	0.45	1.0 U	0.50 U	0.50 U	0.50 U
Bromochloromethane	µg/L	NS	83	1.0 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	0.13	1.0 U	0.25 U	0.25 U	0.25 U
Bromoform	µg/L	80	9.2	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	µg/L	NS	7.5	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	NS	810	1.0 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5.0	0.45	1.0 U	0.25 U	0.25 U	**5.9**
Chlorobenzene	µg/L	100	78	1.0 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	NS	21000	1.0 U	0.50 U	0.50 U	0.50 U
Chloroform	µg/L	80	0.22	1.0 U	0.50 U	0.50 U	0.64 B
Chloromethane	µg/L	NS	190	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-dichloroethene	µg/L	70	36	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	NS	0.47	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	NS	0.17	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	700	1.5	1.0 U	0.50 U	0.50 U	0.50 U
m&p-xylenes	µg/L	NS	190	1.0 U	0.50 U	0.50 U	0.50 U
Methylene chloride	µg/L	5.0	11	1.0 U	0.50 U	0.50 U	0.50 U
o-xylene	µg/L	NS	190	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	µg/L	100	1200	0.50 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	5.0	11	1.0 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	1000	1100	1.0 U	0.50 U	0.50 U	0.50 U
trans-1,2-dichloroethene	µg/L	100	360	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	NS	0.47	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	5.0	0.49	1.0 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2.0	0.019	1.0 U	0.50 U	0.50 U	0.50 U
Total Xylenes	µg/L	10000	190	2.0 U	1.0 U	1.0 U	1.0 U

Notes:
µg/L = microgram per liter
NS = no standard
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level (1/15)
MCL = Maximum Contaminant Level

Table 3-4. FWGWMP March 2015 VOC Analytical Results

Station ID				NTAmw-119	RQLmw-007	RQLmw-008	RQLmw-009
Sample ID		MCL	USEPA RSL	FWGNTAmw-119-0541-GW	FWGRQLmw-007C-0542-GW	FWGRQLmw-008C-0543-GW	FWGRQLmw-009C-0544-GW
Date Collected				3/25/2015	3/12/2015	3/12/2015	3/12/2015
Sample Type				Grab	Grab	Grab	Grab
1,1,1-Trichloroethane	µg/L	200	8000	1.0 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	NS	0.076	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5.0	0.28	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	µg/L	NS	2.7	1.0 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene (total)	µg/L	7.0	280	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	µg/L	NS	0.0075	1.0 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5.0	0.17	1.0 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethene (total)	µg/L	NS	NS	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	5.0	0.44	1.0 U	0.50 U	0.50 U	0.50 U
2-Butanone	µg/L	NS	5600	2.0 U	10 U	10 U	10 U
2-Hexanone	µg/L	NS	38	2.0 U	10 U	10 U	10 U
4-Methyl-2-pentanone	µg/L	NS	1200	2.0 U	10 U	10 U	10 U
Acetone	µg/L	NS	14000	2.0 U	10 U	10 U	10 U
Benzene	µg/L	5.0	0.45	1.0 U	0.50 U	0.50 U	0.50 U
Bromochloromethane	µg/L	NS	83	1.0 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	0.13	1.0 U	0.25 U	0.25 U	0.25 U
Bromoform	µg/L	80	9.2	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	µg/L	NS	7.5	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	NS	810	1.0 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5.0	0.45	1.0 U	0.25 U	0.25 U	0.25 U
Chlorobenzene	µg/L	100	78	1.0 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	NS	21000	1.0 U	0.50 U	0.50 U	0.50 U
Chloroform	µg/L	80	0.22	1.0 U	0.50 U	0.50 U	0.50 U
Chloromethane	µg/L	NS	190	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-dichloroethene	µg/L	70	36	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	NS	0.47	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	NS	0.17	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	700	1.5	1.0 U	0.50 U	0.50 U	0.50 U
m&p-xylenes	µg/L	NS	190	1.0 U	0.50 U	0.50 U	0.50 U
Methylene chloride	µg/L	5.0	11	1.0 U	0.50 U	0.50 U	0.50 U
o-xylene	µg/L	NS	190	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	µg/L	100	1200	0.50 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	5.0	11	1.0 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	1000	1100	1.0 U	0.50 U	0.50 U	0.50 U
trans-1,2-dichloroethene	µg/L	100	360	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	NS	0.47	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	5.0	0.49	1.0 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2.0	0.019	1.0 U	0.50 U	0.50 U	0.50 U
Total Xylenes	µg/L	10000	190	2.0 U	1.0 U	1.0 U	1.0 U

Notes:
µg/L = microgram per liter
NS = no standard
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level (1/15)
MCL = Maximum Contaminant Level

Table 3-4. FWGWMP March 2015 VOC Analytical Results

Data Qualifiers

Data qualifier flags are used in an effort to describe the quality of each piece of data for each constituent. These flags are letter codes appended to the numerical data. The following data qualifiers are specified in the USACE Louisville Chemistry Guidelines. For a complete explanation of qualifiers used for each constituent please refer to the Data Verification Summaries in Appendix C.

U The analyte was analyzed for but not detected. The numerical value preceding the U is the associated reporting limit.

J The identification of the analyte is acceptable, but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision (i.e., the quantitative value is estimated). Examples include:
- Results detected above the laboratory MDL but less than the laboratory reporting limit.
- MS/MSD percent recoveries outside the acceptance criteria.
- LCS percent recoveries outside acceptance criteria.

R Data are considered to be rejected and shall not be used. This flag denotes the failure of quality control criteria such that it cannot be determined if the analyte is present or absent from the sample [e.g., the MRL verification standard was below quality control guidelines; associated sample results that were non-detect are unusable].

UJ This flag is a combination of the U and J qualifiers, which indicate that the analyte is not present. The reported value is considered to be an estimated RL.

B The B flag is used for when the analyte is found in the method blank or any of the field blanks. This designation overrides the CLP "B" designation when used by the laboratory as an estimated value for inorganics.

Table 3-5. FWGWMP March 2015 SVOC Analytical Results

Station ID				DA2mw-115	FBQmw-174	FWGmw-004	FWGmw-007	FWGmw-011	FWGmw-012	FWGmw-015
Sample ID		MCL	USEPA RSL	FWGDA2MW-115-0509-GW	FWGFBQmw-174C-0512-GW	FWGFWGmw-004-0513-GW	FWGFWGmw-007-0514-GW	FWGFWGmw-011-0515-GW	FWGFWGMW-012-0516-GW	FWGFWGmw-015-0517-GW
Date Collected				3/24/2015	3/23/2015	3/13/2015	3/25/2015	3/24/2015	3/24/2015	3/9/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
bis(2-Ethylhexyl)phthalate	µg/L	6.0	5.6	5.3 U	4.8 U	5.3 U	4.8 U	**2.4 J**	4.8 U	4.8 U
Butyl benzyl phthalate	µg/L	NS	16	0.53 U	0.48 U	0.53 U	0.48 U	0.48 U	0.48 U	0.48 U
Diethyl phthalate	µg/L	NS	15000	1.1 U	0.95 U	1.1 U	0.95 U	0.95 U	0.95 U	0.95 U
Dimethyl phthalate	µg/L	NS	NS	0.53 U	0.48 U	0.53 U	0.48 U	0.48 U	0.48 U	0.48 U
Di-n-butyl phthalate	µg/L	NS	900	5.3 U	4.8 U	5.3 U	4.8 U	4.8 U	4.8 U	4.8 U
Di-n-octyl phthalate	µg/L	NS	200	0.53 U	0.48 U	0.53 U	0.48 U	0.48 U	0.48 U	0.48 U

Notes:

MCL = Maximum Contaminant Level

RSL = USEPA Regional Screening Level (1/15)

µg/L = microgram per liter

NS = no standard

N/A = Not Analyzed

Bold = detected compound above the MDL

Table 3-5. FWGWMP March 2015 SVOC Analytical Results

Station ID				FWGmw-016	LL1mw-064	LL1mw-065	LL1mw-083	LL1mw-084	LL1mw-086	LL1mw-087
Sample ID		MCL	USEPA RSL	FWGFWGmw-016-0518-GW	FWGLL1MW-064C-0519-GW	FWGLL1MW-065C-0520-GW	FWGLL1MW-083C-0521-GW	FWGLL1MW-084C-0522-GW	FWGLL1MW-086-0523-GW	FWGLL1MW-087-0524-GW
Date Collected				3/9/2015	3/10/2015	3/10/2015	3/10/2015	3/10/2015	3/10/2015	3/9/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
bis(2-Ethylhexyl)phthalate	µg/L	6.0	5.6	4.8 U	4.8 U	4.8 U	5.0 U	**2.0 J**	4.8 U	**1.7 J**
Butyl benzyl phthalate	µg/L	NS	16	0.48 U	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U	0.49 U
Diethyl phthalate	µg/L	NS	15000	0.96 U	0.95 U	0.95 U	0.99 U	0.95 U	0.95 U	0.98 U
Dimethyl phthalate	µg/L	NS	NS	0.48 U	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U	0.49 U
Di-n-butyl phthalate	µg/L	NS	900	4.8 U	4.8 U	4.8 U	5.0 U	4.8 U	4.8 U	4.9 U
Di-n-octyl phthalate	µg/L	NS	200	0.48 U	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U	0.49 U

Notes:

MCL = Maximum Contaminant Level

RSL = USEPA Regional Screening Level (1/15)

µg/L = microgram per liter

NS = no standard

N/A = Not Analyzed

Bold = detected compound above the MDL

Table 3-5. FWGWMP March 2015 SVOC Analytical Results

Station ID				LL1mw-088	LL2mw-059	LL2mw-060	LL2mw-267	LL2mw-271	LL3mw-238	LL3mw-241
Sample ID		MCL	USEPA RSL	FWGLL1MW-088-0525-GW	FWGLL2MW-059C-0526-GW	FWGLL2MW-060C-0527-GW	FWGLL2MW-267C-0528-GW	FWGLL2mw-271-0529-GW	FWGLL3MW-238C-0530-GW	FWGLL3MW-241C-0531-GW
Date Collected				3/24/2015	3/24/2015	3/24/2015	3/11/2015	3/23/2015	3/11/2015	3/11/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
bis(2-Ethylhexyl)phthalate	µg/L	6.0	5.6	4.8 U	4.8 U	4.8 U	5.0 U	5.0 U	4.8 U	5.3 U
Butyl benzyl phthalate	µg/L	NS	16	0.48 U	0.48 U	0.48 U	0.50 U	0.50 U	0.48 U	0.53 U
Diethyl phthalate	µg/L	NS	15000	0.95 U	0.95 U	0.95 U	1.0 U	1.0 U	0.96 U	**0.93 J**
Dimethyl phthalate	µg/L	NS	NS	0.48 U	0.48 U	0.48 U	0.50 U	0.50 U	0.48 U	0.53 U
Di-n-butyl phthalate	µg/L	NS	900	4.8 U	4.8 U	4.8 U	5.0 U	5.0 U	4.8 U	5.3 U
Di-n-octyl phthalate	µg/L	NS	200	0.48 U	0.48 U	0.48 U	0.50 U	0.50 U	0.48 U	0.53 U

Notes:

MCL = Maximum Contaminant Level

RSL = USEPA Regional Screening Level (1/15)

µg/L = microgram per liter

NS = no standard

N/A = Not Analyzed

Bold = detected compound above the MDL

Table 3-5. FWGWMP March 2015 SVOC Analytical Results

Station ID				LL3mw-244	LL3mw-246	LL7mw-001	LL10mw-003	LL12mw-187	LL12mw-242	LL12mw-245
Sample ID		MCL	USEPA RSL	FWGLL3mw-244-0532-GW	FWGLL3mw-246-0533-GW	FWGLL7MW-001-0534-GW	FWGLL10MW-003C-0535-GW	FWGLL12mw-187C-0537-GW	FWGLL12mw-242C-0538-GW	FWGLL12mw-245C-0539-GW
Date Collected				3/23/2015	3/23/2015	3/11/2015	3/11/2015	3/12/2015	3/12/2015	3/12/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
bis(2-Ethylhexyl)phthalate	µg/L	6.0	5.6	5.1 U	4.8 U	5.0 U	5.1 U	4.8 U	4.8 U	5.2 U
Butyl benzyl phthalate	µg/L	NS	16	0.51 U	0.48 U	0.50 U	0.51 U	0.48 U	0.48 U	0.52 U
Diethyl phthalate	µg/L	NS	15000	1.0 U	0.95 U	1.0 U	1.0 U	0.95 U	0.95 U	1.0 U
Dimethyl phthalate	µg/L	NS	NS	0.51 U	0.48 U	0.50 U	0.51 U	0.48 U	0.48 U	0.52 U
Di-n-butyl phthalate	µg/L	NS	900	5.1 U	4.8 U	5.0 U	5.1 U	4.8 U	4.8 U	5.2 U
Di-n-octyl phthalate	µg/L	NS	200	0.51 U	0.48 U	0.50 U	0.51 U	0.48 U	0.48 U	0.52 U

Notes:

MCL = Maximum Contaminant Level

RSL = USEPA Regional Screening Level (1/15)

µg/L = microgram per liter

NS = no standard

N/A = Not Analyzed

Bold = detected compound above the MDL

Table 3-5. FWGWMP March 2015 SVOC Analytical Results

Station ID				LL12mw-247	SCFmw-002	SCFmw-004	WBGmw-006	WBGmw-009	WBGmw-020	WBGmw-021
Sample ID		MCL	USEPA RSL	FWGLL12MW-247-0540-GW	FWGSCFMW-002-0545-GW	FWGSCFMW-004-0546-GW	FWGWBGMW-006C-0547-GW	FWGWBGMW-009-0548-GW	FWGWBGMW-020-0549-GW	FWGWBGMW-021C-0550-GW
Date Collected				3/10/2015	3/10/2015	3/10/2015	3/11/2015	3/11/2015	3/11/2015	3/11/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
bis(2-Ethylhexyl)phthalate	µg/L	6.0	5.6	**1.7 J**	5.3 U	5.1 U	4.8 U	4.8 U	4.8 U	4.8 U
Butyl benzyl phthalate	µg/L	NS	16	0.51 U	0.53 U	0.51 U	0.48 U	0.48 U	0.48 U	0.48 U
Diethyl phthalate	µg/L	NS	15000	1.0 U	1.1 U	1.0 U	0.95 U	0.96 U	0.95 U	0.95 U
Dimethyl phthalate	µg/L	NS	NS	0.51 U	0.53 U	0.51 U	0.48 U	0.48 U	0.48 U	0.48 U
Di-n-butyl phthalate	µg/L	NS	900	5.1 U	5.3 U	5.1 U	4.8 U	4.8 U	4.8 U	4.8 U
Di-n-octyl phthalate	µg/L	NS	200	0.51 U	0.53 U	0.51 U	0.48 U	0.48 U	0.48 U	0.48 U

Notes:

MCL = Maximum Contaminant Level

RSL = USEPA Regional Screening Level (1/15)

µg/L = microgram per liter

NS = no standard

N/A = Not Analyzed

Bold = detected compound above the MDL

Table 3-5. FWGWMP March 2015 SVOCs Analytical Results

Station ID				NTAmw-119
Sample ID		MCL	USEPA RSL	FWGNTAmw-1190541-GW
Date Collected				3/25/2015
Sample Type				Grab
Analyte	Units			
2,4-Dinitrotoluene	µg/L	NS	0.24	0.52 U
2,6-Dinitrotoluene	µg/L	NS	0.048	5.2 U
Acenaphthene	µg/L	NS	530	0.10 U
Acenaphthylene	µg/L	NS	NS	0.10 U
Anthracene	µg/L	NS	1800	0.10 U
Benzo(a)anthracene	µg/L	NS	0.034	0.10 U
Benzo(a)pyrene	µg/L	0.2	0.0034	0.10 U
Benzo(b)fluoranthene	µg/L	NS	0.034	0.10 U
Benzo(g,h,i)perylene	µg/L	NS	NS	0.10 U
Benzo(k)fluoranthene	µg/L	NS	0.34	0.10 U
bis(2-Ethylhexyl)phthalate	µg/L	6	5.6	5.2 U
Butyl benzyl phthalate	µg/L	NS	16	0.52 U
Chrysene	µg/L	NS	3.4	0.10 U
Dibenzo(a,h)anthracene	µg/L	NS	0.0065	0.10 U
Diethyl phthalate	µg/L	NS	15000	1.0 U
Dimethyl phthalate	µg/L	NS	NS	0.52 U
Di-n-butyl phthalate	µg/L	NS	900	5.2 U
Di-n-octyl phthalate	µg/L	NS	200	0.52 U
Fluoranthene	µg/L	NS	800	0.10 U
Fluorene	µg/L	NS	290	0.10 U
Indeno(1,2,3-cd)pyrene	µg/L	NS	0.034	0.10 U
Naphthalene	µg/L	NS	0.17	0.10 U
Nitrobenzene	µg/L	NS	0.14	0.10 U
Phenanthrene	µg/L	NS	NS	0.10 U
Pyrene	µg/L	NS	120	0.10 U

Notes:

MCL = Maximum Contaminant Level

RSL = USEPA Regional Screening Level (1/15)

µg/L = microgram per liter

NS = no standard

Bold = detected compound above the MDL

Table 3-5. FWGWMP March 2015 SVOC Analytical Results

Station ID				DETmw-003	DETmw-004	RQLmw-007	RQLmw-008	RQLmw-009
Sample ID		MCL	USEPA RSL	FWGDETMW-003C-0510-GW	FWGDETMW-004C-0511-GW	FWGRQLmw-007C-0542-GW	FWGRQLmw-008C-0543-GW	FWGRQLmw-009C-0544-GW
Date Collected				3/24/2015	3/23/2015	3/12/2015	3/12/2015	3/12/2015
Sample Type				Grab	Grab	Grab	Grab	Grab
Analyte	Units							
1,2,4-Trichlorobenzene	µg/L	70	1.1	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
1,2-Dichlorobenzene	µg/L	600	300	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
1,3-Dichlorobenzene	µg/L	NS	NS	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
1,4-Dichlorobenzene	µg/L	75	0.48	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2,2-oxybis (1-chloropropane)	µg/L	NS	0.36	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2,4,5-Trichlorophenol	µg/L	NS	1200	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2,4,6-Trichlorophenol	µg/L	NS	4	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2,4-Dichlorophenol	µg/L	NS	46	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2,4-Dimethylphenol	µg/L	NS	360	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2,4-Dinitrophenol	µg/L	NS	39	0.95 UJ	0.95 UJ	0.99 U	0.95 U	0.95 U
2-Chloronaphthalene	µg/L	NS	750	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2-Chlorophenol	µg/L	NS	91	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2-Methylnaphthalene	µg/L	NS	36	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
2-Methylphenol	µg/L	NS	930	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2-Nitroaniline	µg/L	NS	190	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
2-Nitrophenol	µg/L	NS	NS	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
3,3'-Dichlorobenzidine	µg/L	NS	0.12	0.95 U	0.95 U	0.99 U	0.95 U	0.95 U
3- and 4-Methylphenol	µg/L	NS	930	0.95 U	0.95 U	0.99 U	0.95 U	0.95 U
3-Nitroaniline	µg/L	NS	NS	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
4,6-Dinitro-2-methylphenol	µg/L	NS	1.5	3.8 U	3.8 U	4.0 U	3.8 U	3.8 U
4-Bromophenyl phenyl ether	µg/L	NS	NS	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
4-Chloro-3-methylphenol	µg/L	NS	1400	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
4-Chloroaniline	µg/L	NS	0.36	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
4-Chlorophenyl phenyl ether	µg/L	NS	NS	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
4-Nitroanaline	µg/L	NS	38	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
4-Nitrophenol	µg/L	NS	NS	3.8 U	3.8 U	4.0 U	3.8 U	3.8 U
Acenaphthene	µg/L	NS	530	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Acenaphthylene	µg/L	NS	NS	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Anthracene	µg/L	NS	1800	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Benzo(a)anthracene	µg/L	NS	0.034	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Benzo(a)pyrene	µg/L	0.2	0.0034	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Benzo(b)fluoranthene	µg/L	NS	0.034	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Benzo(g,h,i)perylene	µg/L	NS	NS	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Benzo(k)fluoranthene	µg/L	NS	0.34	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Benzoic acid	µg/L	NS	75000	19 U	19 U	20 U	19 U	19 U

Table 3-5. FWGWMP March 2015 SVOC Analytical Results

Station ID				DETmw-003	DETmw-004	RQLmw-007	RQLmw-008	RQLmw-009
Sample ID		MCL	USEPA RSL	FWGDETMW-003C-0510-GW	FWGDETMW-004C-0511-GW	FWGRQLmw-007C-0542-GW	FWGRQLmw-008C-0543-GW	FWGRQLmw-009C-0544-GW
Date Collected				3/24/2015	3/23/2015	3/12/2015	3/12/2015	3/12/2015
Sample Type				Grab	Grab	Grab	Grab	Grab
Analyte	Units							
Benzyl alcohol	µg/L	NS	2000	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
bis(2-Chloroethoxy)methane	µg/L	NS	59	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
bis(2-Chloroethyl)ether	µg/L	NS	0.014	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
bis(2-Ethylhexyl)phthalate	µg/L	6.0	5.6	4.8 U	4.8 U	5.0 U	4.8 U	4.8 U
Butyl benzyl phthalate	µg/L	NS	16	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
Carbazole	µg/L	NS	NS	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
Chrysene	µg/L	NS	3.4	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Dibenzo(a,h)anthracene	µg/L	NS	0.0065	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Dibenzofuran	µg/L	NS	7.9	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Diethyl phthalate	µg/L	NS	15000	0.95 U	0.95 U	0.99 U	0.95 U	0.95 U
Dimethyl phthalate	µg/L	NS	NS	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
Di-n-butyl phthalate	µg/L	NS	900	4.8 U	4.8 U	5.0 U	4.8 U	4.8 U
Di-n-octyl phthalate	µg/L	NS	200	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
Fluoranthene	µg/L	NS	800	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Fluorene	µg/L	NS	290	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Hexachlorobenzene	µg/L	1.0	0.049	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Hexachlorobutadiene	µg/L	NS	0.3	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
Hexachlorocyclopentadiene	µg/L	50	31	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
Hexachloroethane	µg/L	NS	0.90	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
Indeno(1,2,3-cd)pyrene	µg/L	NS	0.034	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Isophorone	µg/L	NS	78	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
Naphthalene	µg/L	NS	0.17	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
N-Nitroso-di-n-propylamine	µg/L	NS	0.011	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
N-Nitrosodiphenylamine	µg/L	NS	12	0.48 U	0.48 U	0.50 U	0.48 U	0.48 U
Pentachlorophenol	µg/L	1.0	0.04	0.95 U	0.95 U	0.99 U	0.95 U	0.95 U
Phenanthrene	µg/L	NS	NS	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U
Phenol	µg/L	NS	5800	0.95 U	0.95 U	0.99 U	0.95 U	0.95 U
Pyrene	µg/L	NS	120	0.095 U	0.095 U	0.099 U	0.095 U	0.095 U

Notes:
µg/L = microgram per liter
NS = no standard
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level (1/15)
MCL = Maximum Contaminant Level

Table 3-5. FWGWMP March 2015 SVOC Analytical Results

Data Qualifiers

Data qualifier flags are used in an effort to describe the quality of each piece of data for each constituent. These flags are letter codes appended to the numerical data. The following data qualifiers are specified in the USACE Louisville Chemistry Guidelines. For a complete explanation of qualifiers used for each constituent please refer to the Data Verification Summaries in Appendix C.

U The analyte was analyzed for but not detected. The numerical value preceding the U is the associated reporting limit.

J The identification of the analyte is acceptable, but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision (i.e., the quantitative value is estimated). Examples include:
- Results detected above the laboratory MDL but less than the laboratory reporting limit.
- MS/MSD percent recoveries outside the acceptance criteria.
- LCS percent recoveries outside acceptance criteria.

R Data are considered to be rejected and shall not be used. This flag denotes the failure of quality control criteria such that it cannot be determined if the analyte is present or absent from the sample [e.g., the MRL verification standard was below quality control guidelines; associated sample results that were non-detect are unusable].

UJ This flag is a combination of the U and J qualifiers, which indicate that the analyte is not present. The reported value is considered to be an estimated RL.

B The B flag is used for when the analyte is found in the method blank or any of the field blanks. This designation overrides the CLP "B" designation when used by the laboratory as an estimated value for inorganics.

Table 3-6. FWGWMP March 2015 Pesticides and PCBs Analytical Results

Station ID				DETmw-003	DETmw-004	FBQmw-174	LL1mw-083	LL1mw-084	LL1mw-086	LL1mw-088	LL3mw-238
Sample ID		MCL	USEPA RSL	FWGDETMW-003C-0510-GW	FWGDETMW-004C-0511-GW	FWGFBQmw-174C-0512-GW	FWGLL1MW-083C-0521-GW	FWGLL1MW-084C-0522-GW	FWGLL1MW-086 0523-GW	FWGLL1MW-088 0525-GW	FWGLL3MW-238C-0530-GW
Date Collected				3/24/2015	3/24/2015	3/23/2015	3/10/2015	3/10/2015	3/10/2015	3/24/2015	3/11/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units										
4,4'-DDD	µg/L	NS	0.031	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
4,4'-DDE	µg/L	NS	0.23	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	**0.021 J**
4,4'-DDT	µg/L	NS	0.23	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
Aldrin	µg/L	NS	0.0046	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
alpha-BHC	µg/L	NS	0.0071	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
alpha-Chordane	µg/L	NS	NS	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
beta-BHC	µg/L	NS	0.025	0.048 U	0.053 U	**0.21 J**	0.049 U	0.049 U	0.048 U	0.048 U	**0.11**
delta-BHC	µg/L	NS	NS	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
Dieldrin	µg/L	NS	0.0017	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
Endosulfan I	µg/L	NS	100	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
Endosulfan II	µg/L	NS	100	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
Endosulfan sulfate	µg/L	NS	NS	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	**0.018 J**
Endrin	µg/L	2.0	2.3	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
Endrin aldehyde	µg/L	NS	NS	0.048 U	0.053 U	0.048 U	**0.030 J**	0.049 U	0.048 U	0.048 U	0.050 U
Endrin ketone	µg/L	NS	NS	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
gamma-BHC	µg/L	0.20	0.041	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
gamma-Chlordane	µg/L	NS	NS	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
Heptachlor	µg/L	0.40	0.002	0.048 U	0.053 U	0.048 U	**0.044 B**	**0.043 B**	**0.029 B**	0.048 U	**0.038 B**
Heptachlor epoxide	µg/L	0.20	0.0038	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
Methoxychlor	µg/L	40	37	0.048 U	0.053 U	0.048 U	0.049 U	0.049 U	0.048 U	0.048 U	0.050 U
Toxaphene	µg/L	3.0	0.015	1.9 U	2.1 U	1.9 U	0.98 U	0.97 U	0.95 U	1.9 U	1.0 U
PCB- 1016	µg/L	0.50	1.1	0.19 U	0.21 U	NA	NA	NA	NA	NA	NA
PCB- 1221	µg/L	0.50	0.0046	0.19 U	0.21 U	NA	NA	NA	NA	NA	NA
PCB- 1232	µg/L	0.50	0.0046	0.19 U	0.21 U	NA	NA	NA	NA	NA	NA
PCB- 1242	µg/L	0.50	0.039	0.38 U	0.42 U	NA	NA	NA	NA	NA	NA
PCB- 1248	µg/L	0.50	0.039	0.19 U	0.21 U	NA	NA	NA	NA	NA	NA
PCB- 1254	µg/L	0.50	0.039	0.19 U	0.21 U	NA	NA	NA	NA	NA	NA
PCB- 1260	µg/L	0.50	0.039	0.19 U	0.21 U	NA	NA	NA	NA	NA	NA

Notes:
MCL = Maximum Contaminant Level
RSL = USEPA Regional Screening Level (1/15)
NA = not analyzed
NS = no standard
Bold = detected compound above the MDL
µg/L = microgram per liter

Table 3-6. FWGWMP March 2015 Pesticides and PCBs Analytical Results

Station ID				LL3mw-241	LL3mw-244	RQLmw-007	RQLmw-008	RQLmw-009	SCFmw-002	SCFmw-004
Sample ID		MCL	USEPA RSL	FWGLL3MW-241C-0531-GW	FWGLL3mw-244-0532-GW	FWGRQLmw-007C-0542-GW	FWGRQLmw-008C-0543-GW	FWGRQLmw-009C-0544-GW	FWGSCFMW-002-0545-GW	FWGSCFMW-004-0546-GW
Date Collected				3/11/2015	3/23/2015	3/12/2015	3/12/2015	3/12/2015	3/10/2015	3/10/2015
Sample Type				Grab	Grab	Grab	Grab	Grab	Grab	Grab
Analyte	Units									
4,4'-DDD	µg/L	NS	0.031	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
4,4'-DDE	µg/L	NS	0.23	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
4,4'-DDT	µg/L	NS	0.23	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Aldrin	µg/L	NS	0.0046	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
alpha-BHC	µg/L	NS	0.0071	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
alpha-Chordane	µg/L	NS	NS	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
beta-BHC	µg/L	NS	0.025	**0.026 J**	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
delta-BHC	µg/L	NS	NS	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Dieldrin	µg/L	NS	0.0017	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Endosulfan I	µg/L	NS	100	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Endosulfan II	µg/L	NS	100	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Endosulfan sulfate	µg/L	NS	NS	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Endrin	µg/L	2.0	2.3	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Endrin aldehyde	µg/L	NS	NS	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Endrin ketone	µg/L	NS	NS	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
gamma-BHC	µg/L	0.20	0.041	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
gamma-Chlordane	µg/L	NS	NS	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Heptachlor	µg/L	0.40	0.002	**0.047 B**	0.048 U	0.048 U	0.052 U	0.048 U	**0.066 B**	0.052 U
Heptachlor epoxide	µg/L	0.20	0.0038	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Methoxychlor	µg/L	40	37	0.048 U	0.048 U	0.048 U	0.052 U	0.048 U	0.048 U	0.052 U
Toxaphene	µg/L	3.0	0.015	0.96 U	1.9 U	0.95 U	1.0 U	0.95 U	0.95 U	1.0 U
PCB- 1016	µg/L	0.50	1.1	NA	NA	0.19 U	0.21 U	0.19 U	NA	NA
PCB- 1221	µg/L	0.50	0.0046	NA	NA	0.19 U	0.21 U	0.19 U	NA	NA
PCB- 1232	µg/L	0.50	0.0046	NA	NA	0.19 U	0.21 U	0.19 U	NA	NA
PCB- 1242	µg/L	0.50	0.039	NA	NA	0.38 U	0.42 U	0.38 U	NA	NA
PCB- 1248	µg/L	0.50	0.039	NA	NA	0.19 U	0.21 U	0.19 U	NA	NA
PCB- 1254	µg/L	0.50	0.039	NA	NA	0.19 U	0.21 U	0.19 U	NA	NA
PCB- 1260	µg/L	0.50	0.039	NA	NA	0.19 U	0.21 U	0.19 U	NA	NA

Notes:
MCL = Maximum Contaminant Level
RSL = USEPA Regional Screening Level (1/15)
NA = not analyzed
NS = no standard
Bold = detected compound above the MDL
µg/L = microgram per liter

Table 3-6. FWGWMP March 2015 Pesticides and PCBs Analytical Results

Data Qualifiers

Data qualifier flags are used in an effort to describe the quality of each piece of data for each constituent. These flags are letter codes appended to the numerical data. The following data qualifiers are specified in the USACE Louisville Chemistry Guidelines. For a complete explanation of qualifiers used for each constituent please refer to the Data Verification Summaries in Appendix C.

U The analyte was analyzed for but not detected. The numerical value preceding the U is the associated reporting limit.

J The identification of the analyte is acceptable, but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision (i.e., the quantitative value is estimated). Examples include:
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- MS/MSD percent recoveries outside the acceptance criteria.
- LCS percent recoveries outside acceptance criteria.

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UJ This flag is a combination of the U and J qualifiers, which indicate that the analyte is not present. The reported value is considered to be an estimated RL.

B The B flag is used for when the analyte is found in the method blank or any of the field blanks. This designation overrides the CLP "B" designation when used by the laboratory as an estimated value for inorganics.

3.3 Data Verification/Validation

As discussed in Sections 2.4, all primary chemical data were generated by Test America, with the exception of the analysis of hexavalent chromium, which was generated by ALS. RTI conducted the independent QA analysis; however, EQM is not required to verify RTI data. A multi-step process is conducted, which involves the lab, the ADR software, and a data validator performing the data verification and validation of the data. During the first step each lab analyzes the data and assigns a qualifier as necessary in full accordance with DoD QSM and LS guidelines.

Analytical data was then reviewed by qualified EQM personnel, and a report was generated according to Step 2 of the LS and the DoD QSM, with any deviations/outliers noted in the summary report. The USACE-supplied ADR software assigns qualifiers to the data, as necessary, consistent with the programmed criteria of the ADR software. Additionally, the data validator uses professional judgment to check the validity of the qualified data and either accepts, rejects, or re-qualifies the ADR results following strict DoD QSM and LS guidelines.

After this multi-step process has been completed, the resulting final ADR qualifiers may not match the original lab qualifiers that are presented on the laboratory data sheets. As a result of the data validation process, one or more of four possibilities may occur:

1. The lab assigns a B, J, or E qualifier to the data, and the ADR software and/or the data validator changes the qualifier to a J, UJ, U, B, or R.
2. The lab assigns no qualifier to the data, and the ADR software and/or the data validator assigns a J, UJ, U, B, or R qualifier to the data.
3. The lab assigns a B, J, or E qualifier to the data, and the ADR software and/or the data validator assigns no qualifier to the data.
4. The lab assigns a J qualifier or uses no qualifier, and the ADR software and/or the data validator accepts the lab designation.

For the March 2015 Sampling Event Report, the laboratory data, with laboratory-derived qualifiers that follow DoD QSM and LS criteria, are presented in Appendix C. The verification reports for the data are also presented in Appendix C, which includes the definitions of the ADR qualifiers. The data presented in Tables 3-2, 3-3, 3-4, 3-5, 3-6, 3-7, and 3-8 are the result of the data that has been subjected to the multi-step process of verification and validation. These tables display the final assigned data qualifier in accordance with DoD QSM and LS criteria, which may differ from the Appendix C values as indicated above.

Data qualifier flags are used in an effort to describe the quality of each piece of data for each constituent. These flags are letter codes appended to the numerical data. The following data qualifiers are specified in the guidelines. For a complete explanation of qualifiers used for each constituent please refer to the Data Verification Summaries in Appendix C.

- U = the analyte was analyzed for but not detected. The numerical value preceding the U is the associated reporting limit.
- J = the identification of the analyte is acceptable, but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision (i.e., the quantitative value is estimated). Examples include:
    - Results detected above the laboratory MDL but less than the laboratory reporting limit.
    - MS/MSD percent recoveries outside the acceptance criteria.
    - LCS percent recoveries outside acceptance criteria.

- R = data are considered to be rejected and shall not be used. This flag denotes the failure of quality control criteria such that it cannot be determined if the analyte is present or absent from the sample (e.g., MRL verification standard was below quality control guidelines; associated sample results that were non-detect are unusable).

- UJ = a combination of the U and J qualifiers, which indicate that the analyte is not present. The reported value is considered to be an estimated reporting limit.

- B = used for organic and inorganic analyses when the analyte is found in the method blank or any of the field blanks. This designation overrides the CLP "B" designation when used by the laboratory as an estimated value for inorganics.

Forty-two wells, including the five RCRA wells, were sampled during a 8-day sampling event from March 9-25, 2015. During the event, five trip blanks were submitted to Test America for VOCs analysis. Four additional wells were monitored for pH only.

Six field duplicates were collected during the sampling event in order to assess the quality and consistency of sample collection. Project requirements of 10% field duplicates were met for this sampling event. In addition, six laboratory splits were collected and analyzed in order to assess the quality and consistency of the laboratory analysis. The project requirements of taking 10% laboratory splits were met for this sampling event. One equipment rinsate blank was collected during each day of monitoring well sampling for laboratory analysis; a total of eight equipment rinsate blanks were collected. The project requirements of taking 5% MS/MSDs were met for this sampling event.

For the March sampling event, the following laboratory or field contamination was identified at detections greater than ½ MRL for the field QA/QC samples.

SDG 240-47963

Method Blanks

The method blank analyzed 3/11/15 at 1003 had chromium detected at 0.860 µg/L, barium at 6.20µg/L, lead at 2.83µg/L and manganese at 0.846µg/L. The chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF, FWGLL1mw-087-0524-GF and FWGEQUIPRINSE1-0563-GW; the manganese result for sample FWGEQUIPRINSE1-0563-GW and the barium results for samples FWGFWGmw-015-0517-GF and FWGLL1mw-087-0524-GF were qualified "B" as the reported concentrations were greater than five times blank

contamination. No qualification was necessary for the lead method blank contamination, as there were no detected lead concentrations reported for the associated field samples.

Equipment Rinse

FWGEQUIPRINSE1-0563-GW had chromium detected at 1.6 µg/L, magnesium at 120 µg/L and manganese at 1.3 µg/L. The chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF, FWGLL1mw-087-0524-GF were qualified "B" as the reported concentrations were greater than five times blank contamination. No qualification was required for the magnesium or manganese outliers as all reported magnesium or manganese concentrations were greater than five times contamination.

SDG 240-48007

Method Blanks

The method blank had heptachlor detected at 0.0226 µg/L. The detected heptachlor results for samples FWGLL1mw-086-0523-GW, FWGSCFmw-002-0545-GW, FWGLL1mw-083c-0521-GW, FWGLL1mw-084c-0522-GW and FWGEQUIPRINSE2-0564-GW were qualified, "B", as the reported concentrations were less than five times the method blank contamination.

The method blank analyzed 3/13/15 at 1116 had chromium detected at 0.726 µg/L, barium at 2.50 µg/L and manganese at 1.36 µg/L. The chromium result for sample FWGLL1mw-065c-0520-GF was qualified "B" as the reported concentration was greater than five times blank contamination. No qualification was necessary for the barium or manganese method blank contamination, as there were no detected barium or manganese concentrations reported for the associated field samples less than five times method blank contamination.

The method blank had nitrate/nitrite detected at 0.005 mg/L. The nitrate/nitrite result for samples FWGEQUIPRINSE2-0564-GW and FWGLL12mw-247-0540-GW were qualified, "B, as the detected results were less than five times method blank contamination.

Equipment Rinse

FWGEQUIPRINSE2-0564-GW had heptachlor detected at 0.029 µg/L. The detected heptachlor results for samples FWGLL1mw-086-0523-GW, FWGSCFmw-002-0545-GW, FWGLL1mw-083c-0521-GW and FWGLL1mw-084c-0522-GW were qualified, "B", as the reported concentrations were less than five times the equipment rinse contamination.

FWGEQUIPRINSE2-0564-GW had nitrate/nitrite detected at 0.009 mg/L. The nitrate/nitrite result for sample FWGLL12mw-247-0540-GW was qualified, "B, as the detected result was less than five times rinse blank contamination.

SDG 240-48073

Trip Blanks

Methylene chloride was detected in FWGTEAM4-Trip at 0.64 µg/L. The methylene chloride result for sample FWGEQUIPRINSE3-0565-GW was qualified, "B".

Equipment Rinse

FWGEQUIPRINSE3-0565-GW had bromodichloromethane detected at 0.39 µg/L, chloroform at 4 µg/L and methylene chloride at 0.72 µg/L. The chloroform result for sample FWGLL10mw-003c-0535-GW was qualified "B" as the detected concentration was less than five times equipment rinse contamination. There were no detected concentrations of methylene chloride or bromodichloromethane is the associated field samples so no qualification was required for the methylene chloride or bromodichloromethane equipment rinse contamination.

FWGEQUIPRINSE3-0565-GW had heptachlor detected at 0.05µg/L. The heptachlor results for samples FWGLL3mw-238c-0530-GW and FWGLL3mw-241c-0531-GW were qualified, "B" as the reported concentrations were less than five times equipment rinse contamination.

FWGEQUIPRINSE3-0565-GW had nitrate/nitrite detected at 0.006mg/L. No qualification of the data was required, as the associated field sample results were greater than five times rinse blank contamination.

SDG 240-48152

Trip Blanks

Methylene chloride was detected in FWGTEAMRQL-TRIPBLANK at 0.63 µg/L. The methylene chloride result for FWGEQUIPRINSE4-0566-GW was qualified, "B", as the detected equipment rinse concentration was less than ten times the trip blank contamination.

Equipment Rinse

FWGEQUIPRINSE4-0566-GW had methylene chloride detected at 0.66 µg/L, chloroform at 4.1 µg/L and bromodichloromethane at 0.38 µg/L. There were no detected concentrations of bromodichloromethane, chloroform or methylene chloride reported for the associated field samples, so no qualifications were made for the noted equipment rinse contamination.

Calcium was detected in the method blank at 324 µg/L, magnesium at 90.7 µg/L and manganese at 0.650 µg/L. No qualification of the data was required, as there were no detected calcium, manganese or magnesium concentrations reported for the associated field samples less than five times method blank contamination.

FWGEQUIPRINSE4-0566-GW had nitrate/nitrite detected at 0.014 mg/L. The nitrate-nitrite results for samples FWGLL12mw-242c-0538-GW and FWGLL12mw-245c-0539-GW were qualified, "B" as the reported concentrations were less than five times rinse blank contamination.

Method Blanks

Nitrocellulose was detected in the method blank from batch 69251 at 1.05 mg/L. No qualification of the data was required as there were no detected concentrations of nitrocellulose reported for the associated field samples.

SDG 240-48186

Method Blanks

Barium was detected in the method blank at 3.54 µg/L, calcium at 1800 µg/L, magnesium at 94.6 µg/L, manganese at 2.22 µg/L and potassium at 124 µg/L. The potassium result for sample

FWGEQUIPRINSE1-1822-GW and the manganese result for sample FWGFWGmw-004-0513-GF were qualified, "B" as the reported concentrations were less than five times blank contamination. No qualification was required for the barium, calcium or magnesium contamination as all reported concentrations of these analytes were greater than five times method blank contamination.

Nitrocellulose was detected in the method blank at 1.05 mg/L. No qualification of the data was required as there were no detected concentrations of nitrocellulose reported for the associated field samples.

Equipment Rinse

Potassium was detected in FWGEQUIPRINSE1-1822-GW at 100 µg/L. No qualification of the data was made as the reported potassium concentrations for the associated field samples were greater than five times equipment rinse contamination.

Antimony was detected in FWGEQUIPRINSE1-1822-GW at 0.49 µg/L. The antimony result for sample FWGFWGmw-004-0513-GF was qualified, "B" as the reported concentration was less than five times equipment rinse contamination.

SDG 240-48531

Method Blanks

Barium was detected in the method blank at 2.91 µg/L, chromium at 1.28 µg/L, lead at 3.25 µg/L and manganese at 1.64 µg/L. The manganese results for samples FWGLL3mw-246-0533-GF, FWGLL3mw-DUP2-0558-GF, FWGLL3mw-DUP3-0559-GF; the barium results for samples FWGFBQmw-174c-0512-GF and FWGLL2mw-271-0529-GF; and the lead result for sample FWGLL3mw-DUP2-0558-GF were qualified, "B" as the reported concentrations were less than five times blank contamination. No qualification was required for the chromium contamination as chromium was not detected in any of the associated field samples.

SDG 240-48567

Method Blanks

Methylene chloride was detected in the method blank at 0.472 µg/L. Sample FWGTEAM2-TRIPBLANK was qualified, "B" as the reported methylene chloride detection was less than ten times method blank contamination.

Trip Blank

Methylene chloride was detected in FWGTEAM2-TRIPBLANK at 0.87 µg/L. There were no detected concentrations of methylene chloride reported for the associated field samples, so no qualifications were made for the trip blank contamination.

SDG 240-48606

Method Blanks

Methylene chloride was detected in the method blank at 0.472 µg/L. Sample FWGTEAM2-TRIPBLANK was qualified, "B" as the reported methylene chloride detection was less than ten times method blank contamination.

The method blank analyzed 3/27/15 had arsenic detected at 3.34 µg/L, barium at 28.5 µg/L, chromium at 1.09 µg/L, cobalt at 1.03 µg/L, potassium at 2050 µg/L and vanadium at 3.35 µg/L. The chromium and vanadium results for sample FWGEQUIPRINSE8-0570-GW; the barium, chromium, cobalt, potassium and vanadium results for sample FWGFWGmw-007-0514-GF; the arsenic, barium, chromium, cobalt and potassium results for sample FWGFWGmw-011-0515-GF; and the arsenic, barium, chromium and potassium results for sample FWGNTAmw-119-0541-GF were qualified, "B" as the detected concentrations were less than five times method blank contamination.

Trip Blanks

Methylene chloride was detected in FWGTEAM2-TRIPBLANK at 0.84 µg/L. There were no detected concentrations of methylene chloride reported for the associated field samples, so no qualifications were made for the trip blank contamination.

Equipment Rinse

FWGEQUIPRINSE8-0570-GW had acetone detected at 2.7 µg/L. No qualification of the data was made for the equipment rinse contamination as there were no detected acetone results reported for the associated field samples.

FWGEQUIPRINSE8-0570-GW had chromium detected at 0.59 µg/L and vanadium at 2.5 µg/L. The chromium results for samples FWGFWGmw-007-0514-GW and FWGNTAmw-119-0541-GF and the vanadium result for sample FWGFWGmw-007-0541-GF were qualified, "B" as the detected concentrations were less than five times equipment rinse contamination.

SDG R1501658

Equipment Rinse

FWGEQUIPRINSE2-0564-GW had hexavalent chromium detected at 0.135 µg/L. No qualification of the data was required as a result of the equipment rinse contamination, as there were no detected concentrations reported for the associated field samples.

SDG R1502002

Equipment Rinse

FWGEQUIPRINSE6-0568-GF had hexavalent chromium detected at 0.037µg/L. No qualification of the data was required as a result of the equipment rinse contamination, as the reported concentrations for the associated field samples were greater than five times blank contamination.

For a discussion of method blank contamination please review the Data Verification Reports and the Laboratory Case Narrative in Appendix C. Laboratory analyses were performed in analytical batches of ≤ 20 in order to maximize efficiency and group quality control requirements. Method blanks and laboratory control samples were analyzed at a frequency of 1:20 (5%) samples or per analytical batch, whichever was greater. Sufficient volume was provided to the laboratory in order to assess matrix spike analysis on project samples at a frequency of 1:10 (10%) samples. Matrix spike/matrix spike duplicate analysis was performed by the laboratory as batch quality control at a frequency of 1:20 (5%).

Field quality control and laboratory quality control results were evaluated as part of the verification assessment provided in Appendix C. Project requirements were met for the frequency and quality of these samples.

Table 3-9 presents the percent, by analytical method, of data that were acceptable (based on data not rejected) for use. No data was rejected.

All qualified data are discussed in the Data Verification Reports contained in Appendix C. All other data meet the requirements specified in the DoD QSM, LS criteria, and the QAPP associated with this site.

Table 3-9. Percent of Acceptable Data

Analytical Method	Total Number of Analytes	Number of Rejects	Percent Completeness
218.6	6	0	100.0
353.2	9	0	100.0
6010B	757	0	100.0
6020	432	0	100.0
6860	4	0	100.0
7470A	54	0	100.0
8081A	462	0	100.0
8082	56	0	100.0
8260B	702	0	100.0
8270C - SVOC 1&3	50	0	100.0
8270C -SVOC1	270	0	100.0
8270C-SVOC4	504	0	100.0
8330	832	0	100.0
9012A	8	0	100.0
SW8330 Modified	52	0	100.0
WS-WC-0050	52	0	100.0
TOTAL	4250	**0**	**100.0**

SECTION 4
SUMMARY OF RESULTS

Explosive and Propellant Compounds

As shown in Table 3-2, the following explosives or propellants were detected at levels above their corresponding MCLs and/or RSLs (January 2015) during the March 2015 sampling event:

- 2,4,6-Trinitrotoluene – FBQmw-174 (22 µg/L), LL1mw-083 (4.8 µg/L J), LL1mw-084 (12 µg/L J), LL3mw-238 (45 µg/L J). There is no MCL for 2,4,6-trinitrotoluene. The RSL (January 2015) is 2.5 µg/L.

- 2,4-Dinitrotoluene – FBQmw-174 (0.27 µg/L), LL1mw-083 (3.3 µg/L J), LL1mw-084 (1.6 µg/L J), and LL2mw-059 (0.42 µg/L). There is no MCL for 2,4-dinitrotoluene. The RSL (January 2015) is 0.24 µg/L.

- 2,6-Dinitrotoluene – LL1mw-083 (2.2 µg/L J), LL1mw-084 (0.92 µg/L J), and LL3mw-238 (0.29 µg/L J). There is no MCL for 2,6-dinitrotoluene. The RSL (January 2015) is 0.048 µg/L.

- Nitrate-Nitrite – LL12mw-187 (1200 mg/L). The MCL for nitrate-nitrite is 10 mg/L. There is no RSL (January 2015).

- RDX – DETmw-004 (3.2 µg/L), LL1mw-084 (0.92 µg/L J), LL2mw-267 (1.1 µg/L), LL3mw-238 (4.5 µg/L J), WBGmw-006 (41 µg/L), and WBGmw-009 (2.6 µg/L). There is no MCL for RDX. The RSL (January 2015) is 0.7 µg/L.

Inorganic Elements

Several inorganic compounds were detected at levels exceeding the MCLs and/or RSLs (January 2015). These included aluminum, arsenic, cobalt, cyanide, iron, and manganese, in wells from all areas sampled. Table 4-1 in Section 4 presents a summary of all inorganic compounds and the associated wells that had detections exceeding MCLs and/or the RSLs (January 2015).

Volatile Organic Compounds

As shown in Table 3-4, the only VOCs detected at levels exceeding their corresponding MCLs and/or RSLs (January 2015) during the March 2015 sampling event were:

- Carbon tetrachloride – LL10mw-003 (5.9 µg/L). The MCL for carbon tetrachloride is 5.0 µg/L. The RSL (January 2015) is 0.45 µg/L.

- Chloroform – LL10mw-003 (0.64 µg/L B). The MCL for chloroform is 80 µg/L. The RSL (January 2015) is 0.22 µg/L.

Semivolatile Organic Compounds

As shown in Table 3-5, no SVOCs were detected at levels exceeding either their corresponding MCLs or RSLs (January 2015).

Pesticides and Polychlorinated Biphenyls (PCBs)

As shown in Table 3-6, the only pesticide or PCBs detected at levels exceeding either their MCLs or RSLs (January 2015), during the March 2015 sampling event were:

- beta-BHC – FBQmw-174 (0.21 µg/L J), LL3mw-238 (0.11 µg/L), LL3mw-241 (0.026 µg/L J). There is no MCL for beta-BHC. The RSL (January 2015) is 0.025 µg/L.

- Heptachlor – LL1mw-083 (0.044 µg/L B), LL1mw-084 (0.043 µg/L B), LL1mw-086 (0.029 µg/L B), LL3mw-238 (0.038 µg/L B), LL3mw-241 (0.047 µg/L B), and SCFmw-002 (0.066 µg/L B). The MCL for heptachlor is 0.4 µg/L. The RSL (January 2015) is 0.002 µg/L.

Hexavalent Chromium

The analytical results for hexavalent chromium are summarized in Table 3-7. Well LL3mw-244 had a detected concentration for hexavalent chromium of 0.187 µg/L, which is elevated above the RSL (January 2015) of 0.035 µg/L (there is no MCL for hexavalent chromium).

Perchlorate

As shown in Table 3-8, perchlorates were not detected at levels exceeding either their corresponding MCLs or RSLs (January 2015).

Table 4-1. Inorganic Elements Detected at Concentrations Exceeding the MCLs or RSLs

Area	Well Number	Analyte	March 2015 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)
Demolition Area #2	DA2mw-115	IRON	800	300	11000
		MANGANESE	100	50	430
	DETmw-003	ARSENIC	11	10	0.052
		IRON	1900	300	11000
		MANGANESE	250	50	430
	DETmw-004	RDX	3.2	NS	0.7
Fuze & Booster Quarry	FQBmw-174	2,4,6-TRINITROTOLUENE	22	NS	2.5
		2,4-DINITROTOLUENE	0.27	NS	0.24
		BETA-BHC	0.21 J	NS	0.025
Facility-Wide	FWGmw-007	MANGANESE	64	50	430
	FWGmw-011	ARSENIC	5.4 B	10	0.052
		IRON	5500	300	11000
		MANGANESE	330	50	430
	FWGmw-012	ARSENIC	3.3 J	10	0.052
		IRON	2300	300	11000
		MANGANESE	97	50	430
	FWGmw-015	ARSENIC	3.6 J	10	0.052
		MANGANESE	160	50	430
	FWGmw-016	ARSENIC	5.8 J	10	0.052
		IRON	700	300	11000
		MANGANESE	200	50	430
Load Line 1	LL1mw-064	ARSENIC	3.5 J	10	0.052
		IRON	730	300	11000
		MANGANESE	120	50	430
	LL1mw-065	MANGANESE	130	50	430
	LL1mw-083	ALUMINUM	860	200	20000
		MANGANESE	570	50	430
		2,4,6-TRINITROTOLUENE	4.8 J	NS	2.5
		2,4-DINITROTOLUENE	3.3 J	NS	0.24
		2,6-DINITROTOLUENE	2.2 J	NS	0.048
		HEPTACHLOR	0.044 B	0.40	0.002
	LL1mw-084	ALUMINUM	240	200	20000
		COBALT	14	NS	6
		MANGANESE	140	50	430
		2,4,6-TRINITROTOLUENE	12 J	NS	2.5
		2,4-DINITROTOLUENE	1.6 J	NS	0.24
		2,6-DINITROTOLUENE	0.92 J	NS	0.048
		HEPTACHLOR	0.043 B	0.40	0.002
		RDX	0.92 J	NS	0.7
	LL1mw-086	ARSENIC	4.4 J	10	0.052
		MANGANESE	210	50	430
		HEPTACHLOR	0.029 B	0.40	0.002
	LL1mw-087	ALUMINUM	340	200	20000
		IRON	660	300	11000
		MANGANESE	110	50	430
	LL1mw-088	ARSENIC	22	10	0.052
		IRON	570	300	11000
		MANGANESE	51	50	430
Load Line 2	LL2mw-059	2,4-DINITROTOLUENE	0.42	NS	0.24
	LL2mw-267	MANGANESE	490	50	430
		RDX	1.1	NS	0.7
	LL2mw-271	IRON	450	300	11000
		MANGANESE	140	50	430

Table 4-1. Inorganic Elements Detected at Concentrations Exceeding the MCLs or RSLs, continued

Area	Well Number	Analyte	March 2015 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)
Load Line 3	LL3mw238	2,4,6-TRINITROTOLUENE	45 J	NS	2.5
		2,6-DINITROTOLUENE	0.29 J	NS	0.048
		BETA-BHC	0.11	NS	0.025
		HEPTACHLOR	0.038 B	0.40	0.002
		RDX	4.5 J	NS	0.7
	LL3mw-241	BETA-BHC	0.026 J	NS	0.025
		HEPTACHLOR	0.047 B	0.40	0.002
	LL3mw-244	ARSENIC	3.4 J	10	0.052
		HEXAVALENT CHROMIUM	0.187	NS	0.035
Load Line 7	LL7mw-001	COBALT	6.1	NS	6
		IRON	9600	300	11000
		MANGANESE	470	50	430
Load Line 10	LL10mw-003	CARBON TETRACHLORIDE	5.9	5.0	0.45
		CHLOROFORM	0.64 B	80	0.22
Load Line 12	LL12mw-185	ARSENIC	3.1 J	10	0.052
	LL12mw-187	ARSENIC	2.9 J	10	0.052
		COBALT	11	NS	6
		MANGANESE	2100	50	430
		Nitrate-Nitrite[1]	1200	10	NS
	LL12mw-242	ALUMINUM	820	200	20000
		ARSENIC	19	10	0.052
		IRON	2000	300	11000
		MANGANESE	89	50	430
	LL12mw-245	MANGANESE	51	50	430
	LL12mw-247	ARSENIC	7.3 J	10	0.052
		IRON	470	300	11000
		MANGANESE	140	50	430
NACA Test Area	NTAmw-119	ARSENIC	7.8 B	10	0.052
		IRON	1200	300	11000
		MANGANESE	320	50	430
Ramsdell Quarry	RQLmw-007	ARSENIC	31	10	0.052
		COBALT	11	NS	6
		IRON	12000	300	11000
		MANGANESE	1800	50	430
		CYANIDE[1]	0.0058 J	0.20	0.0015
	RQLmw-008	ARSENIC	7.8 J	10	0.052
		IRON	23000	300	11000
		MANGANESE	400	50	430
	RQLmw-009	ARSENIC	12	10	0.052
		IRON	4100	300	11000
		MANGANESE	610	50	430
Sharon Conglomerate	SCFmw-002	ARSENIC	16	10	0.052
		IRON	480	300	11000
		MANGANESE	72	50	430
		HEPTACHLOR	0.066 B	0.40	0.002
	SCFmw-004	MANGANESE	750	50	430
Winklepack Burning Grounds	WBGmw-006	RDX	41	NS	0.7
	WBGmw-009	RDX	2.6	NS	0.7
	WBGmw-020	IRON	3500	300	11000
		MANGANESE	270	50	430
	WBGmw-021	ARSENIC	3.8 J	10	0.052
		MANGANESE	270	50	430

Notes:
MCL = Maximum Contaminant Level
RSL = USEPA Regional Screening Level, January 2015
1 = mg/L = milligram per liter
µg/L= micrograms per liter
NS = no standard
All inorganics are filtered; all organics are not filtered.
B =in the method or field blank. Results have been qualified "B." For more details refer to Data Verification/Validation Reports.
J = estimated result. Results have been qualified "J." For more details refer to Data Verification/Validation Reports.

SECTION 5
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APPENDIX A

MONITORING WELLS SAMPLED DURING THE MARCH 2015 GROUNDWATER MONITORING EVENT

Semiannual Analyte List

Well Location	VOCs	SVOCs			Metals[d]	Explosives/ Propellants	Pesticides	PCBs	Nitrate	Cyanide	Hexavalent Chromium[d]	Perchlorate
		Nitroaromatics & Phthalates[a]	Phenols[b]	PAHs[c]								
LL1mw-064		x			x	x						
LL1mw-065		x			x	x						
LL1mw-083		x				x	x					
LL1mw-084		x				x	x					
LL1mw-086		x				x	x					
LL1mw-087		x		x	x	x						
LL1mw-088		x		x		x	x					
LL2mw-059		x		x	x	x						
LL2mw-060		x			x	x						
LL2mw-267		x		x	x	x						
LL2mw-271		x			x	x						x
LL3mw-238		x				x	x					
LL3mw-241		x				x	x					
LL3mw-244		x				x	x				x	
LL3mw-246		x		x	x	x						x
LL7mw-001	x	x		x	x	x						
LL10mw-003	x	x		x	x							
LL12mw-185					x (As. only)				x			
LL12mw-187		x			x	x			x			
LL12mw-242		x			x	x			x			
LL12mw-245		x			x	x			x			
LL12mw-247		x			x	x			x		x	
FBQmw-174		x				x	x					
FWGmw-004		x			x	x						
FWGmw-007		x			x	x						
FWGmw-011		x		x	x	x						

Semiannual Analyte List, continued

Well Location	VOCs	SVOCs			Metals[d]	Explosives/ Propellants	Pesticides	PCBs	Nitrate	Cyanide	Hexavalent Chromium[d]	Perchlorate
		Nitroaromatics & Phthalates[a]	Phenols[b]	PAHs[c]								
FWGmw-012		x			x	x						
FWGmw-015		x			x	x						
FWGmw-016		x			x	x						
NTAmw-119	x	x		x	x	x						
DA2mw-115		x			x	x						
DET-003	x	x	x	x	x	x	x	x		x		
DET-004	x	x	x	x	x	x	x	x		x		
RQLmw-007	x	x	x	x	x	x	x	x		x		
RQLmw-008	x	x	x	x	x	x	x	x		x		
RQLmw-009	x	x	x	x	x	x	x	x		x		
SCFmw-002		x				x	x				x	
SCFmw-004		x				x	x					
WBGmw-006		x			x	x						
WBGmw-009		x		x	x	x						
WBGmw-020		x		x	x	x						
WBGmw-021		x			x	x						

[a] Analyte list includes: 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, Butyl benzyl phthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, and Nitrobenzene

[b] Analyte list includes: 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2-Chlorophenol, 2-Methylphenol, 2-Nitrophenol, 4,6-Dinitro-2-methylphenol, 4-Chloro-3-methylphenol, 3&4 Methylphenol, 4-Nitrophenol, Pentachlorophenol, and Phenol

[c] Analyte list includes: Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, and Pyrene.

[d] Analyte list includes: Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, and Zinc. Hexavalent chromium will be sampled semiannually in wells LL3mw-244, LL12mw-247, and SCFmw-002.

APPENDIX B

WATER-LEVEL MEASUREMENTS/FIELD LOG BOOK/CALIBRATION RECORDS/ SAMPLE AND PURGE RECORDS/DAILY QUALITY CONTROL REPORTS

Signature Page

March 2015 FWGWMP Monitoring Well Event
Field Personnel Abbreviations and Signatures Page

Field Personnel

Name	Affiliation	Initials
Bryan Deskins	EQM	BD
Angela S. Dragotta	EQM	AD/ASD
Colleen A. Lear	EQM	CL/CAL
Erik Corbin	EQM	EC
John Miller	EQM	JM
Stephen Stuergon	EQM	SS
Suzanne Hicks	EQM	SH
Ryan Russell	EQM	RR
Scott A. Spesshardt	EQM	SAS

Project and Field Leads

Name, Title, Affiliation

John Miller, Project Manager / QC Check, EQM

Signature: _____

Colleen A. Lear, Field Manager / QC Check, EQM

Signature: _____

Logbook

Location RVAAP / CRJMTC Date 3-9-15

Project / Client RVAAP-66 / USACE

SS, CAL, EC, SH, AD, BD, SAS, RR, JM

DRUM ID	CONTENTS
EQM 2015-1	3/9-13/15 Purge
EQM 2015-2	" "
EQM 2015-3	Decon
EQM 2015-4	3/23-25/15 Purge

Location RVAAP / CJMTC Date 3-9-15

Project / Client RVAAP-66 / USACE 30-40s

SS, CAL, EC, SH, AD, BD, SAS, RR, JM trace precip overcast

0730 enter RVAAP
H+S - purge summary
Load for the week of
Purging LL1 LL2 LL3
Four crews.
Calibrations collected okay
under field cal book.

1000 out to field locations
very high snow, tough
terrain + navigation
Vehicles poor negotiation.
Try LL1, LL3 inaccessible
LL2 inaccessible.

1200 FWG possible access locations
LL7 + LL10 no accessible

1230 FWG 15/16 LL87 all accessible
purging.

1500 Partial crews to 1036
strategize next days events.

1600 Rinse completion + prep samples

1700 Post 1 delay getting lab onsite
discussed and allowed on ~~[illegible]~~ afterhands

1715 lab picking

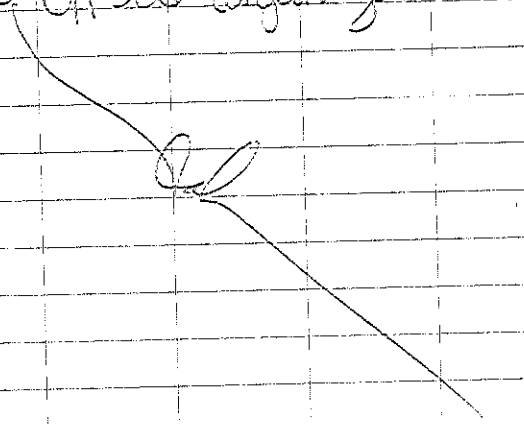
1730 offsite

Location RVAAP ~~66~~ CJMTC Date 3-10-15

Project / Client RVAAP66 / USACE 30-40s possible precip

SS, CAL, EC, SH, AD, BD, SAS, RR

0730 Onsite 4 crews
Calibrations
0800 H+S briefing
load for sampling event
prep and head out for
Loadline 1, SCF + W12, WR
0910 Load line 2 east entrance
too much snow for entrance +
west blocked
Partial Crews to Loadline 1
1200 And SCF plus W12, south of SS Rd
remove snow
1630 Crews to pack + organize
Rinse
1700 Ship fedex samples 1725 LAB pickup
1730 Offsite (organize issues w/ late lab entry)

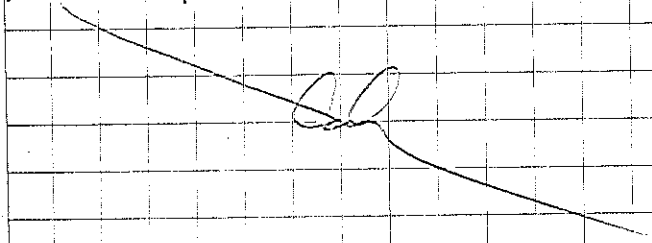


Location RVAAP CJMTC Date 3-11-15

Project / Client RVAAP66 / USACE 30-40s there precip

SS, CAL, EC, SH, AD, BD, SAS, RR

0730 Onsite 4 crews
Calibrations
Load for Sampling
0800 H+S briefing WBG, WR
load for WBG, WR
0830 WBG
W12 not accessible from
South entrance. Setup for
0900 Load line 3.
Continue to Loadline 2
load line 7 + Loadline 10
1500 Access to W12 from
northern entrance accepted
1630 Organize + unload at
OSC
1700 Shipment to FedEXP.
1715 Lab pickup
1730 Off site



Location RVAAP / CJMTC Date 3-12-15

Project / Client RVAAP-66 / USACE 30s-40s

SS, CAL, EL, SH, RR, SAS, AD, BD Sunny

0730 4 crews onsite
0745 Calibrations
0800 H+S briefing LUC @ RQL
load + head to RQL.
0830 @ RQL sign on
1330 all pH + RQL sample complete
sign out
1400 proceed to LL12 + FWG 002
for crews.
1440 check on LL2 entrance and
entrance to FWG 4 + 7
1630 Bldg 1036 Rinse + organize
pack shipments
1705 Lab pickup
1730 Off site

Location RVAAP / CJMTC Date 3-13-15

Project / Client RVAAP-66 USACE 30s-50s

SS CAL EL SH RR SAS AD BD Sunny

0730 4 crews onsite
0745 Calibration
0800 H+S briefings
load + head to FWG sites
0830 partials crews not
accessible to sites
Check working in
0900 partial crews to 1036
Clean organize prep
for sampling event return
event.
930 package deep well setups
for federal express
1050 load for demob
1115 Rinse and organize.
1200 Lab pickup
1215 Off site - Demob

Location RVAAP / CJMTC Date 3-23-15

Project / Client RVAAP66 USACE 20-30s

Cal, SS, AD, BD, EC overcast

Mob to site
1000 East Gate to pickup keys
1030 Main Gate / 1036
unload H&S tailgate
1045 Calibrate Horibas PDs
1100 organize for LL2 + LL3
wells setup FBQ
1130 partial crew to off site
wells
1200 proceed to purge and sample
1330 set on wells while purging
check on DET 4 for purge
and recharge
1430 check on FBQ for well setup.
1530 partial crews to 1036 to
organize shipping
1630 pre pare samples for pickup.
1710 lab pickup
charge equipment
1730 Offsite

Cal

Location RVAAP / CJMTC Date 3-24-15

Project / Client RVAAP-66 USACE 30-40s

Cal, SS, AD, BD, EC, JM Sunny

0730 Onsite prep for purge/sample
0800 Health + Safety Tailgate
Calibrations
Pack/Prep for LL1 mw088
Demo 2 and LL2 areas
3/24/15 Cal 0830 ~~0800~~ Crews to LL1, LL2 and Demo
2 area
900 Setup on wells to purge +
sample.
1300 partial crews to 1036
to organize other well sites
FWG
1400 Partial crews to 1036 for
rinse + organize + shipments
1640 Lab pickup
1715 crews packed for day
1730 Off site

Cal

Location RVAAP66 Date 3-25-15

Project / Client USACE / RVAAP CJMTC

JM, Cal, AD, EC, SS 30-50s precipitation overcast

0730 onsite - Load for day Calibration

0800 H+S Pack + prep for FWG MW007 + NTAMW119

1000 field activities at wells with two crews others organize pack and set up IDW sampling.

1130 Rinse + IDW Sampling at Bldg 1036

1200 prepare samples for pickup.

1300 partial offsite

1310 lab pickup then Demob

Location Date

Project / Client

Cal

PAGE

INTENTIONALLY

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Static Water Level Measurements

EQM MONITOR WELL STATIC WATER LEVEL FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

FIELD BOOK#: 2 DATE: 3/9/2015

Monitor Well Number	Location	Total Well Depth (ft)	Water Level Indicator	Sampler	Time	Depth to Static Water Level (ft)	Sounding	PID Reading (above bkgrnd)
FWGmw-015	Facilitywide	26.34	qed	SAS	12:30	4.28		0
	Cmt:Good, 21.34							
FWGmw-016	Facilitywide	68.1	qed	CAL	12:47	16.54		0
	Cmt:Good,							
LL1mw-087	Loadline 1	18.1	oh1266	AD	11:22	4.25		0
	Cmt:Good, medium bottom							

EQM MONITOR WELL STATIC WATER LEVEL FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

FIELD BOOK#: 2 DATE: 3/10/2015

Monitor Well Number	Location	Total Well Depth (ft)	Water Level Indicator	Sampler	Time	Depth to Static Water Level (ft)	Sounding	PID Reading (above bkgrnd)
LL1mw-083	Loadline 1	41.45	HERON 2804	SAS	9:22	33.9		0
	Cmt:Good,							
LL1mw-086	Loadline 1	77.74	05767	AD	9:44	7.82		0
	Cmt:Good, over 2 hours purge but turbidity still above 10 NTU.							
LL1mw-064	Loadline 1	21.04	oh1266	EC	10:42	1.42		0
	Cmt:Good, pump sat in well for 20 min before purge to get supplies from truck							
LL1mw-084	Loadline 1	39.1	HERON 2804	SAS	11:45	30.52		0
	Cmt:Good,							
LL1mw-065	Loadline 1	23.14	oh1266	EC	12:17	11.4		0
	Cmt:Good,							
LL12mw-247	Loadline 12	22.22	qed	CAL	13:55	4.44		0
	Cmt:Good, silty/soft bottom							
SCFmw-004	Sharon Con	112.5	qed	CAL	9:28	-0.2		0
	Cmt:Good,							
SCFmw-002	Sharon Con	149.9	qed	CAL	13:40	18.84		0
	Cmt:Good,							

EQM MONITOR WELL STATIC WATER LEVEL FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

FIELD BOOK#: 2 DATE: 3/11/2015

Monitor Well Number	Location	Total Well Depth (ft)	Water Level Indicator	Sampler	Time	Depth to Static Water Level (ft)	Sounding	PID Reading (above bkgrnd)
LL10mw-003	Loadline 10	28.54	HERON 2804	SAS	13:47	21.06		0
	Cmt:Good,							
LL12mw-185	Loadline 12	23.61	oh1266	EC	13:51	7.33		0
	Cmt:Good, over 2 hours purged but turbidity still not at 10 NTUs							
LL2mw-267	Loadline 2	22.1	qed	CAL	11:04	8.64		0
	Cmt:Good, start as orange color with tan suspended solids then tinted orange, over 2 hours purged but turbidity still not near 10 NTUs							
LL3mw-241	Loadline 3	25.56	qed	CAL	9:10	9.9		0
	Cmt:Good,							
LL3mw-238	Loadline 3	23.37	HERON 2804	SAS	9:47	14.84		0
	Cmt:Good, 2 hours purge but turbidity still above 10 NTU.							
LL7mw-001	Loadline 7	33.02	05767	AD	14:00	20.18		0
	Cmt:Good, medium bottom, orange color at beginning of purge, over 2 hours purge but turbidity still above 10 NTU.							
WBGmw-020	Winklepeck	44.19	05767	AD	8:45	11.25		0
	Cmt:Good,							
WBGmw-006	Winklepeck	20.2	oh1266	EC	8:46	5.69		0
	Cmt:Good, over 2 hours purged but turbidity still not at 10 NTUs							
WBGmw-009	Winklepeck	24.1	05797	AD	10:20	11.51		0
	Cmt:Good, top casing extension pulled off, Put back on but is loose. At 1116 noticed controller no longer pumping. Changed controller. At 1131 changed to 2cpm							
WBGmw-021	Winklepeck	43.01	oh1266	EC	11:26	8.28		0
	Cmt:Good,							

EQM MONITOR WELL STATIC WATER LEVEL FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

FIELD BOOK#: 2 DATE: 3/12/2015

Monitor Well Number	Location	Total Well Depth (ft)	Water Level Indicator	Sampler	Time	Depth to Static Water Level (ft)	Sounding	PID Reading (above bkgrnd)
FWGmw-002	Facilitywide	69.6	qed	CAL	14:05	23.09		0
	Cmt:Good, for pH monitoring only							
LL12mw-187	Loadline 12	29.9	05767	AD	13:20	8.96		0
	Cmt:Good, soft bottom							
LL12mw-242	Loadline 12	28.62	oh1266	BD	13:43	7.89		0
	Cmt:Good, Well needs new tubing, soft bottom, 2 hours purged but turbidity still not at 10 NTUs							
LL12mw-245	Loadline 12	29.84	HERON 2804	SAS	14:21	7.33		0
	Cmt:Good,							
RQLmw-007	Ramsdell Qu	18.62	HERON 2804	SAS	8:56	6.3		0
	Cmt:Good,							
RQLmw-009	Ramsdell Qu	18.56	oh1266	EC	8:58	5.44		0
	Cmt:Good,							
RQLmw-008	Ramsdell Qu	18.67	qed	CAL	9:10	6.55		0
	Cmt:Good,							
RQLmw-012	Ramsdell Qu	32.62	05767	AD	9:25	22.55		0
	Cmt:Good, For field pH monitoring only							
RQLmw-011	Ramsdell Qu	35.32	blue	CAL	10:33	22.18		0
	Cmt:Good, for pH monitoring only							
RQLmw-013	Ramsdell Qu	36.43	05767	BD	11:44	25.66		0
	Cmt:Good, For field pH monitoring only							

EQM MONITOR WELL STATIC WATER LEVEL FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

FIELD BOOK#: 2 DATE: 3/13/2015

Monitor Well Number	Location	Total Well Depth (ft)	Water Level Indicator	Sampler	Time	Depth to Static Water Level (ft)	Sounding	PID Reading (above bkgrnd)
FWGmw-004	Facilitywide	22.54	qed	CAL	8:35	11.36		0
	Cmt:Good, Soft Bottom							

EQM MONITOR WELL STATIC WATER LEVEL FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

FIELD BOOK#: 2 DATE: 3/23/2015

Monitor Well Number	Location	Total Well Depth (ft)	Water Level Indicator	Sampler	Time	Depth to Static Water Level (ft)	Sounding	PID Reading (above bkgrnd)
DET-004	Demo.Area	13.8	05767	EC	13:25	10.02		0
	Cmt:Good, dry after initial 1.5 L purge, returned to complete the sample within 24 hours							
FBQmw-174	Fuze and Bo	23.06	05767	EC	14:26	16.02		0
	Cmt:Good,							
LL2mw-271	Loadline 2	27.77	SN 1639	BD	12:12	10.28		0
	Cmt:Good,							
LL3mw-246	Loadline 3	45.9	OH1266	AD	12:15	18.39		0
	Cmt:Good,							
LL3mw-244	Loadline 3	46.88	05767	CAL	12:32	7.29		0
	Cmt:Good,							

EQM MONITOR WELL STATIC WATER LEVEL FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

FIELD BOOK#: 2 DATE: 3/24/2015

Monitor Well Number	Location	Total Well Depth (ft)	Water Level Indicator	Sampler	Time	Depth to Static Water Level (ft)	Sounding	PID Reading (above bkgrnd)
DA2mw-115	Demo.Area	46.77	2611	CAL	9:25	5.52		0
	Cmt:Good,							
DET-003	Demo.Area	15.99	2611	CAL	9:30	8.94		0
	Cmt:Good,							
FWGmw-011	Facilitywide	17.69	11012	AD	13:30	1.63		0
	Cmt:Good, Switched from Horiba 53 to 52 at 1441, over 2 hours purge but turbidity still above 10 NTU.							
FWGmw-012	Facilitywide	42.45	2611	BD	13:30			0
	Cmt:Good,							
LL1mw-088	Loadline 1	27.32	OH1266	AD	9:10	4.39		0
	Cmt:Good, over 2 hours purge but turbidity still above 10 NTU.							
LL2mw-059	Loadline 2	21.85	05767	EC	9:34	13.15		0
	Cmt:Good,							
LL2mw-060	Loadline 2	20.76	05767	EC	11:25	9.48		0
	Cmt:Good,							

EQM MONITOR WELL STATIC WATER LEVEL FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

FIELD BOOK#: 2 DATE: 3/25/2015

Monitor Well Number	Location	Total Well Depth (ft)	Water Level Indicator	Sampler	Time	Depth to Static Water Level (ft)	Sounding	PID Reading (above bkgrnd)
FWGmw-007	Facilitywide	32.15	ORANGE	AD	8:25	22.72		0
	Cmt:Good,							
NTAmw-119	NACA Test	104.4	2611	CAL	8:33	11.48		0
	Cmt:Good, 2 hours purged but turbidity still not at 10 NTUs							

Calibration Records

RVAPP ~ Ravenna Ohio

TEAM # 1

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
	Horiba U22	5013014	09-Mar-15	08:00	EC	Autocal	pH	4	3.99	pH units	
						Autocal	Cond	4.49	4.55	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.09	pH units	7.07 - 7.10
						Calibration	pH	10	10.23	pH units	10.19 - 10.26
						Temp Check	Temp		7.16	°C	
						Calibration-Chart	DO		11.84	mg/L	
						Calibration-Chart	ORP		252	mV	
	Horiba U22	5013014	10-Mar-15	08:00	EC	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.51	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.08	pH units	
						Calibration	pH	10	10.20	pH units	
						Temp Check	Temp		7.68	°C	
						Calibration-Chart	DO		11.69	mg/L	
						Calibration-Chart	ORP		238	mV	
	Horiba U22	5013014	11-Mar-15	08:00	EC	Autocal	pH	4	3.99	pH units	
						Autocal	Cond	4.49	4.50	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.04	pH units	
						Calibration	pH	10	10.15	pH units	
						Temp Check	Temp		10.96	°C	
						Calibration-Chart	DO		10.76	mg/L	
						Calibration-Chart	ORP		247	mV	

RVAPP ~ Ravenna Ohio

TEAM # 1

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
	Horiba U22	5013014	3/12/15	0745	EC	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.50	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.08	pH units	
						Calibration	pH	10	10.17	pH units	
						Temp Check	Temp		10.26	°C	
						Calibration-Chart	DO		10.86	mg/L	
						Calibration-Chart	ORP		248	mV	
	Horiba U22	5013014	3/13/15	07:45	EC	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.52	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.07	pH units	
						Calibration	pH	10	10.20	pH units	
						Temp Check	Temp		9.24	°C	
						Calibration-Chart	DO		10.10	mg/L	
						Calibration-Chart	ORP		251	mV	
						Autocal	pH	4		pH units	
						Autocal	Cond	4.49		mS/cm	
						Autocal	Turb	0		NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp			°C	
						Calibration-Chart	DO			mg/L	
						Calibration-Chart	ORP			mV	

RVAPP ~ Ravenna Ohio

TEAM # 1

	Instrument Model	Instrument ID	Date	Time	Calibrator	Calibration Type	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
	Horiba U22	5013014	23-Mar-15	11:00	EC	Autocal	pH	4	4.01	pH units	
						Autocal	Cond	4.49	4.52	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.09	pH units	
						Calibration	pH	10	10.24	pH units	
						Temp Check	Temp		9.41	°C	
						Calibration-Chart	DO		11.62	mg/L	
						Calibration-Chart	ORP		254	mV	
	Horiba U22	5013014	24-Mar-15	07:45	EC	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.53	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.09	pH units	
						Calibration	pH	10	10.28	pH units	
						Temp Check	Temp		5.35	°C	
						Calibration-Chart	DO		12.25	mg/L	
						Calibration-Chart	ORP		256	mV	
						Autocal	pH	4		pH units	
						Autocal	Cond	4.49		mS/cm	
						Autocal	Turb	0		NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp			°C	
						Calibration-Chart	DO			mg/L	
						Calibration-Chart	ORP			mV	

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
HORIBA U52-27109/25333			2-26-15	1530	CAL	Autocal	pH	4	3.98	pH units	
				↓		Autocal	Cond	4.49	4.49	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	6.94	pH units	
						Calibration	pH	10	10.00	pH units	
				1530		Temp Check	Temp		14.01	°C	
				↓		Calibration-Chart	DO		11.69	mg/L	
↓						Calibration-Chart	ORP		246	mV	
Horiba U52 - 17035/28310				1535		Autocal	pH	4	3.99	pH units	
						Autocal	Cond	4.49	4.51	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	6.97	pH units	Delayed Event
						Calibration	pH	10	9.99	pH units	
				1535		Temp Check	Temp		14.53	°C	
				↓		Calibration-Chart	DO		11.09	mg/L	
↓						Calibration-Chart	ORP		251	mV	
TOT 3005 HORIBA			3-6-15	1000	Cal	Autocal	pH	4	4.00	pH units	
				↓		Autocal	Cond	4.49	4.51	mS/cm	
						Autocal	Turb	0	0.0	NTU	
				1020		Calibration	pH	7	6.99	pH units	
				1025		Calibration	pH	10	10.01	pH units	
				1000		Temp Check	Temp		~~14.84~~	°C	14.57°C > Cal 10:32 3/6/15
				1000		Calibration-Chart	DO		11.22	mg/L	10.78
↓			↓	1020	↓	Calibration-Chart	ORP	@15.5°	232	mV	
PID MSA			3-6-15	0940		Zero Air		0ppm	0	ppm	
↓			↓	0950	↓	Isobutylene		100ppm	99.8	ppm	

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
HORIBA U-22		5013014	3-6-15	1005	CaO	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.51	mS/cm	
						Autocal	Turb	0	0.0	NTU	
				1021		Calibration	pH	7	6.99	pH units	
				1026		Calibration	pH	10	10.00	pH units	
				1005		Temp Check	Temp		14.50	°C	
				1005		Calibration-Chart	DO		10.22	mg/L	
				1031		Calibration-Chart	ORP	@15.52°	251	mV	
HORIB U52		27109/25333		1010		Autocal	pH	4	3.99	pH units	
						Autocal	Cond	4.49	4.50	mS/cm	
						Autocal	Turb	0	0	NTU	
				1022		Calibration	pH	7	7.01	pH units	
				1027		Calibration	pH	10	10.02	pH units	
				1010		Temp Check	Temp		16.14	°C	
				1010		Calibration-Chart	DO		10.70	mg/L	
HORIBA U52		17035/28310		1032		Calibration-Chart	ORP	@17.19°	28[illegible]	mV	CaO 17.21° = 241 @ 1034
				1015		Autocal	pH	4	3.97	pH units	
						Autocal	Cond	4.49	4.50	mS/cm	
						Autocal	Turb	0	0.0	NTU	
				1023		Calibration	pH	7	6.99	pH units	
				1028		Calibration	pH	10	9.98	pH units	
				1015		Temp Check	Temp		15.02	°C	
				1015		Calibration-Chart	DO		10.69	mg/L	
				1035		Calibration-Chart	ORP		249	mV	

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TEAM # 2

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	~~Autocal~~	pH	4		pH units	
QED MP20			3-6-15	1040	CaL	~~Autocal~~ CalSol	pH	4	4.02	pH units	single pt calibration
				1044		~~Autocal~~ CalSol	Cond	1.00 ~~4.49~~	1.00	mS/cm	
				1042		~~Autocal~~ CalSol	Turb	0	0.0	NTU	
				1040		Calibration	pH	7	6.98	pH units	
				1041		Calibration	pH	10	10.01	pH units	
				1041		Temp Check	Temp		10.50	°C	
				1045		Calibration-Chart	DO		14.52°	mg/L	
				1046		Calibration-Chart	ORP		247	mV	
	Horiba U22		3-6-15	1130	CaL	Autocal	pH	4	4.0	pH units	
				1130		Autocal	Cond	4.49	4.50	mS/cm	
				1130		Autocal	Turb	0	0	NTU	
				1135		Calibration	pH	7	6.98	pH units	
				1140		Calibration	pH	10	10.01	pH units	
				1130		Temp Check	Temp		14.21	°C	
				1130		Calibration-Chart	DO		10.02	mg/L	
				1145	CaO	Calibration-Chart	ORP		254	mV	
						Autocal	pH	4		pH units	
						Autocal	Cond	4.49		mS/cm	
						Autocal	Turb	0		NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp			°C	
						Calibration-Chart	DO			mg/L	
						Calibration-Chart	ORP			mV	

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TEAM # 2

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
		25333	3-9-15	0800		Autocal	pH	4	4.00	pH units	TEAM 4 may use
						Autocal	Cond	4.49	4.52	mS/cm	
						Autocal	Turb	0	0.1	NTU	
						Calibration	pH	7	7.03	pH units	
						Calibration	pH	10	10.11	pH units	
						Temp Check	Temp		5.31	°C	
						Calibration-Chart	DO		13.62	mg/L	
						Calibration-Chart	ORP		248	mV	
		28310	3-9-15	0830		Autocal	pH	4	4.03	pH units	
						Autocal	Cond	4.49	4.54	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.1	pH units	
						Calibration	pH	10	10.15	pH units	
						Temp Check	Temp		4.60	°C	
						Calibration-Chart	DO		14.01	mg/L	
						Calibration-Chart	ORP		250	mV	
		28130	3-10-15	750		Autocal	pH	4	4.01	pH units	
						Autocal	Cond	4.49	4.56	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.05	pH units	
						Calibration	pH	10	10.11	pH units	
						Temp Check	Temp		6.89	°C	
						Calibration-Chart	DO		12.79	mg/L	
						Calibration-Chart	ORP		249	mV	

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TEAM # 4

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
HORIBA		28310	3/11/15	0800	Cal	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.49	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.04	pH units	
						Calibration	pH	10	10.14	pH units	
						Temp Check	Temp		9.49	°C	
						Calibration-Chart	DO		10.80	mg/L	
						Calibration-Chart	ORP		245	mV	
		28310	3-12-15	0745	Cal	Autocal	pH	4	3.99	pH units	
						Autocal	Cond	4.49	4.56	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.08	pH units	
						Calibration	pH	10	10.17	pH units	
						Temp Check	Temp		8.64	°C	
						Calibration-Chart	DO		11.45	mg/L	
						Calibration-Chart	ORP		250	mV	
		28310	3-13-15	0745	Cal	Autocal	pH	4	3.98	pH units	
						Autocal	Cond	4.49	4.57	mS/cm	
						Autocal	Turb	0	0	NTU	
						Calibration	pH	7	7.04	pH units	
						Calibration	pH	10	10.15	pH units	
						Temp Check	Temp		8.26	°C	
						Calibration-Chart	DO		10.98	mg/L	
						Calibration-Chart	ORP		250	mV	

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TEAM # 2

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
~~HORIBA~~	~~U22~~	~~5013~~				Autocal	pH	4	4.00	pH units	
HORIBA	U52	28310	3-20-15	0800	Cal	Autocal	Cond	4.49	4.49	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp		16.89	°C	
						Calibration-Chart	DO		10.65	mg/L	
						Calibration-Chart	ORP		240	mV	
HORIBA	U52	25333	3-20-15	0820	Cal	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.50	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp		17.66	°C	
						Calibration-Chart	DO		10.27	mg/L	
						Calibration-Chart	ORP		235	mV	
HORIBA	U52	28310	3-23-15	1045	Cal	Autocal	pH	4	4.0	pH units	
						Autocal	Cond	4.49	4.6	mS/cm	4.52
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp		3.56	°C	
						Calibration-Chart	DO		14.71	mg/L	
						Calibration-Chart	ORP		265	mV	
DO	USA		3-23-15	1100	Cal	Bump Calibration	Isobut. Air	100	99.7	ppm	
DO	USA		3-23-15	1105	Cal			0	0	ppm	

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
HORIBA	U52	25333	3-23-15	1190	Cal	Autocal	pH	4	4.01	pH units	
						Autocal	Cond	4.49	4.55	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.08	pH units	
						Calibration	pH	10	10.28	pH units	
						Temp Check	Temp		3.73	°C	
						Calibration-Chart	DO		14.26	mg/L	
		25333				Calibration-Chart	ORP		259	mV	
HORIBA	U52	~~25310~~	3-24-15		Cal	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.58	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.05	pH units	
						Calibration	pH	10	10.19	pH units	
						Temp Check	Temp		15.34	°C	
						Calibration-Chart	DO		12.75	mg/L	
		25310				Calibration-Chart	ORP		250	mV	
HORIBA	U52	~~25333~~	3-24-15		Cal	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.57	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.1	pH units	
						Calibration	pH	10	10.29	pH units	
						Temp Check	Temp		3.78	°C	
						Calibration-Chart	DO		13.76	mg/L	
						Calibration-Chart	ORP		265	mV	

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	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
HORIBA	U52	28310	3-25-15	0740	Cal	Autocal	pH	4	4.0	pH units	
						Autocal	Cond	4.49	4.57	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.08	pH units	
						Calibration	pH	10	10.21	pH units	
						Temp Check	Temp		7.83	°C	
						Calibration-Chart	DO		12.58	mg/L	
						Calibration-Chart	ORP		260	mV	
						Autocal	pH	4		pH units	
						Autocal	Cond	4.49		mS/cm	
						Autocal	Turb	0		NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp			°C	
						Calibration-Chart	DO			mg/L	
						Calibration-Chart	ORP			mV	
						Autocal	pH	4		pH units	
						Autocal	Cond	4.49		mS/cm	
						Autocal	Turb	0		NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp			°C	
						Calibration-Chart	DO			mg/L	
						Calibration-Chart	ORP			mV	

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TEAM # 3

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
Horiba U22		7113010	3/9/15	0800	DO	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.49	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7.07 7	~~10.02~~	pH units	7.07
						Calibration	pH	10	10.02	pH units	10.04
						Temp Check	Temp		18.97	°C	
						Calibration-Chart	DO		8.3	mg/L	
						Calibration-Chart	ORP		222	mV	
Horiba U22		073005	3/10/15	0800	DO	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.51	mS/cm	
						Autocal	Turb	0	0	NTU	
						Calibration	pH	7	7.10	pH units	
						Calibration	pH	10	10.2	pH units	
						Temp Check	Temp		7.52	°C	
						Calibration-Chart	DO		11.51	mg/L	
						Calibration-Chart	ORP		254	mV	
Horiba U22		7073005	3/11/15	0800	DO	Autocal	pH	4	3.99	pH units	
						Autocal	Cond	4.49	4.49	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.07	pH units	
						Calibration	pH	10	10.15	pH units	
						Temp Check	Temp		10.40	°C	
						Calibration-Chart	DO		10.85	mg/L	10.92
						Calibration-Chart	ORP		342	mV	350.5

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TEAM # 93

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
	Horiba U22	7073005	3/12/15	0730	AD	Autocal	pH	4	3.97	pH units	
						Autocal	Cond	4.49	4.50	mS/cm	
						Autocal	Turb	0	0	NTU	
						Calibration	pH	7	7.08	pH units	
						Calibration	pH	10	10.2	pH units	
						Temp Check	Temp		9.94	°C	
						Calibration-Chart	DO		10.44	mg/L	
						Calibration-Chart	ORP		236	mV	
	Horiba U22	7073005	3/13/15	08:00	EC	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.52	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.09	pH units	
						Calibration	pH	10	10.21	pH units	
						Temp Check	Temp		9.72	°C	
						Calibration-Chart	DO		11.04	mg/L	
						Calibration-Chart	ORP		252	mV	
						Autocal	pH	4		pH units	
						Autocal	Cond	4.49		mS/cm	
						Autocal	Turb	0		NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp			°C	
						Calibration-Chart	DO			mg/L	
						Calibration-Chart	ORP			mV	

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TEAM # 3

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
HORIBA	U22	05D13014	3-20-15	0800	ADICal	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.49	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	6.98	pH units	
						Calibration	pH	10	10.16	pH units	
						Temp Check	Temp		17.69	°C	
						Calibration-Chart	DO		985	mg/L	
						Calibration-Chart	ORP		234	mV	
						Autocal	pH	4	398	pH units	
		7073005	3-20-15	0830	ADICal	Autocal	Cond	4.49	4.49	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	6.99	pH units	
						Calibration	pH	10	10.14	pH units	
						Temp Check	Temp		17.64	°C	
						Calibration-Chart	DO		9.99	mg/L	
						Calibration-Chart	ORP		232	mV	
Horiba U22		7073005	3/23/15	1000	ADICal	Autocal	pH	4	3.99	pH units	
						Autocal	Cond	4.49	4.49	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.12	pH units	
						Calibration	pH	10	10.22	pH units	
						Temp Check	Temp		7.13	°C	
						Calibration-Chart	DO		11.67	mg/L	
						Calibration-Chart	ORP		242	mV	

RVAPP ~ Ravenna Ohio

TEAM # 3

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
	Horiba U22	7073005	3/24/15	0730	AO	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.52	mS/cm	
						Autocal	Turb	0	0	NTU	
						Calibration	pH	7	7.1	pH units	
						Calibration	pH	10	10.26	pH units	
						Temp Check	Temp		5.34	°C	
						Calibration-Chart	DO		12.27	mg/L	
						Calibration-Chart	ORP		253	mV	
	Horiba U22	7073005	3/25/15	1745	AO	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.54	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.13	pH units	
						Calibration	pH	10	10.24	pH units	
						Temp Check	Temp		8.49	°C	
						Calibration-Chart	DO		11.50	mg/L	
						Calibration-Chart	ORP		252	mV	
						Autocal	pH	4		pH units	
						Autocal	Cond	4.49		mS/cm	
						Autocal	Turb	0		NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp			°C	
						Calibration-Chart	DO			mg/L	
						Calibration-Chart	ORP			mV	

RVAPP ~ Ravenna Ohio

TEAM # 4

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
	Horiba U22	T910069	9-Oct-15	0837	SS	Autocal	pH	4	3.96	pH units	
						Autocal	Cond	4.49	4.59	mS/cm	
						Autocal	Turb	0	1.5	NTU	
						Calibration	pH	7	7.10	pH units	8°
						Calibration	pH	10	10.20	pH units	7°
						Temp Check	Temp		8°	°C	
						Calibration-Chart	DO		11.39	mg/L	
						Calibration-Chart	ORP		248	mV	
	Horiba U52	X0J2305C	10-Oct-15	0804	SS	Autocal	pH	4	3.99	pH units	
		25333/27109				Autocal	Cond	4.49	4.55	mS/cm	
						Autocal	Turb	0	0.1	NTU	
						Calibration	pH	7	7.04	pH units	
						Calibration	pH	10	10.09	pH units	
						Temp Check	Temp		8.03	°C	
						Calibration-Chart	DO		12.05	mg/L	
						Calibration-Chart	ORP		246	mV	
	Horiba U52	25333/27109	11-Oct-15	0801	SS	Autocal	pH	4	3.98	pH units	
						Autocal	Cond	4.49	4.53	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.09	pH units	
						Calibration	pH	10	10.11	pH units	
						Temp Check	Temp		10.4	°C	
						Calibration-Chart	DO		11.21	mg/L	
						Calibration-Chart	ORP		252	mV	

RVAPP ~ Ravenna Ohio

TEAM # 4

	Instrument Model	Instrument ID	Date	Time	Calibrator	CalibrationType	Standard	Std Concentra	Meter Reading	Units	Comment
EXAMPLE:	Horiba U22	3074008	06-Oct-08	11:00	EC	Autocal	pH	4		pH units	
Horiba U52		25333	3-12-15	750	Cal	Autocal	pH	4	4.00	pH units	4.00
						Autocal	Cond	4.49	4.55	mS/cm	4.53
						Autocal	Turb	0	0.0	NTU	0.0
						Calibration	pH	7	7.09	pH units	7.07
						Calibration	pH	10	10.20	pH units	10.16
						Temp Check	Temp		10.18	°C	10.17
						Calibration-Chart	DO		11.76	mg/L	recheck 10.99
						Calibration-Chart	ORP		244	mV	
Horiba U52		25333	3-13-15	0750	CAL	Autocal	pH	4	4.00	pH units	
						Autocal	Cond	4.49	4.55	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.09	pH units	
						Calibration	pH	10	10.20	pH units	
						Temp Check	Temp		9.70	°C	
						Calibration-Chart	DO		11.36	mg/L	
						Calibration-Chart	ORP		245	mV	
						Autocal	pH	4		pH units	
						Autocal	Cond	4.49		mS/cm	
						Autocal	Turb	0		NTU	
						Calibration	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp			°C	
						Calibration-Chart	DO		11,	mg/L	
						Calibration-Chart	ORP		245	mV	

Purge/Sample Records

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: DEMO.AREA 2 DATE: 3/24/2015 START TIME: 9:25

WELL ID: DA2mw-115

WELL DEPTH: 46.77 INITIAL WATER LEVEL: 5.52 TOTAL PURGED (L) 5.72

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 36.5 - 46.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 41.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:34	5.51	0.2	0	0	0	0	0	0	0
9:40	5.79	0.12	0.72	5.37	0.729	7.61	6.6	19.3	37
9:45	5.79	0.13	0.65	5.8	0.725	5.02	7.06	11.3	-70
9:50	5.78	0.15	0.75	6.09	0.723	4.6	7.09	6.9	-84
9:55	5.78	0.18	0.9	6.87	0.721	4.1	7.14	6.1	-93
10:00	5.79	0.18	0.9	7.01	0.726	3.9	7.16	3.8	-95
10:05	5.79	0.18	0.9	7.15	0.719	3.67	7.18	1.9	-99
10:10	5.79	0.18	0.9	7.19	0.72	3.6	7.19	1.3	-101

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **DEMO.AREA 2** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: DA2mw-115 SampleID: FWGDA2mw-115-0509-GW/GF Dup ID: FWGDA2mw-DUP1-0557-GW/GF

SplitID: FWGDA2mw-115-0551s-GW/GF RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/24/2015 TIME: 10:12

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	1.1	Color:	Clear
	ORP (mV):	-101	Odor:	None

pH: 7.18 Temperature (°C): 7.23 DO (mg/L): 3.57 Specific Conductivity (mS/cm): 0.718

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: S AMBIENT TEMP (°F): 30

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt: DUP@1200

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	6	4C	8270	SVOC
1L/Amber	5	4C	8330	Explo
1L/Amber	6	4C	353.2/8330	Propellants
500ml/Poly	3	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: DEMO.AREA 2 DATE: 3/24/2015 START TIME: 9:30

WELL ID: DET-003

WELL DEPTH: 15.99 INITIAL WATER LEVEL: 8.94 TOTAL PURGED (L) 11.25

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 11 - 16

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 13.5

PUMP READINGS: Throttle (ft.) Recharge: 12 Discharge: 3

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
10:45	8.94	0.125	0	0	0	0	0	0	0
10:50	8.96	0.125	0.625	5.16	0.72	4.4	6.03	800	38
10:55	8.99	0.125	0.625	5.98	0.713	3.9	6.15	1000	-20
11:00	8.98	0.125	0.625	6.54	0.705	3.35	7.01	1000	-59
11:05	8.98	0.125	0.625	6.71	0.703	3.38	7.26	953	-87
11:10	8.99	0.125	0.625	6.89	0.701	3.25	7.23	657	-91
11:15	8.99	0.125	0.625	7.14	0.7	3.2	7.24	268	-99
11:20	8.99	0.125	0.625	7.34	0.699	3.15	7.23	154	-102
11:25	8.99	0.125	0.625	7.5	0.699	3.08	7.23	95.3	-106
11:30	8.98	0.125	0.625	7.68	0.697	3.01	7.24	49.4	-108
11:35	8.99	0.125	0.625	7.97	0.697	3	7.25	37.2	-108
11:40	8.99	0.125	0.625	7.98	0.695	2.89	7.24	27.8	-108
11:45	8.99	0.125	0.625	7.96	0.694	2.82	7.24	25.5	-108
11:50	8.99	0.125	0.625	8	0.685	2.81	7.25	21.7	-108
11:55	8.98	0.125	0.625	7.99	0.692	2.8	7.26	18.4	-109
12:00	8.99	0.125	0.625	8.02	0.692	2.72	7.27	31.1	-110
12:05	8.98	0.125	0.625	8.09	0.693	2.8	7.26	21.9	-111
12:10	8.99	0.125	0.625	8.07	0.693	2.76	7.25	19.5	-111
12:15	8.99	0.125	0.625	8.02	0.693	2.74	7.26	6.4	-112

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **DEMO.AREA 2** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: DET-003 SampleID: FWGDETmw-003C-0509-GW/GF Dup ID:

SplitID: RinseID: FWGEQUIPRinse7-0569-GW

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/24/2015 TIME: 12:17

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	4.6	Color:	Clear
	ORP (mV):	-111	Odor:	None

pH: 7.25 Temperature (°C): 8.04 DO (mg/L): 2.72 Specific Conductivity (mS/cm): 0.692

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SE AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt: Rinse at 1400

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8082	PCB
40ml/Vial	3	HCl	8260	VOC
1L/Amber	2	4C	8081	Pest
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
250ml/Poly	1	NaOH	9012	Cyanide
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: DEMO.AREA 2 DATE: 3/23/2015 START TIME: 13:25

WELL ID: DET-004

WELL DEPTH: 13.8 INITIAL WATER LEVEL: 10.02 TOTAL PURGED (L) 1.5

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 8.75 - 13.75

PUMP/PURGING DEVICE: B - BAILER APPROXIMATE PUMP INTAKE DEPTH: N/A Bailer

PUMP READINGS: Throttle (ft.) Recharge: 0 Discharge: 0

COMMENTS Color: , Odor:,dry after initial 1.5 L purge, returned to complete the sample within 24 hours

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:35	10.02	0.1	1	0	0	0	0	0	0
13:40	13.75	0.1	0.5	8.15	0.7	12.58	6.8	85	174

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **DEMO.AREA 2** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: DET-004 SampleID: FWGDETmw-004C-0511-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: - SAMPLING METHOD: - MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/24/2015 TIME: 9:02

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	85	Color:	Cloudy
	ORP (mV):	174	Odor:	None

pH: 6.8 Temperature (°C): 8.15 DO (mg/L): 12.58 Specific Conductivity (mS/cm): 0.7

GENERAL INFORMATION

SUN/OVERCAST PERCIPITATION: WIND DIRECTION: N AMBIENT TEMP (°F): 0

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt: returned at 1615 3-23-15 to collect VOC, SVOC, Explosives, and cyanide then dry again, return at 09(

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8082	PCB
40ml/Vial	3	HCl	8260	VOC
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
250ml/Poly	1	NaOH	9012	Cyanide
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8081	Pest
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: FACILITYWIDE DATE: 3/12/2015 START TIME: 14:05

WELL ID: FWGmw-002

WELL DEPTH: 69.6 INITIAL WATER LEVEL: 23.09 TOTAL PURGED (L) 8.605

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 60 - 70

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 65

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: , Odor:,for pH monitoring only

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
14:08	23.05	0.15	0	0	0	0	0	0	0
14:15	23.21	0.14	0.98	11.35	0.412	3.4	4.99	132	-26
14:20	23.49	0.125	0.625	9.78	0.432	1.19	7.47	477	-58
14:25	23.60	0.1	0.5	9.59	0.429	0.82	7.46	409	-54
14:30	23.55	0.1	0.5	9.47	0.429	0.72	7.43	301	-73
14:35	23.58	0.1	0.5	9.5	0.428	0.74	7.51	241	-109
14:40	23.58	0.1	0.5	9.44	0.426	0.81	7.63	211	-156
14:45	23.58	0.1	0.5	9.52	0.425	1.11	7.69	155	-170
14:50	23.58	0.1	0.5	9.62	0.424	0.99	7.74	145	-195
14:55	23.58	0.1	0.5	9.58	0.423	1.08	7.76	128	-193
15:00	23.58	0.1	0.5	9.65	0.422	1.07	7.78	105	-189
15:05	23.58	0.1	0.5	9.61	0.422	1.11	7.78	90.1	-190
15:10	23.58	0.1	0.5	9.63	0.42	1.15	7.77	87.3	-187
15:15	23.58	0.1	0.5	9.64	0.419	1.19	7.75	84.1	-184
15:20	23.58	0.1	0.5	9.64	0.419	1.21	7.74	80.3	-184
15:25	23.58	0.1	0.5	9.65	0.419	1.19	7.73	75.7	-183
15:30	23.58	0.1	0.5	9.6	0.419	1.16	7.73	73.8	-184

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: FACILITYWIDE DATE: 3/13/2015 START TIME: 8:35

WELL ID: FWGmw-004

WELL DEPTH: 22.54 INITIAL WATER LEVEL: 11.36 TOTAL PURGED (L) 10.875

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 12.5 - 22.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 17

PUMP READINGS: Throttle (ft.) Recharge: 12 Discharge: 3

COMMENTS Color: Cloudy, Odor:None,Soft Bottom

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
8:48	11.36	0.15	0	0	0	0	0	0	0
8:55	11.55	0.125	0.875	7.11	0.736	4.2	5.56	404	164
9:00	11.58	0.125	0.625	6.94	0.721	3.05	5.57	243	144
9:05	11.60	0.125	0.625	6.95	0.719	3.32	5.61	157	137
9:10	11.61	0.125	0.625	7.11	0.719	3.19	5.7	84.1	132
9:15	11.62	0.125	0.625	7.17	0.719	3.33	5.76	71.4	130
9:20	11.62	0.125	0.625	7.33	0.721	3.22	5.8	53.1	129
9:25	11.62	0.125	0.625	7.31	0.722	3.01	5.84	45.5	129
9:30	11.63	0.125	0.625	7.3	0.724	2.69	5.96	33	121
9:35	11.64	0.125	0.625	7.31	0.725	2.54	5.99	31	121
9:40	11.65	0.125	0.625	7.36	0.727	2.45	5.99	26.3	120
9:45	11.66	0.125	0.625	7.38	0.727	2.38	6.02	24.4	119
9:50	11.67	0.125	0.625	7.37	0.727	2.3	6.08	20.1	114
9:55	11.68	0.125	0.625	7.43	0.728	2.32	6.1	18.4	114
10:00	11.66	0.125	0.625	7.44	0.729	2.43	6.09	15.3	116
10:05	11.69	0.125	0.625	7.41	0.729	2.15	6.1	14.1	115
10:10	11.71	0.125	0.625	7.45	0.729	2.14	6.09	12	115
10:15	11.69	0.125	0.625	7.56	0.73	2.09	6.1	9.3	114

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **FACILITYWIDE** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: FWGmw-004 SampleID: FWGFWGmw-004-0513-GW/GF Dup ID:

SplitID: RinseID: FWGEQUIPRinse5-0567-GW

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/13/2015 TIME: 10:17

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	9.1	Color:	Cloudy
	ORP (mV):	115	Odor:	None

pH: 6.1 Temperature (°C): 7.55 DO (mg/L): 2.14 Specific Conductivity (mS/cm): 0.729

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NE AMBIENT TEMP (°F): 33

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: BDD Cmt: Rinse at 1115

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: FACILITYWIDE DATE: 3/25/2015 START TIME: 8:25

WELL ID: FWGmw-007

WELL DEPTH: 32.15 INITIAL WATER LEVEL: 22.72 TOTAL PURGED (L) 10.3

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 22 - 32

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 27

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
8:37	22.80	0.1	0	0	0	0	0	0	0
8:42	22.85	0.1	0.3	7.74	0.94	12.02	6	106	116
8:47	22.92	0.1	0.5	8	0.91	11.41	6.33	102	90
8:52	22.95	0.1	0.5	8.08	0.902	11.21	6.5	91.1	78
8:57	22.99	0.1	0.5	8.18	0.89	10.77	6.61	72.9	72
9:02	23.00	0.1	0.5	8.19	0.865	10.4	6.67	60.8	68
9:07	23.00	0.1	0.5	8.25	0.857	9.92	6.72	50	65
9:12	23.02	0.1	0.5	8.25	0.849	9.56	6.78	42.9	61
9:17	23.02	0.1	0.5	8.21	0.842	9.05	6.82	37.6	58
9:22	23.02	0.1	0.5	8.31	0.831	8.6	6.86	30.3	55
9:27	23.03	0.1	0.5	8.28	0.833	8.52	6.87	29.2	54
9:32	23.03	0.1	0.5	8.35	0.828	8.15	6.9	29.1	52
9:37	23.04	0.1	0.5	8.38	0.821	7.87	6.91	25.9	51
9:42	23.04	0.1	0.5	8.41	0.818	7.63	6.92	24.7	49
9:47	23.04	0.1	0.5	8.31	0.819	7.51	6.93	23.2	49
9:52	23.04	0.1	0.5	8.38	0.816	7.24	6.95	22.8	47
9:57	23.05	0.1	0.5	8.25	0.819	7.02	6.96	13.9	46
10:02	23.05	0.1	0.5	8.28	0.818	6.82	6.96	13.8	45
10:07	23.05	0.1	0.5	8.39	0.81	6.71	6.97	10.6	45
10:12	23.06	0.1	0.5	8.26	0.814	6.54	6.98	11.5	44
10:17	23.06	0.1	0.5	8.23	0.813	6.41	6.98	9.2	0

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **FACILITYWIDE** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: FWGmw-007 SampleID: FWGFWGmw-007-0514-GW/GF Dup ID:

SplitID: RinseID: FWGEQUIPRinse8-0570-GW

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/25/2015 TIME: 10:23

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	8.9	Color:	Clear
	ORP (mV):	43	Odor:	None

pH: 6.98 Temperature (°C): 8.28 DO (mg/L): 6.41 Specific Conductivity (mS/cm): 0.813

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: Y WIND DIRECTION: NE AMBIENT TEMP (°F): 30

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: AD Cmt: Rinse at 1133

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8270	SVOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: FACILITYWIDE DATE: 3/24/2015 START TIME: 13:30

WELL ID: FWGmw-011

WELL DEPTH: 17.69 INITIAL WATER LEVEL: 1.63 TOTAL PURGED (L) 24.7

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 7.5 - 17.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 12.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: pale orange, Odor:None,Switched from Horiba 53 to 52 at 1441, over 2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:35	1.73	0.3	0	0	0	0	0	0	0
13:38	1.75	0.2	0.6	7.54	0.407	8.2	7.34	9999	-110
13:43	1.73	0.2	1	7.21	0.409	4.35	7.23	9999	-114
13:46	1.73	0.2	0.6	7.09	0.408	3.81	7.16	9999	-116
13:51	1.73	0.2	1	6.87	0.408	3.73	7.17	9999	-115
13:56	1.79	0.3	1.5	6.72	0.408	3.81	7	9999	-104
14:01	1.82	0.2	1	6.71	0.408	3.81	7.12	646	-108
14:06	1.82	0.2	1	6.73	0.409	3.82	7.15	983	-106
14:11	1.82	0.2	1	6.75	0.409	3.92	7.1	811	-105
14:16	1.82	0.2	1	6.8	0.411	3.86	7.06	666	-101
14:21	1.82	0.2	1	6.73	0.411	3.86	7.14	606	-106
14:26	1.82	0.2	1	6.79	0.413	3.85	7.14	513	-106
14:31	1.82	0.2	1	6.86	0.413	3.84	7.15	451	-106
14:36	1.82	0.2	1	6.91	0.414	3.84	7.15	443	-107
14:41	1.82	0.2	1	7.17	0.43	5.72	7.35	419	-55
14:46	1.82	0.2	1	7.06	0.429	4.72	7.48	387	-60
14:51	1.82	0.2	1	7.04	0.428	3.54	7.61	345	-66
14:56	1.82	0.2	1	7.12	0.429	3.13	7.69	319	-68
15:01	1.82	0.2	1	7.1	0.429	3.06	7.73	289	-71
15:06	1.82	0.2	1	7.01	0.431	3.02	7.78	282	-72
15:11	1.82	0.2	1	7	0.432	3.08	7.8	259	-75
15:16	1.82	0.2	1	6.96	0.434	3.09	7.81	245	-76
15:21	1.82	0.2	1	6.91	0.435	3.03	7.82	211	-77
15:26	1.82	0.2	1	6.88	0.436	2.99	7.84	199	-79

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: FACILITYWIDE DATE: 3/24/2015 START TIME: 13:30

WELL ID: FWGmw-011

WELL DEPTH: 17.69 INITIAL WATER LEVEL: 1.63 TOTAL PURGED (L) 24.7

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 7.5 - 17.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 12.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: pale orange, Odor:None,Switched from Horiba 53 to 52 at 1441, over 2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
15:31	1.82	0.2	1	6.82	0.437	2.99	7.82	201	-80
15:36	1.82	0.2	1	6.77	0.437	3.05	7.82	168	-81

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **FACILITYWIDE** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: FWGmw-011 SampleID: FWGFWGmw-011-0515-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/24/2015 TIME: 15:39

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	177	Color:	pale orange
	ORP (mV):	-81	Odor:	None

pH: 7.86 Temperature (°C): 6.85 DO (mg/L): 3.04 Specific Conductivity (mS/cm): 0.437

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NE AMBIENT TEMP (°F): 44

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: AD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8270	SVOC
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: FACILITYWIDE DATE: 3/24/2015 START TIME: 13:30

WELL ID: FWGmw-012

WELL DEPTH: 42.45 INITIAL WATER LEVEL: 0 TOTAL PURGED (L) 9

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 32 - 42

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 37

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:50	0.60	0.2	0	0	0	0	0	0	0
13:55	0.60	0.2	1	8.49	0.263	2.69	7.78	27	-11
14:00	1.00	0.2	1	8.57	0.237	2.37	7.72	19.3	-12
14:05	1.00	0.2	1	8.69	0.236	1.6	7.58	11	-14
14:10	1.00	0.2	1	8.71	0.234	1.25	7.43	7.8	-15
14:15	1.00	0.2	1	8.75	0.233	1.02	7.31	5.1	-13
14:20	1.00	0.2	1	8.73	0.231	0.89	7.18	4.1	-12
14:25	1.00	0.2	1	8.77	0.231	0.82	7.11	3.2	-13
14:30	1.00	0.2	1	8.82	0.23	0.77	7.07	3.5	-13
14:35	1.00	0.2	1	8.82	0.231	0.74	7.03	2.9	-13

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: BD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **FACILITYWIDE** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: FWGmw-012 SampleID: FWGFWGmw-012-0516-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/24/2015 TIME: 14:38

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	4	Color:	Clear
	ORP (mV):	-15	Odor:	None

pH: 7.02 Temperature (°C): 8.82 DO (mg/L): 0.73 Specific Conductivity (mS/cm): 0.231

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NE AMBIENT TEMP (°F): 43

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: BD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8270	SVOC
1L/Amber	2	4C	353.2/8330	Propellants

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: FACILITYWIDE DATE: 3/9/2015 START TIME: 12:30

WELL ID: FWGmw-015

WELL DEPTH: 26.34 INITIAL WATER LEVEL: 4.28 TOTAL PURGED (L) 5.1

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 16 - 26

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 21

PUMP READINGS: Throttle (ft.) Recharge: 0 Discharge: 0

COMMENTS Color: Clear, Odor:None,21.34

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
12:44	3.90	0.2	0	0	0	0	0	0	
12:50	4.74	0.1	0.6	8.49	2.74	7.7	5.93	50.9	156
12:55	5.12	0.1	0.5	8.5	2.73	6.54	5.86	54.6	161
13:00	5.75	0.1	0.5	8.56	2.71	5.7	5.8	38.5	164
13:05	5.94	0.1	0.5	8.57	2.71	5.52	5.79	33.1	164
13:10	6.19	0.1	0.5	8.64	2.71	5.3	5.82	28.2	165
13:15	6.40	0.1	0.5	8.64	2.71	5.36	5.86	22.8	164
13:20	6.61	0.1	0.5	8.72	2.71	5.05	5.9	20.1	163
13:25	6.92	0.1	0.5	8.76	2.71	4.75	5.97	15.8	163
13:30	7.09	0.1	0.5	8.88	2.71	4.6	6.01	12.7	162
13:35	7.20	0.1	0.5	8.97	2.71	4.54	6.03	9.9	162

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: SAS

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **FACILITYWIDE** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: FWGmw-015 SampleID: FWGFWGmw-016-0517-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/9/2015 TIME: 14:00

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	9.8	Color:	Clear
	ORP (mV):	163	Odor:	None

pH: 6.04 Temperature (°C): 8.97 DO (mg/L): 4.52 Specific Conductivity (mS/cm): 2.7

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SW AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: SAS Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8270	SVOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: FACILITYWIDE DATE: 3/9/2015 START TIME: 12:47

WELL ID: FWGmw-016

WELL DEPTH: 68.1 INITIAL WATER LEVEL: 16.54 TOTAL PURGED (L) 3.75

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 57.25 - 67.25

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 62

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
12:54	17.17	0.15	0	0	0	0	0	0	0
13:00	16.95	0.125	0.75	10.33	0.727	1.54	6.08	0	-71
13:05	16.60	0.1	0.5	10.27	0.718	1.1	6.52	0	-81
13:10	16.65	0.1	0.5	10.35	0.719	0.84	6.51	0	-78
13:15	16.70	0.1	0.5	10.36	0.716	0.76	6.51	0	-79
13:20	16.70	0.1	0.5	10.41	0.717	0.72	6.5	0	-79
13:25	16.68	0.1	0.5	10.46	0.715	0.63	6.4	0	-72
13:30	16.68	0.1	0.5	10.46	0.715	0.79	6.44	0	-80

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **FACILITYWIDE** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: FWGmw-016 SampleID: FWGFWGmw-016-0518-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/9/2015 TIME: 13:32

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	0	Color:	Clear
	ORP (mV):	-82	Odor:	None

pH: 6.52 Temperature (°C): 10.47 DO (mg/L): 0.59 Specific Conductivity (mS/cm): 0.714

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SW AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt: load Eplo 1

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8270	SVOC
1L/Amber	2	4C	353.2/8330	Propellants
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: FUZE AND BOOSTER QUARRY DATE: 3/23/2015 START TIME: 14:26

WELL ID: FBQmw-174

WELL DEPTH: 23.06 INITIAL WATER LEVEL: 16.02 TOTAL PURGED (L) 5.4

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 13 - 23

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 18

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
14:34	16.02	0.1	0	0	0	0	0	0	0
14:37	16.05	0.1	0.3	6.53	0.066	11.63	5.49	16.6	244
14:40	16.05	0.1	0.3	6.42	0.064	11.62	5.45	15.3	247
14:43	16.06	0.1	0.3	6.35	0.064	11.61	5.41	14.1	251
14:46	16.09	0.1	0.3	6.24	0.064	11.65	5.44	14.9	254
14:49	16.11	0.1	0.3	6.1	0.063	11.63	5.42	14.5	255
14:52	16.12	0.1	0.3	6.05	0.063	11.65	5.42	14.7	257
14:55	16.12	0.1	0.3	6.04	0.062	11.65	5.41	15.1	260
14:58	16.12	0.1	0.3	6.04	0.062	11.67	5.39	14.9	263
15:01	16.12	0.1	0.3	6.04	0.061	11.68	5.37	14.2	265
15:04	16.14	0.1	0.3	6.02	0.061	11.69	5.36	13.7	266
15:07	16.14	0.1	0.3	6.01	0.061	11.71	5.37	12.9	267
15:10	16.14	0.1	0.3	5.97	0.06	11.65	5.35	13.4	269
15:13	16.14	0.1	0.3	5.93	0.06	11.7	5.34	11.8	271
15:16	16.15	0.1	0.3	5.89	0.06	11.65	5.34	12	273
15:19	16.15	0.1	0.3	5.87	0.059	11.63	5.34	10.3	275
15:22	16.15	0.1	0.3	5.87	0.059	11.64	5.35	9.8	275
15:25	16.15	0.1	0.3	5.88	0.059	11.65	5.36	8.4	274
15:28	16.15	0.1	0.3	5.87	0.06	11.66	5.35	8.3	275

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **FUZE AND BOOSTER** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: FBQmw-174 SampleID: FWGFBQmw-174C-0512-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/23/2015 TIME: 15:31

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	7.3	Color:	Clear
	ORP (mV):	276	Odor:	None

pH: 5.36 Temperature (°C): 5.86 DO (mg/L): 11.67 Specific Conductivity (mS/cm): 0.059

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: NE AMBIENT TEMP (°F): 34

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: EC Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8270	SVOC
1L/Amber	2	4C	8081	Pest
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 1 DATE: 3/10/2015 START TIME: 10:42

WELL ID: LL1mw-064

WELL DEPTH: 21.04 INITIAL WATER LEVEL: 1.42 TOTAL PURGED (L) 11.2

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 11 - 21

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 16

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,pump sat in well for 20 min before purge to get supplies from truck

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
10:42	1.42	0.1	0.1	8.79	0.619	0.29	6.95	113	-110
10:45	1.35	0.1	0.3	9	0.619	0	6.71	113	-124
10:48	1.38	0.1	6.3	9.28	0.593	0	6.59	65.9	-134
10:51	1.38	0.1	0.3	9.44	0.581	0	6.52	31.3	-140
10:54	1.49	0.2	0.6	9.86	0.574	0	6.43	16.8	-144
10:57	1.50	0.2	0.6	10	0.573	0	6.41	4.5	-147
11:00	1.50	0.2	0.6	9.99	0.571	0	6.38	4.3	-150
11:03	1.50	0.2	0.6	9.83	0.572	0	6.36	6.5	-150
11:06	1.50	0.2	0.6	9.77	0.572	0	6.36	2.6	-150
11:09	1.50	0.2	0.6	9.82	0.571	0	6.36	0	-150
11:12	1.50	0.2	0.6	9.89	0.569	0	6.35	0	-148

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 1** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL1mw-064 SampleID: FWGLL1mw-064C-0519-GW Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/10/2015 TIME: 11:15

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	0	Color:	Clear
	ORP (mV):	-148	Odor:	None

pH: 6.33 Temperature (°C): 9.82 DO (mg/L): 0 Specific Conductivity (mS/cm): 0.571

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: Y WIND DIRECTION: NE AMBIENT TEMP (°F): 42

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: EC Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	2	4C	8270	SVOC
1L/Amber	1	4C	8330	Explo
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 1 DATE: 3/10/2015 START TIME: 12:17

WELL ID: LL1mw-065

WELL DEPTH: 23.14 INITIAL WATER LEVEL: 11.4 TOTAL PURGED (L) 4.6

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 13 - 23

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 18

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
12:17	11.41	0.15	0.1	8.36	0.932	1.26	6.24	63.4	117
12:20	11.41	0.15	0.45	8.48	0.934	0.55	6.23	37.2	113
12:23	11.41	0.15	0.45	8.58	0.935	0.01	6.25	25.7	108
12:26	11.41	0.15	0.45	8.68	0.936	0	6.25	19.3	103
12:29	11.41	0.15	0.45	8.76	0.933	0	6.23	13.2	96
12:32	11.41	0.15	0.45	8.8	0.927	0	6.22	9.3	92
12:35	11.41	0.15	0.45	8.78	0.92	0	6.23	7.8	87
12:38	11.41	0.15	0.45	8.77	0.912	0	6.23	7.5	83
12:41	11.41	0.15	0.45	8.79	0.902	0	6.22	4.9	79
12:44	11.41	0.15	0.45	8.78	0.897	0	6.23	3.2	75
12:47	11.41	0.15	0.45	8.78	0.892	0	6.22	1.8	72

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 1** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL1mw-065 SampleID: FWGLL1mw-065C-0520-GW Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/10/2015 TIME: 12:51

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	2.9	Color:	Clear
	ORP (mV):	70	Odor:	None

pH: 6.23 Temperature (°C): 8.76 DO (mg/L): 0 Specific Conductivity (mS/cm): 0.892

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: Y WIND DIRECTION: NE AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: BD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 1 DATE: 3/10/2015 START TIME: 9:22

WELL ID: LL1mw-083

WELL DEPTH: 41.45 INITIAL WATER LEVEL: 33.9 TOTAL PURGED (L) 4

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 31 - 41

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 36

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:27	34.30	0.1	0	8.92	0.314	6.91	3.19	74.6	288
9:32	34.31	0.1	0.5	9.13	0.298	6.57	3.05	49.8	312
9:37	34.30	0.1	0.5	8.98	0.294	6.34	3	24.8	342
9:42	34.29	0.1	0.5	9.02	0.294	6.1	3	20.6	364
9:47	34.28	0.1	0.5	8.84	0.291	6.21	3.03	15.7	0
9:52	34.30	0.1	0.5	8.97	0.289	5.79	3	12.3	384
9:57	34.31	0.1	0.5	9.03	0.286	5.61	3	14.4	392
10:02	34.30	0.1	0.5	9.08	0.286	5.46	3	10.8	398
10:07	34.30	0.1	0.5	9.13	0.285	5.33	3.04	9.6	402

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: SAS

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 1** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL1mw-083 SampleID: FWGLL1mw-083C-0521-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/10/2015 TIME: 10:10

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	9.6	Color:	Clear
	ORP (mV):	402	Odor:	None

pH: 3.04 Temperature (°C): 9.13 DO (mg/L): 5.33 Specific Conductivity (mS/cm): 2.85

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: SAS Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8270	SVOC
1L/Amber	2	4C	8081	Pest

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 1 DATE: 3/10/2015 START TIME: 11:45

WELL ID: LL1mw-084

WELL DEPTH: 39.1 INITIAL WATER LEVEL: 30.52 TOTAL PURGED (L) 4

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 29 - 39

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 34

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:50	31.10	0.1	0	8.71	0.341	5.95	4.29	0	321
11:55	31.37	0.1	0.5	9.03	0.343	5.42	4.19	0	323
12:00	31.56	0.1	0.5	8.93	0.344	5.15	4.22	0	320
12:05	31.64	0.1	0.5	8.83	0.346	5	4.25	0	316
12:10	31.79	0.1	0.5	8.87	0.348	4.83	4.27	0	0
12:15	31.87	0.1	0.5	8.87	0.351	5.52	4.24	0	300
12:20	31.93	0.1	0.5	8.83	0.353	4.75	4.28	0	296
12:25	31.98	0.1	0.5	8.79	0.355	4.67	4.29	0	291
12:30	31.98	0.1	0.5	8.77	0.357	4.61	4.3	0	288

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: SAS

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 1** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL1mw-084 SampleID: FWGLL1mw-084C-0522-GW/GF Dup ID:

SplitID: RinseID: FWGEQUIPRinse2-0564-Gw

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/10/2015 TIME: 12:34

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	0	Color:	Clear
	ORP (mV):	288	Odor:	None

pH: 4.3 Temperature (°C): 8.77 DO (mg/L): 4.61 Specific Conductivity (mS/cm): 0.357

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: Y WIND DIRECTION: AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: SAS Cmt: Rinse at 1614

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8081	Pest
1L/Amber	2	4C	8270	SVOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 1 DATE: 3/10/2015 START TIME: 9:44

WELL ID: LL1mw-086

WELL DEPTH: 77.74 INITIAL WATER LEVEL: 7.82 TOTAL PURGED (L) 23.9

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 67.5 - 77.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 72.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,over 2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:45	7.83	0.2	0	0	0	0		0	0
9:58	7.84	0.2	1.2	7.83	2.34	2.23	11.4	74.8	-127
10:01	7.85	0.2	0.6	8.02	2.22	2.09	11.4	40.9	-128
10:04	7.79	0.2	0.6	8.13	2.13	2.07	11.4	41.7	-126
10:07	7.76	0.2	0.6	8.24	1.98	2.05	11.4	45.3	-124
10:10	7.79	0.2	0.6	8.38	1.82	2.01	11.3	40.4	-124
10:13	7.76	0.2	0.6	8.56	1.64	2.03	11.3	39.9	-123
10:16	7.77	0.2	0.6	8.7	1.54	1.98	11.2	44.5	-122
10:19	7.79	0.2	0.6	8.8	1.34	2.02	11.2	44.5	-119
10:22	7.78	0.2	0.6	8.9	1.19	1.99	11.1	47.5	-117
10:25	7.79	0.2	0.6	8.92	1.09	1.97	11.0	51.7	-115
10:30	7.80	0.2	1	8.91	0.906	2.06	10.9	53.9	-115
10:35	7.86	0.2	1	8.92	0.812	2.08	10.8	58.9	-111
10:40	7.86	0.2	1	9	0.684	2.05	10.7	64.4	-106
10:45	7.90	0.2	1	8.99	0.591	1.96	10.4	79.5	-102
10:50	7.79	0.2	1	8.99	0.566	1.96	10.2	75.5	-101
10:55	7.84	0.2	1	9.07	0.534	1.92	9.96	83.7	-100
11:00	7.79	0.2	1	9.04	0.527	1.89	9.9	80.6	-99
11:05	7.81	0.2	1	9.15	0.521	1.88	9.81	88.6	-100
11:10	7.83	0.2	1	9.23	0.522	1.9	9.8	89.4	-99
11:15	7.79	0.2	1	9.21	0.517	1.84	9.71	88.7	-99
11:20	7.83	0.2	1	9.2	0.51	1.77	9.55	91.1	-98
11:25	7.82	0.2	1	9.16	0.507	1.73	9.5	79.3	-101
11:30	7.83	0.2	1	8.75	0.509	1.71	9.47	77.2	-106

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 1 DATE: 3/10/2015 START TIME: 9:44

WELL ID: LL1mw-086

WELL DEPTH: 77.74 INITIAL WATER LEVEL: 7.82 TOTAL PURGED (L) 23.9

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 67.5 - 77.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 72.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,over 2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:35	7.85	0.2	1	9.18	0.506	1.69	9.47	77.4	-104
11:40	7.85	0.2	1	9.28	0.507	1.66	9.44	74.9	-112
11:45	7.84	0.2	1	9.23	0.509	1.71	9.42	72.3	-108
11:48	7.85	0.2	0.8	9.18	0.508	1.71	9.42	75.3	-107

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 1** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL1mw-086 SampleID: fwgll1-087-0523-gw-gf Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/10/2015 TIME: 11:53

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	76.8	Color:	Clear
	ORP (mV):	-114	Odor:	None

pH: 9.39 Temperature (°C): 9.28 DO (mg/L): 1.69 Specific Conductivity (mS/cm): 0.51

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: Y WIND DIRECTION: AMBIENT TEMP (°F): 45

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: AD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8081	Pest
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 1 DATE: 3/9/2015 START TIME: 11:22

WELL ID: LL1mw-087

WELL DEPTH: 18.1 INITIAL WATER LEVEL: 4.25 TOTAL PURGED (L) 6.35

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 8 - 18

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 13

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None, medium bottom

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:26	5.05	0.2	0.5	0	0	0	0	0	0
11:28	5.10	0.2	0.4	7.59	0.9991	0.22	5.91	65.7	195
11:31	5.55	0.2	0.6	7.38	0.989	0	6.03	45.1	192
11:34	5.56	0.1	0.3	7.26	0.986	0.13	6.08	40.1	189
11:37	5.80	0.15	0.45	7.2	0.973	0.53	6.13	38.3	183
11:40	5.75	0.1	0.3	7.23	0.975	0.71	6.17	35.1	179
11:43	5.72	0.1	0.3	7.27	0.976	0.89	6.2	28.7	174
11:45	5.70	0.1	0.2	7.31	0.975	1.03	6.22	27.9	173
11:48	5.71	0.1	0.3	7.28	0.982	1.56	6.29	56.9	160
11:51	5.75	0.1	0.3	7.25	0.983	1.81	6.34	24.4	151
11:54	5.71	0.1	0.3	7.26	0.986	2.01	6.36	21.7	145
11:57	5.72	0.1	0.3	7.3	0.986	2.28	6.39	16.6	137
12:00	5.78	0.1	0.3	7.33	0.986	2.44	6.42	15.4	133
12:03	5.75	0.1	0.3	7.37	0.988	2.61	6.44	14.1	130
12:06	5.75	0.1	0.3	7.39	0.987	2.76	6.46	13.6	126
12:09	5.77	0.1	0.3	7.42	0.99	2.86	6.48	11.6	123
12:12	5.77	0.1	0.3	7.43	0.992	2.96	6.5	11	120
12:15	5.78	0.1	0.3	7.49	0.995	3.07	6.52	10.6	117
12:18	5.78	0.1	0.3	7.52	0.994	3.12	6.54	9.1	115

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 1** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL1mw-087 SampleID: FWGLL1mw-087-0524-GW/GF Dup ID:

SplitID: RinseID: FWGEQUIPRinse1-0563-GW

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/9/2015 TIME: 12:25

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	9.6	Color:	Clear
	ORP (mV):	115	Odor:	None

pH: 6.55 Temperature (°C): 7.52 DO (mg/L): 3.12 Specific Conductivity (mS/cm): 0.995

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NW AMBIENT TEMP (°F): 35

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: SH Cmt: Rinse at 1601

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	1	4C	8330	Explo
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8270	SVOC
1L/Amber	2	4C	353.2/8330	Propellants

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 1 DATE: 3/24/2015 START TIME: 9:10

WELL ID: LL1mw-088

WELL DEPTH: 27.32 INITIAL WATER LEVEL: 4.39 TOTAL PURGED (L) 12.6

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 17.5 - 27.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 22

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,over 2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:14	4.75	0.2	0	0	0	0	0	0	0
9:19	5.00	0.1	0.5	4.76	0.796	11.23	7.95	589	91
9:22	5.11	0.1	0.3	5.68	0.799	6.99	7.6	675	92
9:25	5.10	0.1	0.3	6.04	0.804	5.11	7.48	876	89
9:30	5.09	0.1	0.5	5.76	0.805	4.27	7.44	901	85
9:35	5.19	0.2	1	6.63	0.788	5.44	7.47	604	67
9:40	5.17	0.1	0.5	6.61	0.786	4.25	7.49	574	65
9:45	5.15	0.1	0.5	6.06	0.792	3.38	7.53	528	50
9:50	5.09	0.1	0.5	5.72	0.794	2.98	7.58	485	37
9:55	5.05	0.1	0.5	5.61	0.792	2.69	7.61	468	30
10:00	5.07	0.1	0.5	5.33	0.794	2.59	7.65	426	24
10:05	5.05	0.1	0.5	5.36	0.792	2.39	7.65	402	22
10:10	5.03	0.1	0.5	5.19	0.792	2.26	7.66	361	19
10:15	5.04	0.1	0.5	5.33	0.791	2.15	7.67	298	15
10:20	5.05	0.1	0.5	5.42	0.789	2.05	7.66	291	15
10:25	5.05	0.1	0.5	5.49	0.789	1.97	7.66	270	13
10:30	5.04	0.1	0.5	5.51	0.789	1.9	7.67	243	8
10:35	5.05	0.1	0.5	5.55	0.789	1.88	7.68	247	4
10:40	5.04	0.1	0.5	5.77	0.787	1.78	7.68	226	3
10:45	5.04	0.1	0.5	5.71	0.788	1.71	7.67	199	3
10:50	5.03	0.1	0.5	5.62	0.788	1.71	7.7	183	-2
10:55	5.05	0.1	0.5	5.96	0.785	1.56	7.69	156	-5
11:00	5.02	0.1	0.5	5.96	0.785	1.5	7.7	149	-6
11:05	5.00	0.1	0.5	5.9	0.786	1.49	7.7	142	-7

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 1 DATE: 3/24/2015 START TIME: 9:10

WELL ID: LL1mw-088

WELL DEPTH: 27.32 INITIAL WATER LEVEL: 4.39 TOTAL PURGED (L) 12.6

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 17.5 - 27.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 22

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,over 2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:10	5.01	0.1	0.5	5.89	0.785	1.49	7.72	136	-9
11:15	5.01	0.1	0.5	6.11	0.784	1.44	7.71	124	-9

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 1** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL1mw-088 SampleID: FWGLL1mw-088-0525-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/24/2015 TIME: 11:19

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	111	Color:	Clear
	ORP (mV):	-10	Odor:	None

pH: 7.7 Temperature (°C): 6.12 DO (mg/L): 1.42 Specific Conductivity (mS/cm): 0.784

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NW AMBIENT TEMP (°F): 20

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: BD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8081	Pest
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 2 DATE: 3/24/2015 START TIME: 9:34

WELL ID: LL2mw-059

WELL DEPTH: 21.85 INITIAL WATER LEVEL: 13.15 TOTAL PURGED (L) 3.3

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 11.5 - 21.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 16.75

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:45	13.20	0.1	0	0	0	0	0	0	0
9:48	13.22	0.1	0.3	7.04	0.397	4.74	5.53	33.2	179
9:51	13.23	0.1	0.3	7.21	0.39	3.56	5.54	34	177
9:54	13.34	0.1	0.3	7.41	0.383	2.29	5.54	24.8	174
9:57	13.36	0.1	0.3	7.55	0.378	1.76	5.56	19	172
10:00	13.38	0.1	0.3	7.68	0.375	1.37	5.57	14.3	168
10:03	13.39	0.1	0.3	7.77	0.374	1.15	5.56	15.2	165
10:06	13.41	0.1	0.3	7.98	0.37	1.06	5.55	10.5	159
10:09	13.43	0.1	0.3	8	0.37	1.05	5.55	9.7	157
10:12	13.44	0.1	0.3	8.03	0.369	1.05	5.56	8.5	155
10:15	13.45	0.1	0.3	8.09	0.368	1.07	5.56	8.7	151
10:18	13.45	0.1	0.3	8.13	0.367	1.04	5.57	8.9	146

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 2** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL2mw-059 SampleID: FWGLL2mw-059C-0526-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/24/2015 TIME: 10:21

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	7.7	Color:	Clear
	ORP (mV):	146	Odor:	None

pH: 5.57 Temperature (°C): 8.12 DO (mg/L): 1.05 Specific Conductivity (mS/cm): 0.366

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: E AMBIENT TEMP (°F): 25

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: EC Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8270	SVOC
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 2 DATE: 3/24/2015 START TIME: 11:25

WELL ID: LL2mw-060

WELL DEPTH: 20.76 INITIAL WATER LEVEL: 9.48 TOTAL PURGED (L) 3.6

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 8.1 - 17.9

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 17

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:32	9.50	0.1	0	0	0	0	0	0	0
11:35	9.51	0.1	0.3	8.22	0.566	11.04	5.68	44.5	169
11:38	9.52	0.1	0.3	8.09	0.589	9.93	5.72	33.9	170
11:41	9.53	0.1	0.3	7.85	0.582	9.47	5.74	26.8	170
11:44	9.61	0.1	0.3	7.49	0.574	9.14	5.79	18.8	171
11:47	9.69	0.1	0.3	7.36	0.577	9.14	5.8	17.8	172
11:50	9.71	0.1	0.3	7.22	0.575	9.26	5.81	15.7	174
11:53	9.73	0.1	0.3	7.18	0.575	9.21	5.81	12.1	174
11:56	9.73	0.1	0.3	7.13	0.574	9.42	5.81	10.1	175
11:59	9.73	0.1	0.3	7.12	0.575	9.52	5.81	11.6	175
12:02	9.73	0.1	0.3	7.13	0.575	9.52	5.82	7.5	174
12:05	9.73	0.1	0.3	7.12	0.575	9.48	5.82	8.9	174
12:08	9.73	0.1	0.3	7.12	0.575	9.46	5.83	8.5	174

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 2** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL2mw-060 SampleID: FWGLL2mw-060C-0527-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/24/2015 TIME: 12:11

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	9.1	Color:	Clear
	ORP (mV):	174	Odor:	None

pH: 5.83 Temperature (°C): 7.13 DO (mg/L): 9.45 Specific Conductivity (mS/cm): 0.575

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: S AMBIENT TEMP (°F): 30

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: EC Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 2 DATE: 3/11/2015 START TIME: 11:04

WELL ID: LL2mw-267

WELL DEPTH: 22.1 INITIAL WATER LEVEL: 8.64 TOTAL PURGED (L) 15.425

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 12 - 22

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 17

PUMP READINGS: Throttle (ft.) Recharge: 12 Discharge: 3

COMMENTS Color: orange tint, Odor:None,start as orange color with tan suspended solids then tinted orange, over 2 hours purged but turbidity still not near 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:05	8.62	0.15	0	0	0	0	0	0	0
11:12	8.81	0.15	1.05	6.13	0.353	8.18	5.42	800	137
11:17	8.76	0.125	0.625	6.2	0.355	8.2	5.29	578	105
11:22	8.80	0.125	0.625	6.19	0.354	8.61	5.42	382	107
11:27	8.82	0.125	0.625	6.23	0.353	8.17	5.36	662	109
11:32	8.84	0.125	0.625	6.31	0.35	7.95	5.3	721	109
11:37	8.85	0.125	0.625	6.34	0.348	8.11	5.34	698	116
11:42	8.85	0.125	0.625	6.37	0.348	8.25	5.4	654	118
11:47	8.85	0.125	0.625	6.44	0.347	8.43	5.44	576	123
11:52	8.85	0.125	0.625	6.47	0.346	8.56	5.48	479	120
11:57	8.86	0.125	0.625	6.48	0.346	8.79	5.52	420	120
12:02	8.86	0.125	0.625	6.49	0.345	8.81	5.51	402	120
12:07	8.86	0.125	0.625	6.5	0.345	8.73	5.51	365	120
12:12	8.86	0.125	0.625	6.55	0.346	8.68	5.57	345	119
12:17	8.86	0.125	0.625	6.6	0.345	8.66	5.54	339	117
12:22	8.87	0.125	0.625	6.62	0.344	8.72	5.62	321	118
12:27	8.86	0.125	0.625	6.72	0.343	8.45	5.65	286	117
12:32	8.86	0.125	0.625	6.84	0.343	8.37	5.68	244	115
12:37	8.86	0.125	0.625	6.88	0.342	8.29	5.7	226	118
12:42	8.85	0.125	0.625	6.93	0.341	8.39	5.72	186	116
12:47	8.85	0.125	0.625	7	0.341	8.35	5.75	151	112
12:52	8.85	0.125	0.625	7.02	0.341	8.19	5.79	144	112
12:57	8.86	0.125	0.625	7.17	0.34	8.09	5.8	136	111
13:02	8.85	0.125	0.625	7.25	0.341	8.02	5.79	131	112

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 2 DATE: 3/11/2015 START TIME: 11:04

WELL ID: LL2mw-267

WELL DEPTH: 22.1 INITIAL WATER LEVEL: 8.64 TOTAL PURGED (L) 15.425

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 12 - 22

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 17

PUMP READINGS: Throttle (ft.) Recharge: 12 Discharge: 3

COMMENTS Color: orange tint, Odor:None,start as orange color with tan suspended solids then tinted orange, over 2 hours purged but turbidity still not near 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:07	8.85	0.125	0.625	7.29	0.341	7.94	5.77	124	113

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 2** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL2mw-267 SampleID: FWGLL2mw-267-0528-GW/GF Dup ID:

SplitID: RinseID: FWGEQUIPRinse3-0565-GW

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 13:12

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	128	Color:	orange tint
	ORP (mV):	113	Odor:	None

pH: 5.76 Temperature (°C): 7.33 DO (mg/L): 7.95 Specific Conductivity (mS/cm): 0.34

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SW AMBIENT TEMP (°F): 45

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt: Rinse at 1530

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8270	SVOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 2 DATE: 3/23/2015 START TIME: 12:12

WELL ID: LL2mw-271

WELL DEPTH: 27.77 INITIAL WATER LEVEL: 10.28 TOTAL PURGED (L) 3.7

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 17.5 - 27.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 22.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
12:15	10.30	0.1	0	0	0	0	0	0	0
12:22	10.32	0.1	0.7	7.4	0.707	3.75	7.35	87.7	145
12:27	10.34	0.1	0.5	8.13	0.698	3.43	7.38	45.1	143
12:32	10.35	0.1	0.5	8.61	0.685	3.28	7.44	19.7	140
12:37	10.35	0.1	0.5	8.42	0.68	3.2	7.42	18	138
12:42	10.35	0.1	0.5	8.43	0.678	3.14	7.39	7.3	128
12:47	10.35	0.1	0.5	8.64	0.679	3.12	7.34	5.5	111
12:52	10.35	0.1	0.5	8.77	0.672	3.05	7.29	2.7	66

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: BD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 2** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL2mw-271 SampleID: FWGLL2mw-271-0529-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: Y

GRAB: **Y** COMPOSITE: **N** DATE: 3/23/2015 TIME: 12:55

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	2.5	Color:	Clear
	ORP (mV):	45	Odor:	None

pH: 7.25 Temperature (°C): 8.87 DO (mg/L): 3.04 Specific Conductivity (mS/cm): 0.673

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NE AMBIENT TEMP (°F): 31

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: BD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	353.2/8330	Propellants
250ml/Poly	3	4C	6860	Perchlorate, filtered
500ml/Poly	3	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	1	4C	8330	Explo
1L/Amber	6	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 3 DATE: 3/11/2015 START TIME: 9:47

WELL ID: LL3mw-238

WELL DEPTH: 23.37 INITIAL WATER LEVEL: 14.84 TOTAL PURGED (L) 15.5

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 13 - 23

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 18

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:49	15.06	0.2	0.5	0	0	0	0	0	0
9:52	15.15	0.2	1	8.91	0.314	8.31	5.6	62.8	188
9:57	15.54	0.2	1	8.38	0.31	7.66	5.54	73.7	194
10:02	15.91	0.2	1	8.24	0.305	6.36	5.52	44.7	197
10:07	16.13	0.2	1	8.19	0.31	6.57	5.57	59.5	197
10:12	16.28	0.2	1	8.13	0.313	6	5.61	44.1	193
10:17	16.40	0.2	1	8.11	0.315	6.07	5.68	33.5	191
10:22	16.49	0.1	0.5	8.08	0.313	5.53	5.75	38.5	188
10:27	16.62	0.1	0.5	8.03	0.314	5.47	5.78	58.5	188
10:32	16.69	0.1	0.5	8.01	0.316	5.43	5.8	32.3	189
10:37	16.73	0.1	0.5	7.99	0.316	5.35	5.8	23.1	189
10:42	16.79	0.1	0.5	7.95	0.315	5.25	5.8	25.9	191
10:47	16.85	0.1	0.5	7.92	0.315	5.42	5.74	31.9	193
10:52	16.90	0.1	0.5	7.9	0.315	5.29	5.79	34.3	195
10:57	16.94	0.1	0.5	7.89	0.315	5.35	5.8	25.2	195
11:02	16.97	0.1	0.5	7.88	0.314	5.29	5.87	36.7	192
11:07	17.01	0.1	0.5	7.89	0.314	5.3	6.03	31.9	185
11:12	17.05	0.1	0.5	7.87	0.314	5.36	6.14	27	179
11:17	17.10	0.1	0.5	7.91	0.314	5.54	6.1	26.5	181
11:22	17.14	0.1	0.5	7.93	0.314	5.53	6.08	27.5	184
11:27	17.15	0.1	0.5	7.92	0.313	5.58	6.06	25.4	184
11:32	17.19	0.1	0.5	7.92	0.314	5.6	6.07	23.2	186
11:37	17.23	0.1	0.5	7.93	0.314	5.63	6.08	22.3	185
11:42	17.22	0.1	0.5	7.92	0.313	5.66	6.11	21.7	183

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: SAS

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 3 DATE: 3/11/2015 START TIME: 9:47

WELL ID: LL3mw-238

WELL DEPTH: 23.37 INITIAL WATER LEVEL: 14.84 TOTAL PURGED (L) 15.5

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 13 - 23

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 18

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:47	17.28	0.1	0.5	7.9	0.313	5.68	6.12	20.2	180

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: SAS

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 3** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL3mw-238 SampleID: FWGLL3mw-238C-0530-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 11:50

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	20.2	Color:	Clear
	ORP (mV):	180	Odor:	None

pH: 6.12 Temperature (°C): 7.9 DO (mg/L): 5.68 Specific Conductivity (mS/cm): 0.313

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: AMBIENT TEMP (°F): 38

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: SAS Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8270	SVOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8081	Pest

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 3 DATE: 3/11/2015 START TIME: 9:10

WELL ID: LL3mw-241

WELL DEPTH: 25.56 INITIAL WATER LEVEL: 9.9 TOTAL PURGED (L) 4.5

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 15 - 25

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 20.5

PUMP READINGS: Throttle (ft.) Recharge: 12 Discharge: 3

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:15	9.84	0.125	0	0	0	0	0	0	0
9:22	10.02	0.125	0.875	6.2	0.225	6.23	6.01	2.1	247
9:27	10.10	0.125	0.625	6.23	0.219	5.92	5.77	4.8	245
9:32	10.10	0.15	0.75	6.35	0.185	5.93	5.7	7.9	252
9:37	10.11	0.15	0.75	6.38	0.178	5.78	5.6	2.1	248
9:42	10.12	0.15	0.75	6.43	0.175	5.59	5.66	0.4	259
9:47	10.13	0.15	0.75	6.44	0.174	5.66	5.63	0	263

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 3** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL3mw-241 SampleID: FWGLL3mw-241C-0531-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 9:52

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	0	Color:	Clear
	ORP (mV):	262	Odor:	None

pH: 5.64 Temperature (°C): 6.44 DO (mg/L): 5.65 Specific Conductivity (mS/cm): 0.174

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: W AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8270	SVOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8081	Pest
1L/Amber	2	4C	8082	PCB

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 3 DATE: 3/23/2015 START TIME: 12:32

WELL ID: LL3mw-244

WELL DEPTH: 46.88 INITIAL WATER LEVEL: 7.29 TOTAL PURGED (L) 8.1

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 37 - 47

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 41.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
12:35	7.28	0.2	0	0	0	0	0	0	0
12:40	7.28	0.18	0.9	7.96	0.228	9.2	6.05	1.7	141
12:45	7.29	0.18	0.9	8.23	0.215	8.3	6.11	0.6	147
12:50	7.29	0.18	0.9	8.38	0.21	7.96	6.08	0.3	158
12:55	7.30	0.18	0.9	8.42	0.208	7.14	6.12	0	162
13:00	7.30	0.18	0.9	8.77	0.207	6.2	6.13	0	161
13:05	7.30	0.18	0.9	8.79	0.207	5.79	6.14	0	161
13:10	7.31	0.18	0.9	8.87	0.208	5.64	6.16	0	164
13:15	7.31	0.18	0.9	8.92	0.207	5.47	6.13	0	167
13:20	7.31	0.18	0.9	8.98	0.207	5.34	6.11	0	167

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 3** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL3mw-244 SampleID: FWGLL3mw-244-0532-GW/GF Dup ID: FWGLL3mw-DUP2-0558-GW/GF

SplitID: FWLL3mw-244-0552s-GW/GF RinseID: FWGEQUIPRinse6-0568-GW

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/23/2015 TIME: 13:22

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	0	Color:	Clear
	ORP (mV):	165	Odor:	None

pH: 6.09 Temperature (°C): 9.02 DO (mg/L): 5.29 Specific Conductivity (mS/cm): 0.207

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NW AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt: DUP@ 1402, Rinse @1608

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	6	4C	8270	SVOC
500ml/Poly	3	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	4	4C	8330	Explo
1L/Amber	5	4C	8081	Pest
1L/Amber	6	4C	353.2/8330	Propellants
250ml/Poly	3	buffered,4C	7196A	Hex. Chromium, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 3 DATE: 3/23/2015 START TIME: 12:15

WELL ID: LL3mw-246

WELL DEPTH: 45.9 INITIAL WATER LEVEL: 18.39 TOTAL PURGED (L) 19.1

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 35.5 - 45.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 40.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
12:20	18.43	0.2	0	0	0	0	0	0	0
12:25	18.49	0.2	1	8.44	0.258	8.38	8.34	8.3	58
12:29	18.53	0.2	0.8	8.9	0.258	9.97	7.72	0.5	68
12:33	18.49	0.2	0.8	9.16	0.243	9.83	7.29	0	75
12:37	18.50	0.2	0.8	9.42	0.224	9.54	6.94	0	88
12:41	18.54	0.2	0.8	9.41	0.227	9.35	6.73	0	86
12:45	18.56	0.2	0.8	9.43	0.23	10.16	6.52	0	92
12:49	18.57	0.2	0.8	9.4	0.226	8.9	6.45	0	93
12:53	18.56	0.2	0.8	9.39	0.224	8.48	6.41	0	96
12:57	18.58	0.2	0.8	9.43	0.223	8.13	6.29	0	100
13:01	18.56	0.2	0.8	9.49	0.222	8.6	6.25	0	103
13:05	18.54	0.2	0.8	9.44	0.222	8.33	6.21	0	107
13:09	18.56	0.2	0.8	9.5	0.221	7.99	6.16	0	109
13:13	18.58	0.2	0.8	9.48	0.221	6.96	6.13	0	109
13:17	18.55	0.2	0.8	9.53	0.22	7.04	6.07	0	110
13:21	18.53	0.2	0.8	9.59	0.219	7.76	6.06	0	113
13:25	18.54	0.2	0.8	9.6	0.219	6.53	6.06	0	115
13:29	18.54	0.2	0.8	9.64	0.218	8.67	6.03	0	118
13:34	18.55	0.2	1	9.61	0.218	8.67	6.02	0	116
13:38	18.56	0.2	0.6	9.53	0.218	9.4	6.02	0	116
13:42	18.55	0.2	0.8	9.55	0.218	9.3	6	0	117
13:46	18.52	0.2	0.8	9.53	0.218	8.56	5.99	0	119
13:50	18.53	0.2	0.8	9.56	0.217	8.54	5.99	0	121
13:54	18.55	0.2	0.8	9.53	0.217	8.46	5.97	0	119

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 3** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL3mw-246 SampleID: FWGLL3mw-246-0533-GW/GF Dup ID: FWGLL3mw-DUP3-0559-GW/GF

SplitID: FWGLL3mw-246-0553s-GW/GF RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/23/2015 TIME: 14:00

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	0	Color:	Clear
	ORP (mV):	119	Odor:	None

pH: 5.98 Temperature (°C): 9.52 DO (mg/L): 8.42 Specific Conductivity (mS/cm): 0.218

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NW AMBIENT TEMP (°F): 30

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: AD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	6	4C	8270	SVOC
1L/Amber	6	4C	8330	Explo
1L/Amber	6	4C	353.2/8330	Propellants
500ml/Poly	3	HNO3	6010/6020/7470	Metals, filtered
250ml/Poly	3	4C	6860	Perchlorate, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 7 DATE: 3/11/2015 START TIME: 14:00

WELL ID: LL7mw-001

WELL DEPTH: 33.02 INITIAL WATER LEVEL: 20.18 TOTAL PURGED (L) 35.1

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 19.5 - 29.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 28.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: slightly yellow, Odor:None,medium bottom, orange color at beginning of purge, over 2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
14:05	20.23	0.1	0.5	0	0	0	0	0	0
14:10	20.25	0.1	0.5	10.12	0.297	3.06	6.41	9999	-7
14:14	20.29	0.2	0.5	10.26	0.302	2.4	6.3	9999	-10
14:17	20.25	0.2	0.6	10.42	0.3	5.07	6.24	9999	-4
14:20	20.26	0.3	0.9	10.44	0.302	2.68	6.21	792	-9
14:23	20.30	0.3	0.9	10.45	0.306	2.68	6.2	800	-13
14:26	20.29	0.3	0.9	10.45	0.315	4.23	6.21	834	-8
14:29	20.31	0.3	0.9	10.42	0.317	2.59	6.21	497	-15
14:32	20.29	0.3	0.9	10.5	0.332	5.91	6.2	412	-11
14:35	20.29	0.3	0.9	10.52	0.332	2.42	6.21	513	-17
14:38	20.29	0.3	0.9	10.44	0.333	2.46	6.22	322	-21
14:41	20.30	0.3	0.9	10.43	0.331	2.52	6.23	360	-23
14:44	20.31	0.3	0.9	10.59	0.329	4.38	6.19	260	-15
14:49	20.31	0.3	1.5	10.58	0.334	2.56	6.21	199	-23
14:52	20.30	0.3	0.9	10.57	0.335	2.53	6.22	184	-25
14:56	20.31	0.3	1.2	10.56	0.336	3.69	6.23	220	-18
14:59	20.32	0.3	0.9	10.55	0.337	2.82	6.23	204	-21
15:02	20.32	0.3	0.9	10.57	0.34	2.52	6.26	154	-26
15:05	20.29	0.3	0.9	10.57	0.335	2.47	6.28	148	-26
15:08	20.31	0.3	0.9	10.59	0.333	2.45	6.27	111	-27
15:11	20.29	0.3	0.9	10.57	0.343	2.37	6.28	124	-29
15:14	20.32	0.3	0.9	10.57	0.344	2.27	6.3	108	-31
15:17	20.29	0.3	0.9	10.54	0.345	2.33	6.3	93.2	-32
15:20	20.29	0.3	0.9	10.57	0.346	2.37	6.31	89.1	-33

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 7 DATE: 3/11/2015 START TIME: 14:00

WELL ID: LL7mw-001

WELL DEPTH: 33.02 INITIAL WATER LEVEL: 20.18 TOTAL PURGED (L) 35.1

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 19.5 - 29.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 28.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: slightly yellow, Odor:None,medium bottom, orange color at beginning of purge, over 2 hours purge but turbidity still above 10 NTU.

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
15:28	20.29	0.3	2.4	10.55	0.347	2.38	6.29	80.1	-34
15:31	20.31	0.3	0.9	10.52	0.348	2.42	6.31	79.3	-35
15:34	20.32	0.3	0.9	10.54	0.35	2.46	6.3	76.1	-35
15:37	20.30	0.3	0.9	10.56	0.343	2.48	6.3	72.9	-34
15:40	20.29	0.3	0.9	10.53	0.346	2.67	6.33	76.4	-37
15:43	20.29	0.3	0.9	10.46	0.344	2.72	6.27	71.8	-21
15:46	20.30	0.3	0.9	10.46	0.347	2.8	6.28	59.8	-23
15:51	20.30	0.3	1.5	10.45	0.354	2.82	6.24	56.9	0
15:54	20.30	0.3	0.9	10.48	0.353	2.79	6.25	54.1	-33
16:01	20.31	0.3	2.1	10.42	0.35	2.86	6.25	47.5	0
16:04	20.30	0.3	0.9	10.41	0.348	2.97	6.25	43.6	-34
16:07	20.31	0.3	0.9	10.37	0.348	3.09	6.25	40	-35

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 7** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL7mw-001 SampleID: FWGLL7mw-001-0534-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 16:09

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	42.5	Color:	slightly yellow
	ORP (mV):	-360	Odor:	None

pH: 6.24 Temperature (°C): 10.37 DO (mg/L): 3.15 Specific Conductivity (mS/cm): 0.351

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SW AMBIENT TEMP (°F): 50

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: AD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8270	SVOC
40ml/Vial	3	HCl	8260	VOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 10 DATE: 3/11/2015 START TIME: 13:47

WELL ID: LL10mw-003

WELL DEPTH: 28.54 INITIAL WATER LEVEL: 21.06 TOTAL PURGED (L) 5.5

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 18.5 - 28.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 23.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:47	21.20	0.1	0	0	0	0	0	0	0
13:52	21.22	0.1	0.5	10.65	0.39	4.99	5.73	0	100
13:57	21.23	0.1	0.5	10.49	0.391	5.2	5.75	0	123
14:02	21.22	0.15	0.75	10.55	0.391	5.34	5.97	0	124
14:07	21.22	0.15	0.75	10.55	0.391	5.41	5.98	0	135
14:12	21.22	0.15	0.75	10.74	0.393	5.58	6.03	0	134
14:17	21.22	0.15	0.75	10.74	0.393	5.48	6.1	0	137
14:22	21.23	0.15	0.75	10.77	0.394	5.48	6.15	0	138
14:27	21.23	0.15	0.75	10.87	0.395	5.52	6.13	0	142

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: SAS

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 10** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL10mw-003 SampleID: FWGLL10mw-003C-0535-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 14:30

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	0	Color:	Clear
	ORP (mV):	142	Odor:	None

pH: 6.13 Temperature (°C): 10.87 DO (mg/L): 5.52 Specific Conductivity (mS/cm): 0.395

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: AMBIENT TEMP (°F): 45

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: SAS Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8270	SVOC
40ml/Vial	3	HCl	8260	VOC

AFCEE FORM SR. 11

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 12 DATE: 3/11/2015 START TIME: 13:51

WELL ID: LL12mw-185

WELL DEPTH: 23.61 INITIAL WATER LEVEL: 7.33 TOTAL PURGED (L) 12.6

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 13 - 23

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 18

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,over 2 hours purged but turbidity still not at 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
14:00	6.82	0.2	0.1	0	0	0	0	0	0
14:02	7.65	0.15	0.3	9.3	5.59	3.04	6.51	26.2	178
14:05	8.30	0.15	0.45	9.27	5.58	3.03	6.49	30.9	176
14:08	8.30	0.15	0.45	9.26	5.58	3.09	6.48	31.7	174
14:11	8.94	0.1	0.3	9.22	5.56	2.13	6.47	34.1	172
14:14	9.27	0.1	0.3	9.2	5.57	3.47	6.47	36.3	170
14:17	9.56	0.1	0.3	9.17	5.57	3.19	6.47	38.8	169
14:20	9.89	0.1	0.3	9.22	5.56	3.1	6.47	38.7	168
14:23	10.21	0.1	0.3	9.17	5.56	2.5	6.46	43.7	167
14:26	10.61	0.1	0.3	9.16	5.55	2.29	6.47	45.2	166
14:29	10.93	0.1	0.3	9.23	5.55	2.6	6.47	40.2	165
14:32	11.23	0.1	0.3	9.26	5.54	2.74	6.48	41.6	165
14:35	11.48	0.1	0.3	9.29	5.55	3.28	6.49	45.8	164
14:38	11.73	0.1	0.3	9.36	5.53	3.51	6.49	43.7	164
14:41	11.98	0.1	0.3	9.37	5.53	3.19	6.49	46.1	164
14:44	12.25	0.1	0.3	9.39	5.53	3.64	6.5	48.2	164
14:47	12.54	0.1	0.3	9.37	5.52	2.1	6.51	50.4	165
14:50	12.77	0.1	0.3	9.38	5.51	2.07	6.52	51.6	165
14:53	13.22	0.1	0.3	9.39	5.51	2.15	6.53	52.5	166
14:56	13.22	0.1	0.3	9.42	5.51	2.15	6.53	53.5	166
14:59	13.31	0.1	0.3	9.43	5.49	2.19	6.53	53.7	166
15:02	13.65	0.1	0.3	9.39	5.49	2.28	6.54	54.7	167
15:05	13.77	0.1	0.3	9.37	5.48	2.31	6.55	28.1	167
15:08	13.81	0.1	0.3	9.41	5.48	2.38	6.56	27.5	168

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 12 DATE: 3/11/2015 START TIME: 13:51

WELL ID: LL12mw-185

WELL DEPTH: 23.61 INITIAL WATER LEVEL: 7.33 TOTAL PURGED (L) 12.6

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 13 - 23

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 18

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,over 2 hours purged but turbidity still not at 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
15:11	13.84	0.1	0.3	9.41	5.48	2.44	6.57	25.2	168
15:14	13.88	0.1	0.3	9.35	5.46	2.52	6.58	25.3	169
15:17	13.98	0.1	0.3	9.36	5.47	2.59	6.59	25.8	169
15:20	14.03	0.1	0.3	9.35	5.46	2.62	6.59	24.9	170
15:23	14.08	0.1	0.3	9.38	5.47	2.69	6.59	24.9	171
15:25	14.14	0.1	0.2	9.4	5.47	2.74	6.59	24.5	171
15:28	14.18	0.1	0.3	9.4	5.48	2.81	6.6	16.9	171
15:31	14.22	0.1	0.3	9.44	5.48	2.87	6.61	17.1	172
15:34	14.26	0.1	0.3	9.48	5.49	2.91	6.61	18.4	173
15:37	14.29	0.1	0.3	9.49	5.5	2.95	6.61	16.9	174
15:40	14.32	0.1	0.3	9.52	5.5	3	6.61	17.6	175
15:43	14.37	0.1	0.3	9.45	5.51	3.04	6.61	17.6	175
15:46	14.42	0.1	0.3	9.55	5.52	3.09	6.62	18	175
15:49	14.48	0.1	0.3	9.56	5.53	3.15	6.61	18.5	176
15:52	14.48	0.1	0.3	9.57	5.53	3.18	6.61	18.1	177
15:55	14.50	0.1	0.3	9.58	5.54	3.22	6.62	18.2	178
15:58	14.52	0.1	0.3	9.51	5.57	3.26	6.62	19	179
16:01	14.62	0.1	0.3	9.51	5.57	3.27	6.62	18.7	180

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 12** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL12mw-185 SampleID: FWGLL12mw-185C-0536-GW/GF Dup ID: FWGLL12mw-DUP4-0560-GW/GF

SplitID: FWGLL12mw-185C-0554s-GW/GF RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 16:11

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	18.3	Color:	Clear
	ORP (mV):	180	Odor:	None

pH: 6.62 Temperature (°C): 9.5 DO (mg/L): 3.29 Specific Conductivity (mS/cm): 5.57

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SE AMBIENT TEMP (°F): 52

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: EC Cmt: METALS ARSENIC ONLY

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
250ml/Poly	3	H2SO4	353.2	NO3/NO2
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 12 DATE: 3/12/2015 START TIME: 13:20

WELL ID: LL12mw-187

WELL DEPTH: 29.9 INITIAL WATER LEVEL: 8.96 TOTAL PURGED (L) 10

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 19.5 - 29.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 24.75

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,soft bottom

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:23	9.00	0.2	0	0	0	0	0	0	0
13:26	9.05	0.2	0.6	9.04	13.8	0.02	6.04	2.7	196
13:32	9.10	0.15	0.9	9.06	13.9	0.39	6.18	11.5	201
13:37	9.20	0.1	0.5	9.09	14	0.55	6.2	23.3	206
13:42	9.21	0.1	0.5	9.15	14.1	0.65	6.24	27	207
13:47	9.24	0.1	0.5	9.2	14.1	0.59	6.27	30.9	208
13:52	9.22	0.1	0.5	9.26	14.1	0.33	6.27	37.3	209
13:57	9.22	0.1	0.5	9.27	14.2	0.31	6.27	43.4	210
14:02	9.24	0.1	0.5	9.26	14.1	0.19	6.28	60.3	212
14:07	9.24	0.1	0.5	9.21	14.1	0.06	6.28	70.5	213
14:12	9.25	0.1	0.5	9.22	14.1	0	6.28	94.3	214
14:17	9.25	0.1	0.5	9.28	14.1	0	6.27	150	216
14:22	9.25	0.1	0.5	9.27	14	0	6.28	159	216
14:27	9.25	0.1	0.5	9.26	14	0	6.27	204	217
14:32	9.28	0.1	0.5	9.34	14	0	6.27	237	218
14:37	9.28	0.1	0.5	9.38	13.9	0	6.27	280	219
14:42	9.33	0.1	0.5	9.36	13.9	0	6.26	300	220
14:47	9.31	0.1	0.5	9.42	13.8	0	6.26	328	221
14:52	9.32	0.1	0.5	9.48	13.8	0	6.26	14.7	222
14:57	9.35	0.1	0.5	9.53	13.7	0	6.25	8.2	223

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 12** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL12mw-187 SampleID: FWGLL12mw-187C-0537-GW/GF Dup ID:

SplitID: RinseID: FWGEQUIPRinse4-0566-GW

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/12/2015 TIME: 15:01

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	8.5	Color:	Clear
	ORP (mV):	223	Odor:	None

pH: 6.25 Temperature (°C): 9.5 DO (mg/L): 0 Specific Conductivity (mS/cm): 13.7

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SE AMBIENT TEMP (°F): 48

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: AD Cmt: Rinse at 1630

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	2	4C	8270	SVOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
250ml/Poly	1	H2SO4	353.2	NO3/NO2

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 12 DATE: 3/12/2015 START TIME: 13:43

WELL ID: LL12mw-242

WELL DEPTH: 28.62 INITIAL WATER LEVEL: 7.89 TOTAL PURGED (L) 12.25

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 18.3 - 28.3

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 23.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Slightly Cloudy, Odor:None,Well needs new tubing, soft bottom, 2 hours purged but turbidity still not at 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:43	7.89	0.1	0	0	0	0	0	0	0
13:48	7.89	0.1	0.5	9.55	0.818	4.76	6.03	566	70
13:53	7.91	0.15	0.75	9.29	0.809	7.13	6.52	209	49
13:58	8.02	0.1	0.5	9.46	0.816	6	6.92	158	0
14:03	8.12	0.1	0.5	9.53	0.815	5.22	7.1	105	-4
14:08	8.12	0.1	0.5	9.59	0.813	5.11	7.1	96.3	5
14:13	8.12	0.1	0.5	9.74	0.813	5.02	7.11	102	7
14:18	8.12	0.1	0.5	9.76	0.813	4.95	7.11	100	4
14:23	8.15	0.1	0.5	9.54	0.817	4.71	7.22	127	-15
14:28	8.16	0.1	0.5	9.56	0.818	4.54	7.26	102	-23
14:33	8.16	0.1	0.5	9.6	0.817	4.61	7.27	92	-25
14:38	8.17	0.1	0.5	9.61	0.817	4.69	7.28	86	-28
14:43	8.20	0.1	0.5	9.38	0.811	5.08	7.29	94	-33
14:48	8.35	0.1	0.5	9.46	0.807	3.89	7.32	120	-39
14:53	8.35	0.1	0.5	9.46	0.807	3.69	7.33	133	-40
14:58	8.35	0.1	0.5	9.57	0.804	7.16	7.33	226	-45
15:03	8.35	0.1	0.5	9.55	0.805	7.18	7.35	258	-48
15:08	8.35	0.1	0.5	9.6	0.804	6.93	7.36	276	-51
15:13	8.35	0.1	0.5	9.56	0.805	6.74	7.38	359	-54
15:18	8.35	0.1	0.5	9.68	0.801	6.47	7.38	279	-55
15:23	8.35	0.1	0.5	9.36	0.807	6.35	7.38	218	-53
15:28	8.35	0.1	0.5	9.36	0.806	5.99	7.38	221	-54
15:33	8.35	0.1	0.5	9.82	0.797	2.18	7.37	189	-57
15:38	8.35	0.1	0.5	9.52	0.806	2.08	7.39	166	-57

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: BD

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 12 DATE: 3/12/2015 START TIME: 13:43

WELL ID: LL12mw-242

WELL DEPTH: 28.62 INITIAL WATER LEVEL: 7.89 TOTAL PURGED (L) 12.25

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 18.3 - 28.3

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 23.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Slightly Cloudy, Odor:None,Well needs new tubing, soft bottom, 2 hours purged but turbidity still not at 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
15:43	8.35	0.1	0.5	9.48	0.803	1.9	7.4	187	-62

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: BD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 12** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL12mw-242 SampleID: FWGLL12mw-242C-0538-GW Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/12/2015 TIME: 15:45

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	176	Color:	Slightly Cloudy
	ORP (mV):	-62	Odor:	None

pH: 7.4 Temperature (°C): 9.5 DO (mg/L): 1.94 Specific Conductivity (mS/cm): 0.803

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NE AMBIENT TEMP (°F): 48

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: BD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants
250ml/Poly	1	H2SO4	353.2	NO3/NO2
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 12 DATE: 3/12/2015 START TIME: 14:21

WELL ID: LL12mw-245

WELL DEPTH: 29.84 INITIAL WATER LEVEL: 7.33 TOTAL PURGED (L) 4.75

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 20 - 30

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 25

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
14:26	8.31	0.15	0	9.53	1.19	4.82	6.41	55.8	87
14:31	9.27	0.15	0.75	9.52	1.19	4	6.43	72.8	82
14:36	9.88	0.1	0.5	9.32	1.19	3.73	6.43	58.2	83
14:41	10.42	0.1	0.5	9.46	1.19	3.54	6.43	50.4	82
14:46	10.89	0.1	0.5	9.47	1.19	3.43	6.42	46.5	86
14:51	11.33	0.1	0.5	9.45	1.19	3.58	6.4	28.2	69
14:56	11.76	0.1	0.5	9.4	1.2	3.29	6.41	17.7	78
15:01	12.15	0.1	0.5	9.48	1.2	3.2	6.4	13.7	77
15:06	12.60	0.1	0.5	9.49	1.2	3.15	6.4	12.1	74
15:11	12.93	0.1	0.5	9.47	1.19	3.12	6.44	9.7	71

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: SAS

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 12** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL12mw-245 SampleID: FWGLL12mw-245C-0539-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/12/2015 TIME: 15:14

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	9.7	Color:	Clear
	ORP (mV):	71	Odor:	None

pH: 6.44 Temperature (°C): 9.47 DO (mg/L): 3.12 Specific Conductivity (mS/cm): 1.19

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SE AMBIENT TEMP (°F): 0

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: SAS Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	353.2/8330	Propellants
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8270	SVOC
250ml/Poly	1	H2SO4	353.2	NO3/NO2

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 12 DATE: 3/10/2015 START TIME: 13:55

WELL ID: LL12mw-247

WELL DEPTH: 22.22 INITIAL WATER LEVEL: 4.44 TOTAL PURGED (L) 11.9

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 12.5 - 22.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 17.5

PUMP READINGS: Throttle (ft.) Recharge: 12 Discharge: 5

COMMENTS Color: Clear, Odor:None,silty/soft bottom

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:56	4.32	0.1	0	0	0	0	0	0	0
14:00	4.44	0.1	0.4	8.76	0.824	8.6	5.83	106	222
14:05	4.56	0.1	0.5	8.37	0.834	6.15	6	107	211
14:10	4.69	0.1	0.5	8.01	0.843	4.99	6.05	110	175
14:15	4.58	0.1	0.5	7.73	0.852	4.31	6.13	80.1	151
14:20	4.69	0.1	0.5	7.68	0.853	4.11	6.15	75.4	106
14:25	4.83	0.1	0.5	7.46	0.857	3.51	6.18	54.2	69
14:30	4.92	0.1	0.5	7.21	0.863	3.13	6.15	45.4	46
14:35	5.03	0.1	0.5	7.2	0.864	3.11	6.2	40.1	34
14:40	5.20	0.1	0.5	7.28	0.865	3.01	6.23	34.2	28
14:45	5.29	0.1	0.5	7.31	0.863	3.03	6.22	31.5	27
14:50	5.33	0.1	0.5	7.29	0.863	3	6.23	28.4	28
14:55	5.39	0.1	0.5	7.28	0.864	2.99	6.23	25	27
15:00	5.44	0.1	0.5	7.27	0.864	2.94	6.23	24.5	26
15:05	5.50	0.1	0.5	7.26	0.864	2.89	6.24	22.3	24
15:10	5.53	0.1	0.5	7.29	0.864	2.86	6.25	22.1	24
15:15	5.56	0.1	0.5	7.28	0.865	2.85	6.26	21.7	23
15:20	5.60	0.1	0.5	7.27	0.865	2.85	6.26	21	22
15:25	5.62	0.1	0.5	7.25	0.865	2.84	6.3	18.9	20
15:30	5.65	0.1	0.5	7.24	0.865	2.8	6.32	17.6	14
15:35	5.68	0.1	0.5	7.25	0.865	2.93	6.3	16.5	12
15:40	5.70	0.1	0.5	7.23	0.866	2.78	6.32	14.9	9
15:45	5.80	0.1	0.5	7.21	0.866	2.71	6.36	12.4	4
15:50	5.87	0.1	0.5	7.2	0.867	2.71	6.36	11.4	30

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: LOADLINE 12 DATE: 3/10/2015 START TIME: 13:55

WELL ID: LL12mw-247

WELL DEPTH: 22.22 INITIAL WATER LEVEL: 4.44 TOTAL PURGED (L) 11.9

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 12.5 - 22.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 17.5

PUMP READINGS: Throttle (ft.) Recharge: 12 Discharge: 5

COMMENTS Color: Clear, Odor:None,silty/soft bottom

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
15:55	5.90	0.1	0.5	7.22	0.867	2.72	6.37	9.9	2

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **LOADLINE 12** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL12mw-247 SampleID: FWGLL12mw-247-0540-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: Y

GRAB: **Y** COMPOSITE: **N** DATE: 3/10/2015 TIME: 16:00

FIELD READINGS / OBSERVATIONS

	Turb (NTU): 10.3	Color:	Clear
	ORP (mV): 2	Odor:	None

pH: 6.32 Temperature (°C): 7.22 DO (mg/L): 2.7 Specific Conductivity (mS/cm): 0.867

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: BD Cmt: MSMSD on NO2NO3 only, 9.9 NTU at end of 2 hr purge

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
250ml/Poly	1	buffered,4C	7196A	Hex. Chromium, filtered
1L/Amber	2	4C	8270	SVOC
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
250ml/Poly	3	H2SO4	353.2	NO3/NO2

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: NACA TEST AREA DATE: 3/25/2015 START TIME: 8:33

WELL ID: NTAmw-119

WELL DEPTH: 104.4 INITIAL WATER LEVEL: 11.48 TOTAL PURGED (L) 30

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 94 - 104

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 99.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,2 hours purged but turbidity still not at 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
8:45	11.50	0.2	0	0	0	0	0	0	0
8:50	11.50	0.25	1.25	7.03	0.593	1.96	6.21	204	-102
8:55	11.50	0.25	1.25	7.42	0.576	1.14	6.44	265	-107
9:00	11.50	0.25	1.25	7.6	0.573	0.8	6.63	195	-111
9:05	11.50	0.25	1.25	7.73	0.573	1.79	6.7	144	-110
9:10	11.50	0.25	1.25	7.78	0.572	1.62	6.75	120	-110
9:15	11.50	0.25	1.25	7.81	0.572	1.51	6.8	99.7	-112
9:20	11.50	0.25	1.25	7.82	0.572	1.37	6.83	82.4	-114
9:25	11.50	0.25	1.25	7.86	0.571	1.25	6.87	70.4	-115
9:30	11.50	0.25	1.25	7.87	0.571	1.13	6.91	63.8	-117
9:35	11.50	0.25	1.25	7.92	0.571	1.08	6.92	58.9	-118
9:40	11.50	0.25	1.25	7.99	0.571	1.05	6.93	50.5	-120
9:45	11.50	0.25	1.25	8.05	0.571	1	6.95	49	-120
9:50	11.50	0.25	1.25	8.05	0.571	0.94	6.97	48.1	-122
9:55	11.50	0.25	1.25	8.06	0.571	0.85	7.04	45.3	-126
10:00	11.50	0.25	1.25	7.96	0.571	0.76	7.11	43.3	-132
10:05	11.50	0.25	1.25	8.04	0.571	0.72	7.17	40.6	-134
10:10	11.50	0.25	1.25	8.01	0.57	0.67	7.21	36.5	-136
10:15	11.50	0.25	1.25	7.93	0.57	0.65	7.19	33.8	-137
10:20	11.50	0.25	1.25	8.12	0.571	0.61	7.23	32.1	-138
10:25	11.50	0.25	1.25	8.11	0.57	0.57	7.23	29.6	-138
10:30	11.50	0.25	1.25	8.1	0.571	0.56	7.25	25.9	-138
10:35	11.50	0.25	1.25	8.07	0.571	0.55	7.24	25.1	-139
10:40	11.50	0.25	1.25	8.16	0.57	0.5	7.22	24.7	-138

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: NACA TEST AREA DATE: 3/25/2015 START TIME: 8:33

WELL ID: NTAmw-119

WELL DEPTH: 104.4 INITIAL WATER LEVEL: 11.48 TOTAL PURGED (L) 30

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 94 - 104

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 99.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,2 hours purged but turbidity still not at 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
10:45	11.50	0.25	1.25	8.1	0.57	0.49	7.2	23.1	-138

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **NACA TEST AREA** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: NTAmw-119 SampleID: FWGNTAmw-119-0541-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/25/2015 TIME: 10:47

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	24.1	Color:	Clear
	ORP (mV):	-138	Odor:	None

pH: 7.2 Temperature (°C): 8.13 DO (mg/L): 0.48 Specific Conductivity (mS/cm): 0.57

GENERAL INFORMATION

SUN/OVERCAST PERCIPITATION: WIND DIRECTION: S AMBIENT TEMP (°F): 0

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
40ml/Vial	3	HCl	8260	VOC
1L/Amber	2	4C	8270	SVOC
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: RAMSDELL QUARRY LANDFILL DATE: 3/12/2015 START TIME: 8:56

WELL ID: RQLmw-007

WELL DEPTH: 18.62 INITIAL WATER LEVEL: 6.3 TOTAL PURGED (L) 9

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 8 - 18

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 13

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:01	6.60	0.15	0	5.41	0.618	9.11	5.71	189	-14
9:06	6.68	0.15	0.75	5.03	0.627	8.75	6.06	143	-19
9:11	6.68	0.15	0.75	4.83	0.643	8.48	6.14	119	-25
9:16	6.67	0.15	0.75	4.8	0.659	8.16	6.17	99.3	-34
9:21	6.67	0.15	0.75	4.77	0.685	7.73	6.16	76.8	-38
9:26	6.68	0.15	0.75	4.81	0.72	7.96	6.19	57.6	-45
9:31	6.70	0.15	0.75	4.82	0.739	7.21	6.2	46.9	-49
9:36	6.69	0.15	0.75	4.94	0.76	6.06	6.21	35	-53
9:41	6.68	0.15	0.75	5	0.777	5.85	6.18	26.2	-54
9:46	6.70	0.15	0.75	5.06	0.796	5.71	6.2	21.5	-56
9:51	6.69	0.15	0.75	5.17	0.812	5.6	6.2	15.7	-59
9:56	6.70	0.15	0.75	5.29	0.826	5.48	6.23	10.6	-61
10:01	6.70	0.15	0.75	5.31	0.834	5.35	6.23	5.8	-62

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: SAS

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **RAMSDELL QUARRY** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: RQLmw-007 SampleID: FWGRQLmw-007C-0542-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: Y

GRAB: **Y** COMPOSITE: **N** DATE: 3/12/2015 TIME: 10:08

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	5.8	Color:	Clear
	ORP (mV):	-62	Odor:	None

pH: 6.23 Temperature (°C): 5.31 DO (mg/L): 5.35 Specific Conductivity (mS/cm): 0.834

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SW AMBIENT TEMP (°F): 0

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: SAS Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
250ml/Poly	3	NaOH	9012	Cyanide
1L/Amber	6	4C	353.2/8330	Propellants
1L/Amber	3	4C	8330	Explo
1L/Amber	6	4C	8082	PCB
1L/Amber	6	4C	8081	Pest
1L/Amber	6	4C	8270	SVOC
40ml/Vial	9	HCl	8260	VOC
500ml/Poly	3	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: RAMSDELL QUARRY LANDFILL DATE: 3/12/2015 START TIME: 9:10

WELL ID: RQLmw-008

WELL DEPTH: 18.67 INITIAL WATER LEVEL: 6.55 TOTAL PURGED (L) 6.05

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 8.5 - 18.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 13.5

PUMP READINGS: Throttle (ft.) Recharge: 11 Discharge: 4

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:12	6.56	0.05	0	0	0	0	0	0	0
9:20	6.56	0.1	0.8	3.97	0.744	3.26	5.77	65.8	-34
9:25	6.57	0.15	0.75	2.93	0.741	4.31	5.82	59.4	-31
9:30	6.60	0.15	0.75	3.04	0.742	5.61	5.88	36.9	-36
9:35	6.62	0.15	0.75	3.14	0.745	5.84	5.92	10.7	-39
9:40	6.65	0.15	0.75	3.21	0.744	5.95	5.98	9.8	-41
9:45	6.66	0.15	0.75	3.24	0.742	5.87	6.05	5.4	-45
9:50	6.65	0.15	0.75	3.28	0.737	5.75	6.09	2.6	-49
9:55	6.65	0.15	0.75	3.32	0.735	5.6	6.13	0.4	-52

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **RAMSDELL QUARRY** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: RQLmw-008 SampleID: FWGRQLmw-008C-0543-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/12/2015 TIME: 9:57

FIELD READINGS / OBSERVATIONS

	Turb (NTU): 0	Color:	Clear
	ORP (mV): -53	Odor:	None

pH: 6.16 Temperature (°C): 3.31 DO (mg/L): 5.48 Specific Conductivity (mS/cm): 0.734

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: NW AMBIENT TEMP (°F): 37

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
40ml/Vial	3	HCl	8260	VOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
250ml/Poly	1	NaOH	9012	Cyanide
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8082	PCB
1L/Amber	2	4C	8081	Pest
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: RAMSDELL QUARRY LANDFILL DATE: 3/12/2015 START TIME: 8:58

WELL ID: RQLmw-009

WELL DEPTH: 18.56 INITIAL WATER LEVEL: 5.44 TOTAL PURGED (L) 10.65

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 8.4 - 18.4

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 13.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:02	5.35	0.2	0.5	0	0	0	0	0	0
9:06	5.77	0.1	0.4	3.98	0.269	0.36	6.2	779	113
9:09	5.78	0.1	0.3	4.05	0.261	0	6.12	176	72
9:15	5.78	0.1	0.6	4.13	0.255	0	6.02	141	47
9:20	5.78	0.1	0.5	4.24	0.256	0	5.93	93.1	41
9:25	5.78	0.1	0.5	4.21	0.256	0	5.88	71.1	41
9:30	5.78	0.1	0.5	4.25	0.256	0	5.83	51.4	42
9:35	5.78	0.1	0.5	4.33	0.255	0	5.83	33.8	43
9:40	5.78	0.1	0.5	4.34	0.254	0.08	5.84	36.6	42
9:45	5.78	0.1	0.5	4.35	0.254	0.39	5.89	30.5	40
9:48	5.78	0.1	0.3	4.41	0.253	0.52	5.92	32.3	38
9:51	5.78	0.1	0.3	4.44	0.253	0.68	5.95	27.6	36
9:54	5.78	0.1	0.3	4.54	0.253	0.79	5.99	27.6	35
9:57	5.78	0.1	0.3	4.5	0.252	0.93	6.02	31.6	33
10:00	5.78	0.1	0.3	4.54	0.252	1.04	6.05	22.3	32
10:03	5.78	0.1	0.3	4.61	0.25	1.16	6.08	21.1	31
10:06	5.78	0.15	0.45	4.68	0.25	1.28	6.1	21.3	31
10:09	5.78	0.15	0.45	4.72	0.25	1.4	6.1	21	31
10:12	5.78	0.15	0.45	4.74	0.251	1.44	6.09	18.2	31
10:15	5.78	0.15	0.45	4.74	0.253	1.49	6.09	16.1	31
10:18	5.78	0.15	0.45	4.75	0.255	1.65	6.07	15.9	34
10:21	5.78	0.15	0.45	4.74	0.258	1.91	6.05	14.9	35
10:24	5.78	0.15	0.45	4.83	0.259	2.06	6.05	12.5	34
10:27	5.78	0.15	0.45	4.81	0.261	2.22	6.06	8.4	34

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: RAMSDELL QUARRY LANDFILL DATE: 3/12/2015 START TIME: 8:58

WELL ID: RQLmw-009

WELL DEPTH: 18.56 INITIAL WATER LEVEL: 5.44 TOTAL PURGED (L) 10.65

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 8.4 - 18.4

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 13.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
10:30	5.78	0.15	0.45	4.78	0.263	2.31	6.07	9.7	33

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **RAMSDELL QUARRY** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: RQLmw-009 SampleID: FWGRQLmw-009C-0544-GW/GF Dup ID: FWGRQLmw-DUP5-0561-GW/GF

SplitID: FWGRQLmw-009C-0555s-GW/GF RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/12/2015 TIME: 10:41

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	7.4	Color:	Clear
	ORP (mV):	33	Odor:	None

pH: 6.08 Temperature (°C): 4.78 DO (mg/L): 2.34 Specific Conductivity (mS/cm): 0.263

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SE AMBIENT TEMP (°F): 35

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: EC Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	6	4C	8270	SVOC
40ml/Vial	9	HCl	8260	VOC
1L/Amber	4	4C	8330	Explo
1L/Amber	5	4C	353.2/8330	Propellants
1L/Amber	5	4C	8082	PCB
250ml/Poly	1	NaOH	9012	Cyanide
1L/Amber	5	4C	8081	Pest

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: RAMSDELL QUARRY LANDFILL DATE: 3/12/2015 START TIME: 10:33

WELL ID: RQLmw-011

WELL DEPTH: 35.32 INITIAL WATER LEVEL: 22.18 TOTAL PURGED (L) 13

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 12.4 - 32.4

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 25.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: , Odor:,for pH monitoring only

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:05	22.18	0.2	0	0	0	0	0	0	0
11:10	22.50	0.2	1	7.93	0.184	2.97	4.16	0.1	320
11:15	22.35	0.1	0.5	7.49	0.183	2.57	3.89	0	367
11:20	22.30	0.1	0.5	7.25	0.184	2.42	3.75	0	382
11:25	22.28	0.1	0.5	7.4	0.186	2.29	3.74	0	379
11:30	22.30	0.1	0.5	7.34	0.19	2.2	3.73	0	375
11:35	22.30	0.1	0.5	7.24	0.193	2.27	3.71	0	373
11:40	22.30	0.1	0.5	7.39	0.196	2.05	3.71	0	369
11:45	22.30	0.1	0.5	7.23	0.2	2.01	3.71	0	365
11:50	22.30	0.1	0.5	7.17	0.204	1.96	3.72	0	360
11:55	22.30	0.1	0.5	7.38	0.211	1.91	3.78	0	349
12:00	22.30	0.1	0.5	7.01	0.216	1.87	3.78	0	344
12:05	22.29	0.1	0.5	7	0.225	2.34	3.84	0	333
12:10	22.30	0.1	0.5	7.13	0.238	1.77	3.92	0	319
12:15	22.30	0.1	0.5	7.22	0.245	1.71	3.97	0	310
12:20	22.30	0.1	0.5	7.25	0.251	1.71	4.01	0	302
12:25	22.30	0.1	0.5	7.17	0.258	1.67	4.07	0	294
12:30	22.30	0.1	0.5	6.87	0.264	1.66	4.13	0	285
12:35	22.30	0.1	0.5	7.07	0.271	1.86	4.17	0	277
12:40	22.30	0.1	0.5	7.2	0.277	1.6	4.23	0	270
12:45	22.30	0.1	0.5	7	0.282	1.61	4.26	0	264
12:50	22.30	0.1	0.5	7.08	0.288	1.61	4.33	0	255
12:55	22.30	0.1	0.5	7.23	0.292	1.63	4.3	0	253
13:00	22.30	0.1	0.5	7.35	0.297	1.61	4.34	0	247

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: RAMSDELL QUARRY LANDFILL DATE: 3/12/2015 START TIME: 10:33

WELL ID: RQLmw-011

WELL DEPTH: 35.32 INITIAL WATER LEVEL: 22.18 TOTAL PURGED (L) 13

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 12.4 - 32.4

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 25.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: , Odor:,for pH monitoring only

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:05	22.30	0.1	0.5	7.31	0.301	1.77	4.4	0	238

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: RAMSDELL QUARRY LANDFILL DATE: 3/12/2015 START TIME: 9:25

WELL ID: RQLmw-012

WELL DEPTH: 32.62 INITIAL WATER LEVEL: 22.55 TOTAL PURGED (L) 16.3

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 19.8 - 29.8

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 28

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: , Odor:,For field pH monitoring only

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:30	22.59	0.2	0	0	0	0	0	0	0
9:34	22.59	0.2	0.8	7.28	0.25	7.91	4.64	44.7	224
9:39	22.59	0.2	1	7.53	0.303	7.28	4.76	26.7	216
9:44	22.59	0.2	1	7.5	0.349	6.88	4.89	16.8	209
9:49	22.59	0.2	1	7.61	0.398	6.47	5.02	13	202
9:54	22.59	0.2	1	7.64	0.441	6.15	5.13	10.3	194
9:59	22.59	0.2	1	7.56	0.465	5.91	5.2	8.8	188
10:04	22.59	0.2	1	7.5	0.481	5.84	5.24	7	183
10:09	22.59	0.2	1	7.63	0.505	5.73	5.29	6.7	177
10:14	22.59	0.2	1	7.45	0.519	5.61	5.33	5.7	172
10:19	22.59	0.2	1	7.38	0.536	5.55	5.35	4.4	167
10:24	22.59	0.2	1	7.47	0.548	5.46	5.39	3.4	164
10:29	22.59	0.2	1	7.49	0.559	5.37	5.42	3	159
10:34	22.59	0.2	1	7.3	0.567	5.3	5.44	3.9	156
10:39	22.59	0.2	1	7.42	0.574	5.28	5.46	3.3	153
10:44	22.59	0.2	1	7.39	0.58	5.22	5.49	3.4	151
10:49	22.59	0.2	1	7.43	0.58	5.23	5.5	3.2	149

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: RAMSDELL QUARRY LANDFILL DATE: 3/12/2015 START TIME: 11:44

WELL ID: RQLmw-013

WELL DEPTH: 36.43 INITIAL WATER LEVEL: 25.66 TOTAL PURGED (L) 6

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 23.7 - 33.7

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 30

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: , Odor:,For field pH monitoring only

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:44	25.66	0.15	0	0	0	0	0	0	0
11:49	25.88	0.15	0.75	9.07	0.342	2.17	4.45	29.4	204
11:54	25.88	0.15	0.75	9.39	0.338	2.34	4.31	17.2	219
11:59	25.89	0.15	0.75	9.54	0.343	2.68	4.21	12.6	239
12:04	25.89	0.15	0.75	9.57	0.354	2.83	4.16	7.4	249
12:09	25.89	0.15	0.75	9.62	0.357	2.8	4.15	6.8	250
12:14	25.89	0.15	0.75	9.67	0.359	2.78	4.15	5.1	249
12:19	25.90	0.15	0.75	9.68	0.359	2.68	4.15	4.3	251
12:24	25.91	0.15	0.75	9.62	0.361	2.66	4.15	4.8	251

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: BD

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: SHARON CONGLOMERATE DATE: 3/10/2015 START TIME: 13:40

WELL ID: SCFmw-002

WELL DEPTH: 149.9 INITIAL WATER LEVEL: 18.84 TOTAL PURGED (L) 9.6

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 140 - 150

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 145

PUMP READINGS: Throttle (ft.) Recharge: 30 Discharge: 30

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
13:47	18.88	0.3	0	0	0	0	0	0	0
13:50	18.99	0.3	0.6	9.22	0.635	1.51	5.75	0	-80
13:55	19.03	0.3	1.5	9.28	0.634	1.03	5.74	0	-72
14:00	19.05	0.3	1.5	9.22	0.634	0.98	5.75	0	-73
14:05	19.06	0.3	1.5	9.3	0.634	0.89	5.79	0	-74
14:10	19.07	0.3	1.5	9.26	0.634	0.8	5.8	0	-77
14:15	19.08	0.3	1.5	9.28	0.633	0.81	5.79	0	-75
14:20	19.09	0.3	1.5	9.32	0.634	0.73	5.77	0	-75
14:22	0.00	0	0	0	0	0	0	0	0

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **SHARON CONGLOM** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: SCFmw-002 SampleID: FWGSCFmw-002-0545-GW/GF Dup ID: FWGSCF-DUP6-0562-GW/GF

SplitID: FWGSCFmw-002-0556s-GW/GF RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: Y

GRAB: **Y** COMPOSITE: **N** DATE: 3/10/2015 TIME: 14:27

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	0	Color:	Clear
	ORP (mV):	-75	Odor:	None

pH: 5.75 Temperature (°C): 9.3 DO (mg/L): 0.75 Specific Conductivity (mS/cm): 0.633

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: Y WIND DIRECTION: SW AMBIENT TEMP (°F): 40

SHIPPED VIA: Lab PU/FedEx

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt: 1500 for Dup, moved MSMSD from ll12-247 to here

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8081	Pest
1L/Amber	10	4C	8270	SVOC
1L/Amber	3	4C	8330	Explo
1L/Amber	6	4C	353.2/8330	Propellants
250ml/Poly	1	buffered,4C	7196A	Hex. Chromium, filtered
500ml/Poly	5	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: SHARON CONGLOMERATE DATE: 3/10/2015 START TIME: 9:28

WELL ID: SCFmw-004

WELL DEPTH: 112.5 INITIAL WATER LEVEL: -0.2 TOTAL PURGED (L) 11.2

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 102.5 - 112.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 107.5

PUMP READINGS: Throttle (ft.) Recharge: 30 Discharge: 30

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
9:33	-0.20	0.15	0	0	0	0	0	0	0
9:40	-0.20	0.35	2.45	8.94	1.13	1.36	5.03	0	-107
9:45	-0.20	0.35	1.75	9.1	1.11	1.05	5.23	0	-125
9:50	-0.20	0.35	1.75	9.22	1.11	0.84	5.49	0	-141
9:55	-0.20	0.35	1.75	9.24	1.1	0.77	5.56	0	-142
10:00	-0.20	0.35	1.75	9.36	1.1	0.71	5.57	0	-148
10:05	-0.20	0.35	1.75	9.36	1.1	0.81	5.62	0	-150

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: CAL

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **SHARON CONGLOM** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: SCFmw-004 SampleID: FWGSFmw-004-0546-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/10/2015 TIME: 10:07

FIELD READINGS / OBSERVATIONS

	Turb (NTU): 0	Color:	Clear
	ORP (mV): -149	Odor:	None

pH: 5.63 Temperature (°C): 9.26 DO (mg/L): 0.7 Specific Conductivity (mS/cm): 1.09

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: W AMBIENT TEMP (°F): 38

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	353.2/8330	Propellants
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8270	SVOC
1L/Amber	2	4C	8081	Pest

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: WINKLEPECK BURNING GROUN DATE: 3/11/2015 START TIME: 8:46

WELL ID: WBGmw-006

WELL DEPTH: 20.2 INITIAL WATER LEVEL: 5.69 TOTAL PURGED (L) 12.5

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 10.1 - 20.1

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 15

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,over 2 hours purged but turbidity still not at 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
8:50	5.69	0.2	0.1	0	0	0	0	0	0
8:53	5.85	0.1	0.3	7.2	0.885	1.45	5.76	56.2	256
8:56	5.86	0.1	0.3	7.19	0.854	0	6.04	47.8	245
8:59	5.86	0.1	0.3	7.26	0.844	0	6.2	42.7	240
9:02	5.87	0.1	0.3	7.3	0.842	0.37	6.32	51.1	237
9:05	5.87	0.1	0.3	7.34	0.842	0.65	6.37	43.1	236
9:08	5.87	0.1	0.3	7.32	0.842	1.01	6.42	36.6	236
9:11	5.87	0.1	0.3	7.34	0.842	1.26	6.45	37	235
9:14	5.87	0.1	0.3	7.4	0.841	1.49	6.49	35.1	234
9:17	5.87	0.1	0.3	7.38	0.841	1.74	6.54	33.3	233
9:20	5.87	0.1	0.3	7.43	0.842	1.89	6.58	34.2	231
9:23	5.87	0.1	0.3	7.48	0.841	2.02	6.63	32.4	230
9:26	5.87	0.1	0.3	7.52	0.84	2.16	6.68	32.6	228
9:29	5.87	0.1	0.3	7.55	0.84	2.16	6.69	32.4	227
9:32	5.87	0.1	0.3	7.59	0.839	2.17	6.73	34.9	226
9:35	5.87	0.1	0.3	7.59	0.837	2.29	6.77	35.4	223
9:38	5.87	0.1	0.3	7.59	0.838	2.46	6.81	35.8	222
9:41	5.87	0.1	0.3	7.59	0.838	2.36	6.83	33.8	221
9:44	5.87	0.1	0.6	7.64	0.837	2.55	6.87	35.9	218
9:47	5.87	0.1	0.1	7.65	0.838	2.5	6.88	34	218
9:50	5.87	0.1	0.3	7.68	0.838	2.52	6.9	35.4	217
9:53	5.87	0.1	0.3	7.65	0.836	2.51	6.91	36.5	216
9:56	5.87	0.1	0.3	7.67	0.836	2.5	6.92	36.1	215
9:59	5.88	0.1	0.3	7.66	0.838	2.55	6.93	37.3	214

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: WINKLEPECK BURNING GROUN DATE: 3/11/2015 START TIME: 8:46

WELL ID: WBGmw-006

WELL DEPTH: 20.2 INITIAL WATER LEVEL: 5.69 TOTAL PURGED (L) 12.5

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 10.1 - 20.1

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 15

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,over 2 hours purged but turbidity still not at 10 NTUs

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
10:02	5.88	0.1	0.3	7.68	0.837	2.55	6.95	38.2	213
10:05	5.88	0.1	0.3	7.69	0.837	2.55	6.98	37.7	211
10:08	5.89	0.1	0.3	7.76	0.838	2.6	6.98	37.7	210
10:11	5.89	0.1	0.3	7.75	0.837	2.57	7	38.5	209
10:14	5.89	0.1	0.3	7.77	0.838	2.54	7	36.8	208
10:17	5.89	0.1	0.3	7.83	0.838	2.44	7.01	38.5	207
10:20	5.89	0.1	0.3	7.91	0.84	2.18	7.01	37.1	206
10:23	5.89	0.1	0.3	7.94	0.84	2.13	7.02	38.1	205
10:26	5.89	0.1	0.3	8	0.84	2.15	7.03	38.5	204
10:29	5.90	0.1	0.3	8.01	0.84	2.02	7.04	38.5	203
10:32	5.90	0.1	0.3	8.03	0.84	1.91	7.05	38.6	203
10:35	5.92	0.1	0.3	8.04	0.838	1.76	7.05	39.4	202
10:38	5.93	0.1	0.3	7.99	0.839	1.67	7.05	39.9	202
10:41	5.93	0.1	0.3	8	0.84	1.6	7.05	40.3	202
10:44	5.93	0.1	0.3	8.02	0.84	1.51	7.05	40.9	202
10:47	5.93	0.1	0.3	8	0.839	1.33	7.06	42.9	203
10:50	5.93	0.1	0.3	7.99	0.839	1.19	7.06	43.1	203
10:53	5.93	0.1	0.3	7.97	0.838	1.28	7.06	44.4	203

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **WINKLEPECK BURN** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: WBGmw-006 SampleID: FWGWBGmw-006C-0547-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 11:01

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	45.1	Color:	Clear
	ORP (mV):	203	Odor:	None

pH: 7.06 Temperature (°C): 7.99 DO (mg/L): 1.26 Specific Conductivity (mS/cm): 0.839

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: SE AMBIENT TEMP (°F): 37

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: EC Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8270	SVOC
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: WINKLEPECK BURNING GROUN DATE: 3/11/2015 START TIME: 10:20

WELL ID: WBGmw-009

WELL DEPTH: 24.1 INITIAL WATER LEVEL: 11.51 TOTAL PURGED (L) 11.1

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 14 - 24

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 19

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,top casing extension pulled off, Put back on but is loose. At 1116 noticed controller no longer pumping. Changed controller. At 1131 changed to 2cpm

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
10:23	11.55	0.2	0	0	0	0	0	0	0
10:26	11.69	0.1	0.1	6.44	0.324	3.62	6.05	40.9	78
10:31	12.04	0.1	0.5	6.7	0.314	4.2	5.94	33.7	84
10:36	11.95	0.1	0.5	6.7	0.307	4.65	5.9	34.5	85
10:41	11.81	0.1	0.5	6.64	0.305	4.89	5.89	30.1	85
10:46	11.71	0.1	0.5	6.5	0.307	4.77	5.87	24.7	83
10:51	11.65	0.1	0.5	6.36	0.307	4.75	5.89	24.2	82
10:56	11.61	0.1	0.5	6.22	0.309	4.73	5.89	22.8	85
11:01	11.59	0.1	0.5	6.02	0.313	4.6	5.87	21.7	86
11:06	11.55	0.1	0.5	5.86	0.314	4.63	5.87	20.7	86
11:11	11.56	0.1	0.5	5.78	0.315	4.63	5.87	19.5	87
11:16	11.51	0.1	0.5	5.73	0.316	4.63	5.87	19.8	89
11:21	11.71	0.1	0.5	5.62	0.314	4.56	5.83	36	92
11:26	12.10	0.1	0.5	6.72	0.315	4.76	5.84	31.6	96
11:31	12.55	0.1	0.5	6.79	0.31	4.96	5.83	25.6	99
11:36	12.80	0.1	0.5	7.12	0.307	5.04	5.83	24.4	102
11:41	13.09	0.1	0.5	7.35	0.311	5.64	5.84	22	104
11:46	13.35	0.1	0.5	7.49	0.318	6	5.86	19.4	105
11:51	13.51	0.1	0.5	7.69	0.324	5.78	5.87	17.2	106
11:56	13.68	0.1	0.5	7.8	0.329	5.61	5.88	12	105
12:01	13.71	0.1	0.5	7.83	0.337	5.47	5.9	9.9	105
12:06	13.70	0.1	0.5	8.04	0.343	5.36	5.93	10.3	104
12:11	13.75	0.1	0.5	8.02	0.345	5.28	5.94	9.5	104

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **WINKLEPECK BURN** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: WBGmw-009 SampleID: FWGWBGmw-009-0548-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 12:13

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	8.2	Color:	Clear
	ORP (mV):	103	Odor:	None

pH: 5.95 Temperature (°C): 8.02 DO (mg/L): 5.27 Specific Conductivity (mS/cm): 3.46

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: SW AMBIENT TEMP (°F): 39

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: BD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	8270	SVOC
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: WINKLEPECK BURNING GROUN DATE: 3/11/2015 START TIME: 8:45

WELL ID: WBGmw-020

WELL DEPTH: 44.19 INITIAL WATER LEVEL: 11.25 TOTAL PURGED (L) 7.9

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 33.5 - 43.5

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 38.5

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
8:50	11.26	0.2	0	0	0	0	0	0	0
8:54	11.39	0.2	0.8	7.53	0.313	4.13	6.25	31.3	-24
8:57	11.40	0.2	0.6	8.07	0.31	2.72	6.45	25.6	-57
9:02	11.50	0.2	1	9.15	0.297	2.49	6.55	9.1	-66
9:07	11.40	0.2	1	8.55	0.298	2.56	6.67	8.1	-66
9:12	11.40	0.2	1	8.24	0.293	2.7	6.71	5.1	-65
9:17	11.40	0.2	1	8.14	0.29	2.75	6.73	5.4	-64
9:22	11.40	0.2	1	8.17	0.287	2.77	6.75	2	-65
9:27	11.40	0.2	1	8.21	0.284	2.77	6.76	2.3	-66

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: AD

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **WINKLEPECK BURN** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: WBGmw-020 SampleID: FWGWBG-mw-020-0549-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 9:31

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	1.4	Color:	Clear
	ORP (mV):	-67	Odor:	None

pH: 6.77 Temperature (°C): 8.29 DO (mg/L): 2.75 Specific Conductivity (mS/cm): 0.283

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: SW AMBIENT TEMP (°F): 37

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: BD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants
1L/Amber	1	4C	8330	Explo
1L/Amber	2	4C	8270	SVOC

EQM MONITOR WELL PURGING FORM

PROJECT NAME: **RVAAP** PROJECT NUMBER: **030174.0016.001**

LOCATION: WINKLEPECK BURNING GROUN DATE: 3/11/2015 START TIME: 11:26

WELL ID: WBGmw-021

WELL DEPTH: 43.01 INITIAL WATER LEVEL: 8.28 TOTAL PURGED (L) 6.2

WELL DIAMETER 2 in. APPROXIMATE SCREEN INTERVAL: 33 - 43

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 38

PUMP READINGS: Throttle (ft.) Recharge: 10 Discharge: 5

COMMENTS Color: Clear, Odor:None,

TIME	WATER LEVEL (btoc)	PURGE RATE (L/min)	VOLUME PURGED (L)	TEMP. (°C)	SPECIFIC CONDUCT. (mS/cm)	DO (mg/L)	pH	Turb (NTU)	ORP (mV)
11:35	8.30	0.15	0.5	0	0	0	0	0	0
11:40	8.31	0.15	0.75	9.11	0.791	0.12	7.01	7.9	-21
11:43	8.31	0.15	0.45	9.72	0.784	0.76	6.99	12	-27
11:46	8.31	0.15	0.45	9.88	0.782	1.11	6.99	18.9	-25
11:49	8.31	0.15	0.45	9.92	0.778	1.27	6.99	29.8	-12
11:52	8.31	0.15	0.45	9.94	0.779	1.18	6.99	34.5	-5
11:55	8.31	0.15	0.45	10.01	0.778	1.13	6.99	34.2	-1
11:58	8.31	0.15	0.45	10.04	0.777	0.95	6.99	21.2	-2
12:01	8.31	0.15	0.45	10.11	0.777	0.49	7	16.5	-1
12:04	8.31	0.15	0.45	10.14	0.777	0.12	7	12.5	-1
12:07	8.31	0.15	0.45	10.15	0.778	0	7	9.2	1
12:10	8.32	0.15	0.45	10.19	0.779	0	7	9.7	2
12:13	8.32	0.15	0.45	10.21	0.779	0	7	7.2	2

Note: Condition of the well: See STATIC WATER LEVEL FORM, Note: All depths in feet BTOC.

Field Personnel: EC

EQM FIELD SAMPLING REPORT

PROJECT: **RVAAP** LOCATION: **WINKLEPECK BURN** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: WBGmw-021 SampleID: FWGWBGmw-021-0550-GW/GF Dup ID:

SplitID: RinseID:

MATRIX: WG - Ground Water SAMPLING METHOD: BP - Bladder Pump MS/MSD: N

GRAB: **Y** COMPOSITE: **N** DATE: 3/11/2015 TIME: 12:21

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	6.3	Color:	Clear
	ORP (mV):	2	Odor:	None

pH: 6.99 Temperature (°C): 10.21 DO (mg/L): 0 Specific Conductivity (mS/cm): 0.781

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: SE AMBIENT TEMP (°F): 38

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: EC Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	2	4C	8270	SVOC
1L/Amber	1	4C	8330	Explo
500ml/Poly	1	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	2	4C	353.2/8330	Propellants

Daily QC Records

Date: 9-Mar

S	X M	T	W	T	F	S

DAILY QUALITY CONTROL REPORT

COE Project Manager Greg Moore

Project Ravenna Army Ammunition Plant Groundwater Monitoring

Job No. 030174.0016.001

Contract No. GSA Contract Number GS-10F-0293K Delivery Order W912QR-11-F-0266

Weather	Bright Sun	Clear	Over-Cast x	Rain	Snow
Temp	To 32	32-50 x	50-70	70-85	85 up
Wind	Still x	Moder x	High	Report No.	
Humidity	Dry	Moder x	Humid x	030915	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, water quality meters (Horiba-U22/U52); multigas detector (MSA); bladder pumps w/ associated controllers and compressors.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment. Event water level collections simultaneous with Purge sample work. Calibrations completed. Four crews to sample locations.
Samples were collected at the following locations:
LL1mw-087, FWGmw-015, FWGmw-016

A field rinsate was collected by Team # 1.

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	030915
Job No.	030174.0016.001	Date:	3/9/2015

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

All field equipment was calibrated prior to mobilizing to the field. Water level meter devices were checked for correct footage. Water quality meters were calibrated with AutoCal Solution, standards, and checks - certified values are: ORP checked okay (Ag/AgCl per chart), DO checked okay (distilled H2O per chart), AutoCal: (Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0) and pH 4.0, 7.0, 10.0 su.
Multigas detector calibrated with Zero Air Standard and 100 ppm Isobutylene. All field equipment was within calibration criteria.

HEALTH AND SAFETY LEVELS AND ACTIVITIES:
H&S briefing conducted prior to mobilizing to the field. All personnel to don modified Level 4 PPE (i.e. steel-toed shoes, safety glasses, & nitrile gloves). First Aid kits were included in each vehicle, & personnel were made aware of eyewash station locations.
Each team was equipped with a cellular phone. Personnel were instructed to hydrate frequently and watch for traffic. Personnel were also instructed to be alert for snow drifts, storms, poisonous plants, stinging insect, and roaming deer/turkey in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

Not all areas accessible. Crews shoveled to gain access to numerous areas. Crews 1& 3 and 2 & 4 work together or next to each other for efficiency. Post 1 entrance by lab delayed. Discussed access and approvals with security.

SPECIAL NOTES:

Post 1 rally point, reviewed purging parameters and snow cover disscusions for tailgate.

TOMORROWS EXPECTATIONS:

Expectations for tomorrow are to continue shoveling plus the purge and sample event.

Date: 10-Mar

S	M	T	W	T	F	S
		X				

DAILY QUALITY CONTROL REPORT

COE Project Manager Greg Moore

Project Ravenna Army Ammunition Plant Groundwater Monitoring

Job No. 030174.0016.001

Contract No. GSA Contract Number GS-10F-0293K Delivery Order W912QR-11-F-0266

Weather	Bright Sun x	Clear	Over-Cast x	Rain x	Snow X
Temp	To 32	32-50 x	50-70	70-85	85 up
Wind	Still x	Moder	High	Report No.	
Humidity	Dry	Moder	Humid x	031015	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, water quality meters (Horiba-U22/U52); multigas detector (MSA); bladder pumps w/ associated controllers and compressors.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment. Continue water level collections simultaneous with Purge sample work. Calibrations completed. Four crews to sample locations.
Samples were collected at the following locations:
LL1mw-(064, 065, 083, 084, 086), SCFmw-002, LL12mw-247

Additional alliquot for MSMSD collected at LL12mw-247 and SCFmw-002. Duplicate and split samples were collected from SCFmw-002, A field rinsate was collected by Team # 4.

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	031015
Job No.	030174.0016.001	Date:	3/10/2015

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

All field equipment was calibrated prior to mobilizing to the field. Water level meter devices were checked for correct footage. Water quality meters were calibrated with AutoCal Solution, standards, and checks - certified values are: ORP checked okay (Ag/AgCl per chart), DO checked okay (distilled H2O per chart), AutoCal: (Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0) and pH 4.0, 7.0, 10.0 su.
Multigas detector calibrated with Zero Air Standard and 100 ppm Isobutylene. All field equipment was within calibration criteria.

HEALTH AND SAFETY LEVELS AND ACTIVITIES:
H&S briefing conducted prior to mobilizing to the field. All personnel to don modified Level 4 PPE (i.e. steel-toed shoes, safety glasses, & nitrile gloves). First Aid kits were included in each vehicle, & personnel were made aware of eyewash station locations.
Each team was equipped with a cellular phone. Personnel were instructed to hydrate frequently and watch for traffic. Personnel were also instructed to be alert for snow drifts, storms, poisonous plants, stinging insect, and roaming deer/turkey in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:
Not all areas accessible. Crews shoveled to gain access to numerous areas. Crews working together or next to each other for efficiency when possible. Started LL12mw-247 late due to missing coupler then not stabilizes as fast as aticipated and running out of time to collect samples therefore MSMSD was transfered to SCFmw-002 for any similar alliquots NO2NO3 still collected at LL12mw-247 though.Post 1 entrance by lab delayed. Discussed access and approvals with security, Range Control, EQM management, and OHARNG.

SPECIAL NOTES:

Snow melt, reviewed traffic rules and speed limits plus slip trip fall hazard disscusions for tailgate.

TOMORROWS EXPECTATIONS:

Expectations for tomorrow are to continue shoveling plus the purge and sample event.

Date: 11-Mar

S	M	T	X W	T	F	S

DAILY QUALITY CONTROL REPORT

COE Project Manager: Greg Moore

Project: Ravenna Army Ammunition Plant Groundwater Monitoring

Job No.: 030174.0016.001

Contract No.: GSA Contract Number GS-10F-0293K Delivery Order W912QR-11-F-0266

Weather	Bright Sun x	Clear	Over-Cast	Rain	Snow
Temp	To 32	32-50 x	50-70	70-85	85 up
Wind	Still x	Moder	High	Report No.	
Humidity	Dry	Moder x	Humid	031115	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, water quality meters (Horiba-U22/U52); multigas detector (MSA); bladder pumps w/ associated controllers and compressors.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment. Continue water level collections simultaneous with Purge sample work. Calibrations completed. Four crews to sample locations.
Samples were collected at the following locations:
WBGmw-(006, 009, 020, 021), LL2mw-267, LL3mw-238 &-241, LL7mw-001, LL10mw-003, LL12mw-185, SCFmw-004

Duplicate and split samples were collected fromLL12mw-185, A field rinsate was collected by Team # 2.

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	031115
Job No.	030174.0016.001	Date:	3/11/2015

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

All field equipment was calibrated prior to mobilizing to the field. Water level meter devices were checked for correct footage. Water quality meters were calibrated with AutoCal Solution, standards, and checks - certified values are: ORP checked okay (Ag/AgCl per chart), DO checked okay (distilled H2O per chart), AutoCal: (Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0) and pH 4.0, 7.0, 10.0 su.
Multigas detector calibrated with Zero Air Standard and 100 ppm Isobutylene. All field equipment was within calibration criteria.

HEALTH AND SAFETY LEVELS AND ACTIVITIES:
H&S briefing conducted prior to mobilizing to the field. All personnel to don modified Level 4 PPE (i.e. steel-toed shoes, safety glasses, & nitrile gloves). First Aid kits were included in each vehicle, & personnel were made aware of eyewash station locations.
Each team was equipped with a cellular phone. Personnel were instructed to hydrate frequently and watch for traffic. Personnel were also instructed to be alert for snow drifts, storms, poisonous plants, stinging insect, and roaming deer/turkey in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

Not all areas accessible. Crews shoveled to gain access to a couple areas. Crews working together or next to each other for efficiency when possible.

SPECIAL NOTES:

Water logged ground, reviewed access to WBG plus slip trip fall hazard disscusions for tailgate.

TOMORROWS EXPECTATIONS:

Expectations for tomorrow are to continue shoveling plus the purge and sample event.

Date: 12-Mar

S	M	T	W	X T	F	S

DAILY QUALITY CONTROL REPORT

COE Project Manager: Greg Moore

Project: Ravenna Army Ammunition Plant Groundwater Monitoring

Job No.: 030174.0016.001

Contract No.: GSA Contract Number GS-10F-0293K Delivery Order W912QR-11-F-0266

Weather	Bright Sun x	Clear	Over-Cast	Rain	Snow
Temp	To 32	32-50 x	50-70	70-85	85 up
Wind	Still x	Moder	High	Report No.	
Humidity	Dry x	Moder x	Humid	031215	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, water quality meters (Horiba-U22/U52); multigas detector (MSA); bladder pumps w/ associated controllers and compressors.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment. Continue water level collections simultaneous with Purge sample work. Calibrations completed. Four crews to sample locations.
Purge and field pH monitor at FWGmw-002, RQLmw-011, -012, and -013.
Samples were collected at the following locations: RQLmw-(007, 008, 009), LL12mw-(187, 242, 245)

Additional alliquot for MSMSD collected at RQLmw-007. Duplicate and split samples were collected from RQLmw-009, A field rinsate was collected by Team # 3.

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	031215
Job No.	030174.0016.001	Date:	3/12/2015

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

All field equipment was calibrated prior to mobilizing to the field. Water level meter devices were checked for correct footage. Water quality meters were calibrated with AutoCal Solution, standards, and checks - certified values are: ORP checked okay (Ag/AgCl per chart), DO checked okay (distilled H2O per chart), AutoCal: (Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0) and pH 4.0, 7.0, 10.0 su.
Multigas detector calibrated with Zero Air Standard and 100 ppm Isobutylene. All field equipment was within calibration criteria.

HEALTH AND SAFETY LEVELS AND ACTIVITIES:
H&S briefing conducted prior to mobilizing to the field. All personnel to don modified Level 4 PPE (i.e. steel-toed shoes, safety glasses, & nitrile gloves). First Aid kits were included in each vehicle, & personnel were made aware of eyewash station locations.
Each team was equipped with a cellular phone. Personnel were instructed to hydrate frequently and watch for traffic. Personnel were also instructed to be alert for snow drifts, storms, poisonous plants, stinging insect, and roaming deer/turkey in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

Not all areas accessible. Crews shoveled to gain access to a couple areas. Crews working together or next to each other for efficiency when possible.

SPECIAL NOTES:

Reviewed access to RQL, Landfill asbestos issues, snowy wet conditions plus steering into a turn and icy driving disscussed.

TOMORROWS EXPECTATIONS:

Expectations for tomorrow are to continue the purge and sample event for 3 wells prior to demob for better weather.

Date: 13-Mar

S	M	T	W	T	X F	S

DAILY QUALITY CONTROL REPORT

COE Project Manager: Greg Moore

Project: Ravenna Army Ammunition Plant Groundwater Monitoring

Job No.: 030174.0016.001

Contract No.: GSA Contract Number GS-10F-0293K Delivery Order W912QR-11-F-0266

Weather	Bright Sun x	Clear	Over-Cast	Rain x	Snow
Temp	To 32	32-50 x	50-70	70-85	85 up
Wind	Still x	Moder	High	Report No.	
Humidity	Dry x	Moder	Humid	031315	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, water quality meters (Horiba-U22/U52); multigas detector (MSA); bladder pumps w/ associated controllers and compressors.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment. Continue water level collections simultaneous with Purge sample work. Calibrations completed. Four crews to sample locations. Three locations in accessible. Head back to building for clean up/organize for return event.
FWGmw-004 accessible and samples were collected. Packed equipment for return back to Cincinnati, and cleaned Building 1036. Demobilization.

A field rinsate was collected by Team # 2.

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	031315
Job No.	030174.0016.001	Date:	3/13/2015

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

All field equipment was calibrated prior to mobilizing to the field. Water level meter devices were checked for correct footage. Water quality meters were calibrated with AutoCal Solution, standards, and checks - certified values are: ORP checked okay (Ag/AgCl per chart), DO checked okay (distilled H2O per chart), AutoCal: (Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0) and pH 4.0, 7.0, 10.0 su.
Multigas detector calibrated with Zero Air Standard and 100 ppm Isobutylene. All field equipment was within calibration criteria.

HEALTH AND SAFETY LEVELS AND ACTIVITIES:
H&S briefing conducted prior to mobilizing to the field. All personnel to don modified Level 4 PPE (i.e. steel-toed shoes, safety glasses, & nitrile gloves). First Aid kits were included in each vehicle, & personnel were made aware of eyewash station locations.
Each team was equipped with a cellular phone. Personnel were instructed to hydrate frequently and watch for traffic. Personnel were also instructed to be alert for snow drifts, storms, poisonous plants, stinging insect, and roaming deer/turkey in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

Not all areas accessible. Crews tried to shovel to gain access but Eatern patrol road was too wet and slippery. Access to the far sw corner of the site is too shady and thus the snow too deep to safety access the well.

SPECIAL NOTES:

Disscussed flooding, the deer/animals coming out with the warmth and the speed limits on site during the tailgate.

TOMORROWS EXPECTATIONS:

NA

Date: 23-Mar

S	M	T	W	T	F	S
	X					

DAILY QUALITY CONTROL REPORT

COE Project Manager: Greg Moore

Project: Ravenna Army Ammunition Plant Groundwater Monitoring

Job No.: 030174.0016.001

Contract No.: GSA Contract Number GS-10F-0293K Delivery Order W912QR-11-F-0266

Weather	Bright Sun	Clear	Over-Cast x	Rain	Snow
Temp	To 32 x	32-50	50-70	70-85	85 up
Wind	Still x	Moder	High	Report No.	
Humidity	Dry	Moder	Humid x	032315	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, water quality meters (Horiba-U22/U52); multigas detector (MSA); bladder pumps w/ associated controllers and compressors.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment. Event water level collections simultaneous with Purge sample work. Calibrations completed. Three crews to sample locations.
Samples were collected at the following locations:
FQBmw-174, LL2mw-271, LL3mw-244, LL3mw-246, Started the purge for DETmw-004 since it goes dry and has slow recharge.

Additional alliquot for MSMSD collected at LL2mw-271. Duplicate and split samples were collected from LL3mw-244 and -246, A field rinsate was collected by Team # 2.

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	032315
Job No.	030174.0016.001	Date:	3/23/2015

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

All field equipment was calibrated prior to mobilizing to the field. Water level meter devices were checked for correct footage. Water quality meters were calibrated with AutoCal Solution, standards, and checks - certified values are: ORP checked okay (Ag/AgCl per chart), DO checked okay (distilled H2O per chart), AutoCal: (Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0) and pH 4.0, 7.0, 10.0 su.
Multigas detector calibrated with Zero Air Standard and 100 ppm Isobutylene. All field equipment was within calibration criteria.

HEALTH AND SAFETY LEVELS AND ACTIVITIES:
H&S briefing conducted prior to mobilizing to the field. All personnel to don modified Level 4 PPE (i.e. steel-toed shoes, safety glasses, & nitrile gloves). First Aid kits were included in each vehicle, & personnel were made aware of eyewash station locations.
Each team was equipped with a cellular phone. Personnel were instructed to hydrate frequently and watch for traffic. Personnel were also instructed to be alert for snow drifts, storms, poisonous plants, stinging insect, and roaming deer/turkey in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

Crews 1& 3 work together or next to each other for efficiency.

SPECIAL NOTES:

Severe weather rally point, reviewed traffic rules and disscussed truck weights for tailgate.

TOMORROWS EXPECTATIONS:

Expectations for tomorrow are to continue the purge and sample event.

Date: 24-Mar

S	M	T	W	T	F	S
		X				

DAILY QUALITY CONTROL REPORT

COE Project Manager: Greg Moore

Project: Ravenna Army Ammunition Plant Groundwater Monitoring

Job No.: 030174.0016.001

Contract No.: GSA Contract Number GS-10F-0293K Delivery Order W912QR-11-F-0266

Weather	Bright Sun x	Clear	Over-Cast	Rain	Snow
Temp	To 32	32-50 x	50-70	70-85	85 up
Wind	Still x	Moder	High	Report No.	
Humidity	Dry	Moder x	Humid x	032415	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, water quality meters (Horiba-U22/U52); multigas detector (MSA); bladder pumps w/ associated controllers and compressors.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, continue water level collections simultaneous with Purge sample work. Calibrations completed. Three crews to sample locations.
Samples were collected at the following locations:
DA2mw-115, DETmw-003, finished DETmw-004,

Duplicate and split samples were collected from DA2mw-115 and field rinsate was collected by Team # 2.

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	032415
Job No.	030174.0016.001	Date:	3/24/2015

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

All field equipment was calibrated prior to mobilizing to the field. Water level meter devices were checked for correct footage. Water quality meters were calibrated with AutoCal Solution, standards, and checks - certified values are: ORP checked okay (Ag/AgCl per chart), DO checked okay (distilled H2O per chart), AutoCal: (Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0) and pH 4.0, 7.0, 10.0 su.
Multigas detector calibrated with Zero Air Standard and 100 ppm Isobutylene. All field equipment was within calibration criteria.

HEALTH AND SAFETY LEVELS AND ACTIVITIES:
H&S briefing conducted prior to mobilizing to the field. All personnel to don modified Level 4 PPE (i.e. steel-toed shoes, safety glasses, & nitrile gloves). First Aid kits were included in each vehicle, & personnel were made aware of eyewash station locations.
Each team was equipped with a cellular phone. Personnel were instructed to hydrate frequently and watch for traffic. Personnel were also instructed to be alert for severe weather, storms, poisonous plants, stinging insect, and roaming deer/turkey in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

NA

SPECIAL NOTES:

Disscussed site traffic, deer and turkey abundance for tailgate.

TOMORROWS EXPECTATIONS:

Finalize the purge and sample event.

Date: 25-Mar

S	M	T	W	T	F	S
			X			

DAILY QUALITY CONTROL REPORT

COE Project Manager Greg Moore

Project Ravenna Army Ammunition Plant Groundwater Monitoring

Job No. 030174.0016.001

Contract No. GSA Contract Number GS-10F-0293K
Delivery Order W912QR-11-F-0266

Weather	Bright Sun	Clear	Over-Cast x	Rain v	Snow
Temp	To 32	32-50 x	50-70 x	70-85	85 up
Wind	Still x	Moder	High	Report No.	
Humidity	Dry	Moder	Humid x	032515	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, water quality meters (Horiba-U22/U52); One multigas detector (MSA); bladder pumps w/ associated controllers and compressors.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment.
Final two samples collected at NTAmw-119 and FWGmw-007
IDW sampling collected. Packed equipment for return back to Cincinnati, and cleaned Building 1036.
Demobilization.

A field rinsate was collected by Team # 3.

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	032515
Job No.	030174.0016.001	Date:	3/25/2015

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

All field equipment was calibrated prior to mobilizing to the field. Water level meter devices were checked for correct footage. Water quality meters were calibrated with AutoCal Solution, standards, and checks - certified values are: ORP checked okay (Ag/AgCl per chart), DO checked okay (distilled H2O per chart), AutoCal: (Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0) and pH 4.0, 7.0, 10.0 su.
Multigas detector calibrated with Zero Air Standard and 100 ppm Isobutylene. All field equipment was within calibration criteria.

HEALTH AND SAFETY LEVELS AND ACTIVITIES:
H&S briefing conducted prior to mobilizing to the field. All personnel to don modified Level 4 PPE (i.e. steel-toed shoes, safety glasses, & nitrile gloves). First Aid kits were included in each vehicle, & personnel were made aware of eyewash station locations.
Each team was equipped with a cellular phone. Personnel were instructed to hydrate frequently and watch for signs of heat/cold stress. Personnel were also instructed to be alert for storms, poisonous plants, stinging insect, ticks, and roaming deer/turkey.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

NA

SPECIAL NOTES:

Dissussed severe weather bunkers available onsite (hand grenade area and Depot/Newton Falls area).
Confirmed wells and QA/QC count = finalized event.

TOMORROWS EXPECTATIONS:

NA

APPENDIX C

DATA VERIFICATION REPORTS/ LABORATORY DATA SHEETS

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 24, 2015
Sample Delivery Group: 240-47963 **Revision:** 1

Data Reviewer: Angela Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 9, 2015 the following samples were collected from groundwater-monitoring wells at the former Ravenna Army Ammunition Plant and analyzed as part of SDG 240-47963. Sample analysis was performed by Test America. Test America-North Canton performed all requested analyses with the exception of the analytical for methods 8330, M8330, TALSOPWS-WC-0050 and 6860. Methods 8330, M8330 and TALSOPWS-WC-0050 were performed by Test America, West Sacramento. Method 6860, if requested, was performed by Test America, Denver.

Sample ID	VOC by SW846 8260	SVOC 4 by SW846 8270	SVOC 1 and 2 by SW846 8270	SVOC 1 by SW846 8270	Pesticides by SW846 8081	PCBs/ SW846 8082	Explosives/Propellants by SW846 8330, Mod. 8330 and TALSOP WS-WC-0050	Cyanide SW846 9012	Perchlorate by SW846 6860	NO2/NO3, EPA 353.2	Metals [3]		
											SW846 6010B	SW846 6020	Mercury by SW846 7470A
FWGFWGmw-015-0517-GW/GF				X			X				X	X	X
FWGFWGmw-016-0518-GW/GF				X			X				X	X	X
FWGLL1mw-087-0524-GW/GF				X			X				X	X	X
FWGEQUIPRINSE1-0563-GW				X			X				X	X	X

1) All metals samples with the exception of FWGEQUIPRINSE1-0563-GW were field filtered (GF).
2) SVOC1= Phthalates only
3) EPA 6020 metals include aluminum, antimony, beryllium, cadmium, iron, sodium, thallium and zinc. EPA 6010B metals include arsenic, chromium, cobalt, lead, selenium, silver, vanadium, barium, calcium, copper, magnesium, manganese, nickel and potassium.

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004*, Analytical Methods, and Laboratory Standard Operating Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Per the DoD QSM, the laboratory data is reported as follows: Non detected results were reported at the LOD with a "U" flag. Detected results between the DL and LOQ were reported as estimated, qualified with a "J" flag.

LOD - An estimate of the minimum amount of a substance that an analytical process can reliably detect.

LOQ - The lowest concentration that produces a quantitative result within specified limits of precision and bias.

DL- The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence.

Checklists used in the verification process are in Attachment I and sample results with outliers requiring qualification are in Attachment II.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, at 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

SVOCs- 8270C

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD

LCS Recovery

The di-n-butyl phthalate LCS recovered above control limits of 55%-115% at 122%. No qualification of the data was required as there were no detected di-n-butyl phthalate results reported for the associated field samples.

Matrix Spike/Spike Duplicate Recovery and RPD Criteria

A matrix spike and spike duplicate were prepped analyzed on sample FWGLL2mw-271-0503-GW. The A matrix spike/ spike duplicate was not requested on a sample from this workorder.

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

Metals - 6010B

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria
- Post Digestion Spike Criteria

Blanks

The ICB analyzed 3/11/15@ 0855 had cobalt detected at 2.07 µg/L, chromium at 0.730 µg/L and nickel detected at 0.89 µg/L. The nickel and cobalt results for samples FWGFWGmw-015-0517-GF and FWGLL1mw-087-0524-GF as well as the chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF,

FWGLL1mw-087-0524-GF and FWGEQUIPRINSE1-0563-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination.

The CCBs analyzed 3/11/15 from 0954 to 1131 had chromium at 0.649 µg/L to 3.40 µg/L. The CCB analyzed 3/11/15 at 0954 also had cobalt detected at 0.583 µg/L, manganese at 3.45µg/L and silver detected at 2.20 µg/L. The cobalt results for samples FWGFWGmw-015-0517-GF and FWGLL1mw-087-0524-GF as well as the chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF, FWGLL1mw-087-0524-GF and FWGEQUIPRINSE1-0563-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualifications were required for the silver or manganese contamination as there were no detected silver results reported for the associated field samples and reported manganese concentrations were greater than five times instrument blank contamination.

The method blank analyzed 3/11/15 at 1003 had chromium detected at 0.860 µg/L, barium at 6.20µg/L, lead at 2.83µg/L and manganese at 0.846µg/L. The chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF, FWGLL1mw-087-0524-GF and FWGEQUIPRINSE1-0563-GF, the manganese result for sample FWGEQUIPRINSE1-0563-GF and the barium results for samples FWGFWGmw-015-0517-GF and FWGLL1mw-087-0524-GF were qualified "B" as the reported concentrations were less than 5x blank contamination. No qualification was necessary for the lead method blank contamination, as there were no detected lead concentrations reported for the associated field samples.

FWGEQUIPRINSE1-0563-GW had chromium detected at 1.6 µg/L, magnesium at 120µg/L and manganese at 1.3µg/L. The chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF, FWGLL1mw-087-0524-GF were qualified "B" as the reported concentrations were less than five times blank contamination. No qualification was required for the magnesium or manganese outliers as all reported magnesium or manganese concentrations were greater than five times contamination.

Laboratory Duplicate RPD
The laboratory duplicate analyzed on sample FWGFWGmw-016-0518-GF had an RPD above control limits of 20% for arsenic at 39% and chromium at 29%. No qualification of the data was required as the detected laboratory duplicate results were less than the LOQ.

Postspike Recovery Criteria
The vanadium post spike recovered above control limits of 75-125% at 129%. No qualification of the data was made as there were no detected vanadium results reported for the associated field samples.

Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

Metals - 6020
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning Criteria
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field Duplicate RPD Criteria
- Post Digestion Spike Criteria
- Internal Stanards

Blanks
The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony results for samples FWGFWGmw-015-0517-GF and FWGFWGmw-016-0518-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results less 5x contamination reported for the associated samples.

The CCBs analyzed 3/17/15 had antimony detected from 0.261 µg/L to 0.352 µg/L, beryllium from 0.131 µg/L to 0.153 µg/L and cadmium from 0.0810 µg/L to 0.130 µg/L. The antimony and cadmium results for samples FWGFWGmw-015-0517-GF and FWGFWGmw-016-0518-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the beryllium contamination, as there were no detected beryllium results less five times contamination reported for the associated samples.

Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

Mercury - 7470A
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

No QC outliers were noted.

Explosives- 8330
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration Criteria
- ICV and CCV criteria
- Retention time criteria
- LOD and MRL verification criteria
- Surrogate recovery criteria
- Method /field blank criteria
- LCS/LCD Recovery and RPD Criteria
- Matrix spike/spike duplicate recovery criteria and RPD
- Second column confirmation RPD
- Field Duplicate RPD

MRL Recovery Criteria
The MRL analyzed 3/19/15 @ 1931 recovered above control limits of 70-130% for 3-nitrotoluene at 139% and nitrobenzene at 141%. No qualification of the data was required for the MRL outliers or missing closing MRL check as LC12 was used for confirmation only and no detected target analyte concentrations were reported.

Field Duplicate RPD
A field duplicate was not submitted with this set of samples.

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 24, 2015
Sample Delivery Group: 240-47963 **Revision:** 1

Matrix Spike/Spike Duplicate Recovery Criteria and RPD
No data was provided as a matrix spike/spike duplicate was not requested nor was sample volume provided for matrix spike analysis specific to this set of samples.

Surrogate Recovery
The surrogate, 3,4-dinitrotolune recovered above control limits of 79-111% at 119% for sample FWGFWGmw-015-0517-GW and at 116% for sample FWGLL1mw-087-0524-GW . No qualification of the data was required for the surrogate outliers as there were no detected target analyte concentrations reported for the associated field samples.

Nitroguanidine- 8330M
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration criteria
- Retention time criteria
- LOD and MRL verification criteria
- ICV and CCV criteria
- Method /field blank criteria
- LCS/LCSD percent recoveries and RPD value criteria
- Matrix spike recovery criteria
- Second column confirmation
- Field Duplicate RPD

Field Duplicate RPD
A field duplicate was not submitted with this set of samples.

No QC outliers were noted.

Nitrocellulose – WS-WC-0050
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD percent recoveries and RPD value criteria
- MS/MSD percent recoveries and RPD
- Field Duplicate RPD

Field Duplicate RPD
A field duplicate was not submitted with this set of samples.

No QC outliers were noted.

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SAMPLE SUMMARY

Client: Environmental Quality Mgt., Inc. Job Number: 240-47963-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
240-47963-1	FWGFWGmw-016-0518-GW	Water	03/09/2015 1332	03/09/2015 1804
240-47963-2	FWGFWGmw-016-0518-GF	Water	03/09/2015 1332	03/09/2015 1804
240-47963-3	FWGFWGmw-015-0517-GW	Water	03/09/2015 1400	03/09/2015 1804
240-47963-4	FWGFWGmw-015-0517-GF	Water	03/09/2015 1400	03/09/2015 1804
240-47964-1	FWGLL1MW-087-0524-GW	Water	03/09/2015 1225	03/09/2015 1804
240-47964-2	FWGLL1MW-087-0524-GF	Water	03/09/2015 1225	03/09/2015 1804
240-47964-3	FWGEQUIPRINSE1-0563-GW	Water	03/09/2015 1601	03/09/2015 1804

METHOD SUMMARY

Client: Environmental Quality Mgt., Inc. Job Number: 240-47963-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Semivolatile Organic Compounds (GC/MS)	TAL CAN	SW846 8270C	
Liquid-Liquid Extraction (Continuous)	TAL CAN		SW846 3520C
Metals (ICP)	TAL CAN	SW846 6010B	
Preparation, Total Recoverable or Dissolved Metals	TAL CAN		SW846 3005A
Metals (ICP/MS)	TAL CAN	SW846 6020	
Preparation, Total Recoverable or Dissolved Metals	TAL CAN		SW846 3005A
Mercury (CVAA)	TAL CAN	SW846 7470A	
Preparation, Mercury	TAL CAN		SW846 7470A
Nitroguanidine (HPLC)	TAL SAC	SW846 8330 Modified	
Sample Filtration	TAL SAC		Filtration
Nitroaromatics and Nitramines	TAL SAC	SW846 8330A	
Solid-Phase Extraction (Explosives)	TAL SAC		SW846 8330-Prep
Nitrocellulose	TAL SAC	TAL-SAC WS-WC-0050	
Nitrocellulose Sample Preparation (Hydrolysis)	TAL SAC		MCAWW 353 (NCell-Hyd)
Nitrocellulose Sample Preparation	TAL SAC		MCAWW 353.2 (NCell)

Lab References:

TAL CAN = TestAmerica Canton

TAL SAC = TestAmerica Sacramento

Method References:

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

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

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS


240-47963 Chain of Custody

TestAmerica Canton
4101 Shuffel Street, N. E.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☒ RCRA ☒ Other: CERCLA

Client Contact	Project Manager: J. Miller	Site Contact: E. Corbin	Date: 3-9-15	COC No: Team214-30915
Company Name: EQM	Tel/Fax: 513 825 7500 / 7495	Lab Contact: M. Loeb	Carrier: Lab Pick-up	1 of ___ COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler: CAL / SAS
City/State/Zip: Cincinnati OH	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513 825 7500	TAT if different from Below ___			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: RVAAP 66	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	SVOC	Explosives	Propellants	Metals	Sample Specific Notes:
FWGFWGmw16-0516-GW	3/4/15	1332	G	GW		N		2	1	2		Cooler ID
FWGFWGmw16-0518-GF	↓	↓	↓	↓		Y					1	
FWGFWGmw15-0517-GW	3/4/15	1400	↓	↓		N		2	1	2		TS2
FWGFWGmw15-0517-GF	↓	↓	↓	↓		Y					1	TS2

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Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ___ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: ___ Corr'd: ___	Therm ID No.:

	Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
1		EQM	03/04/15		Pestmore	3/4/2015 1715
2		Pestmore 3/4/15	1854			
3				Received in Laboratory by:	TAL Canton	3/4/15 1804

TestAmerica Canton Sample Receipt Form/Narrative Login # 47963
Canton Facility

Client EBM Site Name _____ Cooler unpacked by: [signature]

Cooler Received on 3.9.15 Opened on 3.9.15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   - ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C~~
   - IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C ☑ See Multiple Cooler Form
   - ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C~~
   - IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 3 Yes No
   - -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   - -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC425511
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: [signature]

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____.

Ref: SOP NC-SC-0005, Sample Receiving
X:\Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-099P-020915 Cooler Receipt Form.doc djl

TestAmerica Multiple Cooler Receipt Form/Narrative
Canton Facility

Login #: 179163

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
client	4	0.4	0.9	Ice
"	"	1.1	1.6	"
"	"	0.9	1.4	"

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Revision 3, 3/18/13 ils

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other: DOD GSM/LS

Client Contact	Project Manager: John Miller	Site Contact: E. CORBIN	Date: 3/9/15	COC No: AD 030915
Company Name: FGM	Tel/Fax:	Lab Contact: M. Loeb	Carrier: Lab Pickup	1 of 1 COCs
Address: 1800 Cavilleri Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Cincinnati OH 45240	☒ CALENDAR DAYS 21 ☐ WORKING DAYS			For Lab Use Only:
Phone: 513-825-7500	TAT if different from Below _____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: RVAAP	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	SVOC 1, 8270	Explo + Propellant	Metals 6010, 6020, 7470	Sample Specific Notes:
FWGLLIMW-087-0524-GW	3/9/15	1225	G	GW	5	N		1	1		Cooler ID 114
FWGLLIMW-087-0524-GF	↓	↓	↓	↓	1	Y				4	↓
FWGEQUIPRINSE1-0503-GW	3/9/15	1601	G	GW	6	N		1	1	4	↓

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AD 3/9/15

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Metals field filtered

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EQ	3/9/15	[signature]	TestAmerica	3/9/2015. 1715
[signature]	TestAm	3/9/15 1804			
			Received in Laboratory by: [signature]	TA Canton	3/9/15 1804

TestAmerica Canton Sample Receipt Form/Narrative Login # 479604
Canton Facility

Client EBM Site Name _____ Cooler unpacked by: [signature]

Cooler Received on 3.9.15 Opened on 3.9.15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   - ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C~~
   - IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C ☑ See Multiple Cooler Form
   - ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C~~
   - IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 3 Yes No
   - -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   - -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC425511
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: [signature]

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

Ref: SOP NC-SC-0005, Sample Receiving
X:\Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-009P-020915 Cooler Receipt Form.doc djl

SAMPLE SUMMARY

Client: Environmental Quality Mgt., Inc.

Job Number: 240-47963-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
240-47963-1	FWGFWGmw-016-0518-GW	Water	03/09/2015 1332	03/09/2015 1804
240-47963-2	FWGFWGmw-016-0518-GF	Water	03/09/2015 1332	03/09/2015 1804
240-47963-3	FWGFWGmw-015-0517-GW	Water	03/09/2015 1400	03/09/2015 1804
240-47963-4	FWGFWGmw-015-0517-GF	Water	03/09/2015 1400	03/09/2015 1804
240-47964-1	FWGLL1MW-087-0524-GW	Water	03/09/2015 1225	03/09/2015 1804
240-47964-2	FWGLL1MW-087-0524-GF	Water	03/09/2015 1225	03/09/2015 1804
240-47964-3	FWGEQUIPRINSE1-0563-GW	Water	03/09/2015 1601	03/09/2015 1804

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66

TestAmerica Job ID: 240-47963-1

Client Sample ID: FWGFWGmw-016-0518-GW
Date Collected: 03/09/15 13:32
Date Received: 03/09/15 18:04

Lab Sample ID: 240-47963-1
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 13:45	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/16/15 13:45	1
Diethyl phthalate	0.96	U	1.9	0.96	0.58	ug/L		03/16/15 13:45	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/16/15 13:45	1
Di-n-butyl phthalate	4.8	U Q	4.8	4.8	1.6	ug/L		03/16/15 13:45	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/16/15 13:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*94*		*50 - 110*	*03/10/15 06:53*	*03/16/15 13:45*	*1*
2-Fluorophenol (Surr)	*92*		*20 - 110*	*03/10/15 06:53*	*03/16/15 13:45*	*1*
Nitrobenzene-d5 (Surr)	*87*		*40 - 110*	*03/10/15 06:53*	*03/16/15 13:45*	*1*
Phenol-d5 (Surr)	*96*		*10 - 115*	*03/10/15 06:53*	*03/16/15 13:45*	*1*
Terphenyl-d14 (Surr)	*101*		*50 - 135*	*03/10/15 06:53*	*03/16/15 13:45*	*1*
2,4,6-Tribromophenol (Surr)	*88*		*40 - 125*	*03/10/15 06:53*	*03/16/15 13:45*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/18/15 18:40	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.052	U	0.16	0.052	0.032	ug/L		03/19/15 06:33	1
1,3-Dinitrobenzene	0.10	U	0.16	0.10	0.052	ug/L		03/19/15 06:33	1
2,4,6-Trinitrotoluene	0.10	U	0.16	0.10	0.052	ug/L		03/19/15 06:33	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.052	ug/L		03/19/15 06:33	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.052	ug/L		03/19/15 06:33	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.16	0.10	0.016	ug/L		03/19/15 06:33	1
2-Nitrotoluene	0.10	U	0.52	0.10	0.091	ug/L		03/19/15 06:33	1
3-Nitrotoluene	0.10	U	0.52	0.10	0.059	ug/L		03/19/15 06:33	1
4-Nitrotoluene	0.10	U	0.52	0.10	0.091	ug/L		03/19/15 06:33	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.16	0.10	0.052	ug/L		03/19/15 06:33	1
HMX	0.052	U	0.16	0.052	0.037	ug/L		03/19/15 06:33	1
RDX	0.052	U	0.16	0.052	0.037	ug/L		03/19/15 06:33	1
Nitrobenzene	0.10	U	0.16	0.10	0.052	ug/L		03/19/15 06:33	1
Tetryl	0.10	U	0.16	0.10	0.052	ug/L		03/19/15 06:33	1
Nitroglycerin	0.52	U	0.67	0.52	0.34	ug/L		03/19/15 06:33	1
PETN	0.52	U M	0.67	0.52	0.31	ug/L		03/19/15 06:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*101*		*79 - 111*	*03/12/15 10:55*	*03/19/15 06:33*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 09:22	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66

TestAmerica Job ID: 240-47963-1

Client Sample ID: FWGFWGmw-016-0518-GF
Date Collected: 03/09/15 13:32
Date Received: 03/09/15 18:04

Lab Sample ID: 240-47963-2
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	5.8	J	10	10	2.9	ug/L		03/11/15 10:11	1
Chromium	1.5	J	7.0	4.0	0.55	ug/L		03/11/15 10:11	1
Cobalt	4.0	U J	7.0	4.0	0.56	ug/L		03/11/15 10:11	1
Lead	5.0	U J	10	5.0	1.9	ug/L		03/11/15 10:11	1
Selenium	10	U J	15	10	4.0	ug/L		03/11/15 10:11	1
Silver	5.0	U J	7.0	5.0	0.92	ug/L		03/11/15 10:11	1
Vanadium	4.0	U J	7.0	4.0	2.4	ug/L		03/11/15 10:11	1
Barium	55	J	200	5.0	1.0	ug/L		03/11/15 10:11	1
Calcium	100000	J	5000	1000	260	ug/L		03/11/15 10:11	1
Copper	10	U J	25	10	1.8	ug/L		03/11/15 10:11	1
Magnesium	26000	J	5000	300	55	ug/L		03/11/15 10:11	1
Manganese	200	J	15	5.0	0.46	ug/L		03/11/15 10:11	1
Nickel	5.0	U J	40	5.0	0.76	ug/L		03/11/15 10:11	1
Potassium	2100	J	5000	900	70	ug/L		03/11/15 10:11	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 14:43	1
Antimony	0.38	J	2.0	1.0	0.33	ug/L		03/17/15 14:43	1
Beryllium	1.0	U J	1.0	1.0	0.50	ug/L		03/17/15 14:43	1
Cadmium	0.42	J	2.0	1.0	0.40	ug/L		03/17/15 14:43	1
Iron	700		150	100	44	ug/L		03/17/15 14:43	1
Sodium	11000		1000	400	160	ug/L		03/17/15 14:43	1
Thallium	1.5	U J	2.0	1.5	0.79	ug/L		03/17/15 14:43	1
Zinc	50	U J	50	50	27	ug/L		03/17/15 14:43	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/11/15 13:33	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66

TestAmerica Job ID: 240-47963-1

Client Sample ID: FWGFWGmw-015-0517-GW
Date Collected: 03/09/15 14:00
Date Received: 03/09/15 18:04

Lab Sample ID: 240-47963-3
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 14:10	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/16/15 14:10	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/16/15 14:10	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/16/15 14:10	1
Di-n-butyl phthalate	4.8	U Q	4.8	4.8	1.6	ug/L		03/16/15 14:10	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/16/15 14:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*90*		*50 - 110*	*03/10/15 06:53*	*03/16/15 14:10*	*1*
2-Fluorophenol (Surr)	*77*		*20 - 110*	*03/10/15 06:53*	*03/16/15 14:10*	*1*
Nitrobenzene-d5 (Surr)	*88*		*40 - 110*	*03/10/15 06:53*	*03/16/15 14:10*	*1*
Phenol-d5 (Surr)	*84*		*10 - 115*	*03/10/15 06:53*	*03/16/15 14:10*	*1*
Terphenyl-d14 (Surr)	*91*		*50 - 135*	*03/10/15 06:53*	*03/16/15 14:10*	*1*
2,4,6-Tribromophenol (Surr)	*89*		*40 - 125*	*03/10/15 06:53*	*03/16/15 14:10*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/18/15 18:58	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/19/15 07:16	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 07:16	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 07:16	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 07:16	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 07:16	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/19/15 07:16	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/19/15 07:16	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/19/15 07:16	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/19/15 07:16	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 07:16	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/19/15 07:16	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/19/15 07:16	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 07:16	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 07:16	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/19/15 07:16	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		03/19/15 07:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*105*	*M*	*79 - 111*	*03/12/15 10:55*	*03/19/15 07:16*	*1*
3,4-Dinitrotoluene	*119*	*Q*	*79 - 111*	*03/12/15 10:55*	*03/19/15 20:37*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 09:28	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66

TestAmerica Job ID: 240-47963-1

Client Sample ID: FWGFWGmw-015-0517-GF
Date Collected: 03/09/15 14:00
Date Received: 03/09/15 18:04

Lab Sample ID: 240-47963-4
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.6	J	10	10	2.9	ug/L		03/11/15 10:31	1
Chromium	1.9	J	7.0	4.0	0.55	ug/L		03/11/15 10:31	1
Cobalt	1.6	J	7.0	4.0	0.56	ug/L		03/11/15 10:31	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/11/15 10:31	1
Selenium	10	U	15	10	4.0	ug/L		03/11/15 10:31	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/11/15 10:31	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/11/15 10:31	1
Barium	9.2	J	200	5.0	1.0	ug/L		03/11/15 10:31	1
Calcium	280000		5000	1000	260	ug/L		03/11/15 10:31	1
Copper	10	U	25	10	1.9	ug/L		03/11/15 10:31	1
Magnesium	270000		5000	300	55	ug/L		03/11/15 10:31	1
Manganese	160		15	5.0	0.46	ug/L		03/11/15 10:31	1
Nickel	2.8	J	40	5.0	0.76	ug/L		03/11/15 10:31	1
Potassium	3600	J	5000	900	70	ug/L		03/11/15 10:31	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 15:12	1
Antimony	0.39	J	2.0	1.0	0.33	ug/L		03/17/15 15:12	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 15:12	1
Cadmium	0.51	J	2.0	1.0	0.40	ug/L		03/17/15 15:12	1
Iron	100	U	150	100	44	ug/L		03/17/15 15:12	1
Sodium	45000		1000	400	160	ug/L		03/17/15 15:12	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 15:12	1
Zinc	50	U	50	50	27	ug/L		03/17/15 15:12	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/11/15 13:58	1

Client Sample ID: FWGLL1MW-087-0524-GW
Date Collected: 03/09/15 12:25
Date Received: 03/09/15 18:04

Lab Sample ID: 240-47964-1
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	1.7	J	4.9	4.9	1.7	ug/L		03/16/15 14:35	1
Butyl benzyl phthalate	0.49	U	4.9	0.49	0.25	ug/L		03/16/15 14:35	1
Diethyl phthalate	0.98	U	2.0	0.98	0.59	ug/L		03/16/15 14:35	1
Dimethyl phthalate	0.49	U	2.0	0.49	0.28	ug/L		03/16/15 14:35	1
Di-n-butyl phthalate	4.9	U Q	4.9	4.9	1.7	ug/L		03/16/15 14:35	1
Di-n-octyl phthalate	0.49	U	2.0	0.49	0.23	ug/L		03/16/15 14:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*90*		*50 - 110*	*03/10/15 06:53*	*03/16/15 14:35*	*1*
2-Fluorophenol (Surr)	*84*		*20 - 110*	*03/10/15 06:53*	*03/16/15 14:35*	*1*
Nitrobenzene-d5 (Surr)	*83*		*40 - 110*	*03/10/15 06:53*	*03/16/15 14:35*	*1*
Phenol-d5 (Surr)	*90*		*10 - 115*	*03/10/15 06:53*	*03/16/15 14:35*	*1*
Terphenyl-d14 (Surr)	*87*		*50 - 135*	*03/10/15 06:53*	*03/16/15 14:35*	*1*
2,4,6-Tribromophenol (Surr)	*97*		*40 - 125*	*03/10/15 06:53*	*03/16/15 14:35*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/18/15 19:16	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/19/15 08:00	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:00	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:00	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 08:00	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 08:00	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/19/15 08:00	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/19/15 08:00	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/19/15 08:00	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/19/15 08:00	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:00	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/19/15 08:00	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/19/15 08:00	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:00	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:00	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/19/15 08:00	1
PETN	0.51	U M	0.66	0.51	0.31	ug/L		03/19/15 08:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*102*		*79 - 111*	*03/12/15 10:55*	*03/19/15 08:00*	*1*
3,4-Dinitrotoluene	*116*	*Q*	*79 - 111*	*03/12/15 10:55*	*03/19/15 21:42*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 09:30	1

Client Sample ID: FWGLL1MW-087-0524-GF
Lab Sample ID: 240-47964-2
Date Collected: 03/09/15 12:25
Matrix: Water
Date Received: 03/09/15 18:04

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/11/15 10:35	1
Chromium	1.6	J	7.0	4.0	0.55	ug/L		03/11/15 10:35	1
Cobalt	1.0	J	7.0	4.0	0.56	ug/L		03/11/15 10:35	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/11/15 10:35	1
Selenium	10	U	15	10	4.0	ug/L		03/11/15 10:35	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/11/15 10:35	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/11/15 10:35	1
Barium	25	J	200	5.0	1.0	ug/L		03/11/15 10:35	1
Calcium	100000		5000	1000	260	ug/L		03/11/15 10:35	1
Copper	10	U	25	10	1.9	ug/L		03/11/15 10:35	1
Magnesium	29000		5000	300	55	ug/L		03/11/15 10:35	1
Manganese	110		15	5.0	0.46	ug/L		03/11/15 10:35	1
Nickel	1.3	J	40	5.0	0.76	ug/L		03/11/15 10:35	1
Potassium	590	J	5000	900	70	ug/L		03/11/15 10:35	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	340		60	60	20	ug/L		03/17/15 15:16	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 15:16	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 15:16	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 15:16	1
Iron	660		150	100	44	ug/L		03/17/15 15:16	1
Sodium	8500		1000	400	160	ug/L		03/17/15 15:16	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 15:16	1
Zinc	50	U	50	50	27	ug/L		03/17/15 15:16	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/11/15 14:00	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66

TestAmerica Job ID: 240-47963-1

Client Sample ID: FWGEQUIPRINSE1-0563-GW
Date Collected: 03/09/15 16:01
Date Received: 03/09/15 18:04

Lab Sample ID: 240-47964-3
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 15:01	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/16/15 15:01	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/16/15 15:01	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/16/15 15:01	1
Di-n-butyl phthalate	4.8	U Q	4.8	4.8	1.6	ug/L		03/16/15 15:01	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/16/15 15:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*76*		*50 - 110*	*03/10/15 06:53*	*03/16/15 15:01*	*1*
2-Fluorophenol (Surr)	*72*		*20 - 110*	*03/10/15 06:53*	*03/16/15 15:01*	*1*
Nitrobenzene-d5 (Surr)	*71*		*40 - 110*	*03/10/15 06:53*	*03/16/15 15:01*	*1*
Phenol-d5 (Surr)	*76*		*10 - 115*	*03/10/15 06:53*	*03/16/15 15:01*	*1*
Terphenyl-d14 (Surr)	*68*		*50 - 135*	*03/10/15 06:53*	*03/16/15 15:01*	*1*
2,4,6-Tribromophenol (Surr)	*92*		*40 - 125*	*03/10/15 06:53*	*03/16/15 15:01*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/18/15 19:34	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/19/15 08:43	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:43	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:43	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 08:43	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 08:43	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/19/15 08:43	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/19/15 08:43	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/19/15 08:43	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/19/15 08:43	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:43	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/19/15 08:43	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/19/15 08:43	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:43	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 08:43	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/19/15 08:43	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		03/19/15 08:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*104*		*79 - 111*	*03/12/15 10:55*	*03/19/15 08:43*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/11/15 10:47	1
Chromium	1.6	J	7.0	4.0	0.55	ug/L		03/11/15 10:47	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/11/15 10:47	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/11/15 10:47	1
Selenium	10	U	15	10	4.0	ug/L		03/11/15 10:47	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/11/15 10:47	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/11/15 10:47	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66

TestAmerica Job ID: 240-47963-1

Client Sample ID: FWGEQUIPRINSE1-0563-GW
Date Collected: 03/09/15 16:01
Date Received: 03/09/15 18:04

Lab Sample ID: 240-47964-3
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	5.0	U	200	5.0	1.0	ug/L		03/11/15 10:47	1
Calcium	1000	U	5000	1000	260	ug/L		03/11/15 10:47	1
Copper	10	U	25	10	1.9	ug/L		03/11/15 10:47	1
Magnesium	120	J	5000	300	55	ug/L		03/11/15 10:47	1
Manganese	1.3	J	15	5.0	0.46	ug/L		03/11/15 10:47	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/11/15 10:47	1
Potassium	900	U	5000	900	70	ug/L		03/11/15 10:47	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 15:20	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 15:20	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 15:20	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 15:20	1
Iron	100	U	150	100	44	ug/L		03/17/15 15:20	1
Sodium	400	U	1000	400	160	ug/L		03/17/15 15:20	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 15:20	1
Zinc	50	U	50	50	27	ug/L		03/17/15 15:20	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/11/15 14:02	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 09:32	1

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3.Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-6
6. Was the GC/MS system tuned each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Initial Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A4HP9–3/13/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) ≤0.050?	X				QSM Table F-4
7d. Were all other target analytes reported with an avg response have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X				QSM Table F-4 R<0.99=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X			Benzoic acid, 1,3-dinitrobenzene, 2,4-dinitrophenol and 4-nitrophenol 4,6-dinitro-2-methylphenol, pentachlorophenol, bis-2-ethylhexylphthalate, di-n-octylphthalate, indeno (1,2,3-cd)pyrene dibenz (a,h) anthracene used a linear fit	QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte?	X				QSM Table F-4 and section D.1.2.1
9 Was a breakdown check run at the beginning of every 12 hours with DDT degradation <20% and tailing factors of benzidine and pentachlorophenol ≤2?	X				QSM Table F-4 R
10. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12	X			3/16/15 @ 1138, 2030	Louisville Supplement to the DOD QSM

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
hours with recoveries within 70-130%?					
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			3/13/15 @1239	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/16/15 @1113	QSM Table F-4
12a. Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) ≥0.050?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank >1/2 the MRL, >RL for common contaminants?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE1-0563-GW	
16a. Were target analytes detected in the field blank?		X			QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-6 of the DoD QSM?		X		ADR checked section; The di-n-butyl phthalate LCS recovered above control limits of 55%-115% at 122%. No qualification of the data was required as there were no detected di-n-butyl phthalate results reported for the associated field samples.	QSM Table F-4, Table G-6, J/UJ

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
18. Was a MS/MSD prepared with each batch?			X	A matrix spike/ spike duplicate was not requested on a sample from this workorder.	
18a. Were the MS/MSD recoveries within limits specified in Table G-6 of the DoD QSM with an RPD <30%?			X	Checked by ADR	QSM Table F-4, Table G-6 J/UJ Parent sample only
19. Was a field duplicate analyzed?			X	A field duplicate was not submitted with this set of samples.	
19a. Were the field duplicates RPDs within ±50%?			X	No detected sample results were reported.	QSM Table F-4, RPD >50=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% - 50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH. Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Additional Comments:

Table 1: CCCs *(All analytes if CCCs not included in standard)*

Base / Neutral Compounds	Acid Compounds
Acenaphthalene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
N-Nitrosodiphehylamine	Phenol
Di-n-octylphthalate	Pentachlorophenol
Fluoroanthene	2,4,6-Trichlorophenol
Benzo(a)pyrene	

Table 2: SPCCs -

N-Nitroso-di-n-propylamine	0.05
Hexachlorocyclopentadiene	0.05
2,4-Dinitrophenol	0.05
4-Nitrophenol	0.05

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was a LOD Verification performed once per quarter with all target analytes detected?	X				DoD QSM Table F-8
7. Tuning (ICP MS Only)					
7a. Was a tune performed daily prior to calibration	X				DoD QSM Table F-8 R
7b. Mass Calibration <0.1 amu from true value	X				
7c. Resolution <0.9 amu full width at 10 % peak height	X				
7d. RSD <%5 for a minimum of four replicate analyses	X				
8.Calibration	X				
8a. Was the ICAL performed daily with at least	X			ICP3/11/15, Hg 3/11/15and ICPMS 3/17/15	DoD QSM Tables F-8 and F-7
1high standard and a blank for ICP & ICPMS	X				
5 standards and a blank for Hg	X				
8b. Was the correlation coefficient r≥0.995 for Hg?	X				DoD QSM Tables F-8 and F-7 r<0.995=J/R
8c. Was the ICV (second source verification) analyzed after the ICAL with results 90-110% of the true value?	X				DoD QSM Tables F-8 and F-7
8d. Was the ICB analyzed after the ICV with detected results <1/2 the MRL?	X			ICP-The ICB analyzed 3/11/15@ 0855 had cobalt detected at 2.07 µg/L, chromium at 0.730 µg/L and nickel detected at 0.89 µg/L. The nickel and cobalt results for samples FWGFWGmw-015-0517-GF and FWGLL1mw-087-0524-GF as well as the chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF, FWGLL1mw-087-0524-GF and FWGEQUIPRINSE1-0563-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. ICPMS-The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L.	DoD QSM, Tables F-8 and F-7 < 5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				The antimony results for samples FWGFWGmw-015-0517-GF and FWGFWGmw-016-0518-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results less 5x contamination reported for the associated samples.	
Sample Analysis					
9. Was a MRL Level Verification performed at the beginning of the daily sequence and end of the analytical sequence bracketing samples? Were results 70-130%?	X				LS, DoD QSM Table G-18, >130%=J; 70-80%=J/UJ; <70%=J/UJ <65%=R, unless DL check with detected results
10. Were CCVs analyzed every 10 samples and at the end of the analytical sequence with results 90-110% of the true value?	X				DoD QSM, Tables F-8 and F-7 >110%=J, <85%=J/R 90-85%=J/UJ;
11. Were the CCBs run every 10 samples and at the end of the analytical sequence? Were results <1/2 the MRL?	X			ICP The CCBs analyzed 3/11/15 from 0954 to 1131 had chromium at 0.649 µg/L to 3.40 µg/L. The CCB analyzed 3/11/15 at 0954 also had cobalt detected at 0.583 µg/L, manganese at 3.45µg/L and silver detected at 2.20 µg/L. The cobalt results for samples FWGFWGmw-015-0517-GF and FWGLL1mw-087-0524-GF as well as the chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF, FWGLL1mw-087-0524-GF and FWGEQUIPRINSE1-0563-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualifications were required for the silver or manganese contamination as there were no detected silver results reported for the associated field samples and reported manganese concentrations were greater than five times instrument blank contamination. ICPMS The CCBs analyzed 3/17/15 had antimony detected from 0.261 µg/L to 0.352 µg/L, beryllium from 0.131 µg/L to 0.153 µg/L and cadmium from 0.0810 µg/L to 0.130 µg/L . The antimony and cadmium results for samples FWGFWGmw-015-0517-GF and FWGFWGmw-016-0518-GF were qualified, "U" as the reported concentrations were	DoD QSM Tables F-8 and F-7 <5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				less than 5x instrument blank contamination. No qualification of the data was required for the beryllium contamination, as there were no detected beryllium results less five times contamination reported for the associated samples.	
12. Was an Interelement Check Standard run at the beginning of the analytical sequence and every 12 hours with the ICS recovery within 80 to 120% of true value for each element of interest (ICP and ICPMS only)?	X				DoD QSM Tables F-8 and F-7 >120%=J; 50-79%=J/UJ; <50%=Pj/R
13. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
14. Were target analytes detected >1/2 the MRL in the method blank?	X			Checked by ADR. ICP The method blank analyzed 3/11/15 at 1003 had chromium detected at 0.860 µg/L, barium at 6.20µg/L, lead at 2.83µg/L and manganese at 0.846µg/L. The chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF, FWGLL1mw-087-0524-GF and FWGEQUIPRINSE1-0563-GF, the manganese result for sample FWGEQUIPRINSE1-0563-GF and the barium results for samples FWGFWGmw-015-0517-GF and FWGLL1mw-087-0524-GF were qualified "B" as the reported concentrations were greater than 5x blank contamination. No qualification was necessary for the lead method blank contamination, as there were no detected lead concentrations reported for the associated field samples.	DoD QSM Tables F-8 and F-7, <5x = B
15. Was a field blank collected and analyzed?	X			FWGEQUIPRINSE1-0563-GW	
16. Were target analytes reported in the field blank analyses >1/2 the MRL?	X			ADR checked section. FWGEQUIPRINSE1-0563-GW had chromium detected at 1.6 µg/L, magnesium at 120µg/L and manganese at 1.3µg/L. The chromium results for samples FWGFWGmw-015-0517-GF, FWGFWGmw-016-0518-GF, FWGLL1mw-087-0524-GF were qualified "B" as the reported concentrations were greater than five times blank contamination. No qualification was required for the magnesium or manganese outliers as all reported magnesium or manganese concentrations were greater than five times contamination.	DoD QSM Tables F-8 and F-7

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
17. Was a LCS prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7>120%=J; 70-79%=J/UJ; <70%=J/R
19. Was a matrix spike (MS) and lab duplicate sample prepared with each batch?	X				DoD QSM Tables F-8 and F-7
20. Was the MS and Lab Duplicate parent a Ravenna sample?	X			A matrix spike analysis and laboratory duplicate analysis was performed on sample FWGFWGmw-016-0518-GF.	
21. Were the MS recoveries within 80-120%?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7, >120%=J; 70-79%=J/UJ; <70%=J/R All samples in batch
22. Was the lab sample duplicate RPD ≤ 20%, for sample results detected above the LOQ?		X		ICP-The laboratory duplicate analyzed on sample FWGFWGmw-016-0518-GF had an RPD above control limits of 20% for arsenic at 39% and chromium at 29%. No qualification of the data was required as the detected laboratory duplicate results were less than the LOQ.	DoD QSM Tables F-8 and F-7 >20% = J, All samples in batch
23. Was a serial dilution performed, with the fivefold dilution within ± 10% of the original result?	X				DoD QSM, Tables F-8 and F-7 >20% = J. Only evaluate results above the LOQ. Qualify all samples in batch
24. Was a Post Digestion Spike analyzed as needed? Were results within 75-125%?	X			The vanadium post spike recovered above control limits of 75-125% at 129%. No qualification of the data was made as there were no detected vanadium results reported for the associated field samples.	LCG Table 7, >125%=J; 30-75%=J/UJ; <30%=R
25. Was a field duplicate analyzed? Were the RPDs ± 50% for sample results detected above the LOQ?			X	A field duplicate was not submitted with this sample set.	>30% = J. Qualify parent sample only and only evaluate results above the LOQ
26. Were internal standards added to all ICPMS samples with intensity within 30-120% of the intensity of the ICAL internal standard?	X				DoD QSM Table F-8. >120%=J/R, <20%=J

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: SW846 6010/6020/7470A

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 27, 2015

SDG: 240-47963
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			LC10 3/11/15 LC12 1/19/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for non-linear).	X			LC10-4-nitrotoluene used a linear fit LC12-2-nitrotoluene, 4-nitrotoluene, 2,4,6-trinitrotoluene, HMX and 3,4-dinitrotoluene used a linear fit	
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			LC10 on 3/11 at 2136 LC12 1/20/15 @ 0543	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			LC10- 3/19/15 @0044, 0927 LC12-3/19/15 @ 1825 and 3/20/15 @ 0733	DoD QSM Table F-3 J/UJ
10.Was a MRL Level verification run at the beginning and end of every daily? Was the %D< 30%?	X			LC10- 3/19/15 @0127, 1010 LC12-3/19/15 @ 1931, with no closing MRL analyzed. The MRL analyzed 3/19/15 @ 1931 recovered above control limits of 70-130% for 3-nitrotoluene at 139% and nitrobenzene at 141%. No qualification of the data was required for the MRL outliers or missing closing MRL check as LC12 was used for confirmation only and no detected target analyte concentrations were reported.	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3
12. Were target analytes detected in the method blank <1/2 the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 27, 2015

SDG: 240-47963
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses > ½ the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B
15. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		Checked by ADR. A field duplicate was not submitted with this set of samples.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?	X				DoD QSM Table F-3 RPD>40%=J Only detected results above the LOQ were evaluated
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within limits specified in table G-12 of the DoD QSM?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J;30-LL=J/UJ; <30%=J/R
19.Was a MS/MSD or MS and sample duplicate prepared with each batch?			X	No data was provided as a matrix spike/spike duplicate was not requested nor was sample volume provided for matrix spike analysis specific to this set of samples.	DoD QSM Table F-3
20. Were MS/MSD recoveries within limits specified in table G-12 of the DoD QSM with an RPD ≤30%?			X		DoD QSM Table F-3 Pj
21. Were surrogate recoveries within laboratory limits (79-111%)?	X			The surrogate, 3,4-dinitrotolune recovered above control limits of 79-111% at 119% for sample FWGFWGmw-015-0517-GW and at 116% for sample FWGLL1mw-087-0524-GW . No qualification of the data was required for the surrogate outliers as there were no detected target analyte concentrations reported for the associated field samples.	QSM Tables F-2 >UL=J; <LL =J/UJ

References: DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program. RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH. Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC. February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 27, 2015

SDG: 240-47963
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			PDA-1 7/10/14	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for Quadratic curve).			X		
7d. Did reanalysis of the low level standard after calibration, recover within 15%?	X				
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			7/10/14 @ 1719	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			3/18/15 @1747, 2027 and 3/19/15 @ 1019, 1410	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D < 30%?	X			3/18/15 @1729, 2045 and 3/19/15 @1002, 1446	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 27, 2015

SDG: 240-47963
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
12. Were target analytes detected in the method blank <1/2 the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses < ½ the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B
15. Was a field duplicate analyzed? Were the RPDs ≤30%?	X				RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?			X	No detected concentrations were reported.	DoD QSM Table F-3 RPD>40%=J
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within laboratory limits of 79%-119%?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J; 30-LL=J/UJ; <30%=J/R
19. Was a MS/MSD or MS and sample duplicate prepared with each batch?	X				DoD QSM Table F-3
20. Were MS/MSD recoveries within laboratory limits of 40%-150% with an RPD ≤20%?	X				DoD QSM Table F-3 Pj

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Does the initial calibration curve consist of 5 concentration levels with the low standard near but > MDL?	X				SOP Section 10.2 R
7. Was the correlation coefficient >0.995?	X				SOP Section 10.2
8. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D <30%?	X			3/19/15 @ 0908, 0934	>30%=J
9. Was a second source verification (ICV) analyzed after the ICAL? Were all analytes 90-110%?	X			3/19/15 @ 0904	>110%=J; 90-85%=J/UJ; <85%=J/R
10. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				STL SOP Section 9.8, LCG ,< 5x = U
11. Was a CCV run every 10 samples and at the end of the analytical run?	X			3/19/15 @ 0936	STL SOP Section 10.4
12. Was the ICV and CCV a mid-level standard from the initial calibration curve?	X				STL SOP Section 10.3.1
13. Were all CCV calibration analytes within 90-110%?	X				>110%=J; 85-90%=J/UJ; <85%=J/R
14. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				QSM, < 5x = U
15. Was a method blank prepared and analyzed with each batch?	X				
16. Were target analytes detected in the method blank <1/2 the MRL?		X		ADR checked section.	LCG, *<5x=B*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-47963
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
17. Was a field blank collected and analyzed?	X				
18. Were target analytes detected in the field blank analyses <1/2 the MRL?		X			<5x=B
19. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		ADR checked section. No field duplicates for nitrocellulose were submitted with this set of samples.	QAPP Table 3-2 RPD > 30% = J
20. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within lab's in-house limits% (26-144%)?	X				>UL%=J; 50-LL%=J/UJ; <50%=J/R
21. Was a MS/MSD pair prepared with each batch?	X				
22. Was the MS/MSD parent a Ravenna sample?	X				
23. Were MS/MSD recoveries 26-144% and RPD ≤20?	X				Method EPA 353.2 Section 9.4.2 >UL%=J;<LL%=J/UJ; RPD>20%=J/UJ

References:

SOP SAC-WC-0050 "Preparation and Analysis of Nitrocellulose in Aqueous and Soil/Sediment Samples by Colorimetric Autoanalyzer", Jan 2007, rev. 2.0

DoD Quality Systems Manual (QSM)

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Attachment 2

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-47963-1										
6010B	FWGEQUIPRINSE1-0563-GW	AQ	EB							
				CHROMIUM	7.0	1.6J		U	ug/L	Mb, Cb
				MAGNESIUM	5000	120J		J	ug/L	Rl
				MANGANESE	15	1.3J		B	ug/L	Mb
6010B	FWGFWGmw-015-0517-GF	AQ	N							
				ARSENIC	10	3.6J		J	ug/L	Rl
				BARIUM	200	9.2J		B	ug/L	Mb
				CHROMIUM	7.0	1.9J		U	ug/L	Mb, Eb, C
				COBALT	7.0	1.6J		U	ug/L	Cb
				NICKEL	40	2.8J		U	ug/L	Cb
				POTASSIUM	5000	3600J		J	ug/L	Rl
6010B	FWGFWGmw-016-0518-GF	AQ	N							
				ARSENIC	10	5.8J		J	ug/L	Rl
				BARIUM	200	55J		J	ug/L	Rl
				CHROMIUM	7.0	1.5J		U	ug/L	Mb, Eb, C
				POTASSIUM	5000	2100J		J	ug/L	Rl
6010B	FWGLL1MW-087-0524-GF	AQ	N							
				BARIUM	200	25J		U	ug/L	Mb
				CHROMIUM	7.0	1.6J		U	ug/L	Mb, Eb, C
				COBALT	7.0	1.0J		U	ug/L	Cb
				NICKEL	40	1.3J		U	ug/L	Cb
				POTASSIUM	5000	590J		J	ug/L	Rl
6020	FWGFWGmw-015-0517-GF	AQ	N							
				ANTIMONY	2.0	0.39J		U	ug/L	Cb
				CADMIUM	2.0	0.51J		U	ug/L	Cb

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-47963-1										
6020	FWGFWGmw-016-0518-GF	AQ	N							
				ANTIMONY	2.0	0.38J		U	ug/L	Cb
				CADMIUM	2.0	0.42J		U	ug/L	Cb
8270C -SVOC1	FWGLL1MW-087-0524-GW	AQ	N							
				BIS(2-ETHYLHEXYL)PHTHALATE	4.9	1.7J		J	ug/L	Rl

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Qualifier Summary

Lab Reporting Batch ID: 240-47963-1 **Laboratory: TA CAN**

EDD Filename: 240-47963-1 **eQAPP Name: RVAAP 66-rev August 2014**

Sample ID: **FWGEQUIPRINSE1-0563-GW** ***Collected:*** **3/9/2015 4:01:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MAGNESIUM	120	J	55	MDL	5000	LOQ	ug/L	J	RI
MANGANESE	1.3	J	0.46	MDL	15	LOQ	ug/L	B	Mb
CHROMIUM	1.6	J	0.55	MDL	7.0	LOQ	ug/L	U	Mb, Cb

Sample ID: **FWGFWGmw-015-0517-GF** ***Collected:*** **3/9/2015 2:00:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.6	J	2.9	MDL	10	LOQ	ug/L	J	RI
BARIUM	9.2	J	1.0	MDL	200	LOQ	ug/L	B	Mb
CHROMIUM	1.9	J	0.55	MDL	7.0	LOQ	ug/L	U	Mb, Eb, Cb
COBALT	1.6	J	0.56	MDL	7.0	LOQ	ug/L	U	Cb
NICKEL	2.8	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	3600	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: **FWGFWGmw-016-0518-GF** ***Collected:*** **3/9/2015 1:32:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	5.8	J	2.9	MDL	10	LOQ	ug/L	J	RI
BARIUM	55	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	1.5	J	0.55	MDL	7.0	LOQ	ug/L	U	Mb, Eb, Cb
POTASSIUM	2100	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: **FWGLL1MW-087-0524-GF** ***Collected:*** **3/9/2015 12:25:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	25	J	1.0	MDL	200	LOQ	ug/L	U	Mb
CHROMIUM	1.6	J	0.55	MDL	7.0	LOQ	ug/L	U	Mb, Eb, Cb
COBALT	1.0	J	0.56	MDL	7.0	LOQ	ug/L	U	Cb
NICKEL	1.3	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	590	J	70	MDL	5000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-47963-1 **Laboratory: TA CAN**

EDD Filename: 240-47963-1 **eQAPP Name: RVAAP 66-rev August 2014**

Sample ID: **FWGFWGmw-015-0517-GF** ***Collected:*** **3/9/2015 2:00:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.39	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb
CADMIUM	0.51	J	0.40	MDL	2.0	LOQ	ug/L	U	Cb

Sample ID: **FWGFWGmw-016-0518-GF** ***Collected:*** **3/9/2015 1:32:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.38	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb
CADMIUM	0.42	J	0.40	MDL	2.0	LOQ	ug/L	U	Cb

Sample ID: **FWGLL1MW-087-0524-GW** ***Collected:*** **3/9/2015 12:25:00 PM** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BIS(2-ETHYLHEXYL)PHTHALATE	1.7	J	1.7	MDL	4.9	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-47963-1 **Laboratory: TA CAN**

EDD Filename: 240-47963-1 **eQAPP Name: RVAAP 66-rev August 2014**

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Eb	Equipment Blank Contamination
Lcs	Laboratory Control Spike Upper Estimation
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Upper Estimation

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Review Summary

Lab Reporting Batch ID: 240-47963-1 **Laboratory: TA CAN**

EDD Filename: 240-47963-1 **eQAPP Name: RVAAP 66-rev August 2014**

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	SR
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	SR
Laboratory Replicates	N
Laboratory Control Samples	SR
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	SR

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Surrogate Outlier Report

Lab Reporting Batch ID: 240-47963-1 **Laboratory: TA CAN**

EDD Filename: 240-47963-1 **eQAPP Name: RVAAP 66-rev August 2014**

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
FWGFWGmw-015-0517-GW (RE2)	3,4-DINITROTOLUENE	119	79.00-111.00	All Target Analytes	J (all detects)
FWGLL1MW-087-0524-GW (RE2)	3,4-DINITROTOLUENE	116	79.00-111.00	All Target Analytes	J(all detects)

Method Blank Outlier Report

Lab Reporting Batch ID: 240-47963-1 **Laboratory: TA CAN**

EDD Filename: 240-47963-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-171403/1-A	3/11/2015 10:03:00 AM	BARIUM CHROMIUM LEAD MANGANESE	6.20 ug/L 0.860 ug/L 2.83 ug/L 0.846 ug/L	FWGEQUIPRINSE1-0563-GW FWGFWGmw-015-0517-GF FWGFWGmw-016-0518-GF FWGLL1MW-087-0524-GF

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGEQUIPRINSE1-0563-GW(RES/TOT)	CHROMIUM	1.6 ug/L	1.6U ug/L
FWGEQUIPRINSE1-0563-GW(RES/TOT)	MANGANESE	1.3 ug/L	1.3U ug/L
FWGFWGmw-015-0517-GF(RES/TOT)	BARIUM	9.2 ug/L	9.2U ug/L
FWGFWGmw-015-0517-GF(RES/TOT)	CHROMIUM	1.9 ug/L	1.9U ug/L
FWGFWGmw-016-0518-GF(RES/TOT)	CHROMIUM	1.5 ug/L	1.5U ug/L
FWGLL1MW-087-0524-GF(RES/TOT)	BARIUM	25 ug/L	25U ug/L
FWGLL1MW-087-0524-GF(RES/TOT)	CHROMIUM	1.6 ug/L	1.6U ug/L

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: 240-47963-1 **Laboratory: TA CAN**

EDD Filename: 240-47963-1 **eQAPP Name: RVAAP 66-rev August 2014**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGEQUIPRINSE1-0563-GW(RES/TOT)	3/9/2015 4:01:00 PM	CHROMIUM MAGNESIUM MANGANESE	1.6 ug/L 120 ug/L 1.3 ug/L	FWGFWGmw-015-0517-GF FWGFWGmw-015-0517-GW FWGFWGmw-016-0518-GF FWGFWGmw-016-0518-GW FWGLL1MW-087-0524-GF FWGLL1MW-087-0524-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGFWGmw-015-0517-GF(RES/TOT)	CHROMIUM	1.9 ug/L	1.9U ug/L
FWGFWGmw-016-0518-GF(RES/TOT)	CHROMIUM	1.5 ug/L	1.5U ug/L
FWGLL1MW-087-0524-GF(RES/TOT)	CHROMIUM	1.6 ug/L	1.6U ug/L

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 240-47963-1 **Laboratory: TA CAN**

EDD Filename: 240-47963-1 **eQAPP Name: RVAAP 66-rev August 2014**

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FWGFWGmw-016-0518-GFDUP (TOT) (FWGEQUIPRINSE1-0563-GW FWGFWGmw-015-0517-GF FWGFWGmw-016-0518-GF FWGLL1MW-087-0524-GF)	ARSENIC CHROMIUM	39 29	20.00 20.00	J (all detects) UJ (all non-detects)

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 240-47963-1 **Laboratory: TA CAN**

EDD Filename: 240-47963-1 **eQAPP Name: RVAAP 66-rev August 2014**

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCS 240-171368/6-A (FWGEQUIPRINSE1-0563-GW FWGFWGmw-015-0517-GW FWGFWGmw-016-0518-GW FWGLL1MW-087-0524-GW)	DI-N-BUTYL PHTHALATE	122	-	55.00-115.00	-	DI-N-BUTYL PHTHALATE	J (all detects)

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 22, 2015
Sample Delivery Group: 240-48007 **Revision:** 1

Data Reviewer: Angela Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 10, 2015 the following samples were collected from groundwater-monitoring wells at the former Ravenna Army Ammunition Plant and analyzed as part of SDG 240-48007. Sample analysis was performed by Test America. Test America-North Canton performed all requested analyses with the exception of the analytical for methods 8330, M8330, TALSOPWS-WC-0050 and 6860. Methods 8330, M8330 and TALSOPWS-WC-0050 were performed by Test America, West Sacramento. Method 6860, if requested, was performed by Test America, Denver.

Sample ID	VOC by SW846 8260	SVOC 4 by SW846 8270	SVOC 1 and 2 by SW846 8270	SVOC 1 by SW846 8270	Pesticides by SW846 8081	PCBs/ SW846 8082	Explosives/Propellants by SW846 8330, Mod. 8330 and TALSOP WS-WC-0050	Cyanide SW846 9012	Perchlorate by SW846 6860	NO2/NO3, EPA 353.2	Metals [3]		
											SW846 6010B	SW846 6020	Mercury by SW846 7470A
FWGLL1mw-086-0523-GW/GF				X	X		X				X	X	X
FWGLL1mw-064c-0519-GW/GF				X			X				X	X	X
FWGLL1mw-065c-0520-GW/GF				X			X				X	X	X
FWGSCFmw-004-0546-GW/GF				X	X		X				X	X	X
FWGSCFmw-002-0545-GW/GF				X	X		X				X	X	X
FWGSCFmw-DUP6-0562-GW/GF				X							X	X	X
FWGLL12mw-247-0540-GW/GF				X			X			X	X	X	X
FWGLL1mw-083c-0521-GW/GF				X	X		X				X	X	X
FWGLL1mw-084c-0522-GW/GF				X	X		X				X	X	X
FWGEQUIPRINSE-0564-GW				X	X		X			X	X	X	X

1) All metals samples with the exception of FWGEQUIPRINSE2-0564-GW were field filtered (GF).
2) SVOC1= Phthalates only
3) EPA 6020 metals include aluminum, antimony, beryllium, cadmium, iron, sodium, thallium and zinc. EPA 6010B metals include arsenic, chromium, cobalt, lead, selenium, silver, vanadium, barium, calcium, copper, magnesium, manganese, nickel and potassium.

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004*, Analytical Methods, and Laboratory Standard Operating Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 22, 2015
Sample Delivery Group: 240-48007 **Revision:** 1

Per the DoD QSM, the laboratory data is reported as follows: Non detected results were reported at the LOD with a "U" flag. Detected results between the DL and LOQ were reported as estimated, qualified with a "J" flag.

LOD - An estimate of the minimum amount of a substance that an analytical process can reliably detect.

LOQ - The lowest concentration that produces a quantitative result within specified limits of precision and bias.

DL- The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence.

Checklists used in the verification process are in Attachment I and sample results with outliers requiring qualification are in Attachment II.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, at 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

Chain of Custody /Laboratory Report Discrepancies
The chain of custody listed FWGEQUIPRINSE2-0564-GW, but the laboratory logged and reported as FWGEQUIPRINSE-0564-GW.

SVOCs- 8270C
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD

No QC outliers were noted.

Pesticides- 8081A
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- DDT and Endrin breakdown criteria
- Retention time criteria
- ICV criteria
- CCV Criteria
- Method /field blank criteria
- LCS Recoveries
- Field Duplicate Criteria
- LOD and MRL verification criteria
- Matrix Spike Recovery Criteria and RPD
- Surrogate Recoveries
- Second Column confirmation criteria

CCV Criteria
The CCV analyzed 3/12/15 at 1851 had an average %D above 20% for toxaphene at 24% on CLP -2. No qualification of the data was required as there were no detected toxaphene concentrations that required confirmation.

The CCV analyzed 3/12/15 at 1913 had %D above 20% for endrin at 24.6% on CLP-1 and 24.1% on CLP-2, for endosulfan II at 24.1% (CLP-1) and 24% on CLP-2 and for endrin ketone at 22.3% on CLP-1 and 20.9% on CLP-2. No qualification of the data was required as there were no endrin, endosulfan II or endrin ketone results reported for samples FWGLL1mw-086-0523-GW, FWGSCFmw-002-0545-GW, FWGSCFmw-004-0546-GW, FWGLL1mw-083c-0521-GW, FWGLL1mw-084c-0522-GW or FWGEQUIPRINSE2-0564-GW.

Blanks
The method blank had heptachlor detected at 0.0226 µg/L. The detected heptachlor results for samples FWGLL1mw-086-0523-GW, FWGSCFmw-002-0545-GW, FWGLL1mw-083c-0521-GW, FWGLL1mw-084c-0522-GW and FWGEQUIPRINSE2-0564-GW were qualified, "B", as the reported concentrations were less than five times the method blank contamination.

FWGEQUIPRINSE2-0564-GW had heptachlor detected at 0.029 µg/L. The detected heptachlor results for samples FWGLL1mw-086-0523-GW, FWGSCFmw-002-0545-GW, FWGLL1mw-083c-0521-GW and FWGLL1mw-084c-0522-GW were qualified, "B", as the reported concentrations were less than five times the equipment rinse contamination.

Matrix Spike Recovery Criteria
Matrix spike analysis was not requested on a sample from this sample set.

Field duplicate RPD Criteria
A field duplicate was not submitted with this set of samples.

No other QC outliers were noted.

Metals - 6010B
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria
- Post Digestion Spike Criteria

Blanks
The ICB analyzed 3/13/15@ 0910 had cobalt detected at 2.34 µg/L and nickel detected at 2.66 µg/L. The nickel results for sample FWGLL1mw-086-0523-GF and the cobalt result for sample FWGLL1mw-083c-0521-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination.

The CCB analyzed 3/13/15 at 1152 had chromium detected at 2.82 µg/L, manganese at 3.38 µg/L and silver at 1.95 µg/L. The chromium result for sample FWGLL1mw-065c-0520-GF was qualified, "U" as the reported concentration was less than 5x instrument blank contamination. No qualifications were required for the silver or manganese contamination as there were no detected silver results reported for the associated field samples and reported manganese concentrations were greater than five times instrument blank contamination.

The method blank analyzed 3/13/15 at 1116 had chromium detected at 0.726 µg/L, barium at 2.50µg/L and manganese at 1.36 µg/L. The chromium result for sample FWGLL1mw-065c-0520-GF was qualified "B" as the reported concentration was greater than 5x blank contamination. No qualification was necessary for the barium or manganese method blank contamination, as there were no detected barium or manganese concentrations reported for the associated field samples less than five times method blank contamination.

MRL Verification

The closing MRL analyzed 3/13/15 at 1358 recovered below control limits of 70-130% for vanadium at 47%. A DL check was analyzed immediately before the MRL verification with acceptable results. The vanadium results for samples FWGLL1mw-086-0523-GF, FWGLL1mw-064c-0519-GF, FWGLL1mw-065c-0520-GF, FWGSCFmw-004-0546-GF, FWGSCFmw-002-0545GF, FWGSCFmw-DUP6-0562-GF, FWGLL12mw-247-0540-GF, FWGLL1mw-083c-0521-GF, FWGLL1mw-084c-0522-GF and FWGEQUIPRINSE2-0564-GW were qualified as estimated, "UJ".

No other QC outliers were noted.

Metals - 6020

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning Criteria
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field Duplicate RPD Criteria
- Post Digestion Spike Recovery
- Internal Standards

Blanks

The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony result for sample FWGLL1mw-086-0523-GF was qualified, "U" as the reported concentration was less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results less 5x contamination reported for the associated field samples.

The CCBs analyzed 3/17/15 had antimony detected from 0.316 µg/L to 0.365 µg/L, beryllium from 0.055 µg/L to 0.153 µg/L and cadmium from 0.0840 µg/L to 0.112 µg/L. The antimony result for sample FWGLL1mw-086-0523-GF was qualified, "U" as the reported concentration was less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results less 5x contamination reported for the associated field samples.

No additional QC outliers were noted.

Mercury - 7470A

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria

- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

No QC outliers were noted.

Explosives- 8330

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration Criteria
- ICV and CCV criteria
- Retention time criteria
- LOD and MRL verification criteria
- Surrogate recovery criteria
- Method /field blank criteria
- LCS/LCD Recovery and RPD Criteria
- Matrix spike/spike duplicate recovery criteria and RPD
- Second column confirmation RPD
- Field Duplicate RPD

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

Surrogate Recovery

The surrogate, 3,4-dinitrotolune, recovered above control limits of 79-111% in sample FWGLL1mw-083C-0521-GW at 141% in the undiluted analysis and at 139% in the diluted analysis. 3,4-Dinitrotoluene also recovered above control limits of 79-111% in sample FWGLL1mw-084C-0522-GW at 363% in the undiluted analysis and at 381% in the diluted analysis. The detected 1,3,5-trinitrobenzene, 1,3-dinitrobenzene, 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, 2,6-dintrotoluene, 2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, and HMX results for sample FWGLL1mw-083C-0521-GW and the 1,3,5-trinitrobenzene, 1,3-dinitrobenzene, 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, 2,6-dintrotoluene, 2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, 4-nitrotoluene, RDX and HMX were qualified as estimated, "J".

No additional QC outliers were noted.

Nitroguanidine- 8330M

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration criteria
- Retention time criteria
- LOD and MRL verification criteria
- ICV and CCV criteria
- Method /field blank criteria
- LCS/LCSD percent recoveries and RPD value criteria
- Matrix spike recovery criteria
- Second column confirmation
- Field Duplicate RPD

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

No QC outliers were noted.

Nitrocellulose – WS-WC-0050

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD percent recoveries and RPD value criteria
- MS/MSD percent recoveries and RPD
- Field Duplicate RPD

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

No QC outliers were noted.

Nitrate/Nitrite– 353.2

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD percent recoveries and RPD value criteria
- MS/MSD percent recoveries

Blanks

The ICB and CCBs analyzed 3/20/14 from 1903 to 1937 had nitrate/nitrite detected from 0.004mg/L to 0.005mg/L. The nitrate/nitrite results for samples FWGEQUIPRINSE2-0564-GW and FWGLL12mw-247-0540-GW were qualified, "U", as the detected results were less than five times instrument blank contamination.

The method blank had nitrate/nitrite detected at 0.005 mg/L. The nitrate/nitrite result for samples FWGEQUIPRINSE2-0564-GW and FWGLL12mw-247-0540-GW were qualified, "B, as the detected results were <5x method blank contamination.

FWGEQUIPRINSE2-0564-GW had nitrate/nitrite detected at 0.009 mg/L. The nitrate/nitrite result for sample FWGLL12mw-247-0540-GW was qualified, "B, as the detected result was <5x rinse blank contamination.

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

No other QC outliers were noted.

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Sample Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-48007-1	FWGLL1MW-086-0523-GW	Water	03/10/15 11:53	03/10/15 18:33
240-48007-2	FWGLL1MW-086-0523-GF	Water	03/10/15 11:53	03/10/15 18:33
240-48007-3	FWGLL1MW-064C-0519-GW	Water	03/10/15 11:15	03/10/15 18:33
240-48007-4	FWGLL1MW-064C-0519-GF	Water	03/10/15 11:15	03/10/15 18:33
240-48007-5	FWGLL1MW-065C-0520-GW	Water	03/10/15 12:51	03/10/15 18:33
240-48007-6	FWGLL1MW-065C-0520-GF	Water	03/10/15 12:51	03/10/15 18:33
240-48007-7	FWGSCFMW-004-0546-GW	Water	03/10/15 10:07	03/10/15 18:33
240-48007-8	FWGSCFMW-004-0546-GF	Water	03/10/15 10:07	03/10/15 18:33
240-48007-9	FWGSCFMW-002-0545-GW	Water	03/10/15 14:27	03/10/15 18:33
240-48007-10	FWGSCFMW-002-0545-GF	Water	03/10/15 14:27	03/10/15 18:33
240-48007-11	FWGSCFMW-DUP6-0562-GW	Water	03/10/15 15:00	03/10/15 18:33
240-48007-12	FWGSCFMW-DUP6-0562-GF	Water	03/10/15 15:00	03/10/15 18:33
240-48007-13	FWGLL12MW-247-0540-GW	Water	03/10/15 16:00	03/10/15 18:33
240-48007-14	FWGLL12MW-247-0540-GF	Water	03/10/15 16:00	03/10/15 18:33
240-48007-15	FWGLL1MW-083C-0521-GW	Water	03/10/15 10:10	03/10/15 18:33
240-48007-16	FWGLL1MW-083C-0521-GF	Water	03/10/15 10:10	03/10/15 18:33
240-48007-17	FWGLL1MW-084C-0522-GW	Water	03/10/15 12:34	03/10/15 18:33
240-48007-18	FWGLL1MW-084C-0522-GF	Water	03/10/15 12:34	03/10/15 18:33
240-48007-19	FWGEQUIPRINSE-0564-GW	Water	03/10/15 16:14	03/10/15 18:33

Method Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Method	Method Description	Protocol	Laboratory
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
8081A	Organochlorine Pesticides (GC)	SW846	TAL CAN
8330 Modified	Nitroguanidine (HPLC)	SW846	TAL SAC
8330A	Nitroaromatics and Nitramines	SW846	TAL SAC
6010B	Metals (ICP)	SW846	TAL CAN
6020	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAC
WS-WC-0050	Nitrocellulose	TAL-SAC	TAL SAC

Protocol References:

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

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

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS


240-48007 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: John Miller	Site Contact: E Corbin	Date: 3/10/15	COC No: 40 3/10/15
Company Name: EQM	Tel/Fax:	Lab Contact: M. Loeb	Carrier: Lab Pickup	1 of 1 COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Cinti 1041 / 45240	☒ CALENDAR DAYS 21 ☐ WORKING DAYS			For Lab Use Only:
Phone: 513-825-7500	TAT if different from Below			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: RVAAP 66 (O+1)	☐ 1 week			
Site: ~~2017~~ EC 3/10/15	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Pest 8081	SVOC 1 8270	Explosive/Propel	Metals	Sample Specific Notes Cooler ID
FWGLL1MW-086-0523-GW	3/10/15	1153	G	W	7	N	N	X	X	X		173
FWGLL1MW-086-0523-GF	↓	1153	↓	↓	1	Y	N				4	173
FWGLL1mw-064C-0519-GW	3/10/15	11:15	G	GW	5	N	N		X	X		H113
FWGLL1mw-064C-0519-GF	3/10/15	11:15	G	GW	1	Y	N				X	H113
FWGLL1mw-065C-0520-GW	3/10/15	12:51	G	GW	5	N	N		X	X		P-25
FWGLL1mw-065C-0520-GF	3/10/15	12:51	G	GW	1	Y	N				X	P-25

EC 3/10/15

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

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

Special Instructions/QC Requirements & Comments:
Metals Field Filtered.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EQM	03/10/15 1730	RC [signature]	TestAmerica	3/10/2015 · 1730
RC [signature]	TestAm. 3/10/15	1833			
			Received in Laboratory by: [signature]	TAL	3/10/15 1833

TestAmerica Canton
4101 Shuffel Street, N. W.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: John Miller	Site Contact: E. Carbin	Date: 3/10/15	COC No: CAL-031015
Company Name: EQM	Tel/Fax:	Lab Contact: M. Loeb	Carrier: Lab Pickup	1 of 1 COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Cincinnati OH 45240	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513-825-7500	TAT if different from Below 21			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: RVAAP 66 (OH)	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	SVOC	Pest	EXPLO	PROPELLANTS	NO_2, NO_3	METALS, filtered	Sample Specific Notes Cooler ID
FWGSCFmw-004-0546-GW	3-10-15	1007	G	GW	7	N	N	2	2	1	2			AD7
FWGSCFmw-004-0546 GF	↓	↓	↓	↓	1	Y	N						1	AD7
FWGSCFmw-002-0545 GW	↓	1427	↓	↓	16	N	*	6	1	3	6			*MSMSD on same SVOC Expl Prop 14015
FWGSCFmw-002-0545-GF	↓	↓	↓	↓	3	Y	Y						3	*MSMSD 14015
FWGSCFmw-DUP6-0562-GW	↓	1500	↓	↓	2	N	N	2						
FWGSCFmw-DUP6-0562-GF	↓	↓	↓	↓	1	Y	N						1	
FWG LL12mw-247-0540-GW	↓	1600	↓	↓	8	N	*	2		1	2	3		*NO_2, NO_3 MSMSD
FWG LL12mw-247-0540-GF	↓	↓	↓	↓	1	Y	N						1	

EC 3/10/15

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
SCF-002 in Cooler ID: XXX, 14015 LL12-247 in cooler ID: 045J metal are field filtered

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Erik Carlin	EQM	3/10/15 17:15	[signature]	TestAmerica	3/10/2015 1725
[signature]	TestAm 3/10/15	1833			
			Received in Laboratory by: Heather Powell	JDL	3/10/15 1833

TestAmerica Canton
4101 Shuffel Street, N. W.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Client Contact	Project Manager: JOHN MILLER	Site Contact: ERIK COREIN	Date: 03/10/2015	COC No: SAS031015
Company Name: EQM	Tel/Fax: (513) 825-7500 FAX 7495	Lab Contact: MARK LOEB	Carrier: LAB PICKUP	1 of ____ COCs
Address: 1800 CARILLON BLVD	Analysis Turnaround Time			Sampler:
City/State/Zip: CINCINNATI, OH 45240	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (513) 825-7500	TAT if different from Below ____			Walk-in Client:
Fax: (513) 825-7495	☑ 3 weeks PER SOW			Lab Sampling:
Project Name: RVARP (OH)	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O # 30174.0016.001.10.1	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	8270C_1	8260B	6020	PROPELLANTS	METALS - 6010B/6020/7470	NO2/NO3	PERCHLORATE	Sample Specific Notes:
FWGLL1mw-083C-0521-GW	03/10/15	10:10	G	GW	7	N	N	2	2	1	2				0411
FWGLL1mw-083C-0521-GF	1	1	G	GW	1	F	N					1			0411
FWGLL1mw-084C-0522-GW	1	12:34	G	GW	7	N	N	2	2	1	2				S-1
FWGLL1mw-084C-0522-GF	1	1	G	GW	1	F	N					1			S-1
FWGEQUIPRinse2-0564-GW	1	16:14	G	GW	10	N	N	2	2	1	2	1	1	PER	NOT FILTERED 1402

Preservation Used: 1=Ice, 2=HCL, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments: ALL METALS, PERCHLORATE SAMPLES ARE FIELD FILTERED. PER WORK ORDER

TEMPS MAY NOT MEET REQUIREMENTS IF SAMPLE COLLECTION IS CLOSE TO LAB PICKUP TIME.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: 9 | Therm ID No.: ____

Relinquished by:	Company: EQM	Date/Time: 03/10/15 1730	Received by: RC	Company: TestAmerica	Date/Time: 3/10/2015 1730
Relinquished by:	Company: EQM 03/10/15	Date/Time: 1833	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: TAL	Date/Time: 3/10/15 1833

TestAmerica Canton Sample Receipt Form/Narrative Login #: 41800 7
Canton Facility

Client EQM Site Name RVAAP Cooler unpacked by: Heather Powell

Cooler Received on 3/10/15 Opened on 3/10/15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off (TestAmerica Courier) Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box Client Cooler Box (Other) MCF

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt

~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~

IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~

IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

☒ See Multiple Cooler Form

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 each (Yes) No
   - Were custody seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   - Were custody seals on the bottle(s)? Yes (No)
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the sampler(s) clearly identified on the COC? Yes (No)
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? Yes (No)
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Were sample(s) at the correct pH upon receipt? (Yes) No NA pH Strip Lot# HC425511
12. Were VOAs on the COC? Yes (No)
13. Were air bubbles >6 mm in any VOA vials? Yes No (NA)
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # Yes (No)

Contacted PM Date by via Verbal Voice Mail Other

Concerning

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

Recieved 1 liter labled with Sample ID FWGW12MW-247-0510-GW and time of 1427. This does not appear on the COC. Will add to end of job and archive

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

TestAmerica Multiple Cooler Receipt Form/Narrative — Login # : 48007
Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
461	4	3.6	4.1	ICE
AD7	↓	4.6	5.1	↓
14015		4.4	4.9	
51		4.2	4.7	
405A		3.6	4.1	
0411		3.2	3.7	
H113		2.8	3.3	
1402		2.6	3.1	
173		3.8	4.3	
P25		2.6	3.1	

Job ID: 240-48007-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE
REVISED

Client: Environmental Quality Mgt., Inc.

Project: RVAAP (OH)

Report Number: 240-48007-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The 353.2 Nitrocellulose, 8330 Nitroguanidine and 8330A Explosives analysis were performed at the TestAmerica Sacramento Laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

All parameters for which TestAmerica North Canton has certification were evaluated to the limit of detection (LOD) and include qualified results where applicable. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

REVSION 1: Per client request, the dual column confirmation of the pesticide analysis was reevaluated. The following changes were made. Results for Heptachlor were reported for sample FWGLL1MW-086-0523-GW (240-48007-1) as 0.043 J. Following laboratory standard protocol, the result should have been reported as 0.029 J. Results for sample FWGLL1MW-084C-0522-GW (240-48007-17) initially showed a positve 0.014 J for alpha-BHC. The compound did not confirm and should have been report as non-detect.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

RECEIPT

The samples were received on 3/10/2015 6:33 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 10 coolers at receipt time were 3.1° C, 3.1° C, 3.3° C, 3.7° C, 4.1° C, 4.1° C, 4.3° C, 4.7° C, 4.9° C and 5.1° C.

Job ID: 240-48007-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGLL1MW-086-0523-GW (240-48007-1), FWGLL1MW-064C-0519-GW (240-48007-3), FWGLL1MW-065C-0520-GW (240-48007-5), FWGSCFMW-004-0546-GW (240-48007-7), FWGSCFMW-002-0545-GW (240-48007-9), FWGSCFMW-DUP6-0562-GW (240-48007-11), FWGLL12MW-247-0540-GW (240-48007-13), FWGLL1MW-083C-0521-GW (240-48007-15), FWGLL1MW-084C-0522-GW (240-48007-17) and FWGEQUIPRINSE-0564-GW (240-48007-19) were analyzed for semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8270C. The samples were prepared on 03/11/2015 and analyzed on 03/16/2015.

Surrogates are added during the extraction process prior to dilution. When the sample is diluted, surrogate recoveries are diluted out and no corrective action is required.

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

NITROGUANIDINE (HPLC)

Samples FWGLL1MW-086-0523-GW (240-48007-1), FWGLL1MW-064C-0519-GW (240-48007-3), FWGLL1MW-065C-0520-GW (240-48007-5), FWGSCFMW-004-0546-GW (240-48007-7), FWGSCFMW-002-0545-GW (240-48007-9), FWGLL12MW-247-0540-GW (240-48007-13), FWGLL1MW-083C-0521-GW (240-48007-15), FWGLL1MW-084C-0522-GW (240-48007-17) and FWGEQUIPRINSE-0564-GW (240-48007-19) were analyzed for nitroguanidine (HPLC) in accordance with EPA SW-846 Method 8330_Ngu. The samples were prepared on 03/16/2015 and analyzed on 03/19/2015.

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

CHLORINATED PESTICIDES

Samples FWGLL1MW-086-0523-GW (240-48007-1), FWGSCFMW-004-0546-GW (240-48007-7), FWGSCFMW-002-0545-GW (240-48007-9), FWGLL1MW-083C-0521-GW (240-48007-15), FWGLL1MW-084C-0522-GW (240-48007-17) and FWGEQUIPRINSE-0564-GW (240-48007-19) were analyzed for chlorinated pesticides in accordance with EPA SW-846 Method 8081A DoD. The samples were prepared on 03/11/2015 and analyzed on 03/12/2015.

Heptachlor was detected in method blank MB 240-171536/7-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.

The continuing calibration verification (CCV) associated with batch 171791 recovered above the upper control limit for Multiple Analytes. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: FWGEQUIPRINSE-0564-GW (240-48007-19), FWGLL1MW-083C-0521-GW (240-48007-15), FWGLL1MW-084C-0522-GW (240-48007-17), FWGLL1MW-086-0523-GW (240-48007-1), FWGSCFMW-002-0545-GW (240-48007-9), FWGSCFMW-004-0546-GW (240-48007-7).

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 171536.

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

EXPLOSIVES

Samples FWGLL1MW-086-0523-GW (240-48007-1), FWGLL1MW-064C-0519-GW (240-48007-3), FWGLL1MW-065C-0520-GW (240-48007-5), FWGSCFMW-004-0546-GW (240-48007-7), FWGSCFMW-002-0545-GW (240-48007-9), FWGLL12MW-247-0540-GW (240-48007-13), FWGLL1MW-083C-0521-GW (240-48007-15), FWGLL1MW-084C-0522-GW (240-48007-17) and FWGEQUIPRINSE-0564-GW (240-48007-19) were analyzed for explosives in accordance with EPA SW-846 Method 8330A. The samples were prepared on 03/13/2015 and analyzed on 03/20/2015, 03/24/2015 and 03/25/2015.

3,4-Dinitrotoluene and 3,4-Dinitrotoluene failed the surrogate recovery criteria high for FWGLL1MW-083C-0521-GW (240-48007-15) and FWGLL1MW-084C-0522-GW (240-48007-17). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Samples FWGLL1MW-083C-0521-GW (240-48007-15)[5X] and FWGLL1MW-084C-0522-GW (240-48007-17)[5X] required dilution prior to

Job ID: 240-48007-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

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.

TOTAL RECOVERABLE METALS (ICP)

Samples FWGLL1MW-086-0523-GF (240-48007-2), FWGLL1MW-064C-0519-GF (240-48007-4), FWGLL1MW-065C-0520-GF (240-48007-6), FWGSCFMW-004-0546-GF (240-48007-8), FWGSCFMW-002-0545-GF (240-48007-10), FWGSCFMW-DUP6-0562-GF (240-48007-12), FWGLL12MW-247-0540-GF (240-48007-14), FWGLL1MW-083C-0521-GF (240-48007-16), FWGLL1MW-084C-0522-GF (240-48007-18) and FWGEQUIPRINSE-0564-GW (240-48007-19) were analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010B DoD. The samples were prepared on 03/11/2015 and analyzed on 03/13/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

Barium, Chromium and Manganese were detected in method blank MB 240-171577/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the 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.

TOTAL RECOVERABLE METALS (ICPMS)

Samples FWGLL1MW-086-0523-GF (240-48007-2), FWGLL1MW-064C-0519-GF (240-48007-4), FWGLL1MW-065C-0520-GF (240-48007-6), FWGSCFMW-004-0546-GF (240-48007-8), FWGSCFMW-002-0545-GF (240-48007-10), FWGSCFMW-DUP6-0562-GF (240-48007-12), FWGLL12MW-247-0540-GF (240-48007-14), FWGLL1MW-083C-0521-GF (240-48007-16), FWGLL1MW-084C-0522-GF (240-48007-18) and FWGEQUIPRINSE-0564-GW (240-48007-19) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020 DoD. The samples were prepared on 03/11/2015 and analyzed on 03/17/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

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

TOTAL MERCURY

Samples FWGLL1MW-086-0523-GF (240-48007-2), FWGLL1MW-064C-0519-GF (240-48007-4), FWGLL1MW-065C-0520-GF (240-48007-6), FWGSCFMW-004-0546-GF (240-48007-8), FWGSCFMW-002-0545-GF (240-48007-10), FWGSCFMW-DUP6-0562-GF (240-48007-12), FWGLL12MW-247-0540-GF (240-48007-14), FWGLL1MW-083C-0521-GF (240-48007-16), FWGLL1MW-084C-0522-GF (240-48007-18) and FWGEQUIPRINSE-0564-GW (240-48007-19) were analyzed for total mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 03/11/2015 and analyzed on 03/12/2015.

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

NITRATE-NITRITE AS NITROGEN

Samples FWGLL12MW-247-0540-GW (240-48007-13) and FWGEQUIPRINSE-0564-GW (240-48007-19) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 03/20/2015.

Nitrate Nitrite as N was detected in method blank MB 320-69251/41 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.

NITROCELLULOSE

Samples FWGLL1MW-086-0523-GW (240-48007-1), FWGLL1MW-064C-0519-GW (240-48007-3), FWGLL1MW-065C-0520-GW

Job ID: 240-48007-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

(240-48007-5), FWGSCFMW-004-0546-GW (240-48007-7), FWGSCFMW-002-0545-GW (240-48007-9), FWGLL12MW-247-0540-GW (240-48007-13), FWGLL1MW-083C-0521-GW (240-48007-15), FWGLL1MW-084C-0522-GW (240-48007-17) and FWGEQUIPRINSE-0564-GW (240-48007-19) were analyzed for Nitrocellulose in accordance with EPA Method 353.2. The samples were prepared on 03/18/2015 and analyzed on 03/19/2015.

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

Client Sample ID: FWGLL1MW-086-0523-GW
Date Collected: 03/10/15 11:53
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-1
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 15:26	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/16/15 15:26	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/16/15 15:26	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/16/15 15:26	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 15:26	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/16/15 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*50 - 110*	*03/11/15 06:52*	*03/16/15 15:26*	*1*
2-Fluorophenol (Surr)	*76*		*20 - 110*	*03/11/15 06:52*	*03/16/15 15:26*	*1*
Nitrobenzene-d5 (Surr)	*73*		*40 - 110*	*03/11/15 06:52*	*03/16/15 15:26*	*1*
Phenol-d5 (Surr)	*81*		*10 - 115*	*03/11/15 06:52*	*03/16/15 15:26*	*1*
Terphenyl-d14 (Surr)	*80*		*50 - 135*	*03/11/15 06:52*	*03/16/15 15:26*	*1*
2,4,6-Tribromophenol (Surr)	*88*		*40 - 125*	*03/11/15 06:52*	*03/16/15 15:26*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/12/15 15:57	1
4,4'-DDE	0.048	U	0.048	0.048	0.0086	ug/L		03/12/15 15:57	1
4,4'-DDT	0.048	U	0.048	0.048	0.013	ug/L		03/12/15 15:57	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/12/15 15:57	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/12/15 15:57	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/12/15 15:57	1
beta-BHC	0.048	U	0.048	0.048	0.012	ug/L		03/12/15 15:57	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/12/15 15:57	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/12/15 15:57	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/12/15 15:57	1
Endosulfan II	0.048	U Q	0.048	0.048	0.014	ug/L		03/12/15 15:57	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.010	ug/L		03/12/15 15:57	1
Endrin	0.048	U Q	0.048	0.048	0.011	ug/L		03/12/15 15:57	1
Endrin aldehyde	0.048	U	0.048	0.048	0.0076	ug/L		03/12/15 15:57	1
Endrin ketone	0.048	U Q	0.048	0.048	0.0086	ug/L		03/12/15 15:57	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.011	ug/L		03/12/15 15:57	1
gamma-Chlordane	0.048	U	0.048	0.048	0.0095	ug/L		03/12/15 15:57	1
Heptachlor	**0.029**	J	0.048	0.048	0.0048	ug/L		03/12/15 15:57	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.013	ug/L		03/12/15 15:57	1
Methoxychlor	0.048	U	0.095	0.048	0.011	ug/L		03/12/15 15:57	1
Toxaphene	0.95	U	1.9	0.95	0.19	ug/L		03/12/15 15:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*31*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 15:57*	*1*
DCB Decachlorobiphenyl	*30*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 15:57*	*1*
Tetrachloro-m-xylene	*93*		*25 - 140*	*03/11/15 06:54*	*03/12/15 15:57*	*1*
Tetrachloro-m-xylene	*94*		*25 - 140*	*03/11/15 06:54*	*03/12/15 15:57*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 16:32	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Client Sample ID: FWGLL1MW-086-0523-GW
Date Collected: 03/10/15 11:53
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-1
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		03/20/15 05:17	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 05:17	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 05:17	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 05:17	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 05:17	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 05:17	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/20/15 05:17	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/20/15 05:17	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/20/15 05:17	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 05:17	1
HMX	0.051	U	0.15	0.051	0.036	ug/L		03/20/15 05:17	1
RDX	0.051	U	0.15	0.051	0.036	ug/L		03/20/15 05:17	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 05:17	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 05:17	1
Nitroglycerin	0.51	U	0.66	0.51	0.33	ug/L		03/20/15 05:17	1
PETN	0.51	U M	0.66	0.51	0.30	ug/L		03/20/15 05:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*88*		*79 - 111*	*03/13/15 09:40*	*03/20/15 05:17*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 09:46	1

Client Sample ID: FWGLL1MW-086-0523-GF
Date Collected: 03/10/15 11:53
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-2
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	4.4	J	10	10	2.9	ug/L		03/13/15 11:44	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 11:44	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 11:44	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 11:44	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 11:44	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 11:44	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 11:44	1
Barium	57	J	200	5.0	1.0	ug/L		03/13/15 11:44	1
Calcium	43000		5000	1000	260	ug/L		03/13/15 11:44	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 11:44	1
Magnesium	24000		5000	300	55	ug/L		03/13/15 11:44	1
Manganese	210		15	5.0	0.46	ug/L		03/13/15 11:44	1
Nickel	1.3	J	40	5.0	0.76	ug/L		03/13/15 11:44	1
Potassium	23000		5000	900	70	ug/L		03/13/15 11:44	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	33	J	60	60	20	ug/L		03/17/15 16:01	1
Antimony	0.59	J	2.0	1.0	0.33	ug/L		03/17/15 16:01	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 16:01	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 16:01	1
Iron	220		150	100	44	ug/L		03/17/15 16:01	1
Sodium	12000		1000	400	160	ug/L		03/17/15 16:01	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 16:01	1
Zinc	50	U	50	50	27	ug/L		03/17/15 16:01	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:27	1

Client Sample ID: FWGLL1MW-064C-0519-GW
Date Collected: 03/10/15 11:15
Date Received: 03/10/15 16:33

Lab Sample ID: 240-48007-3
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 15:51	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/16/15 15:51	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/16/15 15:51	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/16/15 15:51	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 15:51	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/16/15 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*79*		*50 - 110*	*03/11/15 06:52*	*03/16/15 15:51*	*1*
2-Fluorophenol (Surr)	*75*		*20 - 110*	*03/11/15 06:52*	*03/16/15 15:51*	*1*
Nitrobenzene-d5 (Surr)	*73*		*40 - 110*	*03/11/15 06:52*	*03/16/15 15:51*	*1*
Phenol-d5 (Surr)	*79*		*10 - 115*	*03/11/15 06:52*	*03/16/15 15:51*	*1*
Terphenyl-d14 (Surr)	*84*		*50 - 135*	*03/11/15 06:52*	*03/16/15 15:51*	*1*
2,4,6-Tribromophenol (Surr)	*80*		*40 - 125*	*03/11/15 06:52*	*03/16/15 15:51*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 16:50	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		03/20/15 06:01	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 06:01	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 06:01	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/20/15 06:01	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/20/15 06:01	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 06:01	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		03/20/15 06:01	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.058	ug/L		03/20/15 06:01	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		03/20/15 06:01	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 06:01	1
HMX	0.050	U	0.15	0.050	0.036	ug/L		03/20/15 06:01	1
RDX	0.050	U	0.15	0.050	0.036	ug/L		03/20/15 06:01	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 06:01	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 06:01	1
Nitroglycerin	0.50	U	0.66	0.50	0.33	ug/L		03/20/15 06:01	1
PETN	0.50	U	0.66	0.50	0.30	ug/L		03/20/15 06:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*86*		*79 - 111*	*03/13/15 09:40*	*03/20/15 06:01*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 09:48	1

Client Sample ID: FWGLL1MW-064C-0519-GF
Date Collected: 03/10/15 11:15
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-4
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.5	J	10	10	2.9	ug/L		03/13/15 11:56	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 11:56	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 11:56	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 11:56	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 11:56	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 11:56	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 11:56	1
Barium	47	J	200	5.0	1.0	ug/L		03/13/15 11:56	1
Calcium	59000		5000	1000	260	ug/L		03/13/15 11:56	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 11:56	1
Magnesium	10000		5000	300	55	ug/L		03/13/15 11:56	1
Manganese	120		15	5.0	0.46	ug/L		03/13/15 11:56	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 11:56	1
Potassium	750	J	5000	900	70	ug/L		03/13/15 11:56	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 16:05	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 16:05	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 16:05	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 16:05	1
Iron	730		150	100	44	ug/L		03/17/15 16:05	1
Sodium	5300		1000	400	160	ug/L		03/17/15 16:05	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 16:05	1
Zinc	50	U	50	50	27	ug/L		03/17/15 16:05	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:28	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Client Sample ID: FWGLL1MW-065C-0520-GW
Date Collected: 03/10/15 12:51
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-5
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 16:17	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/16/15 16:17	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/16/15 16:17	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/16/15 16:17	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 16:17	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/16/15 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*50 - 110*	*03/11/15 06:52*	*03/16/15 16:17*	*1*
2-Fluorophenol (Surr)	*56*		*20 - 110*	*03/11/15 06:52*	*03/16/15 16:17*	*1*
Nitrobenzene-d5 (Surr)	*66*		*40 - 110*	*03/11/15 06:52*	*03/16/15 16:17*	*1*
Phenol-d5 (Surr)	*61*		*10 - 115*	*03/11/15 06:52*	*03/16/15 16:17*	*1*
Terphenyl-d14 (Surr)	*80*		*50 - 135*	*03/11/15 06:52*	*03/16/15 16:17*	*1*
2,4,6-Tribromophenol (Surr)	*58*		*40 - 125*	*03/11/15 06:52*	*03/16/15 16:17*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 17:08	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		03/20/15 08:12	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:12	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:12	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 08:12	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 08:12	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 08:12	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/20/15 08:12	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/20/15 08:12	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/20/15 08:12	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:12	1
HMX	0.051	U	0.15	0.051	0.036	ug/L		03/20/15 08:12	1
RDX	0.051	U M	0.15	0.051	0.036	ug/L		03/20/15 08:12	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:12	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:12	1
Nitroglycerin	0.51	U	0.66	0.51	0.33	ug/L		03/20/15 08:12	1
PETN	0.51	U	0.66	0.51	0.30	ug/L		03/20/15 08:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*87*		*79 - 111*	*03/13/15 09:40*	*03/20/15 08:12*	*1*
3,4-Dinitrotoluene	*88*		*79 - 111*	*03/13/15 09:40*	*03/25/15 09:54*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 09:50	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Client Sample ID: FWGLL1MW-065C-0520-GF
Date Collected: 03/10/15 12:51
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-6
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 12:00	1
Chromium	0.59	J	7.0	4.0	0.55	ug/L		03/13/15 12:00	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 12:00	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 12:00	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 12:00	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 12:00	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 12:00	1
Barium	50	J	200	5.0	1.0	ug/L		03/13/15 12:00	1
Calcium	82000		5000	1000	260	ug/L		03/13/15 12:00	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 12:00	1
Magnesium	23000		5000	300	55	ug/L		03/13/15 12:00	1
Manganese	130		15	5.0	0.46	ug/L		03/13/15 12:00	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 12:00	1
Potassium	1200	J	5000	900	70	ug/L		03/13/15 12:00	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 16:17	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 16:17	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 16:17	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 16:17	1
Iron	64	J	150	100	44	ug/L		03/17/15 16:17	1
Sodium	13000		1000	400	160	ug/L		03/17/15 16:17	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 16:17	1
Zinc	50	U	50	50	27	ug/L		03/17/15 16:17	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:34	1

Client Sample ID: FWGSCFMW-004-0546-GW
Date Collected: 03/10/15 10:07
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-7
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/16/15 16:42	1
Butyl benzyl phthalate	0.51	U	5.1	0.51	0.26	ug/L		03/16/15 16:42	1
Diethyl phthalate	1.0	U	2.0	1.0	0.61	ug/L		03/16/15 16:42	1
Dimethyl phthalate	0.51	U	2.0	0.51	0.29	ug/L		03/16/15 16:42	1
Di-n-butyl phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/16/15 16:42	1
Di-n-octyl phthalate	0.51	U	2.0	0.51	0.23	ug/L		03/16/15 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*80*		*50 - 110*	*03/11/15 06:52*	*03/16/15 16:42*	*1*
2-Fluorophenol (Surr)	*77*		*20 - 110*	*03/11/15 06:52*	*03/16/15 16:42*	*1*
Nitrobenzene-d5 (Surr)	*73*		*40 - 110*	*03/11/15 06:52*	*03/16/15 16:42*	*1*
Phenol-d5 (Surr)	*80*		*10 - 115*	*03/11/15 06:52*	*03/16/15 16:42*	*1*
Terphenyl-d14 (Surr)	*84*		*50 - 135*	*03/11/15 06:52*	*03/16/15 16:42*	*1*
2,4,6-Tribromophenol (Surr)	*78*		*40 - 125*	*03/11/15 06:52*	*03/16/15 16:42*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.052	U	0.052	0.052	0.019	ug/L		03/12/15 16:19	1
4,4'-DDE	0.052	U	0.052	0.052	0.0094	ug/L		03/12/15 16:19	1
4,4'-DDT	0.052	U	0.052	0.052	0.015	ug/L		03/12/15 16:19	1
Aldrin	0.052	U	0.052	0.052	0.014	ug/L		03/12/15 16:19	1
alpha-BHC	0.052	U	0.052	0.052	0.015	ug/L		03/12/15 16:19	1
alpha-Chlordane	0.052	U	0.052	0.052	0.013	ug/L		03/12/15 16:19	1
beta-BHC	0.052	U	0.052	0.052	0.014	ug/L		03/12/15 16:19	1
delta-BHC	0.052	U	0.052	0.052	0.030	ug/L		03/12/15 16:19	1
Dieldrin	0.052	U	0.052	0.052	0.014	ug/L		03/12/15 16:19	1
Endosulfan I	0.052	U	0.052	0.052	0.017	ug/L		03/12/15 16:19	1
Endosulfan II	0.052	U Q	0.052	0.052	0.016	ug/L		03/12/15 16:19	1
Endosulfan sulfate	0.052	U	0.052	0.052	0.011	ug/L		03/12/15 16:19	1
Endrin	0.052	U Q	0.052	0.052	0.013	ug/L		03/12/15 16:19	1
Endrin aldehyde	0.052	U	0.052	0.052	0.0083	ug/L		03/12/15 16:19	1
Endrin ketone	0.052	U Q	0.052	0.052	0.0094	ug/L		03/12/15 16:19	1
gamma-BHC (Lindane)	0.052	U	0.052	0.052	0.013	ug/L		03/12/15 16:19	1
gamma-Chlordane	0.052	U	0.052	0.052	0.010	ug/L		03/12/15 16:19	1
Heptachlor	0.052	U Q	0.052	0.052	0.0052	ug/L		03/12/15 16:19	1
Heptachlor epoxide	0.052	U	0.052	0.052	0.015	ug/L		03/12/15 16:19	1
Methoxychlor	0.052	U	0.10	0.052	0.013	ug/L		03/12/15 16:19	1
Toxaphene	1.0	U	2.1	1.0	0.20	ug/L		03/12/15 16:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*68*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 16:19*	*1*
DCB Decachlorobiphenyl	*67*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 16:19*	*1*
Tetrachloro-m-xylene	*61*		*25 - 140*	*03/11/15 06:54*	*03/12/15 16:19*	*1*
Tetrachloro-m-xylene	*73*		*25 - 140*	*03/11/15 06:54*	*03/12/15 16:19*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 17:26	1

Client Sample ID: FWGSCFMW-004-0546-GW
Date Collected: 03/10/15 10:07
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-7
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/20/15 08:55	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:55	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:55	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 08:55	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 08:55	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 08:55	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 08:55	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/20/15 08:55	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 08:55	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:55	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/20/15 08:55	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/20/15 08:55	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:55	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 08:55	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		03/20/15 08:55	1
PETN	0.51	U	0.67	0.51	0.31	ug/L		03/20/15 08:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/13/15 09:40*	*03/20/15 08:55*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 09:52	1

Client Sample ID: FWGSCFMW-004-0546-GF
Lab Sample ID: 240-48007-8
Date Collected: 03/10/15 10:07
Matrix: Water
Date Received: 03/10/15 18:33

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 12:04	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 12:04	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 12:04	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 12:04	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 12:04	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 12:04	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 12:04	1
Barium	**71**	**J**	200	5.0	1.0	ug/L		03/13/15 12:04	1
Calcium	**160000**		5000	1000	260	ug/L		03/13/15 12:04	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 12:04	1
Magnesium	**63000**		5000	300	55	ug/L		03/13/15 12:04	1
Manganese	**750**		15	5.0	0.46	ug/L		03/13/15 12:04	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 12:04	1
Potassium	**2900**	**J**	5000	900	70	ug/L		03/13/15 12:04	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 16:20	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 16:20	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 16:20	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 16:20	1
Iron	100	U	150	100	44	ug/L		03/17/15 16:20	1
Sodium	**11000**		1000	400	160	ug/L		03/17/15 16:20	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 16:20	1
Zinc	50	U	50	50	27	ug/L		03/17/15 16:20	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:35	1

Client Sample ID: FWGSCFMW-002-0545-GW
Date Collected: 03/10/15 14:27
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-9
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.3	U	5.3	5.3	1.8	ug/L		03/16/15 19:14	1
Butyl benzyl phthalate	0.53	U	5.3	0.53	0.28	ug/L		03/16/15 19:14	1
Diethyl phthalate	1.1	U	2.1	1.1	0.64	ug/L		03/16/15 19:14	1
Dimethyl phthalate	0.53	U	2.1	0.53	0.31	ug/L		03/16/15 19:14	1
Di-n-butyl phthalate	5.3	U	5.3	5.3	1.8	ug/L		03/16/15 19:14	1
Di-n-octyl phthalate	0.53	U	2.1	0.53	0.24	ug/L		03/16/15 19:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*50 - 110*	*03/11/15 06:52*	*03/16/15 19:14*	*1*
2-Fluorophenol (Surr)	*73*		*20 - 110*	*03/11/15 06:52*	*03/16/15 19:14*	*1*
Nitrobenzene-d5 (Surr)	*70*		*40 - 110*	*03/11/15 06:52*	*03/16/15 19:14*	*1*
Phenol-d5 (Surr)	*77*		*10 - 115*	*03/11/15 06:52*	*03/16/15 19:14*	*1*
Terphenyl-d14 (Surr)	*80*		*50 - 135*	*03/11/15 06:52*	*03/16/15 19:14*	*1*
2,4,6-Tribromophenol (Surr)	*74*		*40 - 125*	*03/11/15 06:52*	*03/16/15 19:14*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/12/15 16:40	1
4,4'-DDE	0.048	U	0.048	0.048	0.0086	ug/L		03/12/15 16:40	1
4,4'-DDT	0.048	U	0.048	0.048	0.013	ug/L		03/12/15 16:40	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/12/15 16:40	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/12/15 16:40	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/12/15 16:40	1
beta-BHC	0.048	U	0.048	0.048	0.012	ug/L		03/12/15 16:40	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/12/15 16:40	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/12/15 16:40	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/12/15 16:40	1
Endosulfan II	0.048	U Q	0.048	0.048	0.014	ug/L		03/12/15 16:40	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.010	ug/L		03/12/15 16:40	1
Endrin	0.048	U Q	0.048	0.048	0.011	ug/L		03/12/15 16:40	1
Endrin aldehyde	0.048	U	0.048	0.048	0.0076	ug/L		03/12/15 16:40	1
Endrin ketone	0.048	U Q	0.048	0.048	0.0086	ug/L		03/12/15 16:40	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.011	ug/L		03/12/15 16:40	1
gamma-Chlordane	0.048	U	0.048	0.048	0.0095	ug/L		03/12/15 16:40	1
Heptachlor	**0.066**		0.048	0.048	0.0048	ug/L		03/12/15 16:40	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.013	ug/L		03/12/15 16:40	1
Methoxychlor	0.048	U	0.095	0.048	0.011	ug/L		03/12/15 16:40	1
Toxaphene	0.95	U	1.9	0.95	0.19	ug/L		03/12/15 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*76*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 16:40*	*1*
DCB Decachlorobiphenyl	*75*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 16:40*	*1*
Tetrachloro-m-xylene	*74*		*25 - 140*	*03/11/15 06:54*	*03/12/15 16:40*	*1*
Tetrachloro-m-xylene	*72*		*25 - 140*	*03/11/15 06:54*	*03/12/15 16:40*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 17:43	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Client Sample ID: FWGSCFMW-002-0545-GW
Date Collected: 03/10/15 14:27
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-9
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/20/15 09:39	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 09:39	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 09:39	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 09:39	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 09:39	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 09:39	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 09:39	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/20/15 09:39	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 09:39	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 09:39	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/20/15 09:39	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/20/15 09:39	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 09:39	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 09:39	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/20/15 09:39	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		03/20/15 09:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/13/15 09:40*	*03/20/15 09:39*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 09:54	1

Client Sample ID: FWGSCFMW-002-0545-GF
Date Collected: 03/10/15 14:27
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-10
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**16**		10	10	2.9	ug/L		03/13/15 11:24	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 11:24	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 11:24	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 11:24	1
Selenium	10	U J	15	10	4.0	ug/L		03/13/15 11:24	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 11:24	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 11:24	1
Barium	**42**	J	200	5.0	1.0	ug/L		03/13/15 11:24	1
Calcium	**91000**	J	5000	1000	260	ug/L		03/13/15 11:24	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 11:24	1
Magnesium	**29000**	J	5000	300	55	ug/L		03/13/15 11:24	1
Manganese	**72**		15	5.0	0.46	ug/L		03/13/15 11:24	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 11:24	1
Potassium	**2500**	J	5000	900	70	ug/L		03/13/15 11:24	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 15:43	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 15:43	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 15:43	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 15:43	1
Iron	**480**		150	100	44	ug/L		03/17/15 15:43	1
Sodium	**21000**		1000	400	160	ug/L		03/17/15 15:43	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 15:43	1
Zinc	50	U	50	50	27	ug/L		03/17/15 15:43	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:21	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Client Sample ID: FWGSCFMW-DUP6-0562-GW — **Lab Sample ID: 240-48007-11**
Date Collected: 03/10/15 15:00 — **Matrix: Water**
Date Received: 03/10/15 18:33

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/16/15 17:07	1
Butyl benzyl phthalate	0.51	U	5.1	0.51	0.26	ug/L		03/16/15 17:07	1
Diethyl phthalate	1.0	U	2.0	1.0	0.61	ug/L		03/16/15 17:07	1
Dimethyl phthalate	0.51	U	2.0	0.51	0.29	ug/L		03/16/15 17:07	1
Di-n-butyl phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/16/15 17:07	1
Di-n-octyl phthalate	0.51	U	2.0	0.51	0.23	ug/L		03/16/15 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*74*		*50 - 110*	*03/11/15 06:52*	*03/16/15 17:07*	*1*
2-Fluorophenol (Surr)	*73*		*20 - 110*	*03/11/15 06:52*	*03/16/15 17:07*	*1*
Nitrobenzene-d5 (Surr)	*71*		*40 - 110*	*03/11/15 06:52*	*03/16/15 17:07*	*1*
Phenol-d5 (Surr)	*78*		*10 - 115*	*03/11/15 06:52*	*03/16/15 17:07*	*1*
Terphenyl-d14 (Surr)	*78*		*50 - 135*	*03/11/15 06:52*	*03/16/15 17:07*	*1*
2,4,6-Tribromophenol (Surr)	*71*		*40 - 125*	*03/11/15 06:52*	*03/16/15 17:07*	*1*

Client Sample ID: FWGSCFMW-DUP6-0562-GF
Date Collected: 03/10/15 15:00
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-12
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	16		10	10	2.9	ug/L		03/13/15 12:08	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 12:08	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 12:08	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 12:08	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 12:08	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 12:08	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 12:08	1
Barium	40	J	200	5.0	1.0	ug/L		03/13/15 12:08	1
Calcium	88000		5000	1000	260	ug/L		03/13/15 12:08	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 12:08	1
Magnesium	27000		5000	300	55	ug/L		03/13/15 12:08	1
Manganese	75		15	5.0	0.46	ug/L		03/13/15 12:08	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 12:08	1
Potassium	2400	J	5000	900	70	ug/L		03/13/15 12:08	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 16:24	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 16:24	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 16:24	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 16:24	1
Iron	470		150	100	44	ug/L		03/17/15 16:24	1
Sodium	21000		1000	400	160	ug/L		03/17/15 16:24	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 16:24	1
Zinc	50	U	50	50	27	ug/L		03/17/15 16:24	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:37	1

Client Sample ID: FWGLL12MW-247-0540-GW
Date Collected: 03/10/15 16:00
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-13
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	1.7	J	5.1	5.1	1.7	ug/L		03/16/15 17:33	1
Butyl benzyl phthalate	0.51	U	5.1	0.51	0.27	ug/L		03/16/15 17:33	1
Diethyl phthalate	1.0	U	2.0	1.0	0.61	ug/L		03/16/15 17:33	1
Dimethyl phthalate	0.51	U	2.0	0.51	0.30	ug/L		03/16/15 17:33	1
Di-n-butyl phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/16/15 17:33	1
Di-n-octyl phthalate	0.51	U	2.0	0.51	0.23	ug/L		03/16/15 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*50 - 110*	*03/11/15 06:52*	*03/16/15 17:33*	*1*
2-Fluorophenol (Surr)	*71*		*20 - 110*	*03/11/15 06:52*	*03/16/15 17:33*	*1*
Nitrobenzene-d5 (Surr)	*72*		*40 - 110*	*03/11/15 06:52*	*03/16/15 17:33*	*1*
Phenol-d5 (Surr)	*73*		*10 - 115*	*03/11/15 06:52*	*03/16/15 17:33*	*1*
Terphenyl-d14 (Surr)	*80*		*50 - 135*	*03/11/15 06:52*	*03/16/15 17:33*	*1*
2,4,6-Tribromophenol (Surr)	*79*		*40 - 125*	*03/11/15 06:52*	*03/16/15 17:33*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 19:13	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.052	U	0.16	0.052	0.032	ug/L		03/20/15 11:50	1
1,3-Dinitrobenzene	0.10	U	0.16	0.10	0.052	ug/L		03/20/15 11:50	1
2,4,6-Trinitrotoluene	0.10	U	0.16	0.10	0.052	ug/L		03/20/15 11:50	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.052	ug/L		03/20/15 11:50	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.052	ug/L		03/20/15 11:50	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.16	0.10	0.016	ug/L		03/20/15 11:50	1
2-Nitrotoluene	0.10	U	0.52	0.10	0.091	ug/L		03/20/15 11:50	1
3-Nitrotoluene	0.10	U	0.52	0.10	0.059	ug/L		03/20/15 11:50	1
4-Nitrotoluene	0.10	U	0.52	0.10	0.091	ug/L		03/20/15 11:50	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.16	0.10	0.052	ug/L		03/20/15 11:50	1
HMX	0.052	U	0.16	0.052	0.037	ug/L		03/20/15 11:50	1
RDX	0.052	U	0.16	0.052	0.037	ug/L		03/20/15 11:50	1
Nitrobenzene	0.10	U	0.16	0.10	0.052	ug/L		03/20/15 11:50	1
Tetryl	0.10	U	0.16	0.10	0.052	ug/L		03/20/15 11:50	1
Nitroglycerin	0.52	U	0.67	0.52	0.34	ug/L		03/20/15 11:50	1
PETN	0.52	U	0.67	0.52	0.31	ug/L		03/20/15 11:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*86*		*79 - 111*	*03/13/15 09:40*	*03/20/15 11:50*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	0.019	J	0.050	0.012	0.0031	mg/L		03/20/15 19:19	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:00	1

Client Sample ID: FWGLL12MW-247-0540-GF
Date Collected: 03/10/15 16:00
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-14
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	7.3	J	10	10	2.9	ug/L		03/13/15 12:12	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 12:12	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 12:12	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 12:12	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 12:12	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 12:12	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 12:12	1
Barium	23	J	200	5.0	1.0	ug/L		03/13/15 12:12	1
Calcium	100000		5000	1000	260	ug/L		03/13/15 12:12	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 12:12	1
Magnesium	53000		5000	300	55	ug/L		03/13/15 12:12	1
Manganese	140		15	5.0	0.46	ug/L		03/13/15 12:12	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 12:12	1
Potassium	2300	J	5000	900	70	ug/L		03/13/15 12:12	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	27	J	60	60	20	ug/L		03/17/15 16:28	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 16:28	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 16:28	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 16:28	1
Iron	470		150	100	44	ug/L		03/17/15 16:28	1
Sodium	23000		1000	400	160	ug/L		03/17/15 16:28	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 16:28	1
Zinc	50	U	50	50	27	ug/L		03/17/15 16:28	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:39	1

Client Sample ID: FWGLL1MW-083C-0521-GW
Date Collected: 03/10/15 10:10
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-15
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/16/15 17:58	1
Butyl benzyl phthalate	0.50	U	5.0	0.50	0.26	ug/L		03/16/15 17:58	1
Diethyl phthalate	0.99	U	2.0	0.99	0.59	ug/L		03/16/15 17:58	1
Dimethyl phthalate	0.50	U	2.0	0.50	0.29	ug/L		03/16/15 17:58	1
Di-n-butyl phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/16/15 17:58	1
Di-n-octyl phthalate	0.50	U	2.0	0.50	0.23	ug/L		03/16/15 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*50 - 110*	*03/11/15 06:52*	*03/16/15 17:58*	*1*
2-Fluorophenol (Surr)	*68*		*20 - 110*	*03/11/15 06:52*	*03/16/15 17:58*	*1*
Nitrobenzene-d5 (Surr)	*72*		*40 - 110*	*03/11/15 06:52*	*03/16/15 17:58*	*1*
Phenol-d5 (Surr)	*76*		*10 - 115*	*03/11/15 06:52*	*03/16/15 17:58*	*1*
Terphenyl-d14 (Surr)	*79*		*50 - 135*	*03/11/15 06:52*	*03/16/15 17:58*	*1*
2,4,6-Tribromophenol (Surr)	*67*		*40 - 125*	*03/11/15 06:52*	*03/16/15 17:58*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.049	U	0.049	0.049	0.018	ug/L		03/12/15 17:02	1
4,4'-DDE	0.049	U	0.049	0.049	0.0088	ug/L		03/12/15 17:02	1
4,4'-DDT	0.049	U	0.049	0.049	0.014	ug/L		03/12/15 17:02	1
Aldrin	0.049	U	0.049	0.049	0.013	ug/L		03/12/15 17:02	1
alpha-BHC	0.049	U	0.049	0.049	0.014	ug/L		03/12/15 17:02	1
alpha-Chlordane	0.049	U	0.049	0.049	0.012	ug/L		03/12/15 17:02	1
beta-BHC	0.049	U	0.049	0.049	0.013	ug/L		03/12/15 17:02	1
delta-BHC	0.049	U	0.049	0.049	0.028	ug/L		03/12/15 17:02	1
Dieldrin	0.049	U	0.049	0.049	0.013	ug/L		03/12/15 17:02	1
Endosulfan I	0.049	U	0.049	0.049	0.016	ug/L		03/12/15 17:02	1
Endosulfan II	0.049	U Q	0.049	0.049	0.015	ug/L		03/12/15 17:02	1
Endosulfan sulfate	0.049	U	0.049	0.049	0.011	ug/L		03/12/15 17:02	1
Endrin	0.049	U Q	0.049	0.049	0.012	ug/L		03/12/15 17:02	1
Endrin aldehyde	**0.030**	**J**	0.049	0.049	0.0078	ug/L		03/12/15 17:02	1
Endrin ketone	0.049	U Q	0.049	0.049	0.0088	ug/L		03/12/15 17:02	1
gamma-BHC (Lindane)	0.049	U	0.049	0.049	0.012	ug/L		03/12/15 17:02	1
gamma-Chlordane	0.049	U	0.049	0.049	0.0098	ug/L		03/12/15 17:02	1
Heptachlor	**0.044**	**J**	0.049	0.049	0.0049	ug/L		03/12/15 17:02	1
Heptachlor epoxide	0.049	U	0.049	0.049	0.014	ug/L		03/12/15 17:02	1
Methoxychlor	0.049	U	0.098	0.049	0.012	ug/L		03/12/15 17:02	1
Toxaphene	0.98	U	2.0	0.98	0.19	ug/L		03/12/15 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*72*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 17:02*	*1*
DCB Decachlorobiphenyl	*74*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 17:02*	*1*
Tetrachloro-m-xylene	*95*		*25 - 140*	*03/11/15 06:54*	*03/12/15 17:02*	*1*
Tetrachloro-m-xylene	*83*		*25 - 140*	*03/11/15 06:54*	*03/12/15 17:02*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 19:30	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Client Sample ID: FWGLL1MW-083C-0521-GW
Date Collected: 03/10/15 10:10
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-15
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	6.9		0.15	0.051	0.032	ug/L		03/20/15 12:33	1
1,3-Dinitrobenzene	0.19		0.15	0.10	0.051	ug/L		03/20/15 12:33	1
2,4,6-Trinitrotoluene	4.8		0.15	0.10	0.051	ug/L		03/20/15 12:33	1
2,4-Dinitrotoluene	3.3		0.13	0.10	0.051	ug/L		03/20/15 12:33	1
2,6-Dinitrotoluene	2.2		0.13	0.10	0.051	ug/L		03/20/15 12:33	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/20/15 12:33	1
3-Nitrotoluene	0.10	U M	0.51	0.10	0.058	ug/L		03/20/15 12:33	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/20/15 12:33	1
HMX	1.0	M J	0.15	0.051	0.037	ug/L		03/20/15 12:33	1
RDX	0.051	U M	0.15	0.051	0.037	ug/L		03/20/15 12:33	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 12:33	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 12:33	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/20/15 12:33	1
PETN	0.51	U	0.66	0.51	0.30	ug/L		03/20/15 12:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*141*	*Q*	*79 - 111*	*03/13/15 09:40*	*03/20/15 12:33*	*1*
3,4-Dinitrotoluene	*93*		*79 - 111*	*03/13/15 09:40*	*03/25/15 12:07*	*1*

Method: 8330A - Nitroaromatics and Nitramines - DL

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Amino-4,6-dinitrotoluene	13	D	0.76	0.51	0.076	ug/L		03/24/15 23:17	5
4-Amino-2,6-dinitrotoluene	21	D	0.76	0.51	0.25	ug/L		03/24/15 23:17	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*139*	*Q*	*79 - 111*	*03/13/15 09:40*	*03/24/15 23:17*	*5*
3,4-Dinitrotoluene	*96*		*79 - 111*	*03/13/15 09:40*	*03/25/15 11:00*	*5*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:10	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Client Sample ID: FWGLL1MW-083C-0521-GF
Date Collected: 03/10/15 10:10
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-16
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 12:16	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 12:16	1
Cobalt	**11**		7.0	4.0	0.56	ug/L		03/13/15 12:16	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 12:16	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 12:16	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 12:16	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 12:16	1
Barium	**15**	**J**	200	5.0	1.0	ug/L		03/13/15 12:16	1
Calcium	**29000**		5000	1000	260	ug/L		03/13/15 12:16	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 12:16	1
Magnesium	**5900**		5000	300	55	ug/L		03/13/15 12:16	1
Manganese	**570**		15	5.0	0.46	ug/L		03/13/15 12:16	1
Nickel	**37**	**J**	40	5.0	0.76	ug/L		03/13/15 12:16	1
Potassium	**2800**	**J**	5000	900	70	ug/L		03/13/15 12:16	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**860**		60	60	20	ug/L		03/17/15 16:32	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 16:32	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 16:32	1
Cadmium	**0.85**	**J**	2.0	1.0	0.40	ug/L		03/17/15 16:32	1
Iron	100	U	150	100	44	ug/L		03/17/15 16:32	1
Sodium	**9300**		1000	400	160	ug/L		03/17/15 16:32	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 16:32	1
Zinc	**46**	**J**	50	50	27	ug/L		03/17/15 16:32	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:40	1

Client Sample ID: FWGLL1MW-084C-0522-GW
Date Collected: 03/10/15 12:34
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-17
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	J	4.8	4.8	1.6	ug/L		03/16/15 18:23	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/16/15 18:23	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/16/15 18:23	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/16/15 18:23	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 18:23	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/16/15 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*50 - 110*	*03/11/15 06:52*	*03/16/15 18:23*	*1*
2-Fluorophenol (Surr)	*67*		*20 - 110*	*03/11/15 06:52*	*03/16/15 18:23*	*1*
Nitrobenzene-d5 (Surr)	*72*		*40 - 110*	*03/11/15 06:52*	*03/16/15 18:23*	*1*
Phenol-d5 (Surr)	*74*		*10 - 115*	*03/11/15 06:52*	*03/16/15 18:23*	*1*
Terphenyl-d14 (Surr)	*82*		*50 - 135*	*03/11/15 06:52*	*03/16/15 18:23*	*1*
2,4,6-Tribromophenol (Surr)	*77*		*40 - 125*	*03/11/15 06:52*	*03/16/15 18:23*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.049	U	0.049	0.049	0.017	ug/L		03/12/15 17:24	1
4,4'-DDE	0.049	U	0.049	0.049	0.0087	ug/L		03/12/15 17:24	1
4,4'-DDT	0.049	U	0.049	0.049	0.014	ug/L		03/12/15 17:24	1
Aldrin	0.049	U	0.049	0.049	0.013	ug/L		03/12/15 17:24	1
alpha-BHC	0.049	U	0.049	0.049	0.014	ug/L		03/12/15 17:24	1
alpha-Chlordane	0.049	U	0.049	0.049	0.012	ug/L		03/12/15 17:24	1
beta-BHC	0.049	U	0.049	0.049	0.013	ug/L		03/12/15 17:24	1
delta-BHC	0.049	U	0.049	0.049	0.028	ug/L		03/12/15 17:24	1
Dieldrin	0.049	U	0.049	0.049	0.013	ug/L		03/12/15 17:24	1
Endosulfan I	0.049	U	0.049	0.049	0.016	ug/L		03/12/15 17:24	1
Endosulfan II	0.049	U Q	0.049	0.049	0.015	ug/L		03/12/15 17:24	1
Endosulfan sulfate	0.049	U	0.049	0.049	0.011	ug/L		03/12/15 17:24	1
Endrin	0.049	U Q	0.049	0.049	0.012	ug/L		03/12/15 17:24	1
Endrin aldehyde	0.049	U	0.049	0.049	0.0078	ug/L		03/12/15 17:24	1
Endrin ketone	0.049	U Q	0.049	0.049	0.0087	ug/L		03/12/15 17:24	1
gamma-BHC (Lindane)	0.049	U	0.049	0.049	0.012	ug/L		03/12/15 17:24	1
gamma-Chlordane	0.049	U	0.049	0.049	0.0097	ug/L		03/12/15 17:24	1
Heptachlor	0.043	J	0.049	0.049	0.0049	ug/L		03/12/15 17:24	1
Heptachlor epoxide	0.049	U	0.049	0.049	0.014	ug/L		03/12/15 17:24	1
Methoxychlor	0.049	U	0.097	0.049	0.012	ug/L		03/12/15 17:24	1
Toxaphene	0.97	U	1.9	0.97	0.19	ug/L		03/12/15 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*96*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 17:24*	*1*
DCB Decachlorobiphenyl	*89*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 17:24*	*1*
Tetrachloro-m-xylene	*115*		*25 - 140*	*03/11/15 06:54*	*03/12/15 17:24*	*1*
Tetrachloro-m-xylene	*105*		*25 - 140*	*03/11/15 06:54*	*03/12/15 17:24*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 19:48	1

Client Sample ID: FWGLL1MW-084C-0522-GW
Date Collected: 03/10/15 12:34
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-17
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	3.2		0.15	0.050	0.031	ug/L		03/20/15 13:17	1
1,3-Dinitrobenzene	0.48		0.15	0.10	0.050	ug/L		03/20/15 13:17	1
2,4-Dinitrotoluene	1.6	M	0.13	0.10	0.050	ug/L		03/20/15 13:17	1
2,6-Dinitrotoluene	0.92	M	0.13	0.10	0.050	ug/L		03/20/15 13:17	1
2-Amino-4,6-dinitrotoluene	9.7		0.15	0.10	0.015	ug/L		03/20/15 13:17	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/20/15 13:17	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		03/20/15 13:17	1
4-Nitrotoluene	0.71		0.50	0.10	0.088	ug/L		03/20/15 13:17	1
HMX	0.71	M J	0.15	0.050	0.036	ug/L		03/20/15 13:17	1
RDX	0.92	M	0.15	0.050	0.036	ug/L		03/20/15 13:17	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 13:17	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 13:17	1
Nitroglycerin	0.50	U	0.65	0.50	0.33	ug/L		03/20/15 13:17	1
PETN	0.50	U	0.65	0.50	0.30	ug/L		03/20/15 13:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*363*	*Q*	*79 - 111*	*03/13/15 09:40*	*03/20/15 13:17*	*1*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/13/15 09:40*	*03/25/15 14:20*	*1*

Method: 8330A - Nitroaromatics and Nitramines - DL

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4,6-Trinitrotoluene	12	D	0.75	0.50	0.25	ug/L		03/25/15 00:01	5
4-Amino-2,6-dinitrotoluene	31	D	0.75	0.50	0.25	ug/L		03/25/15 00:01	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*381*	*Q*	*79 - 111*	*03/13/15 09:40*	*03/25/15 00:01*	*5*
3,4-Dinitrotoluene	*95*		*79 - 111*	*03/13/15 09:40*	*03/25/15 13:14*	*5*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:12	1

Client Sample ID: FWGLL1MW-084C-0522-GF
Lab Sample ID: 240-48007-18
Date Collected: 03/10/15 12:34
Matrix: Water
Date Received: 03/10/15 18:33

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 12:21	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 12:21	1
Cobalt	14		7.0	4.0	0.56	ug/L		03/13/15 12:21	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 12:21	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 12:21	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 12:21	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 12:21	1
Barium	15	J	200	5.0	1.0	ug/L		03/13/15 12:21	1
Calcium	61000		5000	1000	260	ug/L		03/13/15 12:21	1
Copper	8.5	J	25	10	1.9	ug/L		03/13/15 12:21	1
Magnesium	3400	J	5000	300	55	ug/L		03/13/15 12:21	1
Manganese	140		15	5.0	0.46	ug/L		03/13/15 12:21	1
Nickel	27	J	40	5.0	0.76	ug/L		03/13/15 12:21	1
Potassium	3500	J	5000	900	70	ug/L		03/13/15 12:21	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	240		60	60	20	ug/L		03/17/15 16:36	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 16:36	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 16:36	1
Cadmium	1.7	J	2.0	1.0	0.40	ug/L		03/17/15 16:36	1
Iron	100	U	150	100	44	ug/L		03/17/15 16:36	1
Sodium	4800		1000	400	160	ug/L		03/17/15 16:36	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 16:36	1
Zinc	60		50	50	27	ug/L		03/17/15 16:36	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:43	1

Client Sample ID: FWGEQUIPRINSE-0564-GW
Date Collected: 03/10/15 16:14
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-19
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 18:48	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/16/15 18:48	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/16/15 18:48	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/16/15 18:48	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/16/15 18:48	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/16/15 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*74*		*50 - 110*	*03/11/15 06:52*	*03/16/15 18:48*	*1*
2-Fluorophenol (Surr)	*72*		*20 - 110*	*03/11/15 06:52*	*03/16/15 18:48*	*1*
Nitrobenzene-d5 (Surr)	*71*		*40 - 110*	*03/11/15 06:52*	*03/16/15 18:48*	*1*
Phenol-d5 (Surr)	*74*		*10 - 115*	*03/11/15 06:52*	*03/16/15 18:48*	*1*
Terphenyl-d14 (Surr)	*84*		*50 - 135*	*03/11/15 06:52*	*03/16/15 18:48*	*1*
2,4,6-Tribromophenol (Surr)	*75*		*40 - 125*	*03/11/15 06:52*	*03/16/15 18:48*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/12/15 17:46	1
4,4'-DDE	0.048	U	0.048	0.048	0.0086	ug/L		03/12/15 17:46	1
4,4'-DDT	0.048	U	0.048	0.048	0.013	ug/L		03/12/15 17:46	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/12/15 17:46	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/12/15 17:46	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/12/15 17:46	1
beta-BHC	0.048	U	0.048	0.048	0.012	ug/L		03/12/15 17:46	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/12/15 17:46	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/12/15 17:46	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/12/15 17:46	1
Endosulfan II	0.048	U Q	0.048	0.048	0.014	ug/L		03/12/15 17:46	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.010	ug/L		03/12/15 17:46	1
Endrin	0.048	U Q	0.048	0.048	0.011	ug/L		03/12/15 17:46	1
Endrin aldehyde	0.048	U	0.048	0.048	0.0076	ug/L		03/12/15 17:46	1
Endrin ketone	0.048	U Q	0.048	0.048	0.0086	ug/L		03/12/15 17:46	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.011	ug/L		03/12/15 17:46	1
gamma-Chlordane	0.048	U	0.048	0.048	0.0095	ug/L		03/12/15 17:46	1
Heptachlor	0.029	J	0.048	0.048	0.0048	ug/L		03/12/15 17:46	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.013	ug/L		03/12/15 17:46	1
Methoxychlor	0.048	U	0.095	0.048	0.011	ug/L		03/12/15 17:46	1
Toxaphene	0.95	U	1.9	0.95	0.19	ug/L		03/12/15 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*74*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 17:46*	*1*
DCB Decachlorobiphenyl	*72*	*Q*	*30 - 135*	*03/11/15 06:54*	*03/12/15 17:46*	*1*
Tetrachloro-m-xylene	*76*		*25 - 140*	*03/11/15 06:54*	*03/12/15 17:46*	*1*
Tetrachloro-m-xylene	*74*		*25 - 140*	*03/11/15 06:54*	*03/12/15 17:46*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 20:06	1

Client Sample ID: FWGEQUIPRINSE-0564-GW
Date Collected: 03/10/15 16:14
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-19
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/20/15 14:01	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 14:01	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 14:01	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 14:01	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 14:01	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 14:01	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 14:01	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/20/15 14:01	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 14:01	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 14:01	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/20/15 14:01	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/20/15 14:01	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 14:01	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 14:01	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/20/15 14:01	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		03/20/15 14:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*86*		*79 - 111*	*03/13/15 09:40*	*03/20/15 14:01*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 12:25	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 12:25	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 12:25	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 12:25	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 12:25	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 12:25	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 12:25	1
Barium	5.0	U	200	5.0	1.0	ug/L		03/13/15 12:25	1
Calcium	1000	U	5000	1000	260	ug/L		03/13/15 12:25	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 12:25	1
Magnesium	300	U	5000	300	55	ug/L		03/13/15 12:25	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/13/15 12:25	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 12:25	1
Potassium	900	U	5000	900	70	ug/L		03/13/15 12:25	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 16:40	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 16:40	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 16:40	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 16:40	1
Iron	100	U	150	100	44	ug/L		03/17/15 16:40	1
Sodium	400	U	1000	400	160	ug/L		03/17/15 16:40	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 16:40	1
Zinc	50	U	50	50	27	ug/L		03/17/15 16:40	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48007-1

Client Sample ID: FWGEQUIPRINSE-0564-GW
Date Collected: 03/10/15 16:14
Date Received: 03/10/15 18:33

Lab Sample ID: 240-48007-19
Matrix: Water

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/12/15 13:45	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	0.0090	J	0.050	0.012	0.0031	mg/L		03/20/15 19:17	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:14	1

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 29, 2015

SDG: 240-48007
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?		X		The chain of custody listed FWGEQUIPRINSE2-0564-GW, but lab logged and reported as FWGEQUIPRINSE-0564-GW.	
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3.Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-6
6. Was the GC/MS system tuned each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Initial Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A4HP9–3/13/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) ≤0.050?	X				QSM Table F-4
7d. Were all other target analytes reported with an avg response have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X				QSM Table F-4 R<0.99=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X			Benzoic acid, 1,3-dinitrobenzene, 2,4-dinitrophenol and 4-nitrophenol 4,6-dinitro-2-methylphenol, pentachlorophenol, bis-2-ethylhexylphthalate, di-n-octylphthalate, indeno (1,2,3-cd)pyrene dibenz (a,h) anthracene used a linear fit	QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte?	X				QSM Table F-4 and section D.1.2.1
9 Was a breakdown check run at the beginning of every 12 hours with DDT degradation <20% and tailing factors of benzidine and pentachlorophenol ≤2?	X				QSM Table F-4 R
10. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12	X			3/16/15 @ 1138, 2030	Louisville Supplement to the DOD QSM

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 29, 2015

SDG: 240-48007
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
hours with recoveries within 70-130%?					
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			3/13/15 @1239	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/16/15 @1113	QSM Table F-4
12a. Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) ≥0.050?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank >1/2 the MRL, >RL for common contaminants?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE-0564-GW	
16a. Were target analytes detected in the field blank?		X			QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-6 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-6, J/UJ
18. Was a MS/MSD prepared with each batch?	X			FWGSCFmw-002-0545-GW	

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 29, 2015

SDG: 240-48007
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
18a. Were the MS/MSD recoveries within limits specified in Table G-6 of the DoD QSM with an RPD <30%?	X			Checked by ADR	QSM Table F-4, Table G-6 J/UJ Parent sample only
19. Was a field duplicate analyzed?	X			FWGSCFmw-002-0545-GW	
19a. Were the field duplicates RPDs within ±50%?			X	No detected sample results were reported.	QSM Table F-4, RPD >50=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% - 50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Additional Comments:

Table 1: CCCs *(All analytes if CCCs not included in standard)*

Base / Neutral Compounds	Acid Compounds
Acenaphthalene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
N-Nitrosodiphehylamine	Phenol
Di-n-octylphthalate	Pentachlorophenol
Fluoroanthene	2,4,6-Trichlorophenol
Benzo(a)pyrene	

Table 2: SPCCs -

N-Nitroso-di-n-propylamine	0.05
Hexachlorocyclopentadiene	0.05
2,4-Dinitrophenol	0.05
4-Nitrophenol	0.05

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta / April 29, 2015

SDG: 240-48007
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?		X		The chain of custody listed FWGEQUIPRINSE2-0564-GW, but the laboratory logged and reported as FWGEQUIPRINSE-0564-GW.	
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X			Checked by ADR.	QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a DDT standard analyzed every 12 hours? Was the DDT %breakdown <15%?	X				QSM Table F-2 >15%=J/R
7. Was an endrin standard analyzed every 12 hours? Was the endrin % breakdown <15%?	X				QSM Table F-2 >15%=J/R
8. Initial Calibration					
8a. Does the initial calibration curve consist of 5 concentration levels?	X			A2HP15 on 3/4/15(tox), 3/10/15	QSM Table F-2 R
8a. Were the %RSDs for each analyte ≤ 20%? OR was the average %RSD ≥20% with the r^2>0.990?	X				QSM Table F-2 RSD>20% or r<0.99=J/R
9. Was a LOD Level Verification performed once per quarter with all target analytes detected?	X				QSM Table F-2 R
10. Was a MRL Verification performed at the beginning and end of the sequence or every 12 hours with results within limits of 70-130%?	X				QSM Table F-2, G-14 >UL=J; <LL=J/UJ/R
11. Was a second source (ICV) verification analyzed after the ICAL? Were results 80-120%?	X			3/4/15 @1443 (Tox), 3/10/15 @ 1724	QSM Table F-2 >120%=J;<80%=J/UJ
12. Was a CCV run every 12 hours or at the beginning and end of the analytical run with the %D for all target analytes ≤20%?		X		3/12/15 @ 1325, 1346, 1851 and 1913 The CCV analyzed 3/12/15 at 1851 had an avg %D above 20% for toxaphene at 24% on CLP -2. No qualification of the data was required as there were no detected toxaphene concentrations that required confirmation. The CCV analyzed 3/12/15 at 1913 had %D above 20% for endrin at 24.6% on CLP-1 and 24.1% on CLP-2, for endosulfan II at 24.1% (CLP-1) and 24% on CLP-2 and for endrin ketone at 22.3% on CLP-1 and 20.9% on CLP-2. No qualification of the data was required as there were no endrin, endosulfan II or endrin ketone results reported for samples FWGLL1mw-086-0523-GW, FWGSCFmw-002-0545-GW, FWGSCFmw-004-0546-GW, FWGLL1mw-083c-0521-GW, FWGLL1mw-084c-0522-GW or FWGEQUIPRINSE2-0563-GW.	QSM Table F-2 >120%=J; <80%=J/UJ

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta / April 29, 2015

SDG: 240-48007
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
13. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-2
14. Were target analytes detected?	X			Checked by ADR. The method blank had heptachlor detected at 0.0226 µg/L. The detected heptachlor results for samples FWGLL1mw-086-0523-GW, FWGSCFmw-002-0545-GW, FWGLL1mw-083c-0521-GW, FWGLL1mw-084c-0522-GW and FWGEQUIPRINSE2-0563-GW were qualified, "B", as the reported concentrations were less than five times the method blank contamination.	QSM Table F-2 <5x=B
15. Was a field blank collected and analyzed?	X				
16. Were target analytes detected in the field blank analyses >1/2 the MRL?	X			FWGEQUIPRINSE2-0563-GW had heptachlor detected at 0.029 µg/L. The detected heptachlor results for samples FWGLL1mw-086-0523-GW, FWGSCFmw-002-0545-GW, FWGLL1mw-083c-0521-GW and FWGLL1mw-084c-0522-GW were qualified, "B", as the reported concentrations were less than five times the equipment rinse contamination.	QSM Table F-2 <5x=B
17. Was an LCS prepared and analyzed with each batch?	X				QSM Table F-2
18. Were the LCS recoveries within limits specified in QSM Table G-14?	X			Checked by ADR.	QSM Table G-14 >UL=J; <LL=J/UJ/R
19. Was a MS/MSD pair prepared with each batch?		X		Matrix spike analysis was not requested on a sample from this sample set.	QSM Table F-2
20. Was the MS/MSD parent a Ravenna sample?			X		
21. Were MS/MSD recoveries and RPD within limits specified in QSM Table G-14?			X		QSM Table F-2 Pj with >UL=J; <LL=J/UJ/R
22. Were surrogate recoveries as specified in QSM table G-3?	X			Checked by ADR.	QSM Table F-2 >LL=J; <LL=UJ/J/R
23. Was a field duplicate analyzed? Were the RPDs ≤50%?			X	Checked by ADR. A field duplicate was not submitted with this set of samples.	RPD >50=J parent sample only
24. Were all positive results verified by a second column confirmation? Were the RPD's ≤ 40 for results greater than the LOQ?	X				QSM Table F-2 >40 RPD=J

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ June 22, 2015

SDG: 240-48007
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?		X		The chain of custody listed FWGEQUIPRINSE2-0564-GW, but the laboratory logged and reported as FWGEQUIPRINSE-0564-GW.	
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was a LOD Verification performed once per quarter with all target analytes detected?	X				DoD QSM Table F-8
7. Tuning (ICP MS Only)					
7a. Was a tune performed daily prior to calibration	X				DoD QSM Table F-8 R
7b. Mass Calibration <0.1 amu from true value	X				
7c. Resolution <0.9 amu full width at 10 % peak height	X				
7d. RSD <%5 for a minimum of four replicate analyses	X				
8.Calibration	X				
8a. Was the ICAL performed daily with at least	X			ICP 3/13/15, Hg 3/12/15and ICPMS 3/17/15	DoD QSM Tables F-8 and F-7
1high standard and a blank for ICP & ICPMS	X				
5 standards and a blank for Hg	X				
8b. Was the correlation coefficient r≥0.995 for Hg?	X				DoD QSM Tables F-8 and F-7 r<0.995=J/R
8c. Was the ICV (second source verification) analyzed after the ICAL with results 90-110% of the true value?	X				DoD QSM Tables F-8 and F-7
8d. Was the ICB analyzed after the ICV with detected results <1/2 the MRL?	X			ICP-The ICB analyzed 3/13/15@ 0910 had cobalt detected at 2.34 µg/L and nickel detected at 2.66 µg/L. The nickel results for sample FWGLL1mw-086-0523-GF and the cobalt result for sample FWGLL1mw-083c-0521-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. ICPMS-The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony result for sample FWGLL1mw-086-0523-GF was qualified, "U" as the reported concentration was less than	DoD QSM, Tables F-8 and F-7 < 5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ June 22, 2015

SDG: 240-48007
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results less 5x contamination reported for the associated field samples.	
Sample Analysis					
9. Was a MRL Level Verification performed at the beginning of the daily sequence and end of the analytical sequence bracketing samples? Were results 70-130%?		X		The closing MRL analyzed 3/13/15 at 1358 recovered below control limits of 70-130% for vanadium at 47%. A DL check was analyzed immediately before the MRL verification with acceptable results. The vanadium results for samples FWGLL1mw-086-0523-GF, FWGLL1mw-064c-0519-GF, FWGLL1mw-065c-0520-GF, FWGSCFmw-004-0546-GF, FWGSCFmw-002-0545GF, FWGSCFmw-DUP6-0562-GF, FWGLL12mw-247-0540-GF, FWGLL1mw-083c-0521-GF FWGLL1mw-084c-0522-GF and FWGEQUIPRINSE2-0563-GW were qualified as estimated, "UJ".	LS, DoD QSM Table G-18, >130%=J; 70-80%=J/UJ; <70%=J/UJ <65%=R, unless DL check with detected results
10. Were CCVs analyzed every 10 samples and at the end of the analytical sequence with results 90-110% of the true value?	X				DoD QSM, Tables F-8 and F-7 >110%=J, <85%=J/R 90-85%=J/UJ;
11. Were the CCBs run every 10 samples and at the end of the analytical sequence? Were results <1/2 the MRL?	X			ICP The CCB analyzed 3/13/15 at 1152 had chromium detected at 2.82 µg/L, manganese at 3.38 µg/L and silver at 1.95 µg/L. The chromium result for sample FWGLL1mw-065c-0520-GF was qualified, "U" as the reported concentration was less than 5x instrument blank contamination. No qualifications were required for the silver or manganese contamination as there were no detected silver results reported for the associated field samples and reported manganese concentrations were greater than five times instrument blank contamination. ICPMS The CCBs analyzed 3/17/15 had antimony detected from 0.316 µg/L to 0.365 µg/L, beryllium from 0.055 µg/L to 0.153 µg/L and cadmium from 0.0840 µg/L to 0.112 µg/L . The antimony result for sample FWGLL1mw-086-0523-GF was qualified, "U" as the reported concentration was less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results less 5x contamination reported for the	DoD QSM Tables F-8 and F-7 <5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ June 22, 2015

SDG: 240-48007
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				associated field samples.	
12. Was an Interelement Check Standard run at the beginning of the analytical sequence and every 12 hours with the ICS recovery within 80 to 120% of true value for each element of interest (ICP and ICPMS only)?	X				DoD QSM Tables F-8 and F-7 >120%=J; 50-79%=J/UJ; <50%=Pj/R
13. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
14. Were target analytes detected >1/2 the MRL in the method blank?	X			Checked by ADR. ICP The method blank analyzed 3/13/15 at 1116 had chromium detected at 0.726 µg/L, barium at 2.50µg/L and manganese at 1.36 µg/L. The chromium result for sample FWGLL1mw-065c-0520-GF was qualified "B" as the reported concentration was greater than 5x blank contamination. No qualification was necessary for the barium or manganese method blank contamination, as there were no detected barium or manganese concentrations reported for the associated field samples less than five times method blank contamination.	DoD QSM Tables F-8 and F-7, <5x = B
15. Was a field blank collected and analyzed?	X			FWGEQUIPRINSE2-0564-GW	
16. Were target analytes reported in the field blank analyses?		X		ADR checked section.	DoD QSM Tables F-8 and F-7
17. Was a LCS prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7>120%=J; 70-79%=J/UJ; <70%=J/R
19. Was a matrix spike (MS) and lab duplicate sample prepared with each batch?	X				DoD QSM Tables F-8 and F-7
20. Was the MS and Lab Duplicate parent a Ravenna sample?	X			A matrix spike analysis and laboratory duplicate analysis was performed on sample FWGSCFMW-002-0545-GF.	
21. Were the MS recoveries within 80-120%?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7, >120%=J; 70-79%=J/UJ; <70%=J/R . All samples in batch

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ June 22, 2015

SDG: 240-48007
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
22. Was the lab sample duplicate RPD ≤ 20%, for sample results detected above the LOQ?	X				DoD QSM Tables F-8 and F-7 >20% = J, All samples in batch
23. Was a serial dilution performed, with the fivefold dilution within ± 10% of the original result?	X				DoD QSM, Tables F-8 and F-7 >20% = J. Only evaluate results above the LOQ. Qualify all samples in batch
24. Was a Post Digestion Spike analyzed as needed? Were results within 75-125%?	X				LCG Table 7, >125%=J; 30-75%=J/UJ; <30%=R
25. Was a field duplicate analyzed? Were the RPDs ± 50% for sample results detected above the LOQ?	X			FWGSCFmw-002-0545-GF	>30% = J. Qualify parent sample only and only evaluate results above the LOQ
26. Were internal standards added to all ICPMS samples with intensity within 30-120% of the intensity of the ICAL internal standard?	X				DoD QSM Table F-8. >120%=J/R, <20%=J

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 29, 2015

SDG: 240-48007
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?		X		The chain of custody listed FWGEQUIPRINSE2-0564-GW, but the laboratory logged and reported as FWGEQUIPRINSE-0564-GW.	
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			LC10 3/11/15 LC9 1/23/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for non-linear).	X			LC10-4-nitrotoluene used a linear fit LC9-3-nitrotoluene and RDX used a linear fit	
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			LC10 on 3/11 at 2136 LC9 1/23/15 @ 2328	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			LC10- 3/19/15 @2245, 3/20/15 @ 0644, 1444, 3/24/15 @ 2023 and 3/25/15 @ 0128 LC9- 3/25/15 @ 0420 and 1527	DoD QSM Table F-3 J/UJ
10.Was a MRL Level verification run at the beginning and end of every daily? Was the %D< 30%?	X			LC10- 3/19/15 @2329, 3/20/15 @0728, 1528, 3/24/15 @ 2107 and 3/25/15 @ 0044 LC9- 3/25/15 @ 0527 and 1634	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3
12. Were target analytes detected in the method blank?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 29, 2015

SDG: 240-48007
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
15. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		Checked by ADR. A field duplicate was not submitted with this set of samples.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?	X				DoD QSM Table F-3 RPD>40%=J. Only detected results above the LOQ were evaluated
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within limits specified in table G-12 of the DoD QSM?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J;30-LL=J/UJ; <30%=J/R
19.Was a MS/MSD or MS and sample duplicate prepared with each batch?	X			FWGSCFmw-002-0545-GW	DoD QSM Table F-3
20. Were MS/MSD recoveries within limits specified in table G-12 of the DoD QSM with an RPD ≤30%?	X				DoD QSM Table F-3 Pj
21. Were surrogate recoveries within laboratory limits (79-111%)?	X			The surrogate, 3,4-dinitrotolune, recovered above control limits of 79-111% in sample FWGLL1mw-083C-0521-GW at 141% in the undiluted analysis and at 139% in the diluted analysis. 3,4-Dinitrotoluene also recovered above control limits of 79-111% in sample FWGLL1mw-084C-0522-GW at 363% in the undiluted analysis and at 381% in the diluted analysis. The detected 1,3,5-trinitrobenzene, 1,3-dinitrobenzene, 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, 2,6-dintrotoluene, 2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, and HMX results for sample FWGLL1mw-083C-0521-GW and the 1,3,5-trinitrobenzene, 1,3-dinitrobenzene, 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, 2,6-dintrotoluene, 2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, 4-nitrotoluene, RDX and HMX were qualified as estimated, "J".	QSM Tables F-2 >UL=J; <LL =J/UJ

References: DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 29, 2015

SDG: 240-48007
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?		X		The chain of custody listed FWGEQUIPRINSE2-0564-GW, but the laboratory logged and reported as FWGEQUIPRINSE-0564-GW.	
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			PDA-1 7/10/14	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD $\leq$ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r$\geq$0.995? (0.990 for Quadratic curve).			X		
7d. Did reanalysis of the low level standard after calibration, recover within 15%?	X				
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			7/10/14 @ 1719	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			3/19/15 @ 1019, 1410,1837, 2210	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D < 30%?	X			3/19/15 @1002, 1446, 1855, 2228	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 29, 2015

SDG: 240-48007
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
12. Were target analytes detected in the method blank?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses ?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B
15. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		A field duplicate was not submitted with this set of samples.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?			X		DoD QSM Table F-3 RPD>40%=J
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within laboratory limits of 79%-119%?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J; 30-LL=J/UJ; <30%=J/R
19. Was a MS/MSD or MS and sample duplicate prepared with each batch?	X			FWGSCFmw-002-0545-GW	DoD QSM Table F-3
20. Were MS/MSD recoveries within laboratory limits of 40%-150% with an RPD ≤20%?	X			Checked by ADR.	DoD QSM Table F-3 Pj

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 29, 2015

SDG: 240-48007
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
1. Did Chain-of-Custody information agree with laboratory report?		X		The chain of custody listed FWGEQUIPRINSE2-0564-GW, but the laboratory logged and reported as FWGEQUIPRINSE-0564-GW.	
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Does the initial calibration curve consist of 5 concentration levels with the low standard near but > MDL?	X				SOP Section 10.2 R
7. Was the correlation coefficient >0.995?	X				SOP Section 10.2
8. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D <30%?	X			3/19/15 @ 0934, 1002 and 1030	>30%=J
9. Was a second source verification (ICV) analyzed after the ICAL? Were all analytes 90-110%?	X			3/19/15 @ 0904	>110%=J; 90-85%=J/UJ; <85%=J/R
10. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				STL SOP Section 9.8, LCG ,< 5x = U
11. Was a CCV run every 10 samples and at the end of the analytical run?	X			3/19/15 @ 0936, 1004 and 1032	STL SOP Section 10.4
12. Was the ICV and CCV a mid-level standard from the initial calibration curve?	X				STL SOP Section 10.3.1
13. Were all CCV calibration analytes within 90-110%?	X				>110%=J; 85-90%=J/UJ; <85%=J/R
14. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				QSM, < 5x = U
15. Was a method blank prepared and analyzed with each batch?	X				

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 29, 2015

SDG: 240-48007
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
16. Were target analytes detected in the method blank?		X		ADR checked section.	LCG, <5x=B
17. Was a field blank collected and analyzed?	X				
18. Were target analytes detected in the field blank analyses?		X			<5x=B
19. Was a field duplicate analyzed? Were the RPDs <30%?		X		ADR checked section. No field duplicates for nitrocellulose were submitted with this set of samples.	QAPP Table 3-2 RPD > 30% = J
20. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within lab's in-house limits% (26-144%)?	X				>UL%=J; 50-LL%=J/UJ; <50%=J/R
21. Was a MS/MSD pair prepared with each batch?	X				
22. Was the MS/MSD parent a Ravenna sample?	X			FWGSCGmw-002-0545-GW	
23. Were MS/MSD recoveries 26-144% and RPD ≤20?	X				Method EPA 353.2 Section 9.4.2 >UL%=J;<LL%=J/UJ; RPD>20%=J/UJ

References:

SOP SAC-WC-0050 "Preparation and Analysis of Nitrocellulose in Aqueous and Soil/Sediment Samples by Colorimetric Autoanalyzer", Jan 2007, rev. 2.0

DoD Quality Systems Manual (QSM)

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 29, 2015

SDG: 240-48007
Analysis: EPA 353.2

Review Questions:	Yes	No	N/A	Comments	Qual/Crtieria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				*QAPP Table 5-1, NELAC*
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was the Linear Calibration Range verified using 3 standards and 1 blank?	X				Method EPA 353.2 Section 9.2.2, *J*
7. Were the calibration standards verified by preparation and analysis of a Quality Control Sample? Were results within 10% of the stated values?	X				Method EPA 353.2 Section 9.2.3 Pj
8. Was an Instrument Performance Check Solution (CCV) analyzed immediately following daily calibration, after every 10th sample, and at the end of the analytical sequence?	X				Method EPA 353.2 Section 9.3.4
9. Was the CCV a mid-level standard from the initial calibration curve, with recovery 90-110%?	X				Method EPA 353.2 Section 9.3.4 >110%=J; <85%=J/R 85-90%=J/UJ;
10. Was an MRL check standard analyzed at the beginning and end of each analytical run, with recoveries 70-130%	X				LCG >130%=J; <70%=J/UJ;
11.Was a method blank and calibration blanks prepared and analyzed with each batch?	X				Method EPA 353.2 Section 9.3.1, 9.3.4
12. Were target analytes detected in the method blank or calibration blank >1/2 the MRL?	X			ADR checked section; The method blank had nitrate/nitrite detected at 0.005 mg/L. The nitrate/nitrite result for samples FWGEQUIPRINSE2-0564-GW and FWGLL12mw-247-0540-GW were qualified, "B, as the detected results were <5x method blank contamination. The ICB and CCBs analyzed 3/20/14 from 1903 to 1937 had nitrate/nitrite	<5x = B(method blank) U (calibration blank)

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 29, 2015

SDG: 240-48007
Analysis: EPA 353.2

Review Questions:	Yes	No	N/A	Comments	Qual/Crtieria
				detected from 0.004mg/L to 0.005mg/L. TThe nitrate/nitrite results for samples FWGEQUIPRINSE2-0564-GW and FWGLL12mw-247-0540-GW were qualified, "U", as the detected results were less than five times instrument blank contamination.	
13. Was a field blank (trip or equipment) collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses (trip or equipment) >1/2 the MRL?	X			ADR checked section; FWGEQUIPRINSE2-0564-GW had nitrate/nitrite detected at 0.009mg/L. The nitrate/nitrite result for sample FWGLL12mw-247-0540-GW was qualified, "B, as the detected result was <5x rinse blank contamination.	<5x=B
15. Was a field duplicate analyzed? Were the RPDs acceptable?	X			A field duplicate was not submitted with this set of samples.	
16. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within 90-110%?	X				Method EPA 353.2 Section 9.3.3 J/UJ; <50%= R
17. Was a MS/MSD pair prepared with each batch?	X				Method EPA 353.2 Section 9.4.1
18. Was the MS/MSD parent a Ravenna sample?	X			FWGLL12mw-247-0540-GW	
19. Were MS/MSD recoveries and RPD within acceptance criteria?	X			Checked by ADR.	Method EPA 353.2 Section 9.4.2 Pj

References:

DoD Quality Systems Manual (QSM), version 4.1, October 2010

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Attachment 2

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48007-1										
353.2	FWGEQUIPRINSE-0564-GW	AQ	EB							
				Nitrate-Nitrite	0.050	0.0090J		U	mg/L	Mb, Cb
353.2	FWGLL12MW-247-0540-GW	AQ	N							
				Nitrate-Nitrite	0.050	0.019J		U	mg/L	Mb, Eb, C
6010B	FWGEQUIPRINSE-0564-GW	AQ	EB							
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGLL12MW-247-0540-GF	AQ	N							
				ARSENIC	10	7.3J		J	ug/L	Rl
				BARIUM	200	23J		J	ug/L	Rl
				POTASSIUM	5000	2300J		J	ug/L	Rl
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGLL1MW-064C-0519-GF	AQ	N							
				ARSENIC	10	3.5J		J	ug/L	Rl
				BARIUM	200	47J		J	ug/L	Rl
				POTASSIUM	5000	750J		J	ug/L	Rl
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGLL1MW-065C-0520-GF	AQ	N							
				BARIUM	200	50J		J	ug/L	Rl
				CHROMIUM	7.0	0.59J		U	ug/L	Mb, Cb
				POTASSIUM	5000	1200J		J	ug/L	Rl
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48007-1										
6010B	FWGLL1MW-083C-0521-GF	AQ	N							
				BARIUM	200	15J		J	ug/L	Rl
				COBALT	7.0	11		U	ug/L	Cb
				NICKEL	40	37J		J	ug/L	Rl
				POTASSIUM	5000	2800J		J	ug/L	Rl
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGLL1MW-084C-0522-GF	AQ	N							
				BARIUM	200	15J		J	ug/L	Rl
				COPPER	25	8.5J		J	ug/L	Rl
				MAGNESIUM	5000	3400J		J	ug/L	Rl
				NICKEL	40	27J		J	ug/L	Rl
				POTASSIUM	5000	3500J		J	ug/L	Rl
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGLL1MW-086-0523-GF	AQ	N							
				ARSENIC	10	4.4J		J	ug/L	Rl
				BARIUM	200	57J		J	ug/L	Rl
				NICKEL	40	1.3J		U	ug/L	Cb
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGSCFMW-002-0545-GF	AQ	N							
				BARIUM	200	42J		J	ug/L	Rl
				POTASSIUM	5000	2500J		J	ug/L	Rl
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGSCFMW-004-0546-GF	AQ	N							
				BARIUM	200	71J		J	ug/L	Rl
				POTASSIUM	5000	2900J		J	ug/L	Rl
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48007-1										
6010B	FWGSCFMW-DUP6-0562-GF	AQ	FD							
				BARIUM	200	40J		J	ug/L	Rl
				POTASSIUM	5000	2400J		J	ug/L	Rl
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6020	FWGLL12MW-247-0540-GF	AQ	N							
				ALUMINUM	60	27J		J	ug/L	Rl
6020	FWGLL1MW-065C-0520-GF	AQ	N							
				IRON	150	64J		J	ug/L	Rl
6020	FWGLL1MW-083C-0521-GF	AQ	N							
				CADMIUM	2.0	0.85J		J	ug/L	Rl
				ZINC	50	46J		J	ug/L	Rl
6020	FWGLL1MW-084C-0522-GF	AQ	N							
				CADMIUM	2.0	1.7J		J	ug/L	Rl
6020	FWGLL1MW-086-0523-GF	AQ	N							
				ALUMINUM	60	33J		J	ug/L	Rl
				ANTIMONY	2.0	0.59J		U	ug/L	Cb
8081A	FWGEQUIPRINSE-0564-GW	AQ	EB							
				HEPTACHLOR	0.048	0.029J		B	ug/L	Mb
8081A	FWGLL1MW-083C-0521-GW	AQ	N							
				ENDRIN ALDEHYDE	0.049	0.030J		J	ug/L	Rl
				HEPTACHLOR	0.049	0.044J		U	ug/L	Mb, Eb
8081A	FWGLL1MW-084C-0522-GW	AQ	N							
				HEPTACHLOR	0.049	0.043J		B	ug/L	Mb, Eb

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48007-1										
8081A	FWGLL1MW-086-0523-GW	AQ	N							
				HEPTACHLOR	0.048	0.029J		B	ug/L	Mb, Eb
8081A	FWGSCFMW-002-0545-GW	AQ	N							
				HEPTACHLOR	0.048	0.066		B	ug/L	Mb, Eb
8270C -SVOC1	FWGLL12MW-247-0540-GW	AQ	N							
				BIS(2-ETHYLHEXYL)PHTHALATE	5.1	1.7J		J	ug/L	Rl
8270C -SVOC1	FWGLL1MW-084C-0522-GW	AQ	N							
				BIS(2-ETHYLHEXYL)PHTHALATE	4.8	2.0J		J	ug/L	Rl
8330	FWGLL1MW-083C-0521-GW	AQ	N							
				1,3,5-TRINITROBENZENE	0.15	5.9		J	ug/L	Surr
				1,3-DINITROBENZENE	0.15	0.19		J	ug/L	Surr
				2,4,6-TRINITROTOLUENE	0.15	4.8		J	ug/L	Surr
				2,4-DINITROTOLUENE	0.13	3.3		J	ug/L	Surr
				2,6-DINITROTOLUENE	0.13	2.2		J	ug/L	Surr
				2-AMINO-4,6-DINITROTOLUENE	0.76	13D		J	ug/L	Surr
				4-AMINO-2,6-DINITROTOLUENE	0.76	21D		J	ug/L	Surr
				Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.15	1.0M J		J	ug/L	Surr

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48007-1										
8330	FWGLL1MW-084C-0522-GW	AQ	N							
				1,3,5-TRINITROBENZENE	0.15	3.2		J	ug/L	Surr
				1,3-DINITROBENZENE	0.15	0.48		J	ug/L	Surr
				2,4,6-TRINITROTOLUENE	0.75	12D		J	ug/L	Surr
				2,4-DINITROTOLUENE	0.13	1.6M		J	ug/L	Surr
				2,6-DINITROTOLUENE	0.13	0.92M		J	ug/L	Surr
				2-AMINO-4,6-DINITROTOLUENE	0.15	9.7		J	ug/L	Surr
				4-AMINO-2,6-DINITROTOLUENE	0.75	31D		J	ug/L	Surr
				4-NITROTOLUENE	0.50	0.71		J	ug/L	Surr
				Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.15	0.92M		J	ug/L	Surr
				Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.15	0.71M J		J	ug/L	Surr

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Qualifier Summary

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method Category: GENCHEM

Method: 353.2 **Matrix: AQ**

Sample ID: FWGEQUIPRINSE-0564-GW **Collected:** 3/10/2015 4:14:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate-Nitrite	0.0090	J	0.0031	MDL	0.050	LOQ	mg/L	U	Mb, Cb

Sample ID: FWGLL12MW-247-0540-GW **Collected:** 3/10/2015 4:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate-Nitrite	0.019	J	0.0031	MDL	0.050	LOQ	mg/L	U	Mb, Eb, Cb

Method Category: METALS

Method: 6010B **Matrix: AQ**

Sample ID: FWGEQUIPRINSE-0564-GW **Collected:** 3/10/2015 4:14:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGLL12MW-247-0540-GF **Collected:** 3/10/2015 4:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	7.3	J	2.9	MDL	10	LOQ	ug/L	J	RI
BARIUM	23	J	1.0	MDL	200	LOQ	ug/L	J	RI
POTASSIUM	2300	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGLL1MW-064C-0519-GF **Collected:** 3/10/2015 11:15:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.5	J	2.9	MDL	10	LOQ	ug/L	J	RI
BARIUM	47	J	1.0	MDL	200	LOQ	ug/L	J	RI
POTASSIUM	750	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGLL1MW-065C-0520-GF **Collected:** 3/10/2015 12:51:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	50	J	1.0	MDL	200	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method Category: **METALS**

Method: **6010B** ***Matrix:*** **AQ**

Sample ID: **FWGLL1MW-065C-0520-GF** ***Collected:*** **3/10/2015 12:51:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHROMIUM	0.59	J	0.55	MDL	7.0	LOQ	ug/L	U	Mb, Cb
POTASSIUM	1200	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: **FWGLL1MW-083C-0521-GF** ***Collected:*** **3/10/2015 10:10:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	15	J	1.0	MDL	200	LOQ	ug/L	J	RI
COBALT	11		0.56	MDL	7.0	LOQ	ug/L	U	Cb
NICKEL	37	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	2800	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: **FWGLL1MW-084C-0522-GF** ***Collected:*** **3/10/2015 12:34:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	15	J	1.0	MDL	200	LOQ	ug/L	J	RI
COPPER	8.5	J	1.9	MDL	25	LOQ	ug/L	J	RI
MAGNESIUM	3400	J	55	MDL	5000	LOQ	ug/L	J	RI
NICKEL	27	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	3500	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: **FWGLL1MW-086-0523-GF** ***Collected:*** **3/10/2015 11:53:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	4.4	J	2.9	MDL	10	LOQ	ug/L	J	RI
BARIUM	57	J	1.0	MDL	200	LOQ	ug/L	J	RI
NICKEL	1.3	J	0.76	MDL	40	LOQ	ug/L	U	Cb
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: **FWGSCFMW-002-0545-GF** ***Collected:*** **3/10/2015 2:27:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	42	J	1.0	MDL	200	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method Category: METALS

Method: 6010B **Matrix: AQ**

Sample ID: FWGSCFMW-002-0545-GF **Collected:** 3/10/2015 2:27:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2500	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGSCFMW-004-0546-GF **Collected:** 3/10/2015 10:07:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	71	J	1.0	MDL	200	LOQ	ug/L	J	RI
POTASSIUM	2900	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGSCFMW-DUP6-0562-GF **Collected:** 3/10/2015 3:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	40	J	1.0	MDL	200	LOQ	ug/L	J	RI
POTASSIUM	2400	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Method Category: METALS

Method: 6020 **Matrix: AQ**

Sample ID: FWGLL12MW-247-0540-GF **Collected:** 3/10/2015 4:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	27	J	20	MDL	60	LOQ	ug/L	J	RI

Sample ID: FWGLL1MW-065C-0520-GF **Collected:** 3/10/2015 12:51:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	64	J	44	MDL	150	LOQ	ug/L	J	RI

Sample ID: FWGLL1MW-083C-0521-GF **Collected:** 3/10/2015 10:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.85	J	0.40	MDL	2.0	LOQ	ug/L	J	RI
ZINC	46	J	27	MDL	50	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method Category: METALS

Method: 6020 **Matrix: AQ**

Sample ID: FWGLL1MW-084C-0522-GF **Collected:** 3/10/2015 12:34:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	1.7	J	0.40	MDL	2.0	LOQ	ug/L	J	RI

Sample ID: FWGLL1MW-086-0523-GF **Collected:** 3/10/2015 11:53:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	33	J	20	MDL	60	LOQ	ug/L	J	RI
ANTIMONY	0.59	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

Method Category: SVOA

Method: 8081A **Matrix: AQ**

Sample ID: FWGEQUIPRINSE-0564-GW **Collected:** 3/10/2015 4:14:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEPTACHLOR	0.029	J	0.0048	MDL	0.048	LOQ	ug/L	B	Mb

Sample ID: FWGLL1MW-083C-0521-GW **Collected:** 3/10/2015 10:10:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ENDRIN ALDEHYDE	0.030	J	0.0078	MDL	0.049	LOQ	ug/L	J	RI
HEPTACHLOR	0.044	J	0.0049	MDL	0.049	LOQ	ug/L	U	Mb, Eb

Sample ID: FWGLL1MW-084C-0522-GW **Collected:** 3/10/2015 12:34:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEPTACHLOR	0.043	J	0.0049	MDL	0.049	LOQ	ug/L	B	Mb, Eb

Sample ID: FWGLL1MW-086-0523-GW **Collected:** 3/10/2015 11:53:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEPTACHLOR	0.029	J	0.0048	MDL	0.048	LOQ	ug/L	B	Mb, Eb

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method Category: SVOA

Method: 8081A **Matrix: AQ**

Sample ID: FWGSCFMW-002-0545-GW **Collected:** 3/10/2015 2:27:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEPTACHLOR	0.066		0.0048	MDL	0.048	LOQ	ug/L	B	Mb, Eb

Method Category: SVOA

Method: 8270C -SVOC1 **Matrix: AQ**

Sample ID: FWGLL12MW-247-0540-GW **Collected:** 3/10/2015 4:00:00 PM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BIS(2-ETHYLHEXYL)PHTHALATE	1.7	J	1.7	MDL	5.1	LOQ	ug/L	J	RI

Sample ID: FWGLL1MW-084C-0522-GW **Collected:** 3/10/2015 12:34:00 PM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BIS(2-ETHYLHEXYL)PHTHALATE	2.0	J	1.6	MDL	4.8	LOQ	ug/L	J	RI

Method Category: SVOA

Method: 8330 **Matrix: AQ**

Sample ID: FWGLL1MW-083C-0521-GW **Collected:** 3/10/2015 10:10:00 AM **Analysis Type:** DL **Dilution:** 5

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-AMINO-4,6-DINITROTOLUENE	13	D	0.076	MDL	0.76	LOQ	ug/L	J	Surr
4-AMINO-2,6-DINITROTOLUENE	21	D	0.25	MDL	0.76	LOQ	ug/L	J	Surr

Sample ID: FWGLL1MW-083C-0521-GW **Collected:** 3/10/2015 10:10:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	5.9		0.032	MDL	0.15	LOQ	ug/L	J	Surr
1,3-DINITROBENZENE	0.19		0.051	MDL	0.15	LOQ	ug/L	J	Surr
2,4,6-TRINITROTOLUENE	4.8		0.051	MDL	0.15	LOQ	ug/L	J	Surr
2,4-DINITROTOLUENE	3.3		0.051	MDL	0.13	LOQ	ug/L	J	Surr
2,6-DINITROTOLUENE	2.2		0.051	MDL	0.13	LOQ	ug/L	J	Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.0	M J	0.037	MDL	0.15	LOQ	ug/L	J	Surr

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method Category: **SVOA**

Method: **8330** ***Matrix:*** **AQ**

Sample ID: **FWGLL1MW-084C-0522-GW** ***Collected:*** **3/10/2015 12:34:00 PM** ***Analysis Type:*** **DL** ***Dilution:*** **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4,6-TRINITROTOLUENE	12	D	0.25	MDL	0.75	LOQ	ug/L	J	Surr
4-AMINO-2,6-DINITROTOLUENE	31	D	0.25	MDL	0.75	LOQ	ug/L	J	Surr

Sample ID: **FWGLL1MW-084C-0522-GW** ***Collected:*** **3/10/2015 12:34:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	3.2		0.031	MDL	0.15	LOQ	ug/L	J	Surr
1,3-DINITROBENZENE	0.48		0.050	MDL	0.15	LOQ	ug/L	J	Surr
2,4-DINITROTOLUENE	1.6	M	0.050	MDL	0.13	LOQ	ug/L	J	Surr
2,6-DINITROTOLUENE	0.92	M	0.050	MDL	0.13	LOQ	ug/L	J	Surr
2-AMINO-4,6-DINITROTOLUENE	9.7		0.015	MDL	0.15	LOQ	ug/L	J	Surr
4-NITROTOLUENE	0.71		0.088	MDL	0.50	LOQ	ug/L	J	Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.92	M	0.036	MDL	0.15	LOQ	ug/L	J	Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.71	M J	0.036	MDL	0.15	LOQ	ug/L	J	Surr

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Eb	Equipment Blank Contamination
Mb	Method Blank Contamination
ProfJudg	Professional Judgment
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Upper Estimation

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Review Summary

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	SR
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	A
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	SR

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Surrogate Outlier Report

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method: **8330**
Matrix: **AQ**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FWGLL1MW-083C-0521-GW (DL)	3,4-DINITROTOLUENE	139	79.00-111.00	All Target Analytes	J (all detects)
FWGLL1MW-083C-0521-GW	3,4-DINITROTOLUENE	141	79.00-111.00	All Target Analytes	J(all detects)
FWGLL1MW-084C-0522-GW (DL)	3,4-DINITROTOLUENE	381	79.00-111.00	All Target Analytes	J(all detects)
FWGLL1MW-084C-0522-GW	3,4-DINITROTOLUENE	363	79.00-111.00	All Target Analytes	J(all detects)

Method Blank Outlier Report

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method: **353.2**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 320-69251/41	3/20/2015 7:13:00 PM	Nitrate-Nitrite	0.00500 mg/L	FWGEQUIPRINSE-0564-GW FWGLL12MW-247-0540-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGEQUIPRINSE-0564-GW(RES/TOT)	Nitrate-Nitrite	0.0090 mg/L	0.0090U mg/L
FWGLL12MW-247-0540-GW(RES/TOT)	Nitrate-Nitrite	0.019 mg/L	0.019U mg/L

Method: **6010B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-171577/1-A	3/13/2015 11:16:00 AM	BARIUM CHROMIUM MANGANESE	2.50 ug/L 0.726 ug/L 1.36 ug/L	FWGEQUIPRINSE-0564-GW FWGLL12MW-247-0540-GF FWGLL1MW-064C-0519-GF FWGLL1MW-065C-0520-GF FWGLL1MW-083C-0521-GF FWGLL1MW-084C-0522-GF FWGLL1MW-086-0523-GF FWGSCFMW-002-0545-GF FWGSCFMW-004-0546-GF FWGSCFMW-DUP6-0562-GF

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGLL1MW-065C-0520-GF(RES/TOT)	CHROMIUM	0.59 ug/L	0.59U ug/L

Method: **8081A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-171536/7-A	3/12/2015 2:52:00 PM	HEPTACHLOR	0.0226 ug/L	FWGEQUIPRINSE-0564-GW FWGLL1MW-083C-0521-GW FWGLL1MW-084C-0522-GW FWGLL1MW-086-0523-GW FWGSCFMW-002-0545-GW FWGSCFMW-004-0546-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGEQUIPRINSE-0564-GW(RES)	HEPTACHLOR	0.029 ug/L	0.029U ug/L
FWGLL1MW-083C-0521-GW(RES)	HEPTACHLOR	0.044 ug/L	0.044U ug/L
FWGLL1MW-084C-0522-GW(RES)	HEPTACHLOR	0.043 ug/L	0.043U ug/L
FWGLL1MW-086-0523-GW(RES)	HEPTACHLOR	0.029 ug/L	0.029U ug/L

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Method Blank Outlier Report

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method: **8081A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGSCFMW-002-0545-GW(RES)	HEPTACHLOR	0.066 ug/L	0.066U ug/L

Field Duplicate RPD Report

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method: 6010B
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	FWGSCFMW-002-0545-GF (TOT)	FWGSCFMW-DUP6-0562-GF (TOT)			
ARSENIC	16	15	6	50.00	No Qualifiers Applied
BARIUM	42	40	5	50.00	
CALCIUM	91000	88000	3	50.00	
MAGNESIUM	29000	27000	7	50.00	
MANGANESE	72	75	4	50.00	
POTASSIUM	2500	2400	4	50.00	

Method: 6020
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	FWGSCFMW-002-0545-GF (TOT)	FWGSCFMW-DUP6-0562-GF (TOT)			
IRON	480	470	2	50.00	No Qualifiers Applied
SODIUM	21000	21000	0	50.00	

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: 240-48007-1 **Laboratory: TESTAME**

EDD Filename: 240-48007-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method: **353.2**
Matrix: **AQ**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGEQUIPRINSE-0564-GW (RES/TOT)	3/10/2015 4:14:00 PM	Nitrate-Nitrite	0.009 mg/L	FWGLL12MW-247-0540-GF FWGLL12MW-247-0540-GW FWGLL1MW-064C-0519-GF FWGLL1MW-064C-0519-GW FWGLL1MW-065C-0520-GF FWGLL1MW-065C-0520-GW FWGLL1MW-083C-0521-GF FWGLL1MW-083C-0521-GW FWGLL1MW-084C-0522-GF FWGLL1MW-084C-0522-GW FWGLL1MW-086-0523-GF FWGLL1MW-086-0523-GW FWGSCFMW-002-0545-GF FWGSCFMW-002-0545-GW FWGSCFMW-004-0546-GF FWGSCFMW-004-0546-GW FWGSCFMW-DUP6-0562-GF FWGSCFMW-DUP6-0562-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGLL12MW-247-0540-GW(RES/TOT)	Nitrate-Nitrite	0.019 mg/L	0.019U mg/L

Method: **8081A**
Matrix: **AQ**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGEQUIPRINSE-0564-GW (RES)	3/10/2015 4:14:00 PM	HEPTACHLOR	0.029 ug/L	FWGLL12MW-247-0540-GF FWGLL12MW-247-0540-GW FWGLL1MW-064C-0519-GF FWGLL1MW-064C-0519-GW FWGLL1MW-065C-0520-GF FWGLL1MW-065C-0520-GW FWGLL1MW-083C-0521-GF FWGLL1MW-083C-0521-GW FWGLL1MW-084C-0522-GF FWGLL1MW-084C-0522-GW FWGLL1MW-086-0523-GF FWGLL1MW-086-0523-GW FWGSCFMW-002-0545-GF FWGSCFMW-002-0545-GW FWGSCFMW-004-0546-GF FWGSCFMW-004-0546-GW FWGSCFMW-DUP6-0562-GF FWGSCFMW-DUP6-0562-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGLL1MW-083C-0521-GW(RES)	HEPTACHLOR	0.044 ug/L	0.044U ug/L
FWGLL1MW-084C-0522-GW(RES)	HEPTACHLOR	0.043 ug/L	0.043U ug/L
FWGLL1MW-086-0523-GW(RES)	HEPTACHLOR	0.029 ug/L	0.029U ug/L
FWGSCFMW-002-0545-GW(RES)	HEPTACHLOR	0.066 ug/L	0.066U ug/L

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48073

Date: June 24, 2015
Revision: 1

Data Reviewer: Angela Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 11, 2015 the following samples were collected from groundwater-monitoring wells at the former Ravenna Army Ammunition Plant and analyzed as part of SDG 240-48073. Sample analysis was performed by Test America. Test America-North Canton performed all requested analyses with the exception of the analytical for methods 8330, M8330, TALSOPWS-WC-0050 and 6860. Methods 8330, M8330 and TALSOPWS-WC-0050 were performed by Test America, West Sacramento. Method 6860, if requested, was performed by Test America, Denver.

Sample ID	VOC by SW846 8260	SVOC 4 by SW846 8270	SVOC 1 and 2 by SW846 8270	SVOC 1 by SW846 8270	Pesticides by SW846 8081	PCBs/ SW846 8082	Explosives/Propellants by SW846 8330, Mod. 8330 and TALSOP WS-WC-0050	Cyanide SW846 9012	Perchlorate by SW846 6860	NO2/NO3, EPA 353.2	Metals [4]		
											SW846 6010B	SW846 6020	Mercury by SW846 7470A
FWGLL3mw-241c-0531-GW/GF				X	X		X				X	X	X
FWGLL2mw-267c-0528-GW/GF				X			X				X	X	X
FWGEQUIPRINSE3-0565-GW	X			X	X		X			X	X	X	X
FWGWBGmw-006c-0547-GW/GF				X			X				X	X	X
FWGWBGmw-021c-0550-GW/GF				X			X				X	X	X
FWGLL12mw-185C-0536-GW/GF										X	X[5]		
FWGLL12mw-DUP4-0560-GW										X			
FWGLL3mw-238c-0530-GW/GF				X	X		X				X	X	X
FWGLL10mw-003c-0535-GW/GF	X			X							X	X	X
FWGWBGmw-020-0549-GW/GF				X			X				X	X	X
FWGWBGmw-009-0548-GW/GF				X			X				X	X	X
FWGLL7mw-001-0534-GW/GF	X			X			X				X	X	X

1) All metals samples with the exception of FWGEQUIPRINSE3-0565-GW were field filtered (GF).
2) SVOC1= Phthalates only except for samples FWGLL10mw-003c-0535-GW and FWGEQUIPRINSE3-0565-GW; nitroaromatic targets nitrobenzene, 2,4-dinitrotoluene and 2,6-dinitrotoluene were also reported by SW846-8270.
3) EPA 6020 metals include aluminum, antimony, beryllium, cadmium, iron, sodium, thallium and zinc. EPA 6010B metals include arsenic, chromium, cobalt, lead, selenium, silver, vanadium, barium, calcium, copper, magnesium, manganese, nickel and potassium.
4) Trip blanks, FWGTEAM3-Trip and FWGTEAM4-Trip were collected on 3/11/15 and submitted to the laboratory for VOC analysis by EPA 8260B.
5) Sample FWGLL12mw-185C-0536- GF was analyzed for arsenic only.

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004,* Analytical Methods, and Laboratory Standard Operating

Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Per the DoD QSM, the laboratory data is reported as follows: Non detected results were reported at the LOD with a "U" flag. Detected results between the DL and LOQ were reported as estimated, qualified with a "J" flag.

LOD - An estimate of the minimum amount of a substance that an analytical process can reliably detect.

LOQ - The lowest concentration that produces a quantitative result within specified limits of precision and bias.

DL- The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence.

Checklists used in the verification process are in Attachment I and sample results with outliers requiring qualification are in Attachment II.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, at 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

VOC- 8260

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix spike/spike duplicate recovery criteria and RPD

Blanks

Methylene chloride was detected in FWGTEAM4-Trip at 0.64 µg/L. The methylene chloride result for sample FWGEQUIPRINSE3-0565-GW was qualified, "B".

FWGEQUIPRINSE3-0565-GW had bromodichloromethane detected at 0.39 µg/L, chloroform at 4 µg/L and methylene chloride at 0.72 µg/L. The chloroform result for sample FWGLL10mw-003c-0535-GW was qualified "B" as the detected concentration was less than 5x equipment rinse contamination. There were no detected concentrations of methylene chloride or bromodichloromethane is the associated field samples so no qualification was required for the methylene chloride or bromodichloromethane equipment rinse contamination.

Field Duplicate RPD

A field duplicate was not submitted for volatiles analysis with this set of samples.

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 24, 2015
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SVOCs- 8270C

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD

Matrix Spike/Spike Duplicate Recovery and RPD Criteria

A matrix spike and spike duplicate were prepped analyzed on sample FWGLL2mw-271-0503-GW. The A matrix spike/ spike duplicate was not requested on a sample from this workorder.

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

Pesticides- 8081A

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- DDT and Endrin breakdown criteria
- Retention time criteria
- ICV criteria
- CCV Criteria
- Method /field blank criteria
- LCS Recoveries
- Field Duplicate Criteria
- LOD and MRL verification criteria
- Matrix Spike Recovery Criteria and RPD
- Surrogate Recoveries
- Second Column confirmation criteria

MRL Recovery Criteria

- The closing MRL analyzed 3/15/15 @ 2214 recovered above limits of 70-130% on the primary column for 4,4-DDE at 159%, endosulfan II and endosulfan sulfate at 131%, endrin at 137%, endrin aldehyde at 133% methoxychlor at 139%.
- The MRL analyzed on the confirmation column at 2214, had MRL recoveries above control limits at 141% for beta-BHC, 139% for endrin and methoxychlor, 133% for endrin aldehyde and heptachlor epoxide at 208%.

The endosulfan sulfate result for sample FWGLL3mw-238c-0530-GW was qualified as estimated, "J". No additional qualification was made for the other MRL outliers as there were no detected concentrations reported from the primary column for 4,4-DDE, endosulfan II, endrin, endrin aldehyde or methoxychlor.

CCVs

- The primary column CCV analyzed 3/15/15 at 1933 had %D above 20% for 4,4,-DDE at 156%, endrin at 30.7% and methoxychlor at 23%.

- The confirmation column CCV analyzed 3/15/15 at 1933 had %D above 20% for beta BHC at 21.1%, heptachlor epoxide at 195%, endrin at 27.4% and methoxychlor at 20.8%.

No qualification of the data was required for any of the CCV outliers as there were no detected pesticide concentrations reported for the bracketed field samples associated with the columns with outlier CCVs.

Blanks

FWGEQUIPRINSE3-0565-GW had heptachlor detected at 0.05µg/L. The heptachlor results for samples FWGLL3mw-238c-0530-GW and FWGLL3mw-241c-0531-GW were qualified, "B" as the reported concentrations were less than 5x equipment rinse contamination.

Matrix Spike Recovery Criteria and RPD

A matrix spike and spike duplicate was not requested with this set of samples and no data was provided for matrix spike/ spike duplicate evaluation.

Field Duplicate Criteria

A field duplicate sample was not submitted with this sample set.

Metals - 6010B

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria
- Post Digestion Spike Criteria

Blanks

The ICB analyzed 3/13/15@ 0910 had cobalt detected at 2.34 µg/L and nickel detected at 2.66 µg/L. The nickel and cobalt results for samples FWGLL2mw-267c-0528-GF and FWGLL7mw-001-0534-GF as well as the nickel result for sample FWGWBGmw-020-0549-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination.

The CCB analyzed 3/13/15 had chromium detected at 2.82 µg/L, manganese at 3.38 µg/L and silver at 1.95 µg/L. The CCB analyzed 3/13/15 at 1406 had cobalt detected at 0.741 µg/L. The cobalt result for sample FWGLL7mw-001-0534-GF was qualified "U" as the reported concentration was less than 5x blank contamination. No additional qualifications were made as the other outliers did not bracket detected concentrations in the associated field samples.

MRL Verification Criteria

The closing MRL analyzed 3/13/15 at 1358 recovered below control limits of 70-130% for vanadium at 47%. An LOD check was analyzed immediately before the MRL verification with acceptable results. The vanadium results for samples FWGLL3mw-241c-0531- GF, FWGLL2mw-267c-0528- GF, FWGEQUIPRINSE3-0565-GW, FWGWBGmw-006c-0547- GF, FWGWBGmw-021c-0550-/GF, FWGLL3mw-238c-0530-GF, FWGLL10mw-003c-0535-GF, FWGWBGmw-020-0549- GF, FWGWBGmw-009-0548- GF and FWGLL7mw-001-0534- GF were qualified as estimated, "UJ".

Laboratory Duplicate RPD

The laboratory duplicate analyzed on sample FWGLL3mw-241c-0531-GF had an RPD above control limits of 20% for manganese at 34%. No qualification of the data was required as the detected manganese concentration was less than the LOQ.

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Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

Metals - 6020
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning Criteria
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field Duplicate RPD Criteria
- Post Digestion Spike Criteria
- Internal Standards

Blanks
The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony results for samples FWGLL3mw-241c-0531-GF and FWGLL2mw-267c-0538-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results reported for the associated samples.

The CCBs analyzed 3/17/15 had antimony detected from 0.296 µg/L to 0.316 µg/L, beryllium from 0.055 µg/L to 0.102 µg/L and cadmium from 0.0810 µg/L to 0.0890 µg/L . The antimony results for samples FWGLL3mw-241c-0531-GF and FWGLL2mw-267c-0538-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results reported for the associated samples.

Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

Mercury - 7470A
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

No QC outliers were noted.

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48073

Date: June 24, 2015
Revision: 1

Explosives- 8330

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration Criteria
- ICV and CCV criteria
- Retention time criteria
- LOD and MRL verification criteria
- Surrogate recovery criteria
- Method /field blank criteria
- LCS/LCD Recovery and RPD Criteria
- Matrix spike/spike duplicate recovery criteria and RPD
- Second column confirmation RPD
- Field Duplicate RPD

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

Matrix Spike/Spike Duplicate Recovery Criteria and RPD

No data was provided as a matrix spike/spike duplicate was not requested nor was sample volume provided for matrix spike analysis specific to this set of samples.

Surrogate Recovery

The surrogate, 3,4-dinitrotolune recovered above control limits of 79-111% at 120% for sample FWGLL3mw-238c-0530-GW and at 113% in the diluted analysis of sample FWGLL3mw-238c-0530-GW . The 1,3,5-trinitrobenzene, 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-amino-4,6-dinitrotoluene, 3-nitrotoluene, 4-amino-2,6-dinitrotoluene, HMX , RDX and nitrobenzene results for sample FWGLL3mw-238c-0530-GW were qualified as estimated, "J".

Nitroguanidine- 8330M

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration criteria
- Retention time criteria
- LOD and MRL verification criteria
- ICV and CCV criteria
- Method /field blank criteria
- LCS/LCSD percent recoveries and RPD value criteria
- Matrix spike recovery criteria
- Second column confirmation
- Field Duplicate RPD

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

No QC outliers were noted.

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 24, 2015
Sample Delivery Group: 240-48073 **Revision:** 1

Nitrocellulose – WS-WC-0050
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD percent recoveries and RPD value criteria
- MS/MSD percent recoveries and RPD
- Field Duplicate RPD

Field Duplicate RPD
A field duplicate was not submitted with this set of samples.

No QC outliers were noted.

Nitrate-Nitrite 353.2
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method/Field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Field duplicate RPD criteria

Blank Contamination
The ICB analyzed 3/27/15 @1625 had nitrate/nitrite detected at 0.005mg/L. The nitrate/nitrite result for sample FWGEQUIPRINSE3-0565-GW was qualified, "U", as the detected result was <5x instrument blank contamination. No additional qualification was required as the detected concentrations for the remaining samples were greater than 5x blank contamination.

FWGEQUIPRINSE3-0565-GW had nitrate/nitrite detected at 0.006mg/L. No qualification of the data was required, as the associated field sample results were greater than 5x rinse blank contamination.

No additional QC outliers were noted.

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Sample Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-48073-1	FWGLL3MW-241C-0531-GW	Water	03/11/15 09:52	03/11/15 17:15
240-48073-2	FWGLL3MW-241C-0531-GF	Water	03/11/15 09:52	03/11/15 17:15
240-48073-3	FWGLL2MW-267C-0528-GW	Water	03/11/15 13:12	03/11/15 17:15
240-48073-4	FWGLL2MW-267C-0528-GF	Water	03/11/15 13:12	03/11/15 17:15
240-48073-5	FWGEQUIPRINSE3-0565-GW	Water	03/11/15 15:30	03/11/15 17:15
240-48073-6	FWGWBGMW-006C-0547-GW	Water	03/11/15 11:01	03/11/15 17:15
240-48073-7	FWGWBGMW-006C-0547-GF	Water	03/11/15 11:01	03/11/15 17:15
240-48073-8	FWGWBGMW-021C-0550-GW	Water	03/11/15 12:21	03/11/15 17:15
240-48073-9	FWGWBGMW-021C-0550-GF	Water	03/11/15 12:21	03/11/15 17:15
240-48073-10	FWGLL12MW-185C-0536-GW	Water	03/11/15 16:11	03/11/15 17:15
240-48073-11	FWGLL12MW-185C-0536-GF	Water	03/11/15 16:11	03/11/15 17:15
240-48073-12	FWGLL12MW-DUP4-0560-GW	Water	03/11/15 16:31	03/11/15 17:15
240-48073-13	FWGLL3MW-238C-0530-GW	Water	03/11/15 11:50	03/11/15 17:15
240-48073-14	FWGLL3MW-238C-0530-GF	Water	03/11/15 11:50	03/11/15 17:15
240-48073-15	FWGLL10MW-003C-0535-GW	Water	03/11/15 14:30	03/11/15 17:15
240-48073-16	FWGLL10MW-003C-0535-GF	Water	03/11/15 14:30	03/11/15 17:15
240-48073-17	FWGTEAM4-TRIP	Water	03/11/15 08:00	03/11/15 17:15
240-48073-18	FWGWBGMW-020-0549-GW	Water	03/11/15 09:31	03/11/15 17:15
240-48073-19	FWGWBGMW-020-0549-GF	Water	03/11/15 09:31	03/11/15 17:15
240-48073-20	FWGWBGMW-009-0548-GW	Water	03/11/15 12:13	03/11/15 17:15
240-48073-21	FWGWBGMW-009-0548-GF	Water	03/11/15 12:13	03/11/15 17:15
240-48073-22	FWGLL7MW-001-0534-GW	Water	03/11/15 16:09	03/11/15 17:15
240-48073-23	FWGLL7MW-001-0534-GF	Water	03/11/15 16:09	03/11/15 17:15
240-48073-24	FWGTEAM3-TRIP	Water	03/11/15 08:00	03/11/15 17:15

METHOD SUMMARY

Client: Environmental Quality Mgt., Inc. Job Number: 240-48073-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds (GC/MS)	TAL CAN	SW846 8260B	
Purge and Trap	TAL CAN		SW846 5030B
Semivolatile Organic Compounds (GC/MS)	TAL CAN	SW846 8270C	
Liquid-Liquid Extraction (Continuous)	TAL CAN		SW846 3520C
Organochlorine Pesticides (GC)	TAL CAN	SW846 8081A	
Liquid-Liquid Extraction (Continuous)	TAL CAN		SW846 3520C
Metals (ICP)	TAL CAN	SW846 6010B	
Preparation, Total Recoverable or Dissolved Metals	TAL CAN		SW846 3005A
Metals (ICP/MS)	TAL CAN	SW846 6020	
Preparation, Total Recoverable or Dissolved Metals	TAL CAN		SW846 3005A
Mercury (CVAA)	TAL CAN	SW846 7470A	
Preparation, Mercury	TAL CAN		SW846 7470A
Nitroguanidine (HPLC)	TAL SAC	SW846 8330 Modified	
Sample Filtration	TAL SAC		Filtration
Nitroaromatics and Nitramines	TAL SAC	SW846 8330A	
Solid-Phase Extraction (Explosives)	TAL SAC		SW846 8330-Prep
Nitrogen, Nitrate-Nitrite	TAL SAC	MCAWW 353.2	
Nitrocellulose	TAL SAC	TAL-SAC WS-WC-0050	
Nitrocellulose Sample Preparation (Hydrolysis)	TAL SAC		MCAWW 353 (NCell-Hyd)
Nitrocellulose Sample Preparation	TAL SAC		MCAWW 353.2 (NCell)

Lab References:

TAL CAN = TestAmerica Canton

TAL SAC = TestAmerica Sacramento

Method References:

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

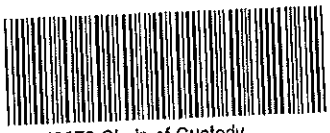
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS


240-48073 Chain of Custody

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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Client Contact	Project Manager: J. MILLER	Site Contact: D. CORBIN	Date: 3-11-15	COC No: CAL03 1115
Company Name: FOM	Tel/Fax:	Lab Contact: M. LOBB	Carrier: LAB PICKUP	1 of 1 COCs
Address: 1900 CARMON RUN	Analysis Turnaround Time			Sampler: Colleen Lear
City/State/Zip: Cincinnati OH 45240	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513 825 7500	TAT if different from Below 21			Walk-in Client:
Fax: 513 825 7495	☒ 2 weeks			Lab Sampling:
Project Name: RVAAP 106	☐ 1 week			
Site: RVAAP - RAVENNA OHIO	☐ 2 days			Job / SDG No.:
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	SVOC 8270	Pesticides 8082	EXPLOSIVES 8330	PROPELLANTS NO_2NO_3	METALS 6010B/7470A	Sample Specific Notes:
FWGW3MW24IC-0531-GW	3-11-15	0952	G	WG	7	N	N	2	2	1	2		C119 cooler
FWGW3MW-24IC-0531-GF	↓	↓	↓	↓	1	Y	N					1	C119
FWGW2MW-216C-0528-GW	3-11-15	1312	G	WG		N	N	2		1	2		3-HR
FWGW2MW-216C-0528-GF	↓	↓	↓	↓		Y	N					1	3-HR
FWGEQUIPRNSE3-0515-GW	3-11-15	1530	G	H2O		N	N	2	2	1	2	1	002
				EL	3/11/15								

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

VOA FOR RINSE UNDER TRAVEL COOLER L142 AS LOGGED.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

	Company	Date/Time	Received by	Company	Date/Time
Relinquished by:	FOM	3/11/15 1715		TestAmerica	3/11/15 1715
Relinquished by:	FOM	3/11/15 1806			
Relinquished by:			Received in laboratory by: Heather Powell	TAL	3/11/15 1806

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TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: John Miller	Site Contact: E. Corbin	Date: 3/11/15	COC No: EC031115
Company Name: EQM	Tel/Fax:	Lab Contact: M. Loeb	Carrier: Lab Pickup	1 of 1 COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Cincinnati OH 45240	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513-825-7500	TAT if different from Below 21			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: RVAAP 66 (OH)	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	SVOC 1 (8270)	Explosives (8330)	Ammonia	Metals (6010/6020/7470)	NO_3/NO_2 (353.2)	Total Arsenic only	Cooler ID Sample Specific Notes:
FWGWBGmw-006C-0547-GW	3/11/15	11:01	G	GW	5	N	N	X	X	X				#15
FWGWBGmw-006C-0547-GF	3/11/15	11:01	G	GW	1	Y	N				X			#15
FWGWBGmw-021C-0550-GW	3/11/15	12:21	G	GW	5	N	N	X	X	X				EC1
FWGWBGmw-021C-0550-GF	3/11/15	12:21	G	GW	1	Y	N				X			EC1
FWGLL12mw-185C-0536-GW	3/11/15	16:11	G	GW	1	N	N					X		#29
FWGLL12mw-185C-0536-GF	3/11/15	16:11	G	GW	1	Y	N						X	#29
FWGLL12mw-DUP4-0560-GW	3/11/15	16:31	G	GW	1	N	N					X		#29

EC 3/11/15

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: metals are field filtered.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EQM	3/11/15 1710	RC [signature]	TestAmerica	3/11/15 1715
[signature]	EQM 3/11/15	1806			
			Received in Laboratory by: Heather Powell	TAC	3/11/15 1806

TestAmerica Canton
4101 Shoffel Street, N. E.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Client Contact	Project Manager: JOHN MILLER	Site Contact: ERIK GREEN	Date: 03/11/15	COC No: SAS031115
Company Name: EAM	Tel/Fax: (513) 825-7500 / 7495	Lab Contact: MARK LOEB	Carrier:	1 of 1 COCs
Address: 1800 CARILLON BLVD.	Analysis Turnaround Time			Sampler: ERR
City/State/Zip: CINCINNATI, OH 45240	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (513) 825-7500	TAT if different from Below _____			Walk-in Client:
Fax: (513) 825-7495	☑ 3 weeks PER			Lab Sampling:
Project Name: RVAAP66 (all)	☐ 1 week SOW			
Site: RAVENNA, OHIO 30174.0016.001.10.1	☐ 2 days			Job / SDG No.:
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	8270 SVOC1	8021 PEST	6850 EXP20	6850 PERCHLORATE	6010/6020/7470 METALS (20D/LOW/HG)	8260 VOC	COOLER ID # / ~~Sample Specific Notes:~~
FWGLL3mw-238C-0530-GW FR	03/11/15	11:50	G	GW	7	N	N	2	2	1	2			E0037
FWGLL3mw-238C-0530-GF	1	1	G	GW	1	Y	N					1		E0037
FWGLL10mw-003C-0535-GW	1	14:30	G	GW	5	N	N	2					3	L142
FWGLL10mw-003C-0535-GF	1	1	G	GW	1	Y	N					1		L142
FWG TEAM 4-TRIP	1	8:00	G	GW	2	N	N						2	L142
FWG EQUIPMENT 3-0505-GW	1	1530	G	GW	3	N	N						3	L142
				EL	3/11/15									

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Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other — 1 1 1 3 4 2

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: ALL METALS, PERCHLORATE SAMPLES ARE FIELD FILTERED. ALL VOAs IN COOLER L142

TEMPS MAY NOT MEET REQUIREMENTS IF SAMPLE COLLECTION IS CLOSE TO LAB PICKUP TIME.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EAM	3/11/15 1715	RC Fobes	TestAmerica	3/11/15 - 1715
Relinquished by: [signature]	Company: TestAm, 3/11/15	Date/Time: 1806	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: Heather Powell	Company: TAL	Date/Time: 3/11/15 1806

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North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other: DOD ELAP/ISM/LSI

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Client Contact	Project Manager: John Miller	Site Contact: E. Corbin	Date: 3/11/15	COC No: 480-103115
Company Name: EDM	Tel/Fax: 573 885-7500	Lab Contact: Mark Lee	Carrier: Lab Courier	1 of 1 COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler: KD
City/State/Zip: Cape Girardeau MO 63701	☒ CALENDAR DAYS 21 ☐ WORKING DAYS			For Lab Use Only:
Phone: 573 335 7500	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: FUSRAP	☐ 1 week			Job / SDG No.:
Site:	☐ 2 days			
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	SVOC/ Explosives	Dioxin/Furan	Metals (200.8)	TCLP Metals	VOC 8260	Sample Specific Notes:
FWGW86MW-030-0549-GW	3/11/15	0931	G	GW	5	N	N	X	X	X			EC9
FWGW86MW-030-0549-GF	↓	0931	↓	↓	1	Y	N				X		EC9
FWGW86MW-009-0548-GW	3/11/15	1213	G	GW	5	N	N	X	X	X			E-21
FWGW86MW-009-0548-GF	↓	↓	↓	↓	1	Y	N				X		E-21
FWGWLL7MW-001-0534-GW	3/11/15	1609	G	GW	8	N	N	X	X	X		X	M12
FWGWLL7MW-001-0534-GF	↓	↓	↓	↓	1	Y	N				X		M12
FWGWLAM3-1012	3/11/15	0800	G	W	1	N	N					X	

KD 3/11/15

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:
Metals field filtered

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: ____ Corr'd: ____	Therm ID No.: ____

	Company	Date/Time	Received by	Company	Date/Time
Relinquished by:	EDM	3/11/15 1715		TestAmerica	3/11/15 - 1715
Relinquished by:	EDM	3/11/15 1806	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: TAL	Date/Time: 3/11/15 1806

TestAmerica Canton Sample Receipt Form/Narrative Login # : 48073
Canton Facility

Client EQM Site Name RIAAP - Ravenna Ohio Cooler unpacked by: Heather Powell

Cooler Received on 3/11/15 Opened on 3/11/15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box Client Cooler Box Other MCP

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   ☒ See Multiple Cooler Form
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s)? HEP Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC425511
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # B43470UB/341 Yes No

Contacted PM Date by via Verbal Voice Mail Other

Concerning

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

Sample HEP Equip FWGEQuiprinse3-0565-GW is listed on 2 separate COCs - will log together as 1 sample

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

TestAmerica Multiple Cooler Receipt Form/Narrative — Login # : 48073
Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
EC9	4	1.4	1.9	DCA
E21		2.6	3.1	
C19		1.4	1.9	
3-HR		3.6	4.1	
002		3.4	3.9	
MIR		2.6	3.1	
E0037		2.4	2.9	
L142		1.8	2.3	
#29		2.0	2.5	
#5		1.6	2.1	
EC1		1.6	2.1	

CASE NARRATIVE
REVISED

Client: Environmental Quality Mgt., Inc.

Project: RVAAP (OH)

Report Number: 240-48073-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The 353.2 Nitrocellulose, 8330 Nitroguandine and 8330A Explosives analysis were performed at the TestAmerica Sacramento Laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

All parameters for which TestAmerica North Canton has certification were evaluated to the limit of detection (LOD) and include qualified results where applicable. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

REVISION 1: Per client request, this report has been revised to include Nitrobenzene, 2,4-Dinitrotoluene and 2,6-Dinitrotoluene results for the 8270C analysis of sample FWGLL10MW-003C-0535-GW (240-48073-15).

REVISION 1: Per client request, this report has been revised to include Nitrobenzene, 2,4-Dinitrotoluene and 2,6-Dinitrotoluene results for the 8270C analysis of sample FWGEQUIPRINSE3-0565-GW (240-48073-5). Additional comments have been added to the Total Recoverable Metasl (ICP) section of the case narrative.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

RECEIPT
The samples were received on 3/11/2015 5:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 11 coolers at receipt time were 1.9° C, 1.9° C, 2.1° C, 2.1° C, 2.3° C, 2.5° C, 2.9° C, 3.1° C, 3.1° C, 3.9° C and 4.1° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples FWGEQUIPRINSE3-0565-GW (240-48073-5), FWGLL10MW-003C-0535-GW (240-48073-15), FWGTEAM4-TRIP (240-48073-17), FWGLL7MW-001-0534-GW (240-48073-22) and FWGTEAM3-TRIP (240-48073-24) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B DoD. The samples were analyzed on 03/18/2015.

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

SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)
Samples FWGLL3MW-241C-0531-GW (240-48073-1), FWGLL2MW-267C-0528-GW (240-48073-3), FWGEQUIPRINSE3-0565-GW

(240-48073-5), FWGWBGMW-006C-0547-GW (240-48073-6), FWGWBGMW-021C-0550-GW (240-48073-8), FWGLL3MW-238C-0530-GW (240-48073-13), FWGLL10MW-003C-0535-GW (240-48073-15), FWGWBGMW-020-0549-GW (240-48073-18), FWGWBGMW-009-0548-GW (240-48073-20) and FWGLL7MW-001-0534-GW (240-48073-22) were analyzed for semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8270C. The samples were prepared on 03/12/2015 and analyzed on 03/17/2015.

Surrogates are added during the extraction process prior to dilution. When the sample is diluted, surrogate recoveries are diluted out and no corrective action is required.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 171756.

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

NITROGUANIDINE (HPLC)

Samples FWGLL3MW-241C-0531-GW (240-48073-1), FWGLL2MW-267C-0528-GW (240-48073-3), FWGEQUIPRINSE3-0565-GW (240-48073-5), FWGWBGMW-006C-0547-GW (240-48073-6), FWGWBGMW-021C-0550-GW (240-48073-8), FWGLL3MW-238C-0530-GW (240-48073-13), FWGWBGMW-020-0549-GW (240-48073-18), FWGWBGMW-009-0548-GW (240-48073-20) and FWGLL7MW-001-0534-GW (240-48073-22) were analyzed for nitroguanidine (HPLC) in accordance with EPA SW-846 Method 8330_Ngu. The samples were prepared on 03/16/2015 and analyzed on 03/19/2015.

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

CHLORINATED PESTICIDES

Samples FWGLL3MW-241C-0531-GW (240-48073-1), FWGEQUIPRINSE3-0565-GW (240-48073-5) and FWGLL3MW-238C-0530-GW (240-48073-13) were analyzed for chlorinated pesticides in accordance with EPA SW-846 Method 8081A DoD. The samples were prepared on 03/12/2015 and analyzed on 03/15/2015.

The continuing calibration verification (CCV) associated with batch 172118 recovered above the upper control limit for Multiple Analytes. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: FWGEQUIPRINSE3-0565-GW (240-48073-5), FWGLL3MW-238C-0530-GW (240-48073-13), FWGLL3MW-241C-0531-GW (240-48073-1).

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 171750.

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

EXPLOSIVES

Samples FWGLL3MW-241C-0531-GW (240-48073-1), FWGLL2MW-267C-0528-GW (240-48073-3), FWGEQUIPRINSE3-0565-GW (240-48073-5), FWGWBGMW-006C-0547-GW (240-48073-6), FWGWBGMW-021C-0550-GW (240-48073-8), FWGLL3MW-238C-0530-GW (240-48073-13), FWGWBGMW-020-0549-GW (240-48073-18), FWGWBGMW-009-0548-GW (240-48073-20) and FWGLL7MW-001-0534-GW (240-48073-22) were analyzed for explosives in accordance with EPA SW-846 Method 8330A. The samples were prepared on 03/14/2015 and analyzed on 03/19/2015, 03/20/2015, 03/24/2015 and 03/25/2015.

3,4-Dinitrotoluene and 3,4-Dinitrotoluene failed the surrogate recovery criteria high for FWGLL3MW-238C-0530-GW (240-48073-13). Refer to the QC report for details.

Samples FWGWBGMW-006C-0547-GW (240-48073-6)[10X] and FWGLL3MW-238C-0530-GW (240-48073-13)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 320-68220.

Surrogate recovery for the following sample was outside control limits: FWGLL3MW-238C-0530-GW (240-48073-13). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

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

TOTAL RECOVERABLE METALS (ICP)

Samples FWGLL3MW-241C-0531-GF (240-48073-2), FWGLL2MW-267C-0528-GF (240-48073-4), FWGEQUIPRINSE3-0565-GW (240-48073-5), FWGWBGMW-006C-0547-GF (240-48073-7), FWGWBGMW-021C-0550-GF (240-48073-9), FWGLL12MW-185C-0536-GF (240-48073-11), FWGLL3MW-238C-0530-GF (240-48073-14), FWGLL10MW-003C-0535-GF (240-48073-16), FWGWBGMW-020-0549-GF (240-48073-19), FWGWBGMW-009-0548-GF (240-48073-21) and FWGLL7MW-001-0534-GF (240-48073-23) were analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010B DoD. The samples were prepared on 03/12/2015 and analyzed on 03/13/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

Manganese exceeded the RPD limit for the duplicate of sample FWGLL3MW-241C-0531-GFDU (240-48073-2). Refer to the QC report

for details.

The closing MRL results for Vanadium were outside specified limits. An LODV standard was analyzed immediately prior to the MRL and the LODV meet project requirements. The LODV results are on page 1911 of the raw data section in the expanded data package.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples FWGLL3MW-241C-0531-GF (240-48073-2), FWGLL2MW-267C-0528-GF (240-48073-4), FWGEQUIPRINSE3-0565-GW (240-48073-5), FWGWBGMW-006C-0547-GF (240-48073-7), FWGWBGMW-021C-0550-GF (240-48073-9), FWGLL3MW-238C-0530-GF (240-48073-14), FWGLL10MW-003C-0535-GF (240-48073-16), FWGWBGMW-020-0549-GF (240-48073-19), FWGWBGMW-009-0548-GF (240-48073-21) and FWGLL7MW-001-0534-GF (240-48073-23) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020 DoD. The samples were prepared on 03/12/2015 and analyzed on 03/17/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

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

TOTAL MERCURY

Samples FWGLL3MW-241C-0531-GF (240-48073-2), FWGLL2MW-267C-0528-GF (240-48073-4), FWGEQUIPRINSE3-0565-GW (240-48073-5), FWGWBGMW-006C-0547-GF (240-48073-7), FWGWBGMW-021C-0550-GF (240-48073-9), FWGLL3MW-238C-0530-GF (240-48073-14), FWGLL10MW-003C-0535-GF (240-48073-16), FWGWBGMW-020-0549-GF (240-48073-19), FWGWBGMW-009-0548-GF (240-48073-21) and FWGLL7MW-001-0534-GF (240-48073-23) were analyzed for total mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 03/12/2015 and analyzed on 03/13/2015.

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

NITRATE-NITRITE AS NITROGEN

Samples FWGEQUIPRINSE3-0565-GW (240-48073-5), FWGLL12MW-185C-0536-GW (240-48073-10) and FWGLL12MW-DUP4-0560-GW (240-48073-12) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 03/27/2015.

Samples FWGLL12MW-185C-0536-GW (240-48073-10)[100X] and FWGLL12MW-DUP4-0560-GW (240-48073-12)[100X] 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.

NITROCELLULOSE

Samples FWGLL3MW-241C-0531-GW (240-48073-1), FWGLL2MW-267C-0528-GW (240-48073-3), FWGEQUIPRINSE3-0565-GW (240-48073-5), FWGWBGMW-006C-0547-GW (240-48073-6), FWGWBGMW-021C-0550-GW (240-48073-8), FWGLL3MW-238C-0530-GW (240-48073-13), FWGWBGMW-020-0549-GW (240-48073-18), FWGWBGMW-009-0548-GW (240-48073-20) and FWGLL7MW-001-0534-GW (240-48073-22) were analyzed for Nitrocellulose in accordance with EPA Method 353.2. The samples were prepared on 03/18/2015 and analyzed on 03/19/2015.

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

Client Sample ID: FWGLL3MW-241C-0531-GW
Date Collected: 03/11/15 09:52
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-1
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.3	U	5.3	5.3	1.8	ug/L		03/17/15 11:10	1
Butyl benzyl phthalate	0.53	U	5.3	0.53	0.28	ug/L		03/17/15 11:10	1
Diethyl phthalate	**0.93**	**J**	2.1	1.1	0.64	ug/L		03/17/15 11:10	1
Dimethyl phthalate	0.53	U	2.1	0.53	0.31	ug/L		03/17/15 11:10	1
Di-n-butyl phthalate	5.3	U	5.3	5.3	1.8	ug/L		03/17/15 11:10	1
Di-n-octyl phthalate	0.53	U	2.1	0.53	0.24	ug/L		03/17/15 11:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*86*		*50 - 110*	*03/12/15 08:54*	*03/17/15 11:10*	*1*
2-Fluorophenol (Surr)	*77*		*20 - 110*	*03/12/15 08:54*	*03/17/15 11:10*	*1*
Nitrobenzene-d5 (Surr)	*78*		*40 - 110*	*03/12/15 08:54*	*03/17/15 11:10*	*1*
Phenol-d5 (Surr)	*83*		*10 - 115*	*03/12/15 08:54*	*03/17/15 11:10*	*1*
Terphenyl-d14 (Surr)	*92*		*50 - 135*	*03/12/15 08:54*	*03/17/15 11:10*	*1*
2,4,6-Tribromophenol (Surr)	*98*		*40 - 125*	*03/12/15 08:54*	*03/17/15 11:10*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/15/15 16:53	1
4,4'-DDE	0.048	U Q	0.048	0.048	0.0087	ug/L		03/15/15 16:53	1
4,4'-DDT	0.048	U	0.048	0.048	0.013	ug/L		03/15/15 16:53	1
Aldrin	0.048	U	0.048	0.048	0.013	ug/L		03/15/15 16:53	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/15/15 16:53	1
alpha-Chlordane	0.048	U	0.048	0.048	0.012	ug/L		03/15/15 16:53	1
beta-BHC	**0.026**	**J**	0.048	0.048	0.013	ug/L		03/15/15 16:53	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/15/15 16:53	1
Dieldrin	0.048	U	0.048	0.048	0.013	ug/L		03/15/15 16:53	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/15/15 16:53	1
Endosulfan II	0.048	U	0.048	0.048	0.014	ug/L		03/15/15 16:53	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.011	ug/L		03/15/15 16:53	1
Endrin	0.048	U Q	0.048	0.048	0.012	ug/L		03/15/15 16:53	1
Endrin aldehyde	0.048	U	0.048	0.048	0.0077	ug/L		03/15/15 16:53	1
Endrin ketone	0.048	U	0.048	0.048	0.0087	ug/L		03/15/15 16:53	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.012	ug/L		03/15/15 16:53	1
gamma-Chlordane	0.048	U	0.048	0.048	0.0096	ug/L		03/15/15 16:53	1
Heptachlor	**0.047**	**J**	0.048	0.048	0.0048	ug/L		03/15/15 16:53	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.013	ug/L		03/15/15 16:53	1
Methoxychlor	0.048	U Q	0.096	0.048	0.012	ug/L		03/15/15 16:53	1
Toxaphene	0.96	U	1.9	0.96	0.19	ug/L		03/15/15 16:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*72*		*30 - 135*	*03/12/15 08:49*	*03/15/15 16:53*	*1*
DCB Decachlorobiphenyl	*72*		*30 - 135*	*03/12/15 08:49*	*03/15/15 16:53*	*1*
Tetrachloro-m-xylene	*84*		*25 - 140*	*03/12/15 08:49*	*03/15/15 16:53*	*1*
Tetrachloro-m-xylene	*86*		*25 - 140*	*03/12/15 08:49*	*03/15/15 16:53*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 20:24	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGLL3MW-241C-0531-GW
Date Collected: 03/11/15 09:52
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-1
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	**2.7**		0.15	0.051	0.032	ug/L		03/19/15 19:51	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 19:51	1
2,4,6-Trinitrotoluene	**1.8**	**M**	0.15	0.10	0.051	ug/L		03/19/15 19:51	1
2,4-Dinitrotoluene	**0.076**	**J M**	0.13	0.10	0.051	ug/L		03/19/15 19:51	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 19:51	1
2-Amino-4,6-dinitrotoluene	**1.4**	**M**	0.15	0.10	0.015	ug/L		03/19/15 19:51	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/19/15 19:51	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.059	ug/L		03/19/15 19:51	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/19/15 19:51	1
4-Amino-2,6-dinitrotoluene	**1.4**	**M**	0.15	0.10	0.051	ug/L		03/19/15 19:51	1
HMX	**0.14**	**J M**	0.15	0.051	0.037	ug/L		03/19/15 19:51	1
RDX	**0.43**	**M**	0.15	0.051	0.037	ug/L		03/19/15 19:51	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 19:51	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 19:51	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		03/19/15 19:51	1
PETN	0.51	U	0.67	0.51	0.31	ug/L		03/19/15 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*107*	*M*	*79 - 111*	*03/14/15 11:02*	*03/19/15 19:51*	*1*
3,4-Dinitrotoluene	*91*		*79 - 111*	*03/14/15 11:02*	*03/24/15 21:41*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:16	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGLL3MW-241C-0531-GF
Date Collected: 03/11/15 09:52
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-2
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 12:45	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 12:45	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 12:45	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 12:45	1
Selenium	10	U J	15	10	4.0	ug/L		03/13/15 12:45	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 12:45	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 12:45	1
Barium	**3.1**	**J**	200	5.0	1.0	ug/L		03/13/15 12:45	1
Calcium	**19000**		5000	1000	260	ug/L		03/13/15 12:45	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 12:45	1
Magnesium	**6900**		5000	300	55	ug/L		03/13/15 12:45	1
Manganese	**1.4**	**J**	15	5.0	0.46	ug/L		03/13/15 12:45	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 12:45	1
Potassium	**820**	**J**	5000	900	70	ug/L		03/13/15 12:45	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:02	1
Antimony	**0.36**	**J**	2.0	1.0	0.33	ug/L		03/17/15 17:02	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:02	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:02	1
Iron	100	U	150	100	44	ug/L		03/17/15 17:02	1
Sodium	**2900**		1000	400	160	ug/L		03/17/15 17:02	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:02	1
Zinc	50	U	50	50	27	ug/L		03/17/15 17:02	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 10:56	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGLL2MW-267C-0528-GW — **Lab Sample ID: 240-48073-3**
Date Collected: 03/11/15 13:12 — **Matrix: Water**
Date Received: 03/11/15 17:15

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/17/15 11:35	1
Butyl benzyl phthalate	0.50	U	5.0	0.50	0.26	ug/L		03/17/15 11:35	1
Diethyl phthalate	1.0	U	2.0	1.0	0.60	ug/L		03/17/15 11:35	1
Dimethyl phthalate	0.50	U	2.0	0.50	0.29	ug/L		03/17/15 11:35	1
Di-n-butyl phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/17/15 11:35	1
Di-n-octyl phthalate	0.50	U	2.0	0.50	0.23	ug/L		03/17/15 11:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*50 - 110*	*03/12/15 08:54*	*03/17/15 11:35*	*1*
2-Fluorophenol (Surr)	*77*		*20 - 110*	*03/12/15 08:54*	*03/17/15 11:35*	*1*
Nitrobenzene-d5 (Surr)	*78*		*40 - 110*	*03/12/15 08:54*	*03/17/15 11:35*	*1*
Phenol-d5 (Surr)	*86*		*10 - 115*	*03/12/15 08:54*	*03/17/15 11:35*	*1*
Terphenyl-d14 (Surr)	*75*		*50 - 135*	*03/12/15 08:54*	*03/17/15 11:35*	*1*
2,4,6-Tribromophenol (Surr)	*98*		*40 - 125*	*03/12/15 08:54*	*03/17/15 11:35*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 20:41	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	**0.061**	**J**	0.15	0.050	0.031	ug/L		03/19/15 20:34	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/19/15 20:34	1
2,4,6-Trinitrotoluene	**0.38**	**M**	0.15	0.10	0.050	ug/L		03/19/15 20:34	1
2,4-Dinitrotoluene	**0.18**	**M**	0.13	0.10	0.050	ug/L		03/19/15 20:34	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/19/15 20:34	1
2-Amino-4,6-dinitrotoluene	**1.1**	**M**	0.15	0.10	0.015	ug/L		03/19/15 20:34	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		03/19/15 20:34	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.058	ug/L		03/19/15 20:34	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		03/19/15 20:34	1
4-Amino-2,6-dinitrotoluene	**1.0**	**M**	0.15	0.10	0.050	ug/L		03/19/15 20:34	1
HMX	**0.77**	**M**	0.15	0.050	0.036	ug/L		03/19/15 20:34	1
RDX	**1.1**	**M**	0.15	0.050	0.036	ug/L		03/19/15 20:34	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/19/15 20:34	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/19/15 20:34	1
Nitroglycerin	0.50	U	0.66	0.50	0.33	ug/L		03/19/15 20:34	1
PETN	0.50	U	0.66	0.50	0.30	ug/L		03/19/15 20:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*88*	*M*	*79 - 111*	*03/14/15 11:02*	*03/19/15 20:34*	*1*
3,4-Dinitrotoluene	*87*		*79 - 111*	*03/14/15 11:02*	*03/24/15 22:47*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:18	1

Client Sample ID: FWGLL2MW-267C-0528-GF
Lab Sample ID: 240-48073-4
Date Collected: 03/11/15 13:12
Matrix: Water
Date Received: 03/11/15 17:15

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 13:05	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 13:05	1
Cobalt	1.7	J	7.0	4.0	0.56	ug/L		03/13/15 13:05	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 13:05	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 13:05	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 13:05	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 13:05	1
Barium	7.8	J	200	5.0	1.0	ug/L		03/13/15 13:05	1
Calcium	29000		5000	1000	260	ug/L		03/13/15 13:05	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 13:05	1
Magnesium	16000		5000	300	55	ug/L		03/13/15 13:05	1
Manganese	490		15	5.0	0.46	ug/L		03/13/15 13:05	1
Nickel	3.0	J	40	5.0	0.76	ug/L		03/13/15 13:05	1
Potassium	560	J	5000	900	70	ug/L		03/13/15 13:05	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:21	1
Antimony	0.59	J	2.0	1.0	0.33	ug/L		03/17/15 17:21	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:21	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:21	1
Iron	160		150	100	44	ug/L		03/17/15 17:21	1
Sodium	18000		1000	400	160	ug/L		03/17/15 17:21	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:21	1
Zinc	50	U	50	50	27	ug/L		03/17/15 17:21	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 11:04	1

Client Sample ID: FWGEQUIPRINSE3-0565-GW
Date Collected: 03/11/15 15:30
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-5
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 14:47	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 14:47	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 14:47	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 14:47	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 14:47	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 14:47	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 14:47	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 14:47	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 14:47	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 14:47	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 14:47	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 14:47	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 14:47	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 14:47	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 14:47	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 14:47	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 14:47	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 14:47	1
Chloroform	**4.0**		1.0	0.50	0.21	ug/L		03/18/15 14:47	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 14:47	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 14:47	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 14:47	1
Bromodichloromethane	**0.39**	**J**	1.0	0.25	0.15	ug/L		03/18/15 14:47	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 14:47	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 14:47	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 14:47	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 14:47	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 14:47	1
Methylene Chloride	**0.72**	**J**	1.0	0.50	0.28	ug/L		03/18/15 14:47	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 14:47	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 14:47	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 14:47	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 14:47	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 14:47	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 14:47	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 14:47	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 14:47	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 14:47	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 14:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 120*		*03/18/15 14:47*	*1*
4-Bromofluorobenzene (Surr)	*92*		*75 - 120*		*03/18/15 14:47*	*1*
Toluene-d8 (Surr)	*92*		*85 - 120*		*03/18/15 14:47*	*1*
Dibromofluoromethane (Surr)	*99*		*85 - 115*		*03/18/15 14:47*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.2	U	5.2	5.2	1.8	ug/L		03/17/15 12:00	1
Butyl benzyl phthalate	0.52	U	5.2	0.52	0.27	ug/L		03/17/15 12:00	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGEQUIPRINSE3-0565-GW
Date Collected: 03/11/15 15:30
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-5
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diethyl phthalate	1.0	U	2.1	1.0	0.62	ug/L		03/17/15 12:00	1
Dimethyl phthalate	0.52	U	2.1	0.52	0.30	ug/L		03/17/15 12:00	1
Di-n-butyl phthalate	5.2	U	5.2	5.2	1.8	ug/L		03/17/15 12:00	1
Di-n-octyl phthalate	0.52	U	2.1	0.52	0.24	ug/L		03/17/15 12:00	1
2,4-Dinitrotoluene	0.52	U	5.2	0.52	0.26	ug/L		03/17/15 12:00	1
Nitrobenzene	0.10	U	1.0	0.10	0.041	ug/L		03/17/15 12:00	1
2,6-Dinitrotoluene	5.2	U	5.2	5.2	1.1	ug/L		03/17/15 12:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*76*		*50 - 110*	*03/12/15 08:54*	*03/17/15 12:00*	*1*
2-Fluorophenol (Surr)	*72*		*20 - 110*	*03/12/15 08:54*	*03/17/15 12:00*	*1*
Nitrobenzene-d5 (Surr)	*72*		*40 - 110*	*03/12/15 08:54*	*03/17/15 12:00*	*1*
Phenol-d5 (Surr)	*76*		*10 - 115*	*03/12/15 08:54*	*03/17/15 12:00*	*1*
Terphenyl-d14 (Surr)	*83*		*50 - 135*	*03/12/15 08:54*	*03/17/15 12:00*	*1*
2,4,6-Tribromophenol (Surr)	*81*		*40 - 125*	*03/12/15 08:54*	*03/17/15 12:00*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.053	U	0.053	0.053	0.019	ug/L		03/15/15 17:16	1
4,4'-DDE	0.053	U Q	0.053	0.053	0.0095	ug/L		03/15/15 17:16	1
4,4'-DDT	0.053	U	0.053	0.053	0.015	ug/L		03/15/15 17:16	1
Aldrin	0.053	U	0.053	0.053	0.014	ug/L		03/15/15 17:16	1
alpha-BHC	0.053	U	0.053	0.053	0.015	ug/L		03/15/15 17:16	1
alpha-Chlordane	0.053	U	0.053	0.053	0.013	ug/L		03/15/15 17:16	1
beta-BHC	0.053	U	0.053	0.053	0.014	ug/L		03/15/15 17:16	1
delta-BHC	0.053	U	0.053	0.053	0.031	ug/L		03/15/15 17:16	1
Dieldrin	0.053	U	0.053	0.053	0.014	ug/L		03/15/15 17:16	1
Endosulfan I	0.053	U	0.053	0.053	0.017	ug/L		03/15/15 17:16	1
Endosulfan II	0.053	U	0.053	0.053	0.016	ug/L		03/15/15 17:16	1
Endosulfan sulfate	0.053	U	0.053	0.053	0.012	ug/L		03/15/15 17:16	1
Endrin	0.053	U Q	0.053	0.053	0.013	ug/L		03/15/15 17:16	1
Endrin aldehyde	0.053	U	0.053	0.053	0.0084	ug/L		03/15/15 17:16	1
Endrin ketone	0.053	U	0.053	0.053	0.0095	ug/L		03/15/15 17:16	1
gamma-BHC (Lindane)	0.053	U	0.053	0.053	0.013	ug/L		03/15/15 17:16	1
gamma-Chlordane	0.053	U	0.053	0.053	0.011	ug/L		03/15/15 17:16	1
Heptachlor	**0.050**	**J**	0.053	0.053	0.0053	ug/L		03/15/15 17:16	1
Heptachlor epoxide	0.053	U	0.053	0.053	0.015	ug/L		03/15/15 17:16	1
Methoxychlor	0.053	U Q	0.11	0.053	0.013	ug/L		03/15/15 17:16	1
Toxaphene	1.1	U	2.1	1.1	0.21	ug/L		03/15/15 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*87*		*30 - 135*	*03/12/15 08:49*	*03/15/15 17:16*	*1*
DCB Decachlorobiphenyl	*87*		*30 - 135*	*03/12/15 08:49*	*03/15/15 17:16*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*03/12/15 08:49*	*03/15/15 17:16*	*1*
Tetrachloro-m-xylene	*78*		*25 - 140*	*03/12/15 08:49*	*03/15/15 17:16*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 20:59	1

Client Sample ID: FWGEQUIPRINSE3-0565-GW
Date Collected: 03/11/15 15:30
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-5
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		03/19/15 21:18	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 21:18	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 21:18	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 21:18	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 21:18	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/19/15 21:18	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/19/15 21:18	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/19/15 21:18	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/19/15 21:18	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 21:18	1
HMX	0.051	U	0.15	0.051	0.036	ug/L		03/19/15 21:18	1
RDX	0.051	U	0.15	0.051	0.036	ug/L		03/19/15 21:18	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 21:18	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 21:18	1
Nitroglycerin	0.51	U	0.66	0.51	0.33	ug/L		03/19/15 21:18	1
PETN	0.51	U M	0.66	0.51	0.30	ug/L		03/19/15 21:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*88*		*79 - 111*	*03/14/15 11:02*	*03/19/15 21:18*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 13:09	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 13:09	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 13:09	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 13:09	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 13:09	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 13:09	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 13:09	1
Barium	5.0	U	200	5.0	1.0	ug/L		03/13/15 13:09	1
Calcium	1000	U	5000	1000	260	ug/L		03/13/15 13:09	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 13:09	1
Magnesium	300	U	5000	300	55	ug/L		03/13/15 13:09	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/13/15 13:09	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 13:09	1
Potassium	900	U	5000	900	70	ug/L		03/13/15 13:09	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:25	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 17:25	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:25	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:25	1
Iron	100	U	150	100	44	ug/L		03/17/15 17:25	1
Sodium	400	U	1000	400	160	ug/L		03/17/15 17:25	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:25	1
Zinc	50	U	50	50	27	ug/L		03/17/15 17:25	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGEQUIPRINSE3-0565-GW
Date Collected: 03/11/15 15:30
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-5
Matrix: Water

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 11:06	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	0.0060	J	0.050	0.012	0.0031	mg/L		03/27/15 15:53	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:20	1

Client Sample ID: FWGWBGMW-006C-0547-GW
Date Collected: 03/11/15 11:01
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-6
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 12:25	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/17/15 12:25	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/17/15 12:25	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/17/15 12:25	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 12:25	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/17/15 12:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*50 - 110*	*03/12/15 08:54*	*03/17/15 12:25*	*1*
2-Fluorophenol (Surr)	*62*		*20 - 110*	*03/12/15 08:54*	*03/17/15 12:25*	*1*
Nitrobenzene-d5 (Surr)	*80*		*40 - 110*	*03/12/15 08:54*	*03/17/15 12:25*	*1*
Phenol-d5 (Surr)	*70*		*10 - 115*	*03/12/15 08:54*	*03/17/15 12:25*	*1*
Terphenyl-d14 (Surr)	*90*		*50 - 135*	*03/12/15 08:54*	*03/17/15 12:25*	*1*
2,4,6-Tribromophenol (Surr)	*81*		*40 - 125*	*03/12/15 08:54*	*03/17/15 12:25*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 21:17	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/19/15 22:01	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 22:01	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 22:01	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 22:01	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/19/15 22:01	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/19/15 22:01	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/19/15 22:01	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/19/15 22:01	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/19/15 22:01	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 22:01	1
HMX	7.7		0.15	0.051	0.037	ug/L		03/19/15 22:01	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 22:01	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/19/15 22:01	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/19/15 22:01	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		03/19/15 22:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/14/15 11:02*	*03/19/15 22:01*	*1*
3,4-Dinitrotoluene	*96*		*79 - 111*	*03/14/15 11:02*	*03/25/15 01:00*	*1*

Method: 8330A - Nitroaromatics and Nitramines - DL

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
RDX	41	D	1.5	0.51	0.37	ug/L		03/24/15 21:50	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*95*	*M*	*79 - 111*	*03/14/15 11:02*	*03/24/15 21:50*	*10*
3,4-Dinitrotoluene	*105*		*79 - 111*	*03/14/15 11:02*	*03/24/15 23:54*	*10*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGWBGMW-006C-0547-GW
Date Collected: 03/11/15 11:01
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-6
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:22	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGWBGMW-006C-0547-GF
Date Collected: 03/11/15 11:01
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-7
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 13:13	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 13:13	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 13:13	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 13:13	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 13:13	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 13:13	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 13:13	1
Barium	**19**	**J**	200	5.0	1.0	ug/L		03/13/15 13:13	1
Calcium	**72000**		5000	1000	260	ug/L		03/13/15 13:13	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 13:13	1
Magnesium	**24000**		5000	300	55	ug/L		03/13/15 13:13	1
Manganese	**20**		15	5.0	0.46	ug/L		03/13/15 13:13	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 13:13	1
Potassium	**730**	**J**	5000	900	70	ug/L		03/13/15 13:13	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:36	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 17:36	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:36	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:36	1
Iron	100	U	150	100	44	ug/L		03/17/15 17:36	1
Sodium	**6000**		1000	400	160	ug/L		03/17/15 17:36	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:36	1
Zinc	50	U	50	50	27	ug/L		03/17/15 17:36	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 11:08	1

Client Sample ID: FWGWBGMW-021C-0550-GW
Date Collected: 03/11/15 12:21
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-8
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 12:50	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/17/15 12:50	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/17/15 12:50	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/17/15 12:50	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 12:50	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/17/15 12:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*84*		*50 - 110*	*03/12/15 08:54*	*03/17/15 12:50*	*1*
2-Fluorophenol (Surr)	*85*		*20 - 110*	*03/12/15 08:54*	*03/17/15 12:50*	*1*
Nitrobenzene-d5 (Surr)	*81*		*40 - 110*	*03/12/15 08:54*	*03/17/15 12:50*	*1*
Phenol-d5 (Surr)	*89*		*10 - 115*	*03/12/15 08:54*	*03/17/15 12:50*	*1*
Terphenyl-d14 (Surr)	*88*		*50 - 135*	*03/12/15 08:54*	*03/17/15 12:50*	*1*
2,4,6-Tribromophenol (Surr)	*89*		*40 - 125*	*03/12/15 08:54*	*03/17/15 12:50*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 21:35	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		03/20/15 00:12	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 00:12	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 00:12	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/20/15 00:12	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/20/15 00:12	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 00:12	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		03/20/15 00:12	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.058	ug/L		03/20/15 00:12	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		03/20/15 00:12	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 00:12	1
HMX	0.050	U	0.15	0.050	0.036	ug/L		03/20/15 00:12	1
RDX	0.050	U	0.15	0.050	0.036	ug/L		03/20/15 00:12	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 00:12	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 00:12	1
Nitroglycerin	0.50	U	0.66	0.50	0.33	ug/L		03/20/15 00:12	1
PETN	0.50	U M	0.66	0.50	0.30	ug/L		03/20/15 00:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*87*	*M*	*79 - 111*	*03/14/15 11:02*	*03/20/15 00:12*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:24	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGWBGMW-021C-0550-GF
Date Collected: 03/11/15 12:21
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-9
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.8	J	10	10	2.9	ug/L		03/13/15 13:17	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 13:17	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 13:17	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 13:17	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 13:17	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 13:17	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 13:17	1
Barium	52	J	200	5.0	1.0	ug/L		03/13/15 13:17	1
Calcium	74000		5000	1000	260	ug/L		03/13/15 13:17	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 13:17	1
Magnesium	19000		5000	300	55	ug/L		03/13/15 13:17	1
Manganese	270		15	5.0	0.46	ug/L		03/13/15 13:17	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 13:17	1
Potassium	1300	J	5000	900	70	ug/L		03/13/15 13:17	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:40	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 17:40	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:40	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:40	1
Iron	91	J	150	100	44	ug/L		03/17/15 17:40	1
Sodium	4900		1000	400	160	ug/L		03/17/15 17:40	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:40	1
Zinc	50	U	50	50	27	ug/L		03/17/15 17:40	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 11:09	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGLL12MW-185C-0536-GW
Date Collected: 03/11/15 16:11
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-10
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	110	D	5.0	1.2	0.31	mg/L		03/27/15 17:28	100

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGLL12MW-185C-0536-GF
Date Collected: 03/11/15 16:11
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-11
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.1	J	10	10	2.9	ug/L		03/13/15 13:50	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGLL12MW-DUP4-0560-GW
Date Collected: 03/11/15 16:31
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-12
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	130	D	5.0	1.2	0.31	mg/L		03/27/15 17:30	100

Client Sample ID: FWGLL3MW-238C-0530-GW — **Lab Sample ID: 240-48073-13**
Date Collected: 03/11/15 11:50 — **Matrix: Water**
Date Received: 03/11/15 17:15

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 13:15	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/17/15 13:15	1
Diethyl phthalate	0.96	U	1.9	0.96	0.58	ug/L		03/17/15 13:15	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/17/15 13:15	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 13:15	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/17/15 13:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*80*		*50 - 110*	*03/12/15 08:54*	*03/17/15 13:15*	*1*
2-Fluorophenol (Surr)	*75*		*20 - 110*	*03/12/15 08:54*	*03/17/15 13:15*	*1*
Nitrobenzene-d5 (Surr)	*75*		*40 - 110*	*03/12/15 08:54*	*03/17/15 13:15*	*1*
Phenol-d5 (Surr)	*78*		*10 - 115*	*03/12/15 08:54*	*03/17/15 13:15*	*1*
Terphenyl-d14 (Surr)	*84*		*50 - 135*	*03/12/15 08:54*	*03/17/15 13:15*	*1*
2,4,6-Tribromophenol (Surr)	*86*		*40 - 125*	*03/12/15 08:54*	*03/17/15 13:15*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.050	U	0.050	0.050	0.018	ug/L		03/15/15 17:39	1
4,4'-DDE	**0.021**	**J**	0.050	0.050	0.0090	ug/L		03/15/15 17:39	1
4,4'-DDT	0.050	U	0.050	0.050	0.014	ug/L		03/15/15 17:39	1
Aldrin	0.050	U	0.050	0.050	0.013	ug/L		03/15/15 17:39	1
alpha-BHC	0.050	U	0.050	0.050	0.014	ug/L		03/15/15 17:39	1
alpha-Chlordane	0.050	U	0.050	0.050	0.012	ug/L		03/15/15 17:39	1
beta-BHC	**0.11**		0.050	0.050	0.013	ug/L		03/15/15 17:39	1
delta-BHC	0.050	U	0.050	0.050	0.029	ug/L		03/15/15 17:39	1
Dieldrin	0.050	U	0.050	0.050	0.013	ug/L		03/15/15 17:39	1
Endosulfan I	0.050	U	0.050	0.050	0.016	ug/L		03/15/15 17:39	1
Endosulfan II	0.050	U	0.050	0.050	0.015	ug/L		03/15/15 17:39	1
Endosulfan sulfate	**0.018**	**J**	0.050	0.050	0.011	ug/L		03/15/15 17:39	1
Endrin	0.050	U Q	0.050	0.050	0.012	ug/L		03/15/15 17:39	1
Endrin aldehyde	0.050	U	0.050	0.050	0.0080	ug/L		03/15/15 17:39	1
Endrin ketone	0.050	U	0.050	0.050	0.0090	ug/L		03/15/15 17:39	1
gamma-BHC (Lindane)	0.050	U	0.050	0.050	0.012	ug/L		03/15/15 17:39	1
gamma-Chlordane	0.050	U	0.050	0.050	0.010	ug/L		03/15/15 17:39	1
Heptachlor	**0.038**	**J**	0.050	0.050	0.0050	ug/L		03/15/15 17:39	1
Heptachlor epoxide	0.050	U	0.050	0.050	0.014	ug/L		03/15/15 17:39	1
Methoxychlor	0.050	U Q	0.10	0.050	0.012	ug/L		03/15/15 17:39	1
Toxaphene	1.0	U	2.0	1.0	0.20	ug/L		03/15/15 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*62*		*30 - 135*	*03/12/15 08:49*	*03/15/15 17:39*	*1*
DCB Decachlorobiphenyl	*64*		*30 - 135*	*03/12/15 08:49*	*03/15/15 17:39*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*03/12/15 08:49*	*03/15/15 17:39*	*1*
Tetrachloro-m-xylene	*76*		*25 - 140*	*03/12/15 08:49*	*03/15/15 17:39*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 21:53	1

Client Sample ID: FWGLL3MW-238C-0530-GW
Date Collected: 03/11/15 11:50
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-13
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 00:56	1
2,4-Dinitrotoluene	**0.071**	**J**	0.13	0.10	0.051	ug/L		03/20/15 00:56	1
2,6-Dinitrotoluene	**0.29**	**M**	0.13	0.10	0.051	ug/L		03/20/15 00:56	1
2-Amino-4,6-dinitrotoluene	**7.4**		0.15	0.10	0.015	ug/L		03/20/15 00:56	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 00:56	1
3-Nitrotoluene	**0.12**	**J M**	0.51	0.10	0.059	ug/L		03/20/15 00:56	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 00:56	1
HMX	**1.1**	**M**	0.15	0.051	0.037	ug/L		03/20/15 00:56	1
RDX	**4.5**		0.15	0.051	0.037	ug/L		03/20/15 00:56	1
Nitrobenzene	**0.098**	**J M**	0.15	0.10	0.051	ug/L		03/20/15 00:56	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 00:56	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		03/20/15 00:56	1
PETN	0.51	U	0.67	0.51	0.31	ug/L		03/20/15 00:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*120*	*M Q*	*79 - 111*	*03/14/15 11:02*	*03/20/15 00:56*	*1*
3,4-Dinitrotoluene	*96*		*79 - 111*	*03/14/15 11:02*	*03/25/15 03:14*	*1*

Method: 8330A - Nitroaromatics and Nitramines - DL

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	**19**	**D**	1.5	0.51	0.32	ug/L		03/24/15 22:34	10
2,4,6-Trinitrotoluene	**45**	**D**	1.5	1.0	0.51	ug/L		03/24/15 22:34	10
4-Amino-2,6-dinitrotoluene	**19**	**D**	1.5	1.0	0.51	ug/L		03/24/15 22:34	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*113*	*Q*	*79 - 111*	*03/14/15 11:02*	*03/24/15 22:34*	*10*
3,4-Dinitrotoluene	*101*		*79 - 111*	*03/14/15 11:02*	*03/25/15 02:07*	*10*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:26	1

Client Sample ID: FWGLL3MW-238C-0530-GF
Date Collected: 03/11/15 11:50
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-14
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 13:21	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 13:21	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 13:21	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 13:21	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 13:21	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 13:21	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 13:21	1
Barium	**5.1**	**J**	200	5.0	1.0	ug/L		03/13/15 13:21	1
Calcium	**64000**		5000	1000	260	ug/L		03/13/15 13:21	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 13:21	1
Magnesium	**5700**		5000	300	55	ug/L		03/13/15 13:21	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/13/15 13:21	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 13:21	1
Potassium	**2300**	**J**	5000	900	70	ug/L		03/13/15 13:21	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:44	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 17:44	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:44	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:44	1
Iron	100	U	150	100	44	ug/L		03/17/15 17:44	1
Sodium	**2700**		1000	400	160	ug/L		03/17/15 17:44	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:44	1
Zinc	50	U	50	50	27	ug/L		03/17/15 17:44	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 11:11	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGLL10MW-003C-0535-GW
Date Collected: 03/11/15 14:30
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-15
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:10	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:10	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 15:10	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 15:10	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 15:10	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 15:10	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 15:10	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:10	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 15:10	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 15:10	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 15:10	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 15:10	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 15:10	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 15:10	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 15:10	1
Carbon tetrachloride	**5.9**		1.0	0.25	0.17	ug/L		03/18/15 15:10	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 15:10	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 15:10	1
Chloroform	**0.64**	**J**	1.0	0.50	0.21	ug/L		03/18/15 15:10	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 15:10	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 15:10	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 15:10	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		03/18/15 15:10	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 15:10	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 15:10	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 15:10	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 15:10	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 15:10	1
Methylene Chloride	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 15:10	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 15:10	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 15:10	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 15:10	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:10	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 15:10	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 15:10	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 15:10	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 15:10	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 15:10	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 15:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 120*		*03/18/15 15:10*	*1*
4-Bromofluorobenzene (Surr)	*91*		*75 - 120*		*03/18/15 15:10*	*1*
Toluene-d8 (Surr)	*93*		*85 - 120*		*03/18/15 15:10*	*1*
Dibromofluoromethane (Surr)	*98*		*85 - 115*		*03/18/15 15:10*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/17/15 13:40	1
Butyl benzyl phthalate	0.51	U	5.1	0.51	0.27	ug/L		03/17/15 13:40	1

Client Sample ID: FWGLL10MW-003C-0535-GW
Lab Sample ID: 240-48073-15
Date Collected: 03/11/15 14:30
Matrix: Water
Date Received: 03/11/15 17:15

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diethyl phthalate	1.0	U	2.0	1.0	0.61	ug/L		03/17/15 13:40	1
Dimethyl phthalate	0.51	U	2.0	0.51	0.30	ug/L		03/17/15 13:40	1
Di-n-butyl phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/17/15 13:40	1
Di-n-octyl phthalate	0.51	U	2.0	0.51	0.23	ug/L		03/17/15 13:40	1
2,4-Dinitrotoluene	0.51	U	5.1	0.51	0.26	ug/L		03/17/15 13:40	1
Nitrobenzene	0.10	U	1.0	0.10	0.041	ug/L		03/17/15 13:40	1
2,6-Dinitrotoluene	5.1	U	5.1	5.1	1.1	ug/L		03/17/15 13:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*90*		*50 - 110*	*03/12/15 08:54*	*03/17/15 13:40*	*1*
2-Fluorophenol (Surr)	*80*		*20 - 110*	*03/12/15 08:54*	*03/17/15 13:40*	*1*
Nitrobenzene-d5 (Surr)	*85*		*40 - 110*	*03/12/15 08:54*	*03/17/15 13:40*	*1*
Phenol-d5 (Surr)	*85*		*10 - 115*	*03/12/15 08:54*	*03/17/15 13:40*	*1*
Terphenyl-d14 (Surr)	*92*		*50 - 135*	*03/12/15 08:54*	*03/17/15 13:40*	*1*
2,4,6-Tribromophenol (Surr)	*90*		*40 - 125*	*03/12/15 08:54*	*03/17/15 13:40*	*1*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGLL10MW-003C-0535-GF
Date Collected: 03/11/15 14:30
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-16
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 13:33	1
Chromium	**1.6**	**J**	7.0	4.0	0.55	ug/L		03/13/15 13:33	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 13:33	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 13:33	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 13:33	1
Silver	**0.97**	**J**	7.0	5.0	0.92	ug/L		03/13/15 13:33	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 13:33	1
Barium	5.0	U	200	5.0	1.0	ug/L		03/13/15 13:33	1
Calcium	**57000**		5000	1000	260	ug/L		03/13/15 13:33	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 13:33	1
Magnesium	**17000**		5000	300	55	ug/L		03/13/15 13:33	1
Manganese	**1.6**	**J**	15	5.0	0.46	ug/L		03/13/15 13:33	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 13:33	1
Potassium	**660**	**J**	5000	900	70	ug/L		03/13/15 13:33	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:48	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 17:48	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:48	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:48	1
Iron	100	U	150	100	44	ug/L		03/17/15 17:48	1
Sodium	**8900**		1000	400	160	ug/L		03/17/15 17:48	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:48	1
Zinc	50	U	50	50	27	ug/L		03/17/15 17:48	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 11:13	1

Client Sample ID: FWGTEAM4-TRIP
Date Collected: 03/11/15 08:00
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-17
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:32	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:32	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 15:32	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 15:32	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 15:32	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 15:32	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 15:32	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:32	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 15:32	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 15:32	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 15:32	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 15:32	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 15:32	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 15:32	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 15:32	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 15:32	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 15:32	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 15:32	1
Chloroform	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 15:32	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 15:32	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 15:32	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 15:32	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		03/18/15 15:32	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 15:32	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 15:32	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 15:32	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 15:32	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 15:32	1
Methylene Chloride	**0.64**	**J**	1.0	0.50	0.28	ug/L		03/18/15 15:32	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 15:32	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 15:32	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 15:32	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:32	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 15:32	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 15:32	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 15:32	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 15:32	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 15:32	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 15:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 120*		*03/18/15 15:32*	*1*
4-Bromofluorobenzene (Surr)	*92*		*75 - 120*		*03/18/15 15:32*	*1*
Toluene-d8 (Surr)	*93*		*85 - 120*		*03/18/15 15:32*	*1*
Dibromofluoromethane (Surr)	*100*		*85 - 115*		*03/18/15 15:32*	*1*

Client Sample ID: FWGWBGMW-020-0549-GW
Date Collected: 03/11/15 09:31
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-18
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 14:05	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/17/15 14:05	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/17/15 14:05	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/17/15 14:05	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 14:05	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/17/15 14:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*87*		*50 - 110*	*03/12/15 08:54*	*03/17/15 14:05*	*1*
2-Fluorophenol (Surr)	*84*		*20 - 110*	*03/12/15 08:54*	*03/17/15 14:05*	*1*
Nitrobenzene-d5 (Surr)	*82*		*40 - 110*	*03/12/15 08:54*	*03/17/15 14:05*	*1*
Phenol-d5 (Surr)	*89*		*10 - 115*	*03/12/15 08:54*	*03/17/15 14:05*	*1*
Terphenyl-d14 (Surr)	*93*		*50 - 135*	*03/12/15 08:54*	*03/17/15 14:05*	*1*
2,4,6-Tribromophenol (Surr)	*98*		*40 - 125*	*03/12/15 08:54*	*03/17/15 14:05*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 22:46	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		03/20/15 01:39	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 01:39	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 01:39	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/20/15 01:39	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/20/15 01:39	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 01:39	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		03/20/15 01:39	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.058	ug/L		03/20/15 01:39	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		03/20/15 01:39	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 01:39	1
HMX	0.050	U	0.15	0.050	0.036	ug/L		03/20/15 01:39	1
RDX	0.050	U	0.15	0.050	0.036	ug/L		03/20/15 01:39	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 01:39	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 01:39	1
Nitroglycerin	0.50	U	0.66	0.50	0.33	ug/L		03/20/15 01:39	1
PETN	0.50	U	0.66	0.50	0.30	ug/L		03/20/15 01:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*88*		*79 - 111*	*03/14/15 11:02*	*03/20/15 01:39*	*1*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/14/15 11:02*	*03/25/15 06:34*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:28	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGWBGMW-020-0549-GF
Date Collected: 03/11/15 09:31
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-19
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 13:38	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 13:38	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 13:38	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 13:38	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 13:38	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 13:38	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 13:38	1
Barium	**15**	**J**	200	5.0	1.0	ug/L		03/13/15 13:38	1
Calcium	**32000**		5000	1000	260	ug/L		03/13/15 13:38	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 13:38	1
Magnesium	**11000**		5000	300	55	ug/L		03/13/15 13:38	1
Manganese	**270**		15	5.0	0.46	ug/L		03/13/15 13:38	1
Nickel	**1.8**	**J**	40	5.0	0.76	ug/L		03/13/15 13:38	1
Potassium	**640**	**J**	5000	900	70	ug/L		03/13/15 13:38	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:51	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 17:51	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:51	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:51	1
Iron	**3500**		150	100	44	ug/L		03/17/15 17:51	1
Sodium	**3900**		1000	400	160	ug/L		03/17/15 17:51	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:51	1
Zinc	50	U	50	50	27	ug/L		03/17/15 17:51	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 11:14	1

Client Sample ID: FWGWBGMW-009-0548-GW
Date Collected: 03/11/15 12:13
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-20
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 14:30	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/17/15 14:30	1
Diethyl phthalate	0.96	U	1.9	0.96	0.58	ug/L		03/17/15 14:30	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/17/15 14:30	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/17/15 14:30	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/17/15 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*50 - 110*	*03/12/15 08:54*	*03/17/15 14:30*	*1*
2-Fluorophenol (Surr)	*75*		*20 - 110*	*03/12/15 08:54*	*03/17/15 14:30*	*1*
Nitrobenzene-d5 (Surr)	*78*		*40 - 110*	*03/12/15 08:54*	*03/17/15 14:30*	*1*
Phenol-d5 (Surr)	*80*		*10 - 115*	*03/12/15 08:54*	*03/17/15 14:30*	*1*
Terphenyl-d14 (Surr)	*86*		*50 - 135*	*03/12/15 08:54*	*03/17/15 14:30*	*1*
2,4,6-Tribromophenol (Surr)	*95*		*40 - 125*	*03/12/15 08:54*	*03/17/15 14:30*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 23:04	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/20/15 02:23	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 02:23	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 02:23	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 02:23	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/20/15 02:23	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 02:23	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 02:23	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/20/15 02:23	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/20/15 02:23	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 02:23	1
HMX	**0.93**	**M**	0.15	0.051	0.037	ug/L		03/20/15 02:23	1
RDX	**2.6**		0.15	0.051	0.037	ug/L		03/20/15 02:23	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 02:23	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/20/15 02:23	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		03/20/15 02:23	1
PETN	0.51	U	0.67	0.51	0.31	ug/L		03/20/15 02:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/14/15 11:02*	*03/20/15 02:23*	*1*
3,4-Dinitrotoluene	*91*		*79 - 111*	*03/14/15 11:02*	*03/25/15 07:41*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:38	1

Client Sample ID: FWGWBGMW-009-0548-GF
Date Collected: 03/11/15 12:13
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-21
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 13:42	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 13:42	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/13/15 13:42	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 13:42	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 13:42	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 13:42	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 13:42	1
Barium	7.7	J	200	5.0	1.0	ug/L		03/13/15 13:42	1
Calcium	48000		5000	1000	260	ug/L		03/13/15 13:42	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 13:42	1
Magnesium	14000		5000	300	55	ug/L		03/13/15 13:42	1
Manganese	30		15	5.0	0.46	ug/L		03/13/15 13:42	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/13/15 13:42	1
Potassium	400	J	5000	900	70	ug/L		03/13/15 13:42	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:55	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 17:55	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:55	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:55	1
Iron	100	U	150	100	44	ug/L		03/17/15 17:55	1
Sodium	3800		1000	400	160	ug/L		03/17/15 17:55	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:55	1
Zinc	50	U	50	50	27	ug/L		03/17/15 17:55	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 11:16	1

Client Sample ID: FWGLL7MW-001-0534-GW
Date Collected: 03/11/15 16:09
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-22
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	**5.0**		1.0	0.50	0.22	ug/L		03/18/15 15:55	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:55	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 15:55	1
1,1-Dichloroethane	**1.7**		1.0	0.50	0.26	ug/L		03/18/15 15:55	1
1,1-Dichloroethene	**4.4**		1.0	1.0	0.45	ug/L		03/18/15 15:55	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 15:55	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 15:55	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:55	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 15:55	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 15:55	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 15:55	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 15:55	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 15:55	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 15:55	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 15:55	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 15:55	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 15:55	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 15:55	1
Chloroform	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 15:55	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 15:55	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 15:55	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 15:55	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		03/18/15 15:55	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 15:55	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 15:55	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 15:55	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 15:55	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 15:55	1
Methylene Chloride	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 15:55	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 15:55	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 15:55	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 15:55	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 15:55	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 15:55	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 15:55	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 15:55	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 15:55	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 15:55	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 120*		*03/18/15 15:55*	*1*
4-Bromofluorobenzene (Surr)	*90*		*75 - 120*		*03/18/15 15:55*	*1*
Toluene-d8 (Surr)	*93*		*85 - 120*		*03/18/15 15:55*	*1*
Dibromofluoromethane (Surr)	*97*		*85 - 115*		*03/18/15 15:55*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/17/15 14:55	1
Butyl benzyl phthalate	0.50	U	5.0	0.50	0.26	ug/L		03/17/15 14:55	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGLL7MW-001-0534-GW
Date Collected: 03/11/15 16:09
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-22
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diethyl phthalate	1.0	U	2.0	1.0	0.60	ug/L		03/17/15 14:55	1
Dimethyl phthalate	0.50	U	2.0	0.50	0.29	ug/L		03/17/15 14:55	1
Di-n-butyl phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/17/15 14:55	1
Di-n-octyl phthalate	0.50	U	2.0	0.50	0.23	ug/L		03/17/15 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*50 - 110*	*03/12/15 08:54*	*03/17/15 14:55*	*1*
2-Fluorophenol (Surr)	*86*		*20 - 110*	*03/12/15 08:54*	*03/17/15 14:55*	*1*
Nitrobenzene-d5 (Surr)	*78*		*40 - 110*	*03/12/15 08:54*	*03/17/15 14:55*	*1*
Phenol-d5 (Surr)	*89*		*10 - 115*	*03/12/15 08:54*	*03/17/15 14:55*	*1*
Terphenyl-d14 (Surr)	*89*		*50 - 135*	*03/12/15 08:54*	*03/17/15 14:55*	*1*
2,4,6-Tribromophenol (Surr)	*93*		*40 - 125*	*03/12/15 08:54*	*03/17/15 14:55*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 23:21	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		03/20/15 03:06	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 03:06	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 03:06	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/20/15 03:06	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/20/15 03:06	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/20/15 03:06	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/20/15 03:06	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		03/20/15 03:06	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/20/15 03:06	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 03:06	1
HMX	0.050	U	0.15	0.050	0.036	ug/L		03/20/15 03:06	1
RDX	0.050	U	0.15	0.050	0.036	ug/L		03/20/15 03:06	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 03:06	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/20/15 03:06	1
Nitroglycerin	0.50	U	0.65	0.50	0.33	ug/L		03/20/15 03:06	1
PETN	0.50	U	0.65	0.50	0.30	ug/L		03/20/15 03:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*87*		*79 - 111*	*03/14/15 11:02*	*03/20/15 03:06*	*1*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/14/15 11:02*	*03/25/15 08:47*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/19/15 10:40	1

Client Sample ID: FWGLL7MW-001-0534-GF
Date Collected: 03/11/15 16:09
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-23
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/13/15 13:46	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/13/15 13:46	1
Cobalt	**6.1**	**J**	7.0	4.0	0.56	ug/L		03/13/15 13:46	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/13/15 13:46	1
Selenium	10	U	15	10	4.0	ug/L		03/13/15 13:46	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/13/15 13:46	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/13/15 13:46	1
Barium	**22**	**J**	200	5.0	1.0	ug/L		03/13/15 13:46	1
Calcium	**39000**		5000	1000	260	ug/L		03/13/15 13:46	1
Copper	10	U	25	10	1.9	ug/L		03/13/15 13:46	1
Magnesium	**13000**		5000	300	55	ug/L		03/13/15 13:46	1
Manganese	**470**		15	5.0	0.46	ug/L		03/13/15 13:46	1
Nickel	**8.1**	**J**	40	5.0	0.76	ug/L		03/13/15 13:46	1
Potassium	**1000**	**J**	5000	900	70	ug/L		03/13/15 13:46	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 17:59	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 17:59	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 17:59	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 17:59	1
Iron	**9600**		150	100	44	ug/L		03/17/15 17:59	1
Sodium	**6800**		1000	400	160	ug/L		03/17/15 17:59	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 17:59	1
Zinc	**60**		50	50	27	ug/L		03/17/15 17:59	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/13/15 11:18	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48073-1

Client Sample ID: FWGTEAM3-TRIP
Date Collected: 03/11/15 08:00
Date Received: 03/11/15 17:15

Lab Sample ID: 240-48073-24
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 16:18	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 16:18	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 16:18	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 16:18	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 16:18	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 16:18	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 16:18	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 16:18	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 16:18	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 16:18	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 16:18	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 16:18	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 16:18	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 16:18	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 16:18	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 16:18	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 16:18	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 16:18	1
Chloroform	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 16:18	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 16:18	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 16:18	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 16:18	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		03/18/15 16:18	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 16:18	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 16:18	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 16:18	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 16:18	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 16:18	1
Methylene Chloride	**0.61**	**J**	1.0	0.50	0.28	ug/L		03/18/15 16:18	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 16:18	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 16:18	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 16:18	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 16:18	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 16:18	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 16:18	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 16:18	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 16:18	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 16:18	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 120*		*03/18/15 16:18*	*1*
4-Bromofluorobenzene (Surr)	*91*		*75 - 120*		*03/18/15 16:18*	*1*
Toluene-d8 (Surr)	*91*		*85 - 120*		*03/18/15 16:18*	*1*
Dibromofluoromethane (Surr)	*98*		*85 - 115*		*03/18/15 16:18*	*1*

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/April 1, 2015

SDG: 240-48073
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3. Were holding times met?	X			Checked by ADR.	QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP addendum-specified target analytes reported?	X				QAPP Table 4-5
6. Was the GC/MS system tuned with bromofluorobenzene (BFB) during each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A3UX17–3/17/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) met?	X				QSM Table F-4
7d. Did target analytes with an average calibration type have an RSD≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X			Bromomethane, chloroethane, acetone and methylene chloride used a linear fit	QSM Table F-4 R<0.995=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?			X		QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte with detected results?	X				QSM Table F-4 and section D.1.2.1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/April 1, 2015

SDG: 240-48073
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
9. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours?	X			3/18/15 @ 1231 and 1834	
10. Were the QC/MRL recoveries 70-130%	X				Louisville Supplement to the DOD QSM
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			3/17/15 @1216. Vinyl acetate had a %D below control limits of 20% at 23%. No qualification of the data was required as vinyl acetate is not a target analyte.	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/18/15 @ 1122	QSM Table F-4
12a. Were the average response factors (RFs) for the (SPCCs) (see Table 2 below) met?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank >1/2 the MRL and >RL for common contaminants?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip)	X				

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/April 1, 2015

SDG: 240-48073
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
collected and analyzed?					
16a. Were target analytes detected in the field blanks?	X			Checked by ADR. Methylene chloride was detected in FWGTEAM4-Trip at 0.64 µg/L. The methylene chloride result for sample FWGEQUIPRINSE3-0565-GW was qualified, "B". FWGEQUIPRINSE3-0565-GW had bromodichloromethane detected at 0.39 µg/L, chloroform at 4 µg/L and methylene chloride at 0.72 µg/L. The chloroform result for sample FWGLL10mw-003c-0535-GW was qualified "B" as the detected concentration was less than 5x equipment rinse contamination. There were no detected concentrations of acetone or bromodichloromethane is the associated field samples so no qualification was required for the acetone or bromodichloromethane contamination detected FWGEQUIPRINSE3-0565-GW.	QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-5 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-5, J/UJ
18. Was a MS/MSD prepared with each batch?	X			A matrix spike and spike duplicate were analyzed on sample FWGRQLmw-007c-0542-GW.	QSM Table F-4
18a. Were the MS/MSD recoveries within limits specified in Table G-4 of the DoD QSM with an RPD <30%?	X				QSM Table F-4, Table G-5 J/UJ Parent sample only
19. Was a field duplicate analyzed?			X	No field duplicate was submitted for volatiles analysis with this set of samples.	QSM Table F-4,
19a. Were the field duplicates RPDs within ±30%?			X		QSM Table F-4, RPD >30=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% -50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/April 1, 2015

SDG: 240-48073
Analysis: SW846 8260B

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Table1- CCCs

Analyte
1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

Table 2- SPCCs

Analyte	Minimum RF
Chloromethane	0.10
1,1-Dichlorethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 3, 2015

SDG: 240-48073
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1.
3.Were holding times met?	X				QAPP Table 5-1. J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1.
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-6
6. Was the GC/MS system tuned each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Initial Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A4HP9–3/13/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) ≤0.050?	X				QSM Table F-4
7d. Were all other target analytes reported with an avg response have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X				QSM Table F-4 R<0.99=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X			Benzoic acid, 1,3-dinitrobenzene, 2,4-dinitrophenol and 4-nitrophenol 4,6-dinitro-2-methylphenol, pentachlorophenol, bis-2-ethylhexylphthalate, di-n-octylphthalate, indeno (1,2,3-cd)pyrene dibenz (a,h) anthracene used a linear fit	QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte?	X				QSM Table F-4 and section D.1.2.1
9 Was a breakdown check run at the beginning of every 12 hours with DDT degradation <20% and tailing factors of benzidine and pentachlorophenol ≤2?	X				QSM Table F-4 R
10. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12	X			3/17/15 @ 0906, 1611	Louisville Supplement to the DOD QSM

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 3, 2015

SDG: 240-48073
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
hours with recoveries within 70-130%?					
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			3/13/15 @1239	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/17/15 @0841	QSM Table F-4
12a. Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) ≥0.050?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank >1/2 the MRL, >RL for common contaminants?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE3-0565-GW	
16a. Were target analytes detected in the field blank?		X			QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-6 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-6, J/UJ

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 3, 2015

SDG: 240-48073
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
18. Was a MS/MSD prepared with each batch?			X	A matrix spike/ spike duplicate was not requested on a sample from this workorder.	
18a. Were the MS/MSD recoveries within limits specified in Table G-6 of the DoD QSM with an RPD <30%?			X	Checked by ADR	QSM Table F-4, Table G-6 J/UJ Parent sample only
19. Was a field duplicate analyzed?			X	A field duplicate was not submitted with this set of samples.	
19a. Were the field duplicates RPDs within ±50%?			X	No detected sample results were reported.	QSM Table F-4, RPD >50=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% - 50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Additional Comments:

Table 1: CCCs *(All analytes if CCCs not included in standard)*

Base / Neutral Compounds	Acid Compounds
Acenaphthalene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
N-Nitrosodiphehylamine	Phenol
Di-n-octylphthalate	Pentachlorophenol
Fluoroanthene	2,4,6-Trichlorophenol
Benzo(a)pyrene	

Table 2: SPCCs -

N-Nitroso-di-n-propylamine	0.05
Hexachlorocyclopentadiene	0.05
2,4-Dinitrophenol	0.05
4-Nitrophenol	0.05

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta / April 2, 2015

SDG: 240-48073
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X			Checked by ADR.	QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a DDT standard analyzed every 12 hours? Was the DDT %breakdown <15%?	X				QSM Table F-2 >15%=J/R
7. Was an endrin standard analyzed every 12 hours? Was the endrin %breakdown <15%?	X				QSM Table F-2 >15%=J/R
8. Initial Calibration					
8a. Does the initial calibration curve consist of 5 concentration levels?	X			A2HP3 on 3/13/15	QSM Table F-2 R
8a. Were the %RSDs for each analyte $\leq$ 20%? OR was the average %RSD $\geq$20% with the r^2 >0.990?	X				QSM Table F-2 RSD>20% or r<0.99=J/R
9. Was a LOD Level Verification performed once per quarter with all target analytes detected?	X				QSM Table F-2 R
10. Was a MRL Verification performed at the beginning and end of the sequence or every 12 hours with results within limits of 70-130%?	X			3/15/15@ 1459, 1522, 2151 and 2214- The closing MRL analyzed 3/15/15 @ 2214 recovered above limits of 70-130% on the primary column for 4,4-DDE at 159%, endosulfan II and endosulfan sulfate at 131%, endrin at 137%, endrin aldehyde at 133% methoxychlor at 139%. The MRL analyzed on the confirmation column at 2214, had MRL recoveries above control limits at 141% for beta-BHC, 139% for endrin and methoxychlor,133% for endrin aldehyde and heptachlor epoxide at 208%. The endosulfan sulfate result for sample FWGLL3mw-238c-0530-GW was qualified as estimated, "J". No additional qualification was made for the other MRL outliers as there were no detected concentrations reported from the primary column for 4,4-DDE, endosulfan II, endrin, endrin aldehyde or methoxychlor	QSM Table F-2, G-14 >UL=J; <LL=J/UJ/R
11. Was a second source (ICV) verification analyzed after the ICAL? Were results 80-120%?	X			3/13/15@ 1818, 3/14/15 @0004	QSM Table F-2 >120%=J;<80%=J/UJ
12. Was a CCV run every 12 hours or at the beginning and end of the analytical run with the %D for all target analytes $\leq$20%?		X		*3/15/15 @ 1414, 1437, 1933, 2237, 2300* The column 1 CCV analyzed 3/15/15 at 1933 had %D above 20% for 4,4,-DDE at 156%, endrin at 30.7% and methoxychlor at 23%. The column 2 CCV analyzed 3/15/15 at 1933 had %D above 20% for beta BHC	QSM Table F-2 >120%=J; <80%=J/UJ

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta / April 2, 2015

SDG: 240-48073
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				at 21.1%, heptachlor epoxide at 195%, endrin at 27.4% and methoxychlor at 20.8%. No qualification of the data was required for any of the CCV outliers as there were no detected pesticide concentrations reported for the bracketed field samples associated with the columns with outlier CCVs.	
13. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-2
14. Were target analytes detected> ½ the RL?		X		Checked by ADR.	QSM Table F-2 <5x=B
15. Was a field blank collected and analyzed?	X				
16. Were target analytes detected in the field blank analyses >1/2 the MRL?	X			FWGEQUIPRINSE3-0565-GW had heptachlor detected at 0.05µg/L. The heptachlor results for samples FWGLL3mw-238c-0530-GW and FWGLL3mw-241c-0531-GW were qualified, "B" as the reported concentrations were less than 5x equipment rinse contamination.	QSM Table F-2 <5x=B
17. Was an LCS prepared and analyzed with each batch?	X				QSM Table F-2
18. Were the LCS recoveries within limits specified in QSM Table G-14?	X			Checked by ADR	QSM Table G-14 >UL=J; <LL=J/UJ/R
19. Was a MS/MSD pair prepared with each batch?			X	A matrix spike and spike duplicate was not requested with this set of samples and no data was provided for matrix spike/ spike duplicate evaluation.	QSM Table F-2
20. Was the MS/MSD parent a Ravenna sample?			X		
21. Were MS/MSD recoveries and RPD within limits specified in QSM Table G-14?			X		QSM Table F-2 Pj with >UL=J; <LL=J/UJ/R
22. Were surrogate recoveries as specified in QSM table G-3?	X			Checked by ADR.	QSM Table F-2 >LL=J; <LL=UJ/J/R
23. Was a field duplicate analyzed? Were the RPDs ≤50%?		X		Checked by ADR. A field duplicate sample was not submitted with this sample set.	RPD >50=J parent sample only
24. Were all positive results greater than the LOQ verified by a second column confirmation? Were the RPD's ≤ 40?	X				QSM Table F-2 >40 RPD=J

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011 .

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-48073
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was a LOD Verification performed once per quarter with all target analytes detected?	X				DoD QSM Table F-8
7. Tuning (ICP MS Only)					
7a. Was a tune performed daily prior to calibration	X				DoD QSM Table F-8 R
7b. Mass Calibration <0.1 amu from true value	X				
7c. Resolution <0.9 amu full width at 10 % peak height	X				
7d. RSD <%5 for a minimum of four replicate analyses	X				
8.Calibration	X				
8a. Was the ICAL performed daily with at least	X			ICP & Hg 3/13/15and ICPMS 3/17/15	DoD QSM Tables F-8 and F-7
1high standard and a blank for ICP & ICPMS	X				
5 standards and a blank for Hg	X				
8b. Was the correlation coefficient r≥0.995 for Hg?	X				DoD QSM Tables F-8 and F-7 r<0.995=J/R
8c. Was the ICV (second source verification) analyzed after the ICAL with results 90-110% of the true value?	X				DoD QSM Tables F-8 and F-7
8d. Was the ICB analyzed after the ICV with detected results <1/2 the MRL?	X			ICP-The ICB analyzed 3/13/15@ 0910 had cobalt detected at 2.34 µg/L and nickel detected at 2.66 µg/L. The nickel and cobalt results for samples FWGLL2mw-267c-0528-GF and FWGLL7mw-001-0534-GF as well as the nickel result for sample FWGWBGmw-020-0549-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. ICPMS-The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony results for samples FWGLL3mw-241c-0531-GF and FWGLL2mw-267c-0538-GF were qualified, "U" as	DoD QSM, Tables F-8 and F-7 < 5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-48073
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results reported for the associated samples.	
Sample Analysis					
9. Was a MRL Level Verification performed at the beginning of the daily sequence and end of the analytical sequence bracketing samples? Were results 70-130%?	X			ICP-The closing MRL analyzed 3/13/15 at 1358 recovered below control limits of 70-130% for vanadium at 47%. An LOD check was analyzed immediately before the MRL verification with acceptable results. The vanadium results for samples FWGLL3mw-241c-0531- GF, FWGLL2mw-267c-0528- GF, FWGEQUIPRINSE3-0565-GW, FWGWBGmw-006c-0547- GF, FWGWBGmw-021c-0550-/GF, FWGLL3mw-238c-0530-GF, FWGLL10mw-003c-0535-GF, FWGWBGmw-020-0549- GF, FWGWBGmw-009-0548- GF and FWGLL7mw-001-0534- GF were qualified as estimated, "J/UJ".	LS, DoD QSM Table G-18, >130%=J; 70-80%=J/UJ; <70%=J/UJ <65%=R, unless DL check with detected results
10. Were CCVs analyzed every 10 samples and at the end of the analytical sequence with results 90-110% of the true value?	X				DoD QSM, Tables F-8 and F-7 >110%=J, <85%=J/R 90-85%=J/UJ;
11. Were the CCBs run every 10 samples and at the end of the analytical sequence? Were results <1/2 the MRL?	X			ICP The CCB analyzed 3/13/15 had chromium detected at 2.82 µg/L, manganese at 3.38 µg/L and silver at 1.95 µg/L. The CCB analyzed 3/13/15 at 1406 had cobalt detected at 0.741 µg/L. The cobalt result for samples FWGLL7mw-001-0534-GF was qualified "U" as the reported concentration was less than 5x blank contamination. No additional qualifications were made as the other outliers did not bracket detected concentrations in the associated field samples. ICPMS The CCBs analyzed 3/17/15 had antimony detected from 0.296 µg/L to 0.316 µg/L, beryllium from 0.055 µg/L to 0.102 µg/L and cadmium from 0.0810 µg/L to 0.0890 µg/L . The antimony results for samples FWGLL3mw-241c-0531-GF and FWGLL2mw-267c-0538-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results reported for the associated samples.	DoD QSM Tables F-8 and F-7 <5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-48073
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
12. Was an Interelement Check Standard run at the beginning of the analytical sequence and every 12 hours with the ICS recovery within 80 to 120% of true value for each element of interest (ICP and ICPMS only)?	X				DoD QSM Tables F-8 and F-7 >120%=J; 50-79%=J/UJ; <50%=Pj/R
13. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
14. Were target analytes detected >1/2 the MRL in the method blank?		X		Checked by ADR.	DoD QSM Tables F-8 and F-7, <5x = B
15. Was a field blank collected and analyzed?	X			FWGEQUIPRINSE3-0565-GW	
16. Were target analytes reported in the field blank analyses >1/2 the MRL?		X		ADR checked section	DoD QSM Tables F-8 and F-7
17. Was a LCS prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7>120%=J; 70-79%=J/UJ; <70%=J/R
19. Was a matrix spike (MS) and lab duplicate sample prepared with each batch?	X				DoD QSM Tables F-8 and F-7
20. Was the MS and Lab Duplicate parent a Ravenna sample?	X			A matrix spike analysis and laboratory duplicate analysis was performed on sample FWGLL3mw-241c-0531-GF.	
21. Were the MS recoveries within 80-120%?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7, >120%=J; 70-79%=J/UJ; <70%=J/R All samples in batch
22. Was the lab sample duplicate RPD ≤ 20%, for sample results detected above the LOQ?		X		ICP-The laboratory duplicate analyzed on sample FWGLL3mw-241c-0531-GF had an RPD above control limits of 20% for manganese at 34%. No qualification of the data was required as the detected manganese concentration was less than the LOQ.	DoD QSM Tables F-8 and F-7 >20% = J, All samples in batch
23. Was a serial dilution performed, with the fivefold dilution within ± 10% of the original result?	X				DoD QSM, Tables F-8 and F-7 >20% = J. Only evaluate results above the LOQ . Qualify all

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 27, 2015

SDG: 240-48073
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
					samples in batch
24. Was a Post Digestion Spike analyzed as needed? Were results within 75-125%?	X				LCG Table 7, >125%=J; 30-75%=J/UJ; <30%=R
25. Was a field duplicate analyzed? Were the RPDs ± 50% for sample results detected above the LOQ?			X	A field duplicate was not submitted with this sample set.	>30% = J. Qualify parent sample only and only evaluate results above the LOQ
26. Were internal standards added to all ICPMS samples with intensity within 30-120% of the intensity of the ICAL internal standard?	X				DoD QSM Table F-8. >120%=J/R, <20%=J

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
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Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 2, 2015

SDG: 240-48073
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			LC10 3/11/15 LC9 1/23/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for non-linear).	X			LC10-4-nitrotoluene used a linear fit LC9-3-nitrotoluene and RDX used a linear fit	
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			LC10 on 3/11 at 2136 LC9 1/23/15 @ 2328	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			LC10- 3/19/15 @1529, 2245 and 3/20/15 @ 0644, 3/24/15 @2023 and 3/25/15 @ 0128 LC9-3/24/15 @ 1821 and 3/25/15 @ 0420 and 1527	DoD QSM Table F-3 J/UJ
10.Was a MRL Level verification run at the beginning and end of every daily? Was the %D< 30%?	X			LC10- 3/19/15 @1613, 2329 and 3/20/15 @ 0728, 3/24/15 @2107 and 3/25/15 @ 0044 LC9-3/24/15 @ 1927 and 3/25/15 @ 0527 and 1634	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3
12. Were target analytes detected in the method blank <1/2 the MRL?	X			Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses > ½ the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 2, 2015

SDG: 240-48073
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
15. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		Checked by ADR. A field duplicate was not submitted with this set of samples.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?	X				DoD QSM Table F-3 RPD>40%=J Only detected results above the LOQ were evaluated
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within limits specified in table G-12 of the DoD QSM?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J;30-LL=J/UJ; <30%=J/R
19.Was a MS/MSD or MS and sample duplicate prepared with each batch?			X	No data was provided as a matrix spike/spike duplicate was not requested nor was sample volume provided for matrix spike analysis specific to this set of samples.	DoD QSM Table F-3
20. Were MS/MSD recoveries within limits specified in table G-12 of the DoD QSM with an RPD ≤30%?			X		DoD QSM Table F-3 Pj
21. Were surrogate recoveries within laboratory limits (79-111%)?	X			The surrogate, 3,4-dinitrotolune recovered above control limits of 79-111% at 120% for sample FWGLL3mw-238c-0530-GW and at 113% in the diluted analysis of sample FWGLL3mw-238c-0530-GW . The 1,3,5-trinitrobenzene, 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-amino-4,6-dinitrotoluene, 3-nitrotoluene, 4-amino-2,6-dinitrotoluene, HMX , RDX and nitrobenzene results for sample FWGLL3mw-238c-0530-GW were qualified as estimated, "J".	QSM Tables F-2 >UL=J; <LL =J/UJ

References: DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
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Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 2, 2015

SDG: 240-48073
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			PDA-1 7/10/14	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD $\leq$ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r$\geq$0.995? (0.990 for Quadratic curve).			X		
7d. Did reanalysis of the low level standard after calibration, recover within 15%?	X				
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			7/10/14 @ 1719	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			3/19/15 @1410, 1837, 2210, 2339	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D < 30%?	X			3/19/15 @1002, 1446, 1855, 2228, 2357	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 2, 2015

SDG: 240-48073
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
12. Were target analytes detected in the method blank <1/2 the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses < ½ the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B
15. Was a field duplicate analyzed? Were the RPDs ≤30%?	X				RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?			X	No detected concentrations were reported.	DoD QSM Table F-3 RPD>40%=J
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within laboratory limits of 79%-119%?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J; 30-LL=J/UJ; <30%=J/R
19. Was a MS/MSD or MS and sample duplicate prepared with each batch?	X			FWGSCFmw-002-0545-GW	DoD QSM Table F-3
20. Were MS/MSD recoveries within laboratory limits of 40%-150% with an RPD ≤20%?	X				DoD QSM Table F-3 Pj

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
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Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 2, 2015

SDG: 240-48073
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Does the initial calibration curve consist of 5 concentration levels with the low standard near but > MDL?	X				SOP Section 10.2 R
7. Was the correlation coefficient >0.995?	X				SOP Section 10.2
8. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D <30%?	X			3/19/15 @ 0934, 1002, 1030 and 1042	>30%=J
9. Was a second source verification (ICV) analyzed after the ICAL? Were all analytes 90-110%?	X			3/19/15 @ 0904	>110%=J; 90-85%=J/UJ; <85%=J/R
10. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				STL SOP Section 9.8, LCG ,< 5x = U
11. Was a CCV run every 10 samples and at the end of the analytical run?	X			3/19/15 @ 0936, 1004, 1032 and 1044	STL SOP Section 10.4
12. Was the ICV and CCV a mid-level standard from the initial calibration curve?	X				STL SOP Section 10.3.1
13. Were all CCV calibration analytes within 90-110%?	X				>110%=J; 85-90%=J/UJ; <85%=J/R
14. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				QSM, < 5x = U
15. Was a method blank prepared and analyzed with each batch?	X				
16. Were target analytes detected in the method blank <1/2 the MRL?		X		ADR checked section.	LCG, *<5x=B*
17. Was a field blank collected and analyzed?	X				

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 2, 2015

SDG: 240-48073
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
18. Were target analytes detected in the field blank analyses <1/2 the MRL?		X			<5x=B
19. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		ADR checked section. No field duplicates for nitrocellulose were submitted with this set of samples.	QAPP Table 3-2 RPD > 30% = J
20. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within lab's in-house limits% (26-144%)?	X				>UL%=J; 50-LL%=J/UJ; <50%=J/R
21. Was a MS/MSD pair prepared with each batch?	X				
22. Was the MS/MSD parent a Ravenna sample?	X				
23. Were MS/MSD recoveries 26-144% and RPD ≤20?	X				Method EPA 353.2 Section 9.4.2 >UL%=J;<LL%=J/UJ; RPD>20%=J/UJ

References:

SOP SAC-WC-0050 "Preparation and Analysis of Nitrocellulose in Aqueous and Soil/Sediment Samples by Colorimetric Autoanalyzer", Jan 2007, rev. 2.0

DoD Quality Systems Manual (QSM)

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 2, 2015

SDG: 240-48073
Analysis: EPA 353.2

Review Questions:	Yes	No	N/A	Comments	Qual/Crtieria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				*QAPP Table 5-1. NELAC*
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was the Linear Calibration Range verified using 3 standards and 1 blank?	X				Method EPA 353.2 Section 9.2.2, *J*
7. Were the calibration standards verified by preparation and analysis of a Quality Control Sample? Were results within 10% of the stated values?	X			3/27/15 @ 1535, FS4	Method EPA 353.2 Section 9.2.3 Pj
8. Was an Instrument Performance Check Solution (CCV) analyzed immediately following daily calibration, after every 10th sample, and at the end of the analytical sequence?	X			3/27/15 @ 1605, 16,23,1722, 1734	Method EPA 353.2 Section 9.3.4
9. Was the CCV a mid-level standard from the initial calibration curve, with recovery 90-110%?	X				Method EPA 353.2 Section 9.3.4 >110%=J; <85%=J/R 85-90%=J/UJ;
10. Was an MRL check standard analyzed at the beginning and end of each analytical run, with recoveries 70-130%	X			3/27/15 @ 1539, 1603, 1720 and 1732	LCG >130%=J; <70%=J/UJ;
11.Was a method blank and calibration blanks prepared and analyzed with each batch?	X				Method EPA 353.2 Section 9.3.1, 9.3.4
12. Were target analytes detected in the method blank or calibration blank >1/2 the MRL?	X			ADR checked section; The ICB analyzed 3/27/15 @1625 had nitrate/nitrite detected at 0.005mg/L. The nitrate/nitrite result for sample FWGEQUIPRINSE3-0565-GW was qualified, "U", as the detected result was <5x instrument blank contamination. No additional qualification was required as the detected concentrations for the remaining samples were greater than 5x blank contamination.	<5x = B(method blank) U (calibration blank)

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 2, 2015

SDG: 240-48073
Analysis: EPA 353.2

Review Questions:	Yes	No	N/A	Comments	Qual/Crtieria
13. Was a field blank (trip or equipment) collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses (trip or equipment) >1/2 the MRL?	X			ADR checked section; FWGEQUIPRINSE3-0565-GW had nitrate/nitrite detected at 0.006mg/L. No qualification of the data was required, as the associated field sample results were greater than 5x rinse blank contamination.	<5x=B
15. Was a field duplicate analyzed? Were the RPDs acceptable?	X			FWGLL12mw-DUP4-0560-GW was a field duplicate for sample FWGLL12mw-185c-0536-GW.	
16. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within 90-110%?	X				Method EPA 353.2 Section 9.3.3 J/UJ; <50%= R
17. Was a MS/MSD pair prepared with each batch?	X				Method EPA 353.2 Section 9.4.1
18. Was the MS/MSD parent a Ravenna sample?	X			The matrix spike analysis was performed on a sample FWGEQUIPRINSE3-0565-GW	
19. Were MS/MSD recoveries and RPD within acceptance criteria?	X			Checked by ADR.	Method EPA 353.2 Section 9.4.2 Pj

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Attachment 2

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48073-1										
353.2	FWGEQUIPRINSE3-0565-GW	AQ	EB							
				Nitrate-Nitrite	0.050	0.0060J		U	mg/L	Cb
6010B	FWGEQUIPRINSE3-0565-GW	AQ	EB							
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGLL10MW-003C-0535-GF	AQ	N							
				CHROMIUM	7.0	1.6J		J	ug/L	RI
				MANGANESE	15	1.6J		J	ug/L	RI
				POTASSIUM	5000	660J		J	ug/L	RI
				SILVER	7.0	0.97J		J	ug/L	RI
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGLL12MW-185C-0536-GF	AQ	N							
				ARSENIC	10	3.1J		J	ug/L	RI
6010B	FWGLL2MW-267C-0528-GF	AQ	N							
				BARIUM	200	7.8J		J	ug/L	RI
				COBALT	7.0	1.7J		U	ug/L	Cb
				NICKEL	40	3.0J		U	ug/L	Cb
				POTASSIUM	5000	560J		J	ug/L	RI
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGLL3MW-238C-0530-GF	AQ	N							
				BARIUM	200	5.1J		J	ug/L	RI
				POTASSIUM	5000	2300J		J	ug/L	RI
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48073-1										
6010B	FWGLL3MW-241C-0531-GF	AQ	N							
				BARIUM	200	3.1J		J	ug/L	RI
				MANGANESE	15	1.4J		J	ug/L	RI
				POTASSIUM	5000	820J		J	ug/L	RI
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGLL7MW-001-0534-GF	AQ	N							
				BARIUM	200	22J		J	ug/L	RI
				COBALT	7.0	6.1J		U	ug/L	Cb
				NICKEL	40	8.1J		U	ug/L	Cb
				POTASSIUM	5000	1000J		J	ug/L	RI
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGWBGMW-006C-0547-GF	AQ	N							
				BARIUM	200	19J		J	ug/L	RI
				POTASSIUM	5000	730J		J	ug/L	RI
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGWBGMW-009-0548-GF	AQ	N							
				BARIUM	200	7.7J		J	ug/L	RI
				POTASSIUM	5000	400J		J	ug/L	RI
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6010B	FWGWBGMW-020-0549-GF	AQ	N							
				BARIUM	200	15J		J	ug/L	RI
				NICKEL	40	1.8J		U	ug/L	Cb
				POTASSIUM	5000	640J		J	ug/L	RI
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48073-1										
6010B	FWGWBGMW-021C-0550-GF	AQ	N							
				ARSENIC	10	3.8J		J	ug/L	RI
				BARIUM	200	52J		J	ug/L	RI
				POTASSIUM	5000	1300J		J	ug/L	RI
				VANADIUM	7.0	7.0U		UJ	ug/L	ProfJudg
6020	FWGLL2MW-267C-0528-GF	AQ	N							
				ANTIMONY	2.0	0.59J		U	ug/L	Cb
6020	FWGLL3MW-241C-0531-GF	AQ	N							
				ANTIMONY	2.0	0.36J		U	ug/L	Cb
6020	FWGWBGMW-021C-0550-GF	AQ	N							
				IRON	150	91J		J	ug/L	RI
8081A	FWGEQUIPRINSE3-0565-GW	AQ	EB							
				HEPTACHLOR	0.053	0.050J		J	ug/L	RI
8081A	FWGLL3MW-238C-0530-GW	AQ	N							
				4,4'-DDE	0.050	0.021J		J	ug/L	RI
				ENDOSULFAN SULFATE	0.050	0.018J		J	ug/L	RI, ProfJu
				HEPTACHLOR	0.050	0.038J		B	ug/L	Eb
8081A	FWGLL3MW-241C-0531-GW	AQ	N							
				BETA-BHC	0.048	0.026J		J	ug/L	RI
				HEPTACHLOR	0.048	0.047J		B	ug/L	Eb
8260B	FWGEQUIPRINSE3-0565-GW	AQ	EB							
				BROMODICHLOROMETHANE	1.0	0.39J		J	ug/L	RI
				METHYLENE CHLORIDE	1.0	0.72J		B	ug/L	Tb
8260B	FWGLL10MW-003C-0535-GW	AQ	N							
				CHLOROFORM	1.0	0.64J		B	ug/L	Eb

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48073-1										
8260B	FWGTEAM3-TRIP	AQ	TB							
				METHYLENE CHLORIDE	1.0	0.61J		J	ug/L	RI
8260B	FWGTEAM4-TRIP	AQ	TB							
				METHYLENE CHLORIDE	1.0	0.64J		J	ug/L	RI
8270C -SVOC1	FWGLL3MW-241C-0531-GW	AQ	N							
				Diethylphthalate	2.1	0.93J		J	ug/L	RI
8330	FWGLL2MW-267C-0528-GW	AQ	N							
				1,3,5-TRINITROBENZENE	0.15	0.061J		J	ug/L	RI
8330	FWGLL3MW-238C-0530-GW	AQ	N							
				1,3,5-TRINITROBENZENE	1.5	19D		J	ug/L	Surr
				2,4,6-TRINITROTOLUENE	1.5	45D		J	ug/L	Surr
				2,4-DINITROTOLUENE	0.13	0.071J		J	ug/L	Surr, RI
				2,6-DINITROTOLUENE	0.13	0.29M		J	ug/L	Surr
				2-AMINO-4,6-DINITROTOLUENE	0.15	7.4		J	ug/L	Surr
				3-NITROTOLUENE	0.51	0.12J M		J	ug/L	Surr, RI
				4-AMINO-2,6-DINITROTOLUENE	1.5	19D		J	ug/L	Surr
				Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.15	4.5		J	ug/L	Surr
				NITROBENZENE	0.15	0.098J M		J	ug/L	Surr, RI
				Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.15	1.1M		J	ug/L	Surr
8330	FWGLL3MW-241C-0531-GW	AQ	N							
				2,4-DINITROTOLUENE	0.13	0.076J M		J	ug/L	RI
				Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.15	0.14J M		J	ug/L	RI

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Qualifier Summary

Lab Reporting Batch ID: 240-48073-1 Laboratory: TESTAME

EDD Filename: 240-48073-1A eQAPP Name: RVAAP 66-rev August 2014

Method Category: GENCHEM **Method:** 353.2 **Matrix:** AQ

Sample ID: FWGEQUIPRINSE3-0565-GW *Collected:* 3/11/2015 3:30:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate-Nitrite	0.0060	J	0.0031	MDL	0.050	LOQ	mg/L	U	Cb

Method Category: METALS **Method:** 6010B **Matrix:** AQ

Sample ID: FWGEQUIPRINSE3-0565-GW *Collected:* 3/11/2015 3:30:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGLL10MW-003C-0535-GF *Collected:* 3/11/2015 2:30:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHROMIUM	1.6	J	0.55	MDL	7.0	LOQ	ug/L	J	RI
MANGANESE	1.6	J	0.46	MDL	15	LOQ	ug/L	J	RI
POTASSIUM	660	J	70	MDL	5000	LOQ	ug/L	J	RI
SILVER	0.97	J	0.92	MDL	7.0	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGLL12MW-185C-0536-GF *Collected:* 3/11/2015 4:11:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.1	J	2.9	MDL	10	LOQ	ug/L	J	RI

Sample ID: FWGLL2MW-267C-0528-GF *Collected:* 3/11/2015 1:12:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	7.8	J	1.0	MDL	200	LOQ	ug/L	J	RI
COBALT	1.7	J	0.56	MDL	7.0	LOQ	ug/L	U	Cb
NICKEL	3.0	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	560	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48073-1 Laboratory: TESTAME

EDD Filename: 240-48073-1A eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS

Method: 6010B **Matrix:** AQ

Sample ID: FWGLL3MW-238C-0530-GF *Collected:* 3/11/2015 11:50:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	5.1	J	1.0	MDL	200	LOQ	ug/L	J	RI
POTASSIUM	2300	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGLL3MW-241C-0531-GF *Collected:* 3/11/2015 9:52:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	3.1	J	1.0	MDL	200	LOQ	ug/L	J	RI
MANGANESE	1.4	J	0.46	MDL	15	LOQ	ug/L	J	RI
POTASSIUM	820	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGLL7MW-001-0534-GF *Collected:* 3/11/2015 4:09:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	22	J	1.0	MDL	200	LOQ	ug/L	J	RI
COBALT	6.1	J	0.56	MDL	7.0	LOQ	ug/L	U	Cb
NICKEL	8.1	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	1000	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGWBGMW-006C-0547-GF *Collected:* 3/11/2015 11:01:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	19	J	1.0	MDL	200	LOQ	ug/L	J	RI
POTASSIUM	730	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGWBGMW-009-0548-GF *Collected:* 3/11/2015 12:13:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	7.7	J	1.0	MDL	200	LOQ	ug/L	J	RI
POTASSIUM	400	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48073-1 Laboratory: TESTAME

EDD Filename: 240-48073-1A eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS **Method:** 6010B **Matrix:** AQ

*Sample ID:*FWGWBGMW-020-0549-GF *Collected:* 3/11/2015 9:31:00 AM *Analysis Type:*RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	15	J	1.0	MDL	200	LOQ	ug/L	J	RI
NICKEL	1.8	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	640	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

*Sample ID:*FWGWBGMW-021C-0550-GF *Collected:* 3/11/2015 12:21:00 PM *Analysis Type:*RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.8	J	2.9	MDL	10	LOQ	ug/L	J	RI
BARIUM	52	J	1.0	MDL	200	LOQ	ug/L	J	RI
POTASSIUM	1300	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	7.0	U	2.4	MDL	7.0	LOQ	ug/L	UJ	ProfJudg

Method Category: METALS **Method:** 6020 **Matrix:** AQ

*Sample ID:*FWGLL2MW-267C-0528-GF *Collected:* 3/11/2015 1:12:00 PM *Analysis Type:*RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.59	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

*Sample ID:*FWGLL3MW-241C-0531-GF *Collected:* 3/11/2015 9:52:00 AM *Analysis Type:*RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.36	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

*Sample ID:*FWGWBGMW-021C-0550-GF *Collected:* 3/11/2015 12:21:00 PM *Analysis Type:*RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	91	J	44	MDL	150	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48073-1 Laboratory: TESTAME

EDD Filename: 240-48073-1A eQAPP Name: RVAAP 66-rev August 2014

Method Category: SVOA **Method:** 8081A **Matrix:** AQ

Sample ID:FWGEQUIPRINSE3-0565-GW Collected:3/11/2015 3:30:00 PM Analysis Type:RES Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEPTACHLOR	0.050	J	0.0053	MDL	0.053	LOQ	ug/L	J	RI

Sample ID:FWGLL3MW-238C-0530-GW Collected:3/11/2015 11:50:00 AM Analysis Type:RES Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDE	0.021	J	0.0090	MDL	0.050	LOQ	ug/L	J	RI
ENDOSULFAN SULFATE	0.018	J	0.011	MDL	0.050	LOQ	ug/L	J	RI, ProfJudg
HEPTACHLOR	0.038	J	0.0050	MDL	0.050	LOQ	ug/L	B	Eb

Sample ID:FWGLL3MW-241C-0531-GW Collected:3/11/2015 9:52:00 AM Analysis Type:RES Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BETA-BHC	0.026	J	0.013	MDL	0.048	LOQ	ug/L	J	RI
HEPTACHLOR	0.047	J	0.0048	MDL	0.048	LOQ	ug/L	B	Eb

Method Category: SVOA **Method:** 8270C -SVOC1 **Matrix:** AQ

Sample ID:FWGLL3MW-241C-0531-GW Collected:3/11/2015 9:52:00 AM Analysis Type:RES-BASE/NEUTRAL Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Diethylphthalate	0.93	J	0.64	MDL	2.1	LOQ	ug/L	J	RI

Method Category: SVOA **Method:** 8330 **Matrix:** AQ

Sample ID:FWGLL2MW-267C-0528-GW Collected:3/11/2015 1:12:00 PM Analysis Type:RES Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.061	J	0.031	MDL	0.15	LOQ	ug/L	J	RI

Sample ID:FWGLL3MW-238C-0530-GW Collected:3/11/2015 11:50:00 AM Analysis Type:DL Dilution: 10

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	19	D	0.32	MDL	1.5	LOQ	ug/L	J	Surr

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48073-1 Laboratory: TESTAME

EDD Filename: 240-48073-1A eQAPP Name: RVAAP 66-rev August 2014

Method Category: SVOA

Method: 8330 **Matrix:** AQ

Sample ID: FWGLL3MW-238C-0530-GW *Collected:* 3/11/2015 11:50:00 AM *Analysis Type:* DL *Dilution:* 10

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4,6-TRINITROTOLUENE	45	D	0.51	MDL	1.5	LOQ	ug/L	J	Surr
4-AMINO-2,6-DINITROTOLUENE	19	D	0.51	MDL	1.5	LOQ	ug/L	J	Surr

Sample ID: FWGLL3MW-238C-0530-GW *Collected:* 3/11/2015 11:50:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DINITROTOLUENE	0.071	J	0.051	MDL	0.13	LOQ	ug/L	J	RI, Surr
2,6-DINITROTOLUENE	0.29	M	0.051	MDL	0.13	LOQ	ug/L	J	Surr
2-AMINO-4,6-DINITROTOLUENE	7.4		0.015	MDL	0.15	LOQ	ug/L	J	Surr
3-NITROTOLUENE	0.12	J M	0.059	MDL	0.51	LOQ	ug/L	J	RI, Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	4.5		0.037	MDL	0.15	LOQ	ug/L	J	Surr
NITROBENZENE	0.098	J M	0.051	MDL	0.15	LOQ	ug/L	J	RI, Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.1	M	0.037	MDL	0.15	LOQ	ug/L	J	Surr

Sample ID: FWGLL3MW-241C-0531-GW *Collected:* 3/11/2015 9:52:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DINITROTOLUENE	0.076	J M	0.051	MDL	0.13	LOQ	ug/L	J	RI
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.14	J M	0.037	MDL	0.15	LOQ	ug/L	J	RI

Method Category: VOA

Method: 8260B **Matrix:** AQ

Sample ID: FWGEQUIPRINSE3-0565-GW *Collected:* 3/11/2015 3:30:00 PM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BROMODICHLOROMETHANE	0.39	J	0.15	MDL	1.0	LOQ	ug/L	J	RI
METHYLENE CHLORIDE	0.72	J	0.28	MDL	1.0	LOQ	ug/L	B	Tb

Sample ID: FWGLL10MW-003C-0535-GW *Collected:* 3/11/2015 2:30:00 PM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	0.64	J	0.21	MDL	1.0	LOQ	ug/L	B	Eb

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48073-1

Laboratory: TESTAME

EDD Filename: 240-48073-1A

eQAPP Name: RVAAP 66-rev August 2014

Method Category: VOA

Method: 8260B **Matrix:** AQ

Sample ID: FWGTEAM3-TRIP *Collected:* 3/11/2015 8:00:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.61	J	0.28	MDL	1.0	LOQ	ug/L	J	RI

Sample ID: FWGTEAM4-TRIP *Collected:* 3/11/2015 8:00:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.64	J	0.28	MDL	1.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48073-1 Laboratory: TESTAME

EDD Filename: 240-48073-1A eQAPP Name: RVAAP 66-rev August 2014

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Eb	Equipment Blank Contamination
Ld	Laboratory Duplicate Precision
ProfJudg	Professional Judgment
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Upper Estimation
Tb	Trip Blank Contamination

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Review Summary

Lab Reporting Batch ID: 240-48073-1
EDD Filename: 240-48073-1A

Laboratory: TESTAME
eQAPP Name: RVAAP 66-rev August 2014

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	SR
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	SR
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	SR

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Trip Blank Outlier Report

Lab Reporting Batch ID: 240-48073-1 **Laboratory: TESTAME**

EDD Filename: 240-48073-1A **eQAPP Name: RVAAP 66-rev August 2014**

Method: **8260B**
Matrix: **AQ**

Trip Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGTEAM4-TRIP(RES)	3/11/2015 8:00:00 AM	METHYLENE CHLORIDE	0.64 ug/L	FWGEQUIPRINSE3-0565-GW FWGLL10MW-003C-0535-GW FWGLL3MW-238C-0530-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGEQUIPRINSE3-0565-GW(RES)	METHYLENE CHLORIDE	0.72 ug/L	0.72U ug/L

Surrogate Outlier Report

Lab Reporting Batch ID: 240-48073-1

Laboratory: TESTAME

EDD Filename: 240-48073-1A

eQAPP Name: RVAAP 66-rev August 2014

Method: 8330
Matrix: AQ

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FWGLL3MW-238C-0530-GW (DL)	3,4-DINITROTOLUENE	113	79.00-111.00	All Target Analytes	J (all detects)
FWGLL3MW-238C-0530-GW	3,4-DINITROTOLUENE	120	79.00-111.00	All Target Analytes	J(all detects)

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 240-48073-1 **Laboratory: TESTAME**

EDD Filename: 240-48073-1A **eQAPP Name: RVAAP 66-rev August 2014**

Method: 6010B
Matrix: AQ

QC Sample ID (Associated Sample ID)	*Analyte*	*Sample RPD*	*eQAPP RPD*	*Flag*
FWGLL3MW-241C-0531-GFDUP (TOT) (FWGEQUIPRINSE3-0565-GW FWGLL10MW-003C-0535-GF FWGLL12MW-185C-0536-GF FWGLL2MW-267C-0528-GF FWGLL3MW-238C-0530-GF FWGLL3MW-241C-0531-GF FWGLL7MW-001-0534-GF FWGWBGMW-006C-0547-GF FWGWBGMW-009-0548-GF FWGWBGMW-020-0549-GF FWGWBGMW-021C-0550-GF)	MANGANESE	34	20.00	J (all detects) UJ (all non-detects)

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Field Duplicate RPD Report

Lab Reporting Batch ID: 240-48073-1 Laboratory: TESTAME

EDD Filename: 240-48073-1A eQAPP Name: RVAAP 66-rev August 2014

Method: 353.2
Matrix: AQ

Analyte	Concentration (mg/L)		Sample RPD	eQAPP RPD	Flag
	FWGLL12MW-185C-05 36-GW	FWGLL12MW-DUP4-0560-GW			
Nitrate-Nitrite	110	130	17	30.00	No Qualifiers Applied

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: 240-48073-1 **Laboratory: TESTAME**

EDD Filename: 240-48073-1A **eQAPP Name: RVAAP 66-rev August 2014**

Method: **8081A**
Matrix: **AQ**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGEQUIPRINSE3-0565-GW(RES)	3/11/2015 3:30:00 PM	HEPTACHLOR	0.05 ug/L	FWGLL10MW-003C-0535-GF FWGLL10MW-003C-0535-GW FWGLL12MW-185C-0536-GF FWGLL12MW-185C-0536-GW FWGLL12MW-DUP4-0560-GW FWGLL2MW-267C-0528-GF FWGLL2MW-267C-0528-GW FWGLL3MW-238C-0530-GF FWGLL3MW-238C-0530-GW FWGLL3MW-241C-0531-GF FWGLL3MW-241C-0531-GW FWGLL7MW-001-0534-GF FWGLL7MW-001-0534-GW FWGWBGMW-006C-0547-GF FWGWBGMW-006C-0547-GW FWGWBGMW-009-0548-GF FWGWBGMW-009-0548-GW FWGWBGMW-020-0549-GF FWGWBGMW-020-0549-GW FWGWBGMW-021C-0550-GF FWGWBGMW-021C-0550-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGLL3MW-238C-0530-GW(RES)	HEPTACHLOR	0.038 ug/L	0.038U ug/L
FWGLL3MW-241C-0531-GW(RES)	HEPTACHLOR	0.047 ug/L	0.047U ug/L

Method: **8260B**
Matrix: **AQ**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGEQUIPRINSE3-0565-GW(RES)	3/11/2015 3:30:00 PM	BROMODICHLOROMETHANE CHLOROFORM METHYLENE CHLORIDE	0.39 ug/L 4 ug/L 0.72 ug/L	FWGLL10MW-003C-0535-GF FWGLL10MW-003C-0535-GW FWGLL12MW-185C-0536-GF FWGLL12MW-185C-0536-GW FWGLL12MW-DUP4-0560-GW FWGLL2MW-267C-0528-GF FWGLL2MW-267C-0528-GW FWGLL3MW-238C-0530-GF FWGLL3MW-238C-0530-GW FWGLL3MW-241C-0531-GF FWGLL3MW-241C-0531-GW FWGLL7MW-001-0534-GF FWGLL7MW-001-0534-GW FWGWBGMW-006C-0547-GF FWGWBGMW-006C-0547-GW FWGWBGMW-009-0548-GF FWGWBGMW-009-0548-GW FWGWBGMW-020-0549-GF FWGWBGMW-020-0549-GW FWGWBGMW-021C-0550-GF FWGWBGMW-021C-0550-GW

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: 240-48073-1 Laboratory: TESTAME

EDD Filename: 240-48073-1A eQAPP Name: RVAAP 66-rev August 2014

Method: 8260B
Matrix: AQ

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGLL10MW-003C-0535-GW(RES)	CHLOROFORM	0.64 ug/L	0.64U ug/L

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48152

Date: June 24, 2015
Revision: 1

Data Reviewer: Angela Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 12, 2015 the following samples were collected from groundwater-monitoring wells at the former Ravenna Army Ammunition Plant and analyzed as part of SDG 240-48152. Sample analysis was performed by Test America. Test America-North Canton performed all requested analyses with the exception of the analytical for methods 8330, M8330, TALSOPWS-WC-0050 and 6860. Methods 8330, M8330 and TALSOPWS-WC-0050 were performed by Test America, West Sacramento. Method 6860, if requested, was performed by Test America, Denver.

Sample ID	VOC by SW846 8260	SVOC 4 by SW846 8270	SVOC 1 and 2 by SW846 8270	SVOC 1 by SW846 8270	Pesticides by SW846 8081	PCBs/ SW846 8082	Explosives/Propellants by SW846 8330, Mod. 8330 and TALSOP WS-WC-0050	Cyanide SW846 9012	Perchlorate by SW846 6860	NO2/NO3, EPA 353.2	Metals [3]		
											SW846 6010B	SW846 6020	Mercury by SW846 7470A
FWGRQLmw-008c-0543-GW/GF	X	X			X	X	X	X			X	X	X
FWGRQLmw-007c-0542-GW/GF	X	X			X	X	X	X			X	X	X
FWGRQLmw-009c-0544-GW/GF	X	X			X	X	X	X			X	X	X
FWGRQLmw-DUP5-0561-GW/GF	X	X			X	X	X	X			X	X	X
FWGEQUIPRINSE4-0566-GW	X	X			X	X	X	X		X	X	X	X
FWGLL12mw-242c-0538-GW/GF				X			X			X	X	X	X
FWGLL12mw-187c-0537-GW/GF				X			X			X	X	X	X
FWGLL12mw-245c-0539-GW/GF				X			X			X	X	X	X

1) All metals samples with the exception of FWGEQUIPRINSE4-0566-GW were field filtered (GF).
2) SVOC1= Phthalates only , SVOC4=Full RVAAP SVOC list
3) EPA 6020 metals include aluminum, antimony, beryllium, cadmium, iron, sodium, thallium and zinc. EPA 6010B metals include arsenic, chromium, cobalt, lead, selenium, silver, vanadium, barium, calcium, copper, magnesium, manganese, nickel and potassium.
4) A trip blank, FWGTEAMRQL-TRIPBLANK, was collected on 3/12/15 and submitted to the laboratory for VOC analysis by EPA 8260B.

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004*, Analytical Methods, and Laboratory Standard Operating Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Per the DoD QSM, the laboratory data is reported as follows: Non detected results were reported at the LOD with a "U" flag. Detected results between the DL and LOQ were reported as estimated, qualified with a "J" flag.

LOD - An estimate of the minimum amount of a substance that an analytical process can reliably detect.

LOQ - The lowest concentration that produces a quantitative result within specified limits of precision and bias.

DL- The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence.

Checklists used in the verification process are in Attachment I and sample results with outliers requiring qualification are in Attachment II.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, at 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

VOC- 8260

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix spike/spike duplicate recovery criteria and RPD

Blanks

Methylene chloride was detected in FWGTEAMRQL-TRIPBLANK at 0.63 µg/L. The methylene chloride result for FWGEQUIPRINSE4-0566-GW was qualified, "B".

FWGEQUIPRINSE4-0566-GW had methylene chloride detected at 0.66 µg/L, chloroform at 4.1 µg/L and bromodichloromethane at 0.38 µg/L. There were no detected concentrations of bromodichloromethane, chloroform or methylene chloride reported for the associated field samples, so no qualifications were made for the noted equipment rinse contamination.

No additional QC outliers were noted.

SVOCs- 8270C

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48152

Date: June 24, 2015
Revision: 1

No QC outliers were noted.

Pesticides- 8081A

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- DDT and Endrin breakdown criteria
- Retention time criteria
- ICV criteria
- CCV Criteria
- Method /field blank criteria
- LCS Recoveries
- Field Duplicate Criteria
- LOD and MRL verification criteria
- Matrix Spike Recovery Criteria and RPD
- Surrogate Recoveries
- Second Column confirmation criteria

No QC outliers were noted.

PCB- 8082

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- Retention time criteria
- ICV criteria
- CCV Criteria
- Method /field blank criteria
- LCS Recoveries
- Field Duplicate Criteria
- LOD and MRL verification criteria
- Matrix Spike Recovery Criteria and RPD
- Surrogate Recoveries
- Second Column confirmation criteria

Second Column Confirmation

No detected concentrations were reported for the field samples that required second column confirmation.

No QC outliers were noted.

Metals - 6010B

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

- Post Digestion Spike Criteria

Blanks
The CCBs analyzed 3/16/15 had chromium detected at 0.946 µg/L to 1.3 µg/L, cobalt at 0.858 µg/L, barium from 1.47 µg/L to 1.57 µg/L, copper at 1.96 µg/L, magnesium at 59.5 µg/L, manganese from 123 µg/L to 131 µg/L and potassium from 0.775 µg/L to 1.38 µg/L. The chromium results for samples FWGRQLmw-008c-0543-GF, FWGRQLmw-007c-0542-GF, FWGLL12mw-242c-0538-GF, FWGLL12mw-187c-0537-GF and FWGLL12mw-245c-0539-GF were qualified "U" as the reported chromium concentrations were less than five times blank contamination. No additional qualifications were made for the barium, cobalt, copper, magnesium, manganese or potassium contamination as any detected concentrations reported for the bracketed field samples were greater than five times contamination.

Calcium was detected in the method blank at 324 µg/L, magnesium at 90.7 µg/L and manganese at 0.650 µg/L. No qualification of the data was required, as there were no detected calcium, manganese or magnesium concentrations reported for the associated field samples less than five times method blank contamination.

Laboratory Duplicate RPD
The laboratory duplicate analyzed on sample FWGRQLmw-007c-0542-GF had an RPD above control limits of 20% for chromium at 30%. No qualification of the data was required as the detected chromium concentration was less than the LOQ.

No additional QC outliers were noted.

Metals - 6020
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning Criteria
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field Duplicate RPD Criteria
- Internal standards recovery
- Post spike Recovery Criteria

Blanks
The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony results for samples FWGRQLmw-008c-0543-GF and FWGRQLmw-007c-0542-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results reported for the associated samples.

The CCBs analyzed 3/17/15 had antimony detected from 0.296 µg/L to 0.306 µg/L, beryllium from 0.054 µg/L to 0.150 µg/L and cadmium from 0.0850 µg/L to 0.121 µg/L . The antimony results for samples FWGRQLmw-008c-0543-GF and FWGRQLmw-007c-0542-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results reported for the associated samples less than five times blank contamination.

No other QC outliers were noted.

Mercury - 7470A

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

No QC outliers were noted.

Cyanide- 9012

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- High and Low Distilled Standard
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

No QC outliers were noted.

Explosives- 8330

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration Criteria
- ICV and CCV criteria
- Retention time criteria
- LOD and MRL verification criteria
- Surrogate recovery criteria
- Method /field blank criteria
- LCS/LCD Recovery and RPD Criteria
- Matrix spike/spike duplicate recovery criteria and RPD
- Second column confirmation RPD
- Field Duplicate RPD

No QC outliers were noted.

Nitroguanidine- 8330M

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration criteria
- Retention time criteria

- LOD and MRL verification criteria
- ICV and CCV criteria
- Method /field blank criteria
- LCS/LCSD percent recoveries and RPD value criteria
- Matrix spike recovery criteria
- Second column confirmation
- Field Duplicate RPD

No QC outliers were noted.

Nitrocellulose – WS-WC-0050

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD percent recoveries and RPD value criteria
- MS/MSD percent recoveries and RPD
- Field Duplicate RPD

Blanks

Nitrocellulose was detected in the method blank from batch 69251 at 1.05 mg/L. No qualification of the data was required as there were no detected concentration of nitrocellulose reported for the associated field samples.

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

No additional QC outliers were noted.

Nitrate/Nitrite– 353.2

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD percent recoveries and RPD value criteria
- MS/MSD percent recoveries

Blanks

The ICB analyzed 4/7/15 @ 1416 had nitrate/nitrite detected at 0.006mg/L and bracketing CCBs from 0.004mg/L to 0.007mg/L. The method blank had nitrate/nitrate detected at 0.008mg/L. The nitrate/nitrite result for sample FWGEQUIPRINSE4-0566-GW was qualified, "U", as the detected result was <5x instrument blank contamination. No additional qualification was required as the detected concentrations for the remaining samples were greater than 5x blank contamination.

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48152

Date: June 24, 2015
Revision: 1

FWGEQUIPRINSE4-0566-GW had nitrate/nitrite detected at 0.014mg/L The nitrate-nitrite results for samples FWGLL12mw-242c-0538-GW and FWGLL12mw-245c-0539-GW were qualified, "B" as the reported concentrations were less than five times rinse blank contamination.

Field Duplicate RPD
A field duplicate was not submitted with this set of samples.

No additional QC outliers were noted.

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Sample Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48152-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-48152-1	FWGTEAMRQL-TRIPBLANK	Water	03/12/15 08:00	03/12/15 17:53
240-48152-2	FWGRQLmw-008C-0543-GW	Water	03/12/15 09:57	03/12/15 17:53
240-48152-3	FWGRQLmw-008C-0543-GF	Water	03/12/15 09:57	03/12/15 17:53
240-48152-4	FWGRQLmw-007C-0542-GW	Water	03/12/15 10:08	03/12/15 17:53
240-48152-5	FWGRQLmw-007C-0542-GF	Water	03/12/15 10:08	03/12/15 17:53
240-48152-6	FWGRQLmw-009C-0544-GW	Water	03/12/15 10:41	03/12/15 17:53
240-48152-7	FWGRQLmw-009C-0544-GF	Water	03/12/15 10:41	03/12/15 17:53
240-48152-8	FWGRQLmw-DUP5-0561-GW	Water	03/12/15 11:35	03/12/15 17:53
240-48152-9	FWGRQLmw-DUP5-0561-GF	Water	03/12/15 11:35	03/12/15 17:53
240-48152-10	FWGEQUIPRINSE4-0566-GW	Water	03/12/15 16:30	03/12/15 17:53
240-48152-11	FWGLL12mw-242C-0538-GW	Water	03/12/15 15:45	03/12/15 17:53
240-48152-12	FWGLL12mw-242C-0538-GF	Water	03/12/15 15:45	03/12/15 17:53
240-48152-13	FWGLL12mw-187C-0537-GW	Water	03/12/15 15:01	03/12/15 17:53
240-48152-14	FWGLL12mw-187C-0537-GF	Water	03/12/15 15:01	03/12/15 17:53
240-48152-15	FWGLL12mw-245C-0539-GW	Water	03/12/15 15:14	03/12/15 17:53
240-48152-16	FWGLL12mw-245C-0539-GF	Water	03/12/15 15:14	03/12/15 17:53

Method Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48152-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
8081A	Organochlorine Pesticides (GC)	SW846	TAL CAN
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL CAN
8330 Modified	Nitroguanidine (HPLC)	SW846	TAL SAC
8330A	Nitroaromatics and Nitramines	SW846	TAL SAC
6010B	Metals (ICP)	SW846	TAL CAN
6020	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAC
9012A	Cyanide, Total and/or Amenable	SW846	TAL CAN
WS-WC-0050	Nitrocellulose	TAL-SAC	TAL SAC

Protocol References:

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

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

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS



240-48152 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

TestAmerica Canton
4101 Shuffel Street, N. W.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: J. Miller	Site Contact: E Corbin	Date: 3-12-15	COC No: CAL 31215
Company Name: EQM	Tel/Fax:	Lab Contact: M Loeb	Carrier: PL LAB PICKUP	1 of 1 COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler: Colleen Lear
City/State/Zip: Cincinnati OH 45240	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513 825 7500	TAT if different from Below 21			Walk-in Client:
Fax: 513 825 7495	☐ 2 weeks			Lab Sampling:
Project Name: RVAAP-16	☐ 1 week			
Site: Ravenna Ohio	☐ 2 days			Job / SDG No.:
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOC 8260	SVOC 4 8270	Pest 8081	PCB 8082	EXPLO 8330	Propellants	Cyanide 9012	Metals 6010/6020/7470	Sample Specific Notes:
~~FWG RQLm~~ FWG TEAM RQL-Tripblank	3-12-15	0800	G	GW	2	N	N	X								#20
FWGRQLmw-008C-0543-GW	3-12-15	0957	G	GW	13	N	N	3	2	2	2	1	2	1		cooler #20
FWGRQLmw-008C-0543-GF	↓	↓	↓	↓	1	Y	Y								1	cooler #20
FWGRQLmw-007C-0542-GW	3-12-15	1008	G	GW	39	N	N	39								MS/MSD 20
FWGRQLmw-009C-0544-GW	3-12-15	1049	G	GW	3	N	N	3								20
FWGRQLmw-DUP5-0561-GW	3-12-15	1135	G	GW	3	N	N	3								20
FWGRQLUPRinse4-0566-GW	3-12-15	1630	G	GW	3	N	N	3								20

EC 3/12/15

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Special Instructions/QC Requirements & Comments:
All VOAs for this chain + others all day are in the cooler #20 other analysis on other chains & not in this cooler

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Erik Corbin	EQM	3/12/15 17:05	RC [signature]	TestAmerica	3/12/15 1705
R. [signature]	Test 3/12/15	1753	[signature]	TA	3-12-15 1753

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact			
Company Name: EQM	Project Manager: John Miller	Site Contact: E. Corbin	Date: 3/12/15
Address: 1800 Carillon Blvd.	Tel/Fax:	Lab Contact: M. Loeb	Carrier: Lab Pickup
City/State/Zip: Cincinnati OH 45240	Analysis Turnaround Time: ☒ CALENDAR DAYS ☐ WORKING DAYS		
Phone: 513-825-7500	TAT if different from Below 21		
Fax:	☐ 2 weeks		
Project Name: RVAAP 66 (OH)	☐ 1 week		
Site:	☐ 2 days		
P O #	☐ 1 day		

COC No: EC031215
1 of 1 COCs
Sampler: EC
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	SVOC 4 (8270)	Pesticides (8081)	PCBs (8082)	Explosives (8330)	Propellants	Cyanide 9012	Metals (6010/6020/7470)	SVOC 1 (8270)	NO_3/NO_2 (353.2)	Cooler ID ~~Sample Specific Notes~~
FWGRQLmw-009C-0544-GW	3/12/15	10:41	G	GW	10	N	N	X	X	X	X	X	X				A-1
FWGRQLmw-009C-0544-GF	3/12/15	10:41	G	GW	1	Y	N							X			A-1
FWGRQLmw-DUP5-0561-GW	3/12/15	11:35	G	GW	10	N	N	X	X	X	X	X	X				12
FWGRQLmw-DUP5-0561-GF	3/12/15	11:35	G	GW	1	Y	N							X			12
FWGLL12mw-242C-0538-GW	3/12/15	15:45	G	GW	6	N	N				X	X			X	X	C222
FWGLL12mw-242C-0538-GF	3/12/15	15:45	G	GW	1	Y	N							X			C222
FWGLL12mw-187C-0537-GW	3/12/15	15:01	G	GW	6	N	N				X	X			X	X	727
FWGLL12mw-187C-0537-GF	3/12/15	15:01	G	GW	1	Y	N							X			727
FWGEQUIPRinse4-0566-GW	3/12/15	16:30	G	W	12	N	N	X	X	X	X	X	X	X		X	B81

EC 3/12/15

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: Metals are field filtered.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Erik Corbin	EQM	03/12/15 1705	[signature]	TestAmerica	3/12/15 1705
[signature]	Test. 3/12/15	1753	[signature]	TA	3-12-15 1753
			Received in Laboratory by:		

TestAmerica Canton
4101 Shuffel Street, N. U.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Client Contact	Project Manager: JOHN MILLER	Site Contact: ERIK CORBIN	Date: 03/12/2015	COC No: SAS03/12/15
Company Name: EQM	Tel/Fax: (513) 825-7500 / 7495	Lab Contact: MARK LOEB	Carrier: LAB PICKUP	1 of 1 COCs
Address: 1800 CAROLLON BLVD	Analysis Turnaround Time			Sampler: SAS / RR
City/State/Zip: CINCINNATI, OH 45240	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (513) 825-7500	TAT if different from Below			Walk-in Client:
Fax: (513) 825-7495	☒ 3 weeks			Lab Sampling:
Project Name: RVBAP66 (OH)	☐ 1 week			
Site: RAVENNA, OHIO 30174.0016.001.10.1	☐ 2 days			Job / SDG No.:
P.O #	☐ 1 day			

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=Grab) | Matrix | # of Cont. | Filtered Sample (Y/N) | Perform MS / MSD (Y/N) | VOC 624 | SVOC 8270 | Diesel 8015 | Gasoline 8015 | Explo 8330 | Propellants 8330 | Cyanide 9012 | Perchlorate 314.0 | Metals 6020/7470 | SVOC 8270 | Nitrates 300.0 | | |

TestAmerica Canton Sample Receipt Form/Narrative — Login # : 48152
Canton Facility

Client EQM Site Name _____ Cooler unpacked by:

Cooler Received on 3-12-14 Opened on 3-12-14

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off ~~TestAmerica Courier~~ Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box ~~Other~~ _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt

~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~

IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C ☑ See Multiple Cooler Form

~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~

IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2.	Were custody seals on the outside of the cooler(s)? If Yes Quantity 10	(Yes)	No	
	-Were custody seals on the outside of the cooler(s) signed & dated?	(Yes)	No	NA
	-Were custody seals on the bottle(s)?	Yes	(No)	
3.	Shippers' packing slip attached to the cooler(s)?	Yes	(No)	
4.	Did custody papers accompany the sample(s)?	(Yes)	No	
5.	Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No	
6.	Was/were the sampler(s) clearly identified on the COC?	(Yes)	No	
7.	Did all bottles arrive in good condition (Unbroken)?	(Yes)	No	
8.	Could all bottle labels be reconciled with the COC?	(Yes)	No	
9.	Were correct bottle(s) used for the test(s) indicated?	(Yes)	No	
10.	Sufficient quantity received to perform indicated analyses?	(Yes)	No	
11.	Were sample(s) at the correct pH upon receipt?	(Yes)	No	NA pH Strip Lot# HC425511
12.	Were VOAs on the COC?	(Yes)	No	
13.	Were air bubbles >6 mm in any VOA vials?	Yes	(No)	NA
14.	Was a trip blank present in the cooler(s)? Trip Blank Lot # _____	(Yes)	No	

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES — Samples processed by: NS

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica Multiple Cooler Receipt Form/Narrative
Canton Facility

Login # : 48152

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
#20	4	4.2	4.7	ICE
A-1		3.2	3.7	
12		1.8	2.3	
C222		2.0	2.5	
727		2.0	2.5	
B81		3.0	3.5	
40		0.8	1.3	
C9		0.4	0.9	
13		1.9	2.4	
M-31		2.3	2.8	

Job ID: 240-48152-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Environmental Quality Mgt., Inc.

Project: RVAAP 66 (OH)

Report Number: 240-48152-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The 353.2 Nitrate Nitrite as N, 353.2 Nitrocellulose, 8330 Nitroguanidine and 8330A Explosives analysis were performed at the TestAmerica Sacramento Laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

All parameters for which TestAmerica North Canton has certification were evaluated to the limit of detection (LOD) and include qualified results where applicable. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

RECEIPT

The samples were received on 3/12/2015 5:53 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 10 coolers at receipt time were 0.9° C, 1.3° C, 2.3° C, 2.4° C, 2.5° C, 2.5° C, 2.8° C, 3.5° C, 3.7° C and 4.7° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGTEAMRQL-TRIPBLANK (240-48152-1), FWGRQLmw-008C-0543-GW (240-48152-2), FWGRQLmw-007C-0542-GW (240-48152-4), FWGRQLmw-009C-0544-GW (240-48152-6), FWGRQLmw-DUP5-0561-GW (240-48152-8) and FWGEQUIPRINSE4-0566-GW (240-48152-10) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B DoD. The samples were analyzed on 03/18/2015.

Job ID: 240-48152-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

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

SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGRQLmw-008C-0543-GW (240-48152-2), FWGRQLmw-007C-0542-GW (240-48152-4), FWGRQLmw-009C-0544-GW (240-48152-6), FWGRQLmw-DUP5-0561-GW (240-48152-8), FWGEQUIPRINSE4-0566-GW (240-48152-10), FWGLL12mw-242C-0538-GW (240-48152-11), FWGLL12mw-187C-0537-GW (240-48152-13) and FWGLL12mw-245C-0539-GW (240-48152-15) were analyzed for semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8270C. The samples were prepared on 03/13/2015 and analyzed on 03/28/2015.

Surrogates are added during the extraction process prior to dilution. When the sample is diluted, surrogate recoveries are diluted out and no corrective action is required.

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

NITROGUANIDINE (HPLC)

Samples FWGRQLmw-008C-0543-GW (240-48152-2), FWGRQLmw-007C-0542-GW (240-48152-4), FWGRQLmw-009C-0544-GW (240-48152-6), FWGRQLmw-DUP5-0561-GW (240-48152-8), FWGEQUIPRINSE4-0566-GW (240-48152-10), FWGLL12mw-242C-0538-GW (240-48152-11), FWGLL12mw-187C-0537-GW (240-48152-13) and FWGLL12mw-245C-0539-GW (240-48152-15) were analyzed for nitroguanidine (HPLC) in accordance with EPA SW-846 Method 8330_Ngu. The samples were prepared on 03/17/2015 and analyzed on 03/19/2015.

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

CHLORINATED PESTICIDES

Samples FWGRQLmw-008C-0543-GW (240-48152-2), FWGRQLmw-007C-0542-GW (240-48152-4), FWGRQLmw-009C-0544-GW (240-48152-6), FWGRQLmw-DUP5-0561-GW (240-48152-8) and FWGEQUIPRINSE4-0566-GW (240-48152-10) were analyzed for chlorinated pesticides in accordance with EPA SW-846 Method 8081A DoD. The samples were prepared on 03/17/2015 and analyzed on 03/20/2015.

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

POLYCHLORINATED BIPHENYLS (PCBS)

Samples FWGRQLmw-008C-0543-GW (240-48152-2), FWGRQLmw-007C-0542-GW (240-48152-4), FWGRQLmw-009C-0544-GW (240-48152-6), FWGRQLmw-DUP5-0561-GW (240-48152-8) and FWGEQUIPRINSE4-0566-GW (240-48152-10) were analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082 DoD. The samples were prepared on 03/17/2015 and analyzed on 03/20/2015.

Surrogates are added during the extraction process prior to dilution. When the sample dilution is 5X or greater, surrogate recoveries are diluted out and no corrective action is required. All of the samples in this data set analyzed for PCBs were subjected to the sulfuric acid cleanup procedure before instrumental analysis, per EPA Method 3665A.

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

EXPLOSIVES

Samples FWGRQLmw-008C-0543-GW (240-48152-2), FWGRQLmw-007C-0542-GW (240-48152-4), FWGRQLmw-009C-0544-GW (240-48152-6), FWGRQLmw-DUP5-0561-GW (240-48152-8), FWGEQUIPRINSE4-0566-GW (240-48152-10), FWGLL12mw-242C-0538-GW (240-48152-11), FWGLL12mw-187C-0537-GW (240-48152-13) and FWGLL12mw-245C-0539-GW (240-48152-15) were analyzed for explosives in accordance with EPA SW-846 Method 8330A. The samples were prepared on 03/17/2015 and analyzed on 03/28/2015 and 03/31/2015.

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

TOTAL RECOVERABLE METALS (ICP)

Samples FWGRQLmw-008C-0543-GF (240-48152-3), FWGRQLmw-007C-0542-GF (240-48152-5), FWGRQLmw-009C-0544-GF

Job ID: 240-48152-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

(240-48152-7), FWGRQLmw-DUP5-0561-GF (240-48152-9), FWGEQUIPRINSE4-0566-GW (240-48152-10), FWGLL12mw-242C-0538-GF (240-48152-12), FWGLL12mw-187C-0537-GF (240-48152-14) and FWGLL12mw-245C-0539-GF (240-48152-16) were analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010B DoD. The samples were prepared on 03/13/2015 and analyzed on 03/16/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

Calcium, Magnesium and Manganese were detected in method blank MB 240-171971/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Chromium exceeded the RPD limit for the duplicate of sample FWGRQLmw-007C-0542-GFDU (240-48152-5). Refer to the QC report for details.

Sample FWGLL12mw-187C-0537-GF (240-48152-14)[2X] required dilution prior to analysis due to the nature of the sample matrix. 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.

TOTAL RECOVERABLE METALS (ICPMS)

Samples FWGRQLmw-008C-0543-GF (240-48152-3), FWGRQLmw-007C-0542-GF (240-48152-5), FWGRQLmw-009C-0544-GF (240-48152-7), FWGRQLmw-DUP5-0561-GF (240-48152-9), FWGEQUIPRINSE4-0566-GW (240-48152-10), FWGLL12mw-242C-0538-GF (240-48152-12), FWGLL12mw-187C-0537-GF (240-48152-14) and FWGLL12mw-245C-0539-GF (240-48152-16) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020 DoD. The samples were prepared on 03/13/2015 and analyzed on 03/17/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

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

TOTAL MERCURY

Samples FWGRQLmw-008C-0543-GF (240-48152-3), FWGRQLmw-007C-0542-GF (240-48152-5), FWGRQLmw-009C-0544-GF (240-48152-7), FWGRQLmw-DUP5-0561-GF (240-48152-9), FWGEQUIPRINSE4-0566-GW (240-48152-10), FWGLL12mw-242C-0538-GF (240-48152-12), FWGLL12mw-187C-0537-GF (240-48152-14) and FWGLL12mw-245C-0539-GF (240-48152-16) were analyzed for total mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 03/13/2015 and analyzed on 03/16/2015.

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

NITRATE-NITRITE AS NITROGEN

Samples FWGEQUIPRINSE4-0566-GW (240-48152-10), FWGLL12mw-242C-0538-GW (240-48152-11), FWGLL12mw-187C-0537-GW (240-48152-13) and FWGLL12mw-245C-0539-GW (240-48152-15) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 04/07/2015.

Nitrate Nitrite as N was detected in method blank MB 320-70595/10 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.

Sample FWGLL12mw-187C-0537-GW (240-48152-13)[1000X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Job ID: 240-48152-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

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

NITROCELLULOSE

Samples FWGRQLmw-008C-0543-GW (240-48152-2), FWGRQLmw-007C-0542-GW (240-48152-4), FWGRQLmw-009C-0544-GW (240-48152-6), FWGRQLmw-DUP5-0561-GW (240-48152-8), FWGEQUIPRINSE4-0566-GW (240-48152-10), FWGLL12mw-242C-0538-GW (240-48152-11), FWGLL12mw-187C-0537-GW (240-48152-13) and FWGLL12mw-245C-0539-GW (240-48152-15) were analyzed for Nitrocellulose in accordance with EPA Method 353.2. The samples were prepared on 03/19/2015 and 03/26/2015 and analyzed on 03/20/2015 and 03/27/2015.

Nitrocellulose was detected in method blank MB 320-68441/1-B 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.

The following samples were re-extracted due method blank contamination. (240-48152-13 MS), (240-48152-13 MSD), FWGLL12mw-187C-0537-GW (240-48152-13).

The method blank for batch 69251 contained NITROCELLULOSE above the method detection limit. This target analyte concentration was less than the reporting limit (RL) but greater than the DoD criteria (contamination less than 1/2 the RL). All of the following samples were non-detect; results were either below 1/2 the RL or non-detect. These samples are being reported. (LCS 320-68441/2-B), (MB 320-68441/1-B), FWGEQUIPRINSE4-0566-GW (240-48152-10), FWGLL12mw-242C-0538-GW (240-48152-11), FWGLL12mw-245C-0539-GW (240-48152-15), FWGRQLmw-007C-0542-GW (240-48152-4), FWGRQLmw-007C-0542-GW (240-48152-4 MS), FWGRQLmw-007C-0542-GW (240-48152-4 MSD), FWGRQLmw-008C-0543-GW (240-48152-2), FWGRQLmw-009C-0544-GW (240-48152-6), FWGRQLmw-DUP5-0561-GW (240-48152-8)

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

TOTAL CYANIDE

Samples FWGRQLmw-008C-0543-GW (240-48152-2), FWGRQLmw-007C-0542-GW (240-48152-4), FWGRQLmw-009C-0544-GW (240-48152-6), FWGRQLmw-DUP5-0561-GW (240-48152-8) and FWGEQUIPRINSE4-0566-GW (240-48152-10) were analyzed for total cyanide in accordance with EPA SW-846 Method 9012A DoD. The samples were prepared and analyzed on 03/24/2015.

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

Client Sample ID: FWGTEAMRQL-TRIPBLANK

Lab Sample ID: 240-48152-1

Date Collected: 03/12/15 08:00
Matrix: Water

Date Received: 03/12/15 17:53

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 16:41	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 16:41	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 16:41	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 16:41	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 16:41	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 16:41	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 16:41	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 16:41	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 16:41	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 16:41	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 16:41	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 16:41	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 16:41	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 16:41	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 16:41	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 16:41	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 16:41	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 16:41	1
Chloroform	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 16:41	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 16:41	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 16:41	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 16:41	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		03/18/15 16:41	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 16:41	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 16:41	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 16:41	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 16:41	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 16:41	1
Methylene Chloride	**0.63**	J	1.0	0.50	0.28	ug/L		03/18/15 16:41	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 16:41	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 16:41	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 16:41	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 16:41	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 16:41	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 16:41	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 16:41	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 16:41	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 16:41	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 16:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 120*		*03/18/15 16:41*	*1*
4-Bromofluorobenzene (Surr)	*90*		*75 - 120*		*03/18/15 16:41*	*1*
Toluene-d8 (Surr)	*93*		*85 - 120*		*03/18/15 16:41*	*1*
Dibromofluoromethane (Surr)	*99*		*85 - 115*		*03/18/15 16:41*	*1*

Client Sample ID: FWGRQLmw-008C-0543-GW
Lab Sample ID: 240-48152-2
Date Collected: 03/12/15 09:57
Matrix: Water
Date Received: 03/12/15 17:53

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:03	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:03	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 17:03	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 17:03	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 17:03	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 17:03	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 17:03	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:03	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 17:03	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 17:03	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 17:03	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 17:03	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 17:03	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 17:03	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 17:03	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 17:03	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 17:03	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 17:03	1
Chloroform	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 17:03	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 17:03	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 17:03	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 17:03	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		03/18/15 17:03	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 17:03	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 17:03	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 17:03	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 17:03	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 17:03	1
Methylene Chloride	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 17:03	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 17:03	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 17:03	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 17:03	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:03	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 17:03	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 17:03	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 17:03	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 17:03	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 17:03	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 120*		*03/18/15 17:03*	*1*
4-Bromofluorobenzene (Surr)	*89*		*75 - 120*		*03/18/15 17:03*	*1*
Toluene-d8 (Surr)	*91*		*85 - 120*		*03/18/15 17:03*	*1*
Dibromofluoromethane (Surr)	*99*		*85 - 115*		*03/18/15 17:03*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.095	U	0.19	0.095	0.042	ug/L		03/28/15 15:48	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		03/28/15 15:48	1

Client Sample ID: FWGRQLmw-008C-0543-GW
Date Collected: 03/12/15 09:57
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-2
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.095	U	0.19	0.095	0.084	ug/L		03/28/15 15:48	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		03/28/15 15:48	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		03/28/15 15:48	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		03/28/15 15:48	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		03/28/15 15:48	1
Benzoic acid	19	U	24	19	9.5	ug/L		03/28/15 15:48	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		03/28/15 15:48	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		03/28/15 15:48	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		03/28/15 15:48	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		03/28/15 15:48	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 15:48	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		03/28/15 15:48	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/28/15 15:48	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		03/28/15 15:48	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 15:48	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 15:48	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		03/28/15 15:48	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		03/28/15 15:48	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		03/28/15 15:48	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		03/28/15 15:48	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		03/28/15 15:48	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		03/28/15 15:48	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		03/28/15 15:48	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		03/28/15 15:48	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		03/28/15 15:48	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		03/28/15 15:48	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		03/28/15 15:48	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/28/15 15:48	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		03/28/15 15:48	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/28/15 15:48	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 15:48	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		03/28/15 15:48	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		03/28/15 15:48	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/28/15 15:48	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		03/28/15 15:48	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		03/28/15 15:48	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		03/28/15 15:48	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		03/28/15 15:48	1
Hexachlorocyclopentadiene	0.48	U	9.5	0.48	0.23	ug/L		03/28/15 15:48	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		03/28/15 15:48	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		03/28/15 15:48	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		03/28/15 15:48	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		03/28/15 15:48	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		03/28/15 15:48	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		03/28/15 15:48	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		03/28/15 15:48	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 15:48	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		03/28/15 15:48	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		03/28/15 15:48	1

Client Sample ID: FWGRQLmw-008C-0543-GW
Date Collected: 03/12/15 09:57
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-2
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.48	U	1.9	0.48	0.27	ug/L		03/28/15 15:48	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		03/28/15 15:48	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		03/28/15 15:48	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		03/28/15 15:48	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		03/28/15 15:48	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		03/28/15 15:48	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		03/28/15 15:48	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		03/28/15 15:48	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		03/28/15 15:48	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		03/28/15 15:48	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		03/28/15 15:48	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		03/28/15 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*69*		*50 - 110*	*03/13/15 09:20*	*03/28/15 15:48*	*1*
2-Fluorophenol (Surr)	*67*		*20 - 110*	*03/13/15 09:20*	*03/28/15 15:48*	*1*
Nitrobenzene-d5 (Surr)	*63*		*40 - 110*	*03/13/15 09:20*	*03/28/15 15:48*	*1*
Phenol-d5 (Surr)	*70*		*10 - 115*	*03/13/15 09:20*	*03/28/15 15:48*	*1*
Terphenyl-d14 (Surr)	*67*		*50 - 135*	*03/13/15 09:20*	*03/28/15 15:48*	*1*
2,4,6-Tribromophenol (Surr)	*83*		*40 - 125*	*03/13/15 09:20*	*03/28/15 15:48*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.052	U	0.052	0.052	0.019	ug/L		03/20/15 01:07	1
4,4'-DDE	0.052	U	0.052	0.052	0.0094	ug/L		03/20/15 01:07	1
4,4'-DDT	0.052	U	0.052	0.052	0.015	ug/L		03/20/15 01:07	1
Aldrin	0.052	U	0.052	0.052	0.014	ug/L		03/20/15 01:07	1
alpha-BHC	0.052	U	0.052	0.052	0.015	ug/L		03/20/15 01:07	1
alpha-Chlordane	0.052	U	0.052	0.052	0.013	ug/L		03/20/15 01:07	1
beta-BHC	0.052	U	0.052	0.052	0.014	ug/L		03/20/15 01:07	1
delta-BHC	0.052	U	0.052	0.052	0.030	ug/L		03/20/15 01:07	1
Dieldrin	0.052	U	0.052	0.052	0.014	ug/L		03/20/15 01:07	1
Endosulfan I	0.052	U	0.052	0.052	0.017	ug/L		03/20/15 01:07	1
Endosulfan II	0.052	U	0.052	0.052	0.016	ug/L		03/20/15 01:07	1
Endosulfan sulfate	0.052	U	0.052	0.052	0.011	ug/L		03/20/15 01:07	1
Endrin	0.052	U	0.052	0.052	0.013	ug/L		03/20/15 01:07	1
Endrin aldehyde	0.052	U	0.052	0.052	0.0083	ug/L		03/20/15 01:07	1
Endrin ketone	0.052	U	0.052	0.052	0.0094	ug/L		03/20/15 01:07	1
gamma-BHC (Lindane)	0.052	U	0.052	0.052	0.013	ug/L		03/20/15 01:07	1
gamma-Chlordane	0.052	U	0.052	0.052	0.010	ug/L		03/20/15 01:07	1
Heptachlor	0.052	U	0.052	0.052	0.0052	ug/L		03/20/15 01:07	1
Heptachlor epoxide	0.052	U	0.052	0.052	0.015	ug/L		03/20/15 01:07	1
Methoxychlor	0.052	U	0.10	0.052	0.013	ug/L		03/20/15 01:07	1
Toxaphene	1.0	U	2.1	1.0	0.20	ug/L		03/20/15 01:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*74*		*30 - 135*	*03/17/15 14:13*	*03/20/15 01:07*	*1*
DCB Decachlorobiphenyl	*76*		*30 - 135*	*03/17/15 14:13*	*03/20/15 01:07*	*1*
Tetrachloro-m-xylene	*78*		*25 - 140*	*03/17/15 14:13*	*03/20/15 01:07*	*1*
Tetrachloro-m-xylene	*78*		*25 - 140*	*03/17/15 14:13*	*03/20/15 01:07*	*1*

Client Sample ID: FWGRQLmw-008C-0543-GW
Date Collected: 03/12/15 09:57
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-2
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.21	U	0.52	0.21	0.18	ug/L		03/20/15 09:20	1
Aroclor-1221	0.21	U	0.52	0.21	0.14	ug/L		03/20/15 09:20	1
Aroclor-1232	0.21	U	0.52	0.21	0.17	ug/L		03/20/15 09:20	1
Aroclor-1242	0.42	U	0.52	0.42	0.23	ug/L		03/20/15 09:20	1
Aroclor-1248	0.21	U	0.52	0.21	0.10	ug/L		03/20/15 09:20	1
Aroclor-1254	0.21	U	0.52	0.21	0.17	ug/L		03/20/15 09:20	1
Aroclor-1260	0.21	U	0.52	0.21	0.18	ug/L		03/20/15 09:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*74*		*40 - 140*	*03/17/15 09:59*	*03/20/15 09:20*	*1*
Tetrachloro-m-xylene	*79*		*40 - 140*	*03/17/15 09:59*	*03/20/15 09:20*	*1*
DCB Decachlorobiphenyl	*74*		*40 - 135*	*03/17/15 09:59*	*03/20/15 09:20*	*1*
DCB Decachlorobiphenyl	*85*		*40 - 135*	*03/17/15 09:59*	*03/20/15 09:20*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 11:30	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		03/28/15 06:03	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 06:03	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 06:03	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/28/15 06:03	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/28/15 06:03	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 06:03	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/28/15 06:03	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		03/28/15 06:03	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/28/15 06:03	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 06:03	1
HMX	0.050	U	0.15	0.050	0.036	ug/L		03/28/15 06:03	1
RDX	0.050	U	0.15	0.050	0.036	ug/L		03/28/15 06:03	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 06:03	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 06:03	1
Nitroglycerin	0.50	U	0.65	0.50	0.33	ug/L		03/28/15 06:03	1
PETN	0.50	U	0.65	0.50	0.30	ug/L		03/28/15 06:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*91*		*79 - 111*	*03/17/15 14:16*	*03/28/15 06:03*	*1*
3,4-Dinitrotoluene	*94*		*79 - 111*	*03/17/15 14:16*	*03/31/15 11:14*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		03/24/15 14:24	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/20/15 18:27	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48152-1

Client Sample ID: FWGRQLmw-008C-0543-GF
Date Collected: 03/12/15 09:57
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-3
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**7.8**	J	10	10	2.9	ug/L		03/16/15 10:49	1
Chromium	**0.68**	J	7.0	4.0	0.55	ug/L		03/16/15 10:49	1
Cobalt	**3.2**	J	7.0	4.0	0.56	ug/L		03/16/15 10:49	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/16/15 10:49	1
Selenium	10	U	15	10	4.0	ug/L		03/16/15 10:49	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/16/15 10:49	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/16/15 10:49	1
Barium	**37**	J	200	5.0	1.0	ug/L		03/16/15 10:49	1
Calcium	**31000**		5000	1000	260	ug/L		03/16/15 10:49	1
Copper	10	U	25	10	1.9	ug/L		03/16/15 10:49	1
Magnesium	**69000**		5000	300	55	ug/L		03/16/15 10:49	1
Manganese	**400**		15	5.0	0.46	ug/L		03/16/15 10:49	1
Nickel	**3.9**	J	40	5.0	0.76	ug/L		03/16/15 10:49	1
Potassium	**1700**	J	5000	900	70	ug/L		03/16/15 10:49	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 18:40	1
Antimony	**0.34**	J	2.0	1.0	0.33	ug/L		03/17/15 18:40	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 18:40	1
Cadmium	**0.42**	J	2.0	1.0	0.40	ug/L		03/17/15 18:40	1
Iron	**23000**		150	100	44	ug/L		03/17/15 18:40	1
Sodium	**2100**		1000	400	160	ug/L		03/17/15 18:40	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 18:40	1
Zinc	50	U	50	50	27	ug/L		03/17/15 18:40	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/16/15 13:17	1

Client Sample ID: FWGRQLmw-007C-0542-GW
Date Collected: 03/12/15 10:08
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-4
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 13:16	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 13:16	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 13:16	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 13:16	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 13:16	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 13:16	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 13:16	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 13:16	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 13:16	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 13:16	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 13:16	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 13:16	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 13:16	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 13:16	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 13:16	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 13:16	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 13:16	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 13:16	1
Chloroform	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 13:16	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 13:16	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 13:16	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 13:16	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		03/18/15 13:16	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 13:16	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 13:16	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 13:16	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 13:16	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 13:16	1
Methylene Chloride	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 13:16	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 13:16	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 13:16	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 13:16	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 13:16	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 13:16	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 13:16	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 13:16	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 13:16	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 13:16	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 13:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 120*		*03/18/15 13:16*	*1*
4-Bromofluorobenzene (Surr)	*90*		*75 - 120*		*03/18/15 13:16*	*1*
Toluene-d8 (Surr)	*94*		*85 - 120*		*03/18/15 13:16*	*1*
Dibromofluoromethane (Surr)	*99*		*85 - 115*		*03/18/15 13:16*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.099	U	0.20	0.099	0.044	ug/L		03/28/15 16:13	1
Acenaphthylene	0.099	U	0.20	0.099	0.048	ug/L		03/28/15 16:13	1

Client Sample ID: FWGRQLmw-007C-0542-GW
Date Collected: 03/12/15 10:08
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-4
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.099	U	0.20	0.099	0.087	ug/L		03/28/15 16:13	1
Benzo[a]anthracene	0.099	U	0.20	0.099	0.029	ug/L		03/28/15 16:13	1
Benzo[a]pyrene	0.099	U	0.20	0.099	0.051	ug/L		03/28/15 16:13	1
Benzo[b]fluoranthene	0.099	U	0.20	0.099	0.039	ug/L		03/28/15 16:13	1
Benzo[g,h,i]perylene	0.099	U	0.20	0.099	0.046	ug/L		03/28/15 16:13	1
Benzoic acid	20	U	25	20	9.9	ug/L		03/28/15 16:13	1
Benzo[k]fluoranthene	0.099	U	0.20	0.099	0.044	ug/L		03/28/15 16:13	1
Benzyl alcohol	0.50	U	5.0	0.50	0.38	ug/L		03/28/15 16:13	1
Bis(2-chloroethoxy)methane	0.50	U	0.99	0.50	0.32	ug/L		03/28/15 16:13	1
Bis(2-chloroethyl)ether	0.099	U	0.99	0.099	0.099	ug/L		03/28/15 16:13	1
Bis(2-ethylhexyl) phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/28/15 16:13	1
4-Bromophenyl phenyl ether	0.50	U	2.0	0.50	0.22	ug/L		03/28/15 16:13	1
Butyl benzyl phthalate	0.50	U	5.0	0.50	0.26	ug/L		03/28/15 16:13	1
Carbazole	0.50	U	0.99	0.50	0.28	ug/L		03/28/15 16:13	1
4-Chloroaniline	0.50	U	2.0	0.50	0.21	ug/L		03/28/15 16:13	1
4-Chloro-3-methylphenol	0.50	U	2.0	0.50	0.21	ug/L		03/28/15 16:13	1
2-Chloronaphthalene	0.50	U	0.99	0.50	0.099	ug/L		03/28/15 16:13	1
2-Chlorophenol	0.50	U	0.99	0.50	0.29	ug/L		03/28/15 16:13	1
4-Chlorophenyl phenyl ether	0.50	U	2.0	0.50	0.30	ug/L		03/28/15 16:13	1
Chrysene	0.099	U	0.20	0.099	0.050	ug/L		03/28/15 16:13	1
Dibenz(a,h)anthracene	0.099	U	0.20	0.099	0.044	ug/L		03/28/15 16:13	1
Dibenzofuran	0.099	U	0.99	0.099	0.020	ug/L		03/28/15 16:13	1
1,2-Dichlorobenzene	0.50	U	0.99	0.50	0.29	ug/L		03/28/15 16:13	1
1,3-Dichlorobenzene	0.50	U	0.99	0.50	0.23	ug/L		03/28/15 16:13	1
1,4-Dichlorobenzene	0.50	U	0.99	0.50	0.34	ug/L		03/28/15 16:13	1
3,3'-Dichlorobenzidine	0.99	U	5.0	0.99	0.37	ug/L		03/28/15 16:13	1
2,4-Dichlorophenol	0.50	U	2.0	0.50	0.19	ug/L		03/28/15 16:13	1
Diethyl phthalate	0.99	U	2.0	0.99	0.59	ug/L		03/28/15 16:13	1
2,4-Dimethylphenol	0.50	U	2.0	0.50	0.25	ug/L		03/28/15 16:13	1
Dimethyl phthalate	0.50	U	2.0	0.50	0.29	ug/L		03/28/15 16:13	1
Di-n-butyl phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/28/15 16:13	1
4,6-Dinitro-2-methylphenol	4.0	U	5.0	4.0	2.4	ug/L		03/28/15 16:13	1
2,4-Dinitrophenol	0.99	U	5.0	0.99	0.32	ug/L		03/28/15 16:13	1
Di-n-octyl phthalate	0.50	U	2.0	0.50	0.23	ug/L		03/28/15 16:13	1
Fluoranthene	0.099	U	0.20	0.099	0.044	ug/L		03/28/15 16:13	1
Fluorene	0.099	U	0.20	0.099	0.040	ug/L		03/28/15 16:13	1
Hexachlorobenzene	0.099	U	0.20	0.099	0.084	ug/L		03/28/15 16:13	1
Hexachlorobutadiene	0.50	U	0.99	0.50	0.27	ug/L		03/28/15 16:13	1
Hexachlorocyclopentadiene	0.50	U	9.9	0.50	0.24	ug/L		03/28/15 16:13	1
Hexachloroethane	0.50	U	0.99	0.50	0.19	ug/L		03/28/15 16:13	1
Indeno[1,2,3-cd]pyrene	0.099	U	0.20	0.099	0.043	ug/L		03/28/15 16:13	1
Isophorone	0.50	U	0.99	0.50	0.27	ug/L		03/28/15 16:13	1
2-Methylnaphthalene	0.099	U	0.20	0.099	0.090	ug/L		03/28/15 16:13	1
2-Methylphenol	0.50	U	0.99	0.50	0.17	ug/L		03/28/15 16:13	1
3 & 4 Methylphenol	0.99	U	2.0	0.99	0.79	ug/L		03/28/15 16:13	1
Naphthalene	0.099	U	0.20	0.099	0.062	ug/L		03/28/15 16:13	1
2-Nitroaniline	0.50	U	2.0	0.50	0.21	ug/L		03/28/15 16:13	1
3-Nitroaniline	0.50	U	2.0	0.50	0.28	ug/L		03/28/15 16:13	1
4-Nitroaniline	0.50	U	2.0	0.50	0.22	ug/L		03/28/15 16:13	1

Client Sample ID: FWGRQLmw-007C-0542-GW
Date Collected: 03/12/15 10:08
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-4
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.50	U	2.0	0.50	0.28	ug/L		03/28/15 16:13	1
4-Nitrophenol	4.0	U	5.0	4.0	0.29	ug/L		03/28/15 16:13	1
N-Nitrosodi-n-propylamine	0.50	U	0.99	0.50	0.24	ug/L		03/28/15 16:13	1
N-Nitrosodiphenylamine	0.50	U	0.99	0.50	0.31	ug/L		03/28/15 16:13	1
2,2'-oxybis[1-chloropropane]	0.50	U	0.99	0.50	0.40	ug/L		03/28/15 16:13	1
Pentachlorophenol	0.99	U	5.0	0.99	0.27	ug/L		03/28/15 16:13	1
Phenanthrene	0.099	U	0.20	0.099	0.061	ug/L		03/28/15 16:13	1
Phenol	0.99	U	0.99	0.99	0.59	ug/L		03/28/15 16:13	1
Pyrene	0.099	U	0.20	0.099	0.042	ug/L		03/28/15 16:13	1
1,2,4-Trichlorobenzene	0.50	U	0.99	0.50	0.28	ug/L		03/28/15 16:13	1
2,4,5-Trichlorophenol	0.50	U	5.0	0.50	0.30	ug/L		03/28/15 16:13	1
2,4,6-Trichlorophenol	0.50	U	5.0	0.50	0.24	ug/L		03/28/15 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*69*		*50 - 110*	*03/13/15 09:20*	*03/28/15 16:13*	*1*
2-Fluorophenol (Surr)	*66*		*20 - 110*	*03/13/15 09:20*	*03/28/15 16:13*	*1*
Nitrobenzene-d5 (Surr)	*65*		*40 - 110*	*03/13/15 09:20*	*03/28/15 16:13*	*1*
Phenol-d5 (Surr)	*72*		*10 - 115*	*03/13/15 09:20*	*03/28/15 16:13*	*1*
Terphenyl-d14 (Surr)	*74*		*50 - 135*	*03/13/15 09:20*	*03/28/15 16:13*	*1*
2,4,6-Tribromophenol (Surr)	*84*		*40 - 125*	*03/13/15 09:20*	*03/28/15 16:13*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/20/15 01:30	1
4,4'-DDE	0.048	U	0.048	0.048	0.0086	ug/L		03/20/15 01:30	1
4,4'-DDT	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 01:30	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 01:30	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 01:30	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 01:30	1
beta-BHC	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 01:30	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/20/15 01:30	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 01:30	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/20/15 01:30	1
Endosulfan II	0.048	U	0.048	0.048	0.014	ug/L		03/20/15 01:30	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.010	ug/L		03/20/15 01:30	1
Endrin	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 01:30	1
Endrin aldehyde	0.048	U	0.048	0.048	0.0076	ug/L		03/20/15 01:30	1
Endrin ketone	0.048	U	0.048	0.048	0.0086	ug/L		03/20/15 01:30	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 01:30	1
gamma-Chlordane	0.048	U	0.048	0.048	0.0095	ug/L		03/20/15 01:30	1
Heptachlor	0.048	U	0.048	0.048	0.0048	ug/L		03/20/15 01:30	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 01:30	1
Methoxychlor	0.048	U	0.095	0.048	0.011	ug/L		03/20/15 01:30	1
Toxaphene	0.95	U	1.9	0.95	0.19	ug/L		03/20/15 01:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*58*		*30 - 135*	*03/17/15 14:13*	*03/20/15 01:30*	*1*
DCB Decachlorobiphenyl	*60*		*30 - 135*	*03/17/15 14:13*	*03/20/15 01:30*	*1*
Tetrachloro-m-xylene	*76*		*25 - 140*	*03/17/15 14:13*	*03/20/15 01:30*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*03/17/15 14:13*	*03/20/15 01:30*	*1*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48152-1

Client Sample ID: FWGRQLmw-007C-0542-GW
Date Collected: 03/12/15 10:08
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-4
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.48	0.19	0.16	ug/L		03/20/15 09:36	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		03/20/15 09:36	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		03/20/15 09:36	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		03/20/15 09:36	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		03/20/15 09:36	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		03/20/15 09:36	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		03/20/15 09:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*90*		*40 - 140*	*03/17/15 09:59*	*03/20/15 09:36*	*1*
Tetrachloro-m-xylene	*95*		*40 - 140*	*03/17/15 09:59*	*03/20/15 09:36*	*1*
DCB Decachlorobiphenyl	*69*		*40 - 135*	*03/17/15 09:59*	*03/20/15 09:36*	*1*
DCB Decachlorobiphenyl	*71*		*40 - 135*	*03/17/15 09:59*	*03/20/15 09:36*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 11:48	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		03/28/15 06:46	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 06:46	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 06:46	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 06:46	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 06:46	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 06:46	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/28/15 06:46	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/28/15 06:46	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/28/15 06:46	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 06:46	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/28/15 06:46	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/28/15 06:46	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 06:46	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 06:46	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/28/15 06:46	1
PETN	0.51	U	0.66	0.51	0.30	ug/L		03/28/15 06:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/17/15 14:16*	*03/28/15 06:46*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.0058**	J	0.010	0.0050	0.0020	mg/L		03/24/15 14:18	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/20/15 18:29	1

Client Sample ID: FWGRQLmw-007C-0542-GF
Date Collected: 03/12/15 10:08
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-5
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**31**	J	10	10	2.9	ug/L		03/16/15 10:21	1
Chromium	**2.1**	J	7.0	4.0	0.55	ug/L		03/16/15 10:21	1
Cobalt	**11**		7.0	4.0	0.56	ug/L		03/16/15 10:21	1
Lead	**2.5**	J	10	5.0	1.9	ug/L		03/16/15 10:21	1
Selenium	10	U J	15	10	4.0	ug/L		03/16/15 10:21	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/16/15 10:21	1
Vanadium	4.0	U J	7.0	4.0	2.4	ug/L		03/16/15 10:21	1
Barium	**35**	J	200	5.0	1.0	ug/L		03/16/15 10:21	1
Calcium	**87000**		5000	1000	260	ug/L		03/16/15 10:21	1
Copper	10	U J	25	10	1.9	ug/L		03/16/15 10:21	1
Magnesium	**75000**		5000	300	55	ug/L		03/16/15 10:21	1
Manganese	**1800**		15	5.0	0.46	ug/L		03/16/15 10:21	1
Nickel	**14**	J	40	5.0	0.76	ug/L		03/16/15 10:21	1
Potassium	**4900**	J	5000	900	70	ug/L		03/16/15 10:21	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 18:22	1
Antimony	**0.39**	J	2.0	1.0	0.33	ug/L		03/17/15 18:22	1
Beryllium	1.0	U J	1.0	1.0	0.50	ug/L		03/17/15 18:22	1
Cadmium	1.0	U J	2.0	1.0	0.40	ug/L		03/17/15 18:22	1
Iron	**12000**		150	100	44	ug/L		03/17/15 18:22	1
Sodium	**3500**		1000	400	160	ug/L		03/17/15 18:22	1
Thallium	1.5	U J	2.0	1.5	0.79	ug/L		03/17/15 18:22	1
Zinc	50	U J	50	50	27	ug/L		03/17/15 18:22	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/16/15 12:59	1

Client Sample ID: FWGRQLmw-009C-0544-GW — **Lab Sample ID: 240-48152-6**

Date Collected: 03/12/15 10:41 — Matrix: Water

Date Received: 03/12/15 17:53

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:26	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:26	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 17:26	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 17:26	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 17:26	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 17:26	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 17:26	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:26	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 17:26	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 17:26	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 17:26	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 17:26	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 17:26	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 17:26	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 17:26	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 17:26	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 17:26	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 17:26	1
Chloroform	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 17:26	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 17:26	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 17:26	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 17:26	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		03/18/15 17:26	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 17:26	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 17:26	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 17:26	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 17:26	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 17:26	1
Methylene Chloride	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 17:26	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 17:26	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 17:26	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 17:26	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:26	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 17:26	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 17:26	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 17:26	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 17:26	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 17:26	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 17:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 120*		*03/18/15 17:26*	*1*
4-Bromofluorobenzene (Surr)	*89*		*75 - 120*		*03/18/15 17:26*	*1*
Toluene-d8 (Surr)	*91*		*85 - 120*		*03/18/15 17:26*	*1*
Dibromofluoromethane (Surr)	*98*		*85 - 115*		*03/18/15 17:26*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.095	U	0.19	0.095	0.042	ug/L		03/28/15 14:33	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		03/28/15 14:33	1

Client Sample ID: FWGRQLmw-009C-0544-GW
Date Collected: 03/12/15 10:41
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-6
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.095	U	0.19	0.095	0.084	ug/L		03/28/15 14:33	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		03/28/15 14:33	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		03/28/15 14:33	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		03/28/15 14:33	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		03/28/15 14:33	1
Benzoic acid	19	U	24	19	9.5	ug/L		03/28/15 14:33	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		03/28/15 14:33	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		03/28/15 14:33	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		03/28/15 14:33	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		03/28/15 14:33	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 14:33	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		03/28/15 14:33	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/28/15 14:33	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		03/28/15 14:33	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 14:33	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 14:33	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		03/28/15 14:33	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		03/28/15 14:33	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		03/28/15 14:33	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		03/28/15 14:33	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		03/28/15 14:33	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		03/28/15 14:33	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		03/28/15 14:33	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		03/28/15 14:33	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		03/28/15 14:33	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		03/28/15 14:33	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		03/28/15 14:33	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/28/15 14:33	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		03/28/15 14:33	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/28/15 14:33	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 14:33	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		03/28/15 14:33	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		03/28/15 14:33	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/28/15 14:33	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		03/28/15 14:33	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		03/28/15 14:33	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		03/28/15 14:33	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		03/28/15 14:33	1
Hexachlorocyclopentadiene	0.48	U	9.5	0.48	0.23	ug/L		03/28/15 14:33	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		03/28/15 14:33	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		03/28/15 14:33	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		03/28/15 14:33	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		03/28/15 14:33	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		03/28/15 14:33	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		03/28/15 14:33	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		03/28/15 14:33	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 14:33	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		03/28/15 14:33	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		03/28/15 14:33	1

Client Sample ID: FWGRQLmw-009C-0544-GW — **Lab Sample ID: 240-48152-6**

Date Collected: 03/12/15 10:41 — Matrix: Water

Date Received: 03/12/15 17:53

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.48	U	1.9	0.48	0.27	ug/L		03/28/15 14:33	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		03/28/15 14:33	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		03/28/15 14:33	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		03/28/15 14:33	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		03/28/15 14:33	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		03/28/15 14:33	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		03/28/15 14:33	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		03/28/15 14:33	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		03/28/15 14:33	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		03/28/15 14:33	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		03/28/15 14:33	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		03/28/15 14:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*58*		*50 - 110*	*03/13/15 09:20*	*03/28/15 14:33*	*1*
2-Fluorophenol (Surr)	*52*		*20 - 110*	*03/13/15 09:20*	*03/28/15 14:33*	*1*
Nitrobenzene-d5 (Surr)	*51*		*40 - 110*	*03/13/15 09:20*	*03/28/15 14:33*	*1*
Phenol-d5 (Surr)	*57*		*10 - 115*	*03/13/15 09:20*	*03/28/15 14:33*	*1*
Terphenyl-d14 (Surr)	*82*		*50 - 135*	*03/13/15 09:20*	*03/28/15 14:33*	*1*
2,4,6-Tribromophenol (Surr)	*79*		*40 - 125*	*03/13/15 09:20*	*03/28/15 14:33*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/20/15 03:26	1
4,4'-DDE	0.048	U	0.048	0.048	0.0086	ug/L		03/20/15 03:26	1
4,4'-DDT	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 03:26	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 03:26	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 03:26	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 03:26	1
beta-BHC	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 03:26	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/20/15 03:26	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 03:26	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/20/15 03:26	1
Endosulfan II	0.048	U	0.048	0.048	0.014	ug/L		03/20/15 03:26	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.010	ug/L		03/20/15 03:26	1
Endrin	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 03:26	1
Endrin aldehyde	0.048	U	0.048	0.048	0.0076	ug/L		03/20/15 03:26	1
Endrin ketone	0.048	U	0.048	0.048	0.0086	ug/L		03/20/15 03:26	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 03:26	1
gamma-Chlordane	0.048	U	0.048	0.048	0.0095	ug/L		03/20/15 03:26	1
Heptachlor	0.048	U	0.048	0.048	0.0048	ug/L		03/20/15 03:26	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 03:26	1
Methoxychlor	0.048	U	0.095	0.048	0.011	ug/L		03/20/15 03:26	1
Toxaphene	0.95	U	1.9	0.95	0.19	ug/L		03/20/15 03:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*67*		*30 - 135*	*03/17/15 14:13*	*03/20/15 03:26*	*1*
DCB Decachlorobiphenyl	*65*		*30 - 135*	*03/17/15 14:13*	*03/20/15 03:26*	*1*
Tetrachloro-m-xylene	*82*		*25 - 140*	*03/17/15 14:13*	*03/20/15 03:26*	*1*
Tetrachloro-m-xylene	*83*		*25 - 140*	*03/17/15 14:13*	*03/20/15 03:26*	*1*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48152-1

Client Sample ID: FWGRQLmw-009C-0544-GW
Date Collected: 03/12/15 10:41
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-6
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.48	0.19	0.16	ug/L		03/20/15 10:26	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		03/20/15 10:26	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		03/20/15 10:26	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		03/20/15 10:26	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		03/20/15 10:26	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		03/20/15 10:26	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		03/20/15 10:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*89*		*40 - 140*	*03/17/15 09:59*	*03/20/15 10:26*	*1*
Tetrachloro-m-xylene	*94*		*40 - 140*	*03/17/15 09:59*	*03/20/15 10:26*	*1*
DCB Decachlorobiphenyl	*72*		*40 - 135*	*03/17/15 09:59*	*03/20/15 10:26*	*1*
DCB Decachlorobiphenyl	*77*		*40 - 135*	*03/17/15 09:59*	*03/20/15 10:26*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 12:41	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		03/28/15 08:57	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 08:57	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 08:57	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 08:57	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 08:57	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 08:57	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/28/15 08:57	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/28/15 08:57	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/28/15 08:57	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 08:57	1
HMX	0.051	U M	0.15	0.051	0.036	ug/L		03/28/15 08:57	1
RDX	0.051	U	0.15	0.051	0.036	ug/L		03/28/15 08:57	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 08:57	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 08:57	1
Nitroglycerin	0.51	U	0.66	0.51	0.33	ug/L		03/28/15 08:57	1
PETN	0.51	U	0.66	0.51	0.30	ug/L		03/28/15 08:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/17/15 14:16*	*03/28/15 08:57*	*1*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/17/15 14:16*	*03/31/15 12:21*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		03/24/15 14:24	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/20/15 18:35	1

Client Sample ID: FWGRQLmw-009C-0544-GF
Lab Sample ID: 240-48152-7
Date Collected: 03/12/15 10:41
Matrix: Water
Date Received: 03/12/15 17:53

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**12**		10	10	2.9	ug/L		03/16/15 10:53	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/16/15 10:53	1
Cobalt	**1.5**	J	7.0	4.0	0.56	ug/L		03/16/15 10:53	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/16/15 10:53	1
Selenium	10	U	15	10	4.0	ug/L		03/16/15 10:53	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/16/15 10:53	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/16/15 10:53	1
Barium	**25**	J	200	5.0	1.0	ug/L		03/16/15 10:53	1
Calcium	**19000**		5000	1000	260	ug/L		03/16/15 10:53	1
Copper	10	U	25	10	1.9	ug/L		03/16/15 10:53	1
Magnesium	**14000**		5000	300	55	ug/L		03/16/15 10:53	1
Manganese	**610**		15	5.0	0.46	ug/L		03/16/15 10:53	1
Nickel	**1.8**	J	40	5.0	0.76	ug/L		03/16/15 10:53	1
Potassium	**2500**	J	5000	900	70	ug/L		03/16/15 10:53	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 18:44	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 18:44	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 18:44	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 18:44	1
Iron	**4100**		150	100	44	ug/L		03/17/15 18:44	1
Sodium	**1700**		1000	400	160	ug/L		03/17/15 18:44	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 18:44	1
Zinc	50	U	50	50	27	ug/L		03/17/15 18:44	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/16/15 13:18	1

Client Sample ID: FWGRQLmw-DUP5-0561-GW
Date Collected: 03/12/15 11:35
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-8
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:49	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:49	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 17:49	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 17:49	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 17:49	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 17:49	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 17:49	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:49	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 17:49	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 17:49	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 17:49	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 17:49	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 17:49	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 17:49	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 17:49	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 17:49	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 17:49	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 17:49	1
Chloroform	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 17:49	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 17:49	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 17:49	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 17:49	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		03/18/15 17:49	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 17:49	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 17:49	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 17:49	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 17:49	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 17:49	1
Methylene Chloride	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 17:49	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 17:49	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 17:49	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 17:49	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 17:49	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 17:49	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 17:49	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 17:49	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 17:49	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 17:49	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 120*		*03/18/15 17:49*	*1*
4-Bromofluorobenzene (Surr)	*91*		*75 - 120*		*03/18/15 17:49*	*1*
Toluene-d8 (Surr)	*92*		*85 - 120*		*03/18/15 17:49*	*1*
Dibromofluoromethane (Surr)	*98*		*85 - 115*		*03/18/15 17:49*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.096	U	0.19	0.096	0.043	ug/L		03/28/15 14:58	1
Acenaphthylene	0.096	U	0.19	0.096	0.046	ug/L		03/28/15 14:58	1

Client Sample ID: FWGRQLmw-DUP5-0561-GW
Date Collected: 03/12/15 11:35
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-8
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.096	U	0.19	0.096	0.085	ug/L		03/28/15 14:58	1
Benzo[a]anthracene	0.096	U	0.19	0.096	0.028	ug/L		03/28/15 14:58	1
Benzo[a]pyrene	0.096	U	0.19	0.096	0.049	ug/L		03/28/15 14:58	1
Benzo[b]fluoranthene	0.096	U	0.19	0.096	0.038	ug/L		03/28/15 14:58	1
Benzo[g,h,i]perylene	0.096	U	0.19	0.096	0.045	ug/L		03/28/15 14:58	1
Benzoic acid	19	U	24	19	9.6	ug/L		03/28/15 14:58	1
Benzo[k]fluoranthene	0.096	U	0.19	0.096	0.043	ug/L		03/28/15 14:58	1
Benzyl alcohol	0.48	U	4.8	0.48	0.37	ug/L		03/28/15 14:58	1
Bis(2-chloroethoxy)methane	0.48	U	0.96	0.48	0.31	ug/L		03/28/15 14:58	1
Bis(2-chloroethyl)ether	0.096	U	0.96	0.096	0.096	ug/L		03/28/15 14:58	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 14:58	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		03/28/15 14:58	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/28/15 14:58	1
Carbazole	0.48	U	0.96	0.48	0.27	ug/L		03/28/15 14:58	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 14:58	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 14:58	1
2-Chloronaphthalene	0.48	U	0.96	0.48	0.096	ug/L		03/28/15 14:58	1
2-Chlorophenol	0.48	U	0.96	0.48	0.28	ug/L		03/28/15 14:58	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		03/28/15 14:58	1
Chrysene	0.096	U	0.19	0.096	0.048	ug/L		03/28/15 14:58	1
Dibenz(a,h)anthracene	0.096	U	0.19	0.096	0.043	ug/L		03/28/15 14:58	1
Dibenzofuran	0.096	U	0.96	0.096	0.019	ug/L		03/28/15 14:58	1
1,2-Dichlorobenzene	0.48	U	0.96	0.48	0.28	ug/L		03/28/15 14:58	1
1,3-Dichlorobenzene	0.48	U	0.96	0.48	0.22	ug/L		03/28/15 14:58	1
1,4-Dichlorobenzene	0.48	U	0.96	0.48	0.33	ug/L		03/28/15 14:58	1
3,3'-Dichlorobenzidine	0.96	U	4.8	0.96	0.36	ug/L		03/28/15 14:58	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		03/28/15 14:58	1
Diethyl phthalate	0.96	U	1.9	0.96	0.58	ug/L		03/28/15 14:58	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		03/28/15 14:58	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/28/15 14:58	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 14:58	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		03/28/15 14:58	1
2,4-Dinitrophenol	0.96	U	4.8	0.96	0.31	ug/L		03/28/15 14:58	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/28/15 14:58	1
Fluoranthene	0.096	U	0.19	0.096	0.043	ug/L		03/28/15 14:58	1
Fluorene	0.096	U	0.19	0.096	0.039	ug/L		03/28/15 14:58	1
Hexachlorobenzene	0.096	U	0.19	0.096	0.082	ug/L		03/28/15 14:58	1
Hexachlorobutadiene	0.48	U	0.96	0.48	0.26	ug/L		03/28/15 14:58	1
Hexachlorocyclopentadiene	0.48	U	9.6	0.48	0.23	ug/L		03/28/15 14:58	1
Hexachloroethane	0.48	U	0.96	0.48	0.18	ug/L		03/28/15 14:58	1
Indeno[1,2,3-cd]pyrene	0.096	U	0.19	0.096	0.042	ug/L		03/28/15 14:58	1
Isophorone	0.48	U	0.96	0.48	0.26	ug/L		03/28/15 14:58	1
2-Methylnaphthalene	0.096	U	0.19	0.096	0.087	ug/L		03/28/15 14:58	1
2-Methylphenol	0.48	U	0.96	0.48	0.16	ug/L		03/28/15 14:58	1
3 & 4 Methylphenol	0.96	U	1.9	0.96	0.77	ug/L		03/28/15 14:58	1
Naphthalene	0.096	U	0.19	0.096	0.060	ug/L		03/28/15 14:58	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 14:58	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		03/28/15 14:58	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		03/28/15 14:58	1

Client Sample ID: FWGRQLmw-DUP5-0561-GW
Date Collected: 03/12/15 11:35
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-8
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.48	U	1.9	0.48	0.27	ug/L		03/28/15 14:58	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		03/28/15 14:58	1
N-Nitrosodi-n-propylamine	0.48	U	0.96	0.48	0.23	ug/L		03/28/15 14:58	1
N-Nitrosodiphenylamine	0.48	U	0.96	0.48	0.30	ug/L		03/28/15 14:58	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.96	0.48	0.38	ug/L		03/28/15 14:58	1
Pentachlorophenol	0.96	U	4.8	0.96	0.26	ug/L		03/28/15 14:58	1
Phenanthrene	0.096	U	0.19	0.096	0.060	ug/L		03/28/15 14:58	1
Phenol	0.96	U	0.96	0.96	0.58	ug/L		03/28/15 14:58	1
Pyrene	0.096	U	0.19	0.096	0.040	ug/L		03/28/15 14:58	1
1,2,4-Trichlorobenzene	0.48	U	0.96	0.48	0.27	ug/L		03/28/15 14:58	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		03/28/15 14:58	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		03/28/15 14:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*78*		*50 - 110*	*03/13/15 09:20*	*03/28/15 14:58*	*1*
2-Fluorophenol (Surr)	*75*		*20 - 110*	*03/13/15 09:20*	*03/28/15 14:58*	*1*
Nitrobenzene-d5 (Surr)	*71*		*40 - 110*	*03/13/15 09:20*	*03/28/15 14:58*	*1*
Phenol-d5 (Surr)	*79*		*10 - 115*	*03/13/15 09:20*	*03/28/15 14:58*	*1*
Terphenyl-d14 (Surr)	*82*		*50 - 135*	*03/13/15 09:20*	*03/28/15 14:58*	*1*
2,4,6-Tribromophenol (Surr)	*88*		*40 - 125*	*03/13/15 09:20*	*03/28/15 14:58*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/20/15 04:11	1
4,4'-DDE	0.048	U	0.048	0.048	0.0086	ug/L		03/20/15 04:11	1
4,4'-DDT	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 04:11	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 04:11	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 04:11	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 04:11	1
beta-BHC	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 04:11	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/20/15 04:11	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 04:11	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/20/15 04:11	1
Endosulfan II	0.048	U	0.048	0.048	0.014	ug/L		03/20/15 04:11	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.010	ug/L		03/20/15 04:11	1
Endrin	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 04:11	1
Endrin aldehyde	0.048	U	0.048	0.048	0.0076	ug/L		03/20/15 04:11	1
Endrin ketone	0.048	U	0.048	0.048	0.0086	ug/L		03/20/15 04:11	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 04:11	1
gamma-Chlordane	0.048	U	0.048	0.048	0.0095	ug/L		03/20/15 04:11	1
Heptachlor	0.048	U	0.048	0.048	0.0048	ug/L		03/20/15 04:11	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 04:11	1
Methoxychlor	0.048	U	0.095	0.048	0.011	ug/L		03/20/15 04:11	1
Toxaphene	0.95	U	1.9	0.95	0.19	ug/L		03/20/15 04:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*38*	*Q*	*30 - 135*	*03/17/15 14:13*	*03/20/15 04:11*	*1*
DCB Decachlorobiphenyl	*40*	*Q*	*30 - 135*	*03/17/15 14:13*	*03/20/15 04:11*	*1*
Tetrachloro-m-xylene	*77*		*25 - 140*	*03/17/15 14:13*	*03/20/15 04:11*	*1*
Tetrachloro-m-xylene	*77*		*25 - 140*	*03/17/15 14:13*	*03/20/15 04:11*	*1*

Client Sample ID: FWGRQLmw-DUP5-0561-GW
Date Collected: 03/12/15 11:35
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-8
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.48	0.19	0.16	ug/L		03/20/15 10:43	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		03/20/15 10:43	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		03/20/15 10:43	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		03/20/15 10:43	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		03/20/15 10:43	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		03/20/15 10:43	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		03/20/15 10:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*86*		*40 - 140*	*03/17/15 09:59*	*03/20/15 10:43*	*1*
Tetrachloro-m-xylene	*91*		*40 - 140*	*03/17/15 09:59*	*03/20/15 10:43*	*1*
DCB Decachlorobiphenyl	*45*		*40 - 135*	*03/17/15 09:59*	*03/20/15 10:43*	*1*
DCB Decachlorobiphenyl	*48*		*40 - 135*	*03/17/15 09:59*	*03/20/15 10:43*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 12:59	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		03/28/15 10:24	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 10:24	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 10:24	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 10:24	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 10:24	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 10:24	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/28/15 10:24	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/28/15 10:24	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/28/15 10:24	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 10:24	1
HMX	0.051	U	0.15	0.051	0.036	ug/L		03/28/15 10:24	1
RDX	0.051	U	0.15	0.051	0.036	ug/L		03/28/15 10:24	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 10:24	1
Tetryl	0.10	U M	0.15	0.10	0.051	ug/L		03/28/15 10:24	1
Nitroglycerin	0.51	U	0.66	0.51	0.33	ug/L		03/28/15 10:24	1
PETN	0.51	U	0.66	0.51	0.30	ug/L		03/28/15 10:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/17/15 14:16*	*03/28/15 10:24*	*1*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/17/15 14:16*	*03/31/15 13:27*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		03/24/15 14:24	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/20/15 18:37	1

Client Sample ID: FWGRQLmw-DUP5-0561-GF
Lab Sample ID: 240-48152-9
Date Collected: 03/12/15 11:35
Matrix: Water
Date Received: 03/12/15 17:53

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**13**		10	10	2.9	ug/L		03/16/15 10:57	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/16/15 10:57	1
Cobalt	**2.0**	J	7.0	4.0	0.56	ug/L		03/16/15 10:57	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/16/15 10:57	1
Selenium	10	U	15	10	4.0	ug/L		03/16/15 10:57	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/16/15 10:57	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/16/15 10:57	1
Barium	**25**	J	200	5.0	1.0	ug/L		03/16/15 10:57	1
Calcium	**20000**		5000	1000	260	ug/L		03/16/15 10:57	1
Copper	10	U	25	10	1.9	ug/L		03/16/15 10:57	1
Magnesium	**15000**		5000	300	55	ug/L		03/16/15 10:57	1
Manganese	**630**		15	5.0	0.46	ug/L		03/16/15 10:57	1
Nickel	**2.1**	J	40	5.0	0.76	ug/L		03/16/15 10:57	1
Potassium	**2500**	J	5000	900	70	ug/L		03/16/15 10:57	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 18:55	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 18:55	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 18:55	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 18:55	1
Iron	**4400**		150	100	44	ug/L		03/17/15 18:55	1
Sodium	**1700**		1000	400	160	ug/L		03/17/15 18:55	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 18:55	1
Zinc	50	U	50	50	27	ug/L		03/17/15 18:55	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/16/15 13:20	1

Client Sample ID: FWGEQUIPRINSE4-0566-GW — **Lab Sample ID: 240-48152-10**

Date Collected: 03/12/15 16:30 — Matrix: Water

Date Received: 03/12/15 17:53

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 18:11	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 18:11	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.17	ug/L		03/18/15 18:11	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 18:11	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 18:11	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 18:11	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/18/15 18:11	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 18:11	1
2-Hexanone	10	U	10	10	3.9	ug/L		03/18/15 18:11	1
Bromochloromethane	0.50	U	1.0	0.50	0.25	ug/L		03/18/15 18:11	1
Acetone	10	U	10	10	3.4	ug/L		03/18/15 18:11	1
Benzene	0.50	U	1.0	0.50	0.24	ug/L		03/18/15 18:11	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 18:11	1
Bromomethane	1.0	U	1.0	1.0	0.63	ug/L		03/18/15 18:11	1
Carbon disulfide	0.50	U	1.0	0.50	0.28	ug/L		03/18/15 18:11	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.17	ug/L		03/18/15 18:11	1
Chlorobenzene	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 18:11	1
Chloroethane	0.50	U	1.0	0.50	0.33	ug/L		03/18/15 18:11	1
Chloroform	**4.1**		1.0	0.50	0.21	ug/L		03/18/15 18:11	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/18/15 18:11	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 18:11	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/18/15 18:11	1
Bromodichloromethane	**0.38**	J	1.0	0.25	0.15	ug/L		03/18/15 18:11	1
Ethylbenzene	0.50	U	1.0	0.50	0.23	ug/L		03/18/15 18:11	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.19	ug/L		03/18/15 18:11	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.22	ug/L		03/18/15 18:11	1
2-Butanone (MEK)	10	U	10	10	4.1	ug/L		03/18/15 18:11	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	3.6	ug/L		03/18/15 18:11	1
Methylene Chloride	**0.66**	J	1.0	0.50	0.28	ug/L		03/18/15 18:11	1
o-Xylene	0.50	U	1.0	0.50	0.21	ug/L		03/18/15 18:11	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/18/15 18:11	1
Tetrachloroethene	0.50	U	1.0	0.50	0.20	ug/L		03/18/15 18:11	1
Toluene	0.50	U	1.0	0.50	0.22	ug/L		03/18/15 18:11	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/18/15 18:11	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/18/15 18:11	1
Trichloroethene	0.50	U	1.0	0.50	0.15	ug/L		03/18/15 18:11	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/18/15 18:11	1
Xylenes, Total	1.0	U	2.0	1.0	0.43	ug/L		03/18/15 18:11	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/18/15 18:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 120*		*03/18/15 18:11*	*1*
4-Bromofluorobenzene (Surr)	*89*		*75 - 120*		*03/18/15 18:11*	*1*
Toluene-d8 (Surr)	*92*		*85 - 120*		*03/18/15 18:11*	*1*
Dibromofluoromethane (Surr)	*101*		*85 - 115*		*03/18/15 18:11*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.095	U	0.19	0.095	0.042	ug/L		03/28/15 15:23	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		03/28/15 15:23	1

Client Sample ID: FWGEQUIPRINSE4-0566-GW
Date Collected: 03/12/15 16:30
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-10
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.095	U	0.19	0.095	0.084	ug/L		03/28/15 15:23	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		03/28/15 15:23	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		03/28/15 15:23	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		03/28/15 15:23	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		03/28/15 15:23	1
Benzoic acid	19	U	24	19	9.5	ug/L		03/28/15 15:23	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		03/28/15 15:23	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		03/28/15 15:23	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		03/28/15 15:23	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		03/28/15 15:23	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 15:23	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		03/28/15 15:23	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/28/15 15:23	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		03/28/15 15:23	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 15:23	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 15:23	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		03/28/15 15:23	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		03/28/15 15:23	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		03/28/15 15:23	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		03/28/15 15:23	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		03/28/15 15:23	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		03/28/15 15:23	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		03/28/15 15:23	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		03/28/15 15:23	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		03/28/15 15:23	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		03/28/15 15:23	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		03/28/15 15:23	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/28/15 15:23	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		03/28/15 15:23	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/28/15 15:23	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 15:23	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		03/28/15 15:23	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		03/28/15 15:23	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/28/15 15:23	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		03/28/15 15:23	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		03/28/15 15:23	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		03/28/15 15:23	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		03/28/15 15:23	1
Hexachlorocyclopentadiene	0.48	U	9.5	0.48	0.23	ug/L		03/28/15 15:23	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		03/28/15 15:23	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		03/28/15 15:23	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		03/28/15 15:23	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		03/28/15 15:23	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		03/28/15 15:23	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		03/28/15 15:23	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		03/28/15 15:23	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		03/28/15 15:23	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		03/28/15 15:23	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		03/28/15 15:23	1

Client Sample ID: FWGEQUIPRINSE4-0566-GW
Date Collected: 03/12/15 16:30
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-10
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.48	U	1.9	0.48	0.27	ug/L		03/28/15 15:23	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		03/28/15 15:23	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		03/28/15 15:23	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		03/28/15 15:23	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		03/28/15 15:23	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		03/28/15 15:23	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		03/28/15 15:23	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		03/28/15 15:23	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		03/28/15 15:23	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		03/28/15 15:23	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		03/28/15 15:23	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		03/28/15 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*66*		*50 - 110*	*03/13/15 09:20*	*03/28/15 15:23*	*1*
2-Fluorophenol (Surr)	*64*		*20 - 110*	*03/13/15 09:20*	*03/28/15 15:23*	*1*
Nitrobenzene-d5 (Surr)	*61*		*40 - 110*	*03/13/15 09:20*	*03/28/15 15:23*	*1*
Phenol-d5 (Surr)	*68*		*10 - 115*	*03/13/15 09:20*	*03/28/15 15:23*	*1*
Terphenyl-d14 (Surr)	*74*		*50 - 135*	*03/13/15 09:20*	*03/28/15 15:23*	*1*
2,4,6-Tribromophenol (Surr)	*73*		*40 - 125*	*03/13/15 09:20*	*03/28/15 15:23*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/20/15 04:34	1
4,4'-DDE	0.048	U	0.048	0.048	0.0086	ug/L		03/20/15 04:34	1
4,4'-DDT	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 04:34	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 04:34	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 04:34	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 04:34	1
beta-BHC	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 04:34	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/20/15 04:34	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/20/15 04:34	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/20/15 04:34	1
Endosulfan II	0.048	U	0.048	0.048	0.014	ug/L		03/20/15 04:34	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.010	ug/L		03/20/15 04:34	1
Endrin	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 04:34	1
Endrin aldehyde	0.048	U	0.048	0.048	0.0076	ug/L		03/20/15 04:34	1
Endrin ketone	0.048	U	0.048	0.048	0.0086	ug/L		03/20/15 04:34	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.011	ug/L		03/20/15 04:34	1
gamma-Chlordane	0.048	U	0.048	0.048	0.0095	ug/L		03/20/15 04:34	1
Heptachlor	0.048	U	0.048	0.048	0.0048	ug/L		03/20/15 04:34	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.013	ug/L		03/20/15 04:34	1
Methoxychlor	0.048	U	0.095	0.048	0.011	ug/L		03/20/15 04:34	1
Toxaphene	0.95	U	1.9	0.95	0.19	ug/L		03/20/15 04:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*94*	*Q*	*30 - 135*	*03/17/15 14:13*	*03/20/15 04:34*	*1*
DCB Decachlorobiphenyl	*94*	*Q*	*30 - 135*	*03/17/15 14:13*	*03/20/15 04:34*	*1*
Tetrachloro-m-xylene	*82*		*25 - 140*	*03/17/15 14:13*	*03/20/15 04:34*	*1*
Tetrachloro-m-xylene	*82*		*25 - 140*	*03/17/15 14:13*	*03/20/15 04:34*	*1*

Client Sample ID: FWGEQUIPRINSE4-0566-GW
Date Collected: 03/12/15 16:30
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-10
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.48	0.19	0.16	ug/L		03/20/15 10:59	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		03/20/15 10:59	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		03/20/15 10:59	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		03/20/15 10:59	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		03/20/15 10:59	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		03/20/15 10:59	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		03/20/15 10:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*91*		*40 - 140*	*03/17/15 09:59*	*03/20/15 10:59*	*1*
Tetrachloro-m-xylene	*97*		*40 - 140*	*03/17/15 09:59*	*03/20/15 10:59*	*1*
DCB Decachlorobiphenyl	*109*		*40 - 135*	*03/17/15 09:59*	*03/20/15 10:59*	*1*
DCB Decachlorobiphenyl	*119*		*40 - 135*	*03/17/15 09:59*	*03/20/15 10:59*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 13:17	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		03/28/15 11:08	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:08	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:08	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/28/15 11:08	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/28/15 11:08	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 11:08	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/28/15 11:08	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		03/28/15 11:08	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/28/15 11:08	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:08	1
HMX	0.050	U	0.15	0.050	0.036	ug/L		03/28/15 11:08	1
RDX	0.050	U	0.15	0.050	0.036	ug/L		03/28/15 11:08	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:08	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:08	1
Nitroglycerin	0.50	U	0.65	0.50	0.33	ug/L		03/28/15 11:08	1
PETN	0.50	U	0.65	0.50	0.30	ug/L		03/28/15 11:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*92*		*79 - 111*	*03/17/15 14:16*	*03/28/15 11:08*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/16/15 11:01	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/16/15 11:01	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/16/15 11:01	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/16/15 11:01	1
Selenium	10	U	15	10	4.0	ug/L		03/16/15 11:01	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/16/15 11:01	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/16/15 11:01	1
Barium	5.0	U	200	5.0	1.0	ug/L		03/16/15 11:01	1
Calcium	1000	U	5000	1000	260	ug/L		03/16/15 11:01	1

Client Sample ID: FWGEQUIPRINSE4-0566-GW
Date Collected: 03/12/15 16:30
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-10
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Copper	10	U	25	10	1.9	ug/L		03/16/15 11:01	1
Magnesium	300	U	5000	300	55	ug/L		03/16/15 11:01	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/16/15 11:01	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/16/15 11:01	1
Potassium	900	U	5000	900	70	ug/L		03/16/15 11:01	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 18:59	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 18:59	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 18:59	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 18:59	1
Iron	100	U	150	100	44	ug/L		03/17/15 18:59	1
Sodium	400	U	1000	400	160	ug/L		03/17/15 18:59	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 18:59	1
Zinc	50	U	50	50	27	ug/L		03/17/15 18:59	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/16/15 13:25	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	**0.014**	**J**	0.050	0.012	0.0031	mg/L		04/07/15 14:32	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		03/24/15 14:18	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/20/15 18:47	1

Client Sample ID: FWGLL12mw-242C-0538-GW
Lab Sample ID: 240-48152-11
Date Collected: 03/12/15 15:45
Matrix: Water
Date Received: 03/12/15 17:53

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 17:29	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/28/15 17:29	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/28/15 17:29	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/28/15 17:29	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 17:29	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/28/15 17:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*50 - 110*	*03/13/15 09:20*	*03/28/15 17:29*	*1*
2-Fluorophenol (Surr)	*73*		*20 - 110*	*03/13/15 09:20*	*03/28/15 17:29*	*1*
Nitrobenzene-d5 (Surr)	*72*		*40 - 110*	*03/13/15 09:20*	*03/28/15 17:29*	*1*
Phenol-d5 (Surr)	*77*		*10 - 115*	*03/13/15 09:20*	*03/28/15 17:29*	*1*
Terphenyl-d14 (Surr)	*69*		*50 - 135*	*03/13/15 09:20*	*03/28/15 17:29*	*1*
2,4,6-Tribromophenol (Surr)	*89*		*40 - 125*	*03/13/15 09:20*	*03/28/15 17:29*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 13:35	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		03/28/15 11:52	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:52	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:52	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/28/15 11:52	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/28/15 11:52	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 11:52	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/28/15 11:52	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		03/28/15 11:52	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/28/15 11:52	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:52	1
HMX	0.050	U	0.15	0.050	0.036	ug/L		03/28/15 11:52	1
RDX	0.050	U	0.15	0.050	0.036	ug/L		03/28/15 11:52	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:52	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 11:52	1
Nitroglycerin	0.50	U M	0.65	0.50	0.33	ug/L		03/28/15 11:52	1
PETN	0.50	U	0.65	0.50	0.30	ug/L		03/28/15 11:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/17/15 14:16*	*03/28/15 11:52*	*1*
3,4-Dinitrotoluene	*91*		*79 - 111*	*03/17/15 14:16*	*03/31/15 14:34*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	**0.045**	J	0.050	0.012	0.0031	mg/L		04/07/15 14:38	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/20/15 18:49	1

Client Sample ID: FWGLL12mw-242C-0538-GF
Date Collected: 03/12/15 15:45
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-12
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**19**		10	10	2.9	ug/L		03/16/15 11:05	1
Chromium	**1.7**	J	7.0	4.0	0.55	ug/L		03/16/15 11:05	1
Cobalt	**0.57**	J	7.0	4.0	0.56	ug/L		03/16/15 11:05	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/16/15 11:05	1
Selenium	10	U	15	10	4.0	ug/L		03/16/15 11:05	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/16/15 11:05	1
Vanadium	**3.8**	J	7.0	4.0	2.4	ug/L		03/16/15 11:05	1
Barium	**26**	J	200	5.0	1.0	ug/L		03/16/15 11:05	1
Calcium	**65000**		5000	1000	260	ug/L		03/16/15 11:05	1
Copper	10	U	25	10	1.9	ug/L		03/16/15 11:05	1
Magnesium	**41000**		5000	300	55	ug/L		03/16/15 11:05	1
Manganese	**89**		15	5.0	0.46	ug/L		03/16/15 11:05	1
Nickel	**1.6**	J	40	5.0	0.76	ug/L		03/16/15 11:05	1
Potassium	**2100**	J	5000	900	70	ug/L		03/16/15 11:05	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**820**		60	60	20	ug/L		03/17/15 19:03	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 19:03	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 19:03	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 19:03	1
Iron	**2000**		150	100	44	ug/L		03/17/15 19:03	1
Sodium	**32000**		1000	400	160	ug/L		03/17/15 19:03	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 19:03	1
Zinc	50	U	50	50	27	ug/L		03/17/15 19:03	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/16/15 13:26	1

Client Sample ID: FWGLL12mw-187C-0537-GW — **Lab Sample ID: 240-48152-13**

Date Collected: 03/12/15 15:01
Date Received: 03/12/15 17:53

Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 17:54	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/28/15 17:54	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/28/15 17:54	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/28/15 17:54	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/28/15 17:54	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/28/15 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*69*		*50 - 110*	*03/13/15 09:20*	*03/28/15 17:54*	*1*
2-Fluorophenol (Surr)	*47*		*20 - 110*	*03/13/15 09:20*	*03/28/15 17:54*	*1*
Nitrobenzene-d5 (Surr)	*62*		*40 - 110*	*03/13/15 09:20*	*03/28/15 17:54*	*1*
Phenol-d5 (Surr)	*44*		*10 - 115*	*03/13/15 09:20*	*03/28/15 17:54*	*1*
Terphenyl-d14 (Surr)	*69*		*50 - 135*	*03/13/15 09:20*	*03/28/15 17:54*	*1*
2,4,6-Tribromophenol (Surr)	*80*		*40 - 125*	*03/13/15 09:20*	*03/28/15 17:54*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 13:52	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/28/15 12:35	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 12:35	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 12:35	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 12:35	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 12:35	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 12:35	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/28/15 12:35	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/28/15 12:35	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/28/15 12:35	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 12:35	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/28/15 12:35	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/28/15 12:35	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 12:35	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 12:35	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/28/15 12:35	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		03/28/15 12:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*88*		*79 - 111*	*03/17/15 14:16*	*03/28/15 12:35*	*1*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/17/15 14:16*	*03/31/15 15:41*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	**1200**	D	50	12	3.1	mg/L		04/07/15 15:28	1000
Nitrocellulose	**1.2**	J	2.0	1.0	0.48	mg/L		03/27/15 16:41	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48152-1

Client Sample ID: FWGLL12mw-187C-0537-GF
Date Collected: 03/12/15 15:01
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-14
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	2.9	J	10	10	2.9	ug/L		03/16/15 11:09	1
Chromium	1.6	J	7.0	4.0	0.55	ug/L		03/16/15 11:09	1
Cobalt	11		7.0	4.0	0.56	ug/L		03/16/15 11:09	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/16/15 11:09	1
Selenium	10	U	15	10	4.0	ug/L		03/16/15 11:09	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/16/15 11:09	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/16/15 11:09	1
Barium	260		200	5.0	1.0	ug/L		03/16/15 11:09	1
Calcium	970000	D	10000	2000	520	ug/L		03/16/15 11:17	2
Copper	20	U	50	20	3.8	ug/L		03/16/15 11:17	2
Magnesium	290000		5000	300	55	ug/L		03/16/15 11:09	1
Manganese	2100		15	5.0	0.46	ug/L		03/16/15 11:09	1
Nickel	21	J	40	5.0	0.76	ug/L		03/16/15 11:09	1
Potassium	50000		5000	900	70	ug/L		03/16/15 11:09	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 19:07	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 19:07	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 19:07	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 19:07	1
Iron	100	U	150	100	44	ug/L		03/17/15 19:07	1
Sodium	37000		1000	400	160	ug/L		03/17/15 19:07	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 19:07	1
Zinc	50	U	50	50	27	ug/L		03/17/15 19:07	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/16/15 13:28	1

Client Sample ID: FWGLL12mw-245C-0539-GW
Date Collected: 03/12/15 15:14
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-15
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.2	U	5.2	5.2	1.8	ug/L		03/28/15 18:19	1
Butyl benzyl phthalate	0.52	U	5.2	0.52	0.27	ug/L		03/28/15 18:19	1
Diethyl phthalate	1.0	U	2.1	1.0	0.62	ug/L		03/28/15 18:19	1
Dimethyl phthalate	0.52	U	2.1	0.52	0.30	ug/L		03/28/15 18:19	1
Di-n-butyl phthalate	5.2	U	5.2	5.2	1.8	ug/L		03/28/15 18:19	1
Di-n-octyl phthalate	0.52	U	2.1	0.52	0.24	ug/L		03/28/15 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*73*		*50 - 110*	*03/13/15 09:20*	*03/28/15 18:19*	*1*
2-Fluorophenol (Surr)	*70*		*20 - 110*	*03/13/15 09:20*	*03/28/15 18:19*	*1*
Nitrobenzene-d5 (Surr)	*67*		*40 - 110*	*03/13/15 09:20*	*03/28/15 18:19*	*1*
Phenol-d5 (Surr)	*75*		*10 - 115*	*03/13/15 09:20*	*03/28/15 18:19*	*1*
Terphenyl-d14 (Surr)	*70*		*50 - 135*	*03/13/15 09:20*	*03/28/15 18:19*	*1*
2,4,6-Tribromophenol (Surr)	*85*		*40 - 125*	*03/13/15 09:20*	*03/28/15 18:19*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 15:04	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		03/28/15 13:19	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 13:19	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 13:19	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 13:19	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 13:19	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 13:19	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/28/15 13:19	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/28/15 13:19	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		03/28/15 13:19	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 13:19	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/28/15 13:19	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/28/15 13:19	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 13:19	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 13:19	1
Nitroglycerin	0.51	U M	0.66	0.51	0.34	ug/L		03/28/15 13:19	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		03/28/15 13:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/17/15 14:16*	*03/28/15 13:19*	*1*
3,4-Dinitrotoluene	*92*		*79 - 111*	*03/17/15 14:16*	*03/31/15 16:48*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	**0.066**		0.050	0.012	0.0031	mg/L		04/07/15 15:16	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/20/15 18:53	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48152-1

Client Sample ID: FWGLL12mw-245C-0539-GF
Date Collected: 03/12/15 15:14
Date Received: 03/12/15 17:53

Lab Sample ID: 240-48152-16
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/16/15 11:13	1
Chromium	**0.99**	J	7.0	4.0	0.55	ug/L		03/16/15 11:13	1
Cobalt	**0.87**	J	7.0	4.0	0.56	ug/L		03/16/15 11:13	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/16/15 11:13	1
Selenium	10	U	15	10	4.0	ug/L		03/16/15 11:13	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/16/15 11:13	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/16/15 11:13	1
Barium	**25**	J	200	5.0	1.0	ug/L		03/16/15 11:13	1
Calcium	**150000**		5000	1000	260	ug/L		03/16/15 11:13	1
Copper	10	U	25	10	1.9	ug/L		03/16/15 11:13	1
Magnesium	**72000**		5000	300	55	ug/L		03/16/15 11:13	1
Manganese	**51**		15	5.0	0.46	ug/L		03/16/15 11:13	1
Nickel	**2.4**	J	40	5.0	0.76	ug/L		03/16/15 11:13	1
Potassium	**3500**	J	5000	900	70	ug/L		03/16/15 11:13	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 19:10	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/17/15 19:10	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 19:10	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 19:10	1
Iron	**85**	J	150	100	44	ug/L		03/17/15 19:10	1
Sodium	**25000**		1000	400	160	ug/L		03/17/15 19:10	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 19:10	1
Zinc	50	U	50	50	27	ug/L		03/17/15 19:10	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/16/15 13:29	1

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 1, 2015

SDG: 240-48152
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3. Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP addendum-specified target analytes reported?	X				QAPP Table 4-5
6. Was the GC/MS system tuned with bromofluorobenzene (BFB) during each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A3UX17–3/17/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) met?	X				QSM Table F-4
7d. Did target analytes with an average calibration type have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X			Bromomethane, chloroethane, acetone, methylene chloride and hexachlorobutadiene used a linear fit.	QSM Table F-4 R<0.995=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X				QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte with detected results?	X				QSM Table F-4 and section D.1.2.1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 1, 2015

SDG: 240-48152
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
9. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours?	X			3/18/15 @ 1231, 1834	
10. Were the QC/MRL recoveries 70-130%	X				LS
11. Was a second source verification (ICV) analyzed? Did all target analytes have a recovery of 80-120%?	X			3/17/15 @ 1216	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/18/15 @ 1122	QSM Table F-4
12a. Were the average response factors (RFs) for the (SPCCs) (see Table 2 below) met?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE4-0566-GW and FWGTEAM RQL-TRIPBLANK	
16a. Were target analytes detected in the field blanks?	X			Checked by ADR. Methylene chloride was detected in FWGTEAMRQL-TRIPBLANK at 0.63 µg/L. The methylene chloride result for FWGEQUIPRINSE4-0566-GW was qualified, "B".	QSM Table F-4 <5/10X =B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 1, 2015

SDG: 240-48152
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				FWGEQUIPRINSE4-0566-GW had methylene chloride detected at 0.66 µg/L, chloroform at 4.1 µg/L and bromodichloromethane at 0.38 µg/L. There were no detected concentrations of bromodichloromethane, chloroform or methylene chloride reported for the associated field samples, so no qualifications were made for the noted equipment rinse contamination.	
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-5 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-5, J/UJ
18. Was a MS/MSD prepared with each batch?	X			A matrix spike and spike duplicate were analyzed on sample FWGRQLmw-007c-0542-GW.	QSM Table F-4
18a. Were the MS/MSD recoveries within limits specified in Table G-4 of the DoD QSM with an RPD <30%?	X				QSM Table F-4, Table G-5 J/UJ Parent sample only
19. Was a field duplicate analyzed?	X			A field duplicate was collected for sample FWGRQLmw-009c-544-GW.	QSM Table F-4,
19a. Were the field duplicates RPDs within ±30%?			X	There were no detected concentrations reported for the parent and field duplicate analysis.	QSM Table F-4, RPD >30=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% -50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 1, 2015

SDG: 240-48152
Analysis: SW846 8260B

Additional Comments:

Table1- CCCs

Analyte
1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

Table 2- SPCCs

Analyte	Minimum RF
Chloromethane	0.10
1,1-Dichlorethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 1, 2015

SDG: 240-48152
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3.Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-6
6. Was the GC/MS system tuned each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Initial Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A4HP9–3/25/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) ≤0.050?	X				QSM Table F-4
7d. Were all other target analytes reported with an avg response have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X				QSM Table F-4 R<0.99=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X			Benzoic acid, 2,4-dinitrophenol 4,6-dinitro-2-methylphenol, pentachlorophenol and pyrene used a linear fit.	QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte?	X				QSM Table F-4 and section D.1.2.1
9 Was a breakdown check run at the beginning of every 12 hours with DDT degradation <20% and tailing factors of benzidine and pentachlorophenol ≤2?	X				QSM Table F-4 R
10. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours with recoveries within 70-130%?	X			3/28/15 @1315, 1845	Louisville Supplement to the DOD QSM

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 1, 2015

SDG: 240-48152
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			3/25/15 @1402	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/28/15 @1225	QSM Table F-4
12a. Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) ≥0.050?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE4-0566-GW	
16a. Were target analytes detected in the field blank?		X			QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-6 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-6, J/UJ
18. Was a MS/MSD prepared with each batch?	X				

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 1, 2015

SDG: 240-48152
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
18a. Were the MS/MSD recoveries within limits specified in Table G-6 of the DoD QSM with an RPD <30%?	X			Checked by ADR. FWGRQLMW-007c-0542-GW	QSM Table F-4, Table G-6 J/UJ Parent sample only
19. Was a field duplicate analyzed?	X			Parent FWGRQLMW-009c-0544-GW	
19a. Were the field duplicates RPDs within ±50%?			X	No detected sample results were reported.	QSM Table F-4, RPD >50=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% - 50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Additional Comments:

Table 1: CCCs *(All analytes if CCCs not included in standard)*

Base / Neutral Compounds	Acid Compounds
Acenaphthalene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
N-Nitrosodiphehylamine	Phenol
Di-n-octylphthalate	Pentachlorophenol
Fluoroanthene	2,4,6-Trichlorophenol
Benzo(a)pyrene	

Table 2: SPCCs -

N-Nitroso-di-n-propylamine	0.05
Hexachlorocyclopentadiene	0.05
2,4-Dinitrophenol	0.05
4-Nitrophenol	0.05

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta / May 1, 2015

SDG: 240-48152
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X			Checked by ADR.	QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a DDT standard analyzed every 12 hours? Was the DDT %breakdown <15%?	X				QSM Table F-2 >15%=J/R
7. Was an endrin standard analyzed every 12 hours? Was the endrin % breakdown <15%?	X				QSM Table F-2 >15%=J/R
8. Initial Calibration					
8a. Does the initial calibration curve consist of 5 concentration levels?	X			A2HP3 on 3/13/15 (tox) , 3/19/15	QSM Table F-2 R
8a. Were the %RSDs for each analyte ≤ 20%? OR was the average %RSD ≥20% with the r^2 >0.990?	X				QSM Table F-2 RSD>20% or r<0.99=J/R
9. Was a LOD Level Verification performed once per quarter with all target analytes detected?	X				QSM Table F-2 R
10. Was a MRL Verification performed at the beginning and end of the sequence or every 12 hours with results within limits of 70-130%?	X			3/19/15 @2310, 2334, 3/20/15 @ 0458, 0520	QSM Table F-2, G-14 >UL=J; <LL=J/UJ/R
11. Was a second source (ICV) verification analyzed after the ICAL? Were results 80-120%?	X			3/13/15 @1818 (tox) and 3/19/15 @1742	QSM Table F-2 >120%=J;<80%=J/UJ
12. Was a CCV run every 12 hours or at the beginning and end of the analytical run with the %D for all target analytes ≤20%?		X		3/19/15 @2136 (tox), 2247 3/20/15 @ 0348, 0543(tox) and 0607	QSM Table F-2 >120%=J; <80%=J/UJ
13. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-2
14. Were target analytes detected?		X		Checked by ADR.	QSM Table F-2 <5x=B
15. Was a field blank collected and analyzed?	X				
16. Were target analytes detected in the field blank analyses?		X			QSM Table F-2 <5x=B
17. Was an LCS prepared and analyzed with each batch?	X				QSM Table F-2

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta / May 1, 2015

SDG: 240-48152
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
18. Were the LCS recoveries within limits specified in QSM Table G-14?	X			Checked by ADR.	QSM Table G-14 >UL=J; <LL=J/UJ/R
19. Was a MS/MSD pair prepared with each batch?	X				QSM Table F-2
20. Was the MS/MSD parent a Ravenna sample?	X			FWGRQLmw-007c-0542-GW	
21. Were MS/MSD recoveries and RPD within limits specified in QSM Table G-14?	X				QSM Table F-2 Pj with >UL=J; <LL=J/UJ/R
22. Were surrogate recoveries as specified in QSM table G-3?	X			Checked by ADR.	QSM Table F-2 >LL=J; <LL=UJ/J/R
23. Was a field duplicate analyzed? Were the RPDs ≤50%?	X			Checked by ADR. parent sample FWGRQLmw-009c-0544-GW	RPD >50=J parent sample only
24. Were all positive results verified by a second column confirmation? Were the RPD's ≤ 40 for results greater than the LOQ?	X				QSM Table F-2 >40 RPD=J

References:

DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 1, 2015

SDG: 240-48152
Analysis: SW846 8082

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Calibration					
6a. Does the initial calibration curve consist of 5 concentration levels of Aroclors 1016 and 1260?	X			Instrument A2HP12 1/29/15 Stds = 0.05, 0.1, 0.2, 0.5, 1.0, 2.0	QSM Table F-2 R
6b. Was the % RSD ≤ 20%? or Were the r^2s >0.990?	X				QSM Table F-2 RSD>20% or r<0.99= J/R
7. Was a LOD Verification performed once per quarter? Were all target analytes detected?	X				QSM Table F-2 R
8. Was an MRL Level Verification performed at the beginning and end of the sequence or every 12 hours? Were recoveries 70-130%?	X			3/20/15 @ 0903, 1205	LCG Table 3 >UCL=J; <LCL=J/UJ/R;
9. Was a second source (ICV) verification performed after the ICAL? Were the avg of all peaks for each aroclor 80-120%?	X			1/30/15	QSM Table F-2 >120%=J; <80%=J/ UJ/R
10. Were single standards of the other five Aroclors run to aid in pattern recognition and to determine a single point calibration factor?		X		All aroclors had a multi-point calibration.	Method 8082 Section 5.6.2
11. Was a CCV run every 12 hours?	X			3/20/15 @0700,1149,	QSM Table F-2
12. Was the % D ≤ 20 % for each analyte?	X				QSM Table F-2 D>20%(neg)=J/R D>20% (pos) =J

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 1, 2015

SDG: 240-48152
Analysis: SW846 8082

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
13. Was a method blank prepared and analyzed with each batch?	X			Section checked by ADR.	QSM Table F-2
14. Were target analytes <1/2 the MRL?	X				QSM Table F-2 <5x = B
15. Was an equipment blank collected and analyzed?	X				
16. Were target analytes in the field blank analyses (equipment) <1/2 the MRL?	X			Section checked by ADR.	QSM Table F-2 <5x = B
17. Was an LCS prepared and analyzed with each batch?	X				QSM Table F-2
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Section checked by ADR.	QSM Table F-2, Table G-16, >UL=J; <LCL%=J/R/UJ;
19. Was a MS/MSD pair prepared with each batch?	X			FWGRQLmw-007c-0542-GW	LCG Table 3
20. Was the MS/MSD parent a Ravenna sample?	X				
21. Were MS/MSD recoveries and RPD within limits specified in the DOD QSM Table G-16?	X				QSM Table F-2, Table G-16, >UL=J; <LCL%=J/R/UJ;
22. Was the surrogate spiked into all samples?	X				
23. Were surrogate recoveries As specified in table G-3 of the DoD QSM?	X			Checked by ADR.	QSM Table F-2, Table G-3 >UCL=J; <LCL=J/UJ/R
24. Was a field duplicate analyzed? Were the RPDs <50%?	X			Checked by ADR. FWGRQLmw-009c-0544-GW	QSM Table F-2, RPD >50=J
25. Were all positive results verified by a second dissimilar column confirmation? Was the RPD ≤ 40?			X	No detected concentrations were reported that required confirmation.	QSM Table F-2, RPD>40=J

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 5, 2015

SDG: 240-48152
Analysis: SW846 9012A

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Does the initial calibration curve consist of at least 6 standards and one blank, with the correlation coefficient $R \geq 0.995$?	X			3/24/15	*DoD QSM Table F-10* R
7. Were a high and low standard distilled and analyzed with results within $\pm$ 15%?	X				*DoD QSM Table F-10* R
8. Was an LOD Verification performed at least once per quarter with all target analytes detected?	X				LCG Table 10 R
9. Was a MRL Level Verification performed at the beginning and end of the daily sequence? Were results within 70-130%?	X				LCG Table 10, LS >130%=J; 65-70%=J/UJ; <65%=J/R
10. Was a second source verification (ICV) analyzed after the ICAL and all analytes 85-115%?	X				*DoD QSM Table F-10* >115%=J; 80-85%=J/UJ; <80%=J/R
11. Was a method blank prepared and analyzed with each batch?	X				*DoD QSM Table F-10*
12. Were target analytes detected in the method blank?		X		Checked by ADR.	*DoD QSM Table F-10* <5x=B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes in the field blank analyses?		X			*DoD QSM Table F-10* <5x=B
15. Was a field duplicate analyzed? Were the RPDs $\leq$20%?	X			Checked by ADR.	>30% = J
16. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-10

Ravenna, OH Data Review Checklist

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Data Reviewer/Date: Angela Dragotta/ May 5, 2015

SDG: 240-48152
Analysis: SW846 9012A

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
17. Were the LCS recoveries 80-118%?	X			Checked by ADR.	*DoD QSM Table F-10* Lab Limits >118%=J; 50-79%=J/UJ; <50%=R
18. Was a MS and duplicate (sample or matrix) prepared once per every 10 samples?	X				DoD QSM Table F-10
19. Was the MS parent a Ravenna sample?	X			FWGRQLmw-007C-0542-GW	
20. Were matrix spike recoveries 42-140%?	X				DoD QSM Table F-10 >140%=J; <42%=J/UJ/R

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

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Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011
Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 5, 2015

SDG: 240-48152
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was a LOD Verification performed once per quarter with all target analytes detected?	X				DoD QSM Table F-8
7. Tuning (ICP MS Only)					
7a. Was a tune performed daily prior to calibration	X				DoD QSM Table F-8 R
7b. Mass Calibration <0.1 amu from true value	X				
7c. Resolution <0.9 amu full width at 10 % peak height	X				
7d. RSD <%5 for a minimum of four replicate analyses	X				
8.Calibration	X				
8a. Was the ICAL performed daily with at least	X			Hg and ICP 3/16/15, ICPMS 3/17/15	DoD QSM Tables F-8 and F-7
1high standard and a blank for ICP & ICPMS	X				
5 standards and a blank for Hg	X				
8b. Was the correlation coefficient r≥0.995 for Hg?	X				DoD QSM Tables F-8 and F-7 r<0.995=J/R
8c. Was the ICV (second source verification) analyzed after the ICAL with results 90-110% of the true value?	X				DoD QSM Tables F-8 and F-7
8d. Was the ICB analyzed after the ICV with detected results <1/2 the MRL?	X			ICPMS-The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony results for samples FWGRQLmw-008c-0543-GF and FWGRQLmw-007c-0542-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results reported for the associated samples.	DoD QSM, Tables F-8 and F-7 < 5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 5, 2015

SDG: 240-48152
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
Sample Analysis					
9. Was a MRL Level Verification performed at the beginning of the daily sequence and end of the analytical sequence bracketing samples? Were results 70-130%?	X				LS, DoD QSM Table G-18, >130%=J; 70-80%=J/UJ; <70%=J/UJ <65%=R, unless DL check with detected results
10. Were CCVs analyzed every 10 samples and at the end of the analytical sequence with results 90-110% of the true value?	X				DoD QSM, Tables F-8 and F-7 >110%=J, <85%=J/R 90-85%=J/UJ;
11. Were the CCBs run every 10 samples and at the end of the analytical sequence? Were results <1/2 the MRL?	X			ICP The CCBs analyzed 3/16/15 had chromium detected at 0.946 µg/L to 1.3 µg/L, cobalt at 0.858 µg/L, barium from 1.47 µg/L to 1.57 µg/L, copper at 1.96 µg/L, magnesium at 59.5 µg/L, manganese from 123 µg/L to 131 µg/L and potassium from 0.775 µg/L to 1.38 µg/L. The chromium results for samples FWGRQLmw-008c-0543-GF, FWGRQLmw-007c-0542-GF, FWGLL12mw-242c-0538-GF, FWGLL12mw-187c-0537-GF and FWGLL12mw-187c-0537-GF were qualified "U" as the reported chromium concentrations were less than five times blank contamination. No additional qualifications were made for the barium, cobalt, copper, magnesium, manganese or potassium contamination as any detected concentrations reported for the bracketed field samples were greater than five times contamination. ICPMS The CCBs analyzed 3/17/15 had antimony detected from 0.296 µg/L to 0.306 µg/L, beryllium from 0.054 µg/L to 0.150 µg/L and cadmium from 0.0850 µg/L to 0.121 µg/L . The antimony results for samples FWGRQLmw-008c-0543-GF and FWGRQLmw-007c-0542-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results reported for the associated samples less than five times blank contamination .	DoD QSM Tables F-8 and F-7 <5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 5, 2015

SDG: 240-48152
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
12. Was an Interelement Check Standard run at the beginning of the analytical sequence and every 12 hours with the ICS recovery within 80 to 120% of true value for each element of interest (ICP and ICPMS only)?	X				DoD QSM Tables F-8 and F-7 >120%=J; 50-79%=J/UJ; <50%=Pj/R
13. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
14. Were target analytes detected in the method blank?	X			Checked by ADR. ICP- Calcium was detected in the method blank at 324 µg/L, magnesium at 90.7 µg/L and manganese at 0.650 µg/L. No qualification of the data was required, as there were no detected calcium, manganese or magnesium concentrations reported for the associated field samples less than five times method blank contamination.	DoD QSM Tables F-8 and F-7, <5x = B
15. Was a field blank collected and analyzed?	X			FWGEQUIPRINSE4-0566-GW	
16. Were target analytes reported in the field blank analyses?		X		ADR checked section	DoD QSM Tables F-8 and F-7
17. Was a LCS prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7>120%=J; 70-79%=J/UJ; <70%=J/R
19. Was a matrix spike (MS) and lab duplicate sample prepared with each batch?	X				DoD QSM Tables F-8 and F-7
20. Was the MS and Lab Duplicate parent a Ravenna sample?	X			A matrix spike analysis and laboratory duplicate analysis was performed on sample FWGRQLmw-007c-0542-GF.	
21. Were the MS recoveries within 80-120%?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7, >120%=J; 70-79%=J/UJ; <70%=J/R All samples in batch
22. Was the lab sample duplicate RPD ≤ 20%, for sample results detected above the LOQ?		X		ICP-The laboratory duplicate analyzed on sample FWGRQLmw-007c-0542-GF had an RPD above control limits of 20% for chromium at 30%. No qualification of the data was required as the detected chromium concentration	DoD QSM Tables F-8 and F-7 >20% = J, All samples in batch

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 5, 2015

SDG: 240-48152
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				was less than the LOQ.	
23. Was a serial dilution performed, with the fivefold dilution within ± 10% of the original result?	X				DoD QSM, Tables F-8 and F-7 >20% = J. Only evaluate results above the LOQ . Qualify all samples in batch
24. Was a Post Digestion Spike analyzed as needed? Were results within 75-125%?	X				LCG Table 7, >125%=J; 30-75%=J/UJ; <30%=R
25. Was a field duplicate analyzed? Were the RPDs ± 50% for sample results detected above the LOQ?	X				>30% = J. Qualify parent sample only and only evaluate results above the LOQ
26. Were internal standards added to all ICPMS samples with intensity within 30-120% of the intensity of the ICAL internal standard?	X				DoD QSM Table F-8. >120%=J/R, <20%=J

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
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Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 5, 2015

SDG: 240-48152
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			LC10 3/11/15 LC9 1/23/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD $\leq$ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r$\geq$0.995? (0.990 for non-linear).	X			LC10-4-nitrotoluene used a linear fit LC9-3-nitrotoluene and RDX used a linear fit	
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			LC10 on 3/11 at 2136 LC9 1/23/15 @ 2328	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			LC10- 3/28/15 @0308, 0941 and 1530 LC9-3/31/15 @ 0901 and 1901	DoD QSM Table F-3 J/UJ
10.Was a MRL Level verification run at the beginning and end of every daily? Was the %D< 30%?	X			LC10- 3/28/15 @0352 and 1613 LC9-3/31/15 @ 1007 and 2008	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3
12. Were target analytes detected in the method blank <1/2 the MRL?	X			Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 5, 2015

SDG: 240-48152
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
15. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		Checked by ADR. A field duplicate was not submitted with this set of samples.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?	X				DoD QSM Table F-3 RPD>40%=J Only detected results above the LOQ were evaluated
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within limits specified in table G-12 of the DoD QSM?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J;30-LL=J/UJ; <30%=J/R
19.Was a MS/MSD or MS and sample duplicate prepared with each batch?	X			FWGRQLmw-007C-0542-GW	DoD QSM Table F-3
20. Were MS/MSD recoveries within limits specified in table G-12 of the DoD QSM with an RPD ≤30%?	X				DoD QSM Table F-3 Pj
21. Were surrogate recoveries within laboratory limits (79-111%)?	X				QSM Tables F-2 >UL=J; <LL =J/UJ

References: DoD Quality Systems Manual (QSM), version 4.1, October 2010
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Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 5, 2015

SDG: 240-48152
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was a LOD Verification performed once per quarter with all target analytes detected?	X				DoD QSM Table F-8
7. Tuning (ICP MS Only)					
7a. Was a tune performed daily prior to calibration	X				DoD QSM Table F-8 R
7b. Mass Calibration <0.1 amu from true value	X				
7c. Resolution <0.9 amu full width at 10 % peak height	X				
7d. RSD <%5 for a minimum of four replicate analyses	X				
8.Calibration	X				
8a. Was the ICAL performed daily with at least	X			Hg and ICP 3/16/15, ICPMS 3/17/15	DoD QSM Tables F-8 and F-7
1high standard and a blank for ICP & ICPMS	X				
5 standards and a blank for Hg	X				
8b. Was the correlation coefficient r≥0.995 for Hg?	X				DoD QSM Tables F-8 and F-7 r<0.995=J/R
8c. Was the ICV (second source verification) analyzed after the ICAL with results 90-110% of the true value?	X				DoD QSM Tables F-8 and F-7
8d. Was the ICB analyzed after the ICV with detected results <1/2 the MRL?	X			ICPMS-The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony results for samples FWGRQLmw-008c-0543-GF and FWGRQLmw-007c-0542-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results reported for the associated samples.	DoD QSM, Tables F-8 and F-7 < 5x = U

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SDG: 240-48152
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
Sample Analysis					
9. Was a MRL Level Verification performed at the beginning of the daily sequence and end of the analytical sequence bracketing samples? Were results 70-130%?	X				LS, DoD QSM Table G-18, >130%=J; 70-80%=J/UJ; <70%=J/UJ <65%=R, unless DL check with detected results
10. Were CCVs analyzed every 10 samples and at the end of the analytical sequence with results 90-110% of the true value?	X				DoD QSM, Tables F-8 and F-7 >110%=J, <85%=J/R 90-85%=J/UJ;
11. Were the CCBs run every 10 samples and at the end of the analytical sequence? Were results <1/2 the MRL?	X			ICP The CCBs analyzed 3/16/15 had chromium detected at 0.946 µg/L to 1.3 µg/L, cobalt at 0.858 µg/L, barium from 1.47 µg/L to 1.57 µg/L, copper at 1.96 µg/L, magnesium at 59.5 µg/L, manganese from 123 µg/L to 131 µg/L and potassium from 0.775 µg/L to 1.38 µg/L. The chromium results for samples FWGRQLmw-008c-0543-GF, FWGRQLmw-007c-0542-GF, FWGLL12mw-242c-0538-GF, FWGLL12mw-187c-0537-GF and FWGLL12mw-245c-0539-GF were qualified "U" as the reported chromium concentrations were less than five times blank contamination. No additional qualifications were made for the barium, cobalt, copper, magnesium, manganese or potassium contamination as any detected concentrations reported for the bracketed field samples were greater than five times contamination. ICPMS The CCBs analyzed 3/17/15 had antimony detected from 0.296 µg/L to 0.306 µg/L, beryllium from 0.054 µg/L to 0.150 µg/L and cadmium from 0.0850 µg/L to 0.121 µg/L . The antimony results for samples FWGRQLmw-008c-0543-GF and FWGRQLmw-007c-0542-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results reported for the associated samples less than five times blank contamination .	DoD QSM Tables F-8 and F-7 <5x = U

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Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 5, 2015

SDG: 240-48152
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
12. Was an Interelement Check Standard run at the beginning of the analytical sequence and every 12 hours with the ICS recovery within 80 to 120% of true value for each element of interest (ICP and ICPMS only)?	X				DoD QSM Tables F-8 and F-7 >120%=J; 50-79%=J/UJ; <50%=Pj/R
13. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
14. Were target analytes detected in the method blank?	X			Checked by ADR. ICP- Calcium was detected in the method blank at 324 µg/L, magnesium at 90.7 µg/L and manganese at 0.650 µg/L. No qualification of the data was required, as there were no detected calcium, manganese or magnesium concentrations reported for the associated field samples less than five times method blank contamination.	DoD QSM Tables F-8 and F-7, <5x = B
15. Was a field blank collected and analyzed?	X			FWGEQUIPRINSE4-0566-GW	
16. Were target analytes reported in the field blank analyses?		X		ADR checked section	DoD QSM Tables F-8 and F-7
17. Was a LCS prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7>120%=J; 70-79%=J/UJ; <70%=J/R
19. Was a matrix spike (MS) and lab duplicate sample prepared with each batch?	X				DoD QSM Tables F-8 and F-7
20. Was the MS and Lab Duplicate parent a Ravenna sample?	X			A matrix spike analysis and laboratory duplicate analysis was performed on sample FWGRQLmw-007c-0542-GF.	
21. Were the MS recoveries within 80-120%?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7, >120%=J; 70-79%=J/UJ; <70%=J/R All samples in batch
22. Was the lab sample duplicate RPD ≤ 20%, for sample results detected above the LOQ?		X		ICP-The laboratory duplicate analyzed on sample FWGRQLmw-007c-0542-GF had an RPD above control limits of 20% for chromium at 30%. No qualification of the data was required as the detected chromium concentration	DoD QSM Tables F-8 and F-7 >20% = J, All samples in batch

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 5, 2015

SDG: 240-48152
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				was less than the LOQ.	
23. Was a serial dilution performed, with the fivefold dilution within ± 10% of the original result?	X				DoD QSM, Tables F-8 and F-7 >20% = J. Only evaluate results above the LOQ . Qualify all samples in batch
24. Was a Post Digestion Spike analyzed as needed? Were results within 75-125%?	X				LCG Table 7, >125%=J; 30-75%=J/UJ; <30%=R
25. Was a field duplicate analyzed? Were the RPDs ± 50% for sample results detected above the LOQ?	X				>30% = J. Qualify parent sample only and only evaluate results above the LOQ
26. Were internal standards added to all ICPMS samples with intensity within 30-120% of the intensity of the ICAL internal standard?	X				DoD QSM Table F-8. >120%=J/R, <20%=J

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
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- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 5, 2015

SDG: 240-48152
Analysis: EPA 353.2

Review Questions:	Yes	No	N/A	Comments	Qual/Crtieria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				*QAPP Table 5-1, NELAC*
3. Were the holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was the Linear Calibration Range verified using 3 standards and 1 blank?	X				Method EPA 353.2 Section 9.2.2, *J*
7. Were the calibration standards verified by preparation and analysis of a Quality Control Sample? Were results within 10% of the stated values?	X			4/7/15 @ 1414	Method EPA 353.2 Section 9.2.3 Pj
8. Was an Instrument Performance Check Solution (CCV) analyzed immediately following daily calibration, after every 10th sample, and at the end of the analytical sequence?	X				Method EPA 353.2 Section 9.3.4
9. Was the CCV a mid-level standard from the initial calibration curve, with recovery 90-110%?	X				Method EPA 353.2 Section 9.3.4 >110%=J; <85%=J/R 85-90%=J/UJ;
10. Was an MRL check standard analyzed at the beginning and end of each analytical run, with recoveries 70-130%	X				LCG >130%=J; <70%=J/UJ;
11.Was a method blank and calibration blanks prepared and analyzed with each batch?	X				Method EPA 353.2 Section 9.3.1, 9.3.4
12. Were target analytes detected in the method blank or calibration blank?	X			ADR checked section; The ICB analyzed 4/7/15 @ 1416 had nitrate/nitrite detected at 0.006mg/L and bracketing CCBs from 0.004mg/L to 0.007mg/L. The method blank had nitrate/nitrate detected at 0.008mg/L. The nitrate/nitrite result for sample FWGEQUIPRINSE4-0566-GW was qualified, "U", as the detected result was <5x instrument blank contamination. No additional qualification was required as the detected concentrations for the remaining samples were greater than 5x blank contamination.	<5x = B(method blank) U (calibration blank)

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 5, 2015

SDG: 240-48152
Analysis: EPA 353.2

Review Questions:	Yes	No	N/A	Comments	Qual/Crtieria
13. Was a field blank (trip or equipment) collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses (trip or equipment) ?	X			ADR checked section; FWGEQUIPRINSE4-0566-GW had nitrate/nitrite detected at 0.014mg/L The nitrate-nitrite results for samples FWGLL12mw-242c-0538-GW and FWGLL12mw-245c-0539-GW were qualified, "B" as the reported concentrations were less than five times rinse blank contamination.	<5x=B
15. Was a field duplicate analyzed? Were the RPDs acceptable?		X		A field duplicate was not submitted with this set of samples.	
16. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within 90-110%?	X				Method EPA 353.2 Section 9.3.3 J/UJ; <50%= R
17. Was a MS/MSD pair prepared with each batch?	X				Method EPA 353.2 Section 9.4.1
18. Was the MS/MSD parent a Ravenna sample?	X			The matrix spike analysis was performed on a sample FWGEQUIPRINSE4-0566-GW.	
19. Were MS/MSD recoveries and RPD within acceptance criteria?	X			Checked by ADR.	Method EPA 353.2 Section 9.4.2 Pj

References:

DoD Quality Systems Manual (QSM), version 4.1, October 2010

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Attachment 2

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48152-1										
353.2	FWGEQUIPRINSE4-0566-GW	AQ	EB							
				Nitrate-Nitrite	0.050	0.014J		U	mg/L	Mb, Cb
353.2	FWGLL12mw-242C-0538-GW	AQ	N							
				Nitrate-Nitrite	0.050	0.045J		B	mg/L	Eb
353.2	FWGLL12mw-245C-0539-GW	AQ	N							
				Nitrate-Nitrite	0.050	0.066		B	mg/L	Eb
6010B	FWGLL12mw-187C-0537-GF	AQ	N							
				ARSENIC	10	2.9J		J	ug/L	RI
				CHROMIUM	7.0	1.6J		U	ug/L	Cb
				NICKEL	40	21J		J	ug/L	RI
6010B	FWGLL12mw-242C-0538-GF	AQ	N							
				BARIUM	200	26J		J	ug/L	RI
				CHROMIUM	7.0	1.7J		U	ug/L	Cb
				COBALT	7.0	0.57J		J	ug/L	RI
				NICKEL	40	1.6J		J	ug/L	RI
				POTASSIUM	5000	2100J		J	ug/L	RI
				VANADIUM	7.0	3.8J		J	ug/L	RI
6010B	FWGLL12mw-245C-0539-GF	AQ	N							
				BARIUM	200	25J		J	ug/L	RI
				CHROMIUM	7.0	0.99J		U	ug/L	Cb
				COBALT	7.0	0.87J		J	ug/L	RI
				NICKEL	40	2.4J		J	ug/L	RI
				POTASSIUM	5000	3500J		J	ug/L	RI

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48152-1										
6010B	FWGRQLmw-007C-0542-GF	AQ	N							
				BARIUM	200	35J		J	ug/L	RI
				CHROMIUM	7.0	2.1J		U	ug/L	Cb
				LEAD	10	2.5J		J	ug/L	RI
				NICKEL	40	14J		J	ug/L	RI
				POTASSIUM	5000	4900J		J	ug/L	RI
6010B	FWGRQLmw-008C-0543-GF	AQ	N							
				ARSENIC	10	7.8J		J	ug/L	RI
				BARIUM	200	37J		J	ug/L	RI
				CHROMIUM	7.0	0.68J		U	ug/L	Cb
				COBALT	7.0	3.2J		J	ug/L	RI
				NICKEL	40	3.9J		J	ug/L	RI
				POTASSIUM	5000	1700J		J	ug/L	RI
6010B	FWGRQLmw-009C-0544-GF	AQ	N							
				BARIUM	200	25J		J	ug/L	RI
				COBALT	7.0	1.5J		J	ug/L	RI
				NICKEL	40	1.8J		J	ug/L	RI
				POTASSIUM	5000	2500J		J	ug/L	RI
6010B	FWGRQLmw-DUP5-0561-GF	AQ	FD							
				BARIUM	200	25J		J	ug/L	RI
				COBALT	7.0	2.0J		J	ug/L	RI
				NICKEL	40	2.1J		J	ug/L	RI
				POTASSIUM	5000	2500J		J	ug/L	RI
6020	FWGLL12mw-245C-0539-GF	AQ	N							
				IRON	150	85J		J	ug/L	RI
6020	FWGRQLmw-007C-0542-GF	AQ	N							
				ANTIMONY	2.0	0.39J		U	ug/L	Cb

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48152-1										
6020	FWGRQLmw-008C-0543-GF	AQ	N							
				ANTIMONY	2.0	0.34J		U	ug/L	Cb
				CADMIUM	2.0	0.42J		J	ug/L	RI
8260B	FWGEQUIPRINSE4-0566-GW	AQ	EB							
				BROMODICHLOROMETHANE	1.0	0.38J		J	ug/L	RI
				METHYLENE CHLORIDE	1.0	0.66J		B	ug/L	Tb
8260B	FWGTEAMRQL-TRIPBLANK	AQ	TB							
				METHYLENE CHLORIDE	1.0	0.63J		J	ug/L	RI
9012A	FWGRQLmw-007C-0542-GW	AQ	N							
				CYANIDE	0.010	0.0058J		J	mg/L	RI
WS-WC-0050	FWGLL12mw-187C-0537-GW	AQ	N							
				Nitrocellulose	2.0	1.2J		J	mg/L	RI

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Qualifier Summary

Lab Reporting Batch ID: 240-48152-1 Laboratory: TESTAME

EDD Filename: 240-48152-1a eQAPP Name: RVAAP 66-rev August 2014

Method Category: GENCHEM **Method:** 353.2 **Matrix:** AQ

Sample ID: FWGEQUIPRINSE4-0566-GW Collected: 3/12/2015 4:30:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate-Nitrite	0.014	J	0.0031	MDL	0.050	LOQ	mg/L	U	Mb, Cb

Sample ID: FWGLL12mw-242C-0538-GW Collected: 3/12/2015 3:45:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate-Nitrite	0.045	J	0.0031	MDL	0.050	LOQ	mg/L	B	Eb

Sample ID: FWGLL12mw-245C-0539-GW Collected: 3/12/2015 3:14:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate-Nitrite	0.066		0.0031	MDL	0.050	LOQ	mg/L	B	Eb

Method Category: GENCHEM **Method:** 9012A **Matrix:** AQ

Sample ID: FWGRQLmw-007C-0542-GW Collected: 3/12/2015 10:08:00 AM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CYANIDE	0.0058	J	0.0020	MDL	0.010	LOQ	mg/L	J	RI

Method Category: GENCHEM **Method:** WS-WC-0050 **Matrix:** AQ

Sample ID: FWGLL12mw-187C-0537-GW Collected: 3/12/2015 3:01:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	1.2	J	0.48	MDL	2.0	LOQ	mg/L	J	RI

Method Category: METALS **Method:** 6010B **Matrix:** AQ

Sample ID: FWGLL12mw-187C-0537-GF Collected: 3/12/2015 3:01:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	2.9	J	2.9	MDL	10	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48152-1 Laboratory: TESTAME

EDD Filename: 240-48152-1a eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS

Method: 6010B **Matrix:** AQ

Sample ID: FWGLL12mw-187C-0537-GF *Collected:* 3/12/2015 3:01:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHROMIUM	1.6	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
NICKEL	21	J	0.76	MDL	40	LOQ	ug/L	J	RI

Sample ID: FWGLL12mw-242C-0538-GF *Collected:* 3/12/2015 3:45:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	26	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	1.7	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
COBALT	0.57	J	0.56	MDL	7.0	LOQ	ug/L	J	RI
NICKEL	1.6	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	2100	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	3.8	J	2.4	MDL	7.0	LOQ	ug/L	J	RI

Sample ID: FWGLL12mw-245C-0539-GF *Collected:* 3/12/2015 3:14:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	25	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	0.99	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
COBALT	0.87	J	0.56	MDL	7.0	LOQ	ug/L	J	RI
NICKEL	2.4	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	3500	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGRQLmw-007C-0542-GF *Collected:* 3/12/2015 10:08:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	35	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	2.1	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
LEAD	2.5	J	1.9	MDL	10	LOQ	ug/L	J	RI
NICKEL	14	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	4900	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGRQLmw-008C-0543-GF *Collected:* 3/12/2015 9:57:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	7.8	J	2.9	MDL	10	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48152-1 Laboratory: TESTAME

EDD Filename: 240-48152-1a eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS
Method: 6010B **Matrix:** AQ

Sample ID: FWGRQLmw-008C-0543-GF *Collected:* 3/12/2015 9:57:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	37	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	0.68	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
COBALT	3.2	J	0.56	MDL	7.0	LOQ	ug/L	J	RI
NICKEL	3.9	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	1700	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGRQLmw-009C-0544-GF *Collected:* 3/12/2015 10:41:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	25	J	1.0	MDL	200	LOQ	ug/L	J	RI
COBALT	1.5	J	0.56	MDL	7.0	LOQ	ug/L	J	RI
NICKEL	1.8	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	2500	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGRQLmw-DUP5-0561-GF *Collected:* 3/12/2015 11:35:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	25	J	1.0	MDL	200	LOQ	ug/L	J	RI
COBALT	2.0	J	0.56	MDL	7.0	LOQ	ug/L	J	RI
NICKEL	2.1	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	2500	J	70	MDL	5000	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6020 **Matrix:** AQ

Sample ID: FWGLL12mw-245C-0539-GF *Collected:* 3/12/2015 3:14:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	85	J	44	MDL	150	LOQ	ug/L	J	RI

Sample ID: FWGRQLmw-007C-0542-GF *Collected:* 3/12/2015 10:08:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.39	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48152-1

Laboratory: TESTAME

EDD Filename: 240-48152-1a

eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS

Method: 6020 **Matrix:** AQ

Sample ID: FWGRQLmw-008C-0543-GF *Collected:* 3/12/2015 9:57:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.34	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb
CADMIUM	0.42	J	0.40	MDL	2.0	LOQ	ug/L	J	RI

Method Category: VOA

Method: 8260B **Matrix:** AQ

Sample ID: FWGEQUIPRINSE4-0566-GW *Collected:* 3/12/2015 4:30:00 PM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BROMODICHLOROMETHANE	0.38	J	0.15	MDL	1.0	LOQ	ug/L	J	RI
METHYLENE CHLORIDE	0.66	J	0.28	MDL	1.0	LOQ	ug/L	B	Tb

Sample ID: FWGTEAMRQL-TRIPBLANK *Collected:* 3/12/2015 8:00:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.63	J	0.28	MDL	1.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48152-1 Laboratory: TESTAME

EDD Filename: 240-48152-1a eQAPP Name: RVAAP 66-rev August 2014

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Eb	Equipment Blank Contamination
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value
Tb	Trip Blank Contamination

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Review Summary

Lab Reporting Batch ID: 240-48152-1
EDD Filename: 240-48152-1a

Laboratory: TESTAME
eQAPP Name: RVAAP 66-rev August 2014

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	SR
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	SR

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Trip Blank Outlier Report

Lab Reporting Batch ID: 240-48152-1 **Laboratory: TESTAME**

EDD Filename: 240-48152-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method: 8260B
Matrix: AQ

Trip Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGTEAMRQL-TRIPBLANK (RES)	3/12/2015 8:00:00 AM	METHYLENE CHLORIDE	0.63 ug/L	FWGEQUIPRINSE4-0566-GW FWGLL12mw-187C-0537-GW FWGLL12mw-242C-0538-GW FWGLL12mw-245C-0539-GW FWGRQLmw-007C-0542-GW FWGRQLmw-008C-0543-GW FWGRQLmw-009C-0544-GW FWGRQLmw-DUP5-0561-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGEQUIPRINSE4-0566-GW(RES)	METHYLENE CHLORIDE	0.66 ug/L	0.66U ug/L

Method Blank Outlier Report

Lab Reporting Batch ID: 240-48152-1 | Laboratory: TESTAME

EDD Filename: 240-48152-1a | eQAPP Name: RVAAP 66-rev August 2014

Method: 353.2
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 320-70595/10	4/7/2015 2:28:00 PM	Nitrate-Nitrite	0.00800 mg/L	FWGEQUIPRINSE4-0566-GW FWGLL12mw-187C-0537-GW FWGLL12mw-242C-0538-GW FWGLL12mw-245C-0539-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGEQUIPRINSE4-0566-GW(RES/TOT)	Nitrate-Nitrite	0.014 mg/L	0.014U mg/L

Method: 6010B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-171971/1-A	3/16/2015 11:22:00 AM	CALCIUM MAGNESIUM MANGANESE	324 ug/L 90.7 ug/L 0.650 ug/L	FWGEQUIPRINSE4-0566-GW FWGLL12mw-187C-0537-GF FWGLL12mw-242C-0538-GF FWGLL12mw-245C-0539-GF FWGRQLmw-007C-0542-GF FWGRQLmw-008C-0543-GF FWGRQLmw-009C-0544-GF FWGRQLmw-DUP5-0561-GF

Method: WS-WC-0050
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 320-68441/1-B	3/20/2015 6:23:00 PM	Nitrocellulose	1.05 mg/L	FWGEQUIPRINSE4-0566-GW FWGLL12mw-242C-0538-GW FWGLL12mw-245C-0539-GW FWGRQLmw-007C-0542-GW FWGRQLmw-008C-0543-GW FWGRQLmw-009C-0544-GW FWGRQLmw-DUP5-0561-GW

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 240-48152-1

Laboratory: TESTAME

EDD Filename: 240-48152-1a

eQAPP Name: RVAAP 66-rev August 2014

Method: 6010B
Matrix: AQ

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FWGRQLmw-007C-0542-GFDUP (TOT) (FWGEQUIPRINSE4-0566-GW FWGLL12mw-187C-0537-GF FWGLL12mw-242C-0538-GF FWGLL12mw-245C-0539-GF FWGRQLmw-007C-0542-GF FWGRQLmw-008C-0543-GF FWGRQLmw-009C-0544-GF FWGRQLmw-DUP5-0561-GF)	CHROMIUM	30	20.00	J (all detects) UJ (all non-detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 240-48152-1 **Laboratory: TESTAME**

EDD Filename: 240-48152-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method: 6010B
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	FWGRQLmw-009C-054 4-GF (TOT)	FWGRQLmw-DUP5-0561-GF (TOT)			
ARSENIC	12	13	8	50.00	No Qualifiers Applied
BARIUM	25	25	0	50.00	
CALCIUM	19000	20000	5	50.00	
COBALT	1.5	2.0	29	50.00	
MAGNESIUM	14000	15000	7	50.00	
MANGANESE	610	630	3	50.00	
NICKEL	1.8	2.1	15	50.00	
POTASSIUM	2500	2500	0	50.00	

Method: 6020
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	FWGRQLmw-009C-054 4-GF (TOT)	FWGRQLmw-DUP5-0561-GF (TOT)			
IRON	4100	4400	7	50.00	No Qualifiers Applied
SODIUM	1700	1700	0	50.00	

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: 240-48152-1 **Laboratory: TESTAME**

EDD Filename: 240-48152-1a **eQAPP Name: RVAAP 66-rev August 2014**

Method: 353.2
Matrix: AQ

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGEQUIPRINSE4-0566-GW(RES/TOT)	3/12/2015 4:30:00 PM	Nitrate-Nitrite	0.014 mg/L	FWGLL12mw-187C-0537-GF FWGLL12mw-187C-0537-GW FWGLL12mw-242C-0538-GF FWGLL12mw-242C-0538-GW FWGLL12mw-245C-0539-GF FWGLL12mw-245C-0539-GW FWGRQLmw-007C-0542-GF FWGRQLmw-007C-0542-GW FWGRQLmw-008C-0543-GF FWGRQLmw-008C-0543-GW FWGRQLmw-009C-0544-GF FWGRQLmw-009C-0544-GW FWGRQLmw-DUP5-0561-GF FWGRQLmw-DUP5-0561-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGLL12mw-242C-0538-GW(RES/TOT)	Nitrate-Nitrite	0.045 mg/L	0.045U mg/L
FWGLL12mw-245C-0539-GW(RES/TOT)	Nitrate-Nitrite	0.066 mg/L	0.066U mg/L

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48186

Date: June 24, 2015
Revision: 1

Data Reviewer: Angela Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 13, 2015 the following samples were collected from groundwater-monitoring wells at the former Ravenna Army Ammunition Plant and analyzed as part of SDG 240-48186. Sample analysis was performed by Test America. Test America-North Canton performed all requested analyses with the exception of the analytical for methods 8330, M8330, TALSOPWS-WC-0050 and 6860. Methods 8330, M8330 and TALSOPWS-WC-0050 were performed by Test America, West Sacramento. Method 6860, if requested, was performed by Test America, Denver.

Sample ID	VOC by SW846 8260	SVOC 4 by SW846 8270	SVOC 1 and 2 by SW846 8270	SVOC 1 by SW846 8270	Pesticides by SW846 8081	PCBs/ SW846 8082	Explosives/Propellants by SW846 8330, Mod. 8330 and TALSOP WS-WC-0050	Cyanide SW846 9012	Perchlorate by SW846 6860	NO2/NO3, EPA 353.2	Metals [3]		
											SW846 6010B	SW846 6020	Mercury by SW846 7470A
FWGFWGmw-004-0513-GW/GF				X			X				X	X	X
FWGEQUIPRINSE1-1822-GW				X			X				X	X	X

1) All metals samples with the exception of FWGEQUIPRINSE1-0563-GW were field filtered (GF).
2) SVOC1= Phthalates only
3) EPA 6020 metals include aluminum, antimony, beryllium, cadmium, iron, sodium, thallium and zinc. EPA 6010B metals include arsenic, chromium, cobalt, lead, selenium, silver, vanadium, barium, calcium, copper, magnesium, manganese, nickel and potassium.

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004*, Analytical Methods, and Laboratory Standard Operating Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Per the DoD QSM, the laboratory data is reported as follows: Non detected results were reported at the LOD with a "U" flag. Detected results between the DL and LOQ were reported as estimated, qualified with a "J" flag.

LOD - An estimate of the minimum amount of a substance that an analytical process can reliably detect.

LOQ - The lowest concentration that produces a quantitative result within specified limits of precision and bias.

DL- The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence.

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48186

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Checklists used in the verification process are in Attachment I and sample results with outliers requiring qualification are in Attachment II.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, at 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

SVOCs- 8270C

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD

Matrix Spike/Spike Duplicate Recovery and RPD Criteria

A matrix spike/ spike duplicate was not requested on a sample from this workorder.

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

Metals - 6010B

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria
- Post Digestion Spike Criteria

Blanks

The ICB analyzed 3/17/15@ 0633 had cobalt detected at 0.594 µg/L, manganese at 0.523 µg/L, potassium at 80.1 µg/L and nickel detected at 1.24 µg/L. No qualification of the data was required due to ICB contamination as any detected concentrations of cobalt, manganese, potassium or nickel were greater than five times contamination.

The CCBs analyzed 3/17/15 had chromium detected from 0.702 µg/L to 0.928 µg/L, cobalt detected from 0.723 µg/L to 1.09µg/L, manganese from 0.785 µg/L to 1.26 µg/L at 0.523 µg/L, potassium at 87.5 µg/L to 130 µg/L and nickel detected at 1.36 µg/L. The chromium and manganese results for sample FWGFWGmw-004-0513-GF were qualified, "U" as the reported concentrations were less than 5x blank contamination. No qualification of the data was required due to cobalt, potassium or nickel contamination as any detected concentrations of these target analytes were greater than five times contamination.

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Barium was detected in the method blank at 3.54 µg/L, calcium at 1800 µg/L, magnesium at 94.6 µg/L, manganese at 2.22 µg/L and potassium at 124 µg/L. The potassium result for sample FWGEQUIPRINSE1-1822-GW and the manganese result for sample FWGFWGmw-004-0513-GF were qualified, "B" as the reported concentrations were less than 5x blank contamination. No qualification was required for the barium, calcium or magnesium contamination as all reported concentrations of these analytes were greater than five times method blank contamination.

Potassium was detected in FWGEQUIPRINSE1-1822-GW at 100 µg/L. No qualification of the data was made as the reported potassium concentration for the associated field sample was greater than 5x contamination.

Laboratory Duplicate RPD
The laboratory duplicate analyzed on sample FWGFWGmw-004-0513-GF had an RPD above control limits of 20% for manganese at 33% and for chromium at 66%. No qualification of the data was required as the detected manganese and chromium concentrations were less than the LOQ.

Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

Metals - 6020
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning Criteria
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field Duplicate RPD Criteria
- Internal Standard Recovery
- Post Digestion Spike Criteria

Blanks
The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony results for samples FWGFWGmw-004-0513-GF and FWGEQUIPRINSE1-1822-GW were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results reported for the associated samples.

The CCBs analyzed 3/17/15 had antimony detected from 0.306 µg/L to 0.318 µg/L, beryllium from 0.054 µg/L to 0.119 µg/L and cadmium from 0.0850 µg/L to 0.134 µg/L . The antimony results for samples FWGFWGmw-004-0513-GF and FWGEQUIPRINSE1-1822-GW were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results reported for the associated samples.

Antimony was detected in FWGEQUIPRINSE1-1822-GW at 0.49 µg/L. The antimony result for sample FWGFWGmw-004-0513-GF was qualified, "B" as the the reported concentration was less than five times blank contamination.

Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

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Mercury - 7470A

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

Field Duplicate RPD Criteria

A field duplicate was not submitted with this sample set.

No QC outliers were noted.

Explosives- 8330

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration Criteria
- ICV and CCV criteria
- Retention time criteria
- LOD and MRL verification criteria
- Surrogate recovery criteria
- Method /field blank criteria
- LCS/LCD Recovery and RPD Criteria
- Matrix spike/spike duplicate recovery criteria and RPD
- Second column confirmation RPD
- Field Duplicate RPD

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

No QC outliers were noted.

Nitroguanidine- 8330M

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration criteria
- Retention time criteria
- LOD and MRL verification criteria
- ICV and CCV criteria
- Method /field blank criteria
- LCS/LCSD percent recoveries and RPD value criteria
- Matrix spike recovery criteria
- Second column confirmation
- Field Duplicate RPD

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

Data Verification Summary

Site: Ravenna Army Ammunition Plant
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No QC outliers were noted.

Nitrocellulose – WS-WC-0050

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD percent recoveries and RPD value criteria
- MS/MSD percent recoveries and RPD
- Field Duplicate RPD

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

Blank Contamination

Nitrocellulose was detected in the method blank at 1.05 mg/L. No qualification of the data was required as there were no detected concentration of nitrocellulose reported for the associated field samples.

No additional QC outliers were noted.

Page left blank intentionally.

Sample Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48186-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-48186-1	FWGFWGmw-004-0513-GW	Water	03/13/15 10:17	03/13/15 12:49
240-48186-2	FWGFWGmw-004-0513-GF	Water	03/13/15 10:17	03/13/15 12:49
240-48186-3	FWGEQUIPRINSE1-1822-GW	Water	03/13/15 11:15	03/13/15 12:49

Method Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48186-1

Method	Method Description	Protocol	Laboratory
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
8330 Modified	Nitroguanidine (HPLC)	SW846	TAL SAC
8330A	Nitroaromatics and Nitramines	SW846	TAL SAC
6010B	Metals (ICP)	SW846	TAL CAN
6020	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
WS-WC-0050	Nitrocellulose	TAL-SAC	TAL SAC

Protocol References:

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

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

Laboratory References:

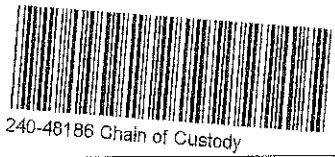
TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS



TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: John Miller	Site Contact: Erik Corbin	Date: 3/13/15	COC No: SH031315
Company Name: EQM	Tel/Fax: 513 825 7500 Fax 7495	Lab Contact: Same	Carrier:	1 of 1 COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Cincinnati OH 45240	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513 825 7500	TAT if different from Below _____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: RVAAP06 (OH)	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	SVOC 8270	Explosives 8330	Propellants	Metals 6010/6020 7470	Sample Specific Notes:
FWGFWGmw-004-0513-GW/~~GF~~ SH	3/13/15	1017	G	GW		N	N	X	X	X		
FWGFWGmw-004-0513-~~GW~~/GF SH	3/13/15	1017	G	GW	1	X	N				X	
FWGEQUIPRINSE1-1822-GW	3/13/15	1115	G	GW		N	N	X	X	X	X	

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Special Instructions/QC Requirements & Comments:
all metals are field filtered

Temps may not meet requirements if sampled collection is close to pick up time

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EQM	3/13/15 1150	[signature]	TestAmerica	3/13/15 1150
R. Robison	TestAm	3/13/15 1249	Terry Burn	JA Cam	3/13/15 1249

4/2/2015

TestAmerica Canton Sample Receipt Form/Narrative — Login # : 41880
Canton Facility

Client EQM — Site Name RVAAP — Cooler unpacked by: Jerry Burns

Cooler Received on 3/13/15 — Opened on 3/13/15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time — Storage Location

TestAmerica Cooler # NONE Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt

~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~

IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 2.9 °C ☐ See Multiple Cooler Form

~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~

IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were custody seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were custody seals on the bottle(s)?	Yes	No
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the sampler(s) clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Were sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC425511
12. Were VOAs on the COC?	Yes	No
13. Were air bubbles >6 mm in any VOA vials? TB 3/13	Yes	No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No

Contacted PM MJL Date 3/13/15 by TB via Verbal Voice Mail Other

Concerning #14

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: JM

COC - FWG Equip Rinse 1-1822-GW, Metals bottle label -

FWG Equip Rinse 1-1822-GF - will log ID per COC

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

Job ID: 240-48186-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Environmental Quality Mgt., Inc.

Project: RVAAP 66 (OH)

Report Number: 240-48186-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The 353.2 Nitrocellulose, 8330 Nitroguandine and 8330A Explosives analysis were performed at the TestAmerica Sacramento Laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

All parameters for which TestAmerica North Canton has certification were evaluated to the limit of detection (LOD) and include qualified results where applicable. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

RECEIPT

The samples were received on 3/13/2015 12:49 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGFWGmw-004-0513-GW (240-48186-1) and FWGEQUIPRINSE1-1822-GW (240-48186-3) were analyzed for semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8270C. The samples were prepared on 03/14/2015 and analyzed on 03/17/2015.

Surrogates are added during the extraction process prior to dilution. When the sample is diluted, surrogate recoveries are diluted out and

Job ID: 240-48186-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

no corrective action is required.

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

NITROGUANIDINE (HPLC)
Samples FWGFWGmw-004-0513-GW (240-48186-1) and FWGEQUIPRINSE1-1822-GW (240-48186-3) were analyzed for nitroguanidine (HPLC) in accordance with EPA SW-846 Method 8330_Ngu. The samples were prepared on 03/17/2015 and analyzed on 03/19/2015.

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

EXPLOSIVES
Samples FWGFWGmw-004-0513-GW (240-48186-1) and FWGEQUIPRINSE1-1822-GW (240-48186-3) were analyzed for explosives in accordance with EPA SW-846 Method 8330A. The samples were prepared on 03/17/2015 and analyzed on 03/28/2015 and 03/31/2015.

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

TOTAL RECOVERABLE METALS (ICP)
Samples FWGFWGmw-004-0513-GF (240-48186-2) and FWGEQUIPRINSE1-1822-GW (240-48186-3) were analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010B DoD. The samples were prepared on 03/16/2015 and analyzed on 03/17/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

Barium, Calcium, Magnesium, Manganese and Potassium were detected in method blank MB 240-172202/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Chromium and Manganese exceeded the RPD limit for the duplicate of sample FWGFWGmw-004-0513-GFDU (240-48186-2). 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.

TOTAL RECOVERABLE METALS (ICPMS)
Samples FWGFWGmw-004-0513-GF (240-48186-2) and FWGEQUIPRINSE1-1822-GW (240-48186-3) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020 DoD. The samples were prepared on 03/16/2015 and analyzed on 03/17/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

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

TOTAL MERCURY
Samples FWGFWGmw-004-0513-GF (240-48186-2) and FWGEQUIPRINSE1-1822-GW (240-48186-3) were analyzed for total mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 03/16/2015 and analyzed on 03/17/2015.

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

NITROCELLULOSE
Samples FWGFWGmw-004-0513-GW (240-48186-1) and FWGEQUIPRINSE1-1822-GW (240-48186-3) were analyzed for Nitrocellulose in accordance with EPA Method 353.2. The samples were prepared on 03/19/2015 and analyzed on 03/20/2015.

Job ID: 240-48186-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Nitrocellulose was detected in method blank MB 320-68441/1-B 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.

The method blank for batch 69251 contained NITROCELLULOSE above the method detection limit. This target analyte concentration was less than the reporting limit (RL) but greater than the DoD criteria (contamination less than 1/2 the RL) for method blank contamination. All of the following samples were non-detect; results were either below 1/2 the RL or non-detect. These samples are being reported. FWGEQUIPRINSE1-1822-GW (240-48186-3), FWGFWGmw-004-0513-GW (240-48186-1)

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

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48186-1

Client Sample ID: FWGFWGmw-004-0513-GW
Date Collected: 03/13/15 10:17
Date Received: 03/13/15 12:49

Lab Sample ID: 240-48186-1
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.3	U	5.3	5.3	1.8	ug/L		03/17/15 15:21	1
Butyl benzyl phthalate	0.53	U	5.3	0.53	0.28	ug/L		03/17/15 15:21	1
Diethyl phthalate	1.1	U	2.1	1.1	0.64	ug/L		03/17/15 15:21	1
Dimethyl phthalate	0.53	U	2.1	0.53	0.31	ug/L		03/17/15 15:21	1
Di-n-butyl phthalate	5.3	U	5.3	5.3	1.8	ug/L		03/17/15 15:21	1
Di-n-octyl phthalate	0.53	U	2.1	0.53	0.24	ug/L		03/17/15 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*50 - 110*	*03/14/15 10:18*	*03/17/15 15:21*	*1*
2-Fluorophenol (Surr)	*71*		*20 - 110*	*03/14/15 10:18*	*03/17/15 15:21*	*1*
Nitrobenzene-d5 (Surr)	*67*		*40 - 110*	*03/14/15 10:18*	*03/17/15 15:21*	*1*
Phenol-d5 (Surr)	*73*		*10 - 115*	*03/14/15 10:18*	*03/17/15 15:21*	*1*
Terphenyl-d14 (Surr)	*77*		*50 - 135*	*03/14/15 10:18*	*03/17/15 15:21*	*1*
2,4,6-Tribromophenol (Surr)	*80*		*40 - 125*	*03/14/15 10:18*	*03/17/15 15:21*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 15:22	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		03/28/15 14:03	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 14:03	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 14:03	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 14:03	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		03/28/15 14:03	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 14:03	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/28/15 14:03	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		03/28/15 14:03	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		03/28/15 14:03	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 14:03	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		03/28/15 14:03	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		03/28/15 14:03	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 14:03	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		03/28/15 14:03	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		03/28/15 14:03	1
PETN	0.51	U	0.66	0.51	0.30	ug/L		03/28/15 14:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*92*	*M*	*79 - 111*	*03/17/15 14:16*	*03/28/15 14:03*	*1*
3,4-Dinitrotoluene	*93*		*79 - 111*	*03/17/15 14:16*	*03/31/15 17:54*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/20/15 18:55	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48186-1

Client Sample ID: FWGFWGmw-004-0513-GF
Date Collected: 03/13/15 10:17
Date Received: 03/13/15 12:49

Lab Sample ID: 240-48186-2
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/17/15 10:15	1
Chromium	1.8	J	7.0	4.0	0.55	ug/L		03/17/15 10:15	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/17/15 10:15	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/17/15 10:15	1
Selenium	10	U	15	10	4.0	ug/L		03/17/15 10:15	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/17/15 10:15	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/17/15 10:15	1
Barium	21	J	200	5.0	1.0	ug/L		03/17/15 10:15	1
Calcium	**91000**		5000	1000	260	ug/L		03/17/15 10:15	1
Copper	10	U	25	10	1.9	ug/L		03/17/15 10:15	1
Magnesium	**46000**		5000	300	55	ug/L		03/17/15 10:15	1
Manganese	**5.3**	J	15	5.0	0.46	ug/L		03/17/15 10:15	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/17/15 10:15	1
Potassium	**740**	J	5000	900	70	ug/L		03/17/15 10:15	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 19:33	1
Antimony	**0.33**	J	2.0	1.0	0.33	ug/L		03/17/15 19:33	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 19:33	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 19:33	1
Iron	100	U	150	100	44	ug/L		03/17/15 19:33	1
Sodium	**4200**		1000	400	160	ug/L		03/17/15 19:33	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 19:33	1
Zinc	50	U	50	50	27	ug/L		03/17/15 19:33	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/17/15 10:35	1

Client Sample ID: FWGEQUIPRINSE1-1822-GW
Date Collected: 03/13/15 11:15
Date Received: 03/13/15 12:49

Lab Sample ID: 240-48186-3
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.9	U	4.9	4.9	1.7	ug/L		03/17/15 15:46	1
Butyl benzyl phthalate	0.49	U	4.9	0.49	0.25	ug/L		03/17/15 15:46	1
Diethyl phthalate	0.97	U	1.9	0.97	0.58	ug/L		03/17/15 15:46	1
Dimethyl phthalate	0.49	U	1.9	0.49	0.28	ug/L		03/17/15 15:46	1
Di-n-butyl phthalate	4.9	U	4.9	4.9	1.7	ug/L		03/17/15 15:46	1
Di-n-octyl phthalate	0.49	U	1.9	0.49	0.22	ug/L		03/17/15 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*85*		*50 - 110*	*03/14/15 10:18*	*03/17/15 15:46*	*1*
2-Fluorophenol (Surr)	*80*		*20 - 110*	*03/14/15 10:18*	*03/17/15 15:46*	*1*
Nitrobenzene-d5 (Surr)	*77*		*40 - 110*	*03/14/15 10:18*	*03/17/15 15:46*	*1*
Phenol-d5 (Surr)	*84*		*10 - 115*	*03/14/15 10:18*	*03/17/15 15:46*	*1*
Terphenyl-d14 (Surr)	*88*		*50 - 135*	*03/14/15 10:18*	*03/17/15 15:46*	*1*
2,4,6-Tribromophenol (Surr)	*84*		*40 - 125*	*03/14/15 10:18*	*03/17/15 15:46*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		03/19/15 15:39	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		03/28/15 14:46	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 14:46	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 14:46	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/28/15 14:46	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		03/28/15 14:46	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		03/28/15 14:46	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/28/15 14:46	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		03/28/15 14:46	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		03/28/15 14:46	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 14:46	1
HMX	0.050	U	0.15	0.050	0.036	ug/L		03/28/15 14:46	1
RDX	0.050	U	0.15	0.050	0.036	ug/L		03/28/15 14:46	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 14:46	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		03/28/15 14:46	1
Nitroglycerin	0.50	U	0.65	0.50	0.33	ug/L		03/28/15 14:46	1
PETN	0.50	U	0.65	0.50	0.30	ug/L		03/28/15 14:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*91*		*79 - 111*	*03/17/15 14:16*	*03/28/15 14:46*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/17/15 10:43	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/17/15 10:43	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/17/15 10:43	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/17/15 10:43	1
Selenium	10	U	15	10	4.0	ug/L		03/17/15 10:43	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/17/15 10:43	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/17/15 10:43	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP 66 (OH)

TestAmerica Job ID: 240-48186-1

Client Sample ID: FWGEQUIPRINSE1-1822-GW
Date Collected: 03/13/15 11:15
Date Received: 03/13/15 12:49

Lab Sample ID: 240-48186-3
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	5.0	U	200	5.0	1.0	ug/L		03/17/15 10:43	1
Calcium	1000	U	5000	1000	260	ug/L		03/17/15 10:43	1
Copper	10	U	25	10	1.9	ug/L		03/17/15 10:43	1
Magnesium	300	U	5000	300	55	ug/L		03/17/15 10:43	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/17/15 10:43	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/17/15 10:43	1
Potassium	**100**	J	5000	900	70	ug/L		03/17/15 10:43	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/17/15 19:51	1
Antimony	**0.49**	J	2.0	1.0	0.33	ug/L		03/17/15 19:51	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/17/15 19:51	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/17/15 19:51	1
Iron	100	U	150	100	44	ug/L		03/17/15 19:51	1
Sodium	400	U	1000	400	160	ug/L		03/17/15 19:51	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/17/15 19:51	1
Zinc	50	U	50	50	27	ug/L		03/17/15 19:51	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/17/15 11:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		03/20/15 18:57	1

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 28, 2015

SDG: 240-48186
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3.Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-6
6. Was the GC/MS system tuned each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Initial Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A4HP9–3/13/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) ≤0.050?	X				QSM Table F-4
7d. Were all other target analytes reported with an avg response have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X				QSM Table F-4 R<0.99=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X			Benzoic acid, 1,3-dinitrobenzene, 2,4-dinitrophenol and 4-nitrophenol 4,6-dinitro-2-methylphenol, pentachlorophenol, bis-2-ethylhexylphthalate, di-n-octylphthalate, indeno (1,2,3-cd)pyrene dibenz (a,h) anthracene used a linear fit	QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte?	X				QSM Table F-4 and section D.1.2.1
9 Was a breakdown check run at the beginning of every 12 hours with DDT degradation <20% and tailing factors of benzidine and pentachlorophenol ≤2?	X				QSM Table F-4 R
10. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12	X			3/17/15 @ 0906, 1611	Louisville Supplement to the DOD QSM

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 28, 2015

SDG: 240-48186
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
hours with recoveries within 70-130%?					
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			3/13/15 @1239	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/17/15 @0841	QSM Table F-4
12a. Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) ≥0.050?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank >1/2 the MRL, >RL for common contaminants?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE1-1822-GW	
16a. Were target analytes detected in the field blank?		X			QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-6 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-6, J/UJ

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 28, 2015

SDG: 240-48186
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
18. Was a MS/MSD prepared with each batch?			X	A matrix spike/ spike duplicate was not requested on a sample from this workorder.	
18a. Were the MS/MSD recoveries within limits specified in Table G-6 of the DoD QSM with an RPD <30%?			X	Checked by ADR	QSM Table F-4, Table G-6 J/UJ Parent sample only
19. Was a field duplicate analyzed?			X	A field duplicate was not submitted with this set of samples.	
19a. Were the field duplicates RPDs within ±50%?			X	No detected sample results were reported.	QSM Table F-4, RPD >50=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% - 50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Additional Comments:

Table 1: CCCs *(All analytes if CCCs not included in standard)*

Base / Neutral Compounds	Acid Compounds
Acenaphthalene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
N-Nitrosodiphehylamine	Phenol
Di-n-octylphthalate	Pentachlorophenol
Fluoroanthene	2,4,6-Trichlorophenol
Benzo(a)pyrene	

Table 2: SPCCs -

N-Nitroso-di-n-propylamine	0.05
Hexachlorocyclopentadiene	0.05
2,4-Dinitrophenol	0.05
4-Nitrophenol	0.05

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 28, 2015

SDG: 240-48186
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was a LOD Verification performed once per quarter with all target analytes detected?	X				DoD QSM Table F-8
7. Tuning (ICP/MS Only)					
7a. Was a tune performed daily prior to calibration	X				DoD QSM Table F-8 R
7b. Mass Calibration <0.1 amu from true value	X				
7c. Resolution <0.9 amu full width at 10 % peak height	X				
7d. RSD <%5 for a minimum of four replicate analyses	X				
8 Calibration	X				
8a. Was the ICAL performed daily with at least	X			ICP, Hg and ICPMS- 3/17/15	DoD QSM Tables F-8 and F-7
1high standard and a blank for ICP & ICPMS	X				
5 standards and a blank for Hg	X				
8b. Was the correlation coefficient r≥0.995 for Hg?	X				DoD QSM Tables F-8 and F-7 r<0.995=J/R
8c. Was the ICV (second source verification) analyzed after the ICAL with results 90-110% of the true value?	X				DoD QSM Tables F-8 and F-7
8d. Was the ICB analyzed after the ICV with detected results <1/2 the MRL?	X			ICP-The ICB analyzed 3/17/15@ 0633 had cobalt detected at 0.594 µg/L, manganese at 0.523 µg/L, potassium at 80.1 µg/L and nickel detected at 1.24 µg/L. No qualification of the data was required due to ICB contamination as any detected concentrations of cobalt, manganese, potassium or nickel were greater than five times contamination. ICPMS-The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony results for samples FWGFWGmw-004-0513-GF and FWGEQUIPRINSE1-1822-GW were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no	DoD QSM, Tables F-8 and F-7 < 5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 28, 2015

SDG: 240-48186
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				detected cadmium results reported for the associated samples.	
Sample Analysis					
9. Was a MRL Level Verification performed at the beginning of the daily sequence and end of the analytical sequence bracketing samples? Were results 70-130%?	X				LS, DoD QSM Table G-18, >130%=J; 70-80%=J/UJ; <70%=J/UJ <65%=R, unless DL check with detected results
10. Were CCVs analyzed every 10 samples and at the end of the analytical sequence with results 90-110% of the true value?	X				DoD QSM, Tables F-8 and F-7 >110%=J, <85%=J/R 90-85%=J/UJ;
11. Were the CCBs run every 10 samples and at the end of the analytical sequence? Were results <1/2 the MRL?	X			ICP The CCBs analyzed 3/17/15 had chromium detected from 0.702 µg/L to 0.928 µg/L, cobalt detected from 0.723 µg/L to 1.09µg/L, manganese from 0.785 µg/L to 1.26 µg/L at 0.523 µg/L, potassium at 87.5 µg/L to 130 µg/L and nickel detected at 1.36 µg/L. The chromium and manganese results for sample FWGFWGmw-004-0513-GF were qualified, "U" as the reported concentrations were less than 5x blank contamination. No qualification of the data was required due to cobalt, potassium or nickel contamination as any detected concentrations of these target analytes were greater than five times contamination. ICPMS The CCBs analyzed 3/17/15 had antimony detected from 0.306 µg/L to 0.318 µg/L, beryllium from 0.054 µg/L to 0.119 µg/L and cadmium from 0.0850 µg/L to 0.134 µg/L . The antimony results for samples FWGFWGmw-004-0513-GF and FWGEQUIPRINSE1-1822-GW were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results reported for the associated samples.	DoD QSM Tables F-8 and F-7 <5x = U
12. Was an Interelement Check Standard run at the beginning of the analytical sequence and every 12 hours with the ICS recovery within 80 to 120% of true value for each element of interest (ICP and ICPMS only)?	X				DoD QSM Tables F-8 and F-7 >120%=J; 50-79%=J/UJ; <50%=Pj/R
13. Was a method blank prepared and analyzed with	X				DoD QSM

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 28, 2015

SDG: 240-48186
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
each batch?					Tables F-8 and F-7
14. Were target analytes detected in the method blank?	X			Checked by ADR. ICP- Barium was detected in the method blank at 3.54 µg/L, calcium at 1800 µg/L, magnesium at 94.6 µg/L, manganese at 2.22 µg/L and potassium at 124 µg/L. The potassium result for sample FWGEQUIPRINSE1-1822-GW and the manganese result for sample FWGFWGmw-004-0513-GF were qualified, "B" as the reported concentrations were less than 5x blank contamination. No qualification was required for the barium, calcium or magnesium contamination as all reported concentrations of these analytes were greater than five times method blank contamination.	DoD QSM Tables F-8 and F-7, <5x = B
15. Was a field blank collected and analyzed?	X			FWGEQUIPRINSE1-1822-GW	
16. Were target analytes reported in the field blank analyses?	X			ADR checked section. ICP- Potassium was detected in FWGEQUIPRINSE1-1822-GW at 100 µg/L. No qualification of the data was made as the reported potassium concentration for the associated field sample was greater than 5x contamination. ICPMS- Antimony was detected in FWGEQUIPRINSE1-1822-GW at 0.49 µg/L. The antimony result for sample FWGFWGmw-004-0513-GF was qualified, "B" as the the reported concentration was less than five times blank contamination.	DoD QSM Tables F-8 and F-7
17. Was a LCS prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7>120%=J; 70-79%=J/UJ; <70%=J/R
19. Was a matrix spike (MS) and lab duplicate sample prepared with each batch?	X				DoD QSM Tables F-8 and F-7
20. Was the MS and Lab Duplicate parent a Ravenna sample?	X			A matrix spike analysis and laboratory duplicate analysis was performed on sample FWGFWGmw-004-0513-GF.	
21. Were the MS recoveries within 80-120%?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7, >120%=J;70-79%=J/UJ; <70%=J/R, All samples in batch

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 28, 2015

SDG: 240-48186
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
22. Was the lab sample duplicate RPD ≤ 20%, for sample results detected above the LOQ?		X		ICP-The laboratory duplicate analyzed on sample FWGFWGmw-004-0513-GF had an RPD above control limits of 20% for manganese at 33% and for chromium at 66%. No qualification of the data was required as the detected manganese and chromium concentrations were less than the LOQ.	DoD QSM Tables F-8 and F-7 >20% = J, All samples in batch
23. Was a serial dilution performed, with the fivefold dilution within ± 10% of the original result?	X				DoD QSM, Tables F-8 and F-7 >20% = J. Only evaluate results above the LOQ . Qualify all samples in batch
24. Was a Post Digestion Spike analyzed as needed? Were results within 75-125%?	X				LCG Table 7, >125%=J; 30-75%=J/UJ; <30%=R
25. Was a field duplicate analyzed? Were the RPDs ± 50% for sample results detected above the LOQ?			X	A field duplicate was not submitted with this sample set.	>30% = J. Qualify parent sample only and only evaluate results above the LOQ
26. Were internal standards added to all ICPMS samples with intensity within 30-120% of the intensity of the ICAL internal standard?	X				DoD QSM Table F-8. >120%=J/R, <20%=J

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 28, 2015

SDG: 240-48186
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			LC10 3/11/15 LC9 1/23/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for non-linear).	X			LC10-4-nitrotoluene used a linear fit LC9-3-nitrotoluene and RDX used a linear fit	
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			LC10 on 3/11 at 2136 LC9 1/23/15 @ 2328	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			LC10- 3/28/15 @ 0308, 0941, 1530 LC9-3/31/15 @ 0901, 1901	DoD QSM Table F-3 J/UJ
10.Was a MRL Level verification run at the beginning and end of every daily? Was the %D< 30%?	X			LC10- 3/28/15 @ 0352, 1613 LC9-3/31/15 @ 1007, 2008	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3
12. Were target analytes detected in the method blank <1/2 the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses > ½ the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 28, 2015

SDG: 240-48186
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL Criteria
15. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		Checked by ADR. A field duplicate was not submitted with this set of samples.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?	X				DoD QSM Table F-3 RPD>40%=J Only detected results above the LOQ were evaluated
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within limits specified in table G-12 of the DoD QSM?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J;30-LL=J/UJ; <30%=J/R
19.Was a MS/MSD or MS and sample duplicate prepared with each batch?	X			The matrix spike was analyzed on a sample from another client.	DoD QSM Table F-3
20. Were MS/MSD recoveries within limits specified in table G-12 of the DoD QSM with an RPD ≤30%?	X				DoD QSM Table F-3 Pj
21. Were surrogate recoveries within laboratory limits (79-111%)?	X				QSM Tables F-2 >UL=J; <LL =J/UJ

References: DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 28, 2015

SDG: 240-48186
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			PDA-1 7/10/14	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for Quadratic curve).			X		
7d. Did reanalysis of the low level standard after calibration, recover within 15%?	X				
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			7/10/14 @ 1719	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			3/19/15 @ 1019, 1410 and 1837	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D < 30%?	X			3/19/15 @1002, 1446 and 1855	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/April 28, 2015

SDG: 240-48186
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
12. Were target analytes detected in the method blank <1/2 the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses < ½ the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B
15. Was a field duplicate analyzed? Were the RPDs ≤30%?			X	A field duplicate was not submitted with this set of samples.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?			X	No detected concentrations were reported.	DoD QSM Table F-3 RPD>40%=J
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within laboratory limits of 79%-119%?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J; 30-LL=J/UJ; <30%=J/R
19. Was a MS/MSD or MS and sample duplicate prepared with each batch?	X				DoD QSM Table F-3
20. Were MS/MSD recoveries within laboratory limits of 40%-150% with an RPD ≤20%?	X				DoD QSM Table F-3 Pj

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 28, 2015

SDG: 240-48186
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Does the initial calibration curve consist of 5 concentration levels with the low standard near but > MDL?	X				SOP Section 10.2 R
7. Was the correlation coefficient >0.995?	X				SOP Section 10.2
8. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D <30%?	X			3/20/15 @ 1813, 1839 and 1859	>30%=J
9. Was a second source verification (ICV) analyzed after the ICAL? Were all analytes 90-110%?	X			3/20/15 @ 1809	>110%=J; 90-85%=J/UJ; <85%=J/R
10. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				STL SOP Section 9.8, LCG ,< 5x = U
11. Was a CCV run every 10 samples and at the end of the analytical run?	X			3/20/15 @ 1841 and 1901	STL SOP Section 10.4
12. Was the ICV and CCV a mid-level standard from the initial calibration curve?	X				STL SOP Section 10.3.1
13. Were all CCV calibration analytes within 90-110%?	X				>110%=J; 85-90%=J/UJ; <85%=J/R
14. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				QSM, < 5x = U
15. Was a method blank prepared and analyzed with each batch?	X				
16. Were target analytes detected in the method blank <1/2 the MRL?	X			ADR checked section. Nitrocellulose was detected in the method blank at 1.05 mg/L. No qualification of the data was required as there were no detected concentration of nitrocellulose reported for the associated field samples.	LCG, *<5x=B*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ April 28, 2015

SDG: 240-48186
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
17. Was a field blank collected and analyzed?	X				
18. Were target analytes detected in the field blank analyses <1/2 the MRL?		X			<5x=B
19. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		ADR checked section. No field duplicates for nitrocellulose were submitted with this set of samples.	QAPP Table 3-2 RPD > 30% = J
20. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within lab's in-house limits% (26-144%)?	X				>UL%=J; 50-LL%=J/UJ; <50%=J/R
21. Was a MS/MSD pair prepared with each batch?	X				
22. Was the MS/MSD parent a Ravenna sample?		X		The parent was sample from another client.	
23. Were MS/MSD recoveries 26-144% and RPD ≤20?	X				Method EPA 353.2 Section 9.4.2 >UL%=J;<LL%=J/UJ; RPD>20%=J/UJ

References:

SOP SAC-WC-0050 "Preparation and Analysis of Nitrocellulose in Aqueous and Soil/Sediment Samples by Colorimetric Autoanalyzer", Jan 2007, rev. 2.0

DoD Quality Systems Manual (QSM)

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Attachment 2

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48186-1										
6010B	FWGEQUIPRINSE1-1822-GW	AQ	EB							
				POTASSIUM	5000	100J		B	ug/L	Mb
6010B	FWGFWGmw-004-0513-GF	AQ	N							
				BARIUM	200	21J		J	ug/L	RI
				CHROMIUM	7.0	1.8J		U	ug/L	Cb
				MANGANESE	15	5.3J		U	ug/L	Mb, Cb
				POTASSIUM	5000	740J		J	ug/L	RI
6020	FWGEQUIPRINSE1-1822-GW	AQ	EB							
				ANTIMONY	2.0	0.49J		U	ug/L	Cb
6020	FWGFWGmw-004-0513-GF	AQ	N							
				ANTIMONY	2.0	0.33J		U	ug/L	Eb, Cb

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Qualifier Summary

Lab Reporting Batch ID: 240-48186-1 Laboratory: TA CAN

EDD Filename: 240-48186-1 eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS **Method:** 6010B **Matrix:** AQ

Sample ID: FWGEQUIPRINSE1-1822-GW *Collected:* 3/13/2015 11:15:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	100	J	70	MDL	5000	LOQ	ug/L	B	Mb

Sample ID: FWGFWGmw-004-0513-GF *Collected:* 3/13/2015 10:17:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	21	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	1.8	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
MANGANESE	5.3	J	0.46	MDL	15	LOQ	ug/L	U	Mb, Cb
POTASSIUM	740	J	70	MDL	5000	LOQ	ug/L	J	RI

Method Category: METALS **Method:** 6020 **Matrix:** AQ

Sample ID: FWGEQUIPRINSE1-1822-GW *Collected:* 3/13/2015 11:15:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.49	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

Sample ID: FWGFWGmw-004-0513-GF *Collected:* 3/13/2015 10:17:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.33	J	0.33	MDL	2.0	LOQ	ug/L	U	Eb, Cb

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48186-1 Laboratory: TA CAN

EDD Filename: 240-48186-1 eQAPP Name: RVAAP 66-rev August 2014

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Eb	Equipment Blank Contamination
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP66 (OH)

Data Review Summary

Lab Reporting Batch ID: 240-48186-1
EDD Filename: 240-48186-1

Laboratory: TA CAN
eQAPP Name: RVAAP 66-rev August 2014

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	SR
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	SR

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Method Blank Outlier Report

Lab Reporting Batch ID: 240-48186-1 **Laboratory: TA CAN**

EDD Filename: 240-48186-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method: **6010B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-172202/1-A	3/17/2015 10:07:00 AM	BARIUM CALCIUM MAGNESIUM MANGANESE POTASSIUM	3.54 ug/L 1800 ug/L 94.6 ug/L 2.22 ug/L 124 ug/L	FWGEQUIPRINSE1-1822-GW FWGFWGmw-004-0513-GF

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGEQUIPRINSE1-1822-GW(RES/TOT)	POTASSIUM	100 ug/L	100U ug/L
FWGFWGmw-004-0513-GF(RES/TOT)	MANGANESE	5.3 ug/L	5.3U ug/L

Method: **WS-WC-0050**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 320-68441/1-B	3/20/2015 6:23:00 PM	Nitrocellulose	1.05 mg/L	FWGEQUIPRINSE1-1822-GW FWGFWGmw-004-0513-GW

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 240-48186-1 Laboratory: TA CAN

EDD Filename: 240-48186-1 eQAPP Name: RVAAP 66-rev August 2014

Method: 6010B
Matrix: AQ

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FWGFWGmw-004-0513-GFDUP (TOT) (FWGEQUIPRINSE1-1822-GW FWGFWGmw-004-0513-GF)	CHROMIUM MANGANESE	66 33	20.00 20.00	J (all detects) UJ (all non-detects)

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: 240-48186-1

Laboratory: TA CAN

EDD Filename: 240-48186-1

eQAPP Name: RVAAP 66-rev August 2014

Method: 6020
Matrix: AQ

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGEQUIPRINSE1-1822-GW(RES/TOT)	3/13/2015 11:15:00 AM	ANTIMONY	0.49 ug/L	FWGFWGmw-004-0513-GF FWGFWGmw-004-0513-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGFWGmw-004-0513-GF(RES/TOT)	ANTIMONY	0.33 ug/L	0.33U ug/L

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48531

Date: June 24, 2015
Revision: 1

Data Reviewer: Angela Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 23, 2015 the following samples were collected from groundwater-monitoring wells at the former Ravenna Army Ammunition Plant and analyzed as part of SDG 240-48531. Sample analysis was performed by Test America. Test America-North Canton performed all requested analyses with the exception of the analytical for methods 8330, M8330, TALSOPWS-WC-0050 and 6860. Methods 8330, M8330 and TALSOPWS-WC-0050 were performed by Test America, West Sacramento. Method 6860, if requested, was performed by Test America, Denver.

Sample ID	VOC by SW846 8260	SVOC 4 by SW846 8270	SVOC 1 and 2 by SW846 8270	SVOC 1 by SW846 8270	Pesticides by SW846 8081	PCBs/ SW846 8082	Explosives/Propellants by SW846 8330, Mod. 8330 and TALSOP WS-WC-0050	Cyanide SW846 9012	Perchlorate by SW846 6860	NO2/NO3, EPA 353.2	Metals [3]		
											SW846 6010B	SW846 6020	Mercury by SW846 7470A
FWGLL2mw-271-0529-GW/GF				X	X		X		X		X	X	X
FWGLL3mw-244-0532-GW/GF				X	X		X				X	X	X
FWGLL3mw-246-0533-GW/GF				X			X		X		X	X	X
FWGLL3mw-DUP2-0558-GW/GF				X	X		X				X	X	X
FWGLL3mw-DUP3-0559-GW/GF				X			X		X		X	X	X
FWGFBQmw-174c-0512-GW/GF				X	X		X				X	X	X
FWGEQUIPRINSE6-0568-GW				X	X		X		X		X	X	X

1) All metals samples with the exception of FWGEQUIPRINSE6-0568-GW were field filtered (GF).
2) SVOC1= Phthalates only
3) EPA 6020 metals include aluminum, antimony, beryllium, cadmium, iron, sodium, thallium and zinc. EPA 6010B metals include arsenic, chromium, cobalt, lead, selenium, silver, vanadium, barium, calcium, copper, magnesium, manganese, nickel and potassium.

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004*, Analytical Methods, and Laboratory Standard Operating Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Per the DoD QSM, the laboratory data is reported as follows: Non detected results were reported at the LOD with a "U" flag. Detected results between the DL and LOQ were reported as estimated, qualified with a "J" flag.

LOD - An estimate of the minimum amount of a substance that an analytical process can reliably detect.

LOQ - The lowest concentration that produces a quantitative result within specified limits of precision and bias.

DL- The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence.

Checklists used in the verification process are in Attachment I and sample results with outliers requiring qualification are in Attachment II.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, at 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

SVOCs- 8270C

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD

No QC outliers were noted.

Pesticides- 8081A

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- DDT and Endrin breakdown criteria
- Retention time criteria
- ICV criteria
- CCV Criteria
- Method /field blank criteria
- LCS Recoveries
- Field Duplicate Criteria
- LOD and MRL verification criteria
- Matrix Spike Recovery Criteria and RPD
- Surrogate Recoveries
- Second Column confirmation criteria

CCV Outliers

The CCV analyzed 3/25/15 at 1509 had a %D above control limits of 20% at 22.7% on CLP-1 and at 33.7% on CLP-2 for endosulfan II. The CCV analyzed 3/25/15 at 2003 had a %D above control limits of 20% at 30.8% on CLP-2 for endosulfan II. No qualification of the data was required as there were no detected endosulfan II results reported for the bracketed field samples.

The CCV analyzed 3/25/15 at 1424 had an average %D above control limits of 20% at 21% on CLP-2. No qualification of the data required as CLP-2 was used for confirmation and there were no detected toxaphene concentrations reported for the bracketed field samples.

MRL Recovery Criteria
The MRL analyzed 3/25/15 at 1556 recovered above control limits of 70-130% at 131% for endosulfan II on CLP-2. No qualification of the data was required as there were no detected endosulfan II results reported for the bracketed field samples.

Matrix Spike Recovery and RPD Criteria
No matrix spike sample was designated from this sample set and no sample volume was provided sample for matrix spike analysis.

Second Column Confirmation
Sample FWGFBQmw-174c-0512-GW had beta-BHC detected at 0.048ug/L. Second column confirmation had an RPD above control limits of 40% at 197%. The beta-BHC result for sample FWGFBQmw-174c-0512-GW was qualified as estimated, "J".

No additional QC outliers were noted.

Metals - 6010B
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria
- Post Digestion Spike Criteria

Blanks
The ICB analyzed 3/25/15@ 0904 had barium detected at 3.02 µg/L and magnesium detected at 93.9 µg/L. The barium results for samples FWGLL2mw-271-0529-GF and FWGFBQmw-174c-0512-GF were qualified, "U" as the reported concentrations were less than 5x barium contamination. No qualification of the data was required due to magnesium contamination in the ICB any detected concentrations of magnesium were greater than five times contamination.

Barium was detected in the method blank at 2.91 µg/L, chromium at 1.28 µg/L, lead at 3.25 µg/L and manganese at 1.64 µg/L. The manganese results for samples FWGLL3mw-246-0533-GF, FWGLL3mw-DUP2-0558-GF, FWGLL3mw-DUP3-0559-GF; the barium results for samples FWGFBQmw-174c-0512-GF and FWGLL2mw-271-0529-GF; and the lead result for sample FWGLL3mw-DUP2-0558-GF were qualified, "B" as the reported concentrations were less than 5x blank contamination. No qualification was required for the chromium contamination as chromium was not detected in any of the associated field samples.

Laboratory Duplicate RPD
The laboratory duplicate analyzed on sample FWGLL2mw-271-0529-GF had an RPD above control limits of 20% for nickel at 28%. No qualification of the data was required as the detected nickel concentration for sample FWGLL2mw-271-0529-GF was less than the LOQ.

No additional QC outliers were noted.

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 24, 2015
Sample Delivery Group: 240-48531 **Revision:** 1

Metals - 6020

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning Criteria
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field Duplicate RPD Criteria
- Post Digestion Spike Criteria
- Internal Standard Criteria

Blanks

The ICB analyzed 4/6/15 at 1117 had antimony detected at 0.611 µg/L and iron detected at 16 µg/L. The antimony results for samples FWGLL3mw-244-0532-GF, FWGLL3mw-246-0533-GF, FWGLL3mw-DUP2-0558-GF, FWGLL3mw-DUP3-0559-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the iron contamination, as there were no detected iron results reported for the associated samples less than five times blank contamination.

The ICB analyzed 4/7/15 at 0939 had antimony detected at 0.513 µg/L and cadmium detected at 0.095 µg/L. No qualification of the data was required for the ICB contamination, as there were no detected cadmium or antimony results reported for the associated sample less than five times blank contamination.

The CCBs analyzed 4/6/15 had antimony detected from 0.225 µg/L to 0.301 µg/L, iron at 16.7 µg/L and cadmium at 0.079 µg/L . The antimony results for samples FWGLL3mw-244-0532-GF, FWGLL3mw-246-0533-GF, FWGLL3mw-DUP2-0558-GF, FWGLL3mw-DUP3-0559-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or iron contamination, as there were no detected cadmium or iron results reported for the associated samples less than five times blank contamination.

The CCBs analyzed 4/7/15 had antimony detected from 0.332 µg/L to 0.429 µg/L, iron at 16.2 µg/L and cadmium at0.095 µg/L. No qualification of the data was required for the cadmium, antimony or iron contamination, as there were no detected antimony, cadmium or iron results reported for the bracket field sample less than five times blank contamination.

No additional QC outliers were noted.

Mercury - 7470A

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48531

Date: June 24, 2015
Revision: 1

No QC outliers were noted.

Explosives- 8330

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration Criteria
- ICV and CCV criteria
- Retention time criteria
- LOD and MRL verification criteria
- Surrogate recovery criteria
- Method /field blank criteria
- LCS/LCD Recovery and RPD Criteria
- Matrix spike/spike duplicate recovery criteria and RPD
- Second column confirmation RPD
- Field Duplicate RPD

MRL Verification Criteria

The bracketing MRL standards analyzed 4/14/15 and 4/15/15 recovered above control limits of 70-130% for 4-amino-2,6-dinitrotoluene at 131%. No qualification of the data was required for the MRL outliers as LC12 was used for confirmation only.

Matrix Spike Recovery Criteria

No data was provided as a matrix spike/spike duplicate was not requested nor was sample volume provided for matrix spike analysis specific to this set of samples.

No additional QC outliers were noted.

Nitroguanidine- 8330M

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration criteria
- Retention time criteria
- LOD and MRL verification criteria
- ICV and CCV criteria
- Method /field blank criteria
- LCS/LCSD/Matrix Spike percent recoveries and RPD value criteria
- Second column confirmation
- Field Duplicate RPD

No QC outliers were noted.

Nitrocellulose – WS-WC-0050

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD and MS/MSD percent recoveries and RPD value criteria
- Field Duplicate RPD

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 24, 2015
Sample Delivery Group: 240-48531 **Revision:** 1

No QC outliers were noted.

Perchlorate 6860

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method/Field blank Criteria
- MRL verification criteria
- LCS percent recovery criteria
- MS percent recovery
- Matrix Duplicate RPD criteria
- Field duplicate RPD criteria
- ICS Check Standard Recovery
- Isotope Ratio Criteria
- Internal Standard Criteria

No QC outliers were noted.

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Sample Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48531-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-48531-1	FWGLL2mw-271-0529-GW	Water	03/23/15 12:55	03/23/15 16:18
240-48531-2	FWGLL2mw-271-0529-GF	Water	03/23/15 12:55	03/23/15 16:18
240-48531-3	FWGLL3mw-244-0532-GW	Water	03/23/15 13:22	03/23/15 16:18
240-48531-4	FWGLL3mw-244-0532-GF	Water	03/23/15 13:22	03/23/15 16:18
240-48531-5	FWGLL3mw-246-0533-GW	Water	03/23/15 14:00	03/23/15 16:18
240-48531-6	FWGLL3mw-246-0533-GF	Water	03/23/15 14:00	03/23/15 16:18
240-48531-7	FWGLL3mw-DUP2-0558-GW	Water	03/23/15 14:02	03/23/15 16:18
240-48531-8	FWGLL3mw-DUP2-0558-GF	Water	03/23/15 14:02	03/23/15 16:18
240-48531-9	FWGLL3mw-DUP3-0559-GW	Water	03/23/15 15:00	03/23/15 16:18
240-48531-10	FWGLL3mw-DUP3-0559-GF	Water	03/23/15 15:00	03/23/15 16:18
240-48531-11	FWGFBQmw-174C-0512-GW	Water	03/23/15 15:31	03/23/15 16:18
240-48531-12	FWGFBQmw-174C-0512-GF	Water	03/23/15 15:31	03/23/15 16:18
240-48531-13	FWGEQUIPRINSE6-0568-GW	Water	03/23/15 16:08	03/23/15 16:18

Method Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48531-1

Method	Method Description	Protocol	Laboratory
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
8081A	Organochlorine Pesticides (GC)	SW846	TAL CAN
8330 Modified	Nitroguanidine (HPLC)	SW846	TAL SAC
8330A	Nitroaromatics and Nitramines	SW846	TAL SAC
6860	Perchlorate by IC/MS or IC/MS/MS	EPA	TAL DEN
6010B	Metals (ICP)	SW846	TAL CAN
6020	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
WS-WC-0050	Nitrocellulose	TAL-SAC	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

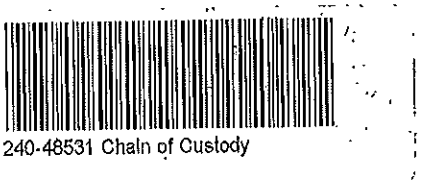
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS



4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

COC No: ~~0323015-0323~~ 032315 Cal
1 of 2 COCs

Client Contact			
Company Name: EDM	Project Manager: J. Miller	Site Contact: E. Corbin	Date: 3-23-15
Address: 1800 Carillon Blvd	Tel/Fax:	Lab Contact: M. Loeb	Carrier: LAB PICKUP
City/State/Zip: Cincinnati OH 45240	Analysis Turnaround Time: ☐ CALENDAR DAYS ☐ WORKING DAYS		
Phone: 513 825 7500	TAT if different from Below ____		
Fax: 513 825 7495	☒ 2 weeks		
Project Name: RVAAP 66	☐ 1 week		
Site: RVAAP	☐ 2 days		
PO#	☐ 1 day		

See quote

Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Cooler ID#

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	SVOC 1 8270	Pesticides 8082	EXPLO 8330	Propellants	Perchlorate 7470	Metals 6010 6020	Sample Specific Notes:
FWGLL2mw-271-0529-GW	3-23-15	1255	G	GW	15	N	Y	6		3	6	~~3~~	~~3~~ 3	MS/MSD A1
FWGLL2mw-271-0529-GF	↓	1255	G	GW	6	Y	Y					3	3	↓ A1
FWGLL3mw-244-0532-GW	3-23-15	1322	G	GW	7	N	N	2	2	1	2			12009
FWGLL3mw-244-0532-GF	↓	1322	G	GW	1	Y	N						1	12009
FWGLL3mw-246-0533-GW	3-23-15	1400	G	GW	5	N	N	2		1	2			176
FWGLL3mw-246-0533-GF	↓	1400	G	GW	2	Y	N					1	1	176
FWGLL3mw-DUP2-0558-GW	3-23-15	1402	G	GW	7	N	N	2	2	1	2			SR3
FWGLL3mw-DUP2-0558-GF	↓	1402	G	GW	1	Y	N						1	SR3
FWGLL3mw-DUP3-0559-GW	3-23-15	1500	G	GW	5	N	N	2		1	2			206
FWGLL3mw-DUP3-0559-GF	↓	1500	G	GW	2	Y	N					1	1	206
FWGFBQmw-174C-0512-GW	3-23-15	1531	G	GW	7	N	N	2	2	1	2			PH12
FWGFBQmw-174C-0512-GF	3-23-15	1531	G	GW	1	Y	N						1	PH12

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:
Temperatures may not meet requirements if samples collected close to lab pickup time.

Custody Seals Intact: ☒ Yes ☐ No
Custody Seal No.:
Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EDM	3/23/15 1700	[signature]	TestAmerica	3/23/15 - 1715
[signature]	EDM 3/23/15	1800			
			Received in Laboratory by: [signature]	TDL	3/23/15 1800

TestAmerica Canton
4101 Shuffel Street, N. N.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact			
Company Name: EQM	Project Manager: J. Miller	Site Contact: E Corbin	Date: 3/23
Address: 1800 Carillon Blvd	Tel/Fax:	Lab Contact: M Loeb	Carrier: Lab Pickup
City/State/Zip: Cincinnati OH 45240	Analysis Turnaround Time: ☐ CALENDAR DAYS ☐ WORKING DAYS		
Phone:	TAT if different from Below ____		
Fax:	☐ 2 weeks		
Project Name:	☐ 1 week		
Site:	☐ 2 days		
P O #	☐ 1 day		

COC No: 032315-2/2
2 of 2 COCs
Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	SVOC 8270	Pesticides 8082	EXPLO 8330	Propellants	Perchlorate	Metals 6010 6020 7470	Sample Specific Notes:
FWG EQUIP Rinse 6-0568-GW	3-23-15	1608	G	W	9	N		2	2	1	2	1	1	xxx

AD 3/23/15

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:
temps may not meet requirements if sample time is close to lab pickup time.

Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EQM	3/23/15	AC [signature]	TestAmerica	3/23/15 1715
RC [signature]	TestAm	3/23/15 1800			
			Received in Laboratory by: Heather [signature]	TDL	3/23/16 1800

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
FWGLL2mw-271-0529-GF	240-48531-D-2	Plastic 500ml - with Nitric Acid	<2	_____	_____
FWGLL2mw-271-0529-GF	240-48531-E-2	Plastic 500ml - with Nitric Acid	<2	_____	_____
FWGLL2mw-271-0529-GF	240-48531-F-2	Plastic 500ml - with Nitric Acid	<2	_____	_____
FWGLL3mw-244-0532-GF	240-48531-A-4	Plastic 500ml - with Nitric Acid	<2	_____	_____
FWGLL3mw-246-0533-GF	240-48531-B-6	Plastic 500ml - with Nitric Acid	<2	_____	_____
FWGLL3mw-DUP2-0558-GF	240-48531-A-8	Plastic 500ml - with Nitric Acid	<2	_____	_____
FWGLL3mw-DUP3-0559-GF	240-48531-B-10	Plastic 500ml - with Nitric Acid	<2	_____	_____
FWGFBQmw-174C-0512-GF	240-48531-A-12	Plastic 500ml - with Nitric Acid	<2	_____	_____
FWGEQUIPRINSE6-0568-GW	240-48531-B-13	Plastic 250ml - with Nitric Acid	<2	_____	_____

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login #: 48531

Client EQM Site Name RVAAP

Cooler unpacked by: [signature]

Cooler Received on 3/23/15 Opened on 3/23/15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box Client Cooler Box Other Mer

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

   ☒ See Multiple Cooler Form

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity lead Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC425511
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # Yes No

Contacted PM MJL Date 3/23/15 by HRP via Verbal Voice Mail Other Email

Concerning #14

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

Sample FWGLL2mw-271-0529-GW is marked for 15 liters as the #9 containers. Only recieved 9 Liters for this sample.

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

TestAmerica Multiple Cooler Receipt Form/Narrative — Login #: 48531
Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
A1	4	1.6	2.1	Ice
12009		0.8	1.3	
176		1.4	1.9	
SR3		2.0	2.5	
206		2.8	3.3	
PH12		0.4	0.9	
XXX		1.2	1.7	

CASE NARRATIVE

Client: Environmental Quality Mgt., Inc.

Project: RVAAP (OH)

Report Number: 240-48531-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The 353.2 Nitrocellulose, 8330 Ngu Nitroguanidine, and 8330A Explosives analyses were performed at the TestAmerica Sacramento Laboratory. The 6860 Perchlorate analysis was performed at the TestAmerica Denver laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

All parameters for which TestAmerica North Canton has certification were evaluated to the limit of detection (LOD) and include qualified results where applicable. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

RECEIPT
The samples were received on 3/23/2015 6:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 0.9° C, 1.3° C, 1.7° C, 1.9° C, 2.1° C, 2.5° C and 3.3° C.

SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)
Samples FWGLL2mw-271-0529-GW (240-48531-1), FWGLL3mw-244-0532-GW (240-48531-3), FWGLL3mw-246-0533-GW (240-48531-5), FWGLL3mw-DUP2-0558-GW (240-48531-7), FWGLL3mw-DUP3-0559-GW (240-48531-9), FWGFBQmw-174C-0512-GW (240-48531-11) and FWGEQUIPRINSE6-0568-GW (240-48531-13) were analyzed for semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8270C. The samples were prepared on 03/24/2015 and analyzed on 03/30/2015.

Surrogates are added during the extraction process prior to dilution. When the sample is diluted, surrogate recoveries are diluted out and no corrective action is required.

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

NITROGUANIDINE (HPLC)
Samples FWGLL2mw-271-0529-GW (240-48531-1), FWGLL3mw-244-0532-GW (240-48531-3), FWGLL3mw-246-0533-GW (240-48531-5), FWGLL3mw-DUP2-0558-GW (240-48531-7), FWGLL3mw-DUP3-0559-GW (240-48531-9), FWGFBQmw-174C-0512-GW (240-48531-11) and FWGEQUIPRINSE6-0568-GW (240-48531-13) were analyzed for nitroguanidine (HPLC) in accordance with EPA SW-846 Method 8330_Ngu. The samples were prepared on 03/27/2015 and analyzed on 04/13/2015.

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

CHLORINATED PESTICIDES
Samples FWGLL3mw-244-0532-GW (240-48531-3), FWGLL3mw-DUP2-0558-GW (240-48531-7), FWGFBQmw-174C-0512-GW (240-48531-11) and FWGEQUIPRINSE6-0568-GW (240-48531-13) were analyzed for chlorinated pesticides in accordance with EPA SW-846 Method 8081A DoD. The samples were prepared on 03/24/2015 and analyzed on 03/25/2015.

The continuing calibration verification (CCV) associated with batch 173644 recovered above the upper control limit for Endosulfan II. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: FWGLL3mw-244-0532-GW (240-48531-3), FWGLL3mw-DUP2-0558-GW (240-48531-7) and FWGEQUIPRINSE6-0568-GW (240-48531-13).

The compound beta-BHC is tentatively identified in this sample. The difference between results for the primary and secondary columns is greater than 100% for FWGFBQmw-174C-0512-GW (240-48531-11).

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 173334.

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

PERCHLORATE
Samples FWGLL2mw-271-0529-GF (240-48531-2), FWGLL3mw-246-0533-GF (240-48531-6), FWGLL3mw-DUP3-0559-GF (240-48531-10) and FWGEQUIPRINSE6-0568-GW (240-48531-13) were analyzed for perchlorate in accordance with EPA SW-846 Method 6860. The samples were analyzed on 03/31/2015.

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

EXPLOSIVES
Samples FWGLL2mw-271-0529-GW (240-48531-1), FWGLL3mw-244-0532-GW (240-48531-3), FWGLL3mw-246-0533-GW (240-48531-5), FWGLL3mw-DUP2-0558-GW (240-48531-7), FWGLL3mw-DUP3-0559-GW (240-48531-9), FWGFBQmw-174C-0512-GW (240-48531-11) and FWGEQUIPRINSE6-0568-GW (240-48531-13) were analyzed for explosives in accordance with EPA SW-846 Method 8330A. The samples were prepared on 03/25/2015 and analyzed on 04/07/2015, 04/08/2015, 04/09/2015 and 04/14/2015.

Sample FWGFBQmw-174C-0512-GW (240-48531-11)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 320-69397.

The %D for 2,4,6-Trinitrotoluene for the following CCVs is outside the limit. This compound is not required for conformation. Therefore, data has been reported for (CCV 320-70597/14) and (CCV 320-70597/32).

The percent difference value for the analyte listed below is above the method acceptance limits in the MRL standard. This standard was analyzed before and after the associated samples. The corrective action for this deficiency is an analysis of a standard at approximately 2x the MDL. The MRL standard for 4-Amino-2,6-dinitrotoluene is approximately 2x the MDL. The acceptance criteria for the 2x MDL standard is detection of the compound. As the compound was detected, the data is reported with no further corrective action.

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

TOTAL RECOVERABLE METALS (ICP)
Samples FWGLL2mw-271-0529-GF (240-48531-2), FWGLL3mw-244-0532-GF (240-48531-4), FWGLL3mw-246-0533-GF (240-48531-6), FWGLL3mw-DUP2-0558-GF (240-48531-8), FWGLL3mw-DUP3-0559-GF (240-48531-10), FWGFBQmw-174C-0512-GF (240-48531-12) and FWGEQUIPRINSE6-0568-GW (240-48531-13) were analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010B DoD. The samples were prepared on 03/24/2015 and analyzed on 03/25/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

Barium, Chromium, Lead and Manganese were detected in method blank MB 240-173416/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Nickel exceeded the RPD limit for the duplicate of sample FWGLL2mw-271-0529-GFDU (240-48531-2). 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.

TOTAL RECOVERABLE METALS (ICPMS)
Samples FWGLL2mw-271-0529-GF (240-48531-2), FWGLL3mw-244-0532-GF (240-48531-4), FWGLL3mw-246-0533-GF (240-48531-6),

FWGLL3mw-DUP2-0558-GF (240-48531-8), FWGLL3mw-DUP3-0559-GF (240-48531-10), FWGFBQmw-174C-0512-GF (240-48531-12) and FWGEQUIPRINSE6-0568-GW (240-48531-13) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020 DoD. The samples were prepared on 04/01/2015 and analyzed on 04/06/2015 and 04/07/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

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

TOTAL MERCURY

Samples FWGLL2mw-271-0529-GF (240-48531-2), FWGLL3mw-244-0532-GF (240-48531-4), FWGLL3mw-246-0533-GF (240-48531-6), FWGLL3mw-DUP2-0558-GF (240-48531-8), FWGLL3mw-DUP3-0559-GF (240-48531-10), FWGFBQmw-174C-0512-GF (240-48531-12) and FWGEQUIPRINSE6-0568-GW (240-48531-13) were analyzed for total mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 03/24/2015 and analyzed on 03/26/2015.

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

NITROCELLULOSE

Samples FWGLL2mw-271-0529-GW (240-48531-1), FWGLL3mw-244-0532-GW (240-48531-3), FWGLL3mw-246-0533-GW (240-48531-5), FWGLL3mw-DUP2-0558-GW (240-48531-7), FWGLL3mw-DUP3-0559-GW (240-48531-9), FWGFBQmw-174C-0512-GW (240-48531-11) and FWGEQUIPRINSE6-0568-GW (240-48531-13) were analyzed for Nitrocellulose in accordance with EPA Method 353.2. The samples were prepared on 03/31/2015 and 04/06/2015 and analyzed on 04/07/2015.

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

Client Sample ID: FWGLL2mw-271-0529-GW
Date Collected: 03/23/15 12:55
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-1
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/30/15 17:50	1
Butyl benzyl phthalate	0.50	U	5.0	0.50	0.26	ug/L		03/30/15 17:50	1
Diethyl phthalate	1.0	U	2.0	1.0	0.60	ug/L		03/30/15 17:50	1
Dimethyl phthalate	0.50	U	2.0	0.50	0.29	ug/L		03/30/15 17:50	1
Di-n-butyl phthalate	5.0	U	5.0	5.0	1.7	ug/L		03/30/15 17:50	1
Di-n-octyl phthalate	0.50	U	2.0	0.50	0.23	ug/L		03/30/15 17:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*70*		*50 - 110*	*03/24/15 05:56*	*03/30/15 17:50*	*1*
2-Fluorophenol (Surr)	*65*		*20 - 110*	*03/24/15 05:56*	*03/30/15 17:50*	*1*
Nitrobenzene-d5 (Surr)	*66*		*40 - 110*	*03/24/15 05:56*	*03/30/15 17:50*	*1*
Phenol-d5 (Surr)	*68*		*10 - 115*	*03/24/15 05:56*	*03/30/15 17:50*	*1*
Terphenyl-d14 (Surr)	*76*		*50 - 135*	*03/24/15 05:56*	*03/30/15 17:50*	*1*
2,4,6-Tribromophenol (Surr)	*67*		*40 - 125*	*03/24/15 05:56*	*03/30/15 17:50*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 16:36	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		04/07/15 18:04	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 18:04	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 18:04	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/07/15 18:04	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/07/15 18:04	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/07/15 18:04	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/07/15 18:04	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/07/15 18:04	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/07/15 18:04	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 18:04	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		04/07/15 18:04	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		04/07/15 18:04	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 18:04	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 18:04	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		04/07/15 18:04	1
PETN	0.51	U	0.67	0.51	0.31	ug/L		04/07/15 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*92*		*79 - 111*	*03/25/15 15:36*	*04/07/15 18:04*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/07/15 13:04	1

Client Sample ID: FWGLL2mw-271-0529-GF
Date Collected: 03/23/15 12:55
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-2
Matrix: Water

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	0.020	J	0.050	0.020	0.0040	ug/L		03/31/15 12:27	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/25/15 10:26	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/25/15 10:26	1
Cobalt	2.0	J	7.0	4.0	0.56	ug/L		03/25/15 10:26	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/25/15 10:26	1
Selenium	10	U	15	10	4.0	ug/L		03/25/15 10:26	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/25/15 10:26	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/25/15 10:26	1
Barium	2.8	J	200	5.0	1.0	ug/L		03/25/15 10:26	1
Calcium	63000	J	5000	1000	260	ug/L		03/25/15 10:26	1
Copper	10	U	25	10	1.9	ug/L		03/25/15 10:26	1
Magnesium	15000	J	5000	300	55	ug/L		03/25/15 10:26	1
Manganese	140		15	5.0	0.46	ug/L		03/25/15 10:26	1
Nickel	3.7	J	40	5.0	0.76	ug/L		03/25/15 10:26	1
Potassium	8900		5000	900	70	ug/L		03/25/15 10:26	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/07/15 10:53	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/07/15 10:53	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/07/15 10:53	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/07/15 10:53	1
Iron	450		150	100	44	ug/L		04/07/15 10:53	1
Sodium	5400		1000	400	160	ug/L		04/07/15 10:53	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/07/15 10:53	1
Zinc	50	U	50	50	27	ug/L		04/07/15 10:53	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/26/15 13:46	1

Client Sample ID: FWGLL3mw-244-0532-GW — **Lab Sample ID: 240-48531-3**

Matrix: Water

Date Collected: 03/23/15 13:22

Date Received: 03/23/15 16:18

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/30/15 15:17	1
Butyl benzyl phthalate	0.51	U	5.1	0.51	0.27	ug/L		03/30/15 15:17	1
Diethyl phthalate	1.0	U	2.0	1.0	0.61	ug/L		03/30/15 15:17	1
Dimethyl phthalate	0.51	U	2.0	0.51	0.30	ug/L		03/30/15 15:17	1
Di-n-butyl phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/30/15 15:17	1
Di-n-octyl phthalate	0.51	U	2.0	0.51	0.23	ug/L		03/30/15 15:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	69		50 - 110	03/24/15 05:56	03/30/15 15:17	1
2-Fluorophenol (Surr)	62		20 - 110	03/24/15 05:56	03/30/15 15:17	1
Nitrobenzene-d5 (Surr)	64		40 - 110	03/24/15 05:56	03/30/15 15:17	1
Phenol-d5 (Surr)	66		10 - 115	03/24/15 05:56	03/30/15 15:17	1
Terphenyl-d14 (Surr)	77		50 - 135	03/24/15 05:56	03/30/15 15:17	1
2,4,6-Tribromophenol (Surr)	81		40 - 125	03/24/15 05:56	03/30/15 15:17	1

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/25/15 17:27	1
4,4'-DDE	0.048	U	0.048	0.048	0.011	ug/L		03/25/15 17:27	1
4,4'-DDT	0.048	U	0.048	0.048	0.016	ug/L		03/25/15 17:27	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 17:27	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/25/15 17:27	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/25/15 17:27	1
beta-BHC	0.048	U	0.048	0.048	0.017	ug/L		03/25/15 17:27	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/25/15 17:27	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 17:27	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/25/15 17:27	1
Endosulfan II	0.048	U Q	0.048	0.048	0.014	ug/L		03/25/15 17:27	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.014	ug/L		03/25/15 17:27	1
Endrin	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 17:27	1
Endrin aldehyde	0.048	U	0.048	0.048	0.017	ug/L		03/25/15 17:27	1
Endrin ketone	0.048	U	0.048	0.048	0.015	ug/L		03/25/15 17:27	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 17:27	1
gamma-Chlordane	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 17:27	1
Heptachlor	0.048	U	0.048	0.048	0.013	ug/L		03/25/15 17:27	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.014	ug/L		03/25/15 17:27	1
Methoxychlor	0.048	U	0.095	0.048	0.012	ug/L		03/25/15 17:27	1
Toxaphene	1.9	U	1.9	1.9	0.19	ug/L		03/25/15 17:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	79	Q	30 - 135	03/24/15 05:59	03/25/15 17:27	1
DCB Decachlorobiphenyl	78	Q	30 - 135	03/24/15 05:59	03/25/15 17:27	1
Tetrachloro-m-xylene	65		25 - 140	03/24/15 05:59	03/25/15 17:27	1
Tetrachloro-m-xylene	65		25 - 140	03/24/15 05:59	03/25/15 17:27	1

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 17:29	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

Client Sample ID: FWGLL3mw-244-0532-GW — **Lab Sample ID: 240-48531-3**

Date Collected: 03/23/15 13:22 — **Matrix: Water**

Date Received: 03/23/15 16:18

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.053	U	0.16	0.053	0.033	ug/L		04/07/15 18:47	1
1,3-Dinitrobenzene	0.11	U	0.16	0.11	0.053	ug/L		04/07/15 18:47	1
2,4,6-Trinitrotoluene	0.11	U	0.16	0.11	0.053	ug/L		04/07/15 18:47	1
2,4-Dinitrotoluene	0.11	U	0.14	0.11	0.053	ug/L		04/07/15 18:47	1
2,6-Dinitrotoluene	0.11	U	0.14	0.11	0.053	ug/L		04/07/15 18:47	1
2-Amino-4,6-dinitrotoluene	0.48		0.16	0.11	0.016	ug/L		04/07/15 18:47	1
2-Nitrotoluene	0.11	U	0.53	0.11	0.094	ug/L		04/07/15 18:47	1
3-Nitrotoluene	0.11	U	0.53	0.11	0.061	ug/L		04/07/15 18:47	1
4-Nitrotoluene	0.11	U	0.53	0.11	0.094	ug/L		04/07/15 18:47	1
4-Amino-2,6-dinitrotoluene	0.44		0.16	0.11	0.053	ug/L		04/07/15 18:47	1
HMX	0.053	U	0.16	0.053	0.038	ug/L		04/07/15 18:47	1
RDX	0.25	M	0.16	0.053	0.038	ug/L		04/07/15 18:47	1
Nitrobenzene	0.11	U	0.16	0.11	0.053	ug/L		04/07/15 18:47	1
Tetryl	0.11	U	0.16	0.11	0.053	ug/L		04/07/15 18:47	1
Nitroglycerin	0.53	U	0.69	0.53	0.35	ug/L		04/07/15 18:47	1
PETN	0.53	U	0.69	0.53	0.32	ug/L		04/07/15 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/25/15 15:36*	*04/07/15 18:47*	*1*
3,4-Dinitrotoluene	*93*		*79 - 111*	*03/25/15 15:36*	*04/09/15 03:03*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/07/15 13:10	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48531-1

Client Sample ID: FWGLL3mw-244-0532-GF
Date Collected: 03/23/15 13:22
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-4
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.4	J	10	10	2.9	ug/L		03/25/15 10:46	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/25/15 10:46	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/25/15 10:46	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/25/15 10:46	1
Selenium	10	U	15	10	4.0	ug/L		03/25/15 10:46	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/25/15 10:46	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/25/15 10:46	1
Barium	16	J	200	5.0	1.0	ug/L		03/25/15 10:46	1
Calcium	25000		5000	1000	260	ug/L		03/25/15 10:46	1
Copper	10	U	25	10	1.9	ug/L		03/25/15 10:46	1
Magnesium	8200		5000	300	55	ug/L		03/25/15 10:46	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/25/15 10:46	1
Nickel	1.2	J	40	5.0	0.76	ug/L		03/25/15 10:46	1
Potassium	1400	J	5000	900	70	ug/L		03/25/15 10:46	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 12:39	1
Antimony	1.0	J	2.0	1.0	0.33	ug/L		04/06/15 12:39	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 12:39	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 12:39	1
Iron	100	U	150	100	44	ug/L		04/06/15 12:39	1
Sodium	3900		1000	400	160	ug/L		04/06/15 12:39	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 12:39	1
Zinc	50	U	50	50	27	ug/L		04/06/15 12:39	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/26/15 13:53	1

Client Sample ID: FWGLL3mw-246-0533-GW
Date Collected: 03/23/15 14:00
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-5
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 15:42	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/30/15 15:42	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/30/15 15:42	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/30/15 15:42	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 15:42	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/30/15 15:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*70*		*50 - 110*	*03/24/15 05:56*	*03/30/15 15:42*	*1*
2-Fluorophenol (Surr)	*65*		*20 - 110*	*03/24/15 05:56*	*03/30/15 15:42*	*1*
Nitrobenzene-d5 (Surr)	*66*		*40 - 110*	*03/24/15 05:56*	*03/30/15 15:42*	*1*
Phenol-d5 (Surr)	*69*		*10 - 115*	*03/24/15 05:56*	*03/30/15 15:42*	*1*
Terphenyl-d14 (Surr)	*70*		*50 - 135*	*03/24/15 05:56*	*03/30/15 15:42*	*1*
2,4,6-Tribromophenol (Surr)	*66*		*40 - 125*	*03/24/15 05:56*	*03/30/15 15:42*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 17:47	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		04/07/15 19:31	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 19:31	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 19:31	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/07/15 19:31	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/07/15 19:31	1
2-Amino-4,6-dinitrotoluene	**0.38**		0.15	0.10	0.015	ug/L		04/07/15 19:31	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/07/15 19:31	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/07/15 19:31	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/07/15 19:31	1
4-Amino-2,6-dinitrotoluene	**0.38**	**M**	0.15	0.10	0.051	ug/L		04/07/15 19:31	1
HMX	0.051	U	0.15	0.051	0.036	ug/L		04/07/15 19:31	1
RDX	**0.21**	**M**	0.15	0.051	0.036	ug/L		04/07/15 19:31	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 19:31	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 19:31	1
Nitroglycerin	0.51	U	0.66	0.51	0.33	ug/L		04/07/15 19:31	1
PETN	0.51	U M	0.66	0.51	0.30	ug/L		04/07/15 19:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*91*	*M*	*79 - 111*	*03/25/15 15:36*	*04/07/15 19:31*	*1*
3,4-Dinitrotoluene	*92*		*79 - 111*	*03/25/15 15:36*	*04/09/15 04:09*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/07/15 13:12	1

Client Sample ID: FWGLL3mw-246-0533-GF
Date Collected: 03/23/15 14:00
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-6
Matrix: Water

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	0.064		0.050	0.020	0.0040	ug/L		03/31/15 13:37	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/25/15 10:50	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/25/15 10:50	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/25/15 10:50	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/25/15 10:50	1
Selenium	10	U	15	10	4.0	ug/L		03/25/15 10:50	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/25/15 10:50	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/25/15 10:50	1
Barium	**16**	**J**	200	5.0	1.0	ug/L		03/25/15 10:50	1
Calcium	**24000**		5000	1000	260	ug/L		03/25/15 10:50	1
Copper	10	U	25	10	1.9	ug/L		03/25/15 10:50	1
Magnesium	**7800**		5000	300	55	ug/L		03/25/15 10:50	1
Manganese	**5.1**	**J**	15	5.0	0.46	ug/L		03/25/15 10:50	1
Nickel	**1.4**	**J**	40	5.0	0.76	ug/L		03/25/15 10:50	1
Potassium	**1400**	**J**	5000	900	70	ug/L		03/25/15 10:50	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 12:43	1
Antimony	**0.63**	**J**	2.0	1.0	0.33	ug/L		04/06/15 12:43	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 12:43	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 12:43	1
Iron	100	U	150	100	44	ug/L		04/06/15 12:43	1
Sodium	**3900**		1000	400	160	ug/L		04/06/15 12:43	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 12:43	1
Zinc	50	U	50	50	27	ug/L		04/06/15 12:43	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/26/15 14:00	1

Client Sample ID: FWGLL3mw-DUP2-0558-GW
Lab Sample ID: 240-48531-7
Matrix: Water
Date Collected: 03/23/15 14:02
Date Received: 03/23/15 16:18

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/30/15 16:08	1
Butyl benzyl phthalate	0.51	U	5.1	0.51	0.27	ug/L		03/30/15 16:08	1
Diethyl phthalate	1.0	U	2.0	1.0	0.61	ug/L		03/30/15 16:08	1
Dimethyl phthalate	0.51	U	2.0	0.51	0.30	ug/L		03/30/15 16:08	1
Di-n-butyl phthalate	5.1	U	5.1	5.1	1.7	ug/L		03/30/15 16:08	1
Di-n-octyl phthalate	0.51	U	2.0	0.51	0.23	ug/L		03/30/15 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	74		50 - 110	03/24/15 05:56	03/30/15 16:08	1
2-Fluorophenol (Surr)	67		20 - 110	03/24/15 05:56	03/30/15 16:08	1
Nitrobenzene-d5 (Surr)	67		40 - 110	03/24/15 05:56	03/30/15 16:08	1
Phenol-d5 (Surr)	71		10 - 115	03/24/15 05:56	03/30/15 16:08	1
Terphenyl-d14 (Surr)	76		50 - 135	03/24/15 05:56	03/30/15 16:08	1
2,4,6-Tribromophenol (Surr)	77		40 - 125	03/24/15 05:56	03/30/15 16:08	1

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.054	U	0.054	0.054	0.020	ug/L		03/25/15 17:50	1
4,4'-DDE	0.054	U	0.054	0.054	0.013	ug/L		03/25/15 17:50	1
4,4'-DDT	0.054	U	0.054	0.054	0.018	ug/L		03/25/15 17:50	1
Aldrin	0.054	U	0.054	0.054	0.014	ug/L		03/25/15 17:50	1
alpha-BHC	0.054	U	0.054	0.054	0.015	ug/L		03/25/15 17:50	1
alpha-Chlordane	0.054	U	0.054	0.054	0.013	ug/L		03/25/15 17:50	1
beta-BHC	0.054	U	0.054	0.054	0.020	ug/L		03/25/15 17:50	1
delta-BHC	0.054	U	0.054	0.054	0.032	ug/L		03/25/15 17:50	1
Dieldrin	0.054	U	0.054	0.054	0.014	ug/L		03/25/15 17:50	1
Endosulfan I	0.054	U	0.054	0.054	0.017	ug/L		03/25/15 17:50	1
Endosulfan II	0.054	U Q	0.054	0.054	0.016	ug/L		03/25/15 17:50	1
Endosulfan sulfate	0.054	U	0.054	0.054	0.016	ug/L		03/25/15 17:50	1
Endrin	0.054	U	0.054	0.054	0.014	ug/L		03/25/15 17:50	1
Endrin aldehyde	0.054	U	0.054	0.054	0.020	ug/L		03/25/15 17:50	1
Endrin ketone	0.054	U	0.054	0.054	0.017	ug/L		03/25/15 17:50	1
gamma-BHC (Lindane)	0.054	U	0.054	0.054	0.014	ug/L		03/25/15 17:50	1
gamma-Chlordane	0.054	U	0.054	0.054	0.014	ug/L		03/25/15 17:50	1
Heptachlor	0.054	U	0.054	0.054	0.015	ug/L		03/25/15 17:50	1
Heptachlor epoxide	0.054	U	0.054	0.054	0.016	ug/L		03/25/15 17:50	1
Methoxychlor	0.054	U	0.11	0.054	0.014	ug/L		03/25/15 17:50	1
Toxaphene	2.2	U	2.2	2.2	0.21	ug/L		03/25/15 17:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	87	Q	30 - 135	03/24/15 05:59	03/25/15 17:50	1
DCB Decachlorobiphenyl	86	Q	30 - 135	03/24/15 05:59	03/25/15 17:50	1
Tetrachloro-m-xylene	71		25 - 140	03/24/15 05:59	03/25/15 17:50	1
Tetrachloro-m-xylene	73		25 - 140	03/24/15 05:59	03/25/15 17:50	1

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 18:04	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

Client Sample ID: FWGLL3mw-DUP2-0558-GW
Lab Sample ID: 240-48531-7
Matrix: Water

Date Collected: 03/23/15 14:02
Date Received: 03/23/15 16:18

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		04/07/15 20:15	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 20:15	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 20:15	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/07/15 20:15	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/07/15 20:15	1
2-Amino-4,6-dinitrotoluene	0.52	M	0.15	0.10	0.015	ug/L		04/07/15 20:15	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.091	ug/L		04/07/15 20:15	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.059	ug/L		04/07/15 20:15	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.091	ug/L		04/07/15 20:15	1
4-Amino-2,6-dinitrotoluene	0.48	M	0.15	0.10	0.051	ug/L		04/07/15 20:15	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		04/07/15 20:15	1
RDX	0.27	M	0.15	0.051	0.037	ug/L		04/07/15 20:15	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 20:15	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 20:15	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		04/07/15 20:15	1
PETN	0.51	U	0.67	0.51	0.31	ug/L		04/07/15 20:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*92*	*M*	*79 - 111*	*03/25/15 15:36*	*04/07/15 20:15*	*1*
3,4-Dinitrotoluene	*92*		*79 - 111*	*03/25/15 15:36*	*04/09/15 05:16*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/07/15 13:14	1

Client Sample ID: FWGLL3mw-DUP2-0558-GF
Lab Sample ID: 240-48531-8
Matrix: Water
Date Collected: 03/23/15 14:02
Date Received: 03/23/15 16:18

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/25/15 11:02	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/25/15 11:02	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/25/15 11:02	1
Lead	2.0	J	10	5.0	1.9	ug/L		03/25/15 11:02	1
Selenium	10	U	15	10	4.0	ug/L		03/25/15 11:02	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/25/15 11:02	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/25/15 11:02	1
Barium	17	J	200	5.0	1.0	ug/L		03/25/15 11:02	1
Calcium	26000		5000	1000	260	ug/L		03/25/15 11:02	1
Copper	3.0	J	25	10	1.9	ug/L		03/25/15 11:02	1
Magnesium	8600		5000	300	55	ug/L		03/25/15 11:02	1
Manganese	1.1	J	15	5.0	0.46	ug/L		03/25/15 11:02	1
Nickel	0.78	J	40	5.0	0.76	ug/L		03/25/15 11:02	1
Potassium	1400	J	5000	900	70	ug/L		03/25/15 11:02	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 12:46	1
Antimony	0.56	J	2.0	1.0	0.33	ug/L		04/06/15 12:46	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 12:46	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 12:46	1
Iron	100	U	150	100	44	ug/L		04/06/15 12:46	1
Sodium	3900		1000	400	160	ug/L		04/06/15 12:46	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 12:46	1
Zinc	50	U	50	50	27	ug/L		04/06/15 12:46	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/26/15 14:02	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48531-1

Client Sample ID: FWGLL3mw-DUP3-0559-GW
Date Collected: 03/23/15 15:00
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-9
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 16:33	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/30/15 16:33	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/30/15 16:33	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/30/15 16:33	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 16:33	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/30/15 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*63*		*50 - 110*	*03/24/15 05:56*	*03/30/15 16:33*	*1*
2-Fluorophenol (Surr)	*57*		*20 - 110*	*03/24/15 05:56*	*03/30/15 16:33*	*1*
Nitrobenzene-d5 (Surr)	*57*		*40 - 110*	*03/24/15 05:56*	*03/30/15 16:33*	*1*
Phenol-d5 (Surr)	*61*		*10 - 115*	*03/24/15 05:56*	*03/30/15 16:33*	*1*
Terphenyl-d14 (Surr)	*67*		*50 - 135*	*03/24/15 05:56*	*03/30/15 16:33*	*1*
2,4,6-Tribromophenol (Surr)	*62*		*40 - 125*	*03/24/15 05:56*	*03/30/15 16:33*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 18:58	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		04/07/15 20:58	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 20:58	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 20:58	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/07/15 20:58	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/07/15 20:58	1
2-Amino-4,6-dinitrotoluene	**0.43**	**M**	0.15	0.10	0.015	ug/L		04/07/15 20:58	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/07/15 20:58	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/07/15 20:58	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/07/15 20:58	1
4-Amino-2,6-dinitrotoluene	**0.40**	**M**	0.15	0.10	0.051	ug/L		04/07/15 20:58	1
HMX	**0.036**	**J M**	0.15	0.051	0.036	ug/L		04/07/15 20:58	1
RDX	**0.21**	**M**	0.15	0.051	0.036	ug/L		04/07/15 20:58	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 20:58	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 20:58	1
Nitroglycerin	0.51	U	0.66	0.51	0.33	ug/L		04/07/15 20:58	1
PETN	0.51	U	0.66	0.51	0.30	ug/L		04/07/15 20:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*	*M*	*79 - 111*	*03/25/15 15:36*	*04/07/15 20:58*	*1*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/25/15 15:36*	*04/09/15 06:22*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/07/15 13:24	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48531-1

Client Sample ID: FWGLL3mw-DUP3-0559-GF
Date Collected: 03/23/15 15:00
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-10
Matrix: Water

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	0.055		0.050	0.020	0.0040	ug/L		03/31/15 13:57	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/25/15 11:07	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/25/15 11:07	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/25/15 11:07	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/25/15 11:07	1
Selenium	10	U	15	10	4.0	ug/L		03/25/15 11:07	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/25/15 11:07	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/25/15 11:07	1
Barium	16	J	200	5.0	1.0	ug/L		03/25/15 11:07	1
Calcium	25000		5000	1000	260	ug/L		03/25/15 11:07	1
Copper	10	U	25	10	1.9	ug/L		03/25/15 11:07	1
Magnesium	8200		5000	300	55	ug/L		03/25/15 11:07	1
Manganese	5.4	J	15	5.0	0.46	ug/L		03/25/15 11:07	1
Nickel	0.99	J	40	5.0	0.76	ug/L		03/25/15 11:07	1
Potassium	1400	J	5000	900	70	ug/L		03/25/15 11:07	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	21	J	60	60	20	ug/L		04/06/15 12:50	1
Antimony	0.53	J	2.0	1.0	0.33	ug/L		04/06/15 12:50	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 12:50	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 12:50	1
Iron	100	U	150	100	44	ug/L		04/06/15 12:50	1
Sodium	3900		1000	400	160	ug/L		04/06/15 12:50	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 12:50	1
Zinc	50	U	50	50	27	ug/L		04/06/15 12:50	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.13	J	0.20	0.20	0.090	ug/L		03/26/15 14:04	1

Client Sample ID: FWGFBQmw-174C-0512-GW — **Lab Sample ID: 240-48531-11**

Date Collected: 03/23/15 15:31 — **Matrix: Water**

Date Received: 03/23/15 16:18

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 16:58	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/30/15 16:58	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/30/15 16:58	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/30/15 16:58	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 16:58	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/30/15 16:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*50 - 110*	*03/24/15 05:56*	*03/30/15 16:58*	*1*
2-Fluorophenol (Surr)	*63*		*20 - 110*	*03/24/15 05:56*	*03/30/15 16:58*	*1*
Nitrobenzene-d5 (Surr)	*65*		*40 - 110*	*03/24/15 05:56*	*03/30/15 16:58*	*1*
Phenol-d5 (Surr)	*67*		*10 - 115*	*03/24/15 05:56*	*03/30/15 16:58*	*1*
Terphenyl-d14 (Surr)	*74*		*50 - 135*	*03/24/15 05:56*	*03/30/15 16:58*	*1*
2,4,6-Tribromophenol (Surr)	*74*		*40 - 125*	*03/24/15 05:56*	*03/30/15 16:58*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/25/15 18:12	1
4,4'-DDE	0.048	U	0.048	0.048	0.011	ug/L		03/25/15 18:12	1
4,4'-DDT	0.048	U	0.048	0.048	0.016	ug/L		03/25/15 18:12	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:12	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/25/15 18:12	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/25/15 18:12	1
beta-BHC	0.21	J cn	0.048	0.048	0.017	ug/L		03/25/15 18:12	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/25/15 18:12	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:12	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/25/15 18:12	1
Endosulfan II	0.048	U Q	0.048	0.048	0.014	ug/L		03/25/15 18:12	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.014	ug/L		03/25/15 18:12	1
Endrin	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:12	1
Endrin aldehyde	0.048	U	0.048	0.048	0.017	ug/L		03/25/15 18:12	1
Endrin ketone	0.048	U	0.048	0.048	0.015	ug/L		03/25/15 18:12	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:12	1
gamma-Chlordane	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:12	1
Heptachlor	0.048	U	0.048	0.048	0.013	ug/L		03/25/15 18:12	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.014	ug/L		03/25/15 18:12	1
Methoxychlor	0.048	U	0.095	0.048	0.012	ug/L		03/25/15 18:12	1
Toxaphene	1.9	U Q	1.9	1.9	0.19	ug/L		03/25/15 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*101*	*Q*	*30 - 135*	*03/24/15 05:59*	*03/25/15 18:12*	*1*
DCB Decachlorobiphenyl	*94*	*Q*	*30 - 135*	*03/24/15 05:59*	*03/25/15 18:12*	*1*
Tetrachloro-m-xylene	*83*		*25 - 140*	*03/24/15 05:59*	*03/25/15 18:12*	*1*
Tetrachloro-m-xylene	*100*		*25 - 140*	*03/24/15 05:59*	*03/25/15 18:12*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 19:16	1

Client Sample ID: FWGFBQmw-174C-0512-GW — **Lab Sample ID: 240-48531-11**

Date Collected: 03/23/15 15:31 — **Matrix: Water**

Date Received: 03/23/15 16:18

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		04/07/15 21:42	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		04/07/15 21:42	1
2,4-Dinitrotoluene	0.27	M	0.13	0.10	0.050	ug/L		04/07/15 21:42	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		04/07/15 21:42	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		04/07/15 21:42	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		04/07/15 21:42	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		04/07/15 21:42	1
HMX	0.050	U M	0.15	0.050	0.036	ug/L		04/07/15 21:42	1
RDX	0.43	M	0.15	0.050	0.036	ug/L		04/07/15 21:42	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		04/07/15 21:42	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		04/07/15 21:42	1
Nitroglycerin	0.50	U	0.65	0.50	0.33	ug/L		04/07/15 21:42	1
PETN	0.50	U	0.65	0.50	0.30	ug/L		04/07/15 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*97*		*79 - 111*	*03/25/15 15:36*	*04/07/15 21:42*	*1*
3,4-Dinitrotoluene	*187*	*M Q*	*79 - 111*	*03/25/15 15:36*	*04/14/15 22:08*	*1*

Method: 8330A - Nitroaromatics and Nitramines - DL

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4,6-Trinitrotoluene	22	D	0.75	0.50	0.25	ug/L		04/08/15 11:30	5
2-Amino-4,6-dinitrotoluene	13	D	0.75	0.50	0.075	ug/L		04/08/15 11:30	5
4-Amino-2,6-dinitrotoluene	18	D	0.75	0.50	0.25	ug/L		04/08/15 11:30	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*98*		*79 - 111*	*03/25/15 15:36*	*04/08/15 11:30*	*5*
3,4-Dinitrotoluene	*186*	*M Q*	*79 - 111*	*03/25/15 15:36*	*04/14/15 21:03*	*5*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/07/15 13:26	1

Client Sample ID: FWGFBQmw-174C-0512-GF
Date Collected: 03/23/15 15:31
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-12
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/25/15 11:11	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/25/15 11:11	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/25/15 11:11	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/25/15 11:11	1
Selenium	10	U	15	10	4.0	ug/L		03/25/15 11:11	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/25/15 11:11	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/25/15 11:11	1
Barium	**11**	**J**	200	5.0	1.0	ug/L		03/25/15 11:11	1
Calcium	**5300**		5000	1000	260	ug/L		03/25/15 11:11	1
Copper	10	U	25	10	1.9	ug/L		03/25/15 11:11	1
Magnesium	**1900**	**J**	5000	300	55	ug/L		03/25/15 11:11	1
Manganese	**19**		15	5.0	0.46	ug/L		03/25/15 11:11	1
Nickel	**4.1**	**J**	40	5.0	0.76	ug/L		03/25/15 11:11	1
Potassium	**930**	**J**	5000	900	70	ug/L		03/25/15 11:11	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 12:54	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 12:54	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 12:54	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 12:54	1
Iron	100	U	150	100	44	ug/L		04/06/15 12:54	1
Sodium	**1100**		1000	400	160	ug/L		04/06/15 12:54	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 12:54	1
Zinc	**36**	**J**	50	50	27	ug/L		04/06/15 12:54	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/26/15 14:08	1

Client Sample ID: FWGEQUIPRINSE6-0568-GW
Date Collected: 03/23/15 16:08
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-13
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 17:24	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/30/15 17:24	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/30/15 17:24	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/30/15 17:24	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 17:24	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/30/15 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	73		50 - 110	03/24/15 05:56	03/30/15 17:24	1
2-Fluorophenol (Surr)	73		20 - 110	03/24/15 05:56	03/30/15 17:24	1
Nitrobenzene-d5 (Surr)	69		40 - 110	03/24/15 05:56	03/30/15 17:24	1
Phenol-d5 (Surr)	77		10 - 115	03/24/15 05:56	03/30/15 17:24	1
Terphenyl-d14 (Surr)	77		50 - 135	03/24/15 05:56	03/30/15 17:24	1
2,4,6-Tribromophenol (Surr)	72		40 - 125	03/24/15 05:56	03/30/15 17:24	1

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/25/15 18:33	1
4,4'-DDE	0.048	U	0.048	0.048	0.011	ug/L		03/25/15 18:33	1
4,4'-DDT	0.048	U	0.048	0.048	0.016	ug/L		03/25/15 18:33	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:33	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/25/15 18:33	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/25/15 18:33	1
beta-BHC	0.048	U	0.048	0.048	0.017	ug/L		03/25/15 18:33	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/25/15 18:33	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:33	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/25/15 18:33	1
Endosulfan II	0.048	U Q	0.048	0.048	0.014	ug/L		03/25/15 18:33	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.014	ug/L		03/25/15 18:33	1
Endrin	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:33	1
Endrin aldehyde	0.048	U	0.048	0.048	0.017	ug/L		03/25/15 18:33	1
Endrin ketone	0.048	U	0.048	0.048	0.015	ug/L		03/25/15 18:33	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:33	1
gamma-Chlordane	0.048	U	0.048	0.048	0.012	ug/L		03/25/15 18:33	1
Heptachlor	0.048	U	0.048	0.048	0.013	ug/L		03/25/15 18:33	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.014	ug/L		03/25/15 18:33	1
Methoxychlor	0.048	U	0.095	0.048	0.012	ug/L		03/25/15 18:33	1
Toxaphene	1.9	U	1.9	1.9	0.19	ug/L		03/25/15 18:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	89	Q	30 - 135	03/24/15 05:59	03/25/15 18:33	1
DCB Decachlorobiphenyl	92	Q	30 - 135	03/24/15 05:59	03/25/15 18:33	1
Tetrachloro-m-xylene	74		25 - 140	03/24/15 05:59	03/25/15 18:33	1
Tetrachloro-m-xylene	74		25 - 140	03/24/15 05:59	03/25/15 18:33	1

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 19:33	1

Client Sample ID: FWGEQUIPRINSE6-0568-GW
Date Collected: 03/23/15 16:08
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-13
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		04/07/15 22:25	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 22:25	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 22:25	1
2,4-Dinitrotoluene	0.10	U M	0.13	0.10	0.051	ug/L		04/07/15 22:25	1
2,6-Dinitrotoluene	0.10	U M	0.13	0.10	0.051	ug/L		04/07/15 22:25	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/07/15 22:25	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/07/15 22:25	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/07/15 22:25	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/07/15 22:25	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 22:25	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		04/07/15 22:25	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		04/07/15 22:25	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 22:25	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/07/15 22:25	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		04/07/15 22:25	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		04/07/15 22:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/25/15 15:36*	*04/07/15 22:25*	*1*
3,4-Dinitrotoluene	*92*		*79 - 111*	*03/25/15 15:36*	*04/09/15 09:42*	*1*

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	0.020	U	0.050	0.020	0.0040	ug/L		03/31/15 14:18	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/25/15 11:15	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/25/15 11:15	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/25/15 11:15	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/25/15 11:15	1
Selenium	10	U	15	10	4.0	ug/L		03/25/15 11:15	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/25/15 11:15	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/25/15 11:15	1
Barium	5.0	U	200	5.0	1.0	ug/L		03/25/15 11:15	1
Calcium	1000	U	5000	1000	260	ug/L		03/25/15 11:15	1
Copper	10	U	25	10	1.9	ug/L		03/25/15 11:15	1
Magnesium	300	U	5000	300	55	ug/L		03/25/15 11:15	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/25/15 11:15	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/25/15 11:15	1
Potassium	900	U	5000	900	70	ug/L		03/25/15 11:15	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 12:58	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 12:58	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 12:58	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 12:58	1
Iron	100	U	150	100	44	ug/L		04/06/15 12:58	1
Sodium	400	U	1000	400	160	ug/L		04/06/15 12:58	1

Client Sample ID: FWGEQUIPRINSE6-0568-GW
Date Collected: 03/23/15 16:08
Date Received: 03/23/15 16:18

Lab Sample ID: 240-48531-13
Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 12:58	1
Zinc	50	U	50	50	27	ug/L		04/06/15 12:58	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/26/15 14:10	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/07/15 13:28	1

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 5, 2015

SDG: 240-48531
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3.Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-6
6. Was the GC/MS system tuned each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Initial Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A4HP9–3/25/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) ≤0.050?	X				QSM Table F-4
7d. Were all other target analytes reported with an avg response have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X				QSM Table F-4 R<0.99=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X			Benzoic acid, 2,4-dinitrophenol 4,6-dinitro-2-methylphenol, pentachlorophenol and pyrene used a linear fit.	QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte?	X				QSM Table F-4 and section D.1.2.1
9 Was a breakdown check run at the beginning of every 12 hours with DDT degradation <20% and tailing factors of benzidine and pentachlorophenol ≤2?	X				QSM Table F-4 R
10. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours with recoveries within 70-130%?	X			3/30/15 @1129, 1906	Louisville Supplement to the DOD QSM

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 5, 2015

SDG: 240-48531
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			3/25/15 @1402	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/30/15 @1103	QSM Table F-4
12a. Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) ≥0.050?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE6-0568-GW	
16a. Were target analytes detected in the field blank?		X			QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-6 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-6, J/UJ
18. Was a MS/MSD prepared with each batch?	X				

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 5, 2015

SDG: 240-48531
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
18a. Were the MS/MSD recoveries within limits specified in Table G-6 of the DoD QSM with an RPD <30%?	X			Checked by ADR. FWGLL2mw-271-0529-GW	QSM Table F-4, Table G-6 J/UJ Parent sample only
19. Was a field duplicate analyzed?	X			Parents FWGLL3mw-244-0532-GW and FWGLL3mw-246-0533-GW	
19a. Were the field duplicates RPDs within ±50%?			X	No detected sample results were reported.	QSM Table F-4, RPD >50=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% - 50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Additional Comments:

Table 1: CCCs *(All analytes if CCCs not included in standard)*

Base / Neutral Compounds	Acid Compounds
Acenaphthalene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
N-Nitrosodiphehylamine	Phenol
Di-n-octylphthalate	Pentachlorophenol
Fluoroanthene	2,4,6-Trichlorophenol
Benzo(a)pyrene	

Table 2: SPCCs -

N-Nitroso-di-n-propylamine	0.05
Hexachlorocyclopentadiene	0.05
2,4-Dinitrophenol	0.05
4-Nitrophenol	0.05

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 6, 2015

SDG: 240-48531
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was a LOD Verification performed once per quarter with all target analytes detected?	X				DoD QSM Table F-8
7. Tuning (ICP MS Only)					
7a. Was a tune performed daily prior to calibration	X				DoD QSM Table F-8 R
7b. Mass Calibration <0.1 amu from true value	X				
7c. Resolution <0.9 amu full width at 10 % peak height	X				
7d. RSD <%5 for a minimum of four replicate analyses	X				
8.Calibration	X				
8a. Was the ICAL performed daily with at least	X			ICP (3/25/15), Hg (3/26/15) and ICPMS- (4/6-4/7/15)	DoD QSM Tables F-8 and F-7
1high standard and a blank for ICP & ICPMS	X				
5 standards and a blank for Hg	X				
8b. Was the correlation coefficient r≥0.995 for Hg?	X				DoD QSM Tables F-8 and F-7 r<0.995=J/R
8c. Was the ICV (second source verification) analyzed after the ICAL with results 90-110% of the true value?	X				DoD QSM Tables F-8 and F-7
8d. Was the ICB analyzed after the ICV with detected results <1/2 the MRL?	X			ICP- The ICB analyzed 3/25/15@ 0904 had barium detected at 3.02 µg/L and magnesium detected at 93.9 µg/L. The barium results for samples FWGLL2mw-271-0529-GF and FWGFBQmw-174c-0512-GF were qualified, "U" as the reported concentrations were less than 5x barium contamination. No qualification of the data was required due to magnesium contamination in the ICB any detected concentrations of magnesium were greater than five times contamination. ICPMS- The ICB analyzed 4/6/15 at 1117 had antimony detected at 0.611 µg/L and iron detected at 16 µg/L. The antimony	DoD QSM, Tables F-8 and F-7 < 5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 6, 2015

SDG: 240-48531
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				results for samples FWGLL3mw-244-0532-GF, FWGLL3mw-246-0533-GF, FWGLL3mw-DUP2-0558-GF, FWGLL3mw-DUP3-0559-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the iron contamination, as there were no detected iron results reported for the associated samples less than five times blank contamination. The ICB analyzed 4/7/15 at 0939 had antimony detected at 0.513 µg/L and cadmium detected at 0.095 µg/L. No qualification of the data was required for the ICB contamination, as there were no detected cadmium or antimony results reported for the associated sample less than five times blank contamination.	
Sample Analysis					
9. Was a MRL Level Verification performed at the beginning of the daily sequence and end of the analytical sequence bracketing samples? Were results 70-130%?	X				LS, DoD QSM Table G-18, >130%=J; 70-80%=J/UJ; <70%=J/UJ <65%=R, unless DL check with detected results
10. Were CCVs analyzed every 10 samples and at the end of the analytical sequence with results 90-110% of the true value?	X				DoD QSM, Tables F-8 and F-7 >110%=J, <85%=J/R 90-85%=J/UJ;
11. Were the CCBs run every 10 samples and at the end of the analytical sequence? Were results <1/2 the MRL?	X			ICPMS The CCBs analyzed 4/6/15 had antimony detected from 0.225 µg/L to 0.301 µg/L, iron at 16.7 µg/L and cadmium at 0.079 µg/L . The antimony results for samples FWGLL3mw-244-0532-GF, FWGLL3mw-246-0533-GF, FWGLL3mw-DUP2-0558-GF, FWGLL3mw-DUP3-0559-GF were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or iron contamination, as there were no detected cadmium or iron results reported for the associated samples less than five times blank contamination. The CCBs analyzed 4/7/15 had antimony detected from 0.332 µg/L to 0.429 µg/L, iron at 16.2 µg/L and cadmium at	DoD QSM Tables F-8 and F-7 <5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 6, 2015

SDG: 240-48531
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				0.095 µg/L . No qualification of the data was required for the cadmium, antimony or iron contamination, as there were no detected antimony, cadmium or iron results reported for the bracket field sample less than five times blank contamination.	
12. Was an Interelement Check Standard run at the beginning of the analytical sequence and every 12 hours with the ICS recovery within 80 to 120% of true value for each element of interest (ICP and ICPMS only)?	X				DoD QSM Tables F-8 and F-7 >120%=J; 50-79%=J/UJ; <50%=Pj/R
13. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
14. Were target analytes detected in the method blank?	X			Checked by ADR. ICP- Barium was detected in the method blank at 2.91 µg/L, chromium at 1.28 µg/L, lead at 3.25 µg/L and manganese at 1.64 µg/L. The manganese results for samples FWGLL3mw-246-0533-GF, FWGLL3mw-DUP2-0558-GF, FWGLL3mw-DUP3-0559-GF; the barium results for samples FWGFBQmw-174c-0512-GF and FWGLL2mw-271-0529-GF; and the lead result for sample FWGLL3mw-DUP2-0558-GF were qualified, "B" as the reported concentrations were less than 5x blank contamination. No qualification was required for the chromium contamination as chromium was not detected in any of the associated field samples.	DoD QSM Tables F-8 and F-7, <5x = B
15. Was a field blank collected and analyzed?	X			FWGEQUIPRINSE6-0568-GW	
16. Were target analytes reported in the field blank analyses?		X		ADR checked section.	DoD QSM Tables F-8 and F-7
17. Was a LCS prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7>120%=J; 70-79%=J/UJ; <70%=J/R
19. Was a matrix spike (MS) and lab duplicate sample prepared with each batch?	X				DoD QSM Tables F-8 and F-7
20. Was the MS and Lab Duplicate parent a Ravenna sample?	X			A matrix spike analysis and laboratory duplicate analysis was performed on sample FWGLL2mw-271-0529-GF.	

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 6, 2015

SDG: 240-48531
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
21. Were the MS recoveries within 80-120%?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7, >120%=J;70-79%=J/UJ; <70%=J/R, All samples in batch
22. Was the lab sample duplicate RPD ≤ 20%, for sample results detected above the LOQ?		X		ICP-The laboratory duplicate analyzed on sample FWGLL2mw-271-0529-GF had an RPD above control limits of 20% for nickel at 28%. No qualification of the data was required as the detected nickel concentration for sample FWGLL2mw-271-0529-GF was less than the LOQ.	DoD QSM Tables F-8 and F-7 >20% = J, All samples in batch
23. Was a serial dilution performed, with the fivefold dilution within ± 10% of the original result?	X				DoD QSM, Tables F-8 and F-7 >20% = J. Only evaluate results above the LOQ . Qualify all samples in batch
24. Was a Post Digestion Spike analyzed as needed? Were results within 75-125%?	X				LCG Table 7, >125%=J; 30-75%=J/UJ; <30%=R
25. Was a field duplicate analyzed? Were the RPDs ± 50% for sample results detected above the LOQ?	X				>30% = J. Qualify parent sample only and only evaluate results above the LOQ
26. Were internal standards added to all ICPMS samples with intensity within 30-120% of the intensity of the ICAL internal standard?	X				DoD QSM Table F-8. >120%=J/R, <20%=J

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 6, 2015

SDG: 240-48531
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			LC10 3/11/15 LC12 1/19/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for non-linear).	X			LC10-4-nitrotoluene used a linear fit LC12-2-nitrotoluene, 4-nitrotoluene, 2,4,6-trinitrotoluene, HMX and 3,4-dinitrotoluene used a linear fit	
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			LC10 on 3/11 at 2136 LC12 1/20/15 at 0543	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			LC10- 4/7/15 @1343 and 2309, 4/8/15 @ 0541 and 1241 LC12-4/14/15 @ 1852 and 4/15/15 @ 0442	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily? Was the %D< 30%?		X		LC10- 4/7/15 @1553, 4/8/15 @ 1257 LC12-4/14/15 @ 1746 and 4/15/15 @ 0547 The bracketing MRL standards analyzed 4/14/15 and 4/15/15 recovered above control limits of 70-130% for 4-amino-2,6-dinitrotoluene at 131%. No qualification of the data was required for the MRL outliers as LC12 was used for confirmation only.	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3
12. Were target analytes detected in the method blank <1/2 the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 6, 2015

SDG: 240-48531
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses > ½ the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B
15. Was a field duplicate analyzed? Were the RPDs ≤30%?	X			Checked by ADR.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?	X				DoD QSM Table F-3 RPD>40%=J Only detected results above the LOQ were evaluated
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within limits specified in table G-12 of the DoD QSM?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J;30-LL=J/UJ; <30%=J/R
19.Was a MS/MSD or MS and sample duplicate prepared with each batch?			X	No data was provided as a matrix spike/spike duplicate was not requested nor was sample volume provided for matrix spike analysis specific to this set of samples.	DoD QSM Table F-3
20. Were MS/MSD recoveries within limits specified in table G-12 of the DoD QSM with an RPD ≤30%?			X		DoD QSM Table F-3 Pj
21. Were surrogate recoveries within laboratory limits (79-111%)?	X			Only primary column was evaluated as second column used for confirmation only.	QSM Tables F-2 >UL=J; <LL =J/UJ

References: DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 6, 2015

SDG: 240-48531
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			PDA-1 4/10/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for Quadratic curve).			X		
7d. Did reanalysis of the low level standard after calibration, recover within 15%?	X				
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			4/10/15 @ 1940	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			4/13/15 @1542, 1822, 2120	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D < 30%?	X			4/13/15 @1525, 1840, 2138	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 6, 2015

SDG: 240-48531
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
12. Were target analytes detected in the method blank?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses < ½ the MRL?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B
15. Was a field duplicate analyzed? Were the RPDs ≤30%?	X				RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?			X	No detected concentrations were reported.	DoD QSM Table F-3 RPD>40%=J
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within laboratory limits of 79%-119%?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J; 30-LL=J/UJ; <30%=J/R
19. Was a MS/MSD or MS and sample duplicate prepared with each batch?	X			FWGLL2mw-271-0529-GW	DoD QSM Table F-3
20. Were MS/MSD recoveries within laboratory limits of 40%-150% with an RPD ≤20%?	X				DoD QSM Table F-3 Pj

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 6, 2015

SDG: 240-48531
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Does the initial calibration curve consist of 5 concentration levels with the low standard near but > MDL?	X				SOP Section 10.2 R
7. Was the correlation coefficient >0.995?	X				SOP Section 10.2
8. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D <30%?	X			4/7/15	>30%=J
9. Was a second source verification (ICV) analyzed after the ICAL? Were all analytes 90-110%?	X			4/7/15 @ 1246	>110%=J; 90-85%=J/UJ; <85%=J/R
10. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				STL SOP Section 9.8, LCG ,< 5x = U
11. Was a CCV run every 10 samples and at the end of the analytical run?	X			4/7/15 @ 1318, 1332	STL SOP Section 10.4
12. Was the ICV and CCV a mid-level standard from the initial calibration curve?	X				STL SOP Section 10.3.1
13. Were all CCV calibration analytes within 90-110%?	X				>110%=J; 85-90%=J/UJ; <85%=J/R
14. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				QSM, < 5x = U
15. Was a method blank prepared and analyzed with each batch?	X				
16. Were target analytes detected in the method blank <1/2 the MRL?		X		ADR checked section.	LCG, <5x=B
17. Was a field blank collected and analyzed?	X				

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 6, 2015

SDG: 240-48531
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
18. Were target analytes detected in the field blank analyses <1/2 the MRL?		X			<5x=B
19. Was a field duplicate analyzed? Were the RPDs ≤30%?	X			ADR checked section.	QAPP Table 3-2 RPD > 30% = J
20. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within lab's in-house limits% (26-144%)?	X				>UL%=J; 50-LL%=J/UJ; <50%=J/R
21. Was a MS/MSD pair prepared with each batch?	X				
22. Was the MS/MSD parent a Ravenna sample?	X			FWGLL2mw-271-0529-GW	
23. Were MS/MSD recoveries 26-144% and RPD ≤20?	X				Method EPA 353.2 Section 9.4.2 >UL%=J;<LL%=J/UJ; RPD>20%=J/UJ

References:
SOP SAC-WC-0050 "Preparation and Analysis of Nitrocellulose in Aqueous and Soil/Sediment Samples by Colorimetric Autoanalyzer", Jan 2007, rev. 2.0

DoD Quality Systems Manual (QSM)

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 6, 2015

SDG: 240-48531
Analysis: SW846 6860/ Perchlorate

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				
3. Were holding times met (28 days)?	X				UJ/J/R
4. Were sample storage requirements met?	X				
5. Was the DOD specified PQLs of 0.5ug/L achieved?	X				
6. Were all QAPP-specified target analytes reported?	X				
7. Did the initial calibration curve consist of 5 concentration levels?	X			LC_LCMS1 3/30/15 Standards(ng/L): 20, 50, 100, 200, 500, 1000	R
8. Was the correlation coefficient r≥0.995?	X				R<0.995 =-J/R
9. Was a second source verification (SSCV) analyzed after the ICAL? Were results 90-110%?	X				LCG Table 1 >120%=J; 60-80%=J/UJ; <60%=J/R
10. Was an ICV analyzed after the ICAL and daily before sample analysis?	X			3/30/15 at 1257	R
11. Was the %Difference ≤ 15%?	X				R
12. Was a CCV analyzed after every 10 samples?	X			3/31/15 @1043, 1459	
13. Was the %Difference ≤ 15%?	X				%D > 15% = UJ/J
14. Was a MRL Verification analyzed bracketing analysis?	X				
15. Were the MRL recoveries 70-130%?	X				R
16. Was an Interference Check Sample extracted and analyzed with every batch?	X				
17.Was the ICS recovery within 70 to 130%?	X				>120%=J; <50%=Pj/R 50-79%=J/UJ;
18. Was a method blank prepared and analyzed with each batch?	X				
19. Were target analytes detected in the method blank at >1/2 the MRL?		X		Checked by ADR.	<5X =B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 6, 2015

SDG: 240-48531
Analysis: SW846 6860/ Perchlorate

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
20. Was a field blank (equipment) collected and analyzed?	X			FWGEQUIPRINSE6-0568-GW	
21. Were target analytes detected in the field blank analyses?		X		Checked by ADR.	<5X =B
22. Were target analytes detected in the calibration blank analyses?		X			<5X =U
23. Was a LCS prepared and analyzed with each batch, with recoveries within 85-115%?	X			Checked by ADR.	>115%=J; 50%-85%=J/UJ; <50%=J/R
24. Was a MS/MSD prepared with each batch?	X			FWGLL2mw-271-0529-GF	
25. Were MS/MSD recoveries 75-125% and RPD values ≤20%?	X				>125% = J 30% - 75% = J/UJ <30% = J/R
26. Was a Laboratory Reagent Blank (LRB) analyzed prior to analysis and after high concentration samples?	X				
27. Were target analytes detected in the LRB?		X			<5X =B
28. Were the internal standards added to every sample?	X				
29. Did the IS recover within 50% to150% of the ICAL mid-point standard?	X				R
30. Was a field duplicate analyzed? Were the RPDs within ±30%?	X			FWGLL3mw-246-0533-GF	RPD >30=J
31. Was the Isotope ratio between 101 and 85 monitored and fell between 2.3 and 3.8?	X				J/UJ
32. Were reported sample concentrations within calibration range?	X				

References:
DOD Perchlorate Handbook. March 2006; Section G "Selecting Analytical Methods and Services"
Additional Comments:

Attachment 2

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48531-1										
6010B	FWGFBQmw-174C-0512-GF	AQ	N							
				BARIUM	200	11J		U	ug/L	Mb, Cb
				MAGNESIUM	5000	1900J		J	ug/L	RI
				NICKEL	40	4.1J		J	ug/L	RI
				POTASSIUM	5000	930J		J	ug/L	RI
6010B	FWGLL2mw-271-0529-GF	AQ	N							
				BARIUM	200	2.8J		U	ug/L	Mb, Cb
				COBALT	7.0	2.0J		J	ug/L	RI
				NICKEL	40	3.7J		J	ug/L	RI
6010B	FWGLL3mw-244-0532-GF	AQ	N							
				ARSENIC	10	3.4J		J	ug/L	RI
				BARIUM	200	16J		J	ug/L	RI
				NICKEL	40	1.2J		J	ug/L	RI
				POTASSIUM	5000	1400J		J	ug/L	RI
6010B	FWGLL3mw-246-0533-GF	AQ	N							
				BARIUM	200	16J		J	ug/L	RI
				MANGANESE	15	5.1J		B	ug/L	Mb
				NICKEL	40	1.4J		J	ug/L	RI
				POTASSIUM	5000	1400J		J	ug/L	RI
6010B	FWGLL3mw-DUP2-0558-GF	AQ	FD							
				BARIUM	200	17J		J	ug/L	RI
				COPPER	25	3.0J		J	ug/L	RI
				LEAD	10	2.0J		B	ug/L	Mb
				MANGANESE	15	1.1J		B	ug/L	Mb
				NICKEL	40	0.78J		J	ug/L	RI
				POTASSIUM	5000	1400J		J	ug/L	RI

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48531-1										
6010B	FWGLL3mw-DUP3-0559-GF	AQ	FD							
				BARIUM	200	16J		J	ug/L	RI
				MANGANESE	15	5.4J		B	ug/L	Mb
				NICKEL	40	0.99J		J	ug/L	RI
				POTASSIUM	5000	1400J		J	ug/L	RI
6020	FWGFBQmw-174C-0512-GF	AQ	N							
				ZINC	50	36J		J	ug/L	RI
6020	FWGLL3mw-244-0532-GF	AQ	N							
				ANTIMONY	2.0	1.0J		U	ug/L	Cb
6020	FWGLL3mw-246-0533-GF	AQ	N							
				ANTIMONY	2.0	0.63J		U	ug/L	Cb
6020	FWGLL3mw-DUP2-0558-GF	AQ	FD							
				ANTIMONY	2.0	0.56J		U	ug/L	Cb
6020	FWGLL3mw-DUP3-0559-GF	AQ	FD							
				ALUMINUM	60	21J		J	ug/L	RI
				ANTIMONY	2.0	0.53J		U	ug/L	Cb
6860	FWGLL2mw-271-0529-GF	AQ	N							
				PERCHLORATE	0.050	0.020J		J	ug/L	RI
7470A	FWGLL3mw-DUP3-0559-GF	AQ	FD							
				MERCURY	0.20	0.13J		J	ug/L	RI
8081A	FWGFBQmw-174C-0512-GW	AQ	N							
				BETA-BHC	0.048	0.21J cn		J	ug/L	ProfJudg
8330	FWGLL3mw-DUP3-0559-GW	AQ	FD							
				Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.15	0.036J M		J	ug/L	RI

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Qualifier Summary

Lab Reporting Batch ID: 240-48531-1 Laboratory: TA CAN

EDD Filename: 240-48531-1a eQAPP Name: RVAAP 66-rev August 2014

Method Category: GENCHEM **Method:** 6860 **Matrix:** AQ

Sample ID: FWGLL2mw-271-0529-GF Collected: 3/23/2015 12:55:00 PM Analysis Type: RES Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PERCHLORATE	0.020	J	0.0040	MDL	0.050	LOQ	ug/L	J	RI

Method Category: METALS **Method:** 6010B **Matrix:** AQ

Sample ID: FWGFBQmw-174C-0512-GF Collected: 3/23/2015 3:31:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	11	J	1.0	MDL	200	LOQ	ug/L	U	Mb, Cb
MAGNESIUM	1900	J	55	MDL	5000	LOQ	ug/L	J	RI
NICKEL	4.1	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	930	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGLL2mw-271-0529-GF Collected: 3/23/2015 12:55:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	2.8	J	1.0	MDL	200	LOQ	ug/L	U	Mb, Cb
COBALT	2.0	J	0.56	MDL	7.0	LOQ	ug/L	J	RI
NICKEL	3.7	J	0.76	MDL	40	LOQ	ug/L	J	RI

Sample ID: FWGLL3mw-244-0532-GF Collected: 3/23/2015 1:22:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.4	J	2.9	MDL	10	LOQ	ug/L	J	RI
BARIUM	16	J	1.0	MDL	200	LOQ	ug/L	J	RI
NICKEL	1.2	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	1400	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGLL3mw-246-0533-GF Collected: 3/23/2015 2:00:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	16	J	1.0	MDL	200	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48531-1 Laboratory: TA CAN

EDD Filename: 240-48531-1a eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS **Method:** 6010B **Matrix:** AQ

3/23/2015 2:00:00

Sample ID: FWGLL3mw-246-0533-GF *Collected:* PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MANGANESE	5.1	J	0.46	MDL	15	LOQ	ug/L	U	Mb
NICKEL	1.4	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	1400	J	70	MDL	5000	LOQ	ug/L	J	RI

3/23/2015 2:02:00

Sample ID: FWGLL3mw-DUP2-0558-GF *Collected:* PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	17	J	1.0	MDL	200	LOQ	ug/L	J	RI
COPPER	3.0	J	1.9	MDL	25	LOQ	ug/L	J	RI
LEAD	2.0	J	1.9	MDL	10	LOQ	ug/L	B	Mb
MANGANESE	1.1	J	0.46	MDL	15	LOQ	ug/L	B	Mb
NICKEL	0.78	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	1400	J	70	MDL	5000	LOQ	ug/L	J	RI

3/23/2015 3:00:00

Sample ID: FWGLL3mw-DUP3-0559-GF *Collected:* PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	16	J	1.0	MDL	200	LOQ	ug/L	J	RI
MANGANESE	5.4	J	0.46	MDL	15	LOQ	ug/L	B	Mb
NICKEL	0.99	J	0.76	MDL	40	LOQ	ug/L	J	RI
POTASSIUM	1400	J	70	MDL	5000	LOQ	ug/L	J	RI

Method Category: METALS **Method:** 6020 **Matrix:** AQ

3/23/2015 3:31:00

Sample ID: FWGFBQmw-174C-0512-GF *Collected:* PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ZINC	36	J	27	MDL	50	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48531-1 Laboratory: TA CAN

EDD Filename: 240-48531-1a eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS **Method:** 6020 **Matrix:** AQ

Sample ID: FWGLL3mw-244-0532-GF *Collected:* 3/23/2015 1:22:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	1.0	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

Sample ID: FWGLL3mw-246-0533-GF *Collected:* 3/23/2015 2:00:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.63	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

Sample ID: FWGLL3mw-DUP2-0558-GF *Collected:* 3/23/2015 2:02:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.56	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

Sample ID: FWGLL3mw-DUP3-0559-GF *Collected:* 3/23/2015 3:00:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	21	J	20	MDL	60	LOQ	ug/L	J	RI
ANTIMONY	0.53	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

Method Category: METALS **Method:** 7470A **Matrix:** AQ

Sample ID: FWGLL3mw-DUP3-0559-GF *Collected:* 3/23/2015 3:00:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.13	J	0.090	MDL	0.20	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48531-1 Laboratory: TA CAN

EDD Filename: 240-48531-1a eQAPP Name: RVAAP 66-rev August 2014

Method Category: SVOA
Method: 8081A **Matrix:** AQ

Sample ID: FWGFBQmw-174C-0512-GW *Collected:* 3/23/2015 3:31:00 PM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BETA-BHC	0.21	J cn	0.017	MDL	0.048	LOQ	ug/L	J	ProfJudg

Method Category: SVOA
Method: 8330 **Matrix:** AQ

Sample ID: FWGLL3mw-DUP3-0559-GW *Collected:* 3/23/2015 3:00:00 PM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.036	J M	0.036	MDL	0.15	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48531-1

Laboratory: TA CAN

EDD Filename: 240-48531-1a

eQAPP Name: RVAAP 66-rev August 2014

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
ProfJudg	Professional Judgment
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Review Summary

Lab Reporting Batch ID: 240-48531-1 **Laboratory: TA CAN**

EDD Filename: 240-48531-1a **eQAPP Name: RVAAP 66-rev August 2014**

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	SR
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Method Blank Outlier Report

Lab Reporting Batch ID: 240-48531-1

Laboratory: TA CAN

EDD Filename: 240-48531-1a

eQAPP Name: RVAAP 66-rev August 2014

Method: 6010B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-173416/1-A	3/25/2015 10:18:00 AM	BARIUM CHROMIUM LEAD MANGANESE	2.91 ug/L 1.28 ug/L 3.25 ug/L 1.64 ug/L	FWGEQUIPRINSE6-0568-GW FWGFBQmw-174C-0512-GF FWGLL2mw-271-0529-GF FWGLL3mw-244-0532-GF FWGLL3mw-246-0533-GF FWGLL3mw-DUP2-0558-GF FWGLL3mw-DUP3-0559-GF

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGFBQmw-174C-0512-GF(RES/TOT)	BARIUM	11 ug/L	11U ug/L
FWGLL2mw-271-0529-GF(RES/TOT)	BARIUM	2.8 ug/L	2.8U ug/L
FWGLL3mw-246-0533-GF(RES/TOT)	MANGANESE	5.1 ug/L	5.1U ug/L
FWGLL3mw-DUP2-0558-GF(RES/TOT)	LEAD	2.0 ug/L	2.0U ug/L
FWGLL3mw-DUP2-0558-GF(RES/TOT)	MANGANESE	1.1 ug/L	1.1U ug/L
FWGLL3mw-DUP3-0559-GF(RES/TOT)	MANGANESE	5.4 ug/L	5.4U ug/L

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 240-48531-1 Laboratory: TA CAN

EDD Filename: 240-48531-1a eQAPP Name: RVAAP 66-rev August 2014

Method: 6010B
Matrix: AQ

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FWGLL2mw-271-0529-GFDUP (TOT) (FWGEQUIPRINSE6-0568-GW FWGFBQmw-174C-0512-GF FWGLL2mw-271-0529-GF FWGLL3mw-244-0532-GF FWGLL3mw-246-0533-GF FWGLL3mw-DUP2-0558-GF FWGLL3mw-DUP3-0559-GF)	NICKEL	28	20.00	J (all detects) UJ (all non-detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 240-48531-1 | Laboratory: TA CAN

EDD Filename: 240-48531-1a | eQAPP Name: RVAAP 66-rev August 2014

Method: 6010B
Matrix: AQ

Analyte	Concentration (ug/L) FWGLL3mw-244-0532-GF (TOT)	Concentration (ug/L) FWGLL3mw-DUP2-0558-GF (TOT)	Sample RPD	eQAPP RPD	Flag
ARSENIC	3.4	10 U	200	50.00	No Qualifiers Applied
BARIUM	16	17	6	50.00	
CALCIUM	25000	26000	4	50.00	
COPPER	25 U	3.0	200	50.00	
LEAD	10 U	2.0	200	50.00	
MAGNESIUM	8200	8600	5	50.00	
MANGANESE	15 U	1.1	200	50.00	
NICKEL	1.2	0.78	42	50.00	
POTASSIUM	1400	1400	0	50.00	

Analyte	Concentration (ug/L) FWGLL3mw-246-0533-GF (TOT)	Concentration (ug/L) FWGLL3mw-DUP3-0559-GF (TOT)	Sample RPD	eQAPP RPD	Flag
BARIUM	16	16	0	50.00	No Qualifiers Applied
CALCIUM	24000	25000	4	50.00	
MAGNESIUM	7800	8200	5	50.00	
MANGANESE	5.1	5.4	6	50.00	
NICKEL	1.4	0.99	34	50.00	
POTASSIUM	1400	1400	0	50.00	

Method: 6020
Matrix: AQ

Analyte	Concentration (ug/L) FWGLL3mw-244-0532-GF (TOT)	Concentration (ug/L) FWGLL3mw-DUP2-0558-GF (TOT)	Sample RPD	eQAPP RPD	Flag
ANTIMONY	1.0	0.56	56	50.00	No Qualifiers Applied
SODIUM	3900	3900	0	50.00	

Analyte	Concentration (ug/L) FWGLL3mw-246-0533-GF (TOT)	Concentration (ug/L) FWGLL3mw-DUP3-0559-GF (TOT)	Sample RPD	eQAPP RPD	Flag
ALUMINUM	60 U	21	200	50.00	No Qualifiers Applied
ANTIMONY	0.63	0.53	17	50.00	
SODIUM	3900	3900	0	50.00	

Method: 6860
Matrix: AQ

Analyte	Concentration (ug/L) FWGLL3mw-246-0533-GF	Concentration (ug/L) FWGLL3mw-DUP3-0559-GF	Sample RPD	eQAPP RPD	Flag
PERCHLORATE	0.054	0.055	2	20.00	No Qualifiers Applied

Method: 7470A
Matrix: AQ

Analyte	Concentration (ug/L) FWGLL3mw-246-0533-GF (TOT)	Concentration (ug/L) FWGLL3mw-DUP3-0559-GF (TOT)	Sample RPD	eQAPP RPD	Flag
MERCURY	0.20 U	0.13	200	50.00	No Qualifiers Applied

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Field Duplicate RPD Report

Lab Reporting Batch ID: 240-48531-1 Laboratory: TA CAN

EDD Filename: 240-48531-1a eQAPP Name: RVAAP 66-rev August 2014

Method: 8330
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	FWGLL3mw-244-0532-GW	FWGLL3mw-DUP2-0558-GW			
2-AMINO-4,6-DINITROTOLUENE	0.48	0.52	8	50.00	No Qualifiers Applied
4-AMINO-2,6-DINITROTOLUENE	0.44	0.48	9	50.00	
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.25	0.27	8	50.00	

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	FWGLL3mw-246-0533-GW	FWGLL3mw-DUP3-0559-GW			
2-AMINO-4,6-DINITROTOLUENE	0.38	0.43	12	50.00	No Qualifiers Applied
4-AMINO-2,6-DINITROTOLUENE	0.38	0.40	5	50.00	
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.21	0.21	0	50.00	
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (	0.15 U	0.036	200	50.00	

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 25, 2015
Sample Delivery Group: 240-48567 **Revision:** 1

Data Reviewer: Angela Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 23-24th, 2015 the following samples were collected from groundwater-monitoring wells at the former Ravenna Army Ammunition Plant and analyzed as part of SDG 240-48567. Sample analysis was performed by Test America. Test America-North Canton performed all requested analyses with the exception of the analytical for methods 8330, M8330, TALSOPWS-WC-0050 and 6860. Methods 8330, M8330 and TALSOPWS-WC-0050 were performed by Test America, West Sacramento. Method 6860, if requested, was performed by Test America, Denver.

Sample ID	VOC by SW846 8260	SVOC 4 by SW846 8270	SVOC 1 and 2 by SW846 8270	SVOC 1 by SW846 8270	Pesticides by SW846 8081	PCBs/ SW846 8082	Explosives/Propellants by SW846 8330, Mod. 8330 and TALSOP WS-WC-0050	Cyanide SW846 9012	Perchlorate by SW846 6860	NO2/NO3, EPA 353.2	Metals [4]		
											SW846 6010B	SW846 6020	Mercury by SW846 7470A
FWGDETmw-004c-0511-GW/GF	X	X			X	X	X	X			X	X	X
FWGDETmw-003c-0510-GW/GF	X	X			X	X	X	X			X	X	X
FWGEQUIPRINSE7-0569-GW	X	X			X	X	X	X			X	X	X
FWGDA2mw-115-0509-GW/GF				X			X				X	X	X
FWGDA2mw-DUP1-0557-GW/GF				X			X				X	X	X
FWGLL2mw-059c-0526-GW/GF				X			X				X	X	X
FWGLL2mw-060c-0527-GW/GF				X			X				X	X	X
FWGLL1mw-088-0525-GW/GF				X	X		X				X	X	X
FWGFWGmw-012-0516-GW/GF				X			X				X	X	X

1) All metals samples with the exception of FWGEQUIPRINSE7-0569-GW were field filtered (GF).
2) SVOC1= Phthalates, SVOC4= RVAAP Full List .
3) EPA 6020 metals include aluminum, antimony, beryllium, cadmium, iron, sodium, thallium and zinc. EPA 6010B metals include arsenic, chromium, cobalt, lead, selenium, silver, vanadium, barium, calcium, copper, magnesium, manganese, nickel and potassium.
4) FWGTEAM2-TRIPBLANK was collected on 3/23/15 and submitted to the laboratory for VOC analysis by EPA 8260B.

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004*, Analytical Methods, and Laboratory Standard Operating Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48567

Date: June 25, 2015
Revision: 1

Per the DoD QSM, the laboratory data is reported as follows: Non detected results were reported at the LOD with a "U" flag. Detected results between the DL and LOQ were reported as estimated, qualified with a "J" flag.

LOD - An estimate of the minimum amount of a substance that an analytical process can reliably detect.

LOQ - The lowest concentration that produces a quantitative result within specified limits of precision and bias.

DL- The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence.

Checklists used in the verification process are in Attachment I and sample results with outliers requiring qualification are in Attachment II.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, at 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

VOC- 8260

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix spike/spike duplicate recovery criteria and RPD

Blanks

Methylene chloride was detected in the method blank at 0.472 µg/L. Sample FWGTEAM2-TRIPBLANK was qualified, "B" as the reported methylene chloride detection was less than ten times method blank contamination.

Methylene chloride was detected in FWGTEAM2-TRIPBLANK at 0.87 µg/L. There were no detected concentrations of methylene chloride reported for the associated field samples, so no qualifications were made for the trip blank contamination.

MRL Recovery Criteria

The opening MRL analyzed 3/27/15 at 1215 recovered above control limits of 70-130% for chloromethane at 140% and at 153% for methylene chloride. The closing MRL analyzed 3/27/15 at 1705 recovered above control limits of 70-130% for chloromethane at 163%, methylene chloride at 153% and vinyl chloride at 135%. The methylene chloride result for sample FWGTEAM2-TRIPBLANK was qualified, "J". No qualifications were made for the chloromethane or vinyl chloride outliers as there were no detected vinyl chloride or chloromethane concentrations reported for the associated field samples.

Matrix Spike Recovery

A matrix spike and spike duplicate was not requested nor was volume provided for analysis of a matrix spike.

Field Duplicate RPD

A field duplicate was not submitted for volatiles analysis with this set of samples.

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 25, 2015
Sample Delivery Group: 240-48567 **Revision:** 1

SVOCs- 8270C

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD

MRL Recovery Criteria

The closing MRL analyzed at 1354 on 4/8/15 recovered below control limits of 70-130% for 2,4-dinitrophenol at 61%. The 2,4-dinitrophenol results for samples FWGDETmw-004c-0511-GW, FWGDETmw-003c-0510-GW and FWGEQUIPRINSE7-0569-GW were qualified as estimated, "UJ".

CCV Criteria

Benzo (g,h,i) perylene outside control limits of 20% D at 21.2%. No qualification of the data was required as there were no detected concentrations of benzo (g,h,i) perylene reported for the associated field samples.

Matrix Spike/Spike Duplicate Recovery and RPD Criteria

A matrix spike or matrix spike duplicate was not requested from this set of samples.

No additional QC outliers were noted.

Pesticides- 8081A

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- DDT and Endrin breakdown criteria
- Retention time criteria
- ICV criteria
- CCV Criteria
- Method /field blank criteria
- LCS Recoveries
- Field Duplicate Criteria
- LOD and MRL verification criteria
- Matrix Spike Recovery Criteria and RPD
- Surrogate Recoveries
- Second Column confirmation criteria

CCV Criteria

The CCV analyzed 3/31/15 at 1307 had a %D above 20% for dieldrin at 21.3%, endrin at 26.2%, 4,4,-DDD at 23.2%, endosulfan II at 29.2% and endrin ketone at 22.9%. The CCV analyzed 3/31/15 at 1707 had a %D above 20% for endrin at 22.8%, endosulfan II at 28.3% and endrin ketone at 22.1%. No qualification of the data was required as there were no detected concentrations reported for the bracketed field sample, FWGEQUIPRINSE7-0569-GW.

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
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Matrix Spike Recovery Criteria and RPD
A matrix spike and spike duplicate was not requested with this set of samples and no data was provided for matrix spike/ spike duplicate evaluation.

Field Duplicate Criteria
A field duplicate sample was not submitted with this sample set.

Second Column Confirmation
No detected results were reported that required confirmation.

No additional QC outliers were noted.

PCB- 8082
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- Retention time criteria
- ICV criteria
- CCV Criteria
- Method /field blank criteria
- LCS Recoveries
- Field Duplicate Criteria
- LOD and MRL verification criteria
- Matrix Spike Recovery Criteria and RPD
- Surrogate Recoveries
- Second Column confirmation criteria

Matrix Spike Recovery Criteria and RPD
A matrix spike and spike duplicate was not requested with this set of samples and no data was provided for matrix spike/ spike duplicate evaluation.

Field Duplicate Criteria
A field duplicate sample was not submitted with this sample set.

Second Column Confirmation
No detected results were reported that required confirmation.

No QC outliers were noted.

Metals - 6010B
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria
- Post Digestion Spike Criteria

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48567

Date: June 25, 2015
Revision: 1

Blanks
The ICB analyzed 3/26/15@ 0612 had chromium detected at 0.627 µg/L and nickel detected at 0.897 µg/L. The chromium results for samples FWGDETmw-004c-0511-GF, FWGDETmw-003c-0510-GF, FWGDA2mw-115-0509-GF, FWGDA2mw-DUP1-0557-GF, FWGLL2mw-059c-0526-GF, FWGLL2mw-060c-0527-GF, FWGLL1mw-088-0525-GF and FWGFWGmw-012-0516-GF and the nickel results for samples FWGDETmw-004c-0511-GF, FWGDA2mw-115-0509-GF, FWGLL2mw-059c-0526-GF and FWGFWGmw-012-0516-GF were qualified, "U" as the reported nickel and chromium concentrations were less than 5x contamination.

The CCBs analyzed 3/26/15 had chromium detected from 2.16 µg/L to 3.10 µg/L, nickel from 1.02 µg/L to 1.21 µg/L, potassium from 108 µg/L to 112 µg/L and vanadium at 2.93 µg/L. The chromium results for samples FWGDETmw-004c-0511-GF, FWGDETmw-003c-0510-GF, FWGDA2mw-115-0509-GF, FWGDA2mw-DUP1-0557-GF, FWGLL2mw-059c-0526-GF, FWGLL2mw-060c-0527-GF, FWGLL1mw-088-0525-GF and FWGFWGmw-012-0516-GF, the nickel results for samples FWGDETmw-004c-0511-GF, FWGDA2mw-115-0509-GF, FWGLL2mw-059c-0526-GF and FWGFWGmw-012-0516-GF, the potassium result for sample FWGLL2mw-060c-0527-GF were qualified, "U" as the reported nickel, potassium and chromium concentrations were less than 5x contamination. No qualification was required for the vanadium contamination as there were no detected vanadium concentrations reported for the bracketed field samples.

Laboratory Duplicate RPD
The laboratory duplicate analyzed on sample FWGDETmw-004C-0511-GF had an RPD above control limits of 20% for nickel at 26% and chromium at 25%. No qualification of the data was required as the detected nickel and chromium concentrations for sample FWGDETmw-004C-0511-GF were less than the LOQ.

No additional QC outliers were noted.

Metals - 6020
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning Criteria
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field Duplicate RPD Criteria
- Post Digestion Spike Criteria
- Internal Standard Criteria

Blanks
The ICB analyzed 4/6/15 at 1117 had antimony detected at 0.611 µg/L and iron detected at 16µg/L. The antimony result for sample FWGLL2mw-060c-0527-GF was qualified, "U" as the reported concentration was less than 5x contamination. No qualification of the data was required for the iron contamination, as there were no detected iron results reported for the associated samples less than five times blank contamination.

The CCBs analyzed 4/6/15 had antimony detected from 0.225 µg/L to 0.301 µg/L, iron at 16.7 µg/L and cadmium at 0.079 µg/L . The antimony result for sample FWGLL2mw-060c-0527-GF was qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or iron contamination, as there were no detected cadmium or iron results reported for the associated samples less than five times blank contamination.

Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

No additional QC outliers were noted.

Mercury - 7470A
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

No QC outliers were noted.

Cyanide- 9012
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- High and Low Distilled Standard
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

No QC outliers were noted.

Explosives- 8330
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration Criteria
- ICV and CCV criteria
- Retention time criteria
- LOD and MRL verification criteria
- Surrogate recovery criteria
- Method /field blank criteria
- LCS/LCD Recovery and RPD Criteria
- Matrix spike/spike duplicate recovery criteria and RPD
- Second column confirmation RPD
- Field Duplicate RPD

Matrix Spike/Spike Duplicate Recovery Criteria and RPD
No data was provided as a matrix spike/spike duplicate was not requested nor was sample volume provided for matrix spike analysis specific to this set of samples.

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48567

Date: June 25, 2015
Revision: 1

No additional QC outliers were noted.

Nitroguanidine- 8330M

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration criteria
- Retention time criteria
- LOD and MRL verification criteria
- ICV and CCV criteria
- Method /field blank criteria
- LCS/LCSD percent recoveries and RPD value criteria
- Matrix spike recovery criteria
- Second column confirmation
- Field Duplicate RPD

No QC outliers were noted.

Nitrocellulose – WS-WC-0050

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD percent recoveries and RPD value criteria
- MS/MSD percent recoveries and RPD
- Field Duplicate RPD

MS/MSD Recovery and RPD Criteria

The matrix spike and spike duplicate analyzed on FWGDETmw-004C-0511-GW, had an RPD above control limits of 20% at 23%. The nitrocellulose results for samples FWGDETmw-004c-0511-GW, FWGDETmw-003c-0510-GW, FWGDA2mw-DUP1-0557-GW, FWGLL2mw-059c-0526-GW, FWGLL2mw-060c-0527-GW, FWGLL1mw-088-0525-GW, FWGEQUIPRINSE7-0569-GW and FWGFWGmw-012-0516-GW were qualified as estimated, "UJ".

No additional QC outliers were noted.

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Sample Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48567-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-48567-1	FWGTEAM2-TRIPBLANK	Water	03/23/15 16:00	03/24/15 17:47
240-48567-2	FWGDETMW-004C-0511-GW	Water	03/23/15 16:15	03/24/15 17:47
240-48567-3	FWGDETMW-004C-0511-GF	Water	03/23/15 16:15	03/24/15 17:47
240-48567-4	FWGDETMW-004C-0511-GW	Water	03/24/15 09:02	03/24/15 17:47
240-48567-5	FWGDA2MW-115-0509-GW	Water	03/24/15 10:12	03/24/15 17:47
240-48567-6	FWGDA2MW-115-0509-GF	Water	03/24/15 10:12	03/24/15 17:47
240-48567-7	FWGDA2MW-DUP1-0557-GW	Water	03/24/15 12:00	03/24/15 17:47
240-48567-8	FWGDA2MW-DUP1-0557-GF	Water	03/24/15 12:00	03/24/15 17:47
240-48567-9	FWGDETMW-003C-0510-GW	Water	03/24/15 12:17	03/24/15 17:47
240-48567-10	FWGDETMW-003C-0510-GF	Water	03/24/15 12:17	03/24/15 17:47
240-48567-11	FWGEQUIPRINSE7-0569-GW	Water	03/24/15 14:00	03/24/15 17:47
240-48567-12	FWGLL2MW-059C-0526-GW	Water	03/24/15 10:21	03/24/15 17:47
240-48567-13	FWGLL2MW-059C-0526-GF	Water	03/24/15 10:21	03/24/15 17:47
240-48567-14	FWGLL2MW-060C-0527-GW	Water	03/24/15 12:11	03/24/15 17:47
240-48567-15	FWGLL2MW-060C-0527-GF	Water	03/24/15 12:11	03/24/15 17:47
240-48567-16	FWGLL1MW-088-0525-GW	Water	03/24/15 11:19	03/24/15 17:47
240-48567-17	FWGLL1MW-088-0525-GF	Water	03/24/15 11:19	03/24/15 17:47
240-48567-18	FWGFWGMW-012-0516-GW	Water	03/24/15 14:38	03/24/15 17:47
240-48567-19	FWGFWGMW-012-0516-GF	Water	03/24/15 14:38	03/24/15 17:47

Method Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48567-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
8081A	Organochlorine Pesticides (GC)	SW846	TAL CAN
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL CAN
8330 Modified	Nitroguanidine (HPLC)	SW846	TAL SAC
8330A	Nitroaromatics and Nitramines	SW846	TAL SAC
6010B	Metals (ICP)	SW846	TAL CAN
6020	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9012A	Cyanide, Total and/or Amenable	SW846	TAL CAN
WS-WC-0050	Nitrocellulose	TAL-SAC	TAL SAC

Protocol References:

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

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS


240-48567 Chain of Custody

TestAmerica Canton
4101 Shuffel Street, N. W.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☒ RCRA ☐ Other:

Client Contact	Project Manager: J. Miller	Site Contact: E Corbin	Date: 3-24-15	COC No: 032415-1
Company Name: FQM	Tel/Fax: 5138257500/7495	Lab Contact: M Loeb	Carrier: Lab Pickup	1 of 2 COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Cincinnati OH 45240	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513 825 7500	TAT if different from Below			Walk-in Client:
Fax: 513 825 7495	☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — Per SOW			Lab Sampling:
Project Name: RVAAP 066				Job / SDG No.:
Site: Ravenna OHIO				
PO#				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	8260 VOC	8270 SVOC	8082 Pesticide PCB	8081	8330 Explosives	Propellants	9012 Cyanide	6010/7470/7471 Metals	SVOC	Sample Specific Notes:
FWGTeam2-Tripblank	3-23-15	1000	G	W	2	N	N	X									Cooler ID# #113
FWGDETmw-004C-0511-GW	3-23-15	1618	G			N	N	X	X			X		X			~~TURNING 2nd day SAMPLE~~ ~~ONCE QUENCH~~ #113
FWGDETmw-004C-0511-GF	1	1618	G			Y	N								X		GAll one set of #113
FWGDETmw-004C-0511-GW	3-24-15	0902	G			N	N		X	X			X				analysis #113
FWGDA2mw-115-0509-GW	3-24-15	1012	G			N	N					X	X			X	AD7
FWGDA2mw-115-0509-GF	1	1	G			Y	N								X		AD7
FWGDA2mw-DUP1-0557-GW	3-24-15	1200	G			N	N					X	X			X	123
FWGDA2mw-DUP1-0557-GF	1	1	G			Y	N								X		123
FWGDETMW-003C-0510-GW	3-24-15	1217	G			N	N	X	X	X	X	X	X	X			220
FWGDETMW-003C-0510-GF	1	1	G			Y	N								X		220
FWGEQUIPRinse7-0569-GW	3-24-15	1400	G			N	N	X	X	X	X	X	X	X	X		9-25
continue on page 2																	

Preservation Used: 1=Ice, 2=HCL, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Special Instructions/QC Requirements & Comments:
temps may not meet requirements if lab pick up is close to sample collection time. All VOA VOCs in cooler #113

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd:	Corr'd:	Therm ID No.:
Relinquished by:	Company: FQM	Date/Time: 3-24-15 1640	Received by:	Company: TestAmerica	Date/Time: 3/24/15 1645
Relinquished by:	Company: TestAm	Date/Time: 3/24/15 1747	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: TA Canton	Date/Time: 3/24/15 1747

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TestAmerica Canton
4101 Shuffel Street, N. W.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Client Contact	Project Manager: J. Muller	Site Contact: E. Corbin	Date: 3-24-15	COC No: 032415-2
Company Name: EQM	Tel/Fax: 513 8257500	Lab Contact: M. Loeb	Carrier: LAB Pickup	2 of 2 COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Cincinnati Oh 45240	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513 8257500	TAT if different from Below ____			Walk-in Client:
Fax: 513 8257495	☐ 2 weeks			Lab Sampling:
Project Name: RWAPP4L6	☐ 1 week			
Site: Ravenna Ohio	☐ 2 days			Job / SDG No.:
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	8260 BTEX	8270 PAH	Propylene Glycol	Metals (Ca, Na, K)	Pesticides 8082	Sample Specific Notes: Cooler ID
FWGLL2mw-059C-0526-GW	3-24-15	1021	G	GW	5	N	N	2	1	2			S1
FWGLL2mw-059C-0526-GF	↓	↓	G	GW	1	Y	N				1		S1
FWGLL2mw-060C-0527-GW	3-24-15	1211	G	GW	5	N	N	2	1	2			C8
FWGLL2mw-060C-0527-GF	↓	↓	G	GW	1	Y	N				1		C8
FWGLL1mw-088-0525-GW	3-24-15	1119	G	GW		N	N	2	1	2		2	#12
FWGLL1mw-088-0525-GF	↓	↓	G	GW		N	Y				1		#12
FWGFWGmw-012-0515-GW	3-24-15	~~1439~~ 1403	G	GW		N	N	2	1	2			185
FWGFWGmw-012-0515-GF	↓	1438	G	GW		N	Y				1		185

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Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:
Temps may not meet requirements if Lab pickup is close to sample collection time.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: ____ Corr'd: ____	Therm ID No.: ____
Relinquished by:	Company: EQM	Date/Time: 3/24/15 1640	Received by: TC	Company: TA Canton	Date/Time: 3/24/15 1640
Relinquished by: TC	Company: TA Canton	Date/Time: 3/24/15 1747	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: TA Canton	Date/Time: 3/24/15 1747

4/1/2015

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 48567
Canton Facility

Client EQM Site Name _____ Cooler unpacked by: [signature]

Cooler Received on 3/24/15 Opened on 3/24/15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   - ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   - IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   - ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   - IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

   ☒ See Multiple Cooler Form
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 9 Yes No
   - -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   - -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC425511
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: [signature]

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____.

TestAmerica Multiple Cooler Receipt Form/Narrative
Canton Facility

Login # : 48567

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
AD-7	4	0.8	1.3	ICE
#12		3.8	4.3	
220		2.6	3.1	
D25		3.0	3.5	
185		1.4	1.9	
C8		3.4	3.9	
32		2.8	3.3	
123		3.2	3.7	
#113		3.2	3.7	

Job ID: 240-48567-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Environmental Quality Mgt., Inc.

Project: RVAAP (OH)

Report Number: 240-48567-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The 353.2 Nitrocellulose, 8330 Ngu Nitroguanidine, and 8330A Explosives analyses were performed at the TestAmerica Sacramento Laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

All parameters for which TestAmerica North Canton has certification were evaluated to the limit of detection (LOD) and include qualified results where applicable. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

RECEIPT

The samples were received on 3/24/2015 5:47 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 9 coolers at receipt time were 1.3° C, 1.9° C, 3.1° C, 3.3° C, 3.5° C, 3.7° C, 3.7° C, 3.9° C and 4.3° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGTEAM2-TRIPBLANK (240-48567-1), FWGDETMW-004C-0511-GW (240-48567-2), FWGDETMW-003C-0510-GW (240-48567-9) and FWGEQUIPRINSE7-0569-GW (240-48567-11) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B DoD. The samples were analyzed on 03/27/2015.

Job ID: 240-48567-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Methylene Chloride was detected in method blank MB 240-174092/6 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.

Chloromethane, Methylene Chloride and Vinyl chloride failed the recovery criteria high for MRL 240-174092/16. Chloromethane and Methylene Chloride failed the recovery criteria high for MRL 240-174092/5. Refer to the QC report for details.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 174092.

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

SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGDETMW-004C-0511-GW (240-48567-2), FWGDA2MW-115-0509-GW (240-48567-5), FWGDA2MW-DUP1-0557-GW (240-48567-7), FWGDETMW-003C-0510-GW (240-48567-9), FWGEQUIPRINSE7-0569-GW (240-48567-11), FWGLL2MW-059C-0526-GW (240-48567-12), FWGLL2MW-060C-0527-GW (240-48567-14), FWGLL1MW-088-0525-GW (240-48567-16) and FWGFWGMW-012-0516-GW (240-48567-18) were analyzed for semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8270C. The samples were prepared on 03/25/2015 and analyzed on 04/08/2015.

Surrogates are added during the extraction process prior to dilution. When the sample is diluted, surrogate recoveries are diluted out and no corrective action is required.

The continuing calibration verification (CCV) associated with analytical batch 175517 recovered above the upper control limit for benzo(ghi)perylene. The samples associated with this CCV were non-detect for this analyte; therefore, the data have been reported. The following samples are impacted: FWGDETMW-004C-0511-GW (240-48567-2), FWGDA2MW-115-0509-GW (240-48567-5), FWGDA2MW-DUP1-0557-GW (240-48567-7), FWGDETMW-003C-0510-GW (240-48567-9), FWGEQUIPRINSE7-0569-GW (240-48567-11), FWGLL2MW-059C-0526-GW (240-48567-12), FWGLL2MW-060C-0527-GW (240-48567-14), FWGLL1MW-088-0525-GW (240-48567-16) and FWGFWGMW-012-0516-GW (240-48567-18).

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 173542.

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

NITROGUANIDINE (HPLC)

Samples FWGDETMW-004C-0511-GW (240-48567-4), FWGDA2MW-115-0509-GW (240-48567-5), FWGDA2MW-DUP1-0557-GW (240-48567-7), FWGDETMW-003C-0510-GW (240-48567-9), FWGEQUIPRINSE7-0569-GW (240-48567-11), FWGLL2MW-059C-0526-GW (240-48567-12), FWGLL2MW-060C-0527-GW (240-48567-14), FWGLL1MW-088-0525-GW (240-48567-16) and FWGFWGMW-012-0516-GW (240-48567-18) were analyzed for nitroguanidine (HPLC) in accordance with EPA SW-846 Method 8330_Ngu. The samples were prepared on 03/27/2015 and analyzed on 04/13/2015.

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

CHLORINATED PESTICIDES

Samples FWGDETMW-004C-0511-GW (240-48567-4), FWGDETMW-003C-0510-GW (240-48567-9), FWGEQUIPRINSE7-0569-GW (240-48567-11) and FWGLL1MW-088-0525-GW (240-48567-16) were analyzed for chlorinated pesticides in accordance with EPA SW-846 Method 8081A DoD. The samples were prepared on 03/25/2015 and 03/30/2015 and analyzed on 03/29/2015, 03/30/2015 and 03/31/2015.

The closing MRL high for Endosulfan II, Endrin Aldehyde, Endrin Ketone. Samples are ND. Data reported for FWGDETMW-004C-0511-GW (240-48567-4), FWGDETMW-003C-0510-GW (240-48567-9) and FWGLL1MW-088-0525-GW (240-48567-16).

The continuing calibration verification (CCV) associated with batch 173986 recovered above the upper control limit for <<Multiple Analytes>>. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: FWGEQUIPRINSE7-0569-GW (240-48567-11).

Job ID: 240-48567-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batches 173543 and 174198.

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

POLYCHLORINATED BIPHENYLS (PCBS)

Samples FWGDETMW-004C-0511-GW (240-48567-4), FWGDETMW-003C-0510-GW (240-48567-9) and FWGEQUIPRINSE7-0569-GW (240-48567-11) were analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082 DoD. The samples were prepared on 03/25/2015 and analyzed on 03/27/2015.

Surrogates are added during the extraction process prior to dilution. When the sample dilution is 5X or greater, surrogate recoveries are diluted out and no corrective action is required. All of the samples in this data set analyzed for PCBs were subjected to the sulfuric acid cleanup procedure before instrumental analysis, per EPA Method 3665A.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 173544.

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

EXPLOSIVES

Samples FWGDETMW-004C-0511-GW (240-48567-2), FWGDA2MW-115-0509-GW (240-48567-5), FWGDA2MW-DUP1-0557-GW (240-48567-7), FWGDETMW-003C-0510-GW (240-48567-9), FWGEQUIPRINSE7-0569-GW (240-48567-11), FWGLL2MW-059C-0526-GW (240-48567-12), FWGLL2MW-060C-0527-GW (240-48567-14), FWGLL1MW-088-0525-GW (240-48567-16) and FWGFWGMW-012-0516-GW (240-48567-18) were analyzed for explosives in accordance with EPA SW-846 Method 8330A. The samples were prepared on 03/27/2015 and analyzed on 04/08/2015 and 04/09/2015.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch. 320-69568

The %D for 2,4,6-Trinitrotoluene for the following CCVs is outside the limit. This compound is not required for conformation. Therefore, data has been reported for (CCV 320-70597/14) and (CCV 320-70597/32).

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

TOTAL RECOVERABLE METALS (ICP)

Samples FWGDETMW-004C-0511-GF (240-48567-3), FWGDA2MW-115-0509-GF (240-48567-6), FWGDA2MW-DUP1-0557-GF (240-48567-8), FWGDETMW-003C-0510-GF (240-48567-10), FWGEQUIPRINSE7-0569-GW (240-48567-11), FWGLL2MW-059C-0526-GF (240-48567-13), FWGLL2MW-060C-0527-GF (240-48567-15), FWGLL1MW-088-0525-GF (240-48567-17) and FWGFWGMW-012-0516-GF (240-48567-19) were analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010B DoD. The samples were prepared on 03/25/2015 and analyzed on 03/26/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

Chromium and Nickel exceeded the RPD limit for the duplicate of sample FWGDETMW-004C-0511-GFDU (240-48567-3). 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.

TOTAL RECOVERABLE METALS (ICPMS)

Samples FWGDETMW-004C-0511-GF (240-48567-3), FWGDA2MW-115-0509-GF (240-48567-6), FWGDA2MW-DUP1-0557-GF (240-48567-8), FWGDETMW-003C-0510-GF (240-48567-10), FWGEQUIPRINSE7-0569-GW (240-48567-11), FWGLL2MW-059C-0526-GF (240-48567-13), FWGLL2MW-060C-0527-GF (240-48567-15), FWGLL1MW-088-0525-GF (240-48567-17) and FWGFWGMW-012-0516-GF (240-48567-19) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method

Job ID: 240-48567-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

6020 DoD. The samples were prepared on 04/01/2015 and analyzed on 04/06/2015 and 04/07/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

Sample FWGLL1MW-088-0525-GF (240-48567-17)[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.

TOTAL MERCURY

Samples FWGDETMW-004C-0511-GF (240-48567-3), FWGDA2MW-115-0509-GF (240-48567-6), FWGDA2MW-DUP1-0557-GF (240-48567-8), FWGDETMW-003C-0510-GF (240-48567-10), FWGEQUIPRINSE7-0569-GW (240-48567-11), FWGLL2MW-059C-0526-GF (240-48567-13), FWGLL2MW-060C-0527-GF (240-48567-15), FWGLL1MW-088-0525-GF (240-48567-17) and FWGFWGMW-012-0516-GF (240-48567-19) were analyzed for total mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 03/25/2015 and analyzed on 03/27/2015.

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

NITROCELLULOSE

Samples FWGDETMW-004C-0511-GW (240-48567-4), FWGDA2MW-115-0509-GW (240-48567-5), FWGDA2MW-DUP1-0557-GW (240-48567-7), FWGDETMW-003C-0510-GW (240-48567-9), FWGEQUIPRINSE7-0569-GW (240-48567-11), FWGLL2MW-059C-0526-GW (240-48567-12), FWGLL2MW-060C-0527-GW (240-48567-14), FWGLL1MW-088-0525-GW (240-48567-16) and FWGFWGMW-012-0516-GW (240-48567-18) were analyzed for Nitrocellulose in accordance with EPA Method 353.2. The samples were prepared on 03/31/2015 and analyzed on 04/01/2015.

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

TOTAL CYANIDE

Samples FWGDETMW-004C-0511-GW (240-48567-2), FWGDETMW-003C-0510-GW (240-48567-9) and FWGEQUIPRINSE7-0569-GW (240-48567-11) were analyzed for total cyanide in accordance with EPA SW-846 Method 9012A DoD. The samples were prepared and analyzed on 04/01/2015 and 04/03/2015.

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

Client Sample ID: FWGTEAM2-TRIPBLANK
Date Collected: 03/23/15 16:00
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 14:48	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/27/15 14:48	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.24	ug/L		03/27/15 14:48	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.30	ug/L		03/27/15 14:48	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/27/15 14:48	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 14:48	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/27/15 14:48	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 14:48	1
2-Hexanone	2.0	U	10	2.0	0.48	ug/L		03/27/15 14:48	1
Bromochloromethane	1.0	U	1.0	1.0	0.50	ug/L		03/27/15 14:48	1
Acetone	2.0	U	10	2.0	0.94	ug/L		03/27/15 14:48	1
Benzene	1.0	U	1.0	1.0	0.35	ug/L		03/27/15 14:48	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 14:48	1
Bromomethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 14:48	1
Carbon disulfide	1.0	U	1.0	1.0	0.38	ug/L		03/27/15 14:48	1
Carbon tetrachloride	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 14:48	1
Chlorobenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 14:48	1
Chloroethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 14:48	1
Chloroform	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 14:48	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 14:48	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/27/15 14:48	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/27/15 14:48	1
Bromodichloromethane	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 14:48	1
Ethylbenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 14:48	1
1,2-Dibromoethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 14:48	1
m-Xylene & p-Xylene	1.0	U	2.0	1.0	0.24	ug/L		03/27/15 14:48	1
2-Butanone (MEK)	2.0	U	10	2.0	0.53	ug/L		03/27/15 14:48	1
4-Methyl-2-pentanone (MIBK)	2.0	U	10	2.0	0.99	ug/L		03/27/15 14:48	1
Methylene Chloride	**0.87**	**J**	1.0	1.0	0.33	ug/L		03/27/15 14:48	1
o-Xylene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 14:48	1
Styrene	0.50	U	1.0	0.50	0.45	ug/L		03/27/15 14:48	1
Tetrachloroethene	1.0	U	1.0	1.0	0.31	ug/L		03/27/15 14:48	1
Toluene	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 14:48	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.30	ug/L		03/27/15 14:48	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 14:48	1
Trichloroethene	1.0	U	1.0	1.0	0.22	ug/L		03/27/15 14:48	1
Vinyl chloride	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 14:48	1
Xylenes, Total	2.0	U	2.0	2.0	0.52	ug/L		03/27/15 14:48	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 14:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 120*		*03/27/15 14:48*	*1*
4-Bromofluorobenzene (Surr)	*85*		*75 - 120*		*03/27/15 14:48*	*1*
Toluene-d8 (Surr)	*90*		*85 - 120*		*03/27/15 14:48*	*1*
Dibromofluoromethane (Surr)	*101*		*85 - 115*		*03/27/15 14:48*	*1*

Client Sample ID: FWGDETMW-004C-0511-GW

Lab Sample ID: 240-48567-2

Date Collected: 03/23/15 16:15
Matrix: Water

Date Received: 03/24/15 17:47

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.44	ug/L		03/27/15 14:26	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/27/15 14:26	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.24	ug/L		03/27/15 14:26	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.30	ug/L		03/27/15 14:26	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/27/15 14:26	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.23	ug/L		03/27/15 14:26	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/27/15 14:26	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 14:26	1
2-Hexanone	10	U	10	10	0.48	ug/L		03/27/15 14:26	1
Bromochloromethane	0.50	U	1.0	0.50	0.50	ug/L		03/27/15 14:26	1
Acetone	10	U	10	10	0.94	ug/L		03/27/15 14:26	1
Benzene	0.50	U	1.0	0.50	0.35	ug/L		03/27/15 14:26	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 14:26	1
Bromomethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 14:26	1
Carbon disulfide	0.50	U	1.0	0.50	0.38	ug/L		03/27/15 14:26	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.43	ug/L		03/27/15 14:26	1
Chlorobenzene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 14:26	1
Chloroethane	0.50	U	1.0	0.50	0.32	ug/L		03/27/15 14:26	1
Chloroform	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 14:26	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 14:26	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/27/15 14:26	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/27/15 14:26	1
Bromodichloromethane	0.25	U	1.0	0.25	0.29	ug/L		03/27/15 14:26	1
Ethylbenzene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 14:26	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.32	ug/L		03/27/15 14:26	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		03/27/15 14:26	1
2-Butanone (MEK)	10	U	10	10	0.53	ug/L		03/27/15 14:26	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	0.99	ug/L		03/27/15 14:26	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		03/27/15 14:26	1
o-Xylene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 14:26	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/27/15 14:26	1
Tetrachloroethene	0.50	U	1.0	0.50	0.31	ug/L		03/27/15 14:26	1
Toluene	0.50	U	1.0	0.50	0.23	ug/L		03/27/15 14:26	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.30	ug/L		03/27/15 14:26	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 14:26	1
Trichloroethene	0.50	U	1.0	0.50	0.22	ug/L		03/27/15 14:26	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/27/15 14:26	1
Xylenes, Total	1.0	U	2.0	1.0	0.52	ug/L		03/27/15 14:26	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 14:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 120*		*03/27/15 14:26*	*1*
4-Bromofluorobenzene (Surr)	*88*		*75 - 120*		*03/27/15 14:26*	*1*
Toluene-d8 (Surr)	*91*		*85 - 120*		*03/27/15 14:26*	*1*
Dibromofluoromethane (Surr)	*102*		*85 - 115*		*03/27/15 14:26*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.095	U	0.19	0.095	0.042	ug/L		04/08/15 10:07	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		04/08/15 10:07	1

Client Sample ID: FWGDETMW-004C-0511-GW
Date Collected: 03/23/15 16:15
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-2
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.095	U	0.19	0.095	0.084	ug/L		04/08/15 10:07	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		04/08/15 10:07	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		04/08/15 10:07	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		04/08/15 10:07	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		04/08/15 10:07	1
Benzoic acid	19	U	24	19	9.5	ug/L		04/08/15 10:07	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		04/08/15 10:07	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		04/08/15 10:07	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		04/08/15 10:07	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		04/08/15 10:07	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 10:07	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		04/08/15 10:07	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		04/08/15 10:07	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		04/08/15 10:07	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		04/08/15 10:07	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		04/08/15 10:07	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		04/08/15 10:07	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		04/08/15 10:07	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		04/08/15 10:07	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		04/08/15 10:07	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		04/08/15 10:07	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		04/08/15 10:07	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		04/08/15 10:07	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		04/08/15 10:07	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		04/08/15 10:07	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		04/08/15 10:07	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		04/08/15 10:07	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		04/08/15 10:07	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		04/08/15 10:07	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		04/08/15 10:07	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 10:07	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		04/08/15 10:07	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		04/08/15 10:07	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		04/08/15 10:07	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		04/08/15 10:07	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		04/08/15 10:07	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		04/08/15 10:07	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		04/08/15 10:07	1
Hexachlorocyclopentadiene	0.48	U	9.5	0.48	0.23	ug/L		04/08/15 10:07	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		04/08/15 10:07	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		04/08/15 10:07	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		04/08/15 10:07	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		04/08/15 10:07	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		04/08/15 10:07	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		04/08/15 10:07	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		04/08/15 10:07	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		04/08/15 10:07	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		04/08/15 10:07	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		04/08/15 10:07	1

Client Sample ID: FWGDETMW-004C-0511-GW
Date Collected: 03/23/15 16:15
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-2
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.48	U	1.9	0.48	0.27	ug/L		04/08/15 10:07	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		04/08/15 10:07	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		04/08/15 10:07	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		04/08/15 10:07	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		04/08/15 10:07	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		04/08/15 10:07	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		04/08/15 10:07	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		04/08/15 10:07	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		04/08/15 10:07	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		04/08/15 10:07	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		04/08/15 10:07	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		04/08/15 10:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*50 - 110*	*03/25/15 05:55*	*04/08/15 10:07*	*1*
2-Fluorophenol (Surr)	*73*		*20 - 110*	*03/25/15 05:55*	*04/08/15 10:07*	*1*
Nitrobenzene-d5 (Surr)	*79*		*40 - 110*	*03/25/15 05:55*	*04/08/15 10:07*	*1*
Phenol-d5 (Surr)	*76*		*10 - 115*	*03/25/15 05:55*	*04/08/15 10:07*	*1*
Terphenyl-d14 (Surr)	*84*		*50 - 135*	*03/25/15 05:55*	*04/08/15 10:07*	*1*
2,4,6-Tribromophenol (Surr)	*90*		*40 - 125*	*03/25/15 05:55*	*04/08/15 10:07*	*1*

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		04/08/15 01:20	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 01:20	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 01:20	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		04/08/15 01:20	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		04/08/15 01:20	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/08/15 01:20	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		04/08/15 01:20	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		04/08/15 01:20	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		04/08/15 01:20	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 01:20	1
HMX	**1.5**	**M**	0.15	0.050	0.036	ug/L		04/08/15 01:20	1
RDX	**3.2**		0.15	0.050	0.036	ug/L		04/08/15 01:20	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 01:20	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 01:20	1
Nitroglycerin	0.50	U	0.66	0.50	0.33	ug/L		04/08/15 01:20	1
PETN	0.50	U	0.66	0.50	0.30	ug/L		04/08/15 01:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/27/15 08:36*	*04/08/15 01:20*	*1*
3,4-Dinitrotoluene	*92*		*79 - 111*	*03/27/15 08:36*	*04/09/15 10:49*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		04/01/15 13:35	1

Client Sample ID: FWGDETMW-004C-0511-GF
Date Collected: 03/23/15 16:15
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-3
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/26/15 08:13	1
Chromium	**1.3**	**J**	7.0	4.0	0.55	ug/L		03/26/15 08:13	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/26/15 08:13	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/26/15 08:13	1
Selenium	10	U	15	10	4.0	ug/L		03/26/15 08:13	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/26/15 08:13	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/26/15 08:13	1
Barium	**54**	**J**	200	5.0	1.0	ug/L		03/26/15 08:13	1
Calcium	**130000**	**J**	5000	1000	260	ug/L		03/26/15 08:13	1
Copper	10	U	25	10	1.9	ug/L		03/26/15 08:13	1
Magnesium	**28000**		5000	300	55	ug/L		03/26/15 08:13	1
Manganese	**1.5**	**J**	15	5.0	0.46	ug/L		03/26/15 08:13	1
Nickel	**1.3**	**J**	40	5.0	0.76	ug/L		03/26/15 08:13	1
Potassium	**1100**	**J**	5000	900	70	ug/L		03/26/15 08:13	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 13:02	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 13:02	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 13:02	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 13:02	1
Iron	100	U	150	100	44	ug/L		04/06/15 13:02	1
Sodium	**2600**		1000	400	160	ug/L		04/06/15 13:02	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 13:02	1
Zinc	50	U	50	50	27	ug/L		04/06/15 13:02	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:03	1

Client Sample ID: FWGDETMW-004C-0511-GW
Date Collected: 03/24/15 09:02
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-4
Matrix: Water

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.053	U	0.053	0.053	0.019	ug/L		03/29/15 18:49	1
4,4'-DDE	0.053	U	0.053	0.053	0.013	ug/L		03/29/15 18:49	1
4,4'-DDT	0.053	U	0.053	0.053	0.018	ug/L		03/30/15 17:13	1
Aldrin	0.053	U	0.053	0.053	0.014	ug/L		03/29/15 18:49	1
alpha-BHC	0.053	U	0.053	0.053	0.015	ug/L		03/29/15 18:49	1
alpha-Chlordane	0.053	U	0.053	0.053	0.013	ug/L		03/29/15 18:49	1
beta-BHC	0.053	U	0.053	0.053	0.019	ug/L		03/29/15 18:49	1
delta-BHC	0.053	U	0.053	0.053	0.031	ug/L		03/29/15 18:49	1
Dieldrin	0.053	U	0.053	0.053	0.014	ug/L		03/29/15 18:49	1
Endosulfan I	0.053	U	0.053	0.053	0.017	ug/L		03/29/15 18:49	1
Endosulfan II	0.053	U	0.053	0.053	0.016	ug/L		03/29/15 18:49	1
Endosulfan sulfate	0.053	U	0.053	0.053	0.016	ug/L		03/29/15 18:49	1
Endrin	0.053	U	0.053	0.053	0.014	ug/L		03/29/15 18:49	1
Endrin aldehyde	0.053	U	0.053	0.053	0.019	ug/L		03/29/15 18:49	1
Endrin ketone	0.053	U	0.053	0.053	0.017	ug/L		03/29/15 18:49	1
gamma-BHC (Lindane)	0.053	U	0.053	0.053	0.014	ug/L		03/29/15 18:49	1
gamma-Chlordane	0.053	U	0.053	0.053	0.014	ug/L		03/29/15 18:49	1
Heptachlor	0.053	U	0.053	0.053	0.015	ug/L		03/29/15 18:49	1
Heptachlor epoxide	0.053	U	0.053	0.053	0.016	ug/L		03/29/15 18:49	1
Methoxychlor	0.053	U	0.11	0.053	0.014	ug/L		03/30/15 17:13	1
Toxaphene	2.1	U	2.1	2.1	0.21	ug/L		03/29/15 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*71*		*30 - 135*	*03/25/15 05:58*	*03/29/15 18:49*	*1*
DCB Decachlorobiphenyl	*71*		*30 - 135*	*03/25/15 05:58*	*03/29/15 18:49*	*1*
DCB Decachlorobiphenyl	*78*	*Q*	*30 - 135*	*03/25/15 05:58*	*03/30/15 17:13*	*1*
DCB Decachlorobiphenyl	*78*		*30 - 135*	*03/25/15 05:58*	*03/30/15 17:13*	*1*
Tetrachloro-m-xylene	*72*		*25 - 140*	*03/25/15 05:58*	*03/29/15 18:49*	*1*
Tetrachloro-m-xylene	*71*		*25 - 140*	*03/25/15 05:58*	*03/29/15 18:49*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*03/25/15 05:58*	*03/30/15 17:13*	*1*
Tetrachloro-m-xylene	*81*		*25 - 140*	*03/25/15 05:58*	*03/30/15 17:13*	*1*

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.21	U	0.53	0.21	0.18	ug/L		03/27/15 00:16	1
Aroclor-1221	0.21	U	0.53	0.21	0.14	ug/L		03/27/15 00:16	1
Aroclor-1232	0.21	U	0.53	0.21	0.17	ug/L		03/27/15 00:16	1
Aroclor-1242	0.42	U	0.53	0.42	0.23	ug/L		03/27/15 00:16	1
Aroclor-1248	0.21	U	0.53	0.21	0.11	ug/L		03/27/15 00:16	1
Aroclor-1254	0.21	U	0.53	0.21	0.17	ug/L		03/27/15 00:16	1
Aroclor-1260	0.21	U	0.53	0.21	0.18	ug/L		03/27/15 00:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*91*		*40 - 140*	*03/25/15 05:59*	*03/27/15 00:16*	*1*
Tetrachloro-m-xylene	*78*		*40 - 140*	*03/25/15 05:59*	*03/27/15 00:16*	*1*
DCB Decachlorobiphenyl	*72*		*40 - 135*	*03/25/15 05:59*	*03/27/15 00:16*	*1*
DCB Decachlorobiphenyl	*63*		*40 - 135*	*03/25/15 05:59*	*03/27/15 00:16*	*1*

Client Sample Results

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48567-1

Client Sample ID: FWGDETMW-004C-0511-GW
Date Collected: 03/24/15 09:02
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-4
Matrix: Water

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 19:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:21	1

Client Sample ID: FWGDA2MW-115-0509-GW

Lab Sample ID: 240-48567-5

Date Collected: 03/24/15 10:12
Date Received: 03/24/15 17:47

Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.3	U	5.3	5.3	1.8	ug/L		04/08/15 11:23	1
Butyl benzyl phthalate	0.53	U	5.3	0.53	0.27	ug/L		04/08/15 11:23	1
Diethyl phthalate	1.1	U	2.1	1.1	0.63	ug/L		04/08/15 11:23	1
Dimethyl phthalate	0.53	U	2.1	0.53	0.31	ug/L		04/08/15 11:23	1
Di-n-butyl phthalate	5.3	U	5.3	5.3	1.8	ug/L		04/08/15 11:23	1
Di-n-octyl phthalate	0.53	U	2.1	0.53	0.24	ug/L		04/08/15 11:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*76*		*50 - 110*	*03/25/15 05:55*	*04/08/15 11:23*	*1*
2-Fluorophenol (Surr)	*68*		*20 - 110*	*03/25/15 05:55*	*04/08/15 11:23*	*1*
Nitrobenzene-d5 (Surr)	*69*		*40 - 110*	*03/25/15 05:55*	*04/08/15 11:23*	*1*
Phenol-d5 (Surr)	*70*		*10 - 115*	*03/25/15 05:55*	*04/08/15 11:23*	*1*
Terphenyl-d14 (Surr)	*86*		*50 - 135*	*03/25/15 05:55*	*04/08/15 11:23*	*1*
2,4,6-Tribromophenol (Surr)	*79*		*40 - 125*	*03/25/15 05:55*	*04/08/15 11:23*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 20:09	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.052	U	0.16	0.052	0.032	ug/L		04/08/15 02:03	1
1,3-Dinitrobenzene	0.10	U	0.16	0.10	0.052	ug/L		04/08/15 02:03	1
2,4,6-Trinitrotoluene	0.10	U	0.16	0.10	0.052	ug/L		04/08/15 02:03	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.052	ug/L		04/08/15 02:03	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.052	ug/L		04/08/15 02:03	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.16	0.10	0.016	ug/L		04/08/15 02:03	1
2-Nitrotoluene	0.10	U	0.52	0.10	0.091	ug/L		04/08/15 02:03	1
3-Nitrotoluene	0.10	U	0.52	0.10	0.059	ug/L		04/08/15 02:03	1
4-Nitrotoluene	0.10	U	0.52	0.10	0.091	ug/L		04/08/15 02:03	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.16	0.10	0.052	ug/L		04/08/15 02:03	1
HMX	0.052	U	0.16	0.052	0.037	ug/L		04/08/15 02:03	1
RDX	0.052	U	0.16	0.052	0.037	ug/L		04/08/15 02:03	1
Nitrobenzene	0.10	U	0.16	0.10	0.052	ug/L		04/08/15 02:03	1
Tetryl	0.10	U	0.16	0.10	0.052	ug/L		04/08/15 02:03	1
Nitroglycerin	0.52	U	0.67	0.52	0.34	ug/L		04/08/15 02:03	1
PETN	0.52	U	0.67	0.52	0.31	ug/L		04/08/15 02:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*91*		*79 - 111*	*03/27/15 08:36*	*04/08/15 02:03*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:03	1

Client Sample ID: FWGDA2MW-115-0509-GF
Date Collected: 03/24/15 10:12
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-6
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/26/15 08:33	1
Chromium	**0.86**	**J**	7.0	4.0	0.55	ug/L		03/26/15 08:33	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/26/15 08:33	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/26/15 08:33	1
Selenium	10	U	15	10	4.0	ug/L		03/26/15 08:33	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/26/15 08:33	1
Vanadium	**2.5**	**J**	7.0	4.0	2.4	ug/L		03/26/15 08:33	1
Barium	**22**	**J**	200	5.0	1.0	ug/L		03/26/15 08:33	1
Calcium	**100000**		5000	1000	260	ug/L		03/26/15 08:33	1
Copper	10	U	25	10	1.9	ug/L		03/26/15 08:33	1
Magnesium	**29000**		5000	300	55	ug/L		03/26/15 08:33	1
Manganese	**100**		15	5.0	0.46	ug/L		03/26/15 08:33	1
Nickel	**0.90**	**J**	40	5.0	0.76	ug/L		03/26/15 08:33	1
Potassium	**3500**	**J**	5000	900	70	ug/L		03/26/15 08:33	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 13:06	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 13:06	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 13:06	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 13:06	1
Iron	**800**		150	100	44	ug/L		04/06/15 13:06	1
Sodium	**12000**		1000	400	160	ug/L		04/06/15 13:06	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 13:06	1
Zinc	50	U	50	50	27	ug/L		04/06/15 13:06	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:04	1

Client Sample ID: FWGDA2MW-DUP1-0557-GW
Date Collected: 03/24/15 12:00
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-7
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	5.2	U	5.2	5.2	1.8	ug/L		04/08/15 11:48	1
Butyl benzyl phthalate	0.52	U	5.2	0.52	0.27	ug/L		04/08/15 11:48	1
Diethyl phthalate	1.0	U	2.1	1.0	0.62	ug/L		04/08/15 11:48	1
Dimethyl phthalate	0.52	U	2.1	0.52	0.30	ug/L		04/08/15 11:48	1
Di-n-butyl phthalate	5.2	U	5.2	5.2	1.8	ug/L		04/08/15 11:48	1
Di-n-octyl phthalate	0.52	U	2.1	0.52	0.24	ug/L		04/08/15 11:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*69*		*50 - 110*	*03/25/15 05:55*	*04/08/15 11:48*	*1*
2-Fluorophenol (Surr)	*64*		*20 - 110*	*03/25/15 05:55*	*04/08/15 11:48*	*1*
Nitrobenzene-d5 (Surr)	*63*		*40 - 110*	*03/25/15 05:55*	*04/08/15 11:48*	*1*
Phenol-d5 (Surr)	*64*		*10 - 115*	*03/25/15 05:55*	*04/08/15 11:48*	*1*
Terphenyl-d14 (Surr)	*81*		*50 - 135*	*03/25/15 05:55*	*04/08/15 11:48*	*1*
2,4,6-Tribromophenol (Surr)	*70*		*40 - 125*	*03/25/15 05:55*	*04/08/15 11:48*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 20:26	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.054	U	0.16	0.054	0.034	ug/L		04/08/15 02:47	1
1,3-Dinitrobenzene	0.11	U	0.16	0.11	0.054	ug/L		04/08/15 02:47	1
2,4,6-Trinitrotoluene	0.11	U	0.16	0.11	0.054	ug/L		04/08/15 02:47	1
2,4-Dinitrotoluene	0.11	U	0.14	0.11	0.054	ug/L		04/08/15 02:47	1
2,6-Dinitrotoluene	0.11	U	0.14	0.11	0.054	ug/L		04/08/15 02:47	1
2-Amino-4,6-dinitrotoluene	0.11	U	0.16	0.11	0.016	ug/L		04/08/15 02:47	1
2-Nitrotoluene	0.11	U	0.54	0.11	0.095	ug/L		04/08/15 02:47	1
3-Nitrotoluene	0.11	U	0.54	0.11	0.062	ug/L		04/08/15 02:47	1
4-Nitrotoluene	0.11	U	0.54	0.11	0.095	ug/L		04/08/15 02:47	1
4-Amino-2,6-dinitrotoluene	0.11	U	0.16	0.11	0.054	ug/L		04/08/15 02:47	1
HMX	0.054	U	0.16	0.054	0.039	ug/L		04/08/15 02:47	1
RDX	0.054	U	0.16	0.054	0.039	ug/L		04/08/15 02:47	1
Nitrobenzene	0.11	U	0.16	0.11	0.054	ug/L		04/08/15 02:47	1
Tetryl	0.11	U	0.16	0.11	0.054	ug/L		04/08/15 02:47	1
Nitroglycerin	0.54	U	0.71	0.54	0.36	ug/L		04/08/15 02:47	1
PETN	0.54	U M	0.71	0.54	0.33	ug/L		04/08/15 02:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*91*		*79 - 111*	*03/27/15 08:36*	*04/08/15 02:47*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:27	1

Client Sample ID: FWGDA2MW-DUP1-0557-GF
Date Collected: 03/24/15 12:00
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-8
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**4.5**	**J**	10	10	2.9	ug/L		03/26/15 08:37	1
Chromium	**0.95**	**J**	7.0	4.0	0.55	ug/L		03/26/15 08:37	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/26/15 08:37	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/26/15 08:37	1
Selenium	10	U	15	10	4.0	ug/L		03/26/15 08:37	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/26/15 08:37	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/26/15 08:37	1
Barium	**21**	**J**	200	5.0	1.0	ug/L		03/26/15 08:37	1
Calcium	**100000**		5000	1000	260	ug/L		03/26/15 08:37	1
Copper	10	U	25	10	1.9	ug/L		03/26/15 08:37	1
Magnesium	**28000**		5000	300	55	ug/L		03/26/15 08:37	1
Manganese	**100**		15	5.0	0.46	ug/L		03/26/15 08:37	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/26/15 08:37	1
Potassium	**3300**	**J**	5000	900	70	ug/L		03/26/15 08:37	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 13:09	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 13:09	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 13:09	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 13:09	1
Iron	**780**		150	100	44	ug/L		04/06/15 13:09	1
Sodium	**11000**		1000	400	160	ug/L		04/06/15 13:09	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 13:09	1
Zinc	50	U	50	50	27	ug/L		04/06/15 13:09	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:06	1

Client Sample ID: FWGDETMW-003C-0510-GW
Date Collected: 03/24/15 12:17
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-9
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 15:11	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/27/15 15:11	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.24	ug/L		03/27/15 15:11	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.30	ug/L		03/27/15 15:11	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/27/15 15:11	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 15:11	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/27/15 15:11	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 15:11	1
2-Hexanone	2.0	U	10	2.0	0.48	ug/L		03/27/15 15:11	1
Bromochloromethane	1.0	U	1.0	1.0	0.50	ug/L		03/27/15 15:11	1
Acetone	2.0	U	10	2.0	0.94	ug/L		03/27/15 15:11	1
Benzene	1.0	U	1.0	1.0	0.35	ug/L		03/27/15 15:11	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 15:11	1
Bromomethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 15:11	1
Carbon disulfide	1.0	U	1.0	1.0	0.38	ug/L		03/27/15 15:11	1
Carbon tetrachloride	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 15:11	1
Chlorobenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 15:11	1
Chloroethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 15:11	1
Chloroform	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 15:11	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 15:11	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/27/15 15:11	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/27/15 15:11	1
Bromodichloromethane	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 15:11	1
Ethylbenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 15:11	1
1,2-Dibromoethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 15:11	1
m-Xylene & p-Xylene	1.0	U	2.0	1.0	0.24	ug/L		03/27/15 15:11	1
2-Butanone (MEK)	2.0	U	10	2.0	0.53	ug/L		03/27/15 15:11	1
4-Methyl-2-pentanone (MIBK)	2.0	U	10	2.0	0.99	ug/L		03/27/15 15:11	1
Methylene Chloride	1.0	U	1.0	1.0	0.33	ug/L		03/27/15 15:11	1
o-Xylene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 15:11	1
Styrene	0.50	U	1.0	0.50	0.45	ug/L		03/27/15 15:11	1
Tetrachloroethene	1.0	U	1.0	1.0	0.31	ug/L		03/27/15 15:11	1
Toluene	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 15:11	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.30	ug/L		03/27/15 15:11	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 15:11	1
Trichloroethene	1.0	U	1.0	1.0	0.22	ug/L		03/27/15 15:11	1
Vinyl chloride	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 15:11	1
Xylenes, Total	2.0	U	2.0	2.0	0.52	ug/L		03/27/15 15:11	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 15:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 120*		*03/27/15 15:11*	*1*
4-Bromofluorobenzene (Surr)	*85*		*75 - 120*		*03/27/15 15:11*	*1*
Toluene-d8 (Surr)	*92*		*85 - 120*		*03/27/15 15:11*	*1*
Dibromofluoromethane (Surr)	*100*		*85 - 115*		*03/27/15 15:11*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.095	U	0.19	0.095	0.042	ug/L		04/08/15 10:32	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		04/08/15 10:32	1

Client Sample ID: FWGDETMW-003C-0510-GW
Date Collected: 03/24/15 12:17
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-9
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.095	U	0.19	0.095	0.084	ug/L		04/08/15 10:32	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		04/08/15 10:32	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		04/08/15 10:32	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		04/08/15 10:32	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		04/08/15 10:32	1
Benzoic acid	19	U	24	19	9.5	ug/L		04/08/15 10:32	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		04/08/15 10:32	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		04/08/15 10:32	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		04/08/15 10:32	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		04/08/15 10:32	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 10:32	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		04/08/15 10:32	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		04/08/15 10:32	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		04/08/15 10:32	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		04/08/15 10:32	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		04/08/15 10:32	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		04/08/15 10:32	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		04/08/15 10:32	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		04/08/15 10:32	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		04/08/15 10:32	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		04/08/15 10:32	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		04/08/15 10:32	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		04/08/15 10:32	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		04/08/15 10:32	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		04/08/15 10:32	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		04/08/15 10:32	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		04/08/15 10:32	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		04/08/15 10:32	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		04/08/15 10:32	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		04/08/15 10:32	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 10:32	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		04/08/15 10:32	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		04/08/15 10:32	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		04/08/15 10:32	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		04/08/15 10:32	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		04/08/15 10:32	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		04/08/15 10:32	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		04/08/15 10:32	1
Hexachlorocyclopentadiene	0.48	U	9.5	0.48	0.23	ug/L		04/08/15 10:32	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		04/08/15 10:32	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		04/08/15 10:32	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		04/08/15 10:32	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		04/08/15 10:32	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		04/08/15 10:32	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		04/08/15 10:32	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		04/08/15 10:32	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		04/08/15 10:32	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		04/08/15 10:32	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		04/08/15 10:32	1

Client Sample ID: FWGDETMW-003C-0510-GW
Date Collected: 03/24/15 12:17
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-9
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.48	U	1.9	0.48	0.27	ug/L		04/08/15 10:32	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		04/08/15 10:32	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		04/08/15 10:32	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		04/08/15 10:32	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		04/08/15 10:32	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		04/08/15 10:32	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		04/08/15 10:32	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		04/08/15 10:32	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		04/08/15 10:32	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		04/08/15 10:32	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		04/08/15 10:32	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		04/08/15 10:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*50 - 110*	*03/25/15 05:55*	*04/08/15 10:32*	*1*
2-Fluorophenol (Surr)	*65*		*20 - 110*	*03/25/15 05:55*	*04/08/15 10:32*	*1*
Nitrobenzene-d5 (Surr)	*69*		*40 - 110*	*03/25/15 05:55*	*04/08/15 10:32*	*1*
Phenol-d5 (Surr)	*72*		*10 - 115*	*03/25/15 05:55*	*04/08/15 10:32*	*1*
Terphenyl-d14 (Surr)	*84*		*50 - 135*	*03/25/15 05:55*	*04/08/15 10:32*	*1*
2,4,6-Tribromophenol (Surr)	*71*		*40 - 125*	*03/25/15 05:55*	*04/08/15 10:32*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/29/15 19:11	1
4,4'-DDE	0.048	U	0.048	0.048	0.011	ug/L		03/29/15 19:11	1
4,4'-DDT	0.048	U	0.048	0.048	0.016	ug/L		03/30/15 17:34	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:11	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/29/15 19:11	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/29/15 19:11	1
beta-BHC	0.048	U	0.048	0.048	0.017	ug/L		03/29/15 19:11	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/29/15 19:11	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:11	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/29/15 19:11	1
Endosulfan II	0.048	U	0.048	0.048	0.014	ug/L		03/29/15 19:11	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.014	ug/L		03/29/15 19:11	1
Endrin	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:11	1
Endrin aldehyde	0.048	U	0.048	0.048	0.017	ug/L		03/29/15 19:11	1
Endrin ketone	0.048	U	0.048	0.048	0.015	ug/L		03/29/15 19:11	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:11	1
gamma-Chlordane	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:11	1
Heptachlor	0.048	U	0.048	0.048	0.013	ug/L		03/29/15 19:11	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.014	ug/L		03/29/15 19:11	1
Methoxychlor	0.048	U	0.095	0.048	0.012	ug/L		03/30/15 17:34	1
Toxaphene	1.9	U	1.9	1.9	0.19	ug/L		03/29/15 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*64*		*30 - 135*	*03/25/15 05:58*	*03/29/15 19:11*	*1*
DCB Decachlorobiphenyl	*63*		*30 - 135*	*03/25/15 05:58*	*03/29/15 19:11*	*1*
DCB Decachlorobiphenyl	*66*	*Q*	*30 - 135*	*03/25/15 05:58*	*03/30/15 17:34*	*1*
DCB Decachlorobiphenyl	*65*		*30 - 135*	*03/25/15 05:58*	*03/30/15 17:34*	*1*

Client Sample ID: FWGDETMW-003C-0510-GW
Date Collected: 03/24/15 12:17
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-9
Matrix: Water

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*77*		*25 - 140*	*03/25/15 05:58*	*03/29/15 19:11*	*1*
Tetrachloro-m-xylene	*76*		*25 - 140*	*03/25/15 05:58*	*03/29/15 19:11*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*03/25/15 05:58*	*03/30/15 17:34*	*1*
Tetrachloro-m-xylene	*79*		*25 - 140*	*03/25/15 05:58*	*03/30/15 17:34*	*1*

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.48	0.19	0.16	ug/L		03/27/15 00:32	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		03/27/15 00:32	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		03/27/15 00:32	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		03/27/15 00:32	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		03/27/15 00:32	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		03/27/15 00:32	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		03/27/15 00:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*89*		*40 - 140*	*03/25/15 05:59*	*03/27/15 00:32*	*1*
Tetrachloro-m-xylene	*82*		*40 - 140*	*03/25/15 05:59*	*03/27/15 00:32*	*1*
DCB Decachlorobiphenyl	*62*		*40 - 135*	*03/25/15 05:59*	*03/27/15 00:32*	*1*
DCB Decachlorobiphenyl	*51*		*40 - 135*	*03/25/15 05:59*	*03/27/15 00:32*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 20:44	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		04/08/15 03:31	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 03:31	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 03:31	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 03:31	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 03:31	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/08/15 03:31	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/08/15 03:31	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/08/15 03:31	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/08/15 03:31	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 03:31	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 03:31	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 03:31	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 03:31	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 03:31	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		04/08/15 03:31	1
PETN	0.51	U M	0.66	0.51	0.30	ug/L		04/08/15 03:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*89*		*79 - 111*	*03/27/15 08:36*	*04/08/15 03:31*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		04/03/15 13:24	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48567-1

Client Sample ID: FWGDETMW-003C-0510-GW
Date Collected: 03/24/15 12:17
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-9
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:29	1

Client Sample ID: FWGDETMW-003C-0510-GF — **Lab Sample ID: 240-48567-10**

Date Collected: 03/24/15 12:17
Date Received: 03/24/15 17:47

Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**11**		10	10	2.9	ug/L		03/26/15 08:49	1
Chromium	**0.56**	J	7.0	4.0	0.55	ug/L		03/26/15 08:49	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/26/15 08:49	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/26/15 08:49	1
Selenium	10	U	15	10	4.0	ug/L		03/26/15 08:49	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/26/15 08:49	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/26/15 08:49	1
Barium	**46**	J	200	5.0	1.0	ug/L		03/26/15 08:49	1
Calcium	**88000**		5000	1000	260	ug/L		03/26/15 08:49	1
Copper	10	U	25	10	1.9	ug/L		03/26/15 08:49	1
Magnesium	**32000**		5000	300	55	ug/L		03/26/15 08:49	1
Manganese	**250**		15	5.0	0.46	ug/L		03/26/15 08:49	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/26/15 08:49	1
Potassium	**1800**	J	5000	900	70	ug/L		03/26/15 08:49	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 13:21	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 13:21	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 13:21	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 13:21	1
Iron	**1900**		150	100	44	ug/L		04/06/15 13:21	1
Sodium	**12000**		1000	400	160	ug/L		04/06/15 13:21	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 13:21	1
Zinc	50	U	50	50	27	ug/L		04/06/15 13:21	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:08	1

Client Sample ID: FWGEQUIPRINSE7-0569-GW
Date Collected: 03/24/15 14:00
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-11
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 15:34	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/27/15 15:34	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.24	ug/L		03/27/15 15:34	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.30	ug/L		03/27/15 15:34	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/27/15 15:34	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 15:34	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/27/15 15:34	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 15:34	1
2-Hexanone	2.0	U	10	2.0	0.48	ug/L		03/27/15 15:34	1
Bromochloromethane	1.0	U	1.0	1.0	0.50	ug/L		03/27/15 15:34	1
Acetone	**6.0**	**J**	10	2.0	0.94	ug/L		03/27/15 15:34	1
Benzene	1.0	U	1.0	1.0	0.35	ug/L		03/27/15 15:34	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 15:34	1
Bromomethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 15:34	1
Carbon disulfide	1.0	U	1.0	1.0	0.38	ug/L		03/27/15 15:34	1
Carbon tetrachloride	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 15:34	1
Chlorobenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 15:34	1
Chloroethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 15:34	1
Chloroform	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 15:34	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 15:34	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/27/15 15:34	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/27/15 15:34	1
Bromodichloromethane	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 15:34	1
Ethylbenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 15:34	1
1,2-Dibromoethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 15:34	1
m-Xylene & p-Xylene	1.0	U	2.0	1.0	0.24	ug/L		03/27/15 15:34	1
2-Butanone (MEK)	**0.97**	**J**	10	2.0	0.53	ug/L		03/27/15 15:34	1
4-Methyl-2-pentanone (MIBK)	2.0	U	10	2.0	0.99	ug/L		03/27/15 15:34	1
Methylene Chloride	1.0	U	1.0	1.0	0.33	ug/L		03/27/15 15:34	1
o-Xylene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 15:34	1
Styrene	0.50	U	1.0	0.50	0.45	ug/L		03/27/15 15:34	1
Tetrachloroethene	1.0	U	1.0	1.0	0.31	ug/L		03/27/15 15:34	1
Toluene	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 15:34	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.30	ug/L		03/27/15 15:34	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 15:34	1
Trichloroethene	1.0	U	1.0	1.0	0.22	ug/L		03/27/15 15:34	1
Vinyl chloride	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 15:34	1
Xylenes, Total	2.0	U	2.0	2.0	0.52	ug/L		03/27/15 15:34	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 15:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 120*		*03/27/15 15:34*	*1*
4-Bromofluorobenzene (Surr)	*88*		*75 - 120*		*03/27/15 15:34*	*1*
Toluene-d8 (Surr)	*91*		*85 - 120*		*03/27/15 15:34*	*1*
Dibromofluoromethane (Surr)	*103*		*85 - 115*		*03/27/15 15:34*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.095	U	0.19	0.095	0.042	ug/L		04/08/15 10:58	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		04/08/15 10:58	1

Client Sample ID: FWGEQUIPRINSE7-0569-GW
Date Collected: 03/24/15 14:00
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-11
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.095	U	0.19	0.095	0.084	ug/L		04/08/15 10:58	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		04/08/15 10:58	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		04/08/15 10:58	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		04/08/15 10:58	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		04/08/15 10:58	1
Benzoic acid	19	U	24	19	9.5	ug/L		04/08/15 10:58	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		04/08/15 10:58	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		04/08/15 10:58	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		04/08/15 10:58	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		04/08/15 10:58	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 10:58	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		04/08/15 10:58	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		04/08/15 10:58	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		04/08/15 10:58	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		04/08/15 10:58	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		04/08/15 10:58	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		04/08/15 10:58	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		04/08/15 10:58	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		04/08/15 10:58	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		04/08/15 10:58	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		04/08/15 10:58	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		04/08/15 10:58	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		04/08/15 10:58	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		04/08/15 10:58	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		04/08/15 10:58	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		04/08/15 10:58	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		04/08/15 10:58	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		04/08/15 10:58	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		04/08/15 10:58	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		04/08/15 10:58	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 10:58	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		04/08/15 10:58	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		04/08/15 10:58	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		04/08/15 10:58	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		04/08/15 10:58	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		04/08/15 10:58	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		04/08/15 10:58	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		04/08/15 10:58	1
Hexachlorocyclopentadiene	0.48	U	9.5	0.48	0.23	ug/L		04/08/15 10:58	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		04/08/15 10:58	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		04/08/15 10:58	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		04/08/15 10:58	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		04/08/15 10:58	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		04/08/15 10:58	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		04/08/15 10:58	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		04/08/15 10:58	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		04/08/15 10:58	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		04/08/15 10:58	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		04/08/15 10:58	1

Client Sample ID: FWGEQUIPRINSE7-0569-GW — **Lab Sample ID: 240-48567-11**

Date Collected: 03/24/15 14:00 — Matrix: Water

Date Received: 03/24/15 17:47

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.48	U	1.9	0.48	0.27	ug/L		04/08/15 10:58	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		04/08/15 10:58	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		04/08/15 10:58	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		04/08/15 10:58	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		04/08/15 10:58	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		04/08/15 10:58	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		04/08/15 10:58	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		04/08/15 10:58	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		04/08/15 10:58	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		04/08/15 10:58	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		04/08/15 10:58	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		04/08/15 10:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*79*		*50 - 110*	*03/25/15 05:55*	*04/08/15 10:58*	*1*
2-Fluorophenol (Surr)	*75*		*20 - 110*	*03/25/15 05:55*	*04/08/15 10:58*	*1*
Nitrobenzene-d5 (Surr)	*75*		*40 - 110*	*03/25/15 05:55*	*04/08/15 10:58*	*1*
Phenol-d5 (Surr)	*78*		*10 - 115*	*03/25/15 05:55*	*04/08/15 10:58*	*1*
Terphenyl-d14 (Surr)	*87*		*50 - 135*	*03/25/15 05:55*	*04/08/15 10:58*	*1*
2,4,6-Tribromophenol (Surr)	*76*		*40 - 125*	*03/25/15 05:55*	*04/08/15 10:58*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U Q	0.048	0.048	0.017	ug/L		03/31/15 15:18	1
4,4'-DDE	0.048	U	0.048	0.048	0.012	ug/L		03/31/15 15:18	1
4,4'-DDT	0.048	U	0.048	0.048	0.016	ug/L		03/31/15 15:18	1
Aldrin	0.048	U	0.048	0.048	0.013	ug/L		03/31/15 15:18	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/31/15 15:18	1
alpha-Chlordane	0.048	U	0.048	0.048	0.012	ug/L		03/31/15 15:18	1
beta-BHC	0.048	U	0.048	0.048	0.017	ug/L		03/31/15 15:18	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/31/15 15:18	1
Dieldrin	0.048	U Q	0.048	0.048	0.013	ug/L		03/31/15 15:18	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/31/15 15:18	1
Endosulfan II	0.048	U Q	0.048	0.048	0.014	ug/L		03/31/15 15:18	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.014	ug/L		03/31/15 15:18	1
Endrin	0.048	U Q	0.048	0.048	0.013	ug/L		03/31/15 15:18	1
Endrin aldehyde	0.048	U	0.048	0.048	0.017	ug/L		03/31/15 15:18	1
Endrin ketone	0.048	U Q	0.048	0.048	0.015	ug/L		03/31/15 15:18	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.013	ug/L		03/31/15 15:18	1
gamma-Chlordane	0.048	U	0.048	0.048	0.013	ug/L		03/31/15 15:18	1
Heptachlor	0.048	U	0.048	0.048	0.013	ug/L		03/31/15 15:18	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.014	ug/L		03/31/15 15:18	1
Methoxychlor	0.048	U	0.096	0.048	0.013	ug/L		03/31/15 15:18	1
Toxaphene	1.9	U	1.9	1.9	0.19	ug/L		03/31/15 15:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*87*	*Q*	*30 - 135*	*03/30/15 05:43*	*03/31/15 15:18*	*1*
DCB Decachlorobiphenyl	*87*		*30 - 135*	*03/30/15 05:43*	*03/31/15 15:18*	*1*
Tetrachloro-m-xylene	*78*		*25 - 140*	*03/30/15 05:43*	*03/31/15 15:18*	*1*
Tetrachloro-m-xylene	*76*		*25 - 140*	*03/30/15 05:43*	*03/31/15 15:18*	*1*

Client Sample ID: FWGEQUIPRINSE7-0569-GW
Date Collected: 03/24/15 14:00
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-11
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.48	0.19	0.16	ug/L		03/27/15 00:47	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		03/27/15 00:47	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		03/27/15 00:47	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		03/27/15 00:47	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		03/27/15 00:47	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		03/27/15 00:47	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		03/27/15 00:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*90*		*40 - 140*	*03/25/15 05:59*	*03/27/15 00:47*	*1*
Tetrachloro-m-xylene	*89*		*40 - 140*	*03/25/15 05:59*	*03/27/15 00:47*	*1*
DCB Decachlorobiphenyl	*89*		*40 - 135*	*03/25/15 05:59*	*03/27/15 00:47*	*1*
DCB Decachlorobiphenyl	*75*		*40 - 135*	*03/25/15 05:59*	*03/27/15 00:47*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 21:02	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.050	U	0.15	0.050	0.031	ug/L		04/08/15 04:14	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 04:14	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 04:14	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		04/08/15 04:14	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		04/08/15 04:14	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/08/15 04:14	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		04/08/15 04:14	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		04/08/15 04:14	1
4-Nitrotoluene	0.10	U	0.50	0.10	0.089	ug/L		04/08/15 04:14	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 04:14	1
HMX	0.050	U	0.15	0.050	0.036	ug/L		04/08/15 04:14	1
RDX	0.050	U	0.15	0.050	0.036	ug/L		04/08/15 04:14	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 04:14	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		04/08/15 04:14	1
Nitroglycerin	0.50	U	0.66	0.50	0.33	ug/L		04/08/15 04:14	1
PETN	0.50	U	0.66	0.50	0.30	ug/L		04/08/15 04:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/27/15 08:36*	*04/08/15 04:14*	*1*
3,4-Dinitrotoluene	*92*		*79 - 111*	*03/27/15 08:36*	*04/09/15 13:02*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/26/15 08:53	1
Chromium	4.0	U	7.0	4.0	0.55	ug/L		03/26/15 08:53	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/26/15 08:53	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/26/15 08:53	1
Selenium	10	U	15	10	4.0	ug/L		03/26/15 08:53	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/26/15 08:53	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/26/15 08:53	1
Barium	5.0	U	200	5.0	1.0	ug/L		03/26/15 08:53	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48567-1

Client Sample ID: FWGEQUIPRINSE7-0569-GW
Date Collected: 03/24/15 14:00
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-11
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Calcium	1000	U	5000	1000	260	ug/L		03/26/15 08:53	1
Copper	10	U	25	10	1.9	ug/L		03/26/15 08:53	1
Magnesium	300	U	5000	300	55	ug/L		03/26/15 08:53	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/26/15 08:53	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/26/15 08:53	1
Potassium	900	U	5000	900	70	ug/L		03/26/15 08:53	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 13:25	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 13:25	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 13:25	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 13:25	1
Iron	100	U	150	100	44	ug/L		04/06/15 13:25	1
Sodium	400	U	1000	400	160	ug/L		04/06/15 13:25	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 13:25	1
Zinc	50	U	50	50	27	ug/L		04/06/15 13:25	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:09	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		04/03/15 13:24	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:31	1

Client Sample ID: FWGLL2MW-059C-0526-GW

Lab Sample ID: 240-48567-12

Date Collected: 03/24/15 10:21
Date Received: 03/24/15 17:47

Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 12:13	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		04/08/15 12:13	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		04/08/15 12:13	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		04/08/15 12:13	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 12:13	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		04/08/15 12:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*80*		*50 - 110*	*03/25/15 05:55*	*04/08/15 12:13*	*1*
2-Fluorophenol (Surr)	*71*		*20 - 110*	*03/25/15 05:55*	*04/08/15 12:13*	*1*
Nitrobenzene-d5 (Surr)	*71*		*40 - 110*	*03/25/15 05:55*	*04/08/15 12:13*	*1*
Phenol-d5 (Surr)	*74*		*10 - 115*	*03/25/15 05:55*	*04/08/15 12:13*	*1*
Terphenyl-d14 (Surr)	*82*		*50 - 135*	*03/25/15 05:55*	*04/08/15 12:13*	*1*
2,4,6-Tribromophenol (Surr)	*84*		*40 - 125*	*03/25/15 05:55*	*04/08/15 12:13*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 21:55	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	**1.2**		0.15	0.051	0.032	ug/L		04/08/15 04:58	1
1,3-Dinitrobenzene	**0.065**	**J**	0.15	0.10	0.051	ug/L		04/08/15 04:58	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 04:58	1
2,4-Dinitrotoluene	**0.42**		0.13	0.10	0.051	ug/L		04/08/15 04:58	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 04:58	1
2-Amino-4,6-dinitrotoluene	**0.54**	**M**	0.15	0.10	0.015	ug/L		04/08/15 04:58	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 04:58	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/08/15 04:58	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 04:58	1
4-Amino-2,6-dinitrotoluene	**0.54**	**M**	0.15	0.10	0.051	ug/L		04/08/15 04:58	1
HMX	**0.074**	**J M**	0.15	0.051	0.037	ug/L		04/08/15 04:58	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 04:58	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 04:58	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 04:58	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		04/08/15 04:58	1
PETN	0.51	U	0.67	0.51	0.31	ug/L		04/08/15 04:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*88*	*M*	*79 - 111*	*03/27/15 08:36*	*04/08/15 04:58*	*1*
3,4-Dinitrotoluene	*88*	*M*	*79 - 111*	*03/27/15 08:36*	*04/09/15 14:09*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:33	1

Client Sample ID: FWGLL2MW-059C-0526-GF
Lab Sample ID: 240-48567-13

Date Collected: 03/24/15 10:21
Matrix: Water

Date Received: 03/24/15 17:47

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/26/15 08:57	1
Chromium	**1.1**	**J**	7.0	4.0	0.55	ug/L		03/26/15 08:57	1
Cobalt	**1.1**	**J**	7.0	4.0	0.56	ug/L		03/26/15 08:57	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/26/15 08:57	1
Selenium	10	U	15	10	4.0	ug/L		03/26/15 08:57	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/26/15 08:57	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/26/15 08:57	1
Barium	**8.4**	**J**	200	5.0	1.0	ug/L		03/26/15 08:57	1
Calcium	**27000**		5000	1000	260	ug/L		03/26/15 08:57	1
Copper	10	U	25	10	1.9	ug/L		03/26/15 08:57	1
Magnesium	**11000**		5000	300	55	ug/L		03/26/15 08:57	1
Manganese	**33**		15	5.0	0.46	ug/L		03/26/15 08:57	1
Nickel	**3.6**	**J**	40	5.0	0.76	ug/L		03/26/15 08:57	1
Potassium	**740**	**J**	5000	900	70	ug/L		03/26/15 08:57	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 13:28	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 13:28	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 13:28	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 13:28	1
Iron	**110**	**J**	150	100	44	ug/L		04/06/15 13:28	1
Sodium	**3400**		1000	400	160	ug/L		04/06/15 13:28	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 13:28	1
Zinc	50	U	50	50	27	ug/L		04/06/15 13:28	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:11	1

Client Sample ID: FWGLL2MW-060C-0527-GW — **Lab Sample ID: 240-48567-14**

Date Collected: 03/24/15 12:11 — Matrix: Water

Date Received: 03/24/15 17:47

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 12:39	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		04/08/15 12:39	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		04/08/15 12:39	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		04/08/15 12:39	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 12:39	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		04/08/15 12:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*81*		*50 - 110*	*03/25/15 05:55*	*04/08/15 12:39*	*1*
2-Fluorophenol (Surr)	*79*		*20 - 110*	*03/25/15 05:55*	*04/08/15 12:39*	*1*
Nitrobenzene-d5 (Surr)	*77*		*40 - 110*	*03/25/15 05:55*	*04/08/15 12:39*	*1*
Phenol-d5 (Surr)	*77*		*10 - 115*	*03/25/15 05:55*	*04/08/15 12:39*	*1*
Terphenyl-d14 (Surr)	*88*		*50 - 135*	*03/25/15 05:55*	*04/08/15 12:39*	*1*
2,4,6-Tribromophenol (Surr)	*76*		*40 - 125*	*03/25/15 05:55*	*04/08/15 12:39*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 22:13	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		04/08/15 06:25	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 06:25	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 06:25	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 06:25	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 06:25	1
2-Amino-4,6-dinitrotoluene	**0.15**	**M**	0.15	0.10	0.015	ug/L		04/08/15 06:25	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 06:25	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/08/15 06:25	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 06:25	1
4-Amino-2,6-dinitrotoluene	**0.13**	**J M**	0.15	0.10	0.051	ug/L		04/08/15 06:25	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 06:25	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 06:25	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 06:25	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 06:25	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		04/08/15 06:25	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		04/08/15 06:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*	*M*	*79 - 111*	*03/27/15 08:36*	*04/08/15 06:25*	*1*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/27/15 08:36*	*04/09/15 15:16*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:35	1

Client Sample Results

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48567-1

Client Sample ID: FWGLL2MW-060C-0527-GF
Date Collected: 03/24/15 12:11
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-15
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/26/15 09:01	1
Chromium	**0.69**	**J**	7.0	4.0	0.55	ug/L		03/26/15 09:01	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/26/15 09:01	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/26/15 09:01	1
Selenium	10	U	15	10	4.0	ug/L		03/26/15 09:01	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/26/15 09:01	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/26/15 09:01	1
Barium	**29**	**J**	200	5.0	1.0	ug/L		03/26/15 09:01	1
Calcium	**59000**		5000	1000	260	ug/L		03/26/15 09:01	1
Copper	10	U	25	10	1.9	ug/L		03/26/15 09:01	1
Magnesium	**7900**		5000	300	55	ug/L		03/26/15 09:01	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/26/15 09:01	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/26/15 09:01	1
Potassium	**440**	**J**	5000	900	70	ug/L		03/26/15 09:01	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 13:32	1
Antimony	**0.33**	**J**	2.0	1.0	0.33	ug/L		04/06/15 13:32	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 13:32	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 13:32	1
Iron	100	U	150	100	44	ug/L		04/06/15 13:32	1
Sodium	**2400**		1000	400	160	ug/L		04/06/15 13:32	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 13:32	1
Zinc	50	U	50	50	27	ug/L		04/06/15 13:32	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:13	1

Client Sample ID: FWGLL1MW-088-0525-GW — **Lab Sample ID: 240-48567-16**

Date Collected: 03/24/15 11:19 — Matrix: Water

Date Received: 03/24/15 17:47

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 13:04	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		04/08/15 13:04	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		04/08/15 13:04	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		04/08/15 13:04	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 13:04	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		04/08/15 13:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*50 - 110*	*03/25/15 05:55*	*04/08/15 13:04*	*1*
2-Fluorophenol (Surr)	*74*		*20 - 110*	*03/25/15 05:55*	*04/08/15 13:04*	*1*
Nitrobenzene-d5 (Surr)	*70*		*40 - 110*	*03/25/15 05:55*	*04/08/15 13:04*	*1*
Phenol-d5 (Surr)	*77*		*10 - 115*	*03/25/15 05:55*	*04/08/15 13:04*	*1*
Terphenyl-d14 (Surr)	*76*		*50 - 135*	*03/25/15 05:55*	*04/08/15 13:04*	*1*
2,4,6-Tribromophenol (Surr)	*67*		*40 - 125*	*03/25/15 05:55*	*04/08/15 13:04*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.048	U	0.048	0.048	0.017	ug/L		03/29/15 19:55	1
4,4'-DDE	0.048	U	0.048	0.048	0.011	ug/L		03/29/15 19:55	1
4,4'-DDT	0.048	U	0.048	0.048	0.016	ug/L		03/30/15 18:18	1
Aldrin	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:55	1
alpha-BHC	0.048	U	0.048	0.048	0.013	ug/L		03/29/15 19:55	1
alpha-Chlordane	0.048	U	0.048	0.048	0.011	ug/L		03/29/15 19:55	1
beta-BHC	0.048	U	0.048	0.048	0.017	ug/L		03/29/15 19:55	1
delta-BHC	0.048	U	0.048	0.048	0.028	ug/L		03/29/15 19:55	1
Dieldrin	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:55	1
Endosulfan I	0.048	U	0.048	0.048	0.015	ug/L		03/29/15 19:55	1
Endosulfan II	0.048	U	0.048	0.048	0.014	ug/L		03/29/15 19:55	1
Endosulfan sulfate	0.048	U	0.048	0.048	0.014	ug/L		03/29/15 19:55	1
Endrin	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:55	1
Endrin aldehyde	0.048	U	0.048	0.048	0.017	ug/L		03/29/15 19:55	1
Endrin ketone	0.048	U	0.048	0.048	0.015	ug/L		03/29/15 19:55	1
gamma-BHC (Lindane)	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:55	1
gamma-Chlordane	0.048	U	0.048	0.048	0.012	ug/L		03/29/15 19:55	1
Heptachlor	0.048	U	0.048	0.048	0.013	ug/L		03/29/15 19:55	1
Heptachlor epoxide	0.048	U	0.048	0.048	0.014	ug/L		03/29/15 19:55	1
Methoxychlor	0.048	U	0.095	0.048	0.012	ug/L		03/30/15 18:18	1
Toxaphene	1.9	U	1.9	1.9	0.19	ug/L		03/29/15 19:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*46*		*30 - 135*	*03/25/15 05:58*	*03/29/15 19:55*	*1*
DCB Decachlorobiphenyl	*43*		*30 - 135*	*03/25/15 05:58*	*03/29/15 19:55*	*1*
DCB Decachlorobiphenyl	*49*	*Q*	*30 - 135*	*03/25/15 05:58*	*03/30/15 18:18*	*1*
DCB Decachlorobiphenyl	*46*		*30 - 135*	*03/25/15 05:58*	*03/30/15 18:18*	*1*
Tetrachloro-m-xylene	*73*		*25 - 140*	*03/25/15 05:58*	*03/29/15 19:55*	*1*
Tetrachloro-m-xylene	*68*		*25 - 140*	*03/25/15 05:58*	*03/29/15 19:55*	*1*
Tetrachloro-m-xylene	*78*		*25 - 140*	*03/25/15 05:58*	*03/30/15 18:18*	*1*
Tetrachloro-m-xylene	*73*		*25 - 140*	*03/25/15 05:58*	*03/30/15 18:18*	*1*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48567-1

Client Sample ID: FWGLL1MW-088-0525-GW
Date Collected: 03/24/15 11:19
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-16
Matrix: Water

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 22:31	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		04/08/15 07:09	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 07:09	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 07:09	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 07:09	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 07:09	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/08/15 07:09	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 07:09	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/08/15 07:09	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 07:09	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 07:09	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 07:09	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 07:09	1
Nitrobenzene	0.10	U M	0.15	0.10	0.051	ug/L		04/08/15 07:09	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 07:09	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		04/08/15 07:09	1
PETN	0.51	U M	0.67	0.51	0.31	ug/L		04/08/15 07:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/27/15 08:36*	*04/08/15 07:09*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:45	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48567-1

Client Sample ID: FWGLL1MW-088-0525-GF
Date Collected: 03/24/15 11:19
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-17
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**22**		10	10	2.9	ug/L		03/26/15 09:06	1
Chromium	**1.1**	J	7.0	4.0	0.55	ug/L		03/26/15 09:06	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/26/15 09:06	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/26/15 09:06	1
Selenium	10	U	15	10	4.0	ug/L		03/26/15 09:06	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/26/15 09:06	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/26/15 09:06	1
Barium	**43**	J	200	5.0	1.0	ug/L		03/26/15 09:06	1
Calcium	**81000**		5000	1000	260	ug/L		03/26/15 09:06	1
Copper	**2.0**	J	25	10	1.9	ug/L		03/26/15 09:06	1
Magnesium	**39000**		5000	300	55	ug/L		03/26/15 09:06	1
Manganese	**51**		15	5.0	0.46	ug/L		03/26/15 09:06	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/26/15 09:06	1
Potassium	**4100**	J	5000	900	70	ug/L		03/26/15 09:06	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 13:36	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 13:36	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 13:36	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 13:36	1
Iron	**570**		150	100	44	ug/L		04/06/15 13:36	1
Sodium	**26000**	D	5000	2000	810	ug/L		04/07/15 15:44	5
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 13:36	1
Zinc	50	U	50	50	27	ug/L		04/06/15 13:36	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:15	1

Client Sample ID: FWGFWGMW-012-0516-GW — **Lab Sample ID: 240-48567-18**

Date Collected: 03/24/15 14:38
Date Received: 03/24/15 17:47

Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 13:29	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		04/08/15 13:29	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		04/08/15 13:29	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		04/08/15 13:29	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		04/08/15 13:29	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		04/08/15 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*78*		*50 - 110*	*03/25/15 05:55*	*04/08/15 13:29*	*1*
2-Fluorophenol (Surr)	*74*		*20 - 110*	*03/25/15 05:55*	*04/08/15 13:29*	*1*
Nitrobenzene-d5 (Surr)	*73*		*40 - 110*	*03/25/15 05:55*	*04/08/15 13:29*	*1*
Phenol-d5 (Surr)	*74*		*10 - 115*	*03/25/15 05:55*	*04/08/15 13:29*	*1*
Terphenyl-d14 (Surr)	*84*		*50 - 135*	*03/25/15 05:55*	*04/08/15 13:29*	*1*
2,4,6-Tribromophenol (Surr)	*71*		*40 - 125*	*03/25/15 05:55*	*04/08/15 13:29*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 22:49	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		04/08/15 07:52	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 07:52	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 07:52	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 07:52	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 07:52	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/08/15 07:52	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/08/15 07:52	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/08/15 07:52	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/08/15 07:52	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 07:52	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 07:52	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 07:52	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 07:52	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 07:52	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		04/08/15 07:52	1
PETN	0.51	U M	0.66	0.51	0.30	ug/L		04/08/15 07:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*91*		*79 - 111*	*03/27/15 08:36*	*04/08/15 07:52*	*1*
3,4-Dinitrotoluene	*92*		*79 - 111*	*03/27/15 08:36*	*04/09/15 16:23*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:47	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48567-1

Client Sample ID: FWGFWGMW-012-0516-GF
Date Collected: 03/24/15 14:38
Date Received: 03/24/15 17:47

Lab Sample ID: 240-48567-19
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**3.3**	**J**	10	10	2.9	ug/L		03/26/15 09:10	1
Chromium	**0.99**	**J**	7.0	4.0	0.55	ug/L		03/26/15 09:10	1
Cobalt	**0.96**	**J**	7.0	4.0	0.56	ug/L		03/26/15 09:10	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/26/15 09:10	1
Selenium	10	U	15	10	4.0	ug/L		03/26/15 09:10	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/26/15 09:10	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/26/15 09:10	1
Barium	**21**	**J**	200	5.0	1.0	ug/L		03/26/15 09:10	1
Calcium	**22000**		5000	1000	260	ug/L		03/26/15 09:10	1
Copper	10	U	25	10	1.9	ug/L		03/26/15 09:10	1
Magnesium	**5200**		5000	300	55	ug/L		03/26/15 09:10	1
Manganese	**97**		15	5.0	0.46	ug/L		03/26/15 09:10	1
Nickel	**1.1**	**J**	40	5.0	0.76	ug/L		03/26/15 09:10	1
Potassium	**3400**	**J**	5000	900	70	ug/L		03/26/15 09:10	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		04/06/15 13:40	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		04/06/15 13:40	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		04/06/15 13:40	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		04/06/15 13:40	1
Iron	**2300**		150	100	44	ug/L		04/06/15 13:40	1
Sodium	**7000**		1000	400	160	ug/L		04/06/15 13:40	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		04/06/15 13:40	1
Zinc	50	U	50	50	27	ug/L		04/06/15 13:40	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:16	1

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 7, 2015

SDG: 240-48567
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3. Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP addendum-specified target analytes reported?	X				QAPP Table 4-5
6. Was the GC/MS system tuned with bromofluorobenzene (BFB) during each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A3UX17–3/17/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) met?	X				QSM Table F-4
7d. Did target analytes with an average calibration type have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X			Bromomethane, chloroethane, acetone, methylene chloride and hexachlorobutadiene used a linear fit.	QSM Table F-4 R<0.995=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X				QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte with detected results?	X				QSM Table F-4 and section D.1.2.1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 7, 2015

SDG: 240-48567
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
9. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours?	X			3/27/15 @ 1215, 1705	
10. Were the QC/MRL recoveries 70-130%		X		The opening MRL analyzed 3/27/15 at 1215 recovered above control limits of 70-130% for chloromethane at 140% and at 153% for methylene chloride. The closing MRL analyzed 3/27/15 at 1705 recovered above control limits of 70-130% for chloromethane at 163%, methylene chloride at 153% and vinyl chloride at 135%. The methylene chloride result for sample FWGTEAM2-TRIPBLANK was qualified, "J". No qualifications were made for the chloromethane or vinyl chloride outliers as there were no detected vinyl chloride or chloromethane concentrations reported for the associated field samples.	LS
11. Was a second source verification (ICV) analyzed? Did all target analytes have a recovery of 80-120%?	X			3/17/15 @ 1216	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/27/15 @ 1107	QSM Table F-4
12a. Were the average response factors (RFs) for the (SPCCs) (see Table 2 below) met?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 7, 2015

SDG: 240-48567
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
15a. Were target analytes detected in the method blank?	X			Checked by ADR. Methylene chloride was detected in the method blank at 0.472 µg/L. Sample FWGTEAM2-TRIPBLANK was qualified, "B" as the reported methylene chloride detection was less than ten times method blank contamination.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE7-0569-GW and FWGTEAM2-TRIP BLANK	
16a. Were target analytes detected in the field blanks?	X			Checked by ADR. Methylene chloride was detected in FWGTEAM2-TRIPBLANK at 0.87 µg/L. There were no detected concentrations of methylene chloride reported for the associated field samples, so no qualifications were made for the trip blank contamination.	QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-5 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-5, J/UJ
18. Was a MS/MSD prepared with each batch?		X		A matrix spike and spike duplicate was not requested nor was volume provided for analysis of a matrix spike.	QSM Table F-4
18a. Were the MS/MSD recoveries within limits specified in Table G-4 of the DoD QSM with an RPD <30%?			X		QSM Table F-4, Table G-5 J/UJ Parent sample only
19. Was a field duplicate analyzed?		X		A field duplicate was not submitted with this set of samples.	QSM Table F-4,
19a. Were the field duplicates RPDs within ±30%?			X		QSM Table F-4, RPD >30=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% -50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 7, 2015

SDG: 240-48567
Analysis: SW846 8260B

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Table1- CCCs

Analyte
1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

Table 2- SPCCs

Analyte	Minimum RF
Chloromethane	0.10
1,1-Dichlorethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 7, 2015

SDG: 240-48567
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3.Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-6
6. Was the GC/MS system tuned each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Initial Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A4HP9–3/25/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) ≤0.050?	X				QSM Table F-4
7d. Were all other target analytes reported with an avg response have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X				QSM Table F-4 R<0.99=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X			Benzoic acid, 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, pentachlorophenol and benzidine used a linear fit	QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte?	X				QSM Table F-4 and section D.1.2.1
9 Was a breakdown check run at the beginning of every 12 hours with DDT degradation <20% and tailing factors of benzidine and pentachlorophenol ≤2?	X				QSM Table F-4 R
10. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours with recoveries within 70-130%?		X		4/8/15 @ 0838, 1354 The closing MRL analyzed at 1354 on 4/8/15 recovered below control limits of 70-130% at 61%. The 2,4-dinitrophenol results for samples	Louisville Supplement to the DOD QSM

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 7, 2015

SDG: 240-48567
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				FWGDETmw-004c-0511-GW, FWGDETmw-003c-0510-GW and FWGEQUIPRINSE7-0569-GW were qualified as estimated, "UJ".	
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			3/25/15 @1815	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			4/8/15 @0813	QSM Table F-4
12a. Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) ≥0.050?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?		X		Benzo (g,h,i) perylene outside control limits of 20% D at 21.2%. No qualification of the data was required as there were no detected concentrations of benzo (g,h,i) perylene reported for the associated field samples.	QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank >1/2 the MRL, >RL for common contaminants?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE7-0569-GW	
16a. Were target analytes detected in the field blank?		X			QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 7, 2015

SDG: 240-48567
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
17a. Were the LCS recoveries within limits specified in Table G-6 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-6, J/UJ
18. Was a MS/MSD prepared with each batch?			X	A matrix spike or spike duplicate was not requested on a sample from this workorder.	
18a. Were the MS/MSD recoveries within limits specified in Table G-6 of the DoD QSM with an RPD <30%?			X	Checked by ADR	QSM Table F-4, Table G-6 J/UJ Parent sample only
19. Was a field duplicate analyzed?	X			FWGDA2-mw-115-0509-GW was the parent	
19a. Were the field duplicates RPDs within ±50%?			X	No detected sample results were reported.	QSM Table F-4, RPD >50=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% - 50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Additional Comments:

Table 1: CCCs *(All analytes if CCCs not included in standard)*

Base / Neutral Compounds	Acid Compounds
Acenaphthalene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
N-Nitrosodiphehylamine	Phenol
Di-n-octylphthalate	Pentachlorophenol
Fluoroanthene	2,4,6-Trichlorophenol
Benzo(a)pyrene	

Table 2: SPCCs -

N-Nitroso-di-n-propylamine	0.05
Hexachlorocyclopentadiene	0.05
2,4-Dinitrophenol	0.05
4-Nitrophenol	0.05

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 7, 2015

SDG: 240-48567
Analysis: SW846 8270

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta / May 8, 2015

SDG: 240-48567
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X			Checked by ADR.	QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a DDT standard analyzed every 12 hours? Was the DDT %breakdown <15%?	X				QSM Table F-2 >15%=J/R
7. Was an endrin standard analyzed every 12 hours? Was the endrin % breakdown <15%?	X				QSM Table F-2 >15%=J/R
8. Initial Calibration					
8a. Does the initial calibration curve consist of 5 concentration levels?	X			A2HP15 on 3/4/15(tox), 3/10/15	QSM Table F-2 R
8a. Were the %RSDs for each analyte ≤ 20%? OR was the average %RSD ≥20% with the r^2 >0.990?	X				QSM Table F-2 RSD>20% or r<0.99=J/R
9. Was a LOD Level Verification performed once per quarter with all target analytes detected?	X				QSM Table F-2 R
10. Was a MRL Verification performed at the beginning and end of the sequence or every 12 hours with results within limits of 70-130%?	X			3/29/15 @ 1701, 1722, 2016, 2038 3/30/15 @ 1523, 1545,1840, 1901- 4,4-DDT and methoxychlor only 3/31/15 @ 1329, 1350, 1539, 1601	QSM Table F-2, G-14 >UL=J; <LL=J/UJ/R
11. Was a second source (ICV) verification analyzed after the ICAL? Were results 80-120%?	X			3/4/15 @1443 (Tox), 3/10/15 @ 1724	QSM Table F-2 >120%=J;<80%=J/UJ
12. Was a CCV run every 12 hours or at the beginning and end of the analytical run with the %D for all target analytes ≤20%?		X		3/29/15 @ 1555, 1631, 2100, 2122 3/30/15 @ 1440, 1502, 1923, 2007- 4,4-DDT and methoxychlor only 3/31/15 @ 1245, 1307, 1623, 1707 The CCV analyzed 3/31/15 at 1307 had a %D above 20% for dieldrin at 21.3%, endrin at 26.2%, 4,4,-DDD at 23.2%, endosulfan II at 29.2% and endrin ketone at 22.9%. The CCV analyzed 3/31/15 at 1707 had a %D above 20% for endrin at 22.8%, endosulfan II at 28.3% and endrin ketone at 22.1%. No qualification of the data was required as there were no detected concentrations reported for the bracketed field sample, FWGEQUIPRINSE7-0569-GW.	QSM Table F-2 >120%=J; <80%=J/UJ
13. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-2
14. Were target analytes detected?		X		Checked by ADR.	QSM Table F-2, <5x=B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta / May 8, 2015

SDG: 240-48567
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
15. Was a field blank collected and analyzed?	X				
16. Were target analytes detected in the field blank analyses?		X			QSM Table F-2 <5x=B
17. Was an LCS prepared and analyzed with each batch?	X				QSM Table F-2
18. Were the LCS recoveries within limits specified in QSM Table G-14?	X			Checked by ADR.	QSM Table G-14 >UL=J; <LL=J/UJ/R
19. Was a MS/MSD pair prepared with each batch?		X		Matrix spike analysis was not requested on a sample from this sample set.	QSM Table F-2
20. Was the MS/MSD parent a Ravenna sample?			X		
21. Were MS/MSD recoveries and RPD within limits specified in QSM Table G-14?			X		QSM Table F-2 Pj with >UL=J; <LL=J/UJ/R
22. Were surrogate recoveries as specified in QSM table G-3?	X			Checked by ADR.	QSM Table F-2 >LL=J; <LL=UJ/J/R
23. Was a field duplicate analyzed? Were the RPDs ≤50%?			X	Checked by ADR. A field duplicate was not submitted with this set of samples.	RPD >50=J parent sample only
24. Were all positive results verified by a second column confirmation? Were the RPD's ≤ 40 for results greater than the LOQ?			X	No detected results were reported that required confirmation.	QSM Table F-2 >40 RPD=J

References:

DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48567
Analysis: SW846 8082

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Calibration					
6a. Does the initial calibration curve consist of 5 concentration levels of Aroclors 1016 and 1260?	X			Instrument A2HP10 3/2/15 Stds = 0.05, 0.1, 0.2, 0.5, 1.0, 2.0	QSM Table F-2 R
6b. Was the % RSD ≤ 20%? or Were the r^2s >0.990?	X				QSM Table F-2 RSD>20% or r<0.99= J/R
7. Was a LOD Verification performed once per quarter? Were all target analytes detected?	X				QSM Table F-2 R
8. Was an MRL Level Verification performed at the beginning and end of the sequence or every 12 hours? Were recoveries 70-130%?	X			3/27/15 @ 0001, 0204	LCG Table 3 >UCL=J; <LCL=J/UJ/R;
9. Was a second source (ICV) verification performed after the ICAL? Were the avg of all peaks for each aroclor 80-120%?	X			3/2/15	QSM Table F-2 >120%=J; <80%=J/ UJ/R
10. Were single standards of the other five Aroclors run to aid in pattern recognition and to determine a single point calibration factor?		X		All aroclors had a multi-point calibration.	Method 8082 Section 5.6.2
11. Was a CCV run every 12 hours?	X			3/26/15 @ 2345, 3/27/15 @ 0149	QSM Table F-2
12. Was the % D ≤ 20 % for each analyte?	X				QSM Table F-2 D>20%(neg)=J/R D>20% (pos) =J
13. Was a method blank prepared and analyzed with each batch?	X			Section checked by ADR.	QSM Table F-2

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48567
Analysis: SW846 8082

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
14. Were target analytes <1/2 the MRL?	X				QSM Table F-2 <5x = B
15. Was an equipment blank collected and analyzed?	X				
16. Were target analytes in the field blank analyses (equipment) <1/2 the MRL?	X			Section checked by ADR.	QSM Table F-2 <5x = B
17. Was an LCS prepared and analyzed with each batch?	X				QSM Table F-2
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Section checked by ADR.	QSM Table F-2, Table G-16, >UL=J; <LCL%=J/R/UJ;
19. Was a MS/MSD pair prepared with each batch?	X			A matrix spike was not requested or sample volume provided.	LCG Table 3
20. Was the MS/MSD parent a Ravenna sample?	X				
21. Were MS/MSD recoveries and RPD within limits specified in the DOD QSM Table G-16?	X				QSM Table F-2, Table G-16, >UL=J; <LCL%=J/R/UJ;
22. Was the surrogate spiked into all samples?	X				
23. Were surrogate recoveries As specified in table G-3 of the DoD QSM?	X			Checked by ADR.	QSM Table F-2, Table G-3 >UCL=J; <LCL=J/UJ/R
24. Was a field duplicate analyzed? Were the RPDs <50%?	X			Checked by ADR. A field duplicate was not submitted with this sample set.	QSM Table F-2, RPD >50=J
25. Were all positive results verified by a second dissimilar column confirmation? Was the RPD ≤ 40?			X	No detected concentrations were reported that required confirmation.	QSM Table F-2, RPD>40=J

References:

DoD Quality Systems Manual (QSM), version 4.1, October 2010

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48567
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was a LOD Verification performed once per quarter with all target analytes detected?	X				DoD QSM Table F-8
7. Tuning (ICP-MS Only)					
7a. Was a tune performed daily prior to calibration	X				DoD QSM Table F-8 R
7b. Mass Calibration <0.1 amu from true value	X				
7c. Resolution <0.9 amu full width at 10 % peak height	X				
7d. RSD <%5 for a minimum of four replicate analyses	X				
8.Calibration	X				
8a. Was the ICAL performed daily with at least	X			ICP (3/26/15), Hg (3/26/15) and ICPMS- (4/6-4/7/15)	DoD QSM Tables F-8 and F-7
1high standard and a blank for ICP & ICPMS	X				
5 standards and a blank for Hg	X				
8b. Was the correlation coefficient r≥0.995 for Hg?	X				DoD QSM Tables F-8 and F-7 r<0.995=J/R
8c. Was the ICV (second source verification) analyzed after the ICAL with results 90-110% of the true value?	X				DoD QSM Tables F-8 and F-7
8d. Was the ICB analyzed after the ICV with detected results <1/2 the MRL?	X			ICP-The ICB analyzed 3/26/15@ 0612 had chromium detected at 0.627 µg/L and nickel detected at 0.897 µg/L. The chromium results for samples FWGDETmw-004c-0511-GF, FWGDETmw-003c-0510-GF, FWGDA2mw-115-0509-GF, FWGDA2mw-DUP1-0557-GF, FWGLL2mw-059c-0526-GF, FWGLL2mw-060c-0527-GF, FWGLL1mw-088-0525-GF and FWGFWGmw-012-0516-GF and the nickel results for samples FWGDETmw-004c-0511-GF, FWGDA2mw-115-0509-GF, FWGLL2mw-059c-0526-GF and FWGFWGmw-012-0516-GF were qualified, "U" as the reported nickel and chromium concentrations were less than 5x contamination. ICPMS- The ICB analyzed 4/6/15 at 1117 had antimony detected at 0.611 µg/L and iron detected at 16µg/L. The	DoD QSM, Tables F-8 and F-7 < 5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48567
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				antimony result for sample FWGLL2mw-060c-0527-GF was qualified, "U" as the reported concentration was less than 5x contamination. No qualification of the data was required for the iron contamination, as there were no detected iron results reported for the associated samples less than five times blank contamination.	
Sample Analysis					
9. Was a MRL Level Verification performed at the beginning of the daily sequence and end of the analytical sequence bracketing samples? Were results 70-130%?	X				LS, DoD QSM Table G-18, >130%=J; 70-80%=J/UJ; <70%=J/UJ <65%=R, unless DL check with detected results
10. Were CCVs analyzed every 10 samples and at the end of the analytical sequence with results 90-110% of the true value?	X				DoD QSM, Tables F-8 and F-7 >110%=J, <85%=J/R 90-85%=J/UJ;
11. Were the CCBs run every 10 samples and at the end of the analytical sequence? Were results <1/2 the MRL?	X			ICP ICP-The CCBs analyzed 3/26/15 had chromium detected from 2.16 µg/L to 3.10 µg/L, nickel from 1.02 µg/L to 1.21 µg/L, potassium from 108 µg/L to 112 µg/L and vanadium at 2.93 µg/L, . The chromium results for samples FWGDETmw-004c-0511-GF, FWGDETmw-003c-0510-GF, FWGDA2mw-115-0509-GF, FWGDA2mw-DUP1-0557-GF, FWGLL2mw-059c-0526-GF, FWGLL2mw-060c-0527-GF, FWGLL1mw-088-0525-GF and FWGFWGmw-012-0516-GF, the nickel results for samples FWGDETmw-004c-0511-GF, FWGDA2mw-115-0509-GF, FWGLL2mw-059c-0526-GF and FWGFWGmw-012-0516-GF, the potassium result for sample FWGLL2mw-060c-0527-GF were qualified, "U" as the reported nickel, potassium and chromium concentrations were less than 5x contamination. No qualification was required for the vanadium contamination as there were no detected vanadium concentrations reported for the bracketed field samples. ICPMS The CCBs analyzed 4/6/15 had antimony detected from 0.225 µg/L to 0.301 µg/L, iron at 16.7 µg/L and cadmium at 0.079 µg/L . The antimony result for sample FWGLL2mw-060c-	DoD QSM Tables F-8 and F-7 <5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48567
Analysis: SW846 6010/6020/7470A

Review Questions	Yes	No	N/A	Comments	Qual/Criteria
				0527-GF was qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or iron contamination, as there were no detected cadmium or iron results reported for the associated samples less than five times blank contamination.	
12. Was an Interelement Check Standard run at the beginning of the analytical sequence and every 12 hours with the ICS recovery within 80 to 120% of true value for each element of interest (ICP and ICPMS only)?	X				DoD QSM Tables F-8 and F-7 >120%=J; 50-79%=J/UJ; <50%=Pj/R
13. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
14. Were target analytes detected in the method blank?		X		Checked by ADR.	DoD QSM Tables F-8 and F-7, <5x = B
15. Was a field blank collected and analyzed?	X			FWGEQUIPRINSE7-0569-GW	
16. Were target analytes reported in the field blank analyses?		X		ADR checked section.	DoD QSM Tables F-8 and F-7
17. Was a LCS prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7>120%=J; 70-79%=J/UJ; <70%=J/R
19. Was a matrix spike (MS) and lab duplicate sample prepared with each batch?	X				DoD QSM Tables F-8 and F-7
20. Was the MS and Lab Duplicate parent a Ravenna sample?	X			A matrix spike analysis and laboratory duplicate analysis was performed on sample FWGDETmw-004C-0511-GF.	
21. Were the MS recoveries within 80-120%?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7, >120%=J;70-79%=J/UJ; <70%=J/R, All samples in batch
22. Was the lab sample duplicate RPD ≤ 20%, for sample results detected above the LOQ?		X		ICP-The laboratory duplicate analyzed on sample FWGDETmw-004C-0511-GF had an RPD above control limits of 20% for nickel at 26% and chromium at 25%. No qualification of the data was required as the detected nickel and chromium concentration for sample FWGDETmw-004C-	DoD QSM Tables F-8 and F-7 >20% = J, All samples in batch

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48567
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				0511-GF were less than the LOQ.	
23. Was a serial dilution performed, with the fivefold dilution within ± 10% of the original result?	X				DoD QSM, Tables F-8 and F-7 >20% = J. Only evaluate results above the LOQ . Qualify all samples in batch
24. Was a Post Digestion Spike analyzed as needed? Were results within 75-125%?	X				LCG Table 7, >125%=J; 30-75%=J/UJ; <30%=R
25. Was a field duplicate analyzed? Were the RPDs ± 50% for sample results detected above the LOQ?	X				>30% = J. Qualify parent sample only and only evaluate results above the LOQ
26. Were internal standards added to all ICPMS samples with intensity within 30-120% of the intensity of the ICAL internal standard?	X				DoD QSM Table F-8. >120%=J/R, <20%=J

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 11, 2015

SDG: 240-48567
Analysis: SW846 9012A

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Does the initial calibration curve consist of at least 6 standards and one blank, with the correlation coefficient $R \geq 0.995$?	X			4/1/15, 4/3/15	*DoD QSM Table F-10* R
7. Were a high and low standard distilled and analyzed with results within $\pm$ 15%?	X				*DoD QSM Table F-10* R
8. Was an LOD Verification performed at least once per quarter with all target analytes detected?	X				LCG Table 10 R
9. Was a MRL Level Verification performed at the beginning and end of the daily sequence? Were results within 70-130%?	X				LCG Table 10, LS >130%=J; 65-70%=J/UJ; <65%=J/R
10. Was a second source verification (ICV) analyzed after the ICAL and all analytes 85-115%?	X				*DoD QSM Table F-10* >115%=J; 80-85%=J/UJ; <80%=J/R
11. Was a method blank prepared and analyzed with each batch?	X				*DoD QSM Table F-10*
12. Were target analytes detected in the method blank?		X		Checked by ADR.	*DoD QSM Table F-10* <5x=B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes in the field blank analyses?		X			*DoD QSM Table F-10* <5x=B
15. Was a field duplicate analyzed? Were the RPDs $\leq$20%?		X		Checked by ADR. A field duplicate was not submitted with this sample set.	>30% = J
16. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-10

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 11, 2015

SDG: 240-48567
Analysis: SW846 9012A

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
17. Were the LCS recoveries 80-118%?	X			Checked by ADR.	*DoD QSM Table F-10* Lab Limits >118%=J; 50-79%=J/UJ; <50%=R
18. Was a MS and duplicate (sample or matrix) prepared once per every 10 samples?	X				DoD QSM Table F-10
19. Was the MS parent a Ravenna sample?			X	A matrix spike specific to RVAAP was not requested.	
20. Were matrix spike recoveries 42-140%?	X				DoD QSM Table F-10 >140%=J; <42%=J/UJ/R

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011
Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 7, 2015

SDG: 240-48567
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			LC10 3/11/15 LC9 1/23/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for non-linear).	X			LC10-4-nitrotoluene used a linear fit LC9-3-nitrotoluene and RDX used a linear fit	
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			LC10 on 3/11 at 2136 LC9 1/23/15 at 2328	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			LC10- 4/7/15 @ 2309, 4/8/15 @ 0541 and 1214 LC9-4/9/15 @0156, 1156, 2156	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily? Was the %D< 30%?		X		LC10- 4/7/15 @1553, 4/8/15 @ 1257 LC9-4/8/15 @1343, 2303	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3
12. Were target analytes detected in the method blank?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 7, 2015

SDG: 240-48567
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
15. Was a field duplicate analyzed? Were the RPDs ≤30%?	X			Checked by ADR.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?	X				DoD QSM Table F-3 RPD>40%=J Only detected results above the LOQ were evaluated
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within limits specified in table G-12 of the DoD QSM?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J;30-LL=J/UJ; <30%=J/R
19.Was a MS/MSD or MS and sample duplicate prepared with each batch?			X	No data was provided as a matrix spike/spike duplicate was not requested nor was sample volume provided for matrix spike analysis specific to this set of samples.	DoD QSM Table F-3
20. Were MS/MSD recoveries within limits specified in table G-12 of the DoD QSM with an RPD ≤30%?			X		DoD QSM Table F-3 Pj
21. Were surrogate recoveries within laboratory limits (79-111%)?	X				QSM Tables F-2 >UL=J; <LL =J/UJ

References: DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 8, 2015

SDG: 240-48567
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			PDA-1 4/10/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for Quadratic curve).			X		
7d. Did reanalysis of the low level standard after calibration, recover within 15%?	X				
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			4/10/15 @ 1940	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			4/13/15 @1542, 1822. 2120, 4/14/15 @ 0017	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D < 30%?	X			4/13/15 @1525, 1840, 2138, 4/14/15 @ 0035	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 8, 2015

SDG: 240-48567
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
12. Were target analytes detected in the method blank?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B
15. Was a field duplicate analyzed? Were the RPDs ≤30%?	X				RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?			X	No detected concentrations were reported.	DoD QSM Table F-3 RPD>40%=J
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within laboratory limits of 79%-119%?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J; 30-LL=J/UJ; <30%=J/R
19. Was a MS/MSD or MS and sample duplicate prepared with each batch?	X				DoD QSM Table F-3
20. Were MS/MSD recoveries within laboratory limits of 40%-150% with an RPD ≤20%?	X				DoD QSM Table F-3 Pj

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ June 25, 2015

SDG: 240-48606
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Does the initial calibration curve consist of 5 concentration levels with the low standard near but > MDL?	X				SOP Section 10.2 R
7. Was the correlation coefficient >0.995?	X				SOP Section 10.2
8. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D <30%?	X			4/1/15 @ 1545, 1609, 1637, 1657	>30%=J
9. Was a second source verification (ICV) analyzed after the ICAL? Were all analytes 90-110%?	X			4/1/15 @ 1515	>110%=J; 90-85%=J/UJ; <85%=J/R
10. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				STL SOP Section 9.8, LCG ,< 5x = U
11. Was a CCV run every 10 samples and at the end of the analytical run?	X			4/1/15 @ 1547, 1611, 1639, 1659	STL SOP Section 10.4
12. Was the ICV and CCV a mid-level standard from the initial calibration curve?	X				STL SOP Section 10.3.1
13. Were all CCV calibration analytes within 90-110%?	X				>110%=J; 85-90%=J/UJ; <85%=J/R
14. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				QSM, < 5x = U
15. Was a method blank prepared and analyzed with each batch?	X				
16. Were target analytes detected in the method blank?		X		ADR checked section.	LCG, <5x=B
17. Was a field blank collected and analyzed?	X				

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ June 25, 2015

SDG: 240-48606
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
18. Were target analytes detected in the field blank analyses?		X			<5x=B
19. Was a field duplicate analyzed? Were the RPDs ≤30%?	X			ADR checked section.	QAPP Table 3-2 RPD > 30% = J
20. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within lab's in-house limits% (26-144%)?	X				>UL%=J; 50-LL%=J/UJ; <50%=J/R
21. Was a MS/MSD pair prepared with each batch?	X				
22. Was the MS/MSD parent a Ravenna sample?	X			FWGDETmw-004c-0511-GW and FWGDA2mw-115-0509-GW	
23. Were MS/MSD recoveries 26-144% and RPD ≤20?		X		Checked by ADR. The matrix spike and spike duplicate analyzed on FWGDETmw-004C-0511-GW, had an RPD above control limits of 20% at 23%. The nitrocellulose results for samples FWGDETmw-004c-0511-GW, FWGDETmw-003c-0510-GW, FWGDA2mw-DUP1-0557-GW, FWGLL2mw-059c-0526-GW, FWGLL2mw-060c-0527-GW, FWGLL1mw-088-0525-GW, FWGEQUIPRINSE7-0569-GW and FWGFWGmw-012-0516-GW were qualified as estimated, "UJ".	Method EPA 353.2 Section 9.4.2 >UL%=J;<LL%=J/UJ; RPD>20%=J/UJ

References:

SOP SAC-WC-0050 "Preparation and Analysis of Nitrocellulose in Aqueous and Soil/Sediment Samples by Colorimetric Autoanalyzer", Jan 2007, rev. 2.0

DoD Quality Systems Manual (QSM)

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Attachment 2

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48567-1										
6010B	FWGDA2MW-115-0509-GF	AQ	N							
				BARIUM	200	22J		J	ug/L	RI
				CHROMIUM	7.0	0.86J		U	ug/L	Cb
				NICKEL	40	0.90J		U	ug/L	Cb
				POTASSIUM	5000	3500J		J	ug/L	RI
				VANADIUM	7.0	2.5J		J	ug/L	RI
6010B	FWGDA2MW-DUP1-0557-GF	AQ	FD							
				ARSENIC	10	4.5J		J	ug/L	RI
				BARIUM	200	21J		J	ug/L	RI
				CHROMIUM	7.0	0.95J		U	ug/L	Cb
				POTASSIUM	5000	3300J		J	ug/L	RI
6010B	FWGDETMW-003C-0510-GF	AQ	N							
				BARIUM	200	46J		J	ug/L	RI
				CHROMIUM	7.0	0.56J		U	ug/L	Cb
				POTASSIUM	5000	1800J		J	ug/L	RI
6010B	FWGDETMW-004C-0511-GF	AQ	N							
				BARIUM	200	54J		J	ug/L	RI
				CHROMIUM	7.0	1.3J		U	ug/L	Cb
				MANGANESE	15	1.5J		J	ug/L	RI
				NICKEL	40	1.3J		U	ug/L	Cb
				POTASSIUM	5000	1100J		J	ug/L	RI
6010B	FWGFWGMW-012-0516-GF	AQ	N							
				ARSENIC	10	3.3J		J	ug/L	RI
				BARIUM	200	21J		J	ug/L	RI
				CHROMIUM	7.0	0.99J		U	ug/L	Cb
				COBALT	7.0	0.96J		J	ug/L	RI
				NICKEL	40	1.1J		U	ug/L	Cb
				POTASSIUM	5000	3400J		J	ug/L	RI

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48567-1										
6010B	FWGLL1MW-088-0525-GF	AQ	N							
				BARIUM	200	43J		J	ug/L	RI
				CHROMIUM	7.0	1.1J		U	ug/L	Cb
				COPPER	25	2.0J		J	ug/L	RI
				POTASSIUM	5000	4100J		J	ug/L	RI
6010B	FWGLL2MW-059C-0526-GF	AQ	N							
				BARIUM	200	8.4J		J	ug/L	RI
				CHROMIUM	7.0	1.1J		U	ug/L	Cb
				COBALT	7.0	1.1J		J	ug/L	RI
				NICKEL	40	3.6J		U	ug/L	Cb
				POTASSIUM	5000	740J		J	ug/L	RI
6010B	FWGLL2MW-060C-0527-GF	AQ	N							
				BARIUM	200	29J		J	ug/L	RI
				CHROMIUM	7.0	0.69J		U	ug/L	Cb
				POTASSIUM	5000	440J		U	ug/L	Cb
6020	FWGLL2MW-059C-0526-GF	AQ	N							
				IRON	150	110J		J	ug/L	RI
6020	FWGLL2MW-060C-0527-GF	AQ	N							
				ANTIMONY	2.0	0.33J		U	ug/L	Cb
8260B	FWGEQUIPRINSE7-0569-GW	AQ	EB							
				2-BUTANONE	10	0.97J		J	ug/L	RI
				ACETONE	10	6.0J		J	ug/L	RI
8260B	FWGTEAM2-TRIPBLANK	AQ	TB							
				METHYLENE CHLORIDE	1.0	0.87J		JB	ug/L	Mb, ProfJu
8270C-SVOC4	FWGDETMW-003C-0510-GW	AQ	N							
				2,4-DINITROPHENOL	4.8	4.8U		UJ	ug/L	ProfJudg

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48567-1										
8270C-SVOC4	FWGDETMW-004C-0511-GW	AQ	N							
				2,4-DINITROPHENOL	4.8	4.8U		UJ	ug/L	ProfJudg
8270C-SVOC4	FWGEQUIPRINSE7-0569-GW	AQ	EB							
				2,4-DINITROPHENOL	4.8	4.8U		UJ	ug/L	ProfJudg
8330	FWGLL2MW-059C-0526-GW	AQ	N							
				1,3-DINITROBENZENE	0.15	0.065J		J	ug/L	RI
				Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.15	0.074J M		J	ug/L	RI
8330	FWGLL2MW-060C-0527-GW	AQ	N							
				4-AMINO-2,6-DINITROTOLUENE	0.15	0.13J M		J	ug/L	RI
WS-WC-0050	FWGDA2MW-DUP1-0557-GW	AQ	FD							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms
WS-WC-0050	FWGDETMW-003C-0510-GW	AQ	N							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms
WS-WC-0050	FWGDETMW-004C-0511-GW	AQ	N							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms
WS-WC-0050	FWGEQUIPRINSE7-0569-GW	AQ	EB							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms
WS-WC-0050	FWGFWGMW-012-0516-GW	AQ	N							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms
WS-WC-0050	FWGLL1MW-088-0525-GW	AQ	N							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48567-1										
WS-WC-0050	FWGLL2MW-059C-0526-GW	AQ	N	Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms
WS-WC-0050	FWGLL2MW-060C-0527-GW	AQ	N	Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Qualifier Summary

Lab Reporting Batch ID: 240-48567-1 | Laboratory: TA CAN

EDD Filename: 240-48567-1A | eQAPP Name: RVAAP 66-rev August 2014

Method Category: GENCHEM

Method: WS-WC-0050 **Matrix:** AQ

3/24/2015 12:00:00

Sample ID: FWGDA2MW-DUP1-0557-GW *Collected:* PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

3/24/2015 12:17:00

Sample ID: FWGDETMW-003C-0510-GW *Collected:* PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

3/24/2015 9:02:00

Sample ID: FWGDETMW-004C-0511-GW *Collected:* AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

3/24/2015 2:00:00

Sample ID: FWGEQUIPRINSE7-0569-GW *Collected:* PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

3/24/2015 2:38:00

Sample ID: FWGFWGMW-012-0516-GW *Collected:* PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

3/24/2015 11:19:00

Sample ID: FWGLL1MW-088-0525-GW *Collected:* AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

3/24/2015 10:21:00

Sample ID: FWGLL2MW-059C-0526-GW *Collected:* AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48567-1 | Laboratory: TA CAN

EDD Filename: 240-48567-1A | eQAPP Name: RVAAP 66-rev August 2014

Method Category: GENCHEM | **Method:** WS-WC-0050 | **Matrix:** AQ

Sample ID: FWGLL2MW-060C-0527-GW | *Collected:* 3/24/2015 12:11:00 PM | *Analysis Type:* RES/TOT | *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

Method Category: METALS | **Method:** 6010B | **Matrix:** AQ

Sample ID: FWGDA2MW-115-0509-GF | *Collected:* 3/24/2015 10:12:00 AM | *Analysis Type:* RES/TOT | *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	22	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	0.86	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
NICKEL	0.90	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	3500	J	70	MDL	5000	LOQ	ug/L	J	RI
VANADIUM	2.5	J	2.4	MDL	7.0	LOQ	ug/L	J	RI

Sample ID: FWGDA2MW-DUP1-0557-GF | *Collected:* 3/24/2015 12:00:00 PM | *Analysis Type:* RES/TOT | *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	4.5	J	2.9	MDL	10	LOQ	ug/L	J	RI
BARIUM	21	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	0.95	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
POTASSIUM	3300	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGDETMW-003C-0510-GF | *Collected:* 3/24/2015 12:17:00 PM | *Analysis Type:* RES/TOT | *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	46	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	0.56	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
POTASSIUM	1800	J	70	MDL	5000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48567-1 Laboratory: TA CAN

EDD Filename: 240-48567-1A eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS

Method: 6010B **Matrix:** AQ

Sample ID: FWGDETMW-004C-0511-GF *Collected:* 3/23/2015 4:15:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	54	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	1.3	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
MANGANESE	1.5	J	0.46	MDL	15	LOQ	ug/L	J	RI
NICKEL	1.3	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	1100	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGFWGMW-012-0516-GF *Collected:* 3/24/2015 2:38:00 PM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.3	J	2.9	MDL	10	LOQ	ug/L	J	RI
BARIUM	21	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	0.99	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
COBALT	0.96	J	0.56	MDL	7.0	LOQ	ug/L	J	RI
NICKEL	1.1	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	3400	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGLL1MW-088-0525-GF *Collected:* 3/24/2015 11:19:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	43	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	1.1	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
COPPER	2.0	J	1.9	MDL	25	LOQ	ug/L	J	RI
POTASSIUM	4100	J	70	MDL	5000	LOQ	ug/L	J	RI

Sample ID: FWGLL2MW-059C-0526-GF *Collected:* 3/24/2015 10:21:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	8.4	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	1.1	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
COBALT	1.1	J	0.56	MDL	7.0	LOQ	ug/L	J	RI
NICKEL	3.6	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	740	J	70	MDL	5000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48567-1 | Laboratory: TA CAN

EDD Filename: 240-48567-1A | eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS
Method: 6010B **Matrix:** AQ

Sample ID: FWGLL2MW-060C-0527-GF | Collected: 3/24/2015 12:11:00 PM | Analysis Type: RES/TOT | Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	29	J	1.0	MDL	200	LOQ	ug/L	J	RI
CHROMIUM	0.69	J	0.55	MDL	7.0	LOQ	ug/L	U	Cb
POTASSIUM	440	J	70	MDL	5000	LOQ	ug/L	U	Cb

Method Category: METALS
Method: 6020 **Matrix:** AQ

Sample ID: FWGLL2MW-059C-0526-GF | Collected: 3/24/2015 10:21:00 AM | Analysis Type: RES/TOT | Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	110	J	44	MDL	150	LOQ	ug/L	J	RI

Sample ID: FWGLL2MW-060C-0527-GF | Collected: 3/24/2015 12:11:00 PM | Analysis Type: RES/TOT | Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.33	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb

Method Category: SVOA
Method: 8270C-SVOC4 **Matrix:** AQ

Sample ID: FWGDETMW-003C-0510-GW | Collected: 3/24/2015 12:17:00 PM | Analysis Type: RES-ACID | Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DINITROPHENOL	4.8	U	0.30	MDL	4.8	LOQ	ug/L	UJ	ProfJudg

Sample ID: FWGDETMW-004C-0511-GW | Collected: 3/23/2015 4:15:00 PM | Analysis Type: RES-ACID | Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DINITROPHENOL	4.8	U	0.30	MDL	4.8	LOQ	ug/L	UJ	ProfJudg

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48567-1 | Laboratory: TA CAN

EDD Filename: 240-48567-1A | eQAPP Name: RVAAP 66-rev August 2014

Method Category: SVOA | **Method:** 8270C-SVOC4 | **Matrix:** AQ

Sample ID: FWGEQUIPRINSE7-0569-GW | *Collected:* 3/24/2015 2:00:00 PM | *Analysis Type:* RES-ACID | *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DINITROPHENOL	4.8	U	0.30	MDL	4.8	LOQ	ug/L	UJ	ProfJudg

Method Category: SVOA | **Method:** 8330 | **Matrix:** AQ

Sample ID: FWGLL2MW-059C-0526-GW | *Collected:* 3/24/2015 10:21:00 AM | *Analysis Type:* RES | *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3-DINITROBENZENE	0.065	J	0.051	MDL	0.15	LOQ	ug/L	J	RI
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.074	J M	0.037	MDL	0.15	LOQ	ug/L	J	RI

Sample ID: FWGLL2MW-060C-0527-GW | *Collected:* 3/24/2015 12:11:00 PM | *Analysis Type:* RES | *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-AMINO-2,6-DINITROTOLUENE	0.13	J M	0.051	MDL	0.15	LOQ	ug/L	J	RI

Method Category: VOA | **Method:** 8260B | **Matrix:** AQ

Sample ID: FWGEQUIPRINSE7-0569-GW | *Collected:* 3/24/2015 2:00:00 PM | *Analysis Type:* RES | *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	0.97	J	0.53	MDL	10	LOQ	ug/L	J	RI
ACETONE	6.0	J	0.94	MDL	10	LOQ	ug/L	J	RI

Sample ID: FWGTEAM2-TRIPBLANK | *Collected:* 3/23/2015 4:00:00 PM | *Analysis Type:* RES | *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.87	J	0.33	MDL	1.0	LOQ	ug/L	JB	Mb, ProfJudg

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48567-1

Laboratory: TA CAN

EDD Filename: 240-48567-1A

eQAPP Name: RVAAP 66-rev August 2014

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
Ms	Matrix Spike Precision
ProfJudg	Professional Judgment
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Data Review Summary

Lab Reporting Batch ID: 240-48567-1

Laboratory: TA CAN

EDD Filename: Prep240-48567-1A

eQAPP Name: RVAAP 66-rev August 2014

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	SR
Laboratory Duplicates	SR
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Method Blank Outlier Report

Lab Reporting Batch ID: 240-48567-1

Laboratory: TA CAN

EDD Filename: Prep240-48567-1A

eQAPP Name: RVAAP 66-rev August 2014

Method: 8260B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-174092/6	3/27/2015 12:38:00 PM	METHYLENE CHLORIDE	0.472 ug/L	FWGDETMW-003C-0510-GW FWGDETMW-004C-0511-GW FWGEQUIPRINSE7-0569-GW FWGTEAM2-TRIPBLANK

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGTEAM2-TRIPBLANK(RES)	METHYLENE CHLORIDE	0.87 ug/L	0.87U ug/L

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 240-48567-1 **Laboratory: TA CAN**

EDD Filename: Prep240-48567-1A **eQAPP Name: RVAAP 66-rev August 2014**

Method: WS-WC-0050
Matrix: AQ

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
FWGDETMW-004C-0511-GWMSD (FWGDA2MW-DUP1-0557-GW FWGDETMW-003C-0510-GW FWGDETMW-004C-0511-GW FWGEQUIPRINSE7-0569-GW FWGFWGMW-012-0516-GW FWGLL1MW-088-0525-GW FWGLL2MW-059C-0526-GW FWGLL2MW-060C-0527-GW)	Nitrocellulose	-	-	25.00-144.00	23 (20.00)	Nitrocellulose	J (all detects) UJ (all non-detects)

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 240-48567-1 **Laboratory: TA CAN**

EDD Filename: Prep240-48567-1A **eQAPP Name: RVAAP 66-rev August 2014**

Method: 6010B
Matrix: AQ

QC Sample ID (Associated Sample ID)	*Analyte*	*Sample RPD*	*eQAPP RPD*	*Flag*
FWGDETMW-004C-0511-GFDUP (TOT) (FWGDA2MW-115-0509-GF FWGDA2MW-DUP1-0557-GF FWGDETMW-003C-0510-GF FWGDETMW-004C-0511-GF FWGEQUIPRINSE7-0569-GW FWGFWGMW-012-0516-GF FWGLL1MW-088-0525-GF FWGLL2MW-059C-0526-GF FWGLL2MW-060C-0527-GF)	CHROMIUM	25	20.00	J (all detects) UJ (all non-detects)
	NICKEL	26	20.00	

Project Name and Number: 30174.0016.0010.1 - USACE Project: RVAAP 66 (OH)

Field Duplicate RPD Report

Lab Reporting Batch ID: 240-48567-1 **Laboratory: TA CAN**

EDD Filename: Prep240-48567-1A **eQAPP Name: RVAAP 66-rev August 2014**

Method: 6010B
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	FWGDA2MW-115-0509 -GF (TOT)	FWGDA2MW-DUP1-0557-GF (TOT)			
ARSENIC	10 U	4.5	200	50.00	
BARIUM	22	21	5	50.00	
CALCIUM	100000	100000	0	50.00	
CHROMIUM	0.86	0.95	10	50.00	
MAGNESIUM	29000	28000	4	50.00	No Qualifiers Applied
MANGANESE	100	100	0	50.00	
NICKEL	0.90	40 U	200	50.00	
POTASSIUM	3500	3300	6	50.00	
VANADIUM	2.5	7.0 U	200	50.00	

Method: 6020
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	FWGDA2MW-115-0509 -GF (TOT)	FWGDA2MW-DUP1-0557-GF (TOT)			
IRON	800	780	3	50.00	No Qualifiers Applied
SODIUM	12000	11000	9	50.00	

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48186

Date: June 24, 2015
Revision: 1

Data Reviewer: Angela Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 13, 2015 the following samples were collected from groundwater-monitoring wells at the former Ravenna Army Ammunition Plant and analyzed as part of SDG 240-48186. Sample analysis was performed by Test America. Test America-North Canton performed all requested analyses with the exception of the analytical for methods 8330, M8330, TALSOPWS-WC-0050 and 6860. Methods 8330, M8330 and TALSOPWS-WC-0050 were performed by Test America, West Sacramento. Method 6860, if requested, was performed by Test America, Denver.

Sample ID	VOC by SW846 8260	SVOC 4 by SW846 8270	SVOC 1 and 2 by SW846 8270	SVOC 1 by SW846 8270	Pesticides by SW846 8081	PCBs/ SW846 8082	Explosives/Propellants by SW846 8330, Mod. 8330 and TALSOP WS-WC-0050	Cyanide SW846 9012	Perchlorate by SW846 6860	NO2/NO3, EPA 353.2	Metals [3]		
											SW846 6010B	SW846 6020	Mercury by SW846 7470A
FWGFWGmw-004-0513-GW/GF				X			X				X	X	X
FWGEQUIPRINSE1-1822-GW				X			X				X	X	X

1) All metals samples with the exception of FWGEQUIPRINSE1-0563-GW were field filtered (GF).
2) SVOC1= Phthalates only
3) EPA 6020 metals include aluminum, antimony, beryllium, cadmium, iron, sodium, thallium and zinc. EPA 6010B metals include arsenic, chromium, cobalt, lead, selenium, silver, vanadium, barium, calcium, copper, magnesium, manganese, nickel and potassium.

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004*, Analytical Methods, and Laboratory Standard Operating Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Per the DoD QSM, the laboratory data is reported as follows: Non detected results were reported at the LOD with a "U" flag. Detected results between the DL and LOQ were reported as estimated, qualified with a "J" flag.

LOD - An estimate of the minimum amount of a substance that an analytical process can reliably detect.

LOQ - The lowest concentration that produces a quantitative result within specified limits of precision and bias.

DL- The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence.

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** June 24, 2015
Sample Delivery Group: 240-48186 **Revision:** 1

Checklists used in the verification process are in Attachment I and sample results with outliers requiring qualification are in Attachment II.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, at 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

SVOCs- 8270C
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning criteria
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Internal standard area counts and retention times
- LOD and MRL verification criteria
- Method /field blank criteria
- Surrogate recoveries
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD

Matrix Spike/Spike Duplicate Recovery and RPD Criteria
A matrix spike/ spike duplicate was not requested on a sample from this workorder.

Field Duplicate RPD
A field duplicate was not submitted with this set of samples.

Metals - 6010B
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria
- Post Digestion Spike Criteria

Blanks
The ICB analyzed 3/17/15@ 0633 had cobalt detected at 0.594 µg/L, manganese at 0.523 µg/L, potassium at 80.1 µg/L and nickel detected at 1.24 µg/L. No qualification of the data was required due to ICB contamination as any detected concentrations of cobalt, manganese, potassium or nickel were greater than five times contamination.

The CCBs analyzed 3/17/15 had chromium detected from 0.702 µg/L to 0.928 µg/L, cobalt detected from 0.723 µg/L to 1.09µg/L, manganese from 0.785 µg/L to 1.26 µg/L at 0.523 µg/L, potassium at 87.5 µg/L to 130 µg/L and nickel detected at 1.36 µg/L. The chromium and manganese results for sample FWGFWGmw-004-0513-GF were qualified, "U" as the reported concentrations were less than 5x blank contamination. No qualification of the data was required due to cobalt, potassium or nickel contamination as any detected concentrations of these target analytes were greater than five times contamination.

Barium was detected in the method blank at 3.54 µg/L, calcium at 1800 µg/L, magnesium at 94.6 µg/L, manganese at 2.22 µg/L and potassium at 124 µg/L. The potassium result for sample FWGEQUIPRINSE1-1822-GW and the manganese result for sample FWGFWGmw-004-0513-GF were qualified, "B" as the reported concentrations were less than 5x blank contamination. No qualification was required for the barium, calcium or magnesium contamination as all reported concentrations of these analytes were greater than five times method blank contamination.

Potassium was detected in FWGEQUIPRINSE1-1822-GW at 100 µg/L. No qualification of the data was made as the reported potassium concentration for the associated field sample was greater than 5x contamination.

Laboratory Duplicate RPD
The laboratory duplicate analyzed on sample FWGFWGmw-004-0513-GF had an RPD above control limits of 20% for manganese at 33% and for chromium at 66%. No qualification of the data was required as the detected manganese and chromium concentrations were less than the LOQ.

Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

Metals - 6020
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Tuning Criteria
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field Duplicate RPD Criteria
- Internal Standard Recovery
- Post Digestion Spike Criteria

Blanks
The ICB analyzed 3/17/15 at 0919 had antimony detected at 0.399 µg/L and cadmium detected at 0.0690 µg/L. The antimony results for samples FWGFWGmw-004-0513-GF and FWGEQUIPRINSE1-1822-GW were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results reported for the associated samples.

The CCBs analyzed 3/17/15 had antimony detected from 0.306 µg/L to 0.318 µg/L, beryllium from 0.054 µg/L to 0.119 µg/L and cadmium from 0.0850 µg/L to 0.134 µg/L . The antimony results for samples FWGFWGmw-004-0513-GF and FWGEQUIPRINSE1-1822-GW were qualified, "U" as the reported concentrations were less than 5x instrument blank contamination. No qualification of the data was required for the cadmium or beryllium contamination, as there were no detected cadmium or beryllium results reported for the associated samples.

Antimony was detected in FWGEQUIPRINSE1-1822-GW at 0.49 µg/L. The antimony result for sample FWGFWGmw-004-0513-GF was qualified, "B" as the the reported concentration was less than five times blank contamination.

Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

Mercury - 7470A
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration criteria
- ICV and CCV criteria
- ICB /CCBs criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

Field Duplicate RPD Criteria
A field duplicate was not submitted with this sample set.

No QC outliers were noted.

Explosives- 8330
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation and sample handling
- Initial Calibration Criteria
- ICV and CCV criteria
- Retention time criteria
- LOD and MRL verification criteria
- Surrogate recovery criteria
- Method /field blank criteria
- LCS/LCD Recovery and RPD Criteria
- Matrix spike/spike duplicate recovery criteria and RPD
- Second column confirmation RPD
- Field Duplicate RPD

Field Duplicate RPD
A field duplicate was not submitted with this set of samples.

No QC outliers were noted.

Nitroguanidine- 8330M
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration criteria
- Retention time criteria
- LOD and MRL verification criteria
- ICV and CCV criteria
- Method /field blank criteria
- LCS/LCSD percent recoveries and RPD value criteria
- Matrix spike recovery criteria
- Second column confirmation
- Field Duplicate RPD

Field Duplicate RPD
A field duplicate was not submitted with this set of samples.

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Sample Delivery Group: 240-48186

Date: June 24, 2015
Revision: 1

No QC outliers were noted.

Nitrocellulose – WS-WC-0050

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Sample preparation criteria
- Initial Calibration criteria
- ICV and CCV criteria
- Method /field blank criteria
- LOD and MRL verification criteria
- ICB and CCBs were free from contamination
- LCS/LCSD percent recoveries and RPD value criteria
- MS/MSD percent recoveries and RPD
- Field Duplicate RPD

Field Duplicate RPD

A field duplicate was not submitted with this set of samples.

Blank Contamination

Nitrocellulose was detected in the method blank at 1.05 mg/L. No qualification of the data was required as there were no detected concentration of nitrocellulose reported for the associated field samples.

No additional QC outliers were noted.

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Sample Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48606-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-48606-1	FWGTEAM2-TRIPBLANK	Water	03/25/15 08:00	03/25/15 14:02
240-48606-2	FWGNTAmw-119-0541-GW	Water	03/25/15 10:47	03/25/15 14:02
240-48606-3	FWGNTAmw-119-0541-GF	Water	03/25/15 10:47	03/25/15 14:02
240-48606-4	FWGFWGmw-007-0514-GW	Water	03/25/15 10:23	03/25/15 14:02
240-48606-5	FWGFWGmw-007-0514-GF	Water	03/25/15 10:23	03/25/15 14:02
240-48606-6	FWGEQUIPRINSE8-0570-GW	Water	03/25/15 11:33	03/25/15 14:02
240-48606-7	FWGFWGmw-011-0515-GW	Water	03/24/15 15:39	03/25/15 14:02
240-48606-8	FWGFWGmw-011-0515-GF	Water	03/24/15 15:39	03/25/15 14:02

Method Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48606-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
8330 Modified	Nitroguanidine (HPLC)	SW846	TAL SAC
8330A	Nitroaromatics and Nitramines	SW846	TAL SAC
6010B	Metals (ICP)	SW846	TAL CAN
6020	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
WS-WC-0050	Nitrocellulose	TAL-SAC	TAL SAC

Protocol References:

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

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS


240-48606 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: J Miller	Site Contact: E Corbin	Date: 3-25-15	COC No: 032515-1
Company Name: EQM	Tel/Fax:	Lab Contact: M Lecb	Carrier: Lab Pickup	1 of 1 COCs
Address: 1800 Carillon Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Cincinnati OH 45240	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513 825 7500	TAT if different from Below			Walk-in Client:
Fax: 513 825 7495	☒ 2 weeks per SOW7 Quote -			Lab Sampling:
Project Name: RVAAP66	☐ 1 week			
Site: Ravenna Oh	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOC 8260	SVOC 1+3 8270	EXPLO 8330	Propellants	Metals 6020 7470	SVOC 1 8270	Sample Specific Notes: Cooler ID
FWG Team 2-Tripblank	3-25-15	0800		W	2			X						045J
FWGNTAmw-119-0541-GW	3-25-15	1047	G	GW	8			X	X	X	X			045J
FWGNTAmw-119-0541-GF	⊥	1047	G	GW	1							X		045J
FWGFWGmw-007-0514-GW	3-25-15	1023	G	GW	5					X	X		X	TS17
FWGFWGmw-007-0514-GF	⊥	1023	G	GW	1							X		TS17
FWGEQUIPRinse8-0570-GW	3-25-15	1133	G	W	9			X	X	X	X	X		#1
		H2												
FWGFWGmw-011-0515-GW	3-24-15	1539	G	GW	5					X	X		X	
FWGFWGmw-011-0515-GF	⊥	1539	G	GW	1							X		

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Special Instructions/QC Requirements & Comments:
temps may not meet requirements if sample time is close to lab pickup time.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
S. [signature]	EQM	3/25/2015 1307	[signature]	TestAmerica	3/25/15 - 1307
R. [signature]	TestAm. 3/25/15	1402	[signature]	TA	3-25-15 1402
			Received in Laboratory by:		

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 42602
Canton Facility

Client EQM Site Name _____ Cooler unpacked by:

Cooler Received on 3-25-15 Opened on 3-25-15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off ~~TestAmerica Courier~~ Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box (Other) _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt

~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C~~

IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C ☑ See Multiple Cooler Form

~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C~~

IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2.	Were custody seals on the outside of the cooler(s)? If Yes Quantity 4	(Yes)	No
	-Were custody seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
	-Were custody seals on the bottle(s)?	Yes	(No)
3.	Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4.	Did custody papers accompany the sample(s)?	(Yes)	No
5.	Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6.	Was/were the sampler(s) clearly identified on the COC?	Yes	(No)
7.	Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8.	Could all bottle labels be reconciled with the COC?	(Yes)	No
9.	Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10.	Sufficient quantity received to perform indicated analyses?	(Yes)	No
11.	Were sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# HC425511
12.	Were VOAs on the COC?	(Yes)	No
13.	Were air bubbles >6 mm in any VOA vials?	Yes	(No) NA
14.	Was a trip blank present in the cooler(s)? Trip Blank Lot #_____	(Yes)	No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica Multiple Cooler Receipt Form/Narrative — Login # : _____
Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
04 KS	4	3.4	3.9	ice
TS17		2.6	3.1	
#1		0.8	1.3	
Client		1.6	2.1	
↓		1.4	1.9	
		3.0	3.5	

Job ID: 240-48606-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Environmental Quality Mgt., Inc.

Project: RVAAP (OH)

Report Number: 240-48606-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The 353.2 Nitrocellulose, 8330 Ngu Nitroguanidine, and 8330A Explosives analyses were performed at the TestAmerica Sacramento Laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

All parameters for which TestAmerica North Canton has certification were evaluated to the limit of detection (LOD) and include qualified results where applicable. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

RECEIPT

The samples were received on 3/25/2015 2:02 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.3° C, 1.9° C, 2.1° C, 3.1° C, 3.5° C and 3.9° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGTEAM2-TRIPBLANK (240-48606-1), FWGNTAmw-119-0541-GW (240-48606-2) and FWGEQUIPRINSE8-0570-GW (240-48606-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B DoD. The samples were analyzed on 03/27/2015.

Methylene Chloride was detected in method blank MB 240-174092/6 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

Job ID: 240-48606-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Chloromethane, Methylene Chloride and Vinyl chloride failed the recovery criteria high for MRL 240-174092/16.

Chloromethane and Methylene Chloride failed the recovery criteria high for MRL 240-174092/5.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 174092.

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

SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGNTAmw-119-0541-GW (240-48606-2), FWGFWGmw-007-0514-GW (240-48606-4), FWGEQUIPRINSE8-0570-GW (240-48606-6) and FWGFWGmw-011-0515-GW (240-48606-7) were analyzed for semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8270C. The samples were prepared on 03/26/2015 and analyzed on 03/30/2015.

Surrogates are added during the extraction process prior to dilution. When the sample is diluted, surrogate recoveries are diluted out and no corrective action is required.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 173763.

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

NITROGUANIDINE (HPLC)

Samples FWGNTAmw-119-0541-GW (240-48606-2), FWGFWGmw-007-0514-GW (240-48606-4), FWGEQUIPRINSE8-0570-GW (240-48606-6) and FWGFWGmw-011-0515-GW (240-48606-7) were analyzed for nitroguanidine (HPLC) in accordance with EPA SW-846 Method 8330_Ngu. The samples were prepared on 03/27/2015 and analyzed on 04/13/2015 and 04/14/2015.

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

EXPLOSIVES

Samples FWGNTAmw-119-0541-GW (240-48606-2), FWGFWGmw-007-0514-GW (240-48606-4), FWGEQUIPRINSE8-0570-GW (240-48606-6) and FWGFWGmw-011-0515-GW (240-48606-7) were analyzed for explosives in accordance with EPA SW-846 Method 8330A. The samples were prepared on 03/27/2015 and analyzed on 04/08/2015 and 04/09/2015.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch: 320-69568.

The %D for 2,4,6-Trinitrotoluene for the following CCVs is outside the limit. This compound is not required for conformation. Therefore, data has been reported: (CCV 320-70597/32).

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

TOTAL RECOVERABLE METALS (ICP)

Samples FWGNTAmw-119-0541-GF (240-48606-3), FWGFWGmw-007-0514-GF (240-48606-5), FWGEQUIPRINSE8-0570-GW (240-48606-6) and FWGFWGmw-011-0515-GF (240-48606-8) were analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010B DoD. The samples were prepared on 03/26/2015 and 03/27/2015 and analyzed on 03/27/2015 and 03/30/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

Several analytes were detected in method blank MB 240-173788/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Job ID: 240-48606-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Chromium and Cobalt exceeded the RPD limit for the duplicate of sample FWGFWGmw-011-0515-GFDU (240-48606-8). 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.

TOTAL RECOVERABLE METALS (ICPMS)

Samples FWGNTAmw-119-0541-GF (240-48606-3), FWGFWGmw-007-0514-GF (240-48606-5), FWGEQUIPRINSE8-0570-GW (240-48606-6) and FWGFWGmw-011-0515-GF (240-48606-8) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020 DoD. The samples were prepared on 03/27/2015 and analyzed on 03/31/2015.

ICB, CCB, and ICSA samples are evaluated using the lowest LOD and DL criteria in LIMS. Using this criteria, an individual element may occasionally be flagged as out of control. If the element has a higher LOD or DL, the data is evaluated to the higher limit and determined to be acceptable.

Antimony and Beryllium exceeded the RPD limit for the duplicate of sample FWGNTAmw-119-0541-GFDU (240-48606-3). 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.

TOTAL MERCURY

Samples FWGNTAmw-119-0541-GF (240-48606-3), FWGFWGmw-007-0514-GF (240-48606-5), FWGEQUIPRINSE8-0570-GW (240-48606-6) and FWGFWGmw-011-0515-GF (240-48606-8) were analyzed for total mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 03/26/2015 and analyzed on 03/27/2015.

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

NITROCELLULOSE

Samples FWGNTAmw-119-0541-GW (240-48606-2), FWGFWGmw-007-0514-GW (240-48606-4), FWGEQUIPRINSE8-0570-GW (240-48606-6) and FWGFWGmw-011-0515-GW (240-48606-7) were analyzed for Nitrocellulose in accordance with EPA Method 353.2. The samples were prepared on 03/31/2015 and analyzed on 04/01/2015.

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

Client Sample ID: FWGTEAM2-TRIPBLANK
Date Collected: 03/25/15 08:00
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.44	ug/L		03/27/15 15:57	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/27/15 15:57	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.24	ug/L		03/27/15 15:57	1
1,1-Dichloroethane	0.50	U	1.0	0.50	0.30	ug/L		03/27/15 15:57	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/27/15 15:57	1
1,2-Dichloroethane	0.50	U	1.0	0.50	0.23	ug/L		03/27/15 15:57	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/27/15 15:57	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 15:57	1
2-Hexanone	10	U	10	10	0.48	ug/L		03/27/15 15:57	1
Bromochloromethane	0.50	U	1.0	0.50	0.50	ug/L		03/27/15 15:57	1
Acetone	10	U	10	10	0.94	ug/L		03/27/15 15:57	1
Benzene	0.50	U	1.0	0.50	0.35	ug/L		03/27/15 15:57	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 15:57	1
Bromomethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 15:57	1
Carbon disulfide	0.50	U	1.0	0.50	0.38	ug/L		03/27/15 15:57	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.43	ug/L		03/27/15 15:57	1
Chlorobenzene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 15:57	1
Chloroethane	0.50	U	1.0	0.50	0.32	ug/L		03/27/15 15:57	1
Chloroform	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 15:57	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 15:57	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/27/15 15:57	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/27/15 15:57	1
Bromodichloromethane	0.25	U	1.0	0.25	0.29	ug/L		03/27/15 15:57	1
Ethylbenzene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 15:57	1
1,2-Dibromoethane	0.50	U	1.0	0.50	0.32	ug/L		03/27/15 15:57	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		03/27/15 15:57	1
2-Butanone (MEK)	10	U	10	10	0.53	ug/L		03/27/15 15:57	1
4-Methyl-2-pentanone (MIBK)	10	U	10	10	0.99	ug/L		03/27/15 15:57	1
Methylene Chloride	**0.84**	**J**	1.0	0.50	0.33	ug/L		03/27/15 15:57	1
o-Xylene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 15:57	1
Styrene	1.0	U	1.0	1.0	0.45	ug/L		03/27/15 15:57	1
Tetrachloroethene	0.50	U	1.0	0.50	0.31	ug/L		03/27/15 15:57	1
Toluene	0.50	U	1.0	0.50	0.23	ug/L		03/27/15 15:57	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.30	ug/L		03/27/15 15:57	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 15:57	1
Trichloroethene	0.50	U	1.0	0.50	0.22	ug/L		03/27/15 15:57	1
Vinyl chloride	0.50	U	1.0	0.50	0.29	ug/L		03/27/15 15:57	1
Xylenes, Total	1.0	U	2.0	1.0	0.52	ug/L		03/27/15 15:57	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 15:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 120*		*03/27/15 15:57*	*1*
4-Bromofluorobenzene (Surr)	*87*		*75 - 120*		*03/27/15 15:57*	*1*
Toluene-d8 (Surr)	*91*		*85 - 120*		*03/27/15 15:57*	*1*
Dibromofluoromethane (Surr)	*101*		*85 - 115*		*03/27/15 15:57*	*1*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48606-1

Client Sample ID: FWGNTAmw-119-0541-GW — **Lab Sample ID: 240-48606-2**

Date Collected: 03/25/15 10:47 — **Matrix: Water**

Date Received: 03/25/15 14:02

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 16:19	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/27/15 16:19	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.24	ug/L		03/27/15 16:19	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.30	ug/L		03/27/15 16:19	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/27/15 16:19	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 16:19	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/27/15 16:19	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 16:19	1
2-Hexanone	2.0	U	10	2.0	0.48	ug/L		03/27/15 16:19	1
Bromochloromethane	1.0	U	1.0	1.0	0.50	ug/L		03/27/15 16:19	1
Acetone	2.0	U	10	2.0	0.94	ug/L		03/27/15 16:19	1
Benzene	1.0	U	1.0	1.0	0.35	ug/L		03/27/15 16:19	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 16:19	1
Bromomethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 16:19	1
Carbon disulfide	1.0	U	1.0	1.0	0.38	ug/L		03/27/15 16:19	1
Carbon tetrachloride	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 16:19	1
Chlorobenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 16:19	1
Chloroethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 16:19	1
Chloroform	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 16:19	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 16:19	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/27/15 16:19	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/27/15 16:19	1
Bromodichloromethane	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 16:19	1
Ethylbenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 16:19	1
1,2-Dibromoethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 16:19	1
m-Xylene & p-Xylene	1.0	U	2.0	1.0	0.24	ug/L		03/27/15 16:19	1
2-Butanone (MEK)	2.0	U	10	2.0	0.53	ug/L		03/27/15 16:19	1
4-Methyl-2-pentanone (MIBK)	2.0	U	10	2.0	0.99	ug/L		03/27/15 16:19	1
Methylene Chloride	1.0	U	1.0	1.0	0.33	ug/L		03/27/15 16:19	1
o-Xylene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 16:19	1
Styrene	0.50	U	1.0	0.50	0.45	ug/L		03/27/15 16:19	1
Tetrachloroethene	1.0	U	1.0	1.0	0.31	ug/L		03/27/15 16:19	1
Toluene	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 16:19	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.30	ug/L		03/27/15 16:19	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 16:19	1
Trichloroethene	1.0	U	1.0	1.0	0.22	ug/L		03/27/15 16:19	1
Vinyl chloride	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 16:19	1
Xylenes, Total	2.0	U	2.0	2.0	0.52	ug/L		03/27/15 16:19	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 16:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 120*		*03/27/15 16:19*	*1*
4-Bromofluorobenzene (Surr)	*85*		*75 - 120*		*03/27/15 16:19*	*1*
Toluene-d8 (Surr)	*91*		*85 - 120*		*03/27/15 16:19*	*1*
Dibromofluoromethane (Surr)	*101*		*85 - 115*		*03/27/15 16:19*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.10	U	0.21	0.10	0.046	ug/L		03/30/15 13:35	1
Acenaphthylene	0.10	U	0.21	0.10	0.050	ug/L		03/30/15 13:35	1

Client Sample ID: FWGNTAmw-119-0541-GW
Date Collected: 03/25/15 10:47
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-2
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.10	U	0.21	0.10	0.091	ug/L		03/30/15 13:35	1
Benzo[a]anthracene	0.10	U	0.21	0.10	0.030	ug/L		03/30/15 13:35	1
Benzo[a]pyrene	0.10	U	0.21	0.10	0.053	ug/L		03/30/15 13:35	1
Benzo[b]fluoranthene	0.10	U	0.21	0.10	0.041	ug/L		03/30/15 13:35	1
Benzo[g,h,i]perylene	0.10	U	0.21	0.10	0.048	ug/L		03/30/15 13:35	1
Benzo[k]fluoranthene	0.10	U	0.21	0.10	0.046	ug/L		03/30/15 13:35	1
Bis(2-ethylhexyl) phthalate	5.2	U	5.2	5.2	1.8	ug/L		03/30/15 13:35	1
Butyl benzyl phthalate	0.52	U	5.2	0.52	0.27	ug/L		03/30/15 13:35	1
Chrysene	0.10	U	0.21	0.10	0.052	ug/L		03/30/15 13:35	1
Dibenz(a,h)anthracene	0.10	U	0.21	0.10	0.046	ug/L		03/30/15 13:35	1
Diethyl phthalate	1.0	U	2.1	1.0	0.62	ug/L		03/30/15 13:35	1
Dimethyl phthalate	0.52	U	2.1	0.52	0.30	ug/L		03/30/15 13:35	1
Di-n-butyl phthalate	5.2	U	5.2	5.2	1.8	ug/L		03/30/15 13:35	1
2,4-Dinitrotoluene	0.52	U	5.2	0.52	0.26	ug/L		03/30/15 13:35	1
2,6-Dinitrotoluene	5.2	U	5.2	5.2	1.1	ug/L		03/30/15 13:35	1
Di-n-octyl phthalate	0.52	U	2.1	0.52	0.24	ug/L		03/30/15 13:35	1
Fluoranthene	0.10	U	0.21	0.10	0.046	ug/L		03/30/15 13:35	1
Fluorene	0.10	U	0.21	0.10	0.042	ug/L		03/30/15 13:35	1
Indeno[1,2,3-cd]pyrene	0.10	U	0.21	0.10	0.045	ug/L		03/30/15 13:35	1
Naphthalene	0.10	U	0.21	0.10	0.065	ug/L		03/30/15 13:35	1
Nitrobenzene	0.10	U	1.0	0.10	0.041	ug/L		03/30/15 13:35	1
Phenanthrene	0.10	U	0.21	0.10	0.064	ug/L		03/30/15 13:35	1
Pyrene	0.10	U	0.21	0.10	0.043	ug/L		03/30/15 13:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*50 - 110*	*03/26/15 08:21*	*03/30/15 13:35*	*1*
2-Fluorophenol (Surr)	*70*		*20 - 110*	*03/26/15 08:21*	*03/30/15 13:35*	*1*
Nitrobenzene-d5 (Surr)	*68*		*40 - 110*	*03/26/15 08:21*	*03/30/15 13:35*	*1*
Phenol-d5 (Surr)	*73*		*10 - 115*	*03/26/15 08:21*	*03/30/15 13:35*	*1*
Terphenyl-d14 (Surr)	*68*		*50 - 135*	*03/26/15 08:21*	*03/30/15 13:35*	*1*
2,4,6-Tribromophenol (Surr)	*73*		*40 - 125*	*03/26/15 08:21*	*03/30/15 13:35*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 23:06	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.052	U	0.16	0.052	0.032	ug/L		04/08/15 08:36	1
1,3-Dinitrobenzene	0.10	U	0.16	0.10	0.052	ug/L		04/08/15 08:36	1
2,4,6-Trinitrotoluene	0.10	U	0.16	0.10	0.052	ug/L		04/08/15 08:36	1
2,4-Dinitrotoluene	0.10	U	0.14	0.10	0.052	ug/L		04/08/15 08:36	1
2,6-Dinitrotoluene	0.10	U	0.14	0.10	0.052	ug/L		04/08/15 08:36	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.16	0.10	0.016	ug/L		04/08/15 08:36	1
2-Nitrotoluene	0.10	U	0.52	0.10	0.092	ug/L		04/08/15 08:36	1
3-Nitrotoluene	0.10	U	0.52	0.10	0.060	ug/L		04/08/15 08:36	1
4-Nitrotoluene	0.10	U	0.52	0.10	0.092	ug/L		04/08/15 08:36	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.16	0.10	0.052	ug/L		04/08/15 08:36	1
HMX	0.052	U	0.16	0.052	0.038	ug/L		04/08/15 08:36	1
RDX	0.052	U	0.16	0.052	0.038	ug/L		04/08/15 08:36	1

Client Sample ID: FWGNTAmw-119-0541-GW
Date Collected: 03/25/15 10:47
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-2
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrobenzene	0.10	U M	0.16	0.10	0.052	ug/L		04/08/15 08:36	1
Tetryl	0.10	U	0.16	0.10	0.052	ug/L		04/08/15 08:36	1
Nitroglycerin	0.52	U	0.68	0.52	0.35	ug/L		04/08/15 08:36	1
PETN	0.52	U	0.68	0.52	0.31	ug/L		04/08/15 08:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*88*		*79 - 111*	*03/27/15 08:36*	*04/08/15 08:36*	*1*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/27/15 08:36*	*04/09/15 17:29*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:49	1

Client Sample ID: FWGNTAmw-119-0541-GF
Date Collected: 03/25/15 10:47
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-3
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	7.8	J	10	10	2.9	ug/L		03/27/15 08:16	1
Chromium	1.2	J	7.0	4.0	0.55	ug/L		03/27/15 08:16	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/27/15 08:16	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/27/15 08:16	1
Selenium	10	U	15	10	4.0	ug/L		03/27/15 08:16	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/27/15 08:16	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/27/15 08:16	1
Barium	81	J	200	5.0	1.0	ug/L		03/27/15 08:16	1
Calcium	81000		5000	1000	260	ug/L		03/30/15 09:02	1
Copper	10	U	25	10	1.9	ug/L		03/27/15 08:16	1
Magnesium	20000		5000	300	55	ug/L		03/30/15 09:02	1
Manganese	320	J	15	5.0	0.46	ug/L		03/30/15 09:02	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/27/15 08:16	1
Potassium	1700	J	5000	900	70	ug/L		03/27/15 08:16	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/31/15 16:41	1
Antimony	0.44	J	2.0	1.0	0.33	ug/L		03/31/15 16:41	1
Beryllium	0.51	J	1.0	1.0	0.50	ug/L		03/31/15 16:41	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/31/15 16:41	1
Iron	1200		150	100	44	ug/L		03/31/15 16:41	1
Sodium	7100		1000	400	160	ug/L		03/31/15 16:41	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/31/15 16:41	1
Zinc	50	U	50	50	27	ug/L		03/31/15 16:41	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:29	1

Client Sample ID: FWGFWGmw-007-0514-GW

Date Collected: 03/25/15 10:23
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-4

Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 14:51	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/30/15 14:51	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/30/15 14:51	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/30/15 14:51	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 14:51	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/30/15 14:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*50 - 110*	*03/26/15 08:21*	*03/30/15 14:51*	*1*
2-Fluorophenol (Surr)	*61*		*20 - 110*	*03/26/15 08:21*	*03/30/15 14:51*	*1*
Nitrobenzene-d5 (Surr)	*66*		*40 - 110*	*03/26/15 08:21*	*03/30/15 14:51*	*1*
Phenol-d5 (Surr)	*67*		*10 - 115*	*03/26/15 08:21*	*03/30/15 14:51*	*1*
Terphenyl-d14 (Surr)	*72*		*50 - 135*	*03/26/15 08:21*	*03/30/15 14:51*	*1*
2,4,6-Tribromophenol (Surr)	*71*		*40 - 125*	*03/26/15 08:21*	*03/30/15 14:51*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 23:24	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		04/08/15 09:19	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 09:19	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 09:19	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 09:19	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 09:19	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/08/15 09:19	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 09:19	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/08/15 09:19	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 09:19	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 09:19	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 09:19	1
RDX	0.051	U M	0.15	0.051	0.037	ug/L		04/08/15 09:19	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 09:19	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 09:19	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		04/08/15 09:19	1
PETN	0.51	U	0.67	0.51	0.31	ug/L		04/08/15 09:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/27/15 08:36*	*04/08/15 09:19*	*1*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/27/15 08:36*	*04/09/15 18:36*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:51	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-48606-1

Client Sample ID: FWGFWGmw-007-0514-GF
Date Collected: 03/25/15 10:23
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-5
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/27/15 08:28	1
Chromium	1.7	J	7.0	4.0	0.55	ug/L		03/27/15 08:28	1
Cobalt	1.0	J	7.0	4.0	0.56	ug/L		03/27/15 08:28	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/27/15 08:28	1
Selenium	10	U	15	10	4.0	ug/L		03/27/15 08:28	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/27/15 08:28	1
Vanadium	2.4	J	7.0	4.0	2.4	ug/L		03/27/15 08:28	1
Barium	17	J	200	5.0	1.0	ug/L		03/27/15 08:28	1
Calcium	100000		5000	1000	260	ug/L		03/30/15 09:22	1
Copper	10	U	25	10	1.9	ug/L		03/27/15 08:28	1
Magnesium	48000		5000	300	55	ug/L		03/30/15 09:22	1
Manganese	64		15	5.0	0.46	ug/L		03/30/15 09:22	1
Nickel	0.89	J	40	5.0	0.76	ug/L		03/27/15 08:28	1
Potassium	2000	J	5000	900	70	ug/L		03/27/15 08:28	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	35	J	60	60	20	ug/L		03/31/15 17:00	1
Antimony	0.81	J	2.0	1.0	0.33	ug/L		03/31/15 17:00	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/31/15 17:00	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/31/15 17:00	1
Iron	110	J	150	100	44	ug/L		03/31/15 17:00	1
Sodium	8200		1000	400	160	ug/L		03/31/15 17:00	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/31/15 17:00	1
Zinc	50	U	50	50	27	ug/L		03/31/15 17:00	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:30	1

Client Sample ID: FWGEQUIPRINSE8-0570-GW
Date Collected: 03/25/15 11:33
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-6
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 16:42	1
1,1,2,2-Tetrachloroethane	0.50	U	1.0	0.50	0.22	ug/L		03/27/15 16:42	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.24	ug/L		03/27/15 16:42	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.30	ug/L		03/27/15 16:42	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.45	ug/L		03/27/15 16:42	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 16:42	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.20	ug/L		03/27/15 16:42	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 16:42	1
2-Hexanone	2.0	U	10	2.0	0.48	ug/L		03/27/15 16:42	1
Bromochloromethane	1.0	U	1.0	1.0	0.50	ug/L		03/27/15 16:42	1
Acetone	**2.7**	**J**	10	2.0	0.94	ug/L		03/27/15 16:42	1
Benzene	1.0	U	1.0	1.0	0.35	ug/L		03/27/15 16:42	1
Bromoform	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 16:42	1
Bromomethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 16:42	1
Carbon disulfide	1.0	U	1.0	1.0	0.38	ug/L		03/27/15 16:42	1
Carbon tetrachloride	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 16:42	1
Chlorobenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 16:42	1
Chloroethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 16:42	1
Chloroform	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 16:42	1
Chloromethane	1.0	U	1.0	1.0	0.44	ug/L		03/27/15 16:42	1
cis-1,2-Dichloroethene	0.50	U	1.0	0.50	0.26	ug/L		03/27/15 16:42	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.46	ug/L		03/27/15 16:42	1
Bromodichloromethane	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 16:42	1
Ethylbenzene	1.0	U	1.0	1.0	0.25	ug/L		03/27/15 16:42	1
1,2-Dibromoethane	1.0	U	1.0	1.0	0.32	ug/L		03/27/15 16:42	1
m-Xylene & p-Xylene	1.0	U	2.0	1.0	0.24	ug/L		03/27/15 16:42	1
2-Butanone (MEK)	2.0	U	10	2.0	0.53	ug/L		03/27/15 16:42	1
4-Methyl-2-pentanone (MIBK)	2.0	U	10	2.0	0.99	ug/L		03/27/15 16:42	1
Methylene Chloride	1.0	U	1.0	1.0	0.33	ug/L		03/27/15 16:42	1
o-Xylene	0.50	U	1.0	0.50	0.25	ug/L		03/27/15 16:42	1
Styrene	0.50	U	1.0	0.50	0.45	ug/L		03/27/15 16:42	1
Tetrachloroethene	1.0	U	1.0	1.0	0.31	ug/L		03/27/15 16:42	1
Toluene	1.0	U	1.0	1.0	0.23	ug/L		03/27/15 16:42	1
trans-1,2-Dichloroethene	0.50	U	1.0	0.50	0.30	ug/L		03/27/15 16:42	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.56	ug/L		03/27/15 16:42	1
Trichloroethene	1.0	U	1.0	1.0	0.22	ug/L		03/27/15 16:42	1
Vinyl chloride	1.0	U	1.0	1.0	0.29	ug/L		03/27/15 16:42	1
Xylenes, Total	2.0	U	2.0	2.0	0.52	ug/L		03/27/15 16:42	1
Dibromochloromethane	1.0	U	1.0	1.0	0.43	ug/L		03/27/15 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 120*		*03/27/15 16:42*	*1*
4-Bromofluorobenzene (Surr)	*86*		*75 - 120*		*03/27/15 16:42*	*1*
Toluene-d8 (Surr)	*92*		*85 - 120*		*03/27/15 16:42*	*1*
Dibromofluoromethane (Surr)	*103*		*85 - 115*		*03/27/15 16:42*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.095	U	0.19	0.095	0.042	ug/L		03/30/15 14:01	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		03/30/15 14:01	1

Client Sample ID: FWGEQUIPRINSE8-0570-GW
Date Collected: 03/25/15 11:33
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-6
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.095	U	0.19	0.095	0.084	ug/L		03/30/15 14:01	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		03/30/15 14:01	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		03/30/15 14:01	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		03/30/15 14:01	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		03/30/15 14:01	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		03/30/15 14:01	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 14:01	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/30/15 14:01	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		03/30/15 14:01	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		03/30/15 14:01	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/30/15 14:01	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/30/15 14:01	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 14:01	1
2,4-Dinitrotoluene	0.48	U	4.8	0.48	0.24	ug/L		03/30/15 14:01	1
2,6-Dinitrotoluene	4.8	U	4.8	4.8	1.0	ug/L		03/30/15 14:01	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/30/15 14:01	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		03/30/15 14:01	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		03/30/15 14:01	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		03/30/15 14:01	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		03/30/15 14:01	1
Nitrobenzene	0.095	U	0.95	0.095	0.038	ug/L		03/30/15 14:01	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		03/30/15 14:01	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		03/30/15 14:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*50 - 110*	*03/26/15 08:21*	*03/30/15 14:01*	*1*
2-Fluorophenol (Surr)	*70*		*20 - 110*	*03/26/15 08:21*	*03/30/15 14:01*	*1*
Nitrobenzene-d5 (Surr)	*67*		*40 - 110*	*03/26/15 08:21*	*03/30/15 14:01*	*1*
Phenol-d5 (Surr)	*73*		*10 - 115*	*03/26/15 08:21*	*03/30/15 14:01*	*1*
Terphenyl-d14 (Surr)	*73*		*50 - 135*	*03/26/15 08:21*	*03/30/15 14:01*	*1*
2,4,6-Tribromophenol (Surr)	*72*		*40 - 125*	*03/26/15 08:21*	*03/30/15 14:01*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/13/15 23:42	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.031	ug/L		04/08/15 10:03	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:03	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:03	1
2,4-Dinitrotoluene	0.10	U M	0.13	0.10	0.051	ug/L		04/08/15 10:03	1
2,6-Dinitrotoluene	0.10	U M	0.13	0.10	0.051	ug/L		04/08/15 10:03	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/08/15 10:03	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/08/15 10:03	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/08/15 10:03	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		04/08/15 10:03	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:03	1
HMX	0.051	U	0.15	0.051	0.036	ug/L		04/08/15 10:03	1
RDX	0.051	U	0.15	0.051	0.036	ug/L		04/08/15 10:03	1

Client Sample ID: FWGEQUIPRINSE8-0570-GW
Date Collected: 03/25/15 11:33
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-6
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:03	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:03	1
Nitroglycerin	0.51	U	0.66	0.51	0.33	ug/L		04/08/15 10:03	1
PETN	0.51	U	0.66	0.51	0.30	ug/L		04/08/15 10:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/27/15 08:36*	*04/08/15 10:03*	*1*
3,4-Dinitrotoluene	*90*		*79 - 111*	*03/27/15 08:36*	*04/09/15 19:43*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	2.9	ug/L		03/27/15 08:32	1
Chromium	**0.59**	**J**	7.0	4.0	0.55	ug/L		03/27/15 08:32	1
Cobalt	4.0	U	7.0	4.0	0.56	ug/L		03/27/15 08:32	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/27/15 08:32	1
Selenium	10	U	15	10	4.0	ug/L		03/27/15 08:32	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/27/15 08:32	1
Vanadium	**2.5**	**J**	7.0	4.0	2.4	ug/L		03/27/15 08:32	1
Barium	5.0	U	200	5.0	1.0	ug/L		03/27/15 08:32	1
Calcium	1000	U	5000	1000	260	ug/L		03/30/15 09:26	1
Copper	10	U	25	10	1.9	ug/L		03/27/15 08:32	1
Magnesium	300	U	5000	300	55	ug/L		03/30/15 09:26	1
Manganese	5.0	U	15	5.0	0.46	ug/L		03/30/15 09:26	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/27/15 08:32	1
Potassium	900	U	5000	900	70	ug/L		03/27/15 08:32	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/31/15 17:04	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/31/15 17:04	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/31/15 17:04	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/31/15 17:04	1
Iron	100	U	150	100	44	ug/L		03/31/15 17:04	1
Sodium	400	U	1000	400	160	ug/L		03/31/15 17:04	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/31/15 17:04	1
Zinc	50	U	50	50	27	ug/L		03/31/15 17:04	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:32	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:53	1

Client Sample ID: FWGFWGmw-011-0515-GW
Date Collected: 03/24/15 15:39
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48606-7
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	**2.4**	**J**	4.8	4.8	1.6	ug/L		03/30/15 14:26	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		03/30/15 14:26	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		03/30/15 14:26	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		03/30/15 14:26	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		03/30/15 14:26	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		03/30/15 14:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*70*		*50 - 110*	*03/26/15 08:21*	*03/30/15 14:26*	*1*
2-Fluorophenol (Surr)	*66*		*20 - 110*	*03/26/15 08:21*	*03/30/15 14:26*	*1*
Nitrobenzene-d5 (Surr)	*64*		*40 - 110*	*03/26/15 08:21*	*03/30/15 14:26*	*1*
Phenol-d5 (Surr)	*71*		*10 - 115*	*03/26/15 08:21*	*03/30/15 14:26*	*1*
Terphenyl-d14 (Surr)	*71*		*50 - 135*	*03/26/15 08:21*	*03/30/15 14:26*	*1*
2,4,6-Tribromophenol (Surr)	*75*		*40 - 125*	*03/26/15 08:21*	*03/30/15 14:26*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		04/14/15 00:00	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.051	U	0.15	0.051	0.032	ug/L		04/08/15 10:47	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:47	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:47	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 10:47	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		04/08/15 10:47	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		04/08/15 10:47	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 10:47	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		04/08/15 10:47	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		04/08/15 10:47	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:47	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 10:47	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		04/08/15 10:47	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:47	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		04/08/15 10:47	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		04/08/15 10:47	1
PETN	0.51	U M	0.66	0.51	0.31	ug/L		04/08/15 10:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*88*		*79 - 111*	*03/27/15 08:36*	*04/08/15 10:47*	*1*
3,4-Dinitrotoluene	*88*		*79 - 111*	*03/27/15 08:36*	*04/09/15 20:49*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		04/01/15 16:55	1

Client Sample ID: FWGFWGmw-011-0515-GF

Lab Sample ID: 240-48606-8

Date Collected: 03/24/15 15:39

Matrix: Water

Date Received: 03/25/15 14:02

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	5.4	J	10	10	2.9	ug/L		03/27/15 07:52	1
Chromium	1.6	J	7.0	4.0	0.55	ug/L		03/27/15 07:52	1
Cobalt	1.2	J	7.0	4.0	0.56	ug/L		03/27/15 07:52	1
Lead	5.0	U	10	5.0	1.9	ug/L		03/27/15 07:52	1
Selenium	10	U	15	10	4.0	ug/L		03/27/15 07:52	1
Silver	5.0	U	7.0	5.0	0.92	ug/L		03/27/15 07:52	1
Vanadium	4.0	U	7.0	4.0	2.4	ug/L		03/27/15 07:52	1
Barium	29	J	200	5.0	1.0	ug/L		03/27/15 07:52	1
Calcium	57000		5000	1000	260	ug/L		03/30/15 09:30	1
Copper	10	U	25	10	1.9	ug/L		03/27/15 07:52	1
Magnesium	12000		5000	300	55	ug/L		03/30/15 09:30	1
Manganese	330		15	5.0	0.46	ug/L		03/30/15 09:30	1
Nickel	5.0	U	40	5.0	0.76	ug/L		03/27/15 07:52	1
Potassium	2100	J	5000	900	70	ug/L		03/27/15 07:52	1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	60	U	60	60	20	ug/L		03/31/15 17:15	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		03/31/15 17:15	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		03/31/15 17:15	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		03/31/15 17:15	1
Iron	5500		150	100	44	ug/L		03/31/15 17:15	1
Sodium	5600		1000	400	160	ug/L		03/31/15 17:15	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		03/31/15 17:15	1
Zinc	50	U	50	50	27	ug/L		03/31/15 17:15	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.090	ug/L		03/27/15 11:24	1

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 8, 2015

SDG: 240-48606
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3. Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP addendum-specified target analytes reported?	X				QAPP Table 4-5
6. Was the GC/MS system tuned with bromofluorobenzene (BFB) during each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A3UX17–3/17/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) met?	X				QSM Table F-4
7d. Did target analytes with an average calibration type have an RSD≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X			Bromomethane, chloroethane, acetone, methylene chloride and hexachlorobutadiene used a linear fit.	QSM Table F-4 R<0.995=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X				QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte with detected results?	X				QSM Table F-4 and section D.1.2.1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 8, 2015

SDG: 240-48606
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
9. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours?	X			3/27/15 @ 1215, 1705	
10. Were the QC/MRL recoveries 70-130%		X		The opening MRL analyzed 3/27/15 at 1215 recovered above control limits of 70-130% for chloromethane at 140% and at 153% for methylene chloride. The closing MRL analyzed 3/27/15 at 1705 recovered above control limits of 70-130% for chloromethane at 163%, methylene chloride at 153% and vinyl chloride at 135%. The methylene chloride result for sample FWGTEAM2-TRIPBLANK was qualified, "J". No qualifications were made for the chloromethane or vinyl chloride outliers as there were no detected vinyl chloride or chloromethane concentrations reported for the associated field samples.	LS
11. Was a second source verification (ICV) analyzed? Did all target analytes have a recovery of 80-120%?	X			3/17/15 @ 1216	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			3/27/15 @ 1107	QSM Table F-4
12a. Were the average response factors (RFs) for the (SPCCs) (see Table 2 below) met?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 8, 2015

SDG: 240-48606
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
15a. Were target analytes detected in the method blank?	X			Checked by ADR. Methylene chloride was detected in the method blank at 0.472 µg/L. Sample FWGTEAM2-TRIPBLANK was qualified, "B" as the reported methylene chloride detection was less than ten times method blank contamination.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE8-0570-GW and FWGTEAM2-TRIP BLANK	
16a. Were target analytes detected in the field blanks?	X			Checked by ADR. Methylene chloride was detected in FWGTEAM2-TRIPBLANK at 0.84 µg/L. There were no detected concentrations of methylene chloride reported for the associated field samples, so no qualifications were made for the trip blank contamination. FWGEQUIPRINSE8-0570-GW had acetone detected at 2.7 µg/L. No qualification of the data was made for rinse contamination as there were no detected acetone results reported for the associated field samples.	QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-5 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-5, J/UJ
18. Was a MS/MSD prepared with each batch?		X		A matrix spike and spike duplicate was not requested nor was volume provided for analysis of a matrix spike.	QSM Table F-4
18a. Were the MS/MSD recoveries within limits specified in Table G-4 of the DoD QSM with an RPD <30%?			X		QSM Table F-4, Table G-5 J/UJ Parent sample only
19. Was a field duplicate analyzed?		X		A field duplicate was not submitted with this set of samples.	QSM Table F-4,
19a. Were the field duplicates RPDs within ±30%?			X		QSM Table F-4, RPD >30=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% -50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/May 8, 2015

SDG: 240-48606
Analysis: SW846 8260B

DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Table1- CCCs

Analyte
1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

Table 2- SPCCs

Analyte	Minimum RF
Chloromethane	0.10
1,1-Dichlorethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48606
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1,
3.Were holding times met?	X				QAPP Table 5-1, J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1,
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-6
6. Was the GC/MS system tuned each 12 hour shift (prior to ICAL and Cal Ver.)?	X				QSM Table F-4
7. Initial Calibration					
7a. Did the initial calibration curve consist of 5 concentration levels?	X			Instrument A4HP9–3/25/15	QSM Table F-4 R
7b. Did the Calibration Check Compounds (CCCs) (see Table 1 below) relative standard deviations (%RSD) ≤ 30%?	X				QSM Table F-4 R
7c. Were the minimum response factors (RFs) for the System Performance Check Compounds (SPCCs) (see Table 2 below) ≤0.050?	X				QSM Table F-4
7d. Were all other target analytes reported with an avg response have an RSD ≤ 15%?	X				QSM Table F-4 15% <RSD< 20% = J/UJ
7e. IF the RSD was >15% was a different calibration option used?	X				
7f. If a linear regression curve was used, was the correlation coefficient r>0.995?	X				QSM Table F-4 R<0.99=-J/R
7g. If a non-linear regression was used, was the COD r≥0.99, with a minimum of 6 points for second order and 7 points for third order?	X			Benzoic acid, 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, pentachlorophenol and benzidine used a linear fit	QSM Table F-4 R<0.99=-J/R
8. Was a LOD Level Verification performed quarterly for each reported analyte?	X				QSM Table F-4 and section D.1.2.1
9 Was a breakdown check run at the beginning of every 12 hours with DDT degradation <20% and tailing factors of benzidine and pentachlorophenol ≤2?	X				QSM Table F-4 R
10. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours with recoveries within 70-130%?	X			3/30/15@ 1129, 1906	Louisville Supplement to the DOD QSM

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48606
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			3/25/15 @1815	QSM Table F-4 J=<80% and >120%
12. Was a CCV run daily prior to analysis and every 12 hours of analysis time?	X			4/25/15 @1402	QSM Table F-4
12a. Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) ≥0.050?	X				QSM Table F-4
12b. Were all target analytes ≤ 20%D?	X				QSM Table F-4 %D <20% = J/UJ
13. Were the internal standards added to every sample?	X				QSM Table F-4
13a. Was the EICP area between -50% and +100% of the ICAL mid-point standard?	X				QSM Table F-4 R
13b. Were the retention times for all IS compounds within ±30 seconds from the RT of the mid-point standard in the ICAL?	X				QSM Table F-4 J/UJ
14. Were the retention times for target analytes within ±0.06 RRT units from the RT of the mid-point standard in the ICAL or the most recently updated RRT for all samples?	X				QSM Table F-4 J
15. Was a method blank prepared and analyzed with each batch?	X				QSM Table F-4
15a. Were target analytes detected in the method blank >1/2 the MRL, >RL for common contaminants?		X		Checked by ADR.	QSM Table F-4 <5/10X =B
16. Was a field blank (equipment and/or trip) collected and analyzed?	X			FWGEQUIPRINSE8-0570-GW	
16a. Were target analytes detected in the field blank?		X			QSM Table F-4 <5/10X =B
17. Was a LCS prepared and analyzed with each batch?	X				QSM Table F-4
17a. Were the LCS recoveries within limits specified in Table G-6 of the DoD QSM?	X			ADR checked section;	QSM Table F-4, Table G-6, J/UJ
18. Was a MS/MSD prepared with each batch?			X	A matrix spike or spike duplicate was not requested on a sample from this workorder.	

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48606
Analysis: SW846 8270

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
18a. Were the MS/MSD recoveries within limits specified in Table G-6 of the DoD QSM with an RPD <30%?			X	Checked by ADR	QSM Table F-4, Table G-6 J/UJ Parent sample only
19. Was a field duplicate analyzed?		X		A field duplicate was not submitted with this set of samples.	
19a. Were the field duplicates RPDs within ±50%?			X		QSM Table F-4, RPD >50=J Parent sample only
20. Were surrogate recoveries within control limits specified in the DOD QSM?	X				QSM Tables F-4 & G-3 >150%=J; 10% - 50%=J/UJ; <10%=J/R
21. Were reported sample concentrations within calibration range?	X				

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Additional Comments:

Table 1: CCCs *(All analytes if CCCs not included in standard)*

Base / Neutral Compounds	Acid Compounds
Acenaphthalene	4-Chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-Dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
N-Nitrosodiphehylamine	Phenol
Di-n-octylphthalate	Pentachlorophenol
Fluoroanthene	2,4,6-Trichlorophenol
Benzo(a)pyrene	

Table 2: SPCCs -

N-Nitroso-di-n-propylamine	0.05
Hexachlorocyclopentadiene	0.05
2,4-Dinitrophenol	0.05
4-Nitrophenol	0.05

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 11, 2015

SDG: 240-48606
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1, NELAC
3. Were holding times met?	X				QAPP Table *5-1* J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table *5-1*
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Was a LOD Verification performed once per quarter with all target analytes detected?	X				DoD QSM Table F-8
7. Tuning (ICP MS Only)					
7a. Was a tune performed daily prior to calibration	X				DoD QSM Table F-8 R
7b. Mass Calibration <0.1 amu from true value	X				
7c. Resolution <0.9 amu full width at 10 % peak height	X				
7d. RSD <%5 for a minimum of four replicate analyses	X				
8.Calibration	X				
8a. Was the ICAL performed daily with at least	X			ICP(3/27/15 & 3/30/15), Hg (3/27/15) and ICPMS-(3/31/15)	DoD QSM Tables F-8 and F-7
1high standard and a blank for ICP & ICPMS	X				
5 standards and a blank for Hg	X				
8b. Was the correlation coefficient r≥0.995 for Hg?	X				DoD QSM Tables F-8 and F-7 r<0.995=J/R
8c. Was the ICV (second source verification) analyzed after the ICAL with results 90-110% of the true value?	X				DoD QSM Tables F-8 and F-7
8d. Was the ICB analyzed after the ICV with detected results <1/2 the MRL?	X			ICP-The ICB analyzed 3/27/15@ 0545 had chromium detected at 1.66 µg/L, barium at 1.28 µg/L, cobalt at 0.877 µg/L, nickel at 0.786 µg/L, potassium at 94.6 µg/L and vanadium at 3.31 µg/L. The chromium, cobalt, vanadium and nickel results for sample FWGFWGmw-007-0514-GW, the chromium and vanadium results for sample FWEQUIPRINSE8-0570-GW, the chromium and cobalt result for sample FWGFWGmw-011-0515-GF and the chromium result for sample FWGNTAmw-119-0541-GF were qualified, "U" as the reported cobalt, vanadium, nickel and chromium concentrations were less than 5x contamination. No qualification was made for the potassium or barium contamination as all detected potassium and barium	DoD QSM, Tables F-8 and F-7 < 5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 11, 2015

SDG: 240-48606
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				concentrations for the associated field samples were greater than 5x blank contamination. ICPMS- The ICB analyzed 3/31/15 at 0955 had antimony detected at 0.720 µg/L. The antimony results for sample FWGNTAmw-119-0541-GF and FWGFWGmw-007-0514-GF were qualified, "U" as the reported concentrations were less than 5x antimony contamination.	
Sample Analysis					
9. Was a MRL Level Verification performed at the beginning of the daily sequence and end of the analytical sequence bracketing samples? Were results 70-130%?	X				LS, DoD QSM Table G-18, >130%=J; 70-80%=J/UJ; <70%=J/UJ <65%=R, unless DL check with detected results
10. Were CCVs analyzed every 10 samples and at the end of the analytical sequence with results 90-110% of the true value?	X				DoD QSM, Tables F-8 and F-7 >110%=J, <85%=J/R 90-85%=J/UJ;
11. Were the CCBs run every 10 samples and at the end of the analytical sequence? Were results <1/2 the MRL?	X			ICP ICP-The CCBs analyzed 3/27/15 had chromium detected from 1.40 µg/L to 1.77 µg/L, , potassium from 76 µg/L to 136 µg/L and vanadium at 2.84 µg/L . The chromium results for samples FWGFWGmw-007-0514-GW, FWGNTAmw-119-0541-GF, FWEQUIPRINSE8-0570-GW and FWGFWGmw-011-0515-GF; and the vanadium results for samples FWGFWGmw-007-0514-GW and FWEQUIPRINSE8-0570-GW were qualified, "U" as the reported vanadium and chromium concentrations were less than 5x contamination. No qualification was required for the potassium contamination as there were no detected potassium concentrations reported for the bracketed field samples less than 5x blank contamination. ICPMS The CCBs analyzed 3/31/15 had antimony detected from 0.368 µg/L to 0.398 µg/L, beryllium from 0.163 µg/L to 0.194 µg/L and cadmium from 0.099 µg/L to 0.128 µg/L. The antimony results for samples FWGNTAmw-119-0541-GF and FWGFWGmw-007-0514-GF; and the beryllium result for sample FWGNTAmw-119-0541-GF were qualified, "U"	DoD QSM Tables F-8 and F-7 <5x = U

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 11, 2015

SDG: 240-48606
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				as the reported concentrations were less than 5x antimony and beryllium contamination. No qualification of the data was required for the cadmium contamination, as there were no detected cadmium results reported for the associated samples less than five times blank contamination.	
12. Was an Interelement Check Standard run at the beginning of the analytical sequence and every 12 hours with the ICS recovery within 80 to 120% of true value for each element of interest (ICP and ICPMS only)?	X				DoD QSM Tables F-8 and F-7 >120%=J; 50-79%=J/UJ; <50%=Pj/R
13. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Tables F-8 and F-7
14. Were target analytes detected in the method blank?	X			Checked by ADR. ICP- The method blank analyzed 3/27/15 had arsenic detected at 3.34 µg/L, barium at 28.5 µg/L, chromium at 1.09 µg/L, cobalt at 1.03 µg/L, potassium at 2050 µg/L and vanadium at 3.35 µg/L. The chromium and vanadium results for sample FWGEQUIPRINSE8-0570-GW; the barium, chromium, cobalt, potassium and vanadium results for sample FWGFWGmw-007-0514-GF; the arsenic, barium, chromium, cobalt and potassium results for sample FWGFWGmw-011-0515-GF; and the arsenic, barium, chromium and potassium results for sample FWGNTAmw-119-0541-GF were qualified, "B" as the detected concentrations were less than 5x method blank contamination.	DoD QSM Tables F-8 and F-7, <5x = B
15. Was a field blank collected and analyzed?	X				
16. Were target analytes reported in the field blank analyses?	X			ADR checked section. FWGEQUIPRINSE8-0570-GW had chromium detected at 0.59 µg/L and vanadium at 2.5 µg/L. The chromium results for samples FWGFWGmw-007-0514-GW and FWGNTAmw-119-0541-GF as well as the vanadium result for sample FWGFWGmw-007-0541-GF were qualified, "B" as the detected concentrations were less than 5x equipment rinse contamination.	DoD QSM Tables F-8 and F-7 <5x = B
17. Was a LCS prepared and analyzed with each batch?	X				DoD QSM, Tables F-8 and F-7
18. Were the LCS recoveries within limits specified in LCG Appendix C?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7>120%=J;

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 11, 2015

SDG: 240-48606
Analysis: SW846 6010/6020/7470A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
					70-79%=J/UJ; <70%=J/R
19. Was a matrix spike (MS) and lab duplicate sample prepared with each batch?	X				DoD QSM Tables F-8 and F-7
20. Was the MS and Lab Duplicate parent a Ravenna sample?	X			A matrix spike analysis and laboratory duplicate analysis was performed on sample FWGNTAmw-119-0541-GF and FWGFWGmw-011-0515-GF (ICP only).	
21. Were the MS recoveries within 80-120%?	X			Checked by ADR.	DoD QSM Tables G-18, F-8 and F-7, >120%=J;70-79%=J/UJ; <70%=J/R, All samples in batch
22. Was the lab sample duplicate RPD ≤ 20%, for sample results detected above the LOQ?		X		ICP-The laboratory duplicate analyzed on sample FWGFWGmw-011-0515-GF had an RPD above control limits of 20% for cobalt at 21% and chromium at 25%. No qualification of the data was required as the detected nickel and chromium concentrations for sample FWGFWGmw-011-0515-GF were less than the LOQ. ICPMS-The laboratory duplicate analyzed on sample FWGNTAmw-119-0541-GF had an RPD above control limits of 20% for antimony at 26% and beryllium at 38%. No qualification of the data was required as the detected beryllium and antimony concentrations for sample FWGNTAmw-119-0541-GF were less than the LOQ.	DoD QSM Tables F-8 and F-7 >20% = J, All samples in batch
23. Was a serial dilution performed, with the fivefold dilution within ± 10% of the original result?	X				DoD QSM, Tables F-8 and F-7 >20% = J. Only evaluate results above the LOQ . Qualify all samples in batch
24. Was a Post Digestion Spike analyzed as needed? Were results within 75-125%?	X				LCG Table 7, >125%=J; 30-75%=J/UJ; <30%=R
25. Was a field duplicate analyzed? Were the RPDs ± 50% for sample results detected above the LOQ?	X				>30% = J. Qualify parent sample only and only evaluate results above the LOQ
26. Were internal standards added to all ICPMS samples with intensity within 30-120% of the intensity of the ICAL internal standard?	X				DoD QSM Table F-8. >120%=J/R, <20%=J

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 11, 2015

SDG: 240-48606
Analysis: SW846 6010/6020/7470A

References:

- *DoD Quality Systems Manual (QSM), version 4.1, October 2010*
- *Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007*
- *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012*
- *Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 8, 2015

SDG: 240-48606
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			LC10 3/11/15 LC9 1/23/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD $\leq$ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r$\geq$0.995? (0.990 for non-linear).	X			LC10-4-nitrotoluene used a linear fit LC9-3-nitrotoluene and RDX used a linear fit	
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			LC10 on 3/11 at 2136 LC9 1/23/15 at 2328	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			LC10- 4/7/15 @ 2309, 4/8/15 @ 0541 and 1214 LC9-4/9/15 @0156, 1156, 2156	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily? Was the %D< 30%?		X		LC10- 4/7/15 @1553, 4/8/15 @ 1257 LC9-4/8/15 @1343, 2303	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3
12. Were target analytes detected in the method blank?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 8, 2015

SDG: 240-48606
Analysis: SW846 8330 Explosives

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
15. Was a field duplicate analyzed? Were the RPDs ≤30%?		X		Checked by ADR. A field duplicate was not submitted with this set of samples.	RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?	X				DoD QSM Table F-3 RPD>40%=J Only detected results above the LOQ were evaluated
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within limits specified in table G-12 of the DoD QSM?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J;30-LL=J/UJ; <30%=J/R
19.Was a MS/MSD or MS and sample duplicate prepared with each batch?			X	No data was provided as a matrix spike/spike duplicate was not requested nor was sample volume provided for matrix spike analysis specific to this set of samples.	DoD QSM Table F-3
20. Were MS/MSD recoveries within limits specified in table G-12 of the DoD QSM with an RPD ≤30%?			X		DoD QSM Table F-3 Pj
21. Were surrogate recoveries within laboratory limits (79-111%)?	X				QSM Tables F-2 >UL=J; <LL =J/UJ

References: DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 8, 2015

SDG: 240-48606
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-3
6. Was a LOD Verification analyzed once per quarter with all target analytes detected?	X				DoD QSM Table F-3 R
7.Calibration					
7a. Does the initial calibration curve consist of 5 concentration levels? (6 stds for quadratic curves)	X			PDA-1 4/10/15	DoD QSM Table F-3 R
7b. Did all target analytes using avg response have an RSD ≤ 15% ?	X				
7c. If a linear regression curve was used, was the correlation coefficient r≥0.995? (0.990 for Quadratic curve).			X		
7d. Did reanalysis of the low level standard after calibration, recover within 15%?	X				
8. Was a second source verification (ICV) analyzed after the ICAL and all analytes 80-120%?	X			4/10/15 @ 1940	DoD QSM Table F-3 >120%=J; <80%= J/UJ;
Sample Analysis					
9. Was a CCV run at the beginning of the analytical sequence, every 10 samples and at the end of the analytical run with targets and surrogates recovering 80-120% of the true value?	X			4/13/15 @1542, 1822, 2120, 4/14/15 @ 0017	DoD QSM Table F-3 J/UJ
10. Was a MRL Level verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D < 30%?	X			4/13/15 @1525, 1840, 2138, 4/14/15 @ 0035	LCG Table 5 >30%=J
11. Was a method blank prepared and analyzed with each batch?	X				DoD QSM Table F-3

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/May 8, 2015

SDG: 240-48606
Analysis: SW846 8330M Nitroguanidine

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
12. Were target analytes detected in the method blank?		X		Checked by ADR.	DoD QSM Table F-3 <5x = B
13. Was a field blank collected and analyzed?	X				
14. Were target analytes detected in the field blank analyses?		X		Checked by ADR.	DoD QSM Table F-3 <5x=B
15. Was a field duplicate analyzed? Were the RPDs ≤30%?	X				RPD >30=J
16. Were all positive results confirmed with a second column confirmation? Were the RPDs ≤ 40%?			X	No detected concentrations were reported.	DoD QSM Table F-3 RPD>40%=J
17. Was an LCS prepared and analyzed with each batch?	X				DoD QSM Table F-3
18. Were the LCS recoveries within laboratory limits of 79%-119%?	X			Checked by ADR.	DoD QSM Table F-3 <UL=J; 30-LL=J/UJ; <30%=J/R
19. Was a MS/MSD or MS and sample duplicate prepared with each batch?	X				DoD QSM Table F-3
20. Were MS/MSD recoveries within laboratory limits of 40%-150% with an RPD ≤20%?	X				DoD QSM Table F-3 Pj

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010
Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007
Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012
Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48606
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
1. Did Chain-of-Custody information agree with laboratory report?	X				
2. Were samples preserved properly and received in good condition?	X				QAPP Table 5-1
3. Were holding times met?	X				QAPP Table 5-1 J/UJ/R
4. Were sample storage requirements met?	X				QAPP Table 5-1
5. Were all QAPP-specified target analytes reported?	X				QAPP Table 4-1
6. Does the initial calibration curve consist of 5 concentration levels with the low standard near but > MDL?	X				SOP Section 10.2 R
7. Was the correlation coefficient >0.995?	X				SOP Section 10.2
8. Was a MRL Level Verification run at the beginning and end of every daily sequence or every 12 hours? Was the %D <30%?	X			4/1/15 @ 1545, 1609, 1637, 1657	>30%=J
9. Was a second source verification (ICV) analyzed after the ICAL? Were all analytes 90-110%?	X			4/1/15 @ 1515	>110%=J; 90-85%=J/UJ; <85%=J/R
10. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				STL SOP Section 9.8, LCG ,< 5x = U
11. Was a CCV run every 10 samples and at the end of the analytical run?	X			4/1/15 @ 1547, 1611, 1639, 1659	STL SOP Section 10.4
12. Was the ICV and CCV a mid-level standard from the initial calibration curve?	X				STL SOP Section 10.3.1
13. Were all CCV calibration analytes within 90-110%?	X				>110%=J; 85-90%=J/UJ; <85%=J/R
14. Was the ICB analyzed after the ICV with results <1/2 the MRL?	X				QSM, < 5x = U
15. Was a method blank prepared and analyzed with each batch?	X				
16. Were target analytes detected in the method blank?		X		ADR checked section.	LCG, *<5x=B*
17. Was a field blank collected and analyzed?	X				

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48606
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
18. Were target analytes detected in the field blank analyses?		X			<5x=B
19. Was a field duplicate analyzed? Were the RPDs ≤30%?	X			ADR checked section.	QAPP Table 3-2 RPD > 30% = J
20. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within lab's in-house limits% (26-144%)?	X				>UL%=J; 50-LL%=J/UJ; <50%=J/R
21. Was a MS/MSD pair prepared with each batch?	X				
22. Was the MS/MSD parent a Ravenna sample?	X			FWGDETmw-004c-0511-GW and FWGDA2mw-115-0509-GW	
23. Were MS/MSD recoveries 26-144% and RPD ≤20?		X		Checked by ADR. The matrix spike and spike duplicate analyzed on had an RPD above control limits of 20% at 23%. The nitrocellulose results for samples FWGNTAmw-119-0541-GW, FWGFWGmw-007-0514-GW, FWGEQUIPRINSE8-0570-GW, and FWGFWGmw-011-0515-GW were qualified as estimated, "UJ".	Method EPA 353.2 Section 9.4.2 >UL%=J;<LL%=J/UJ; RPD>20%=J/UJ

References:

SOP SAC-WC-0050 "Preparation and Analysis of Nitrocellulose in Aqueous and Soil/Sediment Samples by Colorimetric Autoanalyzer", Jan 2007, rev. 2.0

DoD Quality Systems Manual (QSM)

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Attachment 2

Data Qualifier Summary

Lab Reporting Batch ID: 240-48606-1 **Laboratory: TA CAN**

EDD Filename: Prep240-48606-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method Category: GENCHEM

Method: WS-WC-0050 **Matrix: AQ**

Sample ID: FWGEQUIPRINSE8-0570-GW **Collected:** 3/25/2015 11:33:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	1.0	U	0.48	MDL	1.0	LOD	mg/L	UJ	Ms

Sample ID: FWGFWGmw-007-0514-GW **Collected:** 3/25/2015 10:23:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	1.0	U	0.48	MDL	1.0	LOD	mg/L	UJ	Ms

Sample ID: FWGFWGmw-011-0515-GW **Collected:** 3/24/2015 3:39:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	1.0	U	0.48	MDL	1.0	LOD	mg/L	UJ	Ms

Sample ID: FWGNTAmw-119-0541-GW **Collected:** 3/25/2015 10:47:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	1.0	U	0.48	MDL	1.0	LOD	mg/L	UJ	Ms

Method Category: METALS

Method: 6010B **Matrix: AQ**

Sample ID: FWGEQUIPRINSE8-0570-GW **Collected:** 3/25/2015 11:33:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHROMIUM	0.59	J	0.55	MDL	4.0	LOD	ug/L	U	Mb, Cb
VANADIUM	2.5	J	2.4	MDL	4.0	LOD	ug/L	U	Mb, Cb

Sample ID: FWGFWGmw-007-0514-GF **Collected:** 3/25/2015 10:23:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	17	J	1.0	MDL	5.0	LOD	ug/L	B	Mb
CHROMIUM	1.7	J	0.55	MDL	4.0	LOD	ug/L	U	Mb, Eb, Cb
COBALT	1.0	J	0.56	MDL	4.0	LOD	ug/L	U	Mb, Cb
NICKEL	0.89	J	0.76	MDL	5.0	LOD	ug/L	U	Cb
POTASSIUM	2000	J	70	MDL	900	LOD	ug/L	B	Mb
VANADIUM	2.4	J	2.4	MDL	4.0	LOD	ug/L	U	Mb, Eb, Cb

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - USACE Project: RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48606-1 **Laboratory: TA CAN**

EDD Filename: Prep240-48606-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method Category: METALS

Method: 6010B **Matrix: AQ**

Sample ID: FWGFWGmw-011-0515-GF **Collected:** 3/24/2015 3:39:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	5.4	J	2.9	MDL	10	LOD	ug/L	B	Mb
BARIUM	29	J	1.0	MDL	5.0	LOD	ug/L	B	Mb
CHROMIUM	1.6	J	0.55	MDL	4.0	LOD	ug/L	U	Mb, Cb
COBALT	1.2	J	0.56	MDL	4.0	LOD	ug/L	U	Mb, Cb
POTASSIUM	2100	J	70	MDL	900	LOD	ug/L	B	Mb

Sample ID: FWGNTAmw-119-0541-GF **Collected:** 3/25/2015 10:47:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	7.8	J	2.9	MDL	10	LOD	ug/L	B	Mb
BARIUM	81	J	1.0	MDL	5.0	LOD	ug/L	B	Mb
CHROMIUM	1.2	J	0.55	MDL	4.0	LOD	ug/L	U	Mb, Eb, Cb
POTASSIUM	1700	J	70	MDL	900	LOD	ug/L	B	Mb

Method Category: METALS

Method: 6020 **Matrix: AQ**

Sample ID: FWGFWGmw-007-0514-GF **Collected:** 3/25/2015 10:23:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	35	J	20	MDL	60	LOD	ug/L	J	RI
ANTIMONY	0.81	J	0.33	MDL	1.0	LOD	ug/L	U	Cb

Sample ID: FWGNTAmw-119-0541-GF **Collected:** 3/25/2015 10:47:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.44	J	0.33	MDL	1.0	LOD	ug/L	U	Cb
BERYLLIUM	0.51	J	0.50	MDL	1.0	LOD	ug/L	U	Cb

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 240-48606-1 **Laboratory: TA CAN**

EDD Filename: Prep240-48606-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method Category: SVOA
Method: 8270C -SVOC1 **Matrix:** AQ

Sample ID: FWGFWGmw-011-0515-GW **Collected:** 3/24/2015 3:39:00 PM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BIS(2-ETHYLHEXYL)PHTHALATE	2.4	J	1.6	MDL	4.8	LOD	ug/L	J	RI

Method Category: VOA
Method: 8260B **Matrix:** AQ

Sample ID: FWGTEAM2-TRIPBLANK **Collected:** 3/25/2015 8:00:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.84	J	0.33	MDL	0.50	LOD	ug/L	JB	Mb, ProfJudg

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - USACE Project: RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48606-1 **Laboratory: TA CAN**

EDD Filename: Prep240-48606-1 **eQAPP Name: RVAAP 66-rev August 2014**

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Eb	Equipment Blank Contamination
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
Ms	Matrix Spike Precision
ProfJudg	Professional Judgment/ MRL Recovery outside control limits
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Data Review Summary

Lab Reporting Batch ID: 240-48606-1
EDD Filename: 240-48606-1

Laboratory: TA CAN
eQAPP Name: RVAAP 66-rev August 2014

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	SR
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	SR

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Reporting Limit Outliers

Lab Reporting Batch ID: 240-48606-1 **Laboratory: TA CAN**

EDD Filename: 240-48606-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method: 6010B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGEQUIPRINSE8-0570-GW	CHROMIUM VANADIUM	J J	0.59 2.5	4.0 4.0	LOD LOD	ug/L ug/L	J (all detects)
FWGFWGmw-007-0514-GF	CHROMIUM COBALT NICKEL VANADIUM	J J J J	1.7 1.0 0.89 2.4	4.0 4.0 5.0 4.0	LOD LOD LOD LOD	ug/L ug/L ug/L ug/L	J (all detects)
FWGFWGmw-011-0515-GF	ARSENIC CHROMIUM COBALT	J J J	5.4 1.6 1.2	10 4.0 4.0	LOD LOD LOD	ug/L ug/L ug/L	J (all detects)
FWGNTAmw-119-0541-GF	ARSENIC CHROMIUM	J J	7.8 1.2	10 4.0	LOD LOD	ug/L ug/L	J (all detects)

Method: 6020

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGFWGmw-007-0514-GF	ALUMINUM ANTIMONY	J J	35 0.81	60 1.0	LOD LOD	ug/L ug/L	J (all detects)
FWGNTAmw-119-0541-GF	ANTIMONY BERYLLIUM	J J	0.44 0.51	1.0 1.0	LOD LOD	ug/L ug/L	J (all detects)

Method: 8270C -SVOC1

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGFWGmw-011-0515-GW	BIS(2-ETHYLHEXYL)PHTHALATE	J	2.4	4.8	LOD	ug/L	J (all detects)

Method Blank Outlier Report

Lab Reporting Batch ID: 240-48606-1 **Laboratory: TA CAN**

EDD Filename: 240-48606-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method: **6010B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-173788/1-A	3/27/2015 8:08:00 AM	ARSENIC BARIUM CHROMIUM COBALT POTASSIUM VANADIUM	3.34 ug/L 28.5 ug/L 1.09 ug/L 1.03 ug/L 2050 ug/L 3.35 ug/L	FWGEQUIPRINSE8-0570-GW FWGFWGmw-007-0514-GF FWGFWGmw-011-0515-GF FWGNTAmw-119-0541-GF

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGEQUIPRINSE8-0570-GW(RES/TOT)	CHROMIUM	0.59 ug/L	0.59U ug/L
FWGEQUIPRINSE8-0570-GW(RES/TOT)	VANADIUM	2.5 ug/L	2.5U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	BARIUM	17 ug/L	17U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	CHROMIUM	1.7 ug/L	1.7U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	COBALT	1.0 ug/L	1.0U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	POTASSIUM	2000 ug/L	2000U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	VANADIUM	2.4 ug/L	2.4U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	ARSENIC	5.4 ug/L	5.4U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	BARIUM	29 ug/L	29U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	CHROMIUM	1.6 ug/L	1.6U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	COBALT	1.2 ug/L	1.2U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	POTASSIUM	2100 ug/L	2100U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	ARSENIC	7.8 ug/L	7.8U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	BARIUM	81 ug/L	81U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	CHROMIUM	1.2 ug/L	1.2U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	POTASSIUM	1700 ug/L	1700U ug/L

Method: **8260B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-174092/6	3/27/2015 12:38:00 PM	METHYLENE CHLORIDE	0.472 ug/L	FWGEQUIPRINSE8-0570-GW FWGNTAmw-119-0541-GW FWGTEAM2-TRIPBLANK

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGTEAM2-TRIPBLANK(RES)	METHYLENE CHLORIDE	0.84 ug/L	0.84U ug/L

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 240-48606-1 **Laboratory: TA CAN**

EDD Filename: 240-48606-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method: 6010B
Matrix: AQ

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FWGFWGmw-011-0515-GFDUP (TOT) (FWGEQUIPRINSE8-0570-GW FWGFWGmw-007-0514-GF FWGFWGmw-011-0515-GF FWGNTAmw-119-0541-GF)	CHROMIUM COBALT	25 21	20.00 20.00	J (all detects) UJ (all non-detects)

Method: 6020
Matrix: AQ

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FWGNTAmw-119-0541-GFDUP (TOT) (FWGEQUIPRINSE8-0570-GW FWGFWGmw-007-0514-GF FWGFWGmw-011-0515-GF FWGNTAmw-119-0541-GF)	ANTIMONY BERYLLIUM	26 38	20.00 20.00	J(all detects) UJ(all non-detects)

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: 240-48606-1 **Laboratory: TA CAN**

EDD Filename: 240-48606-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method: **6010B**
Matrix: **AQ**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGEQUIPRINSE8-0570-GW(RES/TOT)	3/25/2015 11:33:00 AM	CHROMIUM VANADIUM	0.59 ug/L 2.5 ug/L	FWGFWGmw-007-0514-GF FWGFWGmw-007-0514-GW FWGNTAmw-119-0541-GF FWGNTAmw-119-0541-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGFWGmw-007-0514-GF(RES/TOT)	CHROMIUM	1.7 ug/L	1.7U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	VANADIUM	2.4 ug/L	2.4U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	CHROMIUM	1.2 ug/L	1.2U ug/L

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48606-1										
6010B	FWGEQUIPRINSE8-0570-GW	AQ	EB							
				CHROMIUM	4.0	0.59J		U	ug/L	Mb, Cb
				VANADIUM	4.0	2.5J		U	ug/L	Mb, Cb
6010B	FWGFWGmw-007-0514-GF	AQ	N							
				BARIUM	5.0	17J		U	ug/L	Mb
				CHROMIUM	4.0	1.7J		U	ug/L	Mb, Eb, C
				COBALT	4.0	1.0J		U	ug/L	Mb, Cb
				NICKEL	5.0	0.89J		U	ug/L	Cb
				POTASSIUM	900	2000J		B	ug/L	Mb
				VANADIUM	4.0	2.4J		U	ug/L	Mb, Eb, C
6010B	FWGFWGmw-011-0515-GF	AQ	N							
				ARSENIC	10	5.4J		B	ug/L	Mb
				BARIUM	5.0	29J		B	ug/L	Mb
				CHROMIUM	4.0	1.6J		U	ug/L	Mb, Cb
				COBALT	4.0	1.2J		U	ug/L	Mb, Cb
				POTASSIUM	900	2100J		B	ug/L	Mb
6010B	FWGNTAmw-119-0541-GF	AQ	N							
				ARSENIC	10	7.8J		B	ug/L	Mb
				BARIUM	5.0	81J		B	ug/L	Mb
				CHROMIUM	4.0	1.2J		U	ug/L	Mb, Eb, C
				POTASSIUM	900	1700J		B	ug/L	Mb
6020	FWGFWGmw-007-0514-GF	AQ	N							
				ALUMINUM	60	35J		J	ug/L	RI
				ANTIMONY	1.0	0.81J		U	ug/L	Cb
6020	FWGNTAmw-119-0541-GF	AQ	N							
				ANTIMONY	1.0	0.44J		U	ug/L	Cb
				BERYLLIUM	1.0	0.51J		U	ug/L	Cb

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48606-1										
8260B	FWGTEAM2-TRIPBLANK	AQ	TB							
				METHYLENE CHLORIDE	0.50	0.84J		JB	ug/L	Mb, ProfJu
8270C -SVOC1	FWGFWGmw-011-0515-GW	AQ	N							
				BIS(2-ETHYLHEXYL)PHTHALATE	4.8	2.4J		J	ug/L	RI
WS-WC-0050	FWGEQUIPRINSE8-0570-GW	AQ	EB							
				Nitrocellulose	1.0	1.0U		UJ	mg/L	Ms
WS-WC-0050	FWGFWGmw-007-0514-GW	AQ	N							
				Nitrocellulose	1.0	1.0U		UJ	mg/L	Ms
WS-WC-0050	FWGFWGmw-011-0515-GW	AQ	N							
				Nitrocellulose	1.0	1.0U		UJ	mg/L	Ms
WS-WC-0050	FWGNTAmw-119-0541-GW	AQ	N							
				Nitrocellulose	1.0	1.0U		UJ	mg/L	Ms

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angela Dragotta/ May 8, 2015

SDG: 240-48606
Analysis: TAL SOP WS-WC-0050

Review Questions:	Yes	No	N/A	Comments	Qualifier
18. Were target analytes detected in the field blank analyses?		X			<5x=B
19. Was a field duplicate analyzed? Were the RPDs ≤30%?	X			ADR checked section.	QAPP Table 3-2 RPD > 30% = J
20. Was an LCS prepared and analyzed with each batch? Was the LCS recovery within lab's in-house limits% (26-144%)?	X				>UL%=J; 50-LL%=J/UJ; <50%=J/R
21. Was a MS/MSD pair prepared with each batch?	X				
22. Was the MS/MSD parent a Ravenna sample?	X			FWGDETmw-004c-0511-GW and FWGDA2mw-115-0509-GW	
23. Were MS/MSD recoveries 26-144% and RPD ≤20?		X		Checked by ADR. The matrix spike and spike duplicate analyzed on had an RPD above control limits of 20% at 23%. The nitrocellulose results for samples FWGNTAmw-119-0541-GW, FWGFWGmw-007-0514-GW, FWGEQUIPRINSE8-0570-GW, and FWGFWGmw-011-0515-GW were qualified as estimated, "UJ".	Method EPA 353.2 Section 9.4.2 >UL%=J;<LL%=J/UJ; RPD>20%=J/UJ

References:

SOP SAC-WC-0050 "Preparation and Analysis of Nitrocellulose in Aqueous and Soil/Sediment Samples by Colorimetric Autoanalyzer", Jan 2007, rev. 2.0

DoD Quality Systems Manual (QSM)

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Attachment 2

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48606-1										
6010B	FWGEQUIPRINSE8-0570-GW	AQ	EB							
				CHROMIUM	7.0	0.59J		U	ug/L	Mb, Cb
				VANADIUM	7.0	2.5J		U	ug/L	Mb, Cb
6010B	FWGFWGmw-007-0514-GF	AQ	N							
				BARIUM	200	17J		B	ug/L	Mb
				CHROMIUM	7.0	1.7J		U	ug/L	Mb, Eb, C
				COBALT	7.0	1.0J		U	ug/L	Mb, Cb
				NICKEL	40	0.89J		U	ug/L	Cb
				POTASSIUM	5000	2000J		B	ug/L	Mb
				VANADIUM	7.0	2.4J		U	ug/L	Mb, Eb, C
6010B	FWGFWGmw-011-0515-GF	AQ	N							
				ARSENIC	10	5.4J		B	ug/L	Mb
				BARIUM	200	29J		B	ug/L	Mb
				CHROMIUM	7.0	1.6J		U	ug/L	Mb, Eb, C
				COBALT	7.0	1.2J		U	ug/L	Mb, Cb
				POTASSIUM	5000	2100J		B	ug/L	Mb
6010B	FWGNTAmw-119-0541-GF	AQ	N							
				ARSENIC	10	7.8J		B	ug/L	Mb
				BARIUM	200	81J		B	ug/L	Mb
				CHROMIUM	7.0	1.2J		U	ug/L	Mb, Eb, C
				POTASSIUM	5000	1700J		B	ug/L	Mb
6020	FWGFWGmw-007-0514-GF	AQ	N							
				ALUMINUM	60	35J		J	ug/L	RI
				ANTIMONY	2.0	0.81J		U	ug/L	Cb
				IRON	150	110J		J	ug/L	RI

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-48606-1										
6020	FWGNTAmw-119-0541-GF	AQ	N							
				ANTIMONY	2.0	0.44J		U	ug/L	Cb
				BERYLLIUM	1.0	0.51J		U	ug/L	Cb
8260B	FWGEQUIPRINSE8-0570-GW	AQ	EB							
				ACETONE	10	2.7J		J	ug/L	RI
8260B	FWGTEAM2-TRIPBLANK	AQ	TB							
				METHYLENE CHLORIDE	1.0	0.84J		JB	ug/L	Mb, ProfJu
8270C -SVOC1	FWGFWGmw-011-0515-GW	AQ	N							
				BIS(2-ETHYLHEXYL)PHTHALATE	4.8	2.4J		J	ug/L	RI
WS-WC-0050	FWGEQUIPRINSE8-0570-GW	AQ	EB							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms
WS-WC-0050	FWGFWGmw-007-0514-GW	AQ	N							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms
WS-WC-0050	FWGFWGmw-011-0515-GW	AQ	N							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms
WS-WC-0050	FWGNTAmw-119-0541-GW	AQ	N							
				Nitrocellulose	2.0	2.0U		UJ	mg/L	Ms

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Qualifier Summary

Lab Reporting Batch ID: 240-48606-1

Laboratory: TA CAN

EDD Filename: 240-48606-1

eQAPP Name: RVAAP 66-rev August 2014

Method Category: GENCHEM

Method: WS-WC-0050 **Matrix:** AQ

Sample ID: FWGEQUIPRINSE8-0570-GW Collected: 3/25/2015 11:33:00 AM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

Sample ID: FWGFWGmw-007-0514-GW Collected: 3/25/2015 10:23:00 AM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

Sample ID: FWGFWGmw-011-0515-GW Collected: 3/24/2015 3:39:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

Sample ID: FWGNTAmw-119-0541-GW Collected: 3/25/2015 10:47:00 AM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	2.0	U	0.48	MDL	2.0	LOQ	mg/L	UJ	Ms

Method Category: METALS

Method: 6010B **Matrix:** AQ

Sample ID: FWGEQUIPRINSE8-0570-GW Collected: 3/25/2015 11:33:00 AM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHROMIUM	0.59	J	0.55	MDL	7.0	LOQ	ug/L	U	Mb, Cb
VANADIUM	2.5	J	2.4	MDL	7.0	LOQ	ug/L	U	Mb, Cb

Sample ID: FWGFWGmw-007-0514-GF Collected: 3/25/2015 10:23:00 AM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	17	J	1.0	MDL	200	LOQ	ug/L	U	B
CHROMIUM	1.7	J	0.55	MDL	7.0	LOQ	ug/L	U	Mb, Eb, Cb
COBALT	1.0	J	0.56	MDL	7.0	LOQ	ug/L	U	Mb, Cb
NICKEL	0.89	J	0.76	MDL	40	LOQ	ug/L	U	Cb
POTASSIUM	2000	J	70	MDL	5000	LOQ	ug/L	U	B
VANADIUM	2.4	J	2.4	MDL	7.0	LOQ	ug/L	U	Mb, Eb, Cb

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48606-1 Laboratory: TA CAN

EDD Filename: 240-48606-1 eQAPP Name: RVAAP 66-rev August 2014

Method Category: METALS

Method: 6010B **Matrix:** AQ

Sample ID: FWGFWGmw-011-0515-GF Collected: 3/24/2015 3:39:00 PM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	5.4	J	2.9	MDL	10	LOQ	ug/L	B	Mb
BARIUM	29	J	1.0	MDL	200	LOQ	ug/L	B	Mb
CHROMIUM	1.6	J	0.55	MDL	7.0	LOQ	ug/L	U	Mb, Eb, Cb
COBALT	1.2	J	0.56	MDL	7.0	LOQ	ug/L	U	Mb, Cb
POTASSIUM	2100	J	70	MDL	5000	LOQ	ug/L	B	Mb

Sample ID: FWGNTAmw-119-0541-GF Collected: 3/25/2015 10:47:00 AM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	7.8	J	2.9	MDL	10	LOQ	ug/L	B	Mb
BARIUM	81	J	1.0	MDL	200	LOQ	ug/L	B	Mb
CHROMIUM	1.2	J	0.55	MDL	7.0	LOQ	ug/L	U	Mb, Eb, Cb
POTASSIUM	1700	J	70	MDL	5000	LOQ	ug/L	B	Mb

Method Category: METALS

Method: 6020 **Matrix:** AQ

Sample ID: FWGFWGmw-007-0514-GF Collected: 3/25/2015 10:23:00 AM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	35	J	20	MDL	60	LOQ	ug/L	J	RI
ANTIMONY	0.81	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb
IRON	110	J	44	MDL	150	LOQ	ug/L	J	RI

Sample ID: FWGNTAmw-119-0541-GF Collected: 3/25/2015 10:47:00 AM Analysis Type: RES/TOT Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.44	J	0.33	MDL	2.0	LOQ	ug/L	U	Cb
BERYLLIUM	0.51	J	0.50	MDL	1.0	LOQ	ug/L	U	Cb

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48606-1 Laboratory: TA CAN

EDD Filename: 240-48606-1 eQAPP Name: RVAAP 66-rev August 2014

Method Category: SVOA **Method:** 8270C -SVOC1 **Matrix:** AQ

Sample ID: FWGFWGmw-011-0515-GW *Collected:* 3/24/2015 3:39:00 PM *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BIS(2-ETHYLHEXYL)PHTHALATE	2.4	J	1.6	MDL	4.8	LOQ	ug/L	J	RI

Method Category: VOA **Method:** 8260B **Matrix:** AQ

Sample ID: FWGEQUIPRINSE8-0570-GW *Collected:* 3/25/2015 11:33:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	2.7	J	0.94	MDL	10	LOQ	ug/L	J	RI

Sample ID: FWGTEAM2-TRIPBLANK *Collected:* 3/25/2015 8:00:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.84	J	0.33	MDL	1.0	LOQ	ug/L	JB	Mb, ProfJudg

* denotes a non-reportable result

Project Name and Number: 30174.0016.0010.1 - RVAAP 66 (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-48606-1

Laboratory: TA CAN

EDD Filename: 240-48606-1

eQAPP Name: RVAAP 66-rev August 2014

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Eb	Equipment Blank Contamination
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
Ms	Matrix Spike Precision
ProfJudg	Professional Judgment
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Data Review Summary

Lab Reporting Batch ID: 240-48606-1
EDD Filename: 240-48606-1

Laboratory: TA CAN
eQAPP Name: RVAAP 66-rev August 2014

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	SR
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	SR

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Method Blank Outlier Report

Lab Reporting Batch ID: 240-48606-1 Laboratory: TA CAN

EDD Filename: 240-48606-1 eQAPP Name: RVAAP 66-rev August 2014

Method: 6010B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-173788/1-A	3/27/2015 8:08:00 AM	ARSENIC	3.34 ug/L	FWGEQUIPRINSE8-0570-GW
		BARIUM	28.5 ug/L	FWGFWGmw-007-0514-GF
		CHROMIUM	1.09 ug/L	FWGFWGmw-011-0515-GF
		COBALT	1.03 ug/L	FWGNTAmw-119-0541-GF
		POTASSIUM	2050 ug/L	
		VANADIUM	3.35 ug/L	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGEQUIPRINSE8-0570-GW(RES/TOT)	CHROMIUM	0.59 ug/L	0.59U ug/L
FWGEQUIPRINSE8-0570-GW(RES/TOT)	VANADIUM	2.5 ug/L	2.5U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	BARIUM	17 ug/L	17U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	CHROMIUM	1.7 ug/L	1.7U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	COBALT	1.0 ug/L	1.0U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	POTASSIUM	2000 ug/L	2000U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	VANADIUM	2.4 ug/L	2.4U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	ARSENIC	5.4 ug/L	5.4U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	BARIUM	29 ug/L	29U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	CHROMIUM	1.6 ug/L	1.6U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	COBALT	1.2 ug/L	1.2U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	POTASSIUM	2100 ug/L	2100U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	ARSENIC	7.8 ug/L	7.8U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	BARIUM	81 ug/L	81U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	CHROMIUM	1.2 ug/L	1.2U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	POTASSIUM	1700 ug/L	1700U ug/L

Method: 8260B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 240-174092/6	3/27/2015 12:38:00 PM	METHYLENE CHLORIDE	0.472 ug/L	FWGEQUIPRINSE8-0570-GW FWGNTAmw-119-0541-GW FWGTEAM2-TRIPBLANK

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGTEAM2-TRIPBLANK(RES)	METHYLENE CHLORIDE	0.84 ug/L	0.84U ug/L

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 240-48606-1 Laboratory: TA CAN

EDD Filename: 240-48606-1 eQAPP Name: RVAAP 66-rev August 2014

Method: 6010B
Matrix: AQ

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FWGFWGmw-011-0515-GFDUP (TOT) (FWGEQUIPRINSE8-0570-GW FWGFWGmw-007-0514-GF FWGFWGmw-011-0515-GF FWGNTAmw-119-0541-GF)	CHROMIUM	25	20.00	J (all detects) UJ (all non-detects)
	COBALT	21	20.00	

Method: 6020
Matrix: AQ

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FWGNTAmw-119-0541-GFDUP (TOT) (FWGEQUIPRINSE8-0570-GW FWGFWGmw-007-0514-GF FWGFWGmw-011-0515-GF FWGNTAmw-119-0541-GF)	ANTIMONY	26	20.00	J(all detects) UJ(all non-detects)
	BERYLLIUM	38	20.00	

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: 240-48606-1 **Laboratory: TA CAN**

EDD Filename: 240-48606-1 **eQAPP Name: RVAAP 66-rev August 2014**

Method: **6010B**
Matrix: **AQ**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FWGEQUIPRINSE8-0570-GW(RES/TOT)	3/25/2015 11:33:00 AM	CHROMIUM VANADIUM	0.59 ug/L 2.5 ug/L	FWGFWGmw-007-0514-GF FWGFWGmw-007-0514-GW FWGFWGmw-011-0515-GF FWGFWGmw-011-0515-GW FWGNTAmw-119-0541-GF FWGNTAmw-119-0541-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGFWGmw-007-0514-GF(RES/TOT)	CHROMIUM	1.7 ug/L	1.7U ug/L
FWGFWGmw-007-0514-GF(RES/TOT)	VANADIUM	2.4 ug/L	2.4U ug/L
FWGFWGmw-011-0515-GF(RES/TOT)	CHROMIUM	1.6 ug/L	1.6U ug/L
FWGNTAmw-119-0541-GF(RES/TOT)	CHROMIUM	1.2 ug/L	1.2U ug/L

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015 **Date:** April 6, 2015
Workorder: R1501658 **Revision:** 0

Data Reviewer: Angye Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 10, 2015 the following samples were collected from groundwater-monitoring wells at Ravenna Army Ammunition Plant and analyzed as part of work order R1501658. The hexavalent chromium analysis was performed by ALS Laboratories (formerly Columbia Analytical Services), Rochester, New York by method EPA 218.6.

FWGSCFmw-002-0545-GF
FWGLL12mw-247-0540-GF
FWGEQUIPRINSE2-247-0564-GW

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004*, Analytical Methods, and Laboratory Standard Operating Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Checklists used in review of the data have been presented in Attachment1. Outliers have been noted below and results requiring qualification, as a result of this verification process, have been summarized in Attachment 2.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

Hexavalent Chromium – 218.6
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Retention times
- MRL verification criteria
- Instrument, Method and Field Blank Criteria
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD
- Instrument/method and field blanks free of contamination

Blanks
FWGEQUIPRINSE2-0564-GW had hexavalent chromium detected at 0.135 µg/L. No qualification of the data was required as a result of the equipment rinse contamination, as there were no detected concentrations reported for the associated field samples.

No additional QC outliers were noted.

ALS ASP/CLP Batching Form/Login Sheet

Client Proj #:		Batch Complete:	Yes	Date Revised:	
Submission:	R1501658	Diskette Requested:	Yes	Date Due:	3/25/15
Client:	Environmental Quality Manageme	Date:	3/16/15	Protocol:	MCAWW
Client Rep:	JJAEGER	Custody Seal: Present/Absent:		Shipping No.:	
Project:	RVAAP, EQM PN 030174.0016	Chain of Custody: Present/Absent:		SDG #:	

CAS Job #	Client/EPA ID	Matrix	Requested Parameters	Date Sampled	Date Received	pH (Solids)	% Solids	Remarks Sample Condition
R1501658-001QC	FWGSCFmw-002-0545-GF	Water	218.6 LL	3/10/15	3/11/15			
R1501658-002	FWGLL12mw-247-0540-GF	Water	218.6 LL	3/10/15	3/11/15			
R1501658-003	FWGEQUIPRinse2-0564-GW	Water	218.6 LL	3/10/15	3/11/15			

Folder Comments: Need opening & closing MRL check & ADR.net checker, DoD report

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

23857

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE 1 OF 1

Project Name: RVAAP 66	Project Number: 30174-16
Project Manager: John Miller	Report CC: Erik Corbin
Company/Address: 1800 Carillon Blvd, Cincinnati, OH ~~45242~~ 45240	
Phone #: 513-825-7500	Email: ecorbin@eqm.com
Sampler's Signature:	Sampler's Printed Name:

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE

Preservative Key: 0. NONE 1. HCL 2. HNO_3 3. H_2SO_4 4. NaOH 5. Zn. Acetate 6. MeOH 7. $NaHSO_4$ 8. Other ____

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP	GC/MS SVOAs ○ 8270 ○ 625	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	Hex. Chrom 218.6	SNOA HOLD						REMARKS/ ALTERNATE DESCRIPTION
FWGSCFmw-002-0545-GF		3-10-15	14:27	GW	1								X							*MS/MSD
~~FWGSCFm~~ SH																				
FWGLL12mw-247-0540-GF		3-10-15	16:00	GW	1								X							
FWGEQUIP Rinse2-0564-GW		3-10-15	1614	GW	1								X							

SPECIAL INSTRUCTIONS/COMMENTS
Metals

8995 9543 8028
FED EXP

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED OHIO

TURNAROUND REQUIREMENTS
____ RUSH (SURCHARGES APPLY)
____ 1 day ____ 2 day ____ 3 day
____ 4 day ____ 5 day

REQUESTED REPORT DATE

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data

Edata ____ Yes ____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: [signature]	Signature: Colleen A Lear	Signature: Fed Exp.	Signature: [signature]	Signature:	
Printed Name: Colleen Lear	Printed Name: FED EX	Printed Name: FED EXP	Printed Name: J. Seward	Printed Name:	
Firm: EQM	Firm:	Firm: EQM/FEDEX	Firm: ALS	Firm:	
Date/Time: 3-10-15 1730	Date/Time:	Date/Time: 3-10-15 1730	Date/Time: 3/11/15 0820	Date/Time:	

R1501658 5
Environmental Quality Management
RVAAP, EQM PN 030174.0016

Distribution: White - Lab Copy; Yellow - Return to Originator

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R1501658 5
Environmental Quality Management
RVAAP, EQM PN 030174.0016

Cooler Receipt and Preservation Check Form

Project/Client EQM Folder Number M5-14458

Cooler received on 3/11/15 by: JHS COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	(Y)	N
2	Custody papers properly completed (ink, signed)?	(Y)	N
3	Did all bottles arrive in good condition (unbroken)?	(Y)	N
4	Circle: Wet Ice Dry Ice Gel packs present?	(Y)	N

5a	Perchlorate samples have required headspace?	Y	N	(NA)
5b	Did VOA vials, Alk,or Sulfide have sig* bubbles?	Y	N	(NA)
6	Where did the bottles originate?	ALS/ROC		(CLIENT)
7	Soil VOA received as: Bulk Encore 5035set			(NA)

8. Temperature Readings Date: 3/11/15 Time: 0821 ID: ~~IR#3~~ IR#4 From: Temp Blank Sample Bottle

Observed Temp (°C)	2.6						
Correction Factor (°C)	-1.3						
Corrected Temp (°C)	1.3						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: ROOM by JHS on 3/11/15 at 0821
5035 samples placed in storage location: _____ by _____ on _____ at _____

PC Secondary Review: JHW 3/11/15

Cooler Breakdown: Date: 3/11/15 Time: 1244 by: JHS

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
2. Did all bottle labels and tags agree with custody papers? (YES) NO
3. Were correct containers used for the tests indicated? (YES) NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated (N/A)

Explain any discrepancies:

pH	Reagent	Yes	No	Lot Received	Exp	Sample ID	Vol. Added	Lot Added	Final pH
≥12	NaOH								
≤2	HNO_3								
≤2	H_2SO_4								
<4	$NaHSO_4$								
Residual Chlorine (-)	For CN Phenol and 522			If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol).					
	$Na_2S_2O_3$	-	-						
	ZnAcetate	-	-						
	HCl	**	**						

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

Bottle lot numbers: 122214 - ZAHO
Other Comments:

PC Secondary Review: _____ *significant air bubbles: VOA > 5-6 mm : WC>1 in. diameter

ALS Environmental

Client:	Environmental Quality Management
Service Request No.:	R1501658
Project:	RVAAP
Date Received:	3/11/15
Sample Matrix:	Water
Project/Case No.:	

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS).

Sample Receipt

Water samples were received for analysis at ALS Environmental on 3/11/15. The samples were received in good condition and consistent with the accompanying chain of custody form. All sampling activities performed by ALS personnel have been in accordance with "ALS Field Procedures and Measurements Manual" or by client specifications. The samples were stored in a refrigerator between 1°C and 6°C upon receipt at the laboratory.

Inorganic Analysis

Three water samples were analyzed for Hexavalent Chromium by method 218.6.

All samples that were not within the pH range of 9.3-9.7 were pH adjusted upon receipt in the laboratory.

Site specific QC was performed on FWGSCFmw-002-0545-GF as requested. All MS/MSD recoveries and RPD's were acceptable.

All LCS recoveries were acceptable.

All Continuing Calibration Verification (CCV) standards were within limits.

All Method blanks were free of contamination.

No other analytical or QC problems were encountered.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Environmental Quality Management	**Service Request:**	R1501658
Project:	RVAAP, EQM PN 030174.0016	**Date Collected:**	3/10/15 1427
Sample Matrix:	Water	**Date Received:**	3/11/15
Sample Name:	FWGSCFmw-002-0545-GF		
Lab Code:	R1501658-001	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Chromium, Hexavalent, Dissolved	218.6 LL	ND	U	µg/L	0.020	0.020	0.014	1	NA	3/20/15 12:27	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Environmental Quality Management	**Service Request:**	R1501658
Project:	RVAAP, EQM PN 030174.0016	**Date Collected:**	3/10/15 1600
Sample Matrix:	Water	**Date Received:**	3/11/15
Sample Name:	FWGLL12mw-247-0540-GF		
Lab Code:	R1501658-002	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Chromium, Hexavalent, Dissolved	218.6 LL	ND	U	µg/L	0.020	0.020	0.014	1	NA	3/20/15 11:55	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Environmental Quality Management	**Service Request:**	R1501658
Project:	RVAAP, EQM PN 030174.0016	**Date Collected:**	3/10/15 1614
Sample Matrix:	Water	**Date Received:**	3/11/15
Sample Name:	FWGEQUIPRinse2-0564-GW		
Lab Code:	R1501658-003	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Chromium, Hexavalent, Dissolved	218.6 LL	0.135		µg/L	0.020	0.020	0.014	1	NA	3/20/15 12:06	

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/April 6, 2015

SDG: R1501658
Analysis: EPA 218.6

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	✓				
2. Were samples preserved properly and received in good condition?	✓				pH verified to be with 9.3-9.7 with 24 hours of sampling, 4°C
3. Were holding times met?	✓				J/UJ/R
4. Were sample storage requirements met?	✓				
5. Does the initial calibration curve consist of at least 3 standards and one blank?	✓				
6. Was a MRL Level Verification performed at the beginning and end of every daily sequence? Were results within 70-130%?	✓				>130%=J; 65-70%=J/UJ; <65%=J/R
7. Was the ICB analyzed after the ICV with results <1/2 the MRL?	✓				< 5x = U
8. Was a CCV run at the beginning and end of the analytical sequence?	✓				
9. Were the CCV results 95-105%?	✓				>110%=J; <90%=J/UJ;
10. Was a method blank prepared and analyzed with each batch?	✓				
11. Were target analytes detected in the method blank?		✓		Checked by ADR.	LCG Table 10 <5x=B
12. Was a field blank collected and analyzed?	✓				
13. Were target analytes in the field blank analyses <1/2 the MRL?		✓		FWGEQUIPRINSE2-0564-GW had hexavalent chromium detected at 0.135 µg/L. No qualification of the data was required as a result of the equipment rinse contamination, as there were no detected concentrations reported for the associated field samples.	<5x=B
14. Was a field duplicate analyzed? Were the RPDs ≤30%?	✓			Checked by ADR.	>30% = J
15. Was an LCS prepared and analyzed with each batch?	✓				
16. Were the LCS recoveries within lab limits%?	✓			Checked by ADR.	>UL=J; <LL=J/UJ;

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/April 6, 2015

SDG: R1501658
Analysis: EPA 218.6

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
17. Was a MS prepared once per every 10 samples?	✓				LCG Table 10
18. Was the MS parent a Ravenna sample?	✓			Matrix spike analysis performed on sample FWGSCFmw-002-0545-GF.	
19. Were MS/MSD recoveries within lab limits%?	✓				>UL=J; <LL=J/UJ;
20. Were reported sample concentrations within calibration range?	✓				

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011
Additional Comments:

Attachment 2

Data Qualifier Summary

Lab Reporting Batch ID: R1501658

Laboratory: ALS_R

EDD Filename: R1501658

eQAPP Name: RVAAP Cr6+ oct 2013

No Data Review Qualifiers Applied.

Data Review Summary

Lab Reporting Batch ID: R1501658
EDD Filename: R1501658

Laboratory: ALS_R
eQAPP Name: RVAAP Cr6+ oct 2013

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	A
Field Duplicates	N
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Field QC Assignments and Associated Samples

EDD File Name: R1501658
eQapp Name: RVAAP Cr6+ oct 2013

	Associated Samples	Sample Collection Date
Field QC Sample: FWGEQUIPRinse2-0564-GW **QC Type:** EB		
	FWGLL12mw-247-0540-GF	3/10/2015 4:00:00 PM
	FWGSCFmw-002-0545-GF	3/10/2015 2:27:00 PM

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: R1501658										

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: March 2015
Workorder: R1502002

Date: April 22, 2015
Revision: 0

Data Reviewer: Angye Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On March 23, 2015 the following samples were collected from groundwater-monitoring wells at Ravenna Army Ammunition Plant and analyzed as part of work order R1502002. The hexavalent chromium analysis was performed by ALS Laboratories (formerly Columbia Analytical Services), Rochester, New York by method EPA 218.6.

FWGLL3mw-244-0532-GF
FWGLL3mw-DUP2-0558-GF
FWGEQUIPRINSE6-0568-GF

The data presented in this report were evaluated according to the *Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January, 2012.* The following documents were used as needed to supplement the project documentation: The United States Department of Defense (DoD) Quality Services Manual (QSM) for Environmental Laboratories, Version 4.1, and the United States Army Corps of Engineers (USACE), Louisville District Quality Systems Manual Supplement (LS), *EPA National Functional Guidelines (NFG) for Organic Data Review, EPA-540/R-08-01, June 2008, NFG for Inorganic Data Review, EPA-540/R-04-004, October 2004*, Analytical Methods, and Laboratory Standard Operating Procedures. The QC criteria provided in the reference documents represent accuracy and precision performance goals for each analytical method. QC criteria reviewed for each method are listed below, along with any outliers.

All analytical results have been verified against compliance requirements specified in the project QAPP, QSM, LS, associated analytical methods and/or SOPs, as appropriate, and reported by the laboratory as directed by the DoD QSM.

Checklists used in review of the data have been presented in Attachment1. Outliers have been noted below and results requiring qualification, as a result of this verification process, have been summarized in Attachment 2.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, 100%. Limitations, if any, on the data are indicated with qualifiers detailed below.

Hexavalent Chromium – 218.6

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, sample handling
- Initial Calibration Criteria including SPCC and CCC compounds
- ICV/CCV criteria
- Retention times
- MRL verification criteria
- Instrument, Method and Field Blank Criteria
- Field duplicate RPD criteria
- Laboratory Control Sample criteria
- Matrix Spike Recovery Criteria and RPD
- Instrument/method and field blanks free of contamination

Blanks

FWGEQUIPRINSE6-0568-GF had hexavalent chromium detected at 0.037µg/L. No qualification of the data was required as a result of the equipment rinse contamination, as the reported concentrations for the associated field samples were greater than 5x blank contamination.

No additional QC outliers were noted.

ALS ASP/CLP Batching Form/Login Sheet

Client Proj #:		Batch Complete: Yes	Date Revised:
Submission:	R1502002	Diskette Requested: Yes	Date Due: 4/7/15
Client:	Environmental Quality Manageme	Date: 3/24/15	Protocol: MCAWW
Client Rep:	JJAEGER	Custody Seal: Present/Absent:	Shipping No.:
Project:	RVAAP, EQM PN 030174.0016	Chain of Custody: Present/Absent:	SDG #:

CAS Job #	Client/EPA ID	Matrix	Requested Parameters	Date Sampled	Date Received	pH (Solids)	% Solids	Remarks Sample Condition
R1502002-001	FWGLL3mw-244-0532-GF	Water	218.6 LL	3/23/15	3/24/15			
R1502002-002	FWGLL3mw-DUP2-0558-GF	Water	218.6 LL	3/23/15	3/24/15			
R1502002-003	FWGEQUIPRINSE6-0568-GF	Water	218.6 LL	3/23/15	3/24/15			

Folder Comments: Need opening & closing MRL check & ADR.net checker, DoD report

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM 07326

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE 1 OF 1

Project Name: RVAAP-66	Project Number: 30174.0016.01.12
Project Manager: J. Miller	Report CC: A. Dragotta / E. Corbin
Company/Address: EQM 1800 Carillon Blvd Cincinnati Oh 45240	
Phone #: 513 825 7500	Email: ecorbin@eqm.com
Sampler's Signature:	Sampler's Printed Name: Colleen A. Lear

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs • 8260 • 624 • CLP	GC/MS SVOAs • 8270 • 625	GC VOAs • 8021 • 601/602	PESTICIDES • 8081 • 608	PCBs • 8082 • 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	Hexavalent Chromium 6 * short HOLD*	REMARKS/ ALTERNATE DESCRIPTION
FWGW3MW-244-0532-GF		3-23-15	1322	GW	1								1	
FWGW3MW-DUP-0558-GF		3-23-15	1402	GW	1								1	
~~FWGW3~~														
FWGWEQUIPRINSE-0568-GF		3-23-15	1605	W	1								1	NOT BUFFERED * NEEDS BUFFER

Preservative Key: 0. NONE; 1. HCL; 2. HNO_3; 3. H_2SO_4; 4. NaOH; 5. Zn. Acetate; 6. MeOH; 7. $NaHSO_4$; 8. Other

SPECIAL INSTRUCTIONS/COMMENTS
Metals: * Cr the Short HOLD *

See QAPP ☐ FedEx# 8748 3715 3764

STATE WHERE SAMPLES WERE COLLECTED

TURNAROUND REQUIREMENTS
____ RUSH (SURCHARGES APPLY)
____ 1 day ____ 2 day ____ 3 day
____ 4 day ____ 5 day
Dergiotti
REQUESTED REPORT DATE

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
Edata ____ Yes ____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature:	Signature: Fed Ex	Signature	Signature:	Signature	Signature
Printed Name: Colleen A. Lear	Printed Name: Express	Printed Name	Printed Name:	Printed Name	
Firm: EQM	Firm	Firm	Firm: ALS	Firm	
Date/Time: 3-23-15 1700	Date/Time: 3-23-15 1700	Date/Time	Date/Time: 3/24/15 0825	Date/Time	

R1502002 5
Environmental Quality Management
RVAAP, EQM PN 030174.0016

Distribution: White - Lab Copy; Yellow - Return to Originator

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R1502002 5
Environmental Quality Management
RVAAP, EQM PN 030174.0016

Cooler Receipt and Preservation Check Form

Project/Client EQM Folder Number

Cooler received on 3/24/15 by: @ COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	(Y) N	5a	Perchlorate samples have required headspace?	Y N (NA)
2	Custody papers properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* bubbles?	Y N (NA)
3	Did all bottles arrive in good condition (unbroken)?	(Y) N	6	Where did the bottles originate?	(ALS/ROC) CLIENT
4	Circle: (Wet Ice) Dry Ice Gel packs present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

8. Temperature Readings Date: 3/24/15 Time: 0833 ID: (IR#3) IR#4 From: (Temp Blank) Sample Bottle

Observed Temp (°C)	1.2						
Correction Factor (°C)	-						
Corrected Temp (°C)	1.2						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by @ on 3/24/15 at 0833
5035 samples placed in storage location: _____ by _____ on _____ at _____

PC Secondary Review: JMS 3/24/15

Cooler Breakdown: Date: 3/24/15 Time: 0850 by: @

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
2. Did all bottle labels and tags agree with custody papers? (YES) NO
3. Were correct containers used for the tests indicated? (YES) NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated (N/A)

Explain any discrepancies:

pH	Reagent	Yes	No	Lot Received	Exp	Sample ID	Vol. Added	Lot Added	Final pH
≥12	NaOH								
≤2	HNO_3								
≤2	H_2SO_4								
<4	$NaHSO_4$								
Residual Chlorine (-)	For CN Phenol and 522			If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol).					
	$Na_2S_2O_3$	-	-						
	ZnAcetate	-	-						
	HCl	**	**						

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

Bottle lot numbers: Client, Client corrected
Other Comments:

Cr+6 Buffer: WC140125-1 Exp 12/15

PC Secondary Review: JMS 3/24/15 *significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter

ALS Environmental

Client:	Environmental Quality Management
Service Request No.:	R1502002
Project:	RVAAP
Date Received:	3/24/15
Sample Matrix:	Water
Project/Case No.:	

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS).

Sample Receipt

Water samples were received for analysis at ALS Environmental on 3/24/15. The samples were received in good condition and consistent with the accompanying chain of custody form. All sampling activities performed by ALS personnel have been in accordance with "ALS Field Procedures and Measurements Manual" or by client specifications. The samples were stored in a refrigerator between 1°C and 6°C upon receipt at the laboratory.

Inorganic Analysis

Three water samples were analyzed for Hexavalent Chromium by method 218.6.

Site specific QC was not requested on these samples, however was performed. All MS/MSD recoveries and RPD's were acceptable.

All LCS recoveries were acceptable.

All Continuing Calibration Verification (CCV) standards were within limits.

All Method blanks were free of contamination.

No other analytical or QC problems were encountered.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Environmental Quality Management	**Service Request:**	R1502002
Project:	RVAAP, EQM PN 030174.0016	**Date Collected:**	3/23/15 1322
Sample Matrix:	Water	**Date Received:**	3/24/15
Sample Name:	FWGLL3mw-244-0532-GF		
Lab Code:	R1502002-001	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Chromium, Hexavalent, Dissolved	218.6 LL	0.187		µg/L	0.020	0.020	0.014	1	NA	3/27/15 12:28	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Environmental Quality Management	**Service Request:**	R1502002
Project:	RVAAP, EQM PN 030174.0016	**Date Collected:**	3/23/15 1402
Sample Matrix:	Water	**Date Received:**	3/24/15
Sample Name:	FWGLL3mw-DUP2-0558-GF		
Lab Code:	R1502002-002	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Chromium, Hexavalent, Dissolved	218.6 LL	0.188		µg/L	0.020	0.020	0.014	1	NA	3/27/15 12:38	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Environmental Quality Management	**Service Request:**	R1502002
Project:	RVAAP, EQM PN 030174.0016	**Date Collected:**	3/23/15 1608
Sample Matrix:	Water	**Date Received:**	3/24/15
Sample Name:	FWGEQUIPRINSE6-0568-GF		
Lab Code:	R1502002-003	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Chromium, Hexavalent, Dissolved	218.6 LL	0.037		µg/L	0.020	0.020	0.014	1	NA	3/27/15 12:48	

Attachment 1

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/April 22, 2015

SDG: R1502002
Analysis: EPA 218.6

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
1. Did Chain-of-Custody information agree with laboratory report?	✓				
2. Were samples preserved properly and received in good condition?	✓				pH verified to be with 9.3-9.7 with 24 hours of sampling, 4°C
3. Were holding times met?	✓				J/UJ/R
4. Were sample storage requirements met?	✓				
5. Does the initial calibration curve consist of at least 3 standards and one blank?	✓				
6. Was a MRL Level Verification performed at the beginning and end of every daily sequence? Were results within 70-130%?	✓				>130%=J; 65-70%=J/UJ; <65%=J/R
7. Was the ICB analyzed after the ICV with results <1/2 the MRL?	✓				< 5x = U
8. Was a CCV run at the beginning and end of the analytical sequence?	✓				
9. Were the CCV results 95-105%?	✓				>110%=J; <90%=J/UJ;
10. Was a method blank prepared and analyzed with each batch?	✓				
11. Were target analytes detected in the method blank?		✓		Checked by ADR.	LCG Table 10 <5x=B
12. Was a field blank collected and analyzed?	✓				
13. Were target analytes in the field blank analyses <1/2 the MRL?	✓			FWGEQUIPRINSE6-0568-GF had hexavalent chromium detected at 0.037µg/L. No qualification of the data was required as a result of the equipment rinse contamination, as reported concentrations for the associated samples were greater than 5x blank contamination.	<5x=B
14. Was a field duplicate analyzed? Were the RPDs ≤30%?	✓			Checked by ADR. A field duplicate was submitted for sample FWGLL3mw-244-0532-GF.	>30% = J
15. Was an LCS prepared and analyzed with each batch?	✓				
16. Were the LCS recoveries within lab limits%?	✓			Checked by ADR.	>UL=J; <LL=J/UJ;

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: March 2015
Data Reviewer/Date: Angye Dragotta/April 22, 2015

SDG: R1502002
Analysis: EPA 218.6

Review Questions:	Yes	No	N/A	Comments	QUAL/Criteria
17. Was a MS prepared once per every 10 samples?	✓				LCG Table 10
18. Was the MS parent a Ravenna sample?	✓			Matrix spike analysis performed on sample FWGLL3mw-244-0532-GF	
19. Were MS/MSD recoveries within lab limits%?	✓				>UL=J; <LL=J/UJ;
20. Were reported sample concentrations within calibration range?	✓				

References:
DoD Quality Systems Manual (QSM), version 4.1, October 2010

Louisville DoD Quality Systems Manual Supplement (LS), Version 1 March 2007

Final Facility Wide Groundwater Monitoring Program, RVAAP-66 Facility Wide Groundwater Quality Assurance Project Plan (QAPP) Addendum for the Ravenna Army Ammunition Plant, Ravenna, OH, Environmental Quality Management, January 2012

Final Facility Wide Quality Assurance Project Plan for Environmental Investigations Groundwater for the Ravenna Army Ammunition Plant, Ravenna, OH, SAIC, February 2011

Additional Comments:

Attachment 2

Data Qualifier Summary

Lab Reporting Batch ID: R1502002

EDD Filename: R1502002

Laboratory: ALS_R

eQAPP Name: RVAAP Cr6+ oct 2013

No Data Review Qualifiers Applied.

Data Review Summary

Lab Reporting Batch ID: R1502002
EDD Filename: R1502002

Laboratory: ALS_R
eQAPP Name: RVAAP Cr6+ oct 2013

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	A
Field Duplicates	A
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Field Duplicate RPD Report

Lab Reporting Batch ID: R1502002 **Laboratory: ALS_R**

EDD Filename: R1502002 **eQAPP Name: RVAAP Cr6+ oct 2013**

Method: 218.6
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	FWGLL3mw-244-0532-GF (DIS)	FWGLL3mw-DUP2-0558-GF (DIS)			
HEXAVALENT CHROMIUM	0.187	0.188	1	20.00	No Qualifiers Applied

Project Name and Number: 030174.0016 - RVAAP

Field QC Assignments and Associated Samples

EDD File Name: R1502002
eQapp Name: RVAAP Cr6+ oct 2013

	Associated Samples	Sample Collection Date
Field QC: FWGEQUIPRINSE6-0568-GF **QC Type:** EB		
	FWGLL3mw-244-0532-GF	3/23/2015 1:22:00 PM
	FWGLL3mw-DUP2-0558-GF	3/23/2015 2:02:00 PM
Field QC: FWGLL3mw-DUP2-0558-GF **QC Type:** FD		
	FWGLL3mw-244-0532-GF	3/23/2015 1:22:00 PM

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG:R1502002										

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

APPENDIX D

INVESTIGATION-DERIVED WASTE CHARACTERIZATION AND DISPOSAL PLAN

FINAL

FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RVAAP-66 FACILITY-WIDE GROUNDWATER

INVESTIGATION-DERIVED WASTE CHARACTERIZATION AND DISPOSAL PLAN
MARCH 2015 GROUNDWATER SAMPLING EVENT REPORT

FORMER RAVENNA ARMY AMMUNITION PLANT,
PORTAGE AND TRUMBULL COUNTIES, OHIO

April 15, 2015

GSA Contract Number GS-10F-0293K
Delivery Order W912QR-11-F-0266

Prepared for:

U.S. Army Corps of Engineers
600 Martin Luther King Jr. Place
Louisville, Kentucky 40202

Prepared by:

Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240

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APPENDICES

A Investigation-Derived Waste Analytical Report

ACRONYMS

AOC	area of concern
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
EQM	Environmental Quality Management, Inc.
^{o}F	degrees Fahrenheit
FWG	Facility-Wide Groundwater
FWGWMP	Facility-Wide Groundwater Monitoring Program
FWGWMPP	Facility-Wide Groundwater Monitoring Program Plan
FWSAP	Facility-Wide Sampling and Analysis Plan
gal	gallon
IDW	investigation-derived waste
mg/L	milligram per liter
OHARNG	Ohio Army National Guard
RCRA	Resource Conservation and Recovery Act
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SAP	Sampling and Analysis Plan
S.U.	standard unit
SVOC	semivolatile organic compound
TCLP	Toxicity Characteristic Leaching Procedure
USACE	United States Army Corps of Engineers
VOC	volatile organic compound

1.0 INTRODUCTION

Investigative activities were conducted during the Facility-Wide Groundwater Monitoring Program (FWGWMP) sampling events in March 2015 at the former Ravenna Army Ammunition Plant (RVAAP), Portage and Trumbull Counties, Ohio, resulting in the generation of investigation-derived wastes (IDW). The IDW consists of purge water and equipment decontamination wastewater. The IDW purge water was generated in the course of field activities at each well. The IDW decontamination waters were generated from the cleaning and decontamination of non-dedicated equipment used to sample the wells. The purpose of this report is to characterize and classify the IDW for proper disposal. The report includes:

- A summary of the IDW generated and its origin.
- A review of the analytical results used for waste characterization.
- Classification of the IDW per the *Facility Wide Sampling and Analysis Plan* (FWSAP).
- Recommendations for disposal.

This document follows guidance established by the United States Army Corps of Engineers (USACE), the Ohio Army National Guard (OHARNG), and the Ohio Environmental Protection Agency (EPA) regarding IDW disposition at the former RVAAP.

2.0 OPERATIONAL HISTORY AND WASTE GENERATION

Information regarding the operational history and suspected contaminants for the Facility-Wide Groundwater Monitoring Program Plan (FWGWMPP) is presented in Section 1.2 of the *Final Part 1 - Sampling and Analysis Plan Addendum for the Facility-Wide Groundwater Monitoring Program Plan at the Ravenna Army Ammunition Plant, Ravenna, Ohio* (SAP Addendum; Portage, 2004). Section 4.6 of the FWGWMP SAP Addendum describes procedures used for sampling and managing IDW at the former RVAAP.

Water (purged groundwater and decontamination water) IDW was generated during the March 2015 sampling event (forty-six wells). The purge water collected from the sampled areas of concern (AOCs) was stored in drums labeled for purge water disposal. Purge water was generated in accordance with the FWSAP, Section 5.4.4.2 (SAIC, 2011) under the micropurging criteria. Decontamination water was generated from the washing, rinsing, and decontamination procedures used for all non-dedicated sampling equipment. The decontamination water was stored in a drum separate from the purge water. These decontamination procedures are described in Section 5.4.8 of the FWSAP.

The drum container label, type and size of the drum container used, estimated volume per drum, and the source of purge wastewater or decontamination fluid is presented in Table 2-1.

Table 2-1. IDW Inventory of Drums

Drum Label	Drum Type & Size	Contents	Estimated Volume	Location/ Source
EQM 2015-1	55-gal Steel	Purge Water	~50 gallons	Load Lines 1, 2, 3, 7, and 12 wells; FWG wells; FBQ well, RQL wells; NACA well; WBG wells, SCF well; OD2 wells
EQM 2015-2	55-gal Steel	Purge Water	~50 gallons	Load Lines 1, 2, 3, 7, and 12 wells; FWG wells; FBQ well, RQL wells; NACA well; WBG wells, SCF well; OD2 wells
EQM 2015-3	55-gal Steel	Decontamination Fluids	~20 gallons	Equipment Decontamination fluids
EQM 2015-4	55-gal Steel	Purge Water	~50 gallons	Load Lines 1, 2, 3, 7, and 12 wells; FWG wells; FBQ well, RQL wells; NACA well; WBG wells, SCF well; OD2 wells

3.0 MANAGEMENT OF ENVIRONMENTAL MEDIA

All environmental media were managed in a manner that minimized potential risk to human health and the environment. Based on past sampling and IDW reports for similar groundwater monitoring activities, investigation-derived waste was handled as nonhazardous material pending waste characterization and classification based on analytical results. The FWSAP and the FWGWMPP SAP Addendum describe approved procedures used for containerizing and handling IDW.

All purged groundwater IDW generated from each micropurging event was placed into a 55-gal drum as previously agreed upon by the Army, USACE, and Ohio EPA. The purge water was transferred daily from each well location after sampling via closed-top 5-gal buckets to the appropriately labeled 55-gal drum located and staged on secondary containment inside Building 1036.

4.0 DISCUSSION OF ANALYTICAL RESULTS

As described in Section 8.4 of the FWSAP (IDW Characterization and Classification for Disposal), all IDW were characterized for disposal by taking composite samples collected from each of the segregated waste streams. There were only two segregated waste streams during this sampling event that required characterization: one for the generated purge water and one for the decontamination wastewater. A composite sample was taken of each waste stream using a disposable bailer until a total of approximately 4 liters was withdrawn in equal amounts from all drums of that particular waste stream. Each waste stream composite sample was submitted to TestAmerica Laboratories in North Canton, Ohio, for full Toxicity Characteristic Leaching Procedure (TCLP) analysis in accordance with the FWSAP using the following methods:

- TCLP mercury by EPA Method SW-846 1311/7470A.
- TCLP metals (silver, arsenic, barium, cadmium, chromium, lead, and selenium) by EPA Method SW-846 1311/6010B.
- TCLP semivolatile organic compounds (SVOCs) by EPA Method SW-846 1311/8270C.
- TCLP volatile organic compounds (VOCs) by EPA Method SW-846 1311/8260B.
- TCLP pesticides by EPA Method SW-846 1311/8081A
- TCLP herbicides by EPA Method SW-846 1311/8151A
- Total cyanide by EPA Method SW-846 9012A
- Total sulfide by EPA Method SW-846 9034
- Flashpoint by EPA Method SW-846 1010
- pH by EPA Method SW-846 9040B

A trip blank was submitted with the samples and analyzed for VOCs. The IDW analytical results are presented in Appendix A.

5.0 RECOMMENDATIONS FOR DISPOSAL

Table 8-1 in the FWSAP presents the maximum concentrations of contaminants for the toxicity characteristic for hazardous wastes as per 40 CFR 261.24. Analytical results for the IDW generated during the March 2015 groundwater sampling event were compared against these criteria to determine whether the waste streams generated were potentially hazardous or non-hazardous. No volatile organic compounds were identified in the trip blank.

5.1 Purge Water

During micro-purging of the monitoring wells, liquid IDW was generated and sampled. The analytical results for the purged groundwater were compared to the regulatory levels from Table 8-1 in the FWSAP. The regulatory criteria (TCLP) for Resource Conservation and Recovery Act (RCRA) hazardous waste determinations were not exceeded. Table 5-1 presents the detected results compared to the regulatory characteristics for hazardous wastes as per 40 CFR 261.24.

The drums containing purged groundwater will be classified as non-hazardous and will be sent offsite for disposal to a permitted water treatment facility in accordance with Section 8.0 of the FWSAP.

5.2 Decontamination Fluids

A composite sample was collected of the decontamination fluids generated during cleaning of non-dedicated sampling equipment. The regulatory criteria (TCLP) for RCRA hazardous waste determinations were not exceeded. Table 5-1 presents the detected results compared to the regulatory characteristics for hazardous wastes as per 40 CFR 261.24.

The drum containing the decontamination water will be classified as non-hazardous and will be sent offsite for disposal to a permitted water treatment facility in accordance with Section 8.0 of the FWSAP.

5.3 Summary of Disposal Recommendations

All drums will be classified as contaminated but non-hazardous. The decontamination and purge water drums will be sent offsite to a permitted water treatment facility for disposal. The results for both composite samples show that no chemical was detected at hazardous waste levels. Table 5-2 presents a summary of each drum and the recommended disposal options for the waste streams. Upon review and acceptance of the IDW report, Environmental Quality Management, Inc. (EQM) will proceed with the appropriate waste disposal.

Table 5-1. Detected Analytical Results When Compared to USEPA Regulatory Characteristic Levels (40 CFR 261.20 - 24)

Sample ID	Detected Contaminant	Detected Result, mg/L	Characteristic Levels for Determining Hazardous Waste[1], mg/L	Above Regulatory Yes/No
FWG-IDW-MWPURGEMAR2015	Barium	0.032 JB	100	No
	Cadmium	0.00039 J	1.0	No
	Chromium	0.0013 JB	5.0	No
	Flashpoint	>200°F	<140°F	No
	Cyanide, Total	0.15	See Notes	No
	pH[2]	8.40	<2 or >12.5	No
FWG-IDW-MWDECONMAR2015	Arsenic	0.0087 JB	5.0	No
	Barium	0.04 JB	100	No
	Cadmium	0.0011 J	1.0	No
	Chromium	0.027 JB	5.0	No
	Lead	0.079 J	5.0	No
	Mercury	0.000092 J	0.20	No
	Flashpoint	>200°F	<140°F	No
	Cyanide, Total	0.0096 J	See Notes	No
	pH[2]	7.42	<2 or >12.5	No
Trip Blank-IDW-MAR2015	None Detected			

1 = USEPA Regulatory Characteristic Levels (40 CFR 261.20 through 24).
2 = pH measured in Standard Units (S.U.).
J = estimated result. Result is less than reporting limit.
B = blank contamination.
Reactive Cyanide Note: Despite the presence of a low concentration of cyanide, the waste streams are deemed nonhazardous as they do not meet the hazardous waste criteria set forth in OAC 3725-51-23 (i.e., reacts violently with water or produces toxic gases, fumes, or vapors between the pH of 2 and 12.5).

Table 5-2. Summary of Drum Containers, TCLP/Characteristic Waste Criteria, and Disposal Recommendations

Drum Container Label	Media	TCLP Criteria	Disposal Recommendation
EQM 2015-1 Purge Water	Water	Regulatory limits not exceeded.	Offsite disposal as non-hazardous waste.
EQM 2015-2 Purge Water	Water	Regulatory limits not exceeded.	Offsite disposal as non-hazardous waste.
EQM 2015-3 Decon Water	Water	Regulatory limits not exceeded.	Offsite disposal as non-hazardous waste.
EQM 2015-4 Purge Water	Water	Regulatory limits not exceeded.	Offsite disposal as non-hazardous waste.

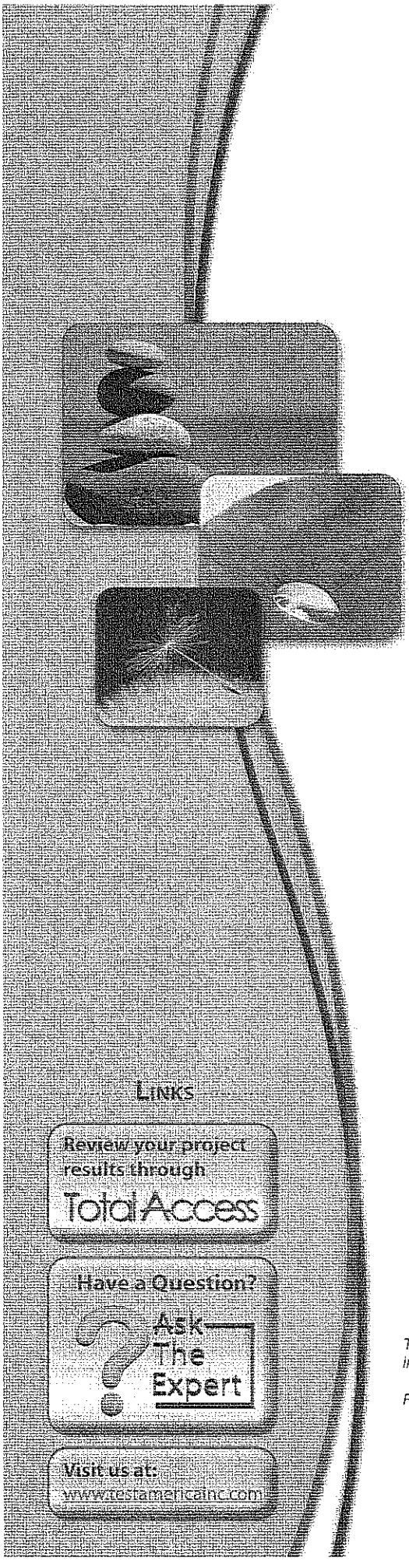
6.0 REFERENCES

Science Applications International Corporation (SAIC). February 24, 2011. *Final Facility-Wide Sampling and Analysis Plan for Environmental Investigations, Ravenna Army Ammunition Plant, Ravenna, Ohio.*

Portage Environmental. 2004. *RVAAP Facility Wide Groundwater Monitoring Program Plan*.

APPENDIX A

INVESTIGATION-DERIVED WASTE ANALYTICAL REPORT



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-48610-1
Client Project/Site: RVAAP (OH) - IDW

For:
Environmental Quality Mgt., Inc.
1800 Carillon Blvd
Cincinnati, Ohio 45240

Attn: Mr. Erik Corbin

Authorized for release by:
4/7/2015 2:42:31 PM

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

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

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Definitions/Glossary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
*	LCS or LCSD exceeds the control limits
X	Surrogate is outside control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 240-48610-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Environmental Quality Mgt., Inc.

Project: RVAAP (OH) - IDW

Report Number: 240-48610-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

RECEIPT

The samples were received on 3/25/2015 2:02 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.3° C, 1.9° C, 2.1° C, 3.1° C, 3.5° C and 3.9° C.

TCLP VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for TCLP volatile organic compounds (GCMS) in accordance with EPA SW-846 Methods 1311/8260B. The samples were leached on 03/26/2015 and analyzed on 03/27/2015.

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

VOLATILE ORGANIC COMPOUNDS (GCMS)

Sample TRIPBLANK IDW MAR 2015 (240-48610-1) was analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 03/30/2015.

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

TCLP SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)

Job ID: 240-48610-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for TCLP semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Methods 1311/8270C. The samples were leached on 03/25/2015 and 03/26/2015, prepared on 03/26/2015 and analyzed on 03/31/2015.

Surrogates are added during the extraction process prior to dilution. When the sample is diluted, surrogate recoveries are diluted out and no corrective action is required.

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

TCLP CHLORINATED PESTICIDES

Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for TCLP chlorinated pesticides in accordance with EPA SW-846 Methods 1311/8081A. The samples were leached on 03/25/2015 and 03/26/2015, prepared on 03/26/2015 and analyzed on 04/01/2015.

Surrogates are added during the extraction process prior to dilution. When the sample dilution is 5X or greater, surrogate recoveries are diluted out and no corrective action is required.

DCB Decachlorobiphenyl failed the surrogate recovery criteria low for FWG-IDW-MWDECONMAR2015 (240-48610-3). Refer to the QC report for details.

Method(s) 8081A: The continuing calibration verification (CCV) associated with batch 174449 recovered above the upper control limit for Multiple Analytes. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: FWG-IDW-MWDECONMAR2015, FWG-IDW-MWPURGEMAR2015.

Method(s) 8081A: The following sample(s) was diluted due to the nature of the sample matrix: FWG-IDW-MWDECONMAR2015. Elevated reporting limits (RLs) are provided.

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

TCLP CHLORINATED HERBICIDES

Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for TCLP chlorinated herbicides in accordance with EPA SW-846 Methods 1311/8151A. The samples were leached on 03/25/2015 and 03/26/2015, prepared on 03/26/2015 and analyzed on 03/30/2015.

Surrogates are added during the extraction process prior to dilution. When the sample dilution is 5X or greater, surrogate recoveries are diluted out and no corrective action is required.

Silvex (2,4,5-TP) failed the recovery criteria high for the MS of sample 190-6835-1 in batch 240-174352.

Refer to the QC report for details.

Method(s) 8151A: The continuing calibration verification (CCV) associated with batch 174352 recovered above the upper control limit for 2,4-D and silvex. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: DISCHARGE TO STREAM, FWG-IDW-MWDECONMAR2015, FWG-IDW-MWPURGEMAR2015.

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

TCLP METALS (ICP)

Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for TCLP metals (ICP) in accordance with EPA SW-846 Methods 1311/6010B. The samples were leached on 03/25/2015 and 03/26/2015, prepared on 03/26/2015 and analyzed on 03/27/2015.

Arsenic, Barium and Chromium were detected in method blank LB 240-173827/1-B at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a

Job ID: 240-48610-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Chromium was detected in method blank MB 240-173852/2-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.

TCLP MERCURY
Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for TCLP mercury in accordance with EPA SW-846 Methods 1311/7470A. The samples were leached on 03/25/2015 and 03/26/2015, and prepared and analyzed on 03/27/2015.

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

FLASHPOINT
Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for flashpoint in accordance with EPA SW-846 Method 1010. The samples were analyzed on 03/26/2015.

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

TOTAL CYANIDE
Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for total cyanide in accordance with EPA SW-846 Method 9012A. The samples were prepared and analyzed on 04/02/2015.

Sample FWG-IDW-MWPURGEMAR2015 (240-48610-2)[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.

SULFIDE
Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for sulfide in accordance with EPA SW-846 Method 9034. The samples were prepared and analyzed on 03/26/2015.

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

PH
Samples FWG-IDW-MWPURGEMAR2015 (240-48610-2) and FWG-IDW-MWDECONMAR2015 (240-48610-3) were analyzed for pH in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 03/26/2015.

The following samples were received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: FWG-IDW-MWDECONMAR2015, FWG-IDW-MWPURGEMAR2015.

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

Method Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
8081A	Organochlorine Pesticides (GC)	SW846	TAL CAN
8151A	Herbicides (GC)	SW846	TAL CAN
6010B	Metals (ICP)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL CAN
9012A	Cyanide, Total and/or Amenable	SW846	TAL CAN
9034	Sulfide, Acid soluble and Insoluble (Titrimetric)	SW846	TAL CAN
9040B	pH	SW846	TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-48610-1	TRIPBLANK IDW MAR 2015	Water	03/25/15 08:00	03/25/15 14:02
240-48610-2	FWG-IDW-MWPURGEMAR2015	Water	03/25/15 11:40	03/25/15 14:02
240-48610-3	FWG-IDW-MWDECONMAR2015	Water	03/25/15 11:50	03/25/15 14:02

Detection Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Client Sample ID: TRIPBLANK IDW MAR 2015 — Lab Sample ID: 240-48610-1

No Detections.

Client Sample ID: FWG-IDW-MWPURGEMAR2015 — Lab Sample ID: 240-48610-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.032	J B	10	0.0010	mg/L	1		6010B	TCLP
Cadmium	0.00039	J	0.10	0.00014	mg/L	1		6010B	TCLP
Chromium	0.0013	J B	0.50	0.00055	mg/L	1		6010B	TCLP
Flashpoint	>200		1.00	1.00	Degrees F	1		1010	Total/NA
Cyanide, Total	0.15		0.050	0.010	mg/L	5		9012A	Total/NA
pH	8.40	H	0.100	0.100	SU	1		9040B	Total/NA

Client Sample ID: FWG-IDW-MWDECONMAR2015 — Lab Sample ID: 240-48610-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0087	J B	0.50	0.0029	mg/L	1		6010B	TCLP
Barium	0.040	J B	10	0.0010	mg/L	1		6010B	TCLP
Cadmium	0.0011	J	0.10	0.00014	mg/L	1		6010B	TCLP
Chromium	0.027	J B	0.50	0.00055	mg/L	1		6010B	TCLP
Lead	0.079	J	0.50	0.0019	mg/L	1		6010B	TCLP
Mercury	0.000092	J	0.0020	0.000090	mg/L	1		7470A	TCLP
Flashpoint	>200		1.00	1.00	Degrees F	1		1010	Total/NA
Cyanide, Total	0.0096	J	0.010	0.0020	mg/L	1		9012A	Total/NA
pH	7.42	H	0.100	0.100	SU	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Client Sample ID: TRIPBLANK IDW MAR 2015
Date Collected: 03/25/15 08:00
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48610-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.45	ug/L			03/30/15 19:53	1
1,2-Dichloroethane	1.0	U	1.0	0.23	ug/L			03/30/15 19:53	1
Benzene	1.0	U	1.0	0.35	ug/L			03/30/15 19:53	1
Carbon tetrachloride	1.0	U	1.0	0.43	ug/L			03/30/15 19:53	1
Chlorobenzene	1.0	U	1.0	0.25	ug/L			03/30/15 19:53	1
Chloroform	1.0	U	1.0	0.25	ug/L			03/30/15 19:53	1
2-Butanone (MEK)	10	U	10	0.53	ug/L			03/30/15 19:53	1
Tetrachloroethene	1.0	U	1.0	0.31	ug/L			03/30/15 19:53	1
Trichloroethene	1.0	U	1.0	0.22	ug/L			03/30/15 19:53	1
Vinyl chloride	1.0	U	1.0	0.29	ug/L			03/30/15 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 129*		*03/30/15 19:53*	*1*
4-Bromofluorobenzene (Surr)	*99*		*66 - 120*		*03/30/15 19:53*	*1*
Toluene-d8 (Surr)	*92*		*74 - 120*		*03/30/15 19:53*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 121*		*03/30/15 19:53*	*1*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Client Sample ID: FWG-IDW-MWPURGEMAR2015
Date Collected: 03/25/15 11:40
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48610-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.025	U	0.025	0.0095	mg/L			03/27/15 16:49	1
1,2-Dichloroethane	0.025	U	0.025	0.011	mg/L			03/27/15 16:49	1
2-Butanone (MEK)	0.25	U	0.25	0.029	mg/L			03/27/15 16:49	1
Benzene	0.025	U	0.025	0.0065	mg/L			03/27/15 16:49	1
Carbon tetrachloride	0.025	U	0.025	0.0065	mg/L			03/27/15 16:49	1
Chlorobenzene	0.025	U	0.025	0.0075	mg/L			03/27/15 16:49	1
Chloroform	0.025	U	0.025	0.0080	mg/L			03/27/15 16:49	1
Tetrachloroethene	0.025	U	0.025	0.015	mg/L			03/27/15 16:49	1
Trichloroethene	0.025	U	0.025	0.0085	mg/L			03/27/15 16:49	1
Vinyl chloride	0.025	U	0.025	0.011	mg/L			03/27/15 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*80 - 121*		*03/27/15 16:49*	*1*
4-Bromofluorobenzene (Surr)	*85*		*70 - 124*		*03/27/15 16:49*	*1*
Toluene-d8 (Surr)	*85*		*80 - 120*		*03/27/15 16:49*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 128*		*03/27/15 16:49*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.0040	U	0.0040	0.00034	mg/L		03/26/15 12:59	03/31/15 14:44	1
2,4,5-Trichlorophenol	0.0040	U	0.0040	0.00030	mg/L		03/26/15 12:59	03/31/15 14:44	1
2,4,6-Trichlorophenol	0.0040	U	0.0040	0.00024	mg/L		03/26/15 12:59	03/31/15 14:44	1
2,4-Dinitrotoluene	0.0040	U	0.0040	0.00025	mg/L		03/26/15 12:59	03/31/15 14:44	1
Hexachlorobenzene	0.00080	U	0.00080	0.000085	mg/L		03/26/15 12:59	03/31/15 14:44	1
Hexachlorobutadiene	0.0040	U	0.0040	0.00027	mg/L		03/26/15 12:59	03/31/15 14:44	1
Hexachloroethane	0.0040	U	0.0040	0.00019	mg/L		03/26/15 12:59	03/31/15 14:44	1
3 & 4 Methylphenol	0.0040	U	0.0040	0.00080	mg/L		03/26/15 12:59	03/31/15 14:44	1
2-Methylphenol	0.0040	U	0.0040	0.00017	mg/L		03/26/15 12:59	03/31/15 14:44	1
Nitrobenzene	0.0040	U	0.0040	0.000040	mg/L		03/26/15 12:59	03/31/15 14:44	1
Pentachlorophenol	0.0040	U	0.0040	0.00027	mg/L		03/26/15 12:59	03/31/15 14:44	1
Pyridine	0.0040	U	0.0040	0.00035	mg/L		03/26/15 12:59	03/31/15 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*30 - 110*	*03/26/15 12:59*	*03/31/15 14:44*	*1*
2-Fluorophenol (Surr)	*52*		*20 - 110*	*03/26/15 12:59*	*03/31/15 14:44*	*1*
2,4,6-Tribromophenol (Surr)	*42*		*23 - 110*	*03/26/15 12:59*	*03/31/15 14:44*	*1*
Nitrobenzene-d5 (Surr)	*58*		*28 - 110*	*03/26/15 12:59*	*03/31/15 14:44*	*1*
Phenol-d5 (Surr)	*44*		*21 - 110*	*03/26/15 12:59*	*03/31/15 14:44*	*1*
Terphenyl-d14 (Surr)	*82*		*48 - 110*	*03/26/15 12:59*	*03/31/15 14:44*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	0.0050	U	0.0050	0.00014	mg/L		03/26/15 12:57	04/01/15 00:01	1
Endrin	0.00050	U	0.00050	0.000013	mg/L		03/26/15 12:57	04/01/15 00:01	1
Heptachlor	0.00050	U	0.00050	0.000014	mg/L		03/26/15 12:57	04/01/15 00:01	1
Heptachlor epoxide	0.00050	U *	0.00050	0.000015	mg/L		03/26/15 12:57	04/01/15 00:01	1
gamma-BHC (Lindane)	0.00050	U	0.00050	0.000013	mg/L		03/26/15 12:57	04/01/15 00:01	1
Methoxychlor	0.0010	U	0.0010	0.000013	mg/L		03/26/15 12:57	04/01/15 00:01	1
Toxaphene	0.020	U	0.020	0.00020	mg/L		03/26/15 12:57	04/01/15 00:01	1

Client Sample ID: FWG-IDW-MWPURGEMAR2015
Date Collected: 03/25/15 11:40
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48610-2
Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*82*		*40 - 129*	*03/26/15 12:57*	*04/01/15 00:01*	*1*
Tetrachloro-m-xylene	*81*		*40 - 129*	*03/26/15 12:57*	*04/01/15 00:01*	*1*
DCB Decachlorobiphenyl	*82*		*40 - 152*	*03/26/15 12:57*	*04/01/15 00:01*	*1*
DCB Decachlorobiphenyl	*84*		*40 - 152*	*03/26/15 12:57*	*04/01/15 00:01*	*1*

Method: 8151A - Herbicides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	0.0040	U	0.0040	0.0019	mg/L		03/26/15 12:54	03/30/15 19:40	1
Silvex (2,4,5-TP)	0.0010	U	0.0010	0.00027	mg/L		03/26/15 12:54	03/30/15 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*106*		*56 - 120*	*03/26/15 12:54*	*03/30/15 19:40*	*1*
2,4-Dichlorophenylacetic acid	*76*		*56 - 120*	*03/26/15 12:54*	*03/30/15 19:40*	*1*

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.50	U	0.50	0.0029	mg/L		03/26/15 12:00	03/27/15 19:07	1
Barium	**0.032**	**J B**	10	0.0010	mg/L		03/26/15 12:00	03/27/15 19:07	1
Cadmium	**0.00039**	**J**	0.10	0.00014	mg/L		03/26/15 12:00	03/27/15 19:07	1
Chromium	**0.0013**	**J B**	0.50	0.00055	mg/L		03/26/15 12:00	03/27/15 19:07	1
Lead	0.50	U	0.50	0.0019	mg/L		03/26/15 12:00	03/27/15 19:07	1
Selenium	0.25	U	0.25	0.0040	mg/L		03/26/15 12:00	03/27/15 19:07	1
Silver	0.50	U	0.50	0.00092	mg/L		03/26/15 12:00	03/27/15 19:07	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0020	0.000090	mg/L		03/27/15 07:15	03/27/15 13:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>200**		1.00	1.00	Degrees F			03/26/15 06:35	1
Cyanide, Total	**0.15**		0.050	0.010	mg/L		04/02/15 10:00	04/02/15 14:38	5
Sulfide	3.0	U	3.0	0.94	mg/L		03/26/15 08:23	03/26/15 08:23	1
pH	**8.40**	**H**	0.100	0.100	SU			03/26/15 16:16	1

Client Sample ID: FWG-IDW-MWDECONMAR2015
Date Collected: 03/25/15 11:50
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48610-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.025	U	0.025	0.0095	mg/L			03/27/15 17:12	1
1,2-Dichloroethane	0.025	U	0.025	0.011	mg/L			03/27/15 17:12	1
2-Butanone (MEK)	0.25	U	0.25	0.029	mg/L			03/27/15 17:12	1
Benzene	0.025	U	0.025	0.0065	mg/L			03/27/15 17:12	1
Carbon tetrachloride	0.025	U	0.025	0.0065	mg/L			03/27/15 17:12	1
Chlorobenzene	0.025	U	0.025	0.0075	mg/L			03/27/15 17:12	1
Chloroform	0.025	U	0.025	0.0080	mg/L			03/27/15 17:12	1
Tetrachloroethene	0.025	U	0.025	0.015	mg/L			03/27/15 17:12	1
Trichloroethene	0.025	U	0.025	0.0085	mg/L			03/27/15 17:12	1
Vinyl chloride	0.025	U	0.025	0.011	mg/L			03/27/15 17:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*80 - 121*		*03/27/15 17:12*	*1*
4-Bromofluorobenzene (Surr)	*87*		*70 - 124*		*03/27/15 17:12*	*1*
Toluene-d8 (Surr)	*91*		*80 - 120*		*03/27/15 17:12*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 128*		*03/27/15 17:12*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.0040	U	0.0040	0.00034	mg/L		03/26/15 12:59	03/31/15 15:08	1
2,4,5-Trichlorophenol	0.0040	U	0.0040	0.00030	mg/L		03/26/15 12:59	03/31/15 15:08	1
2,4,6-Trichlorophenol	0.0040	U	0.0040	0.00024	mg/L		03/26/15 12:59	03/31/15 15:08	1
2,4-Dinitrotoluene	0.0040	U	0.0040	0.00025	mg/L		03/26/15 12:59	03/31/15 15:08	1
Hexachlorobenzene	0.00080	U	0.00080	0.000085	mg/L		03/26/15 12:59	03/31/15 15:08	1
Hexachlorobutadiene	0.0040	U	0.0040	0.00027	mg/L		03/26/15 12:59	03/31/15 15:08	1
Hexachloroethane	0.0040	U	0.0040	0.00019	mg/L		03/26/15 12:59	03/31/15 15:08	1
3 & 4 Methylphenol	0.0040	U	0.0040	0.00080	mg/L		03/26/15 12:59	03/31/15 15:08	1
2-Methylphenol	0.0040	U	0.0040	0.00017	mg/L		03/26/15 12:59	03/31/15 15:08	1
Nitrobenzene	0.0040	U	0.0040	0.000040	mg/L		03/26/15 12:59	03/31/15 15:08	1
Pentachlorophenol	0.0040	U	0.0040	0.00027	mg/L		03/26/15 12:59	03/31/15 15:08	1
Pyridine	0.0040	U	0.0040	0.00035	mg/L		03/26/15 12:59	03/31/15 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*48*		*30 - 110*	*03/26/15 12:59*	*03/31/15 15:08*	*1*
2-Fluorophenol (Surr)	*37*		*20 - 110*	*03/26/15 12:59*	*03/31/15 15:08*	*1*
2,4,6-Tribromophenol (Surr)	*46*		*23 - 110*	*03/26/15 12:59*	*03/31/15 15:08*	*1*
Nitrobenzene-d5 (Surr)	*39*		*28 - 110*	*03/26/15 12:59*	*03/31/15 15:08*	*1*
Phenol-d5 (Surr)	*34*		*21 - 110*	*03/26/15 12:59*	*03/31/15 15:08*	*1*
Terphenyl-d14 (Surr)	*64*		*48 - 110*	*03/26/15 12:59*	*03/31/15 15:08*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	0.025	U	0.025	0.00070	mg/L		03/26/15 12:57	04/01/15 00:24	5
Endrin	0.0025	U	0.0025	0.000065	mg/L		03/26/15 12:57	04/01/15 00:24	5
Heptachlor	0.0025	U	0.0025	0.000070	mg/L		03/26/15 12:57	04/01/15 00:24	5
Heptachlor epoxide	0.0025	U *	0.0025	0.000075	mg/L		03/26/15 12:57	04/01/15 00:24	5
gamma-BHC (Lindane)	0.0025	U	0.0025	0.000065	mg/L		03/26/15 12:57	04/01/15 00:24	5
Methoxychlor	0.0050	U	0.0050	0.000065	mg/L		03/26/15 12:57	04/01/15 00:24	5
Toxaphene	0.10	U	0.10	0.00098	mg/L		03/26/15 12:57	04/01/15 00:24	5

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Client Sample ID: FWG-IDW-MWDECONMAR2015
Date Collected: 03/25/15 11:50
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48610-3
Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*57*		*40 - 129*	*03/26/15 12:57*	*04/01/15 00:24*	*5*
Tetrachloro-m-xylene	*58*		*40 - 129*	*03/26/15 12:57*	*04/01/15 00:24*	*5*
DCB Decachlorobiphenyl	*11*	*X*	*40 - 152*	*03/26/15 12:57*	*04/01/15 00:24*	*5*
DCB Decachlorobiphenyl	*10*	*X*	*40 - 152*	*03/26/15 12:57*	*04/01/15 00:24*	*5*

Method: 8151A - Herbicides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	0.0040	U	0.0040	0.0019	mg/L		03/26/15 12:54	03/30/15 20:03	1
Silvex (2,4,5-TP)	0.0010	U	0.0010	0.00027	mg/L		03/26/15 12:54	03/30/15 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*94*		*56 - 120*	*03/26/15 12:54*	*03/30/15 20:03*	*1*
2,4-Dichlorophenylacetic acid	*109*		*56 - 120*	*03/26/15 12:54*	*03/30/15 20:03*	*1*

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0087**	J B	0.50	0.0029	mg/L		03/26/15 12:00	03/27/15 19:11	1
Barium	**0.040**	J B	10	0.0010	mg/L		03/26/15 12:00	03/27/15 19:11	1
Cadmium	**0.0011**	J	0.10	0.00014	mg/L		03/26/15 12:00	03/27/15 19:11	1
Chromium	**0.027**	J B	0.50	0.00055	mg/L		03/26/15 12:00	03/27/15 19:11	1
Lead	**0.079**	J	0.50	0.0019	mg/L		03/26/15 12:00	03/27/15 19:11	1
Selenium	0.25	U	0.25	0.0040	mg/L		03/26/15 12:00	03/27/15 19:11	1
Silver	0.50	U	0.50	0.00092	mg/L		03/26/15 12:00	03/27/15 19:11	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000092**	J	0.0020	0.000090	mg/L		03/27/15 07:15	03/27/15 13:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>200**		1.00	1.00	Degrees F			03/26/15 07:07	1
Cyanide, Total	**0.0096**	J	0.010	0.0020	mg/L		04/02/15 10:00	04/02/15 15:13	1
Sulfide	3.0	U	3.0	0.94	mg/L		03/26/15 08:23	03/26/15 08:23	1
pH	**7.42**	H	0.100	0.100	SU			03/26/15 16:26	1

Surrogate Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(63-129)	(66-120)	(74-120)	(75-121)
240-48610-1	TRIPBLANK IDW MAR 2015	109	99	92	105
LCS 240-174262/4	Lab Control Sample	103	105	92	107
MB 240-174262/31	Method Blank	107	94	91	103

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(80-121)	(70-124)	(80-120)	(80-128)
LCS 240-174039/4	Lab Control Sample	94	90	89	91

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

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

Matrix: Water

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(80-121)	(70-124)	(80-120)	(80-128)
240-48610-2	FWG-IDW-MWPURGEMAR2015	87	85	85	90
240-48610-3	FWG-IDW-MWDECONMAR2015	88	87	91	90
LB 240-173834/1-A MB	Method Blank	88	86	87	90

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	TBP	NBZ	PHL	TPH
Lab Sample ID	Client Sample ID	(30-110)	(20-110)	(23-110)	(28-110)	(21-110)	(48-110)
LCS 240-173880/14-A	Lab Control Sample	79	61	70	71	58	86
MB 240-173880/13-A	Method Blank	85	66	72	72	48	99

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

2FP = 2-Fluorophenol (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPH = Terphenyl-d14 (Surr)

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Water — Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	TBP	NBZ	PHL	TPH
Lab Sample ID	Client Sample ID	(30-110)	(20-110)	(23-110)	(28-110)	(21-110)	(48-110)
240-48610-2	FWG-IDW-MWPURGEMAR2015	72	52	42	58	44	82
240-48610-3	FWG-IDW-MWDECONMAR2015	48	37	46	39	34	64

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPH = Terphenyl-d14 (Surr)

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Water — Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		TCX1	TCX2	DCB1	DCB2
Lab Sample ID	Client Sample ID	(40-129)	(40-129)	(40-152)	(40-152)
LCS 240-173877/6-A	Lab Control Sample	70	69	80	79
LCS 240-173877/6-A	Lab Control Sample	75	77	87	88
MB 240-173877/5-A	Method Blank	83	84	86	89

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Water — Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)			
		TCX1	TCX2	DCB1	DCB2
Lab Sample ID	Client Sample ID	(40-129)	(40-129)	(40-152)	(40-152)
240-48610-2	FWG-IDW-MWPURGEMAR2015	82	81	82	84
240-48610-3	FWG-IDW-MWDECONMAR2015	57	58	11 X	10 X

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl

Surrogate Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Method: 8151A - Herbicides (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCPA1 (56-120)	DCPA2 (56-120)
LCS 240-173875/6-A	Lab Control Sample	119	80
MB 240-173875/5-A	Method Blank	108	84

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Method: 8151A - Herbicides (GC)

Matrix: Water

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCPA1 (56-120)	DCPA2 (56-120)
240-48610-2	FWG-IDW-MWPURGEMAR2015	106	76
240-48610-3	FWG-IDW-MWDECONMAR2015	94	109

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

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

Lab Sample ID: LCS 240-174039/4
Matrix: Water
Analysis Batch: 174039

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.00	1.06		mg/L		106	71 - 133
1,2-Dichloroethane	1.00	0.944		mg/L		94	80 - 120
Benzene	1.00	0.985		mg/L		98	80 - 120
2-Butanone (MEK)	2.00	1.79		mg/L		90	49 - 120
Carbon tetrachloride	1.00	0.770		mg/L		77	54 - 122
Chlorobenzene	1.00	0.969		mg/L		97	80 - 120
Chloroform	1.00	0.983		mg/L		98	80 - 123
Tetrachloroethene	1.00	0.970		mg/L		97	79 - 134
Trichloroethene	1.00	1.06		mg/L		106	78 - 130
Vinyl chloride	1.00	0.945		mg/L		95	56 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*80 - 121*
4-Bromofluorobenzene (Surr)	*90*		*70 - 124*
Toluene-d8 (Surr)	*89*		*80 - 120*
Dibromofluoromethane (Surr)	*91*		*80 - 128*

Lab Sample ID: MB 240-174262/31
Matrix: Water
Analysis Batch: 174262

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.45	ug/L			03/30/15 12:00	1
1,2-Dichloroethane	1.0	U	1.0	0.23	ug/L			03/30/15 12:00	1
Benzene	1.0	U	1.0	0.35	ug/L			03/30/15 12:00	1
2-Butanone (MEK)	10	U	10	0.53	ug/L			03/30/15 12:00	1
Carbon tetrachloride	1.0	U	1.0	0.43	ug/L			03/30/15 12:00	1
Chlorobenzene	1.0	U	1.0	0.25	ug/L			03/30/15 12:00	1
Chloroform	1.0	U	1.0	0.25	ug/L			03/30/15 12:00	1
Tetrachloroethene	1.0	U	1.0	0.31	ug/L			03/30/15 12:00	1
Trichloroethene	1.0	U	1.0	0.22	ug/L			03/30/15 12:00	1
Vinyl chloride	1.0	U	1.0	0.29	ug/L			03/30/15 12:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 129*		*03/30/15 12:00*	*1*
4-Bromofluorobenzene (Surr)	*94*		*66 - 120*		*03/30/15 12:00*	*1*
Toluene-d8 (Surr)	*91*		*74 - 120*		*03/30/15 12:00*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 121*		*03/30/15 12:00*	*1*

Lab Sample ID: LCS 240-174262/4
Matrix: Water
Analysis Batch: 174262

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	10.0	11.0		ug/L		110	78 - 131
1,2-Dichloroethane	10.0	10.8		ug/L		108	71 - 127
Benzene	10.0	11.2		ug/L		112	80 - 120

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

Lab Sample ID: LCS 240-174262/4
Matrix: Water
Analysis Batch: 174262

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Butanone (MEK)	20.0	23.9		ug/L		120	60 - 126
Carbon tetrachloride	10.0	11.2		ug/L		112	66 - 128
Chlorobenzene	10.0	9.68		ug/L		97	80 - 120
Chloroform	10.0	11.0		ug/L		110	79 - 120
Tetrachloroethene	10.0	9.54		ug/L		95	79 - 120
Trichloroethene	10.0	10.8		ug/L		108	76 - 120
Vinyl chloride	10.0	11.0		ug/L		110	53 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*
4-Bromofluorobenzene (Surr)	*105*		*66 - 120*
Toluene-d8 (Surr)	*92*		*74 - 120*
Dibromofluoromethane (Surr)	*107*		*75 - 121*

Lab Sample ID: LB 240-173834/1-A MB
Matrix: Water
Analysis Batch: 174039

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.025	U	0.025	0.0095	mg/L			03/27/15 12:44	1
1,2-Dichloroethane	0.025	U	0.025	0.011	mg/L			03/27/15 12:44	1
Benzene	0.025	U	0.025	0.0065	mg/L			03/27/15 12:44	1
2-Butanone (MEK)	0.25	U	0.25	0.029	mg/L			03/27/15 12:44	1
Carbon tetrachloride	0.025	U	0.025	0.0065	mg/L			03/27/15 12:44	1
Chlorobenzene	0.025	U	0.025	0.0075	mg/L			03/27/15 12:44	1
Chloroform	0.025	U	0.025	0.0080	mg/L			03/27/15 12:44	1
Tetrachloroethene	0.025	U	0.025	0.015	mg/L			03/27/15 12:44	1
Trichloroethene	0.025	U	0.025	0.0085	mg/L			03/27/15 12:44	1
Vinyl chloride	0.025	U	0.025	0.011	mg/L			03/27/15 12:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*80 - 121*		*03/27/15 12:44*	*1*
4-Bromofluorobenzene (Surr)	*86*		*70 - 124*		*03/27/15 12:44*	*1*
Toluene-d8 (Surr)	*87*		*80 - 120*		*03/27/15 12:44*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 128*		*03/27/15 12:44*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-173880/13-A
Matrix: Water
Analysis Batch: 174452

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 173880

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.0040	U	0.0040	0.00034	mg/L		03/26/15 12:59	03/31/15 11:55	1
2,4,5-Trichlorophenol	0.0040	U	0.0040	0.00030	mg/L		03/26/15 12:59	03/31/15 11:55	1
2,4,6-Trichlorophenol	0.0040	U	0.0040	0.00024	mg/L		03/26/15 12:59	03/31/15 11:55	1
2,4-Dinitrotoluene	0.0040	U	0.0040	0.00025	mg/L		03/26/15 12:59	03/31/15 11:55	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-173880/13-A
Matrix: Water
Analysis Batch: 174452

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 173880

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	0.00080	U	0.00080	0.000085	mg/L		03/26/15 12:59	03/31/15 11:55	1
Hexachlorobutadiene	0.0040	U	0.0040	0.00027	mg/L		03/26/15 12:59	03/31/15 11:55	1
Hexachloroethane	0.0040	U	0.0040	0.00019	mg/L		03/26/15 12:59	03/31/15 11:55	1
3 & 4 Methylphenol	0.0040	U	0.0040	0.00080	mg/L		03/26/15 12:59	03/31/15 11:55	1
2-Methylphenol	0.0040	U	0.0040	0.00017	mg/L		03/26/15 12:59	03/31/15 11:55	1
Nitrobenzene	0.0040	U	0.0040	0.000040	mg/L		03/26/15 12:59	03/31/15 11:55	1
Pentachlorophenol	0.0040	U	0.0040	0.00027	mg/L		03/26/15 12:59	03/31/15 11:55	1
Pyridine	0.0040	U	0.0040	0.00035	mg/L		03/26/15 12:59	03/31/15 11:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*85*		*30 - 110*	*03/26/15 12:59*	*03/31/15 11:55*	*1*
2-Fluorophenol (Surr)	*66*		*20 - 110*	*03/26/15 12:59*	*03/31/15 11:55*	*1*
2,4,6-Tribromophenol (Surr)	*72*		*23 - 110*	*03/26/15 12:59*	*03/31/15 11:55*	*1*
Nitrobenzene-d5 (Surr)	*72*		*28 - 110*	*03/26/15 12:59*	*03/31/15 11:55*	*1*
Phenol-d5 (Surr)	*48*		*21 - 110*	*03/26/15 12:59*	*03/31/15 11:55*	*1*
Terphenyl-d14 (Surr)	*99*		*48 - 110*	*03/26/15 12:59*	*03/31/15 11:55*	*1*

Lab Sample ID: LCS 240-173880/14-A
Matrix: Water
Analysis Batch: 174452

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 173880

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0800	0.0569		mg/L		71	52 - 110
2,4,5-Trichlorophenol	0.0800	0.0632		mg/L		79	51 - 110
2,4,6-Trichlorophenol	0.0800	0.0665		mg/L		83	46 - 110
2,4-Dinitrotoluene	0.0800	0.0673		mg/L		84	54 - 110
Hexachlorobenzene	0.0800	0.0639		mg/L		80	50 - 110
Hexachlorobutadiene	0.0800	0.0485		mg/L		61	34 - 110
Hexachloroethane	0.0800	0.0499		mg/L		62	41 - 110
3 & 4 Methylphenol	0.0800	0.0604		mg/L		76	48 - 110
2-Methylphenol	0.0800	0.0572		mg/L		72	44 - 111
Nitrobenzene	0.0800	0.0576		mg/L		72	40 - 110
Pentachlorophenol	0.160	0.114		mg/L		71	12 - 110
Pyridine	0.0800	0.0463		mg/L		58	30 - 110

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*79*		*30 - 110*
2-Fluorophenol (Surr)	*61*		*20 - 110*
2,4,6-Tribromophenol (Surr)	*70*		*23 - 110*
Nitrobenzene-d5 (Surr)	*71*		*28 - 110*
Phenol-d5 (Surr)	*58*		*21 - 110*
Terphenyl-d14 (Surr)	*86*		*48 - 110*

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 240-173877/5-A
Matrix: Water
Analysis Batch: 174449

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 173877

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	0.0050	U	0.0050	0.00014	mg/L		03/26/15 12:57	04/01/15 00:47	1
Endrin	0.00050	U	0.00050	0.000013	mg/L		03/26/15 12:57	04/01/15 00:47	1
Heptachlor	0.00050	U	0.00050	0.000014	mg/L		03/26/15 12:57	04/01/15 00:47	1
Heptachlor epoxide	0.00050	U	0.00050	0.000015	mg/L		03/26/15 12:57	04/01/15 00:47	1
gamma-BHC (Lindane)	0.00050	U	0.00050	0.000013	mg/L		03/26/15 12:57	04/01/15 00:47	1
Methoxychlor	0.0010	U	0.0010	0.000013	mg/L		03/26/15 12:57	04/01/15 00:47	1
Toxaphene	0.020	U	0.020	0.00020	mg/L		03/26/15 12:57	04/01/15 00:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*83*		*40 - 129*	*03/26/15 12:57*	*04/01/15 00:47*	*1*
Tetrachloro-m-xylene	*84*		*40 - 129*	*03/26/15 12:57*	*04/01/15 00:47*	*1*
DCB Decachlorobiphenyl	*86*		*40 - 152*	*03/26/15 12:57*	*04/01/15 00:47*	*1*
DCB Decachlorobiphenyl	*89*		*40 - 152*	*03/26/15 12:57*	*04/01/15 00:47*	*1*

Lab Sample ID: LCS 240-173877/6-A
Matrix: Water
Analysis Batch: 174449

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 173877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methoxychlor	0.00400	0.00309	J	mg/L		77	49 - 160

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*70*		*40 - 129*
Tetrachloro-m-xylene	*69*		*40 - 129*
DCB Decachlorobiphenyl	*80*		*40 - 152*
DCB Decachlorobiphenyl	*79*		*40 - 152*

Lab Sample ID: LCS 240-173877/6-A
Matrix: Water
Analysis Batch: 174860

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 173877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Endrin	0.00200	0.00163	J	mg/L		81	73 - 146
Heptachlor	0.00200	0.00154	J	mg/L		77	60 - 140
Heptachlor epoxide	0.00200	0.00156	J	mg/L		78	73 - 158
gamma-BHC (Lindane)	0.00200	0.00152	J	mg/L		76	63 - 157

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*75*		*40 - 129*
Tetrachloro-m-xylene	*77*		*40 - 129*
DCB Decachlorobiphenyl	*87*		*40 - 152*
DCB Decachlorobiphenyl	*88*		*40 - 152*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 240-173875/5-A
Matrix: Water
Analysis Batch: 174352

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 173875

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	0.0040	U	0.0040	0.0019	mg/L		03/26/15 12:54	03/30/15 20:27	1
Silvex (2,4,5-TP)	0.0010	U	0.0010	0.00027	mg/L		03/26/15 12:54	03/30/15 20:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*108*		*56 - 120*	*03/26/15 12:54*	*03/30/15 20:27*	*1*
2,4-Dichlorophenylacetic acid	*84*		*56 - 120*	*03/26/15 12:54*	*03/30/15 20:27*	*1*

Lab Sample ID: LCS 240-173875/6-A
Matrix: Water
Analysis Batch: 174352

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 173875

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-D	0.0200	0.0135		mg/L		68	50 - 120
Silvex (2,4,5-TP)	0.00500	0.00381		mg/L		76	45 - 129

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*119*		*56 - 120*
2,4-Dichlorophenylacetic acid	*80*		*56 - 120*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-173852/2-A
Matrix: Water
Analysis Batch: 174197

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 173852

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.50	U	0.50	0.0029	mg/L		03/26/15 12:00	03/27/15 17:53	1
Barium	10	U	10	0.0010	mg/L		03/26/15 12:00	03/27/15 17:53	1
Cadmium	0.10	U	0.10	0.00014	mg/L		03/26/15 12:00	03/27/15 17:53	1
Chromium	0.000577	J	0.50	0.00055	mg/L		03/26/15 12:00	03/27/15 17:53	1
Lead	0.50	U	0.50	0.0019	mg/L		03/26/15 12:00	03/27/15 17:53	1
Selenium	0.25	U	0.25	0.0040	mg/L		03/26/15 12:00	03/27/15 17:53	1
Silver	0.50	U	0.50	0.00092	mg/L		03/26/15 12:00	03/27/15 17:53	1

Lab Sample ID: LCS 240-173852/3-A
Matrix: Water
Analysis Batch: 174197

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 173852

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.00	1.99		mg/L		99	50 - 150
Barium	2.00	1.90	J	mg/L		95	50 - 150
Cadmium	0.0500	0.0501	J	mg/L		100	50 - 150
Chromium	0.200	0.190	J	mg/L		95	50 - 150
Lead	0.500	0.457	J	mg/L		91	50 - 150
Selenium	2.00	2.08		mg/L		104	50 - 150
Silver	0.0500	0.0521	J	mg/L		104	50 - 150

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LB 240-173827/1-B
Matrix: Water
Analysis Batch: 174197

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 173852

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00587	J	0.50	0.0029	mg/L		03/26/15 12:00	03/27/15 17:49	1
Barium	0.00312	J	10	0.0010	mg/L		03/26/15 12:00	03/27/15 17:49	1
Cadmium	0.10	U	0.10	0.00014	mg/L		03/26/15 12:00	03/27/15 17:49	1
Chromium	0.00179	J	0.50	0.00055	mg/L		03/26/15 12:00	03/27/15 17:49	1
Lead	0.50	U	0.50	0.0019	mg/L		03/26/15 12:00	03/27/15 17:49	1
Selenium	0.25	U	0.25	0.0040	mg/L		03/26/15 12:00	03/27/15 17:49	1
Silver	0.50	U	0.50	0.00092	mg/L		03/26/15 12:00	03/27/15 17:49	1

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-173853/2-A
Matrix: Water
Analysis Batch: 174123

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 173853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0020	0.000090	mg/L		03/27/15 07:15	03/27/15 13:17	1

Lab Sample ID: LCS 240-173853/3-A
Matrix: Water
Analysis Batch: 174123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 173853

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00495		mg/L		99	80 - 120

Lab Sample ID: LB 240-173827/1-C
Matrix: Water
Analysis Batch: 174123

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 173853

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0020	0.000090	mg/L		03/27/15 07:15	03/27/15 13:16	1

Method: 1010 - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 240-173874/1
Matrix: Water
Analysis Batch: 173874

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Flashpoint	81.0	81.00		Degrees F		100	97 - 103

Lab Sample ID: 240-48610-2 DU
Matrix: Water
Analysis Batch: 173874

Client Sample ID: FWG-IDW-MWPURGEMAR2015
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Flashpoint	>200		>200		Degrees F		NC	20

Method: 9012A - Cyanide, Total and/or Amenable

Lab Sample ID: MB 240-174830/1-A
Matrix: Water
Analysis Batch: 174910

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 174830

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U	0.010	0.0020	mg/L		04/02/15 10:00	04/02/15 14:48	1

Lab Sample ID: MB 240-174830/1-A
Matrix: Water
Analysis Batch: 174916

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 174830

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U	0.010	0.0020	mg/L		04/02/15 10:00	04/02/15 17:08	1

Lab Sample ID: LCS 240-174830/2-A
Matrix: Water
Analysis Batch: 174910

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 174830

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0921	0.104		mg/L		113	69 - 118

Lab Sample ID: LCS 240-174830/2-A
Matrix: Water
Analysis Batch: 174916

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 174830

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0921	0.0876		mg/L		95	69 - 118

Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 240-173767/1-A
Matrix: Water
Analysis Batch: 173872

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 173767

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	3.0	U	3.0	0.94	mg/L		03/26/15 08:23	03/26/15 08:23	1

Lab Sample ID: LCS 240-173767/2-A
Matrix: Water
Analysis Batch: 173872

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 173767

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	9.20	7.78		mg/L		85	70 - 130

Method: 9040B - pH

Lab Sample ID: LCS 240-173821/28
Matrix: Water
Analysis Batch: 173821

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	6.15	6.140		SU		100	97 - 103

GC/MS VOA

Leach Batch: 173834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	1311	
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	1311	
LB 240-173834/1-A MB	Method Blank	TCLP	Water	1311	

Analysis Batch: 174039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	8260B	173834
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	8260B	173834
LB 240-173834/1-A MB	Method Blank	TCLP	Water	8260B	173834
LCS 240-174039/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 174262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-1	TRIPBLANK IDW MAR 2015	Total/NA	Water	8260B	
LCS 240-174262/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-174262/31	Method Blank	Total/NA	Water	8260B	

GC/MS Semi VOA

Leach Batch: 173827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	1311	
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	1311	

Prep Batch: 173880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	3510C	173827
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	3510C	173827
LCS 240-173880/14-A	Lab Control Sample	Total/NA	Water	3510C	
MB 240-173880/13-A	Method Blank	Total/NA	Water	3510C	

Analysis Batch: 174452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	8270C	173880
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	8270C	173880
LCS 240-173880/14-A	Lab Control Sample	Total/NA	Water	8270C	173880
MB 240-173880/13-A	Method Blank	Total/NA	Water	8270C	173880

GC Semi VOA

Leach Batch: 173827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	1311	
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	1311	

Prep Batch: 173875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	8151A	173827
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	8151A	173827
LCS 240-173875/6-A	Lab Control Sample	Total/NA	Water	8151A	

GC Semi VOA (Continued)

Prep Batch: 173875 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-173875/5-A	Method Blank	Total/NA	Water	8151A	

Prep Batch: 173877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	3510C	173827
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	3510C	173827
LCS 240-173877/6-A	Lab Control Sample	Total/NA	Water	3510C	
MB 240-173877/5-A	Method Blank	Total/NA	Water	3510C	

Analysis Batch: 174352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	8151A	173875
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	8151A	173875
LCS 240-173875/6-A	Lab Control Sample	Total/NA	Water	8151A	173875
MB 240-173875/5-A	Method Blank	Total/NA	Water	8151A	173875

Analysis Batch: 174449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	8081A	173877
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	8081A	173877
LCS 240-173877/6-A	Lab Control Sample	Total/NA	Water	8081A	173877
MB 240-173877/5-A	Method Blank	Total/NA	Water	8081A	173877

Analysis Batch: 174860

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-173877/6-A	Lab Control Sample	Total/NA	Water	8081A	173877

Metals

Leach Batch: 173827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	1311	
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	1311	
LB 240-173827/1-B	Method Blank	TCLP	Water	1311	
LB 240-173827/1-C	Method Blank	TCLP	Water	1311	

Prep Batch: 173852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	3010A	173827
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	3010A	173827
LB 240-173827/1-B	Method Blank	TCLP	Water	3010A	173827
LCS 240-173852/3-A	Lab Control Sample	Total/NA	Water	3010A	
MB 240-173852/2-A	Method Blank	Total/NA	Water	3010A	

Prep Batch: 173853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	7470A	173827
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	7470A	173827
LB 240-173827/1-C	Method Blank	TCLP	Water	7470A	173827
LCS 240-173853/3-A	Lab Control Sample	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 173853 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-173853/2-A	Method Blank	Total/NA	Water	7470A	

Analysis Batch: 174123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	7470A	173853
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	7470A	173853
LB 240-173827/1-C	Method Blank	TCLP	Water	7470A	173853
LCS 240-173853/3-A	Lab Control Sample	Total/NA	Water	7470A	173853
MB 240-173853/2-A	Method Blank	Total/NA	Water	7470A	173853

Analysis Batch: 174197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	TCLP	Water	6010B	173852
240-48610-3	FWG-IDW-MWDECONMAR2015	TCLP	Water	6010B	173852
LB 240-173827/1-B	Method Blank	TCLP	Water	6010B	173852
LCS 240-173852/3-A	Lab Control Sample	Total/NA	Water	6010B	173852
MB 240-173852/2-A	Method Blank	Total/NA	Water	6010B	173852

General Chemistry

Prep Batch: 173767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	Total/NA	Water	9030B	
240-48610-3	FWG-IDW-MWDECONMAR2015	Total/NA	Water	9030B	
LCS 240-173767/2-A	Lab Control Sample	Total/NA	Water	9030B	
MB 240-173767/1-A	Method Blank	Total/NA	Water	9030B	

Analysis Batch: 173821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	Total/NA	Water	9040B	
240-48610-3	FWG-IDW-MWDECONMAR2015	Total/NA	Water	9040B	
LCS 240-173821/28	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 173872

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	Total/NA	Water	9034	173767
240-48610-3	FWG-IDW-MWDECONMAR2015	Total/NA	Water	9034	173767
LCS 240-173767/2-A	Lab Control Sample	Total/NA	Water	9034	173767
MB 240-173767/1-A	Method Blank	Total/NA	Water	9034	173767

Analysis Batch: 173874

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	Total/NA	Water	1010	
240-48610-2 DU	FWG-IDW-MWPURGEMAR2015	Total/NA	Water	1010	
240-48610-3	FWG-IDW-MWDECONMAR2015	Total/NA	Water	1010	
LCS 240-173874/1	Lab Control Sample	Total/NA	Water	1010	

Prep Batch: 174830

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	Total/NA	Water	9012A	

General Chemistry (Continued)

Prep Batch: 174830 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-3	FWG-IDW-MWDECONMAR2015	Total/NA	Water	9012A	
LCS 240-174830/2-A	Lab Control Sample	Total/NA	Water	9012A	
MB 240-174830/1-A	Method Blank	Total/NA	Water	9012A	

Analysis Batch: 174910

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-48610-2	FWG-IDW-MWPURGEMAR2015	Total/NA	Water	9012A	174830
240-48610-3	FWG-IDW-MWDECONMAR2015	Total/NA	Water	9012A	174830
LCS 240-174830/2-A	Lab Control Sample	Total/NA	Water	9012A	174830
MB 240-174830/1-A	Method Blank	Total/NA	Water	9012A	174830

Analysis Batch: 174916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-174830/2-A	Lab Control Sample	Total/NA	Water	9012A	174830
MB 240-174830/1-A	Method Blank	Total/NA	Water	9012A	174830

Lab Chronicle

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Client Sample ID: TRIPBLANK IDW MAR 2015

Lab Sample ID: 240-48610-1
Matrix: Water

Date Collected: 03/25/15 08:00
Date Received: 03/25/15 14:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	174262	03/30/15 19:53	LEE	TAL CAN

Client Sample ID: FWG-IDW-MWPURGEMAR2015

Lab Sample ID: 240-48610-2
Matrix: Water

Date Collected: 03/25/15 11:40
Date Received: 03/25/15 14:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			173834	03/26/15 11:41	DRJ	TAL CAN
TCLP	Analysis	8260B		1	174039	03/27/15 16:49	RJQ	TAL CAN
TCLP	Leach	1311			173827	03/25/15 17:45	DRJ	TAL CAN
TCLP	Prep	3510C			173880	03/26/15 12:59	JDR	TAL CAN
TCLP	Analysis	8270C		1	174452	03/31/15 14:44	JMG	TAL CAN
TCLP	Leach	1311			173827	03/25/15 17:45	DRJ	TAL CAN
TCLP	Prep	3510C			173877	03/26/15 12:57	JDR	TAL CAN
TCLP	Analysis	8081A		1	174449	04/01/15 00:01	BPM	TAL CAN
TCLP	Leach	1311			173827	03/25/15 17:45	DRJ	TAL CAN
TCLP	Prep	8151A			173875	03/26/15 12:54	JDR	TAL CAN
TCLP	Analysis	8151A		1	174352	03/30/15 19:40	DEB	TAL CAN
TCLP	Leach	1311			173827	03/25/15 17:45	DRJ	TAL CAN
TCLP	Prep	3010A			173852	03/26/15 12:00	WAL	TAL CAN
TCLP	Analysis	6010B		1	174197	03/27/15 19:07	KLC	TAL CAN
TCLP	Leach	1311			173827	03/25/15 17:45	DRJ	TAL CAN
TCLP	Prep	7470A			173853	03/27/15 07:15	WAL	TAL CAN
TCLP	Analysis	7470A		1	174123	03/27/15 13:42	BW	TAL CAN
Total/NA	Analysis	1010		1	173874	03/26/15 06:35	TPH	TAL CAN
Total/NA	Prep	9012A			174830	04/02/15 10:00	SEM	TAL CAN
Total/NA	Analysis	9012A		5	174910	04/02/15 14:38	SEM	TAL CAN
Total/NA	Analysis	9034		1	173872	03/26/15 08:23	BLW	TAL CAN
Total/NA	Prep	9030B			173767	03/26/15 08:23	BLW	TAL CAN
Total/NA	Analysis	9040B		1	173821	03/26/15 16:16	NJE	TAL CAN

Client Sample ID: FWG-IDW-MWDECONMAR2015

Lab Sample ID: 240-48610-3
Matrix: Water

Date Collected: 03/25/15 11:50
Date Received: 03/25/15 14:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			173834	03/26/15 11:41	DRJ	TAL CAN
TCLP	Analysis	8260B		1	174039	03/27/15 17:12	RJQ	TAL CAN
TCLP	Leach	1311			173827	03/26/15 11:40	DRJ	TAL CAN
TCLP	Prep	3510C			173880	03/26/15 12:59	JDR	TAL CAN
TCLP	Analysis	8270C		1	174452	03/31/15 15:08	JMG	TAL CAN
TCLP	Leach	1311			173827	03/26/15 11:40	DRJ	TAL CAN
TCLP	Prep	3510C			173877	03/26/15 12:57	JDR	TAL CAN
TCLP	Analysis	8081A		5	174449	04/01/15 00:24	BPM	TAL CAN

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Client Sample ID: FWG-IDW-MWDECONMAR2015
Date Collected: 03/25/15 11:50
Date Received: 03/25/15 14:02

Lab Sample ID: 240-48610-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			173827	03/26/15 11:40	DRJ	TAL CAN
TCLP	Prep	8151A			173875	03/26/15 12:54	JDR	TAL CAN
TCLP	Analysis	8151A		1	174352	03/30/15 20:03	DEB	TAL CAN
TCLP	Leach	1311			173827	03/26/15 11:40	DRJ	TAL CAN
TCLP	Prep	3010A			173852	03/26/15 12:00	WAL	TAL CAN
TCLP	Analysis	6010B		1	174197	03/27/15 19:11	KLC	TAL CAN
TCLP	Leach	1311			173827	03/26/15 11:40	DRJ	TAL CAN
TCLP	Prep	7470A			173853	03/27/15 07:15	WAL	TAL CAN
TCLP	Analysis	7470A		1	174123	03/27/15 13:43	BW	TAL CAN
Total/NA	Analysis	1010		1	173874	03/26/15 07:07	TPH	TAL CAN
Total/NA	Prep	9012A			174830	04/02/15 10:00	SEM	TAL CAN
Total/NA	Analysis	9012A		1	174910	04/02/15 15:13	SEM	TAL CAN
Total/NA	Analysis	9034		1	173872	03/26/15 08:23	BLW	TAL CAN
Total/NA	Prep	9030B			173767	03/26/15 08:23	BLW	TAL CAN
Total/NA	Analysis	9040B		1	173821	03/26/15 16:26	NJE	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-48610-1

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-15 *
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	04-30-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-15 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

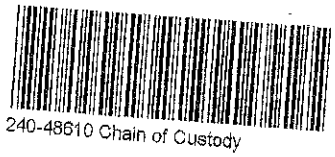
* Certification renewal pending - certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS



240-48610 Chain of Custody

TestAmerica Canton
4101 Shuffel Street, N. N.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Client Contact	Project Manager: J Miller	Site Contact: E Corbin	Date: 3-25-15	COC No: IDW32515
Company Name: EDM	Tel/Fax:	Lab Contact: M Lobb	Carrier: Lab Pickup	1 of 1 COCs
Address: 1000 Carillon Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Cincinnati OH 45240	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 513 825 7500	TAT if different from Below _____			Walk-in Client:
Fax: 513 825 7495	☒ 2 weeks			Lab Sampling:
Project Name: IAAAP LoL	☐ 1 week			
Site: Ravenna Ohio	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	TCLP VOA	TCLP Pest, Herb SVOA	TCLP Metal	Cyanide 9012A	Sulfide 9034	pH Flashpoint	VOC 8260	Cooler ID. / Sample Specific Notes:
Trip Blank IDW MAR 2015	3-25-15	0800		W	2									X	All VOAs in purge cooler
FWG-IDW-MW Purge MAR 2015	"	1140		GW	9	N	N	X	X		X	X	X		
FWG-IDW-MW Grab MAR 2015	"	1150		W	9	N	N	X	X		X	X	X		

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

temps may not meet requirements if sample pick up is close to lab pickup time

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EDM	3/25/15 1307	[signature]	TestAmerica	3/25/15 1307
[signature]	TestAmerica 3/25/15	1402	[signature]	TA	3-25-15 1402
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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4/7/2015

TestAmerica Canton Sample Receipt Form/Narrative — Login # : 41820
Canton Facility

Client EQM Site Name _____ Cooler unpacked by:

Cooler Received on 3-25-15 Opened on 3-25-15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt

~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~

IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C ☑ See Multiple Cooler Form

~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~

IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 4	Yes	No
-Were custody seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were custody seals on the bottle(s)?	Yes	No
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the sampler(s) clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Were sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC425511
12. Were VOAs on the COC?	Yes	No
13. Were air bubbles >6 mm in any VOA vials?	Yes	No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES — Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica Multiple Cooler Receipt Form/Narrative
Canton Facility

Login # : 42810

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
04K5	4	3.4	3.9	ice
T517	1	2.6	3.1	"
#1	"	0.8	1.3	"
Client	"	1.6	2.1	"
↓	"	1.4	1.9	"
↓	↓	3.0	3.5	↓

APPENDIX E

REPORTING LIMITS THAT CURRENTLY DO NOT MEET THE RVAAP QAPP PROJECT ACTION REQUIRMENTS, MCLS, AND/OR RSL (January 2015)

Appendix E

VOCs CAS No.	Analyte Name	Units	DL	LOD[1]	LOQ	PAR[2]	MCL	RSL[3]
79-34-5	1,1,2,2-Tetrachloroethane	µg/L	0.18	0.25	1	1	NS	0.076
106-93-4	1,2-Dibromoethane	µg/L	0.19	0.5	1	1	NS	0.0075
107-06-2	1,2-Dichloroethane	µg/L	0.2	0.5	1	1	5	0.17
75-27-4	Bromodichloromethane	µg/L	0.15	0.25	1	1	80	0.13
124-48-1	Dibromochloromethane	µg/L	0.43	0.5	1	1	NS	0.17
75-01-4	Vinyl chloride	µg/L	0.29	0.5	1	1	2	0.019

SVOCs CAS No.	Analyte Name	Units	DL	LOD[1]	LOQ	PAR[2]	MCL	RSL[3]
91-94-1	3,3'-Dichlorobenzidine	µg/L	0.37	1	5	5	NS	0.12
534-52-1	4,6-Dinitro-2-methylphenol	µg/L	2.4	4	5	25	NS	1.5
50-32-8	Benzo(a)pyrene	µg/L	0.051	0.1	0.2	0.2	0.2	0.0034
205-99-2	Benzo(b)fluoranthene	µg/L	0.045	0.1	0.2	0.2	NS	0.034
111-44-4	bis(2-Chloroethyl)ether	µg/L	0.1	0.1	1	1	NS	0.014
53-70-3	Dibenzo(a,h)anthracene	µg/L	0.45	0.1	0.2	50	NS	0.0065
118-74-1	Hexachlorobenzene	µg/L	0.085	0.1	0.2	10	1	0.049
87-68-3	Hexachlorobutadiene	µg/L	0.27	0.5	1	10	NS	0.3
193-39-5	Indeno(1,2,3-cd)pyrene	µg/L	0.043	0.1	0.2	0.2	NS	0.034
180-60-1	2,2'-Oxybis (1-Chloropropane)	µg/L	0.4	0.5	1	10	NS	0.36
621-64-7	N-Nitroso-di-n-propylamine	µg/L	0.24	0.5	1	10	NS	0.011
87-86-5	Pentachlorophenol	µg/L	0.27	1	5	5	1	0.04

Pesticides CAS No.	Analyte Name	Units	DL	LOD[1]	LOQ	PAR[2]	MCL	RSL[3]
309-00-2	Aldrin	µg/L	0.013	0.05	0.05	0.03	NS	0.00046
319-84-6	alpha-BHC	µg/L	0.014	0.05	0.05	0.03	NS	0.0071
60-57-1	Dieldrin	µg/L	0.013	0.05	0.05	0.03	NS	0.0017
76-44-8	Heptachlor	µg/L	0.005	0.05	0.05	0.03	0.4	0.002
1024-57-3	Heptachlor epoxide	µg/L	0.014	0.05	0.05	0.03	0.2	0.0038
8001-35-2	Toxaphene	µg/L	0.2	2	2	2	3	0.015

PCB CAS No.	Analyte Name	Units	DL	LOD[1]	LOQ	PAR[2]	MCL	RSL[3]
11104-28-2	PCB- 1221	µg/L	0.13	0.2	0.5	0.2	0.5	0.0046
11141-16-5	PCB- 1232	µg/L	0.16	0.2	0.5	0.2	0.5	0.0046
53469-21-9	PCB- 1242	µg/L	0.22	0.4	0.5	0.4	0.5	0.039
12672-29-6	PCB- 1248	µg/L	0.1	0.2	0.5	0.2	0.5	0.039
11097-69-1	PCB- 1254	µg/L	0.16	0.2	0.5	0.2	0.5	0.039
11096-82-5	PCB- 1260	µg/L	0.17	0.2	0.5	0.2	0.5	0.039

Explosives CAS No.	Analyte Name	Units	DL	LOD[1]	LOQ	PAR[2]	MCL	RSL[3]
606-20-2	2,6-Dinitrotoluene	µg/L	0.05	0.1	0.13	0.1	NS	0.048

Inorganics CAS No.	Analyte Name	Units	DL	LOD[1]	LOQ	PAR[2]	MCL	RSL[3]
7440-38-2	Arsenic	µg/L	2.9	10	10	5	10	0.052
7440-70-2	Calcium	µg/L	260	1000	5000	100	NS	NS
7440-09-7	Potassium	µg/L	70	900	5000	200	NS	NS
7439-95-4	Magnesium	µg/L	55	300	5000	100	NS	NS
7440-66-6	Zinc	µg/L	27	50	50	10	NS	6000
7440-28-0	Thallium	µg/L	0.79	1.5	2	1	2	0.2
57-12-5	Cyanide	mg/L	0.002	0.005	0.1	0.01	0.2	0.0015

Notes:

1- LOD= The smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate is 1%.

2- Project Action Requirements from table 4 of the Facility Wide QAPP

3- RSL = USEPA Regional Screening Level (1/15)

NS= No Standard

APPENDIX F

CORRESPONDENCE AND COMMENTS/RESPONSES

Ohio Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

September 2, 2015

Mr. Mark Leeper
Army National Guard Directorate
ARNGD-ILE Clean Up
111 South George Mason Drive
Arlington, VA 22204

Re: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage
267000859036

Subject: Ravenna Army Ammunition Plant, Portage/Trumbull Counties. Approval of the Response to Comments on the RVAAP-66 Draft Facility-Wide Groundwater Report on the March 2015 Sampling Event, Dated July, 2015. Ohio EPA ID # 267-000859-036

Dear Mr. Leeper:

The Ohio Environmental Protection Agency (Ohio EPA) has received the Response to Comments on the "Draft Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Report on the March 2015 Sampling Event" at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio. These responses to comments were received at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), via email on August 27, 2015. The report was prepared for the US Army Corps of Engineers (USACE) Louisville District by Environmental Quality Management, Inc. under Contract Number W912QR-11-F-0266.

The response to Ohio EPA comments provided clarification on the Draft Report and notification of the award of the new ground water contract. It also provided assurance that tasks that have been delayed, such as additional well installation near the southeast property lines will be completed.

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09-08-2015

This document was reviewed by personnel from Ohio EPA's DERR, pursuant to the Director's Findings and Orders paragraph 39 (b), the response to Ohio EPA comments are satisfactory and the document may be finalized.

If you have any questions, please call me at (330) 963-1292.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/nvr

cc: Katie Tait, OHARNG RTLS
Kevin Sedlak, ARNG
Gregory F. Moore, USACE
Rebecca Haney/Gail Harris, VISTA Sciences Corp.

ec: Bob Princic, Ohio EPA, NEDO DERR
Rodney Beals, Ohio EPA, NEDO DERR
Justin Burke, Ohio EPA, CO DERR
Al Muller, Ohio EPA, NEDO DDAGW

NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

August 27, 2015

Ohio Environmental Protection Agency
DERR-NEDO
Attn: Mr. Kevin Palombo
2110 East Aurora Road
Twinsburg, OH 44087-1924

Subject: Ravenna Army Ammunition Plant (RVAAP) Restoration Program
Portage/Trumbull Counties
RVAAP-66 Facility-Wide Groundwater
Report on the March 2015 Sampling Event
Response to Comments
Ohio EPA ID 267-000859-036

Dear Mr. Palombo:

On August 20, 2015, the Army received a letter of correspondence from the Ohio Enviromnental Protection Agency (Ohio EPA), dated August 18, 2015. The letter presented the Ohio EPA comments on the Draft *Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Report on the March 2015 Sampling Event* for the former Ravenna Army Ammunition Plant in Portage/Trumbull Counties Ohio. Below, please find our responses to the Ohio EPA comments. This document was prepared for the U.S. Army Corps of Engineers (USACE) - Louisville District by Environmental Quality Management, Inc. under Contract No. W912QR-11-F-0266.

COMMENTS

Comment #1. Ohio EPA believes that the following statement in the Executive Summary section (page vi) of the submitted report is a typographical error:

> *To date, 281 Facility-wide Ground Water Monitoring Program (FWGWMP) wells of the 284 wells at the facility have been sampled and analyzed a minimum of four quarters.*

It is our understanding, that as of the October 2014 sampling event that all 284 FWGWMP wells have been sampled and analyzed a minimum of four quarters. If this is accurate, please let us know in an email, then we will provide notice to finalize the document.

Response: This is a typographical error. All 284 wells have been sampled a minimum of four quarters. The text will be revised to reflect this change.

Subject: Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Response to Comments for the Draft Report on the March 2015 Sampling Event Portage/Trumbull Counties

GENERAL COMMENTS

Comment #1. Ohio EPA is aware that the contract for the continuation of ground water monitoring activities, the preparation of the Remedial Investigation and Feasibility Study for the Facility Wide Groundwater at RVAAP has not yet been awarded. This task is a milestone in Ohio EPA's Directors Final Findings and Orders that was not met in 2014 and is behind schedule in 2015. We anticipate that this contract will be awarded soon and that the requirements for ground water activities will be satisfied within the FFY 16 milestone deadlines.

Response: The groundwater contract has been awarded to Weston Solutions. The award was made on August 18, 2015. The Army and the Contractor are currently arranging the kickoff meeting. The Army will inform the Ohio EPA of the location and time of the meeting so they may also attend if they so choose.

Comment #2. The results of the sampling of three ground water monitoring wells that were installed December 2013 (LL1MW-088, LL2MW-271, and LL3MW-246) near the East and Southeast property lines showed some evidence of impact from site activities. After the initial sampling in January 2014, additional wells were proposed to be installed further off site and downgradient to evaluate whether or not impact was affecting groundwater quality further off property. Without the installation of these additional wells, Ohio EPA cannot be assured adjacent properties to RVAAP have not been affected by site activities.

Response: The additional wells will be installed as necessary by the newly selected contractor for the groundwater contract. The schedule for the installation of the wells will be discussed at the kickoff meeting and in subsequent documents.

Finalization of the Report on the March 2015 Sampling Event will occur in accordance with the Director's Final Findings and Orders upon receipt of the Ohio EPA notice to finalize the document.

Please contact the undersigned at (703) 607-7955 or mark.s.leeper.civ@mail.mil if there are issues or concerns with this submission.

Sincerely,



Mark S. Leeper
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Bob Princic, Ohio EPA, NEDO-DERR
Rod Beals, Ohio EPA, NEDO-DERR

Subject: Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Response to Comments for the Draft Report on the March 2015 Sampling Event Portage/Trumbull Counties

Justin Burke, Ohio EPA, CO-DERR
Kevin Sedlak, ARNG, Camp Ravenna
Katie Tait, OHARNG Camp Ravenna
Greg Moore, USACE Louisville
Nat Peters, USACE Louisville
Gail Harris, Vista Sciences

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

August 18, 2015

Mr. Mark Leeper
Army National Guard Directorate
ARNGD-ILE Clean Up
111 South George Mason Drive
Arlington, VA 22204

Re: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
267000859036

Subject: Ravenna Army Ammunition Plant, Portage/Trumbull Counties. Comments on the RVAAP-66 Draft Facility-Wide Groundwater Monitoring Program RVAAP-66, Facility-Wide Groundwater Report on the March 2015 Sampling Event at the Ravenna Army Ammunition Plant, Ravenna, Ohio, Dated, July 1, 2015, Ohio EPA ID # 267-000859-036

Dear Mr. Leeper:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Draft Report on the Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Report on the March 2015 Sampling Event" at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio. This document was received at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on July 2, 2015. The report was prepared for the US Army Corps of Engineers (USACE) Louisville District by Environmental Quality Management, Inc. under Contract Number W912QR-11-F-0266.

Ohio EPA has one comment regarding the July 2, 2015 submittal. In addition, Ohio EPA has provided general comments regarding the completion of planned Facility Wide Groundwater tasks. Please provide response to the enclosed comments in accordance with the Director's Findings and Orders.

The *Draft RVAAP-66 Facility-Wide Ground Water Report* summarizes most of the ground water monitoring activities conducted during the March 2015 sampling event, including:

- A total of 42 wells were sampled. The FWGWMP semiannual sampling of 37 wells was conducted concurrently with semiannual RCRA ground water sampling

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08-20-2015

of three wells (RQLmw-007, RQLmw-008, and RQLmw-009) in Ramsdell Quarry and two wells (DETmw-003 and DETmw-004) in Demolition Area #2. The 42 wells were sampled between March 9 and March 25, 2015.

- Four wells, FWGmw-002, LL1mw-086, FBQmw-174, and LL1mw-083 were monitored for pH in the field as requested by Ohio EPA.

- Water levels and total depth were gaged in 46 monitoring wells scheduled for ground water sampling and/or pH monitoring at the facility.

- Laboratory analyses and data evaluation was completed for collected samples.

- An Investigation-Derived Waste (IDW) characterization and disposal report was prepared and submitted.

- A draft monitoring report for the sampling event was prepared and submitted.

COMMENTS

1. Ohio EPA believes that the following statement in the Executive Summary section (page vi) of the submitted report is a typographical error:

   > *To date, 281 Facility-wide Ground Water Monitoring Program (FWGWMP) wells of the 284 wells at the facility have been sampled and analyzed a minimum of four quarters.*

   It is our understanding, that as of the October 2014 sampling event that all 284 FWGWMP wells have been sampled and analyzed a minimum of four quarters. If this is accurate, please let us know in an email, then we will provide notice to finalize the document.

GENERAL COMMENTS

1. Ohio EPA is aware that the contract for the continuation of ground water monitoring activities, the preparation of the Remedial Investigation and Feasibility Study for the Facility Wide Groundwater at RVAAP has not yet been awarded. This task is a milestone in Ohio EPA's Directors Final Findings and Orders that was not met in 2014 and is behind schedule in 2015. We anticipate that this contract will be awarded soon and that the requirements for ground water activities will be satisfied within the FFY 16 milestone deadlines.
2. The results of the sampling of three ground water monitoring wells that were installed December 2013 (LL1MW-088, LL2MW-271, and LL3MW-246) near the

East and Southeast property lines showed some evidence of impact from site activities. After the initial sampling in January 2014, additional wells were proposed to be installed further off site and downgradient to evaluate whether or not impact was affecting ground water quality further off property. Without the installation of these additional wells, Ohio EPA cannot be assured adjacent properties to RVAAP have not been affected by site activities.

Ohio EPA does expect and will anticipate receipt of the next scheduled reporting activities, including the finalization of the Report on the March 2015 Sampling Event, the Report on the July 2015 Sampling event, and the Annual Report for 2015.

This document was reviewed by personnel from Ohio EPA, DERR. Ohio EPA has determined that additional information is necessary to approve the document. If you have any questions, please call me at (330) 963-1292.

Sincerely,

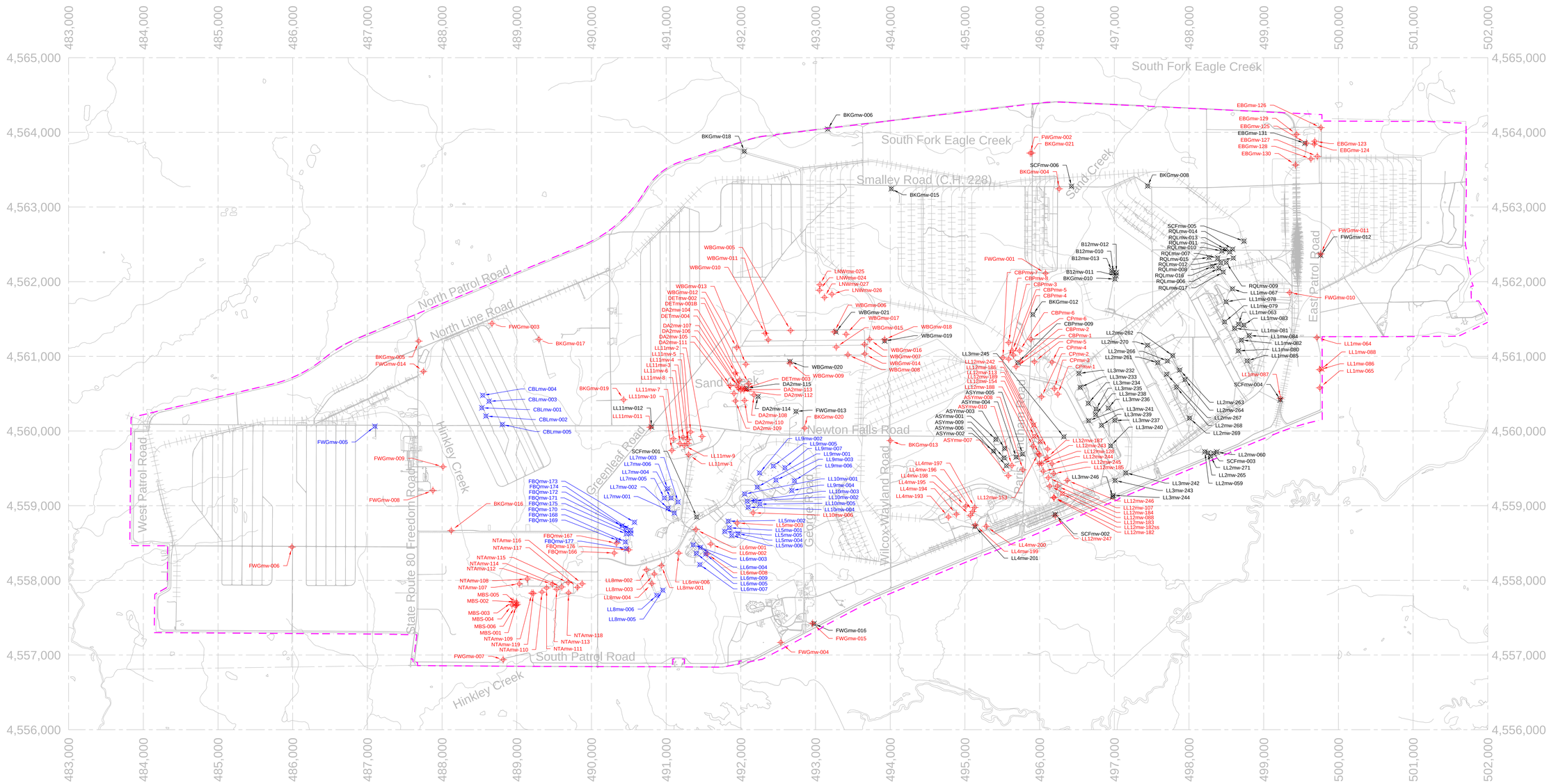
Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/nvr

cc: Katie Tait, OHARNG RTLS
Kevin Sedlak, ARNG
Gregory F. Moore, USACE
Rebecca Haney/Gail Harris, VISTA Sciences Corp.

ec: Bob Princic, Ohio EPA, NEDO DERR
Rodney Beals, Ohio EPA NEDO DERR
Justin Burke, Ohio EPA, CO DERR
Albert Muller, Ohio EPA, NEDO DDAGW

PLATES



LEGEND

- SHARON MEMBER WELL
- UNCONSOLIDATED WELL
- HOMEWOOD MEMBER WELL
- PROPERTY LINE

N

0 500 1000

SCALE (METERS)

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED

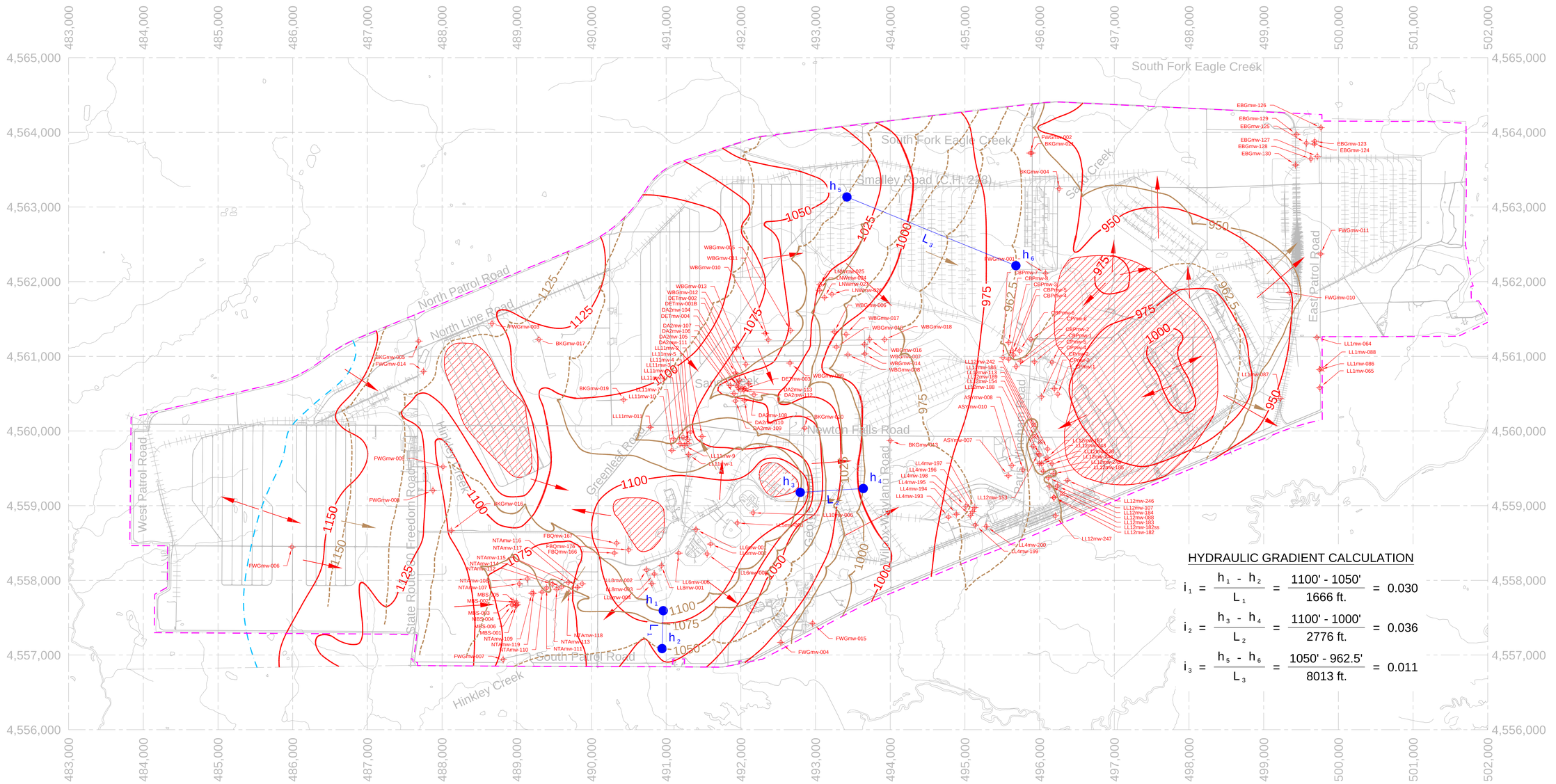
REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM

DRAWN	R. RUSSELL	09-10-2014
CHECKED	S. SPESSHARDT	09-12-2014
APPROVED	J. MILLER	09-12-2014
SCALE:	AS SHOWN	

MONITORING WELLS
AT RVAAP

SIZE	PROJECT NO.	DWG NO.	REV
E	030174.0016	PLATE 1	0



HYDRAULIC GRADIENT CALCULATION

$$i_1 = \frac{h_1 - h_2}{L_1} = \frac{1100' - 1050'}{1666\ ft.} = 0.030$$

$$i_2 = \frac{h_3 - h_4}{L_2} = \frac{1100' - 1000'}{2776\ ft.} = 0.036$$

$$i_3 = \frac{h_5 - h_6}{L_3} = \frac{1050' - 962.5'}{8013\ ft.} = 0.011$$

RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft. amsl)
Load Line 1	LL1mw-094	934.75
	LL1mw-095	934.80
	LL1mw-096	934.67
	LL1mw-097	939.66
	LL1mw-098	934.69
Load Line 4	LL4mw-193	977.29
	LL4mw-194	977.55
	LL4mw-195	972.89
	LL4mw-196	972.03
	LL4mw-197	971.74
	LL4mw-198	978.08
	LL4mw-199	971.08
	LL4mw-200	971.09
Load Line 5	LL5mw-003	1112.71
Load Line 6	LL6mw-001	1115.35
	LL6mw-002	1112.90
	LL6mw-006	1113.04
	LL6mw-008	1112.66
Load Line 8	LL8mw-001	1114.18
	LL8mw-002	1110.59
	LL8mw-003	1110.46
	LL8mw-004	1108.60
Load Line 10	LL10mw-006	1114.98
Load Line 11	LL11mw-001	1091.81
	LL11mw-002	1079.62
	LL11mw-003	1087.41
	LL11mw-004	1084.50
	LL11mw-005	1075.06
	LL11mw-006	1094.22
	LL11mw-007	1068.80
	LL11mw-008	1086.99
	LL11mw-009	1089.13
	LL11mw-010	1079.09
	LL11mw-011	1073.01

RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft. amsl)
Load Line 12	LL12mw-088	975.22
	LL12mw-107	972.93
	LL12mw-113	975.23
	LL12mw-128	970.55
	LL12mw-153	972.83
	LL12mw-154	972.12
	LL12mw-182	977.56
	LL12mw-182xs	977.11
	LL12mw-183	972.78
	LL12mw-184	972.62
	LL12mw-185	975.27
	LL12mw-186	973.23
	LL12mw-187	972.62
	LL12mw-188	976.64
	LL12mw-189	974.85
	LL12mw-242	974.26
	LL12mw-243	972.80
	LL12mw-244	972.90
	LL12mw-245	973.29
	LL12mw-246	970.71
	LL12mw-247	979.94
Atlas Scrap Yard	ASYmw-007	970.62
	ASYmw-008	973.45
	ASYmw-010	970.56
Central Burn Pits	CBPmw-001	964.19
	CBPmw-002	963.24
	CBPmw-003	963.56
	CBPmw-004	962.03
	CBPmw-005	962.10
	CBPmw-006	961.45
	CBPmw-007	962.88
	CBPmw-008	959.85
Cobbs Pond	CPmw-001	973.36
	CPmw-002	972.11
	CPmw-003	971.92
	CPmw-004	971.45
	CPmw-005	964.03
	CPmw-006	957.34

RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft. amsl)
Demolition Area 2	DETmw-001B	1045.03
	DETmw-002	1029.24
	DETmw-003	1027.73
	DETmw-004	1028.35
	DA2mw-104	1054.61
	DA2mw-105	1042.10
	DA2mw-106	1040.18
	DA2mw-107	1034.23
	DA2mw-108	1026.17
	DA2mw-109	1060.51
	DA2mw-110	1058.03
	DA2mw-111	1035.53
	DA2mw-112	1030.41
	DA2mw-113	1030.07
Erie Burning Grounds	EBGmw-123	938.02
	EBGmw-124	937.73
	EBGmw-125	937.53
	EBGmw-126	938.87
	EBGmw-127	939.61
	EBGmw-128	938.66
	EBGmw-129	939.40
	EBGmw-130	937.88
Fuze and Booster Quarry	FBQmw-166	1104.02
	FBQmw-167	1112.46
	FBQmw-176	1125.34
Landfill North of Winklepeck	LNWmw-024	1028.31
	LNWmw-025	1025.18
	LNWmw-026	1024.16
	LNWmw-027	1022.68

RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft. amsl)
NACA Test Area	NTAmw-107	1069.33
	NTAmw-108	1068.86
	NTAmw-109	1069.43
	NTAmw-110	1070.19
	NTAmw-111	1077.62
	NTAmw-112	1071.16
	NTAmw-113	1070.34
	NTAmw-114	1074.01
	NTAmw-115	1076.48
	NTAmw-116	1089.47
	NTAmw-117	1082.33
	NTAmw-118	1074.17
	NTAmw-119	1069.26
Winklepeck Burning Grounds	WBGmw-005	1050.10
	WBGmw-006	1009.40
	WBGmw-007	984.69
	WBGmw-008	994.78
	WBGmw-009	1036.92
	WBGmw-010	1062.97
	WBGmw-011	1062.69
	WBGmw-012	1063.78
	WBGmw-013	1062.36
	WBGmw-014	981.86
	WBGmw-015	1001.32
	WBGmw-016	981.65
	WBGmw-017	999.87
	WBGmw-018	978.40

RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft. amsl)
Suspected Mustard Agent Burial Site	MBSmw-001	1065.84
	MBSmw-002	1066.48
	MBSmw-003	1068.08
	MBSmw-004	1067.20
	MBSmw-005	1065.88
	MBSmw-006	1065.82
Facilitywide	FWGmw-001	948.49
	FWGmw-002	950.44
	FWGmw-003	1127.13
	FWGmw-004	1026.09
	FWGmw-006	1181.48
	FWGmw-007	1052.56
	FWGmw-008	1156.62
	FWGmw-009	1100.22
	FWGmw-010	953.27
	FWGmw-011	939.88
	FWGmw-014	1134.47
	FWGmw-015	1010.54
Background	BKGmw-004	954.51
	BKGmw-005	1142.00
	BKGmw-013	977.69
	BKGmw-016	1095.60
	BKGmw-017	1119.10
	BKGmw-019	1092.35
	BKGmw-020	1060.29
	BKGmw-021	961.25

LEGEND

- UNCONSOLIDATED WELL
- PROPERTY LINE
- 1100 LINE OF EQUAL GROUNDWATER ELEVATION (ft.,amsl) [DASHED WHERE INFERRED]
- GROUNDWATER DIRECTION
- UNCONSOLIDATED AQUIFER MISSING
- INFERRED GROUNDWATER DIVIDE

N

0 500 1000

SCALE (METERS)

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED

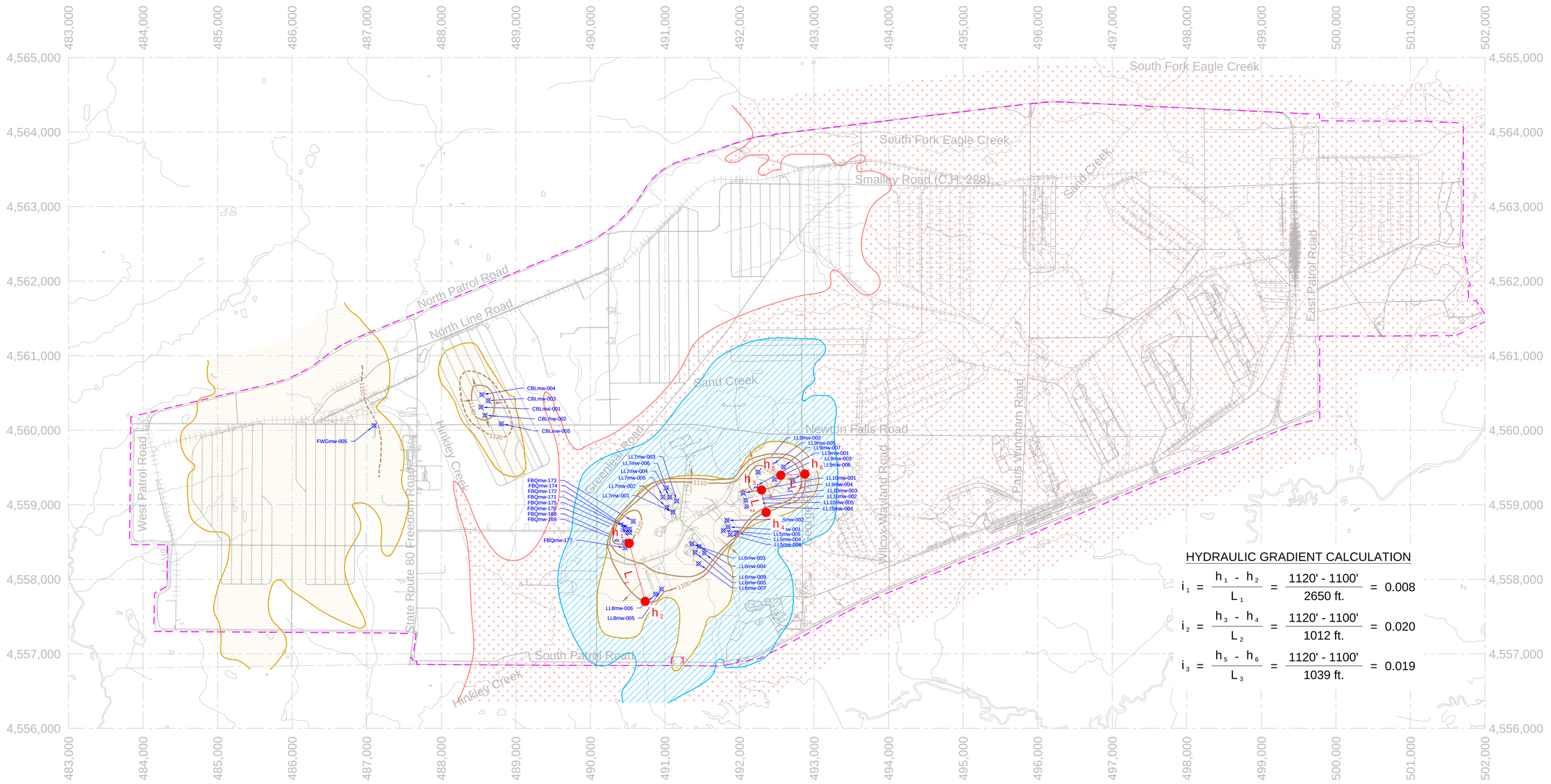
REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM

DRAWN	R. RUSSELL	09-10-2014
CHECKED	S. SPESSHARDT	09-12-2014
APPROVED	J. MILLER	09-12-2014
SCALE:	AS SHOWN	

POTENTIOMETRIC SURFACE OF UNCONSOLIDATED AQUIFER (MAY 2014)

SIZE	PROJECT NO.	DWG NO.	REV
E	030174.0016	PLATE 2	0



HYDRAULIC GRADIENT CALCULATION

$$i_1 = \frac{h_1 - h_2}{L_1} = \frac{1120' - 1100'}{2650\ ft.} = 0.008$$

$$i_2 = \frac{h_3 - h_4}{L_2} = \frac{1120' - 1100'}{1012\ ft.} = 0.020$$

$$i_3 = \frac{h_5 - h_6}{L_3} = \frac{1120' - 1100'}{1039\ ft.} = 0.019$$

RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft. amsl)
Load Line 5	LL5mw-001	1111.42
	LL5mw-002	1112.01
	LL5mw-004	1111.54
	LL5mw-005	1111.42
	LL5mw-006	1111.49
Load Line 6	LL6mw-003	1112.72
	LL6mw-004	1111.40
	LL6mw-005	1110.13
	LL6mw-007	1113.51
	LL6mw-009	1112.54
Load Line 7	LL7mw-001	1112.21
	LL7mw-002	1118.87
	LL7mw-003	1112.33
	LL7mw-004	1114.15
	LL7mw-005	1117.33
	LL7mw-006	1115.47
Load Line 8	LL8mw-005	1106.91
	LL8mw-006	1100.36
Load Line 9	LL9mw-001	1122.74
	LL9mw-002	1121.22
	LL9mw-003	1125.25
	LL9mw-004	1114.66
	LL9mw-005	1117.98
	LL9mw-006	1114.61
	LL9mw-007	1113.57
Load Line 10	LL10mw-001	1112.20
	LL10mw-002	1114.14
	LL10mw-003	1114.22
	LL10mw-004	1113.37
	LL10mw-005	1114.38

RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft. amsl)
C-Block Quarry	CBLmw-001	1141.33
	CBLmw-002	1140.84
	CBLmw-003	1144.01
	CBLmw-004	1142.64
	CBLmw-005	1134.07
Fuze and Booster Quarry	FBQmw-168	1124.65
	FBQmw-169	1115.79
	FBQmw-170	1127.08
	FBQmw-171	1126.62
	FBQmw-172	1127.82
	FBQmw-173	1123.69
	FBQmw-174	1126.42
	FBQmw-175	1125.35
	FBQmw-177	1118.80
Facilitywide	FWGmw-005	1150.05

NOTES

1. BEDROCK GEOLOGY ADOPTED FROM "GEOLOGY AND GROUND-WATER RESOURCES OF PORTAGE COUNTY, OHIO" (WINSLOW AND WHITE, 1966). NOT ALL LITHOLOGIC UNITS ARE PRESENTED.

LEGEND

- HOMEWOOD MEMBER WELL
- PROPERTY LINE
- 1100 — LINE OF EQUAL GROUNDWATER ELEVATION (ft.,amsl)
- 1030 — (INTERMEDIATE DASHED)
- GROUNDWATER DIRECTION
- HOMEWOOD MEMBER
- SHARON MEMBER
- SHARON SHALE

N

0 500 1000

SCALE (METERS)

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED

REVISIONS

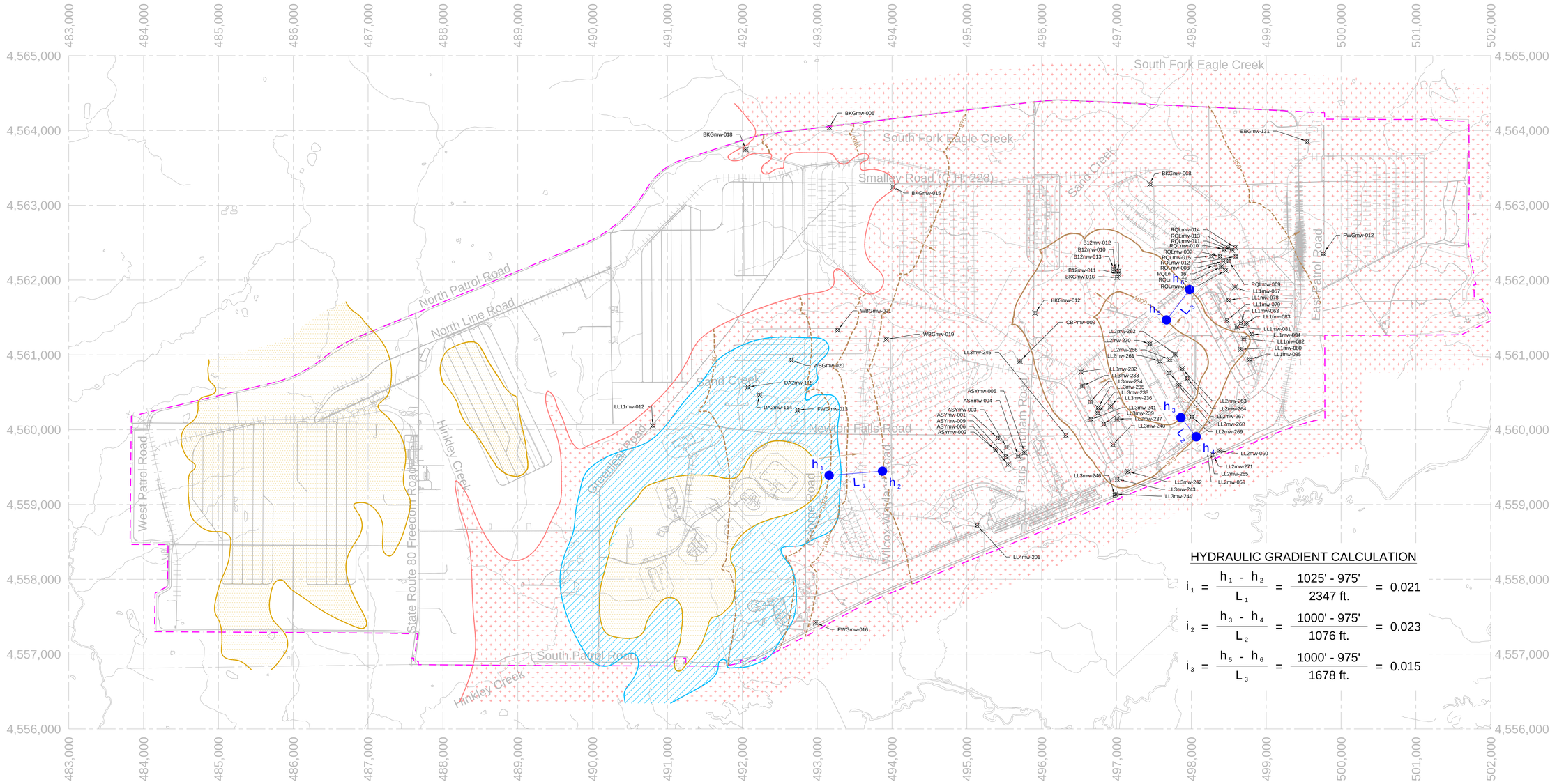
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM

DRAWN	R. RUSSELL	09-10-2014
CHECKED	S. SPESSHARDT	09-12-2014
APPROVED	J. MILLER	09-12-2014

SCALE: AS SHOWN

POTENTIOMETRIC SURFACE OF HOMEWOOD (MAY 2014)

SIZE	PROJECT NO.	DWG NO.	REV
E	030174.0016	PLATE 3	0



RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft. amsl)
Load Line 1	LL1mw-063	973.69
	LL1mw-067	964.62
	LL1mw-078	968.50
	LL1mw-079	968.49
	LL1mw-080	986.87
	LL1mw-081	971.70
	LL1mw-082	980.18
	LL1mw-083	965.06
	LL1mw-084	973.48
	LL1mw-085	963.15
Load Line 2	LL2mw-059	954.90
	LL2mw-060	953.19
	LL2mw-261	1005.02
	LL2mw-262	1006.72
	LL2mw-263	1005.06
	LL2mw-264	1007.28
	LL2mw-265	953.06
	LL2mw-266	1006.85
	LL2mw-267	1006.49
	LL2mw-268	1003.18
	LL2mw-269	996.06
	LL2mw-270	1003.68
	LL2mw-271	951.90
Load Line 3	LL3mw-232	986.02
	LL3mw-233	981.10
	LL3mw-234	997.08
	LL3mw-235	994.79
	LL3mw-236	997.12
	LL3mw-237	992.58
	LL3mw-238	992.32
	LL3mw-239	982.17
	LL3mw-240	983.05
	LL3mw-241	987.40
	LL3mw-242	986.45
	LL3mw-243	982.55
	LL3mw-244	981.07
	LL3mw-245	970.72
	LL3mw-246	969.74
Load Line 4	LL4mw-201	969.30

RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft. amsl)
Load Line 11	LL11mw-012	1061.65
Atlas Scrap Yard	AS1mw-001	971.68
	AS1mw-002	973.00
	AS1mw-003	971.82
	AS1mw-004	972.03
	AS1mw-005	973.41
	AS1mw-006	970.80
	AS1mw-009	973.03
Building 1200	B12mw-010	992.27
	B12mw-011	992.61
	B12mw-012	992.93
	B12mw-013	988.21
Central Burn Pits	CBPmw-009	963.89
Demolition Area 2	DA2mw-114	1026.64
	DA2mw-115	1032.86
Ene Burning Grounds	EBGmw-131	941.79
Ramsdell Quarry Landfill	RQLmw-006	962.47
	RQLmw-007	961.12
	RQLmw-008	961.06
	RQLmw-009	960.86
	RQLmw-010	958.74
	RQLmw-011	956.96
	RQLmw-012	958.35
	RQLmw-013	957.62
	RQLmw-014	956.08
	RQLmw-015	962.20
	RQLmw-016	962.45
	RQLmw-017	963.63
Winklepeck Burning Grounds	WBGmw-019	974.54
	WBGmw-020	1034.11
	WBGmw-021	1003.42
Facilitywide	FWGmw-012	941.37
	FWGmw-013	1043.33
	FWGmw-016	999.25
Background	BKGmw-006	1006.85
	BKGmw-008	958.71
	BKGmw-012	993.86
	BKGmw-012	993.06
	BKGmw-015	992.59
	BKGmw-018	1030.15

NOTES

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LEGEND

- SHARON MEMBER WELL
- PROPERTY LINE
- 1100 — LINE OF EQUAL GROUNDWATER ELEVATION (ft.,amsl) (INTERMEDIATE DASHED)
- 1030 — LINE OF EQUAL GROUNDWATER ELEVATION (ft.,amsl) (INTERMEDIATE DASHED)
- GROUNDWATER DIRECTION
- HOMEWOOD MEMBER
- SHARON MEMBER
- SHARON SHALE

N

0 500 1000

SCALE (METERS)

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED

REVISIONS

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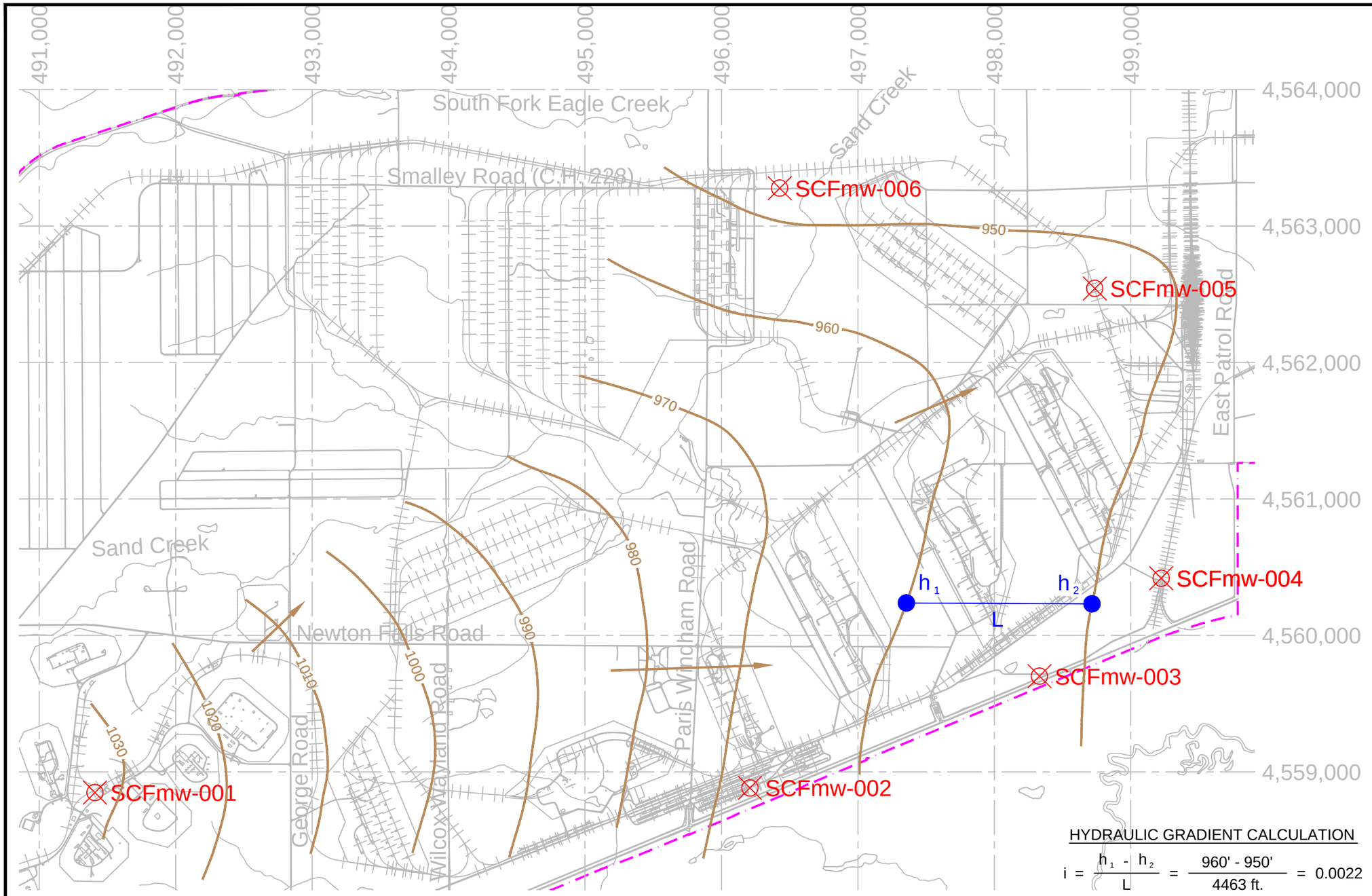
CHECKED	S. SPESSHARDT	09-12-2014
APPROVED	J. MILLER	09-12-2014
SCALE:	AS SHOWN	

POTENTIOMETRIC SURFACE OF UPPER SHARON (MAY 2014)

SIZE	PROJECT NO.	DWG NO.	REV
E	030174.0016	PLATE 4	0



SHARON CONGLOMERATE WELLS

Well ID	Elevation (ft, amsl)
SCFmw-001	1033.30
SCFmw-002	966.93
SCFmw-003	951.67
SCFmw-004	944.37
SCFmw-005	952.01
SCFmw-006	948.71

N

0 500 1000

SCALE (METERS)

HYDRAULIC GRADIENT CALCULATION

$$i = \frac{h_1 - h_2}{L} = \frac{960' - 950'}{4463\ ft.} = 0.0022$$

LEGEND

- PROPERTY LINE
- 980 — LINE OF EQUAL GROUNDWATER ELEVATION (ft,amsl)
- GROUNDWATER DIRECTION
- MONITORING WELL

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

DRAWN	R. RUSSELL	09-10-2014
CHECKED	S. SPESSHARDT	09-12-2014
APPROVED	J. MILLER	09-12-2014
SCALE:	AS SHOWN	

POTENTIOMETRIC SURFACE OF SHARON CONGLOMERATE (MAY 2014)

ORIGINAL SIZE	PROJECT NO.	DWG NO.	REV
B	30174.0016.001	PLATE 5	0