FINAL
FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RVAAP-66 FACILITY-WIDE GROUNDWATER
REPORT ON THE MAY 2014 SAMPLING EVENT

FORMER RAVENNA ARMY AMMUNITION PLANT
PORTAGE AND TRUMBULL COUNTIES, OHIO

December 4, 2014

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

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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 May 2014. 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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CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Environmental Quality Management, Inc. (EQM) has completed the *Final Facility-Wide Groundwater Monitoring Program Report on the May 2014 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.

Jackie Doan, CQM, CQA, CHMM, CEAC
Director of Quality

Dec 1, 2014
Date

John M. Miller
Senior Project Manager

12/1/14
Date

Colleen A. Lear CPG, LG
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Date

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Document Distribution for the
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Former Ravenna Army Ammunition Plant

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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
Ohio EPA – CO-DERR – Ohio Environmental Protection Agency – Columbus – Division of Environmental Response &Revitalization
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
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
N/A	not analyzed

LIST OF GENERAL ACRONYMS
(continued)

NM	not measured
NS	no standard
NTU	nephelometric turbidity unit
OHARNG	Ohio Army National Guard
%	percent
PBA	Performance Based Acquisition
pCi/L	picocuries per liter
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
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 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, 281 Facility-Wide Groundwater Monitoring Program (FWGWMP) wells of 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 August 1, 2013. The monitoring wells sampled during the May 2014 groundwater monitoring event are presented in Appendix A. The list in Appendix A presents the list of the wells to be sampled. Note that the new wells are monitored quarterly until four data sets have been completed.

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

- Performed groundwater sampling on 6 wells identified in Appendix A.
- Gauged water levels/total depth and performed well inspections for 284 groundwater monitoring wells 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 May 2014 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). Note that the RSLs used in this report are the most recent available (May 2014). The summary is as follows.

Explosive and Propellant Compounds

As shown in Table 3-1, no explosives or propellants were detected at levels exceeding either their corresponding MCLs or RSLs (May 2014).

Inorganic Elements

Several inorganic compounds were detected at levels exceeding the method detection limit (MDL) at all sampled areas. The detected compounds included arsenic, barium, calcium, cobalt, iron, magnesium, manganese, nickel, potassium, sodium, and thallium. Several inorganic compounds had detections exceeding MCLs and/or the RSLs (May 2014) [arsenic, cobalt, manganese, and thallium] during the May 2014 sampling event.

Volatile Organic Compounds

The analytical results for VOCs are summarized in Table 3-3. There were no VOCs detected above the MDL for this sampling event.

Semivolatile Organic Compounds

As shown in Table 3-4, no SVOCs were detected at levels exceeding either their corresponding MCLs or RSLs (May 2014).

Pesticides and Polychlorinated Biphenyls (PCBs)

The analytical results for pesticides or PCBs are summarized in Table 3-5. There were no pesticides or PCBs detected above the MDL for this sampling event, this includes the new well (LL1mw-088) outside of the perimeter fence.

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. 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. Figures 1-1 and 1-2 present the former RVAAP Site Location Map and former RVAAP Facility 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

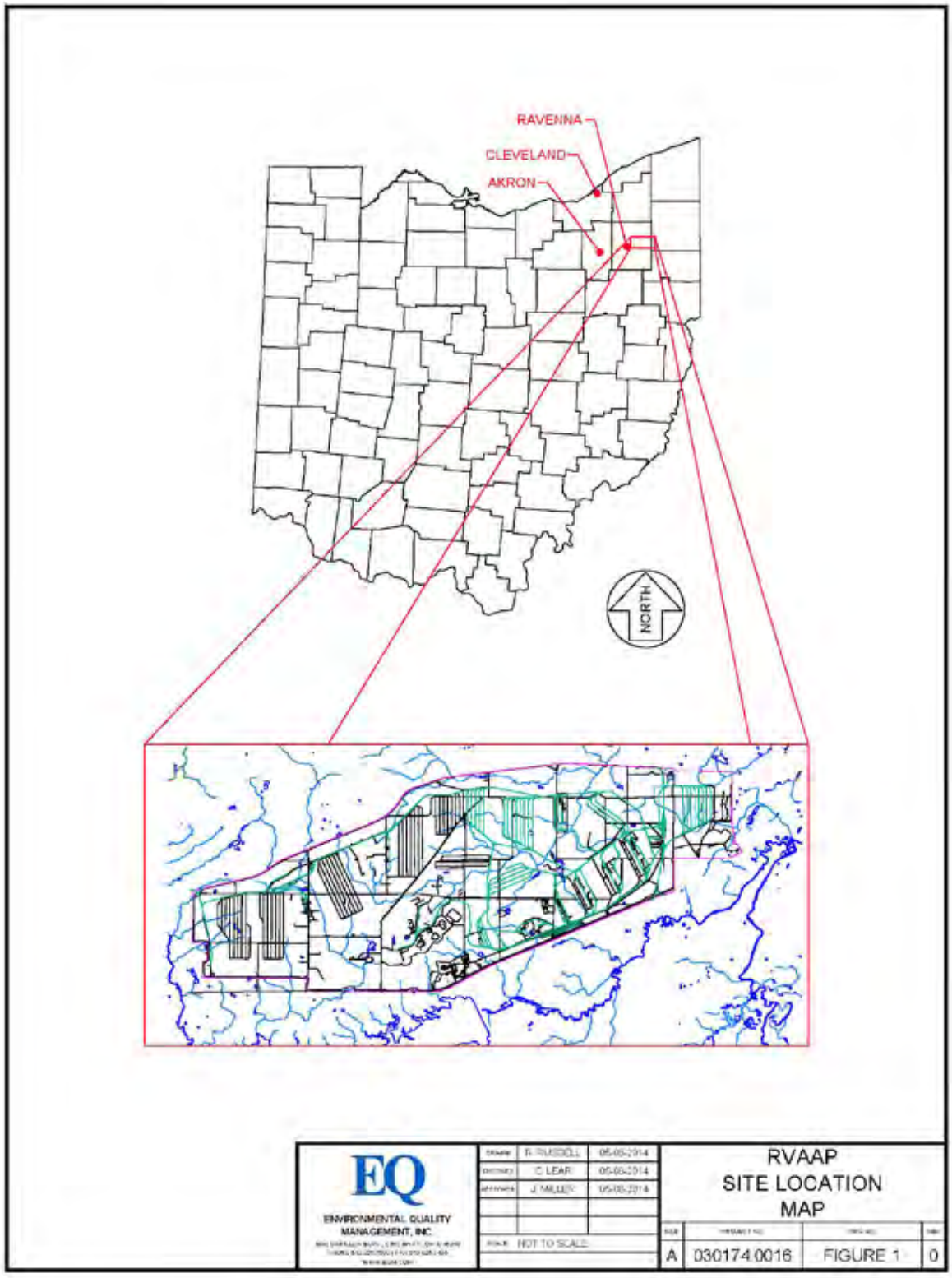


Figure 1-1. Former RVAAP General Location Map

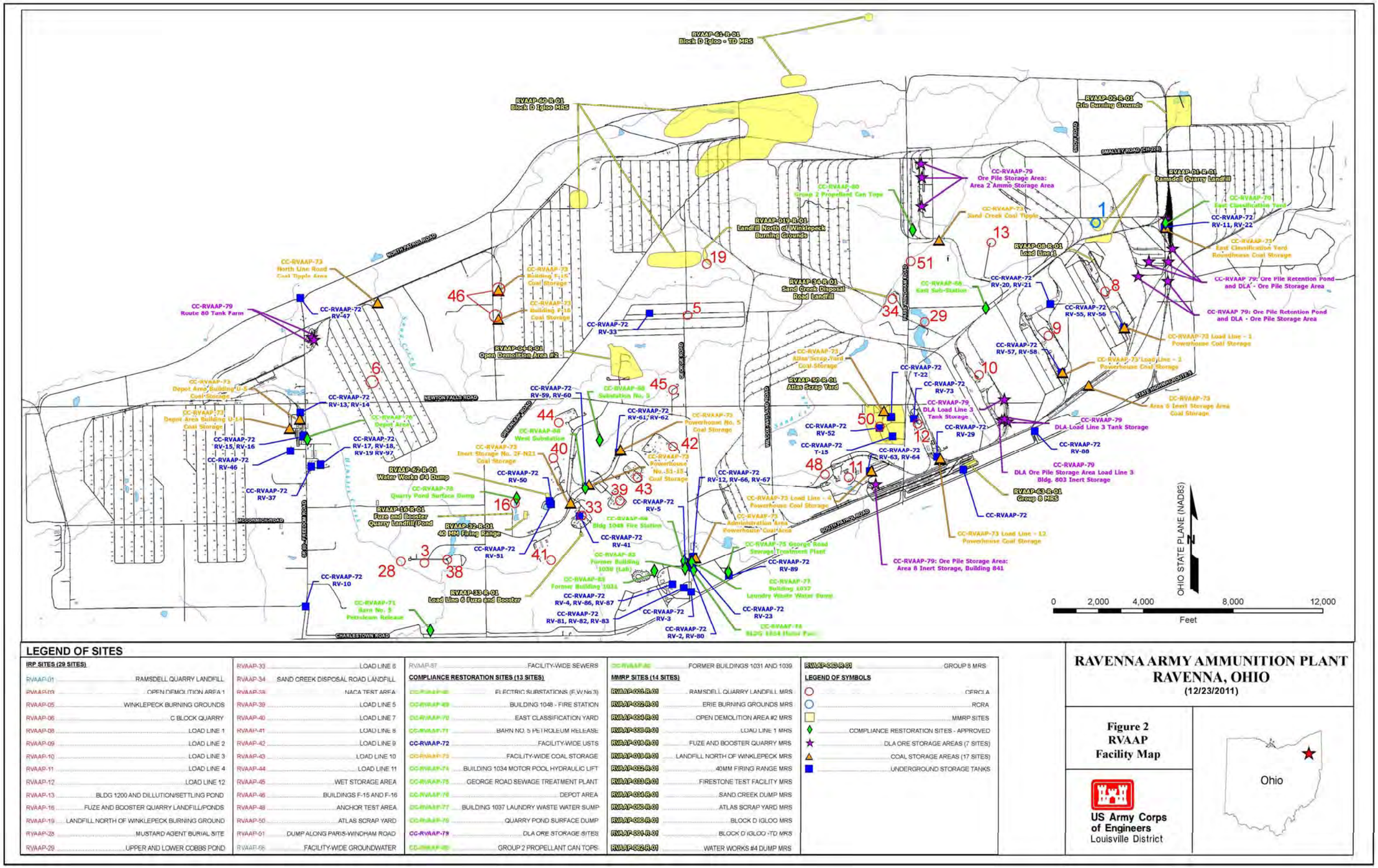


Figure 1-2. Former RVAAP Facility Map

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) 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 RVAAP. The first sampling event for this project was conducted in April 2005. The results of the previous FWGWMP sampling events are presented in Section 5 of this report. 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 May 2014 Event Monitoring

One of the activities conducted under the IRP includes monitoring of an extensive network (now 284 wells) of groundwater monitoring wells at the RVAAP facility. To date, 281 current FWGWMP wells, of the 284 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).

With the exception of three wells installed in December 2013 the current wells to be sampled and the analytes to be analyzed from each well were approved in the FWGWMPP Addendum dated August 1, 2013. In December 2013 three wells were installed under the *Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Additional Well Installation Addendum (September 2013*). The purpose of the new wells was to evaluate potential groundwater impacts outside of the perimeter fence area of the former RVAAP.

The current Monitoring Well Schedule is presented in Appendix A. This appendix presents the list of wells sampled during the May 2014 event. Note that the new wells are monitored quarterly until four data sets have been completed.

1.3 Scope of Work for the May 2014 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 May 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 on 6 wells identified in Appendix A.
- Gauged water levels/total depth and performed well inspections for 284 groundwater monitoring wells 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 May 2014 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 – Summary. The results of the sampling event are summarized, including groundwater elevation measurements, analytical results, and data verification/validation information.
- Section 4.0 – References.

- Appendix A – Monitoring Wells Sampled During the May 2014 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
- Appendix F - Correspondence and Comments/Responses

SECTION 2
PROJECT ACTIVITIES

2.1 Groundwater Level Monitoring

Depth to water from the top of the inner casing was measured in 284 FWGWMP wells during May 6-8, 2014. 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. The annual inspection of all the wells was also conducted at that time (the results of the inspections and potentiometric maps will be updated and discussed in the 2014 Annual Report). Potentiometric maps resulting from the water level measurements will be included in the Jul 2014 semiannual report.

Results of the groundwater level monitoring for all the RVAAP wells sampled during this monitoring event are presented in Section 3.1 and Appendix B. The monitoring well location map, identified as Figure 2-1 Eastern Portion RVAAP Map, is included with this report.

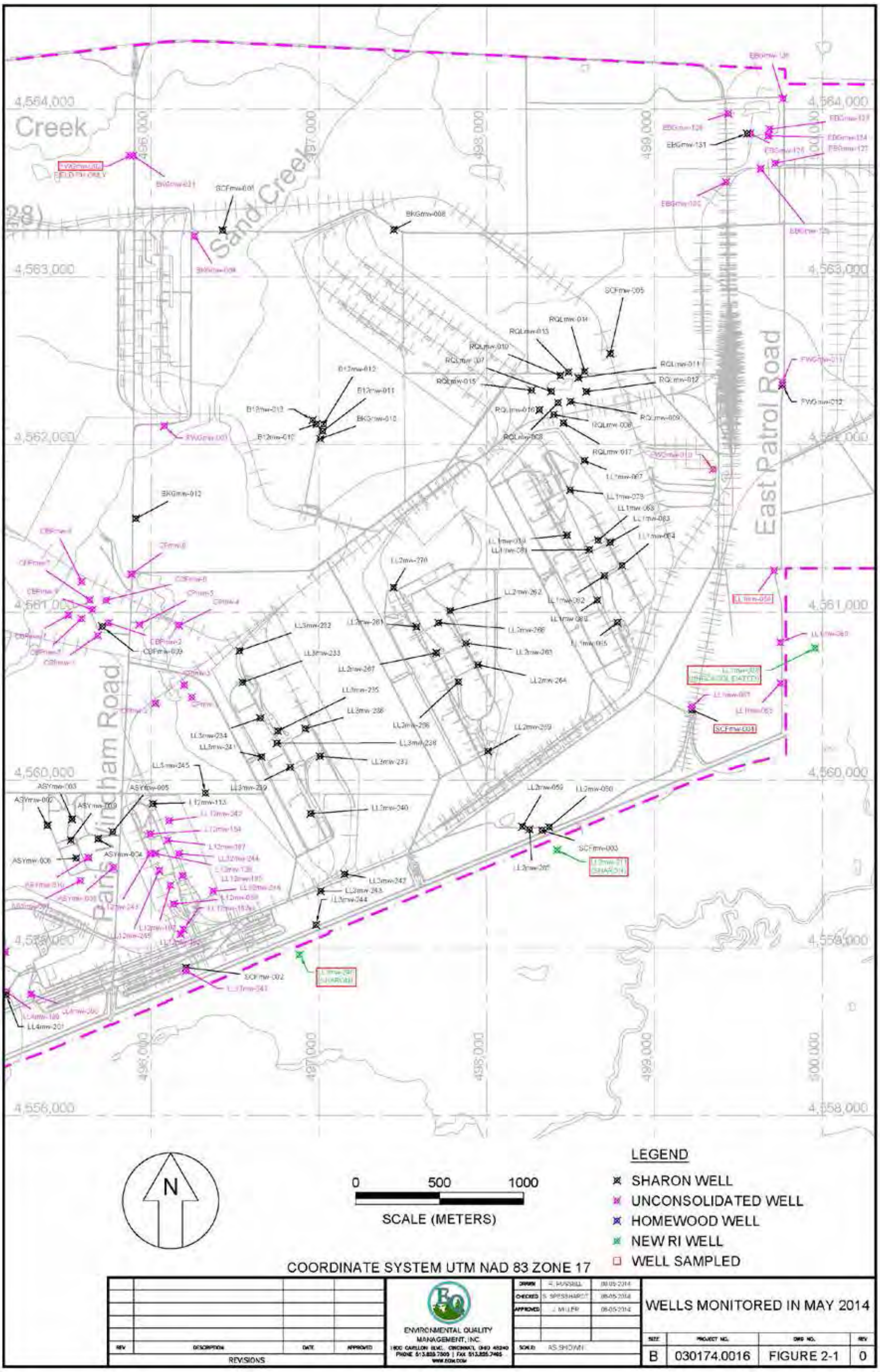
2.2 Groundwater Sampling

All identified monitoring wells were sampled from May 7-8, 2014. Wells were sampled using micropurge techniques 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) or had three consecutive readings within 10 percent (%). The groundwater parameters were measured using a Horiba U-22/U-52 with flow cell**.** Groundwater parameter measurements obtained during micropurging are presented in Appendix B.

A groundwater pH value of more than 9 standard units (s.u.) has been noted historically at FWGmw-002. EQM is monitoring the pH at this well to evaluate it as a potential groundwater contamination or anomaly. In May 2014, the pH was stabilized to 8.07 s.u.during purging activities. EQM will continue to monitor the pH in this well during the next event.

EQM continued purging after the normal stabilization parameters had stabilized (turbidity is not a stabilization parameter) in an attempt to reach turbidity values that were within 10 percent (%) of each other. 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.

Groundwater samples were collected using a bladder pump and micropurge sampling techniques. The pump was decontaminated, and the used bladder was discarded and replaced with a new bladder between sample locations. 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.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SCALE
AS SHOWN
WELLS MONITORED IN MAY 2014
SIZE
PROJECT NO.
DWG NO.
REV
B
030174.0016
FIGURE 2-1
0

During the May 2014 sampling, all coolers were received by the laboratory at temperatures within the prescribed tolerance limits. 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.

2.3 Laboratory Analysis

Laboratory analyses on all primary samples and associated quality control (QC) samples were performed by Test America Laboratories. Table 2-1 presents the analytical methods used to analyze the groundwater samples.

Note that for this event, wells were sampled for specific analytes as identified in the FWGWMPP Addendum. The three new wells were sampled for the full RVAAP analytical suite. The May 2014 groundwater samples were analyzed for the following parameters depending upon the well requirements, 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).

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

LL3mw-246 – Duplicate Sample
LL2mw-271 – MS/MSD

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). Laboratory analyses on all quality assurance (QA) samples (i.e., split samples) were performed by RTI Laboratories in Livonia, Michigan. One QA sample set was collected from the same well where the duplicate sample was collected. The 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 May 2014 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.

Table 2-1. Analytical Suite of Chemicals

Constituents	Method[1]	Preservation
PCBs	Gas Chromatograph (GC) – (8082)	Cool, 4º C[3]
Pesticides	GC – (8081A)	Cool, 4º C
SVOCs	GC/Mass Spectrograph (MS) SVOCs (8270C)	Cool, 4º C
VOCs	GC/MS VOCs (8260B)	HCl, Cool, 4º C
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
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
Perchlorate	Method 6860	0.2µm filter, with prefilter, Cool, 4º C

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

Table 2-2. QA Table for May 2014 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 4	Pesticides	PCBs	Explosives & Propellants	Cyanide	Filtered Metals
LL1mw-064	FWGLL1mw-064C-0436-GW/GF	5/7/2014	GW		EQUIPRinse1-0443	FWGTeam3-Trip					1		1		1		1
LL1mw-088	FWGLL1mw-088-0437-GW/GF	5/8/2014	GW		EQUIPRinse2-0444	FWGTeam3-Trip				1		1	1	1	1	1	1
LL2mw-271	FWGLL2mw-271-0438-GW/GF	5/7/2014	GW		EQUIPRinse1-0443	FWGTeam3-Trip	Y			1		1	1	1	1	1	1
LL3mw-246	FWGLL3mw-246-0439-GW/GF	5/7/2014	GW	DUP1-0442	EQUIPRinse1-0443	FWGTeam3-Trip		FWGLL3mw-246-0441s-GW/GF	TRIPBLANK	1		1	1	1	1	1	1
SCFmw-004	FWGSCFmw-004-0440-GW/GF	5/7/2014	GW		EQUIPRinse1-0443	FWGTeam2-Trip					1		1		1		1

SVOCs (1=Phthalates, and 4=Full RVAAP RCRA suite)

2.4 Data Verification/Validation

Data from Test America was 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 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 were stored in the 55-gallon drums until the IDW Report was approved by the Ohio EPA. The IDW was then disposed of in accordance with the FWSAP, FWGWMPP Addendum, and Semiannual Addendum requirements. The IDW Report is presented in Appendix D. The approval letter from the Ohio EPA for disposal of the IDW is included in Appendix D. Note that the purge water from the May event was disposed of at the same time as the frac tank purge water on August 12, 2014.

SECTION 3
SUMMARY

3.1 Groundwater Elevations

Groundwater elevations were measured in 6 RVAAP monitoring wells during May 6-8, 2014. The locations of the 6 monitoring wells sampled are shown on Figure 2-1. 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. Potentiometric maps resulting from the water level measurements will be included in the Jul 2014 semiannual report.

Water-level measurements were measured in accordance with procedures in Section 4.3.3.1 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.

3.2 Summary of Analytical Results

Summaries of laboratory analytical results are presented in Tables 3-1, 3-2, 3-3, 3-4, and 3-5. 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.

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). Note that the RSLs used in this report are the most recent available (May 2014). 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 (May 2014) are presented in Appendix E.

3.2.1 Explosives and Propellants

Explosive and propellant compound analytical results are summarized in Table 3-1. The following compounds were detected at concentrations above the method detection limit (MDL)s.

- 2-Amino-4,6-dinitrotoluene in LL3mw-246 (0.36 µg/L). There is no MCL for 2-amino-4,6-dinitrotoluene. The RSL (May 2014) is 39 µg/L.

- 4-Amino-2,6-dinitrotoluene in LL3mw-246 (0.35 µg/L). There is no MCL for 4-amino-2,6-dinitrotoluene. The RSL (May 2014) is 39 µg/L.

- HMX in LL3mw-246 (0.039 µg/L J). There is no MCL for HMX. The RSL (May 2014) is 1000 mg/L.

- RDX in LL3mw-246 (0.18 µg/L). There is no MCL for RDX. The RSL (May 2014) is 0.70 µg/L.

As shown in Table 3-1, no explosives or propellants were detected at levels exceeding either their corresponding MCLs or RSLs (May 2014).

Table 3-1. FWGWMP May 2014 Explosive and Propellant Analytical Results

Station ID				LL1mw-064	LL1mw-088	LL2mw-271	LL3mw-246	SCFmw-004
Sample ID		MCL	USEPA RSL	FWGLL1mw-064C-0436-GW	FWGLL1mw-088-0437-GW	FWGLL2mw-271-0438-GW	FWGLL3mw-246-0439-GW	FWGSCFmw-004-0440-GW
Date Collected				5/7/2014	5/8/2014	5/7/2014	5/7/2014	5/7/2014
Sample Type				Grab	Grab	Grab	Grab	Grab
Analyte	Units							
1,3,5-Trinitrobenzene	µg/L	NS	590	0.052 U	0.053 U	0.051 U	0.051 U	0.051 U
1,3-Dinitrobenzene	µg/L	NS	2	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
2,4,6-Trinitrotoluene	µg/L	NS	2.5	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
2,4-Dinitrotoluene	µg/L	NS	0.24	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
2,6-Dinitrotoluene	µg/L	NS	0.048	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
2-Amino-4,6-dinitrotoluene	µg/L	NS	39	0.10 U	0.11 U	0.10 U	**0.36**	0.10 U
2-Nitrotoluene	µg/L	NS	0.31	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
3-Nitrotoluene	µg/L	NS	1.7	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
4-Amino-2,6-Dinitrotoluene	µg/L	NS	39	0.10 U	0.11 U	0.10 U	**0.35**	0.10 U
4-Nitrotoluene	µg/L	NS	4.2	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
HMX	µg/L	NS	1000	0.052 U	0.053 U	0.051 U	**0.039 J**	0.051 U
Nitrobenzene	µg/L	NS	0.14	0.10 U	0.11 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
Nitroglycerin	µg/L	NS	2	0.52 U	0.53 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
PETN	µg/L	NS	19	0.52 U	0.53 U	0.51 U	0.51 U	0.51 U
RDX	µg/L	NS	0.7	0.052 U	0.053 U	0.051 U	**0.18**	0.051 U
Tetryl	µg/L	NS	39	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U

Notes:
µg/L = microgram per liter
mg/L = milligram per liter
NS = no standard
N/A = Not Analyzed
Bold = detected compound above the MDL
RSL = USEPA Regional Screening Level, May 2014
MCL = Maximum Contaminant Level

Table 3-1. FWGWMP May 2014 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.

3.2.2 Inorganic Elements

The analytical results for inorganic elements are presented in Table 3-2. The inorganics detected in the samples included: arsenic, barium, calcium, cobalt, iron, magnesium, manganese, nickel, potassium, sodium, and thallium. 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.

The following compounds were detected at concentrations above the MDLs.

Arsenic

- LL1mw-064 (4.5 µg/L J), LL1mw-088 (18 µg/L), and LL2mw-271 (5.5 µg/L J). The MCL for arsenic is 10 µg /L. The RSL (May 2014) is 0.052 µg/L.

Barium

- LL1mw-064 (48 µg/L), LL1mw-088 (44 µg/L), LL2mw-271 (3.4 µg/L J), LL3mw-246 (16 µg/L), and SCFmw-004 (76 µg/L). The MCL for barium is 2000 µg /L. The RSL (May 2014) is 3800 µg/L.

Cobalt

- LL2mw-271 (9.2 µg/L). There is no MCL for cobalt. The RSL (May 2014) is 6 µg/L.

Manganese

- LL1mw-064 (120 µg/L), LL1mw-088 (86 µg/L), LL2mw-271 (520 µg/L), LL3mw-246 (300 µg/L), and SCFmw-004 (720 µg/L). The MCL for manganese is 50 µg/L. The RSL (May 2014) is 430 µg/L.

Nickel

- LL1mw-064 (2.5 µg/L J), LL2mw-271 (37 µg/L), and LL3mw-246 (5.3 µg/L). There is no MCL for nickel. The RSL (May 2014) is 390 µg/L.

Thallium

- LL2mw-271 (0.83 µg/L J). The MCL for thallium is 2 µg/L. The RSL (May 2014) is 0.2 µg/L

As shown above and on Table 3-2, several of the inorganics (arsenic, cobalt, manganese, and thallium) were detected at levels above their corresponding MCLs or RSLs (May 2014) during the May 2014 sampling event.

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 (May 2014). 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.

Table 3-2. FWGWMP May 2014 Inorganics Analytical Results

Station ID				LL1mw-064	LL1mw-088	LL2mw-271	LL3mw-246	SCFmw-004
Sample ID		MCL	USEPA RSL	FWGLL1mw-064C-0436-GF	FWGLL1mw-088-0437-GF	FWGLL2mw-271-0438-GF	FWGLL3mw-246-0439-GF	FWGSCFmw-004-0440-GF
Date Collected				5/7/2014	5/8/2014	5/7/2014	5/7/2014	5/7/2014
Sample Type				Grab	Grab	Grab	Grab	Grab
Analyte	Units							
Aluminum	µg/L	200	20000	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
Arsenic	µg/L	10	0.052	**4.5 J**	**18**	**5.5 J**	10 U	10 U
Barium	µg/L	2000	3800	**48**	**44**	**3.4 J**	**16**	**76**
Beryllium	µg/L	4.0	25	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
Calcium	µg/L	NS	NS	**58000**	**84000**	**56000**	**22000**	**150000**
Chromium	µg/L	100	22000	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Cobalt	µg/L	NS	6	4.0 U	4.0 U	**9.2**	4.0 U	4.0 U
Copper	µg/L	1300	800	10 U	10 U	10 U	10 U	10 U
Cyanide	mg/L	0.20	0.0015	N/A	0.0050 UJ	0.0050 UJ	0.0050 UJ	N/A
Iron	µg/L	300	11000	**760**	**550**	**4400**	**1800**	100 U
Lead	µg/L	15	NS	5.0 U	**2.0 B**	5.0 U	5.0 U	5.0 U
Magnesium	µg/L	NS	NS	**9800**	**39000**	**19000**	**7400**	**59000**
Manganese	µg/L	50	430	**120**	**86**	**520**	**300**	**720**
Mercury	µg/L	2.0	0.63	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	µg/L	NS	390	**2.5 J**	5.0 U	**37**	**5.3**	5.0 U
Potassium	µg/L	NS	NS	**800 J**	**3400**	**1000**	**1600**	**2800**
Selenium	µg/L	50	100	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
Sodium	µg/L	NS	NS	**5000**	**24000**	**4300**	**3900**	**10000**
Thallium	µg/L	2.0	0.20	1.5 U	1.5 U	**0.83 J**	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
Zinc	µg/L	5000	6000	50 U	50 U	50 U	50 U	50 U

Notes:

Bold = detected compound above the MDL

MCL = Maximum Contaminant Level

RSL = USEPA Regional Screening Level, May 2014

N/A = not analyzed

NS = no standard

µg/L = microgram per liter

mg/L = milligram per liter

Table 3-2. FWGWMP May 2014 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.

3.2.3 Volatile Organic Compounds

The analytical results for VOCs are summarized in Table 3-3. There were no VOCs detected above the MDL, for this sampling event.

3.2.4 Semivolatile Organic Compounds

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

- Diethyl phthalate – LL2mw-271 (0.64 µg/L B). There is no MCL for diethyl phthalate. The RSL (May 2014) is 15,000 µg/L.

- Naphthalene – LL1mw-088 (0.15 µg/L B) and LL3mw-246 (0.10 µg/L J). There is no MCL for naphthalene. The RSL (May 2014) is 0.17 µg/L.

- Phenanthrene – LL1mw-088 (0.10 µg/L). There is no MCL or RSL for phenanthrene. The RSL (May 2014) is 0.17 µg/L.

- Pyrene – LL1mw-088 (0.10 µg/L). There is no MCL for pyrene. The RSL (May 2014) is 120 µg/L.

As shown in Table 3-4 and above, no SVOCs were detected at levels exceeding either their corresponding MCLs or RSLs (May 2014).

3.2.5 Pesticides and Polychlorinated Biphenyls

The analytical results for pesticides and PCBs are summarized in Table 3-5. There were no pesticides and PCBs were detected above the MDL, for this sampling event.

Table 3-3. FWGWMP May 2014 VOC Analytical Results

Station ID				LL1mw-088	LL2mw-271	LL3mw-246
Sample ID		MCL	USEPA RSL	FWGLL1mw-088-0437-GW	FWGLL2mw-271-0438-GW	FWGLL3mw-246-0439-GW
Date Collected				5/8/2014	5/7/2014	5/7/2014
Sample Type				Grab	Grab	Grab
Analyte	Units					
1,1,1-Trichloroethane	µg/L	200	8000	0.25 U	0.25 U	0.25 U
1,1,2,2-Tetrachloroethane	µg/L	NS	0.076	0.25 U	0.25 U	0.25 U
1,1,2-Trichloroethane	µg/L	5.0	0.28	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	µg/L	NS	2.7	0.25 U	0.25 U	0.25 U
1,1-Dichloroethene (total)	µg/L	7.0	280	0.25 U	0.25 U	0.25 U
1,2-Dibromoethane	µg/L	NS	0.0075	0.25 U	0.25 U	0.25 U
1,2-Dichloroethane	µg/L	5.0	0.17	0.25 U	0.25 U	0.25 U
1,2-Dichloroethene (total)	µg/L	NS	NS	0.25 U	0.25 U	0.25 U
1,2-Dichloropropane	µg/L	5.0	0.44	0.25 U	0.25 U	0.25 U
2-Butanone	µg/L	NS	5600	0.57 UJ	0.57 UJ	0.57 UJ
2-Hexanone	µg/L	NS	38	0.50 UJ	0.50 UJ	0.50 UJ
4-Methyl-2-pentanone	µg/L	NS	1200	0.50 UJ	0.50 UJ	0.50 UJ
Acetone	µg/L	NS	14000	1.1 U	1.1 U	1.1 U
Benzene	µg/L	5.0	0.45	0.25 U	0.25 U	0.25 U
Bromochloromethane	µg/L	NS	83	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	0.13	0.25 UJ	0.25 UJ	0.25 UJ
Bromoform	µg/L	80	9.2	0.64 UJ	0.64 UJ	0.64 UJ
Bromomethane	µg/L	NS	7.5	0.50 U	0.50 U	0.50 U
Carbon disulfide	µg/L	NS	810	0.25 UJ	0.25 UJ	0.25 UJ
Carbon tetrachloride	µg/L	5.0	0.45	0.25 UJ	0.25 UJ	0.25 UJ
Chlorobenzene	µg/L	100	78	0.25 U	0.25 U	0.25 U
Chloroethane	µg/L	NS	21000	0.50 U	0.50 U	0.50 U
Chloroform	µg/L	80	0.22	0.25 U	0.25 U	0.25 U
Chloromethane	µg/L	NS	190	0.50 U	0.50 U	0.50 U
cis-1,2-dichloroethene	µg/L	70	36	0.25 U	0.25 U	0.25 U
cis-1,3-Dichloropropene	µg/L	NS	0.47	0.25 U	0.25 U	0.25 U
Dibromochloromethane	µg/L	NS	0.17	0.25 U	0.25 U	0.25 U
Ethylbenzene	µg/L	700	1.5	0.25 U	0.25 U	0.25 U
m&p-xylenes	µg/L	NS	190	0.50 U	0.50 U	0.50 U
Methylene chloride	µg/L	5.0	11	0.50 U	0.50 U	0.50 U
o-xylene	µg/L	NS	190	0.25 U	0.25 U	0.25 U
Styrene	µg/L	100	1200	0.25 U	0.25 U	0.25 U
Tetrachloroethene	µg/L	5.0	11	0.50 U	0.50 U	0.50 U
Toluene	µg/L	1000	1100	0.25 U	0.25 U	0.25 U
trans-1,2-dichloroethene	µg/L	100	360	0.25 U	0.25 U	0.25 U
trans-1,3-Dichloropropene	µg/L	NS	0.47	0.25 U	0.25 U	0.25 U
Trichloroethene	µg/L	5.0	0.49	0.25 U	0.25 U	0.25 U
Vinyl chloride	µg/L	2.0	0.019	0.25 U	0.25 U	0.25 U
Total Xylenes	µg/L	10000	190	0.25 U	0.25 U	0.25 U

Notes:

MCL = Maximum Contaminant Level

RSL = USEPA Regional Screening Level, May 2014

Bold = detected compound above the MDL

mg/L = milligram per liter

µg/L = microgram per liter

NS = no standard

Table 3-3. FWGWMP May 2014 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 3-4. FWGWMP May 2014 SVOC Analytical Results

Station ID				LL1mw-064	SCFmw-004
Sample ID		MCL	USEPA RSL	FWGLL1mw-064C-0436-GW	FWGSCFmw-004-0440-GW
Date Collected				5/7/2014	5/7/2014
Sample Type				Grab	Grab
Analyte	Units				
bis(2-Ethylhexyl)phthalate	µg/L	6.0	5.6	4.8 U	4.8 U
Butyl benzyl phthalate	µg/L	NS	16	0.48 U	0.48 U
Diethyl phthalate	µg/L	NS	15000	0.95 U	0.95 U
Dimethyl phthalate	µg/L	NS	NS	0.48 U	0.48 U
Di-n-butyl phthalate	µg/L	NS	900	4.8 U	4.8 U
Di-n-octyl phthalate	µg/L	NS	200	0.48 U	0.48 U

Notes:

MCL = Maximum Contaminant Level

RSL = USEPA Regional Screening Level, May 2014

µg/L = microgram per liter

NS = no standard

N/A = Not Analyzed

Bold = detected compound above the MDL

Table 3-4. FWGWMP May 2014 SVOC Analytical Results

Station ID				LL1mw-088	LL2mw-271	LL3mw-246
Sample ID		MCL	USEPA RSL	FWGLL1mw-088-0437-GW	FWGLL2mw-271-0438-GW	FWGLL3mw-246-0439-GW
Date Collected				5/8/2014	5/7/2014	5/7/2014
Sample Type				Grab	Grab	Grab
Analyte	Units					
1,2,4-Trichlorobenzene	µg/L	70	1.1	0.51 U	0.48 U	0.48 U
1,2-Dichlorobenzene	µg/L	600	300	0.51 U	0.48 U	0.48 U
1,3-Dichlorobenzene	µg/L	NS	NS	0.51 U	0.48 U	0.48 U
1,4-Dichlorobenzene	µg/L	75	0.48	0.51 U	0.48 U	0.48 U
2,2-oxybis (1-chloropropane)	µg/L	NS	0.36	0.51 U	0.48 U	0.48 U
2,4,5-Trichlorophenol	µg/L	NS	1200	0.51 U	0.48 U	0.48 U
2,4,6-Trichlorophenol	µg/L	NS	4	0.51 U	0.48 U	0.48 U
2,4-Dichlorophenol	µg/L	NS	46	0.51 U	0.48 U	0.48 U
2,4-Dimethylphenol	µg/L	NS	360	0.51 U	0.48 U	0.48 U
2,4-Dinitrophenol	µg/L	NS	39	1.0 U	0.95 U	0.95 U
2-Chloronaphthalene	µg/L	NS	750	0.51 U	0.48 U	0.48 U
2-Chlorophenol	µg/L	NS	91	0.51 U	0.48 U	0.48 U
2-Methylnaphthalene	µg/L	NS	36	0.10 U	0.095 U	0.095 U
2-Methylphenol	µg/L	NS	930	0.51 U	0.48 U	0.48 U
2-Nitroaniline	µg/L	NS	190	0.51 U	0.48 U	0.48 U
2-Nitrophenol	µg/L	NS	NS	0.51 U	0.48 U	0.48 U
3,3'-Dichlorobenzidine	µg/L	NS	0.12	1.0 U	0.95 U	0.95 U
3- and 4-Methylphenol	µg/L	NS	930	1.0 U	0.95 U	0.95 U
3-Nitroaniline	µg/L	NS	NS	0.51 U	0.48 U	0.48 U
4,6-Dinitro-2-methylphenol	µg/L	NS	1.5	4.0 U	3.8 U	3.8 U
4-Bromophenyl phenyl ether	µg/L	NS	NS	0.51 U	0.48 U	0.48 U
4-Chloro-3-methylphenol	µg/L	NS	1400	0.51 U	0.48 U	0.48 U
4-Chloroaniline	µg/L	NS	0.36	0.51 U	0.48 U	0.48 U
4-Chlorophenyl phenyl ether	µg/L	NS	NS	0.51 U	0.48 U	0.48 U
4-Nitroanaline	µg/L	NS	38	0.51 U	0.48 U	0.48 U
4-Nitrophenol	µg/L	NS	NS	4.0 U	3.8 U	3.8 U
Acenaphthene	µg/L	NS	530	0.10 U	0.095 U	0.095 U
Acenaphthylene	µg/L	NS	NS	0.10 U	0.095 U	0.095 U
Anthracene	µg/L	NS	1800	0.10 U	0.095 U	0.095 U
Benzo(a)anthracene	µg/L	NS	0.034	0.10 U	0.095 U	0.095 U
Benzo(a)pyrene	µg/L	0.2	0.0034	0.10 U	0.095 U	0.095 U
Benzo(b)fluoranthene	µg/L	NS	0.034	0.10 U	0.095 U	0.095 U
Benzo(g,h,i)perylene	µg/L	NS	NS	0.10 U	0.095 U	0.095 U
Benzo(k)fluoranthene	µg/L	NS	0.34	0.10 U	0.095 U	0.095 U
Benzoic acid	µg/L	NS	75000	20 U	19 U	19 U
Benzyl alcohol	µg/L	NS	2000	0.51 U	0.48 U	0.48 U
bis(2-Chloroethoxy)methane	µg/L	NS	59	0.51 U	0.48 U	0.48 U
bis(2-Chloroethyl)ether	µg/L	NS	0.014	0.10 U	0.095 U	0.095 U
bis(2-Ethylhexyl)phthalate	µg/L	6.0	5.6	5.1 U	4.8 U	4.8 U
Butyl benzyl phthalate	µg/L	NS	16	0.51 U	0.48 U	0.48 U

Table 3-4. FWGWMP May 2014 SVOC Analytical Results

Station ID				LL1mw-088	LL2mw-271	LL3mw-246
Sample ID		MCL	USEPA RSL	FWGLL1mw-088-0437-GW	FWGLL2mw-271-0438-GW	FWGLL3mw-246-0439-GW
Date Collected				5/8/2014	5/7/2014	5/7/2014
Sample Type				Grab	Grab	Grab
Analyte	Units					
Carbazole	µg/L	NS	NS	0.51 U	0.48 U	0.48 U
Chrysene	µg/L	NS	3.4	0.10 U	0.095 U	0.095 U
Dibenzo(a,h)anthracene	µg/L	NS	0.0065	0.10 U	0.095 U	0.095 U
Dibenzofuran	µg/L	NS	7.9	0.10 U	0.095 U	0.095 U
Diethyl phthalate	µg/L	NS	15000	1.0 U	**0.64 B**	0.95 U
Dimethyl phthalate	µg/L	NS	NS	0.51 U	0.48 U	0.48 U
Di-n-butyl phthalate	µg/L	NS	900	5.1 U	4.8 U	4.8 U
Di-n-octyl phthalate	µg/L	NS	200	0.51 U	0.48 U	0.48 U
Fluoranthene	µg/L	NS	800	0.10 U	0.095 U	0.095 U
Fluorene	µg/L	NS	290	0.10 U	0.095 U	0.095 U
Hexachlorobenzene	µg/L	1.0	0.049	0.10 U	0.095 U	0.095 U
Hexachlorobutadiene	µg/L	NS	0.3	0.51 U	0.48 U	0.48 U
Hexachlorocyclopentadiene	µg/L	50	31	0.51 UJ	0.48 U	0.48 UJ
Hexachloroethane	µg/L	NS	0.90	0.51 U	0.48 U	0.48 U
Indeno(1,2,3-cd)pyrene	µg/L	NS	0.034	0.10 U	0.095 U	0.095 U
Isophorone	µg/L	NS	78	0.51 U	0.48 U	0.48 U
Naphthalene	µg/L	NS	0.17	**0.15 B**	0.095 U	**0.10 J**
N-Nitroso-di-n-propylamine	µg/L	NS	0.011	0.51 U	0.48 U	0.48 U
N-Nitrosodiphenylamine	µg/L	NS	12	0.51 U	0.48 U	0.48 U
Pentachlorophenol	µg/L	1.0	0.04	1.0 U	0.95 U	0.95 U
Phenanthrene	µg/L	NS	NS	**0.10**	0.095 U	0.095 U
Phenol	µg/L	NS	5800	1.0 U	0.95 U	0.95 U
Pyrene	µg/L	NS	120	**0.10**	0.095 U	0.095 U

Notes:
MCL = Maximum Contaminant Level
RSL = USEPA Regional Screening Level, May 2014
µg/L = microgram per liter
NS = no standard
N/A = Not Analyzed
Bold = detected compound above the MDL

Table 3-4. FWGWMP May 2014 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 3-5. FWGWMP May 2014 Pesticides and PCBs Analytical Results

Station ID				LL1mw-064	LL1mw-088	LL2mw-271	LL3mw-246	SCFmw-004
Sample ID		MCL	USEPA RSL	FWGLL1mw-064C-0436-GW	FWGLL1mw-088-0437-GW	FWGLL2mw-271-0438-GW	FWGLL3mw-246-0439-GW	FWGSCFmw-004-0440-GW
Date Collected				5/7/2014	5/8/2014	5/7/2014	5/7/2014	5/7/2014
Sample Type				Grab	Grab	Grab	Grab	Grab
Analyte	Units							
4,4'-DDD	µg/L	NS	0.031	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
4,4'-DDE	µg/L	NS	0.23	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
4,4'-DDT	µg/L	NS	0.23	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Aldrin	µg/L	NS	0.0046	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
alpha-BHC	µg/L	NS	0.0071	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
alpha-Chordane	µg/L	NS	NS	0.019 U	0.019 UJ	0.020 UJ	0.019 U	0.095 U
beta-BHC	µg/L	NS	0.025	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
delta-BHC	µg/L	NS	NS	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Dieldrin	µg/L	NS	0.0017	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Endosulfan I	µg/L	NS	100	0.019 U	0.019 UJ	0.020 UJ	0.019 U	0.095 U
Endosulfan II	µg/L	NS	100	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Endosulfan sulfate	µg/L	NS	NS	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Endrin	µg/L	2.0	2.3	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Endrin aldehyde	µg/L	NS	NS	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Endrin ketone	µg/L	NS	NS	0.019 U	0.019 UJ	0.020 UJ	0.019 U	0.095 U
gamma-BHC	µg/L	0.20	0.041	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
gamma-Chlordane	µg/L	NS	NS	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Heptachlor	µg/L	0.40	0.002	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Heptachlor epoxide	µg/L	0.20	0.0038	0.019 U	0.019 UJ	0.020 U	0.019 U	0.095 U
Methoxychlor	µg/L	40	37	0.048 U	0.048 UJ	0.050 U	0.048 U	0.24 U
Toxaphene	µg/L	3.0	0.015	0.76 U	0.76 UJ	0.79 U	0.76 U	3.8 U
PCB- 1016	µg/L	0.50	1.1	N/A	0.19 UJ	0.20 U	0.19 U	N/A
PCB- 1221	µg/L	0.50	0.0046	N/A	0.19 UJ	0.20 U	0.19 U	N/A
PCB- 1232	µg/L	0.50	0.0046	N/A	0.19 UJ	0.20 U	0.19 U	N/A
PCB- 1242	µg/L	0.50	0.039	N/A	0.38 UJ	0.40 U	0.38 U	N/A
PCB- 1248	µg/L	0.50	0.039	N/A	0.19 UJ	0.20 U	0.19 U	N/A
PCB- 1254	µg/L	0.50	0.039	N/A	0.19 UJ	0.20 U	0.19 U	N/A
PCB- 1260	µg/L	0.50	0.039	N/A	0.19 UJ	0.20 U	0.19 U	N/A

Notes:
MCL = Maximum Contaminant Level
RSL = USEPA Regional Screening Level, May 2014
N/A = not analyzed
NS = no standard
Bold = detected compound above the MDL
µg/L = microgram per liter

Table 3-5. FWGWMP May 2014 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:
- 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.

3.3 Data Verification/Validation

As discussed in Sections 2.4 and 3.3, all primary chemical data were generated by Test America. 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 May 2014 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 3-1, 3-2, 3-3, 3-4, and 3-5 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.

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.

Six wells were sampled during a 2-day sampling event from May 7-8, 2014. During the event, three trip blanks were submitted to Test America for VOCs analysis.

One field duplicate was 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, one laboratory split was 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; a total of two equipment rinsate blanks were collected.

For the May 2014 sampling event, the following laboratory or field contamination was identified at detections greater than ½ MRL for the field QA/QC samples.

SDG 240-37114

Trip Blank

Chloroform was detected in FWGTEAM3-Trip050814 at 0.35 µg/L, FWGTEAM3-Trip at 0.29 µg/L and at 0.34 µg/L in sample FWGTEAM2-Trip. There were no detected chloroform concentrations reported for the associated field samples, so no qualifications were required for trip blank contamination.

Equipment Rinse

- FWGEQUIPRinse2-0444-GW had acetone detected at 14 µg/L, carbon disulfide at 0.69 µg/L, 2-butanone at 3.6 µg/L and toluene at 0.22 µg/L.
- FWGEQUIPRinse1-0443-GW had acetone detected at 12 µg/L, 2-butanone at 1.5 µg/L and toluene at 0.20 µg/L.

There were no detected concentrations reported for the associated field samples, so no qualifications were made for the acetone, carbon disulfide, 2-butanone or toluene contamination.

- FWGEQUIPRinse2-0444-GW had diethylphthalate detected at 2.7 µg/L, naphthalene at 0.14 µg/L and phenol at 0.73 µg/L.

- FWGEQUIPRinse1-0443-GW had diethylphthalate detected at 3.2 µg/L.

The naphthalene result for sample FWGLL1mw-088-0437-GW and the diethyl phthalate result for sample FWGLL2mw-271-0438-GW were qualified, "B", as the reported concentrations were less than 5x the associated equipment rinse contamination.

- FWGEQUIPRinse2-0444-GW had lead detected at 1.7 µg/L.

The lead result for sample FWGLL1mw-088-0437-GF was qualified, "B", as the reported concentration was less than five times the equipment rinse contamination.

Method Blank

Vanadium was detected in the method blank at 1.37 µg/L. No qualifications were made as there were no detected vanadium concentrations reported for the associated field samples.

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 3-6 presents the percent, by analytical method, of data that were acceptable (based on data not rejected) for use.

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 3-6. Percent of Acceptable Data

Analytical Method	Total Number of Analytes	Number of Rejects	Percent Completeness
6010B	112	0	100.0
6020	64	0	100.0
7470A	8	0	100.0
8081A	168	0	100.0
8082	42	0	100.0
8260B	351	0	100.0
8270C -SVOC1	12	0	100.0
8270C-SVOC4	378	0	100.0
8330	128	0	100.0
9012A	6	0	100.0
SW8330 Modified	8	0	100.0
WS-WC-0050	8	0	100.0
TOTAL	**1285**	**0**	**100.0**

SECTION 4
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APPENDIX A

MONITORING WELLS SAMPLED DURING THE MAY 2014 GROUNDWATER MONITORING EVENT

May 2014 Well Sampling List

Well ID Number	RVAAP Location	Sampling Rationale
FWGmw-002	Facility-Wide wells	Monitoring Well for pH
LL1mw-064	Load Line 1	Semiannual Well, frozen in January
LL1mw-088	Load Line 1	New well, four events needed
LL2mw-271	Load Line 2	New well, four events needed
LL3mw-246	Load Line 3	New well, four events needed
SCFmw-004	Sharon Conglomerate Formation	Semiannual Well, frozen in January

APPENDIX B

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

Signature Page

May 2014 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
John Miller	EQM	JM
Stephen Stuergon	EQM	SS
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: _____

Erik Corbin, Sample Manager, EQM

Signature: _____

Logbook

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Location RVAAP 66 Date 5-5-14 CS 5/5/14

Project / Client USACE

JM CA SAS 50s P.Cldy

1500 Onsite for unpack + organize
& TO East first then 1036

1615 Coolers organized
OFFSITE

CS 5/5/14

93

Location RVAAP 66 Date 5-6-14

Project / Client USACE 40-60s

JM CA SS SAS BB AD Sunny

0730 onsite
0800 Health + Safety
Stop at eastern + Demo
Water Level Event.
1100 Vehicle Stuck (partial crew)
1300 partial crew working.
Continue water levels
1630 Setup at 1036 for
CS 5/6/14 tomorrow.
1645 organize
1700 offsite

SS 5/6/14

Location RVAAP 66 Date 5-7-14

Project / Client USACE 40s-60s

CAL JM SAS AD BD P. Sunny rain

0730 Organize partial water level partial sample.
Health Safety / Calibration
water level + purge sample event. 6 well purge & sample

1330 partial to 1036.

1430 Partial demob of CAL + JM.

1730 Offsite after Angie & Bryan finished sampling wells 223-246, 222-271, and 221-064 ✓

D. Greenhalgh 5/7/14

Location RVAAP Date 5/8/14

Project / Client 50-80s P. Sunny

AD, BD, SAS

Mostly sunny, warming to near 80°

0730 Arrived on site.

0830 Set up on 221MW-088. Angie & Bryan performed purge & sample

1220 Finished sampling well

1400 Courier picked up samples from yesterday and today incl. rinseate sample and waste char. of purge & decon water

1447 Offsite after loading and cleaning up.

D. Greenhalgh 5/8/14

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Location RVAAP 66 Date 5-5 to 5-8/14

Project / Client USACE

DRUM LOG

DRUM ID	CONTENTS
EQM 2014 - 5	Decon/Rinse
EQM 2014 - 6	*Purged Ground Water

* location of groundwater is loadline 1, loadline 2 loadline 3 and SCF areas. Decon was facility wide due to water levels.

5-8-14

97

Location Date

Project / Client

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5-8-14

Static Water Level Measurements

EQM MONITOR WELL STATIC WATER LEVEL FORM

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

FIELD BOOK#: 2 DATE: 5/7/2014

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 ms6000	CAL	10:40	22.66		0
	Cmt:Good, PURGE ONLY: intake 64, black suspended solids, cleaned out by 1130, gray sed at bottom med to soft							
LL1mw-064	Loadline 1	21.1	05767	AD	15:23	0.7		0
	Cmt:Good, water leaking from weephole at .5 L per Min.							
LL2mw-271	Loadline 2	27.8	05767	AD	12:10	9.29		0
	Cmt:Good,							
LL3mw-246	Loadline 3	45.61	05767	AD	9:04	19.1		0
	Cmt:Good,							
SCFmw-004	Sharon Con	112.5	qed ms6000	CAL	8:50	-0.2		0
	Cmt:Good, hard bottom, artesian flow, intake depth 107, needs new tubing							

EQM MONITOR WELL STATIC WATER LEVEL FORM

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

FIELD BOOK#: 2 DATE: 5/8/2014

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-088	Loadline 1	27.37	05767	AD	8:30	4.02		0
	Cmt:Good, start @ 50 10/5 drawn too fast. Changed cycles per min(CPM) to 2 @ 0840. @0845 changed to 1 CPM. After 0853 reading dumped flow thru & changed 2 CPM. After 0858 read changed to 1CPM.							

Calibration Records

CALIBRATION REFERENCE TABLES

Summary of Field Instruments and Calibration/Performance Requirements for RVAAP AOC-Specific Investigations

Instrument and Use	Calibration	Performance
Water level meter used to determine static water level	Calibrated by manufacturer	±0.01 ft
Water quality instrument used to determine groundwater pH	Two points using pH 4.0 and 7.0 standard solutions on a daily basis	±0.1 units
Water quality instrument used to determine groundwater conductivity	One point using 0.01 m KCl or equivalent standard solution on a daily basis. Standard solutions should be close to the range of groundwater sampled	±0.1 µmhos/cm
Water quality instrument used to determine groundwater turbidity	One point using a 0.0 NTU or equivalent standard solution on a daily basis	0.1 NTU
Water quality instrument used to determine dissolved oxygen	One point using standard solution or manufacturer's DO chart	10%
Thermometer used to determine groundwater temperature	Calibration by manufacturer	±1°C
Photoionization detector used to determine organic vapor concentrations emitted from subsurface material	One point using 100-ppm isobutylene calibration gas on a daily basis	±0.1 ppm

AOC = Area of concern KCl = Potassium chloride (solution) ppm = Parts per million
RVAAP = Ravenna Army Ammunition Plant

MODEL 3682 ZOBELL SOLUTION INSTRUCTIONS

ORP CHART

TEMPERATURE in °C	Ag/AgCl (4M KCl) in millivolts	CALOMEL in millivolts
-5	270.0	234.2
0	263.5	226.0
5	257.0	217.8
10	250.5	209.6
15	244.0	201.4
20	237.5	193.2
25	231.0	185.0
30	224.5	176.8
35	218.0	168.6
40	211.5	160.4
45	205.0	152.2
50	198.5	144.0

DO CHART

The YSI 3682 Zobell Solution is not for food or drug use and can be harmful if swallowed. It will react with acids to form harmful by-products, including hydro-

Amounts of saturated dissolved oxygen in water at various temperatures (salinity=0.0%)

JIS K0101

Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)
0	14.16						
1	13.77	11	10.67	21	8.68	31	7.42
2	13.40	12	10.43	22	8.53	32	7.32
3	13.04	13	10.20	23	8.39	33	7.22
4	12.70	14	9.97	24	8.25	34	7.13
5	12.37	15	9.76	25	8.11	35	7.04
6	12.06	16	9.56	26	7.99	36	6.94
7	11.75	17	9.37	27	7.87	37	6.86
8	11.47	18	9.18	28	7.75	38	6.76
9	11.19	19	9.01	29	7.64	39	6.68
10	10.92	20	8.84	30	7.53	40	6.59

RVAAP – Ravenna Ohio

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	1st Read then Cal'd
HORIBA	U22	706025	02-MAY-14	1300	CAL	Autocal	pH	4	3.99	pH units	3.99
						Autocal	Cond	4.49	4.48	mS/cm	4.61
						Autocal	Turb	0	0.0	NTU	0.0
						Calibration	pH	7	7.00	pH units	6.49
						Calibration	pH	10	10.08	pH units	9.98
						Temp Check	Temp		13.98	°C	16.00
						Calibration-Chart	DO		10.01	mg/L	10.59
						Calibration-Chart	ORP		251	mV	263
HORIBA	U22	706025	02-MAY-14	0745	Cal	Autocal	pH	4	3.99	pH units	
						Autocal	Cond	4.49	4.51	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	7.00	pH units	
						Calibration	pH	10	10.02	pH units	
						Temp Check	Temp		13.42	°C	
						Calibration-Chart	DO		9.99	mg/L	
						Calibration-Chart	ORP		250	mV	✓
						Autocal	pH	4		pH units	
						Autocal	Cond	4.49		mS/cm	
						Autocal	Turb	0		NTU	
					Cal	~~Calibration~~	pH	7		pH units	
						Calibration	pH	10		pH units	
						Temp Check	Temp			°C	
						Calibration-Chart	DO			mg/L	
5/2/14						Calibration-Chart	ORP			mV	
	RAE/PID		02/MAY/14	1351	CAL	Bump - ISOBUTYLENE			102	PPM	
						- ZERO AIR			0	PPM	
			02/MAY/14	0740	Cal	Bump	ISO		101	PPM	
							AIR		0	PPM	

	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		T9100069	07-MAY-14	1310	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	7.03	pH units	
						Calibration	pH	10	10.30	pH units	
						Temp Check	Temp		19.80	°C	
						Calibration-Chart	DO	9.19	~~19.89~~ 9.21	mg/L	✓
						Calibration-Chart	ORP		245	mV	
HORIBA U22		T9100069	07-MAY-14	0750	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	7.02	pH units	
						Calibration	pH	10	10.04	pH units	
						Temp Check	Temp		14.19	°C	
						Calibration-Chart	DO		9.82	mg/L	
						Calibration-Chart	ORP		245	mV	
						Autocal	pH	4	3.99	pH units	
			8-May-14	1340	ASD	Autocal	Cond	4.49	4.49	mS/cm	
						Autocal	Turb	0	0.0	NTU	
						Calibration	pH	7	6.98	pH units	
						Calibration	pH	10	10.01	pH units	
						Temp Check	Temp		15.09	°C	
						Calibration-Chart	DO		9.69	mg/L	
						Calibration-Chart	ORP		240	mV	

Purge/Sample Records

EQM MONITOR WELL PURGING FORM

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

LOCATION: FACILITYWIDE DATE: 5/7/2014 START TIME: 10:40

WELL ID: FWGmw-002

WELL DEPTH: 69.6 INITIAL WATER LEVEL: 22.66 TOTAL PURGED (L) 5.8

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: 10.5 Discharge: 4.5

COMMENTS PURGE ONLY: intake 64, black suspended solids, cleaned out by 1130, gray sed at bottom med to soft

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)
10:55	22.71	0.125	0.2						
11:07	23.12	0.125	1.5	10.92	0.461	1.16	8.22	669	-223
11:12	23.28	0.1	0.5	10.93	0.46	0.68	8.09	611	-225
11:17	23.20	0.1	0.5	11	0.457	0.22	8.05	479	-221
11:20	23.18	0.1	0.3	10.93	0.456	0.04	8.02	355	-226
11:23	23.19	0.1	0.3	10.87	0.455	0.02	8.02	291	-228
11:26	23.18	0.1	0.3	10.81	0.455	0.02	8.03	251	-232
11:30	23.18	0.1	0.4	10.8	0.452	0.04	8.03	179	-233
11:33	23.18	0.1	0.3	10.72	0.452	0.02	8.03	161	-236
11:36	23.18	0.1	0.3	10.75	0.451	0.02	8.04	151	-238
11:39	23.17	0.1	0.3	10.76	0.451	0.03	8.04	148	-239
11:42	23.17	0.1	0.3	10.78	0.452	0.04	8.05	136	-239
11:45	23.17	0.1	0.3	10.81	0.452	0.02	8.06	133	-239
11:48	23.16	0.1	0.3	10.84	0.452	0.02	8.07	129	-238

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

Field Personnel: CAL

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EQM MONITOR WELL PURGING FORM

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

LOCATION: LOADLINE 1 DATE: 5/7/2014 START TIME: 15:23

WELL ID: LL1mw-064

WELL DEPTH: 21.1 INITIAL WATER LEVEL: 0.7 TOTAL PURGED (L) 18.2

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

PUMP/PURGING DEVICE: BP - BLADDER PUMP APPROXIMATE PUMP INTAKE DEPTH: 15.5

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

COMMENTS Color: Clear, Odor:None,water leaking from weephole at .5 L per Min.

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)
15:33	0.60	0.3	0.5						
15:36	0.60	0.3	0.9	10.56	0.583	7.73	7.1	324	-127
15:39	0.60	0.3	0.9	10.49	99.9	0	7.24	317	-133
15:42	0.60	0.3	0.9	10.5	99.9	0	7.29	322	-135
15:47	0.60	0.3	1.5	10.5	41.4	5.46	7.44	112	-139
15:52	0.60	0.3	1.5	10.58	0.9	5.67	7.54	71.5	-142
15:57	0.60	0.3	1.5	10.56	0.9	5.84	7.56	70.2	-144
16:02	0.60	0.3	1.5	10.62	0.652	5.54	7.61	52	-144
16:07	0.60	0.3	1.5	10.63	0.544	5.53	7.63	48.4	-145
16:12	0.60	0.3	1.5	10.55	0.46	5.44	7.66	72.3	-147
16:17	0.60	0.3	1.5	10.42	0.445	5.42	7.68	54.4	-147
16:22	0.60	0.3	1.5	10.43	0.441	5.33	7.69	49.1	-148
16:27	0.60	0.3	1.5	10.39	0.438	5.32	7.66	45.1	-149
16:32	0.60	0.3	1.5	10.38	0.434	5.27	7.7	44.7	-150

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-064 SampleID: FWGLL1mw-064C-0436-GW Dup ID:

SplitID: RinseID:

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

GRAB: **Y** COMPOSITE: **N** DATE: 5/7/2014 TIME: 16:37

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	44.9	Color:	Clear
	ORP (mV):	-150	Odor:	None

pH: 7.71 Temperature (°C): 10.32 DO (mg/L): 5.23 Specific Conductivity (mS/cm): 0.438

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: NE AMBIENT TEMP (°F): 60

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: AD Cmt:

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

EQM MONITOR WELL PURGING FORM

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

LOCATION: LOADLINE 1 DATE: 5/8/2014 START TIME: 8:30

WELL ID: LL1mw-088

WELL DEPTH: 27.37 INITIAL WATER LEVEL: 4.02 TOTAL PURGED (L) 11.1

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: 40 Discharge: 20

COMMENTS Color: Cloudy, Odor:None,start @ 50 10/5 drawn too fast. Changed cycles per min(CPM) to 2 @ 0840. @0845 changed to 1 CPM. After 0853 reading dumped flow thru & changed 2 CPM. After 0858 read changed to 1CPM.

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)
8:35	3.77	0.2	0						
8:40	4.34	0.2	1	10.41	0.999	7.15	7.1	9999	-32
8:45	4.74	0.1	0.5	10.32	0.999	6.98	7.1	9999	-29
8:50	4.69	0.1	0.5	10.72	0.97	6.35	7.19	9999	-30
8:53	4.69	0.1	0.3	10.81	0.999	6.29	7.15	9999	-34
8:58	4.80	0.1	0.5	10.47	0.93	7.5	7.25	9999	-30
9:01	4.71	0.1	0.3	10.54	0.953	6.32	7.26	9999	-39
9:04	4.62	0.1	0.3	10.6	0.941	6.1	7.27	9999	-40
9:07	4.68	0.1	0.3	10.62	0.937	5.97	7.27	9999	-41
9:10	4.58	0.1	0.3	10.66	0.961	5.84	7.28	9999	-43
9:13	4.60	0.1	0.3	10.69	0.934	5.74	7.27	9999	-44
9:16	4.59	0.1	0.3	10.77	0.935	5.7	7.28	9999	-44
9:19	4.65	0.1	0.3	10.84	0.928	5.6	7.29	9999	-46
9:22	4.65	0.1	0.3	10.94	0.932	5.59	7.29	9999	-47
9:25	4.66	0.1	0.3	11.06	0.921	5.55	7.29	928	-49
9:28	4.69	0.1	0.3	11.17	0.918	5.5	7.3	891	-50
9:31	4.71	0.1	0.3	11.16	0.919	5.51	7.3	772	-50
9:34	4.70	0.1	0.3	11.18	0.928	5.55	7.3	680	-52
9:37	4.71	0.1	0.3	11.29	0.913	5.52	7.29	600	-52
9:40	4.60	0.1	0.3	11.29	0.918	5.57	7.3	531	-53
9:43	4.69	0.1	0.3	11.37	0.915	5.61	7.31	474	-54
9:46	4.62	0.1	0.3	11.34	0.915	5.64	7.31	438	-54
9:49	4.68	0.1	0.3	11.41	0.921	5.68	7.31	372	-55
9:51	4.61	0.1	0.2	11.53	0.913	5.65	7.31	389	-55

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: 5/8/2014 START TIME: 8:30

WELL ID: LL1mw-088

WELL DEPTH: 27.37 INITIAL WATER LEVEL: 4.02 TOTAL PURGED (L) 11.1

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: 40 Discharge: 20

COMMENTS Color: Cloudy, Odor:None,start @ 50 10/5 drawn too fast. Changed cycles per min(CPM) to 2 @ 0840. @0845 changed to 1 CPM. After 0853 reading dumped flow thru & changed 2 CPM. After 0858 read changed to 1CPM.

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)
9:54	4.65	0.1	0.3	11.57	0.912	5.68	7.3	368	-55
9:57	4.66	0.1	0.3	11.56	0.917	5.63	7.32	330	-56
10:00	4.64	0.1	0.3	11.64	0.913	5.66	7.32	336	-57
10:03	4.68	0.1	0.3	11.86	0.914	5.62	7.32	470	-57
10:06	4.60	0.1	0.3	11.97	0.922	5.63	7.32	342	-59
10:09	4.70	0.1	0.3	12.09	0.925	5.62	7.32	318	-59
10:12	4.60	0.1	0.3	12.06	0.912	5.6	7.32	303	-60
10:15	4.65	0.1	0.3	12.08	0.935	5.59	7.33	287	-61
10:18	4.70	0.1	0.3	12	0.917	5.62	7.33	276	-60
10:21	4.65	0.1	0.3	11.98	0.922	5.62	7.33	276	-61

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-088-0437-GW/GF Dup ID:

SplitID: RinseID: FWGEQUIPRinse2-0444-GW

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

GRAB: **Y** COMPOSITE: **N** DATE: 5/8/2014 TIME: 10:29

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	270	Color:	Cloudy
	ORP (mV):	-61	Odor:	None

pH: 7.33 Temperature (°C): 12 DO (mg/L): 5.62 Specific Conductivity (mS/cm): 0.13

GENERAL INFORMATION

SUN/OVERCAST Sunny PERCIPITATION: N WIND DIRECTION: SE AMBIENT TEMP (°F): 65

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: AD Cmt: Rinse @1300

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
40ml/Vial	3	HCl	8260	VOC
1L/Amber	2	4C	8270	SVOC
1L/Amber	2	4C	8081	Pest
1L/Amber	2	4C	8082	PCB
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

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EQM MONITOR WELL PURGING FORM

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

LOCATION: LOADLINE 2 DATE: 5/7/2014 START TIME: 12:10

WELL ID: LL2mw-271

WELL DEPTH: 27.8 INITIAL WATER LEVEL: 9.29 TOTAL PURGED (L) 8.9

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: Pale Yellow transparent tint, 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)
12:13	9.32	0.2	0						
12:16	9.35	0.2	0.5	11.38	0.561	7.38	6.55	9999	-3
12:19	9.44	0.2	0.6	10.68	0.569	6.32	6.64	875	-6
12:22	9.38	0.2	0.6	10.67	0.635	8.93	6.66	891	-12
12:25	9.43	0.2	0.6	10.54	0.72	6.31	6.67	671	-9
12:28	9.39	0.2	0.6	10.22	0.565	6.4	6.68	462	-8
12:31	9.44	0.2	0.6	10.1	0.544	6.29	6.69	468	-8
12:34	9.44	0.2	0.6	10.1	0.541	6.28	6.7	416	-11
12:37	9.44	0.2	0.6	10.02	0.541	6.21	6.71	375	-13
12:40	9.44	0.2	0.6	9.95	0.539	5.99	6.72	346	-14
12:43	9.46	0.2	0.6	9.89	0.538	5.84	6.73	300	-14
12:46	9.45	0.2	0.6	9.91	0.534	5.79	6.73	266	-14
12:49	9.40	0.2	0.6	9.93	0.532	5.71	6.74	239	-14
12:52	9.39	0.2	0.6	10.06	0.529	5.67	6.75	214	-14
12:55	9.44	0.2	0.6	10.05	0.529	5.69	6.67	210	-14
12:58	9.44	0.2	0.6	10.04	0.528	5.7	6.77	205	-14

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 2** PROJECT NO.: **030174.0016.001**

SAMPLE INFORMATION

WELL: LL2mw-271 SampleID: FWGLL2-mw-0271-0438-GW Dup ID:

SplitID: RinseID:

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

GRAB: **Y** COMPOSITE: **N** DATE: 5/7/2014 TIME: 12:59

FIELD READINGS / OBSERVATIONS

	Turb (NTU):	200	Color:	Pale Yellow transparent tint
	ORP (mV):	-14	Odor:	None

pH: 6.77 Temperature (°C): 10.02 DO (mg/L): 5.73 Specific Conductivity (mS/cm): 0.527

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: NE AMBIENT TEMP (°F): 52

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: AD Cmt: Two 1 L toxaphene sent

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
250ml/Poly	3	NaOH	9012	Cyanide
1L/Amber	8	4C	8081	Pest
40ml/Vial	9	HCl	8260	VOC
1L/Amber	6	4C	8270	SVOC
1L/Amber	6	4C	353.2/8330	Propellants
500ml/Poly	3	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	3	4C	8330	Explo
1L/Amber	6	4C	8082	PCB

EQM MONITOR WELL PURGING FORM

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

LOCATION: LOADLINE 3 DATE: 5/7/2014 START TIME: 9:04

WELL ID: LL3mw-246

WELL DEPTH: 45.61 INITIAL WATER LEVEL: 19.1 TOTAL PURGED (L) 6.5

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)
9:08	19.19	0.2	0						
9:11	19.21	0.2	0.5	9.56	0.293	7.86	6.55	59.8	126
9:14	19.21	0.2	0.6	9.54	0.297	7.41	6.34	39.9	124
9:17	19.21	0.2	0.6	9.57	0.296	6.88	6.31	31.8	128
9:20	19.22	0.2	0.6	9.59	0.287	6.57	6.27	22.2	133
9:23	19.24	0.2	0.6	9.59	0.282	6.31	6.26	20.9	139
9:26	19.25	0.2	0.6	9.64	0.27	6.17	6.23	16.6	145
9:29	19.25	0.2	0.6	9.65	0.265	6.15	6.21	17.9	148
9:31	19.25	0.2	0.4	9.65	0.262	6.08	6.22	16.1	152
9:34	19.25	0.2	0.6	9.65	0.259	6.04	6.22	18.1	154
9:37	19.25	0.2	0.6	9.63	0.259	6.04	6.21	18.4	158
9:41	19.25	0.2	0.8	9.63	0.256	6.02	6.19	19.1	159

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-246-0439-GW Dup ID: FWGLL3mw-DUP1-0442-GW

SplitID: FWGLL3mw-246-0441s-GW RinseID:

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

GRAB: **Y** COMPOSITE: **N** DATE: 5/7/2014 TIME: 9:43

FIELD READINGS / OBSERVATIONS

	Turb (NTU): 20.3	Color:	Clear
	ORP (mV): 160	Odor:	None

pH: 6.19 Temperature (°C): 9.64 DO (mg/L): 6 Specific Conductivity (mS/cm): 0.257

GENERAL INFORMATION

SUN/OVERCAST Overcast PERCIPITATION: N WIND DIRECTION: NE AMBIENT TEMP (°F): 41

SHIPPED VIA: Lab PU/FedEx

SHIPPED TO: Testamerica

SAMPLER: AD Cmt:

CONTAINER		PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
SIZE/TYPE	*NUMBER*			
1L/Amber	3	4C	8330	Explo
40ml/Vial	9	HCl	8260	VOC
1L/Amber	5	4C	8270	SVOC
1L/Amber	5	4C	8082	PCB
1L/Amber	7	4C	353.2/8330	Propellants
250ml/Poly	3	NaOH	9012	Cyanide
500ml/Poly	3	HNO3	6010/6020/7470	Metals, filtered
1L/Amber	5	4C	8081	Pest

EQM MONITOR WELL PURGING FORM

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

LOCATION: SHARON CONGLOMERATE DATE: 5/7/2014 START TIME: 8:50

WELL ID: SCFmw-004

WELL DEPTH: 112.5 INITIAL WATER LEVEL: -0.2 TOTAL PURGED (L) 10.8

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:sulfer,hard bottom, artesian flow, intake depth 107, needs new tubing

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)
8:53	-0.20	0.3	0						
8:55	-0.20	0.28	1	10.74	1.23	7.53	6.53	0.2	-132
9:00	-0.20	0.28	1.4	10.74	1.23	6.77	6.6	0	-133
9:04	-0.20	0.28	1.12	10.78	1.2	6.21	6.69	0	-149
9:08	-0.20	0.28	1.12	10.79	1.18	5.98	6.74	0	-169
9:12	-0.20	0.28	1.12	10.83	1.17	5.82	6.76	0.2	-175
9:16	-0.20	0.28	0.84	10.76	1.16	6.44	6.77	0.9	-178
9:19	-0.20	0.28	0.84	10.84	1.16	5.75	6.78	0.4	-184
9:22	-0.20	0.28	0.84	10.83	1.16	5.61	6.79	0.2	-185
9:25	-0.20	0.28	0.84	10.86	1.15	5.43	6.78	0.6	-187
9:28	-0.20	0.28	0.84	10.86	1.15	5.22	6.79	0.8	-188
9:31	-0.20	0.28	0.84	10.85	1.15	5.13	6.79	0.9	-187

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: FWGSCFmw-004-0440-GW/GF Dup ID:

SplitID: RinseID: FWGEQUIPRinse1-0443-GW

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

GRAB: **Y** COMPOSITE: **N** DATE: 5/7/2014 TIME: 9:32

FIELD READINGS / OBSERVATIONS

	Turb (NTU): 0.9	Color:	Clear
	ORP (mV): -190	Odor:	sulfer

pH: 6.79 Temperature (°C): 10.84 DO (mg/L): 5 Specific Conductivity (mS/cm): 1.14

GENERAL INFORMATION

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

SHIPPED VIA: Lab Pickup

SHIPPED TO: Testamerica

SAMPLER: CAL Cmt: Rinse @ 1342

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

Daily QC Records

Date: 6-May

S	M	X T	W	T	F	S

DAILY QUALITY CONTROL REPORT

COE Project Manager: Glen Beckham

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 x	70-85	85 up
Wind	Still x	Moder x	High	Report No.	
Humidity	Dry	Moder x	Humid	050614	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, two water quality meters (Horiba-U22/U52); One multigas detector (MSA); two bladder pumps w/ associated controllers and compressors and one deep well bladder set up.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment. Partial equipment drop off on 5-5-14. Event water level collections.
Water level collection and inspection completed at the wells. Information was collected at the following areas: ASY, partial BKG, CBL, CBP, CP, EBG, partial FWG, partial FBQ, LL1, LL2, partial LL3, LL4 through LL10, Partial LL11, LL12, NTA, RQL, partial SCF

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	050614
Job No.	030174.0016.001	Date:	5/6/2014

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.
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 stress. Personnel were also instructed to be alert for storms, poisonous plants, stinging insect, ticks, and roaming deer/turkey (and hunters) in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

Certain areas soft due to poor drainage.

SPECIAL NOTES:

Turkey hunt discussion at tailgate briefing. Use of mutiple teams to help with stuck vehicles.

TOMORROWS EXPECTATIONS:

Expectations for tomorrow are to safely and correctly collect majority of the remaining water levels in additiona to purge/ sample at a minimum of 4 wells while continuing water level collections.

Date: 7-May

S	M	T	W	T	F	S
			x			

DAILY QUALITY CONTROL REPORT

COE Project Manager: Glen Beckham

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 x	Snow x
Temp	To 32	32-50 x	50-70 x	70-85	85 up
Wind	Still x	Moder x	High	Report No.	
Humidity	Dry	Moder	Humid x	050714	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, two water quality meters (Horiba-U22/U52); One multigas detector (MSA); two bladder pumps w/ associated controllers and compressors and one deep well bladder set up.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment. Event water level collections simultaneous with Purge sample work . Continue purge and sample work at the wells.
Samples were collected at the following locations: SCFmw-004, LL3mw-246, LL2mw-271 and LL1mw-064.
Water level collection and inspection completed at the following areas: partial BKG, B12, DA2, partial FWG, LNW, LL11, partial LL3, patial SCF, MBS, and WBG. All well inspections accounted for.

Field duplicate and QA split samples were collected from LL3mw-246. Extra volume was collected from LL2mw-271 to be designated for matrix spike/matrix spike duplicate analysis at the laboratory. Additionally, a field rinsate was collected by Team # 2.

Project	Ravenna Army Ammunition Plant Groundwater Monitorin	Report No.	050714
Job No.	030174.0016.001	Date:	5/7/2014

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 and standards checks - certified values are: ORP checked okay (per chart), DO checked okay (per chart), Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0 and 7.0 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 stress. Personnel were also instructed to be alert for storms, poisonous plants, stinging insect, ticks, and roaming deer/turkey (and hunters) in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

SCFmw-004 needs new tubing next time.

SPECIAL NOTES:

Lightening and Evacuation Routes at tailgate briefing.

TOMORROWS EXPECTATIONS:

Expectations for tomorrow are to safely and correctly collect samples from a minimum of 9 wells and continue water level collections.

Date: 8-May

S	M	T	W	T	X F	S

DAILY QUALITY CONTROL REPORT

COE Project Manager: Glen Beckham

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 x
Temp	To 32	32-50	50-70 x	70-85 x	85 up
Wind	Still x	Moder x	High	Report No.	
Humidity	Dry	Moder x	Humid x	050814	

SUB-CONTRACTORS ON SITE:

Environmental Quality Management, Inc.

EQUIPMENT ON SITE:

Water level meters, two water quality meters (Horiba-U22/U52); One multigas detector (MSA); two bladder pumps w/ associated controllers and compressors.

WORK PERFORMED (INCLUDING SAMPLING):

Arrive at Building 1036, unload/load and organize equipment. Purge sample work and waste charaterization. Continue purge and sample work at the wells. Samples were collected at the following locations: LL1mw-088. 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.	050814
Job No.	030174.0016.001	Date:	5/8/2014

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 and standards checks - certified values are: ORP checked okay (per chart), DO checked okay (per chart), Conductivity - 4.49 mS/cm; Turbidity - 0 NTU; pH - 4.0 and 7.0 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 stress. Personnel were also instructed to be alert for storms, poisonous plants, stinging insect, ticks, and roaming deer/turkey (and hunters) in addition to signs of bear/coyotes.

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION (S) TAKEN:

N/A

SPECIAL NOTES:

Heat stress discussion at tailgate briefing. Confirmed wells = finalized event.

TOMORROWS EXPECTATIONS:

N/A

APPENDIX C

DATA VERIFICATION REPORTS/ LABORATORY DATA SHEETS

Data Verification Summary

Site: Ravenna Army Ammunition Plant
Sampling Event: May 2014 **Date:** August 18, 2014
Sample Delivery Group: 240-37114 **Revision:** 1

Data Reviewer: Angela Dragotta /Environmental Quality Management, Inc. (EQM, Inc.)

QA/QC Summary

On May 7-8th, 2014 the following samples were collected from groundwater-monitoring wells at Ravenna Army Ammunition Plant and analyzed as part of SDG 240-37114. Sample analysis was performed by Test America. Test America-North Canton performed all 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 and method 6860 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
FWGSCFmw-004-0440-GW/GF				X	X		X				X	X	X
FWGEQUIPRINSE1-0443-GW	X	X			X	X	X	X			X	X	X
FWGLL3MW-246-0439-GW/GF	X	X			X	X	X	X			X	X	X
FWGLL3MW-DUP1-0442-GW/GF	X	X			X	X	X	X			X	X	X
FWGLL2MW-271-0438-GW/GF	X	X			X	X	X	X			X	X	X
FWGLL1MW-064C-0436-GW/GF				X	X		X				X	X	X
FWGLL1MW-088-0437-GW/GF	X	X			X	X	X	X			X	X	X
FWGEQUIPRINSE2-0444-GW	X	X			X	X	X	X			X	X	X

Notes:

1) All metals samples with the exception of FWGEQUIPRINSE1-0443-GW and FWGEQUIPRINSE2-0444-GW were field filtered (GF).
2) SVOC 1= Nitroaromatics and phthalates, 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) FWGTEAM2-TRIP and FWGTEAM3-TRIP were collected on 5/7/14. FWGTEAM3-TRIP050814 was collected on 5/8/14. All trip blanks were analyzed for VOC 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: May 2014 **Date:** August 18, 2014
Sample Delivery Group: 240-37114 **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 review of the data have been presented in Appendix 1. Outliers have been noted below and results requiring qualification have been summarized in Appendix 2.

The completeness objective for the project was 90%. The completeness objective was met for this SDG, at 99.7%. 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:

- Holding times, preservation, 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 Recoveries

- The opening MRL analyzed 5/19/14 @ 1005 recovered above control limits of 70-130% for vinyl chloride at 137%.
- The closing MRL analyzed 5/19/14 @ 1529 recovered above control limits of 70-130% for bromomethane at 138% and below control limits of 70-130% for 2-hexanone at 67%, bromoform at 69%, carbon disulfide at 55%, carbon tetrachloride at 63%, 2-butanone at 66% and MIBK at 67%. A verification check sample was analyzed following the closing MRL with detected results for the outlier analytes.

The 2-hexanone, bromoform, carbon disulfide, carbon tetrachloride, 2-butanone and MIBK results for samples FWGTEAM3-TRIP050814, FWGLL1MW-088-0437-GW, FWGEQUIPRINSE2-0444-GW, FWGTEAM3-TRIP, FWGLL3MW-246-0439-GW, FWGLL3MW-DUP1-0442-GW, FWGLL2MW-271-0438-GW, FWGTEAM2-TRIP and FWGEQUIPRINSE1-0443-GW were qualified as estimated, "J/ UJ". No qualifications were required for the bromomethane or vinyl chloride outliers as there were no detected concentrations of bromomethane or vinyl chloride reported for the bracketed field samples.

Blank Criteria

- Chloroform was detected in FWGTEAM3-Trip050814 at 0.35µg/L, FWGTEAM3-Trip at 0.29µg/L and at 0.34µg/L in sample FWGTEAM2-Trip.
- FWGEQUIPRINSE2-0444-GW had acetone detected at 14µg/L, carbon disulfide at 0.69µg/L, 2-butanone at 3.6µg/L and toluene at 0.22µg/L. FWGEQUIPRINSE1-0443-GW had acetone detected at 12µg/L, 2-butanone at 1.5µg/L and toluene at 0.20µg/L.

There were no detected acetone, chloroform, carbon disulfide, 2-butanone or toluene concentrations reported for the associated field samples, so no qualifications were required.

Site: Ravenna Army Ammunition Plant
Sampling Event: May 2014 **Date:** August 18, 2014
Sample Delivery Group: 240-37114 **Revision:** 1

SVOCs- 8270C

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, 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

Blanks

- FWGEQUIPRINSE2-0444-GW had diethylphthalate detected at 2.7 µg/L, naphthalene at 0.14 µg/L and phenol at 0.73 µg/L.
- FWGEQUIPRINSE1-0443-GW had diethylphthalate detected at 3.2 µg/L.

The naphthalene result for sample FWGLL1mw-088-0437-GW and the diethyl phthalate result for sample FWGLL2mw-271-0438-GW were qualified, "B", as the reported concentrations were less than 5x the associated equipment rinse contamination.

LCS

Hexachlorocyclopentadiene recovered below control limits of 10-115% in LCS 240-130172 at 9%. The hexachlorocyclopentadiene results for the associated samples (FWGLl1mw-088-0437-GW, FWGLL3mw-246-0439-GW and FWGLL3mw-DUP1-0442-GW) were qualified as estimated, "UJ".

Field Duplicate

The field duplicate analyzed on sample FWGLL3mw-246-0439-GW, had an RPD above control limits of 50% for naphthalene at 200%. The naphthalene result for sample FWGLL3mw-246-0439-GW was qualified as estimated, "J".

Pesticides- 8081A

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation, holding time 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

LCS Recovery

Endosulfan I recovered below control limits of 50-110% at 46% in the LCS. The endosulfan I result for FWGEQUIPRINSE1-0443-GW was qualified as estimated, "UJ".

Matrix Spike Criteria
The matrix spike analysis performed on sample FWGLL2mw-271-0438-GW recovered below control limits of 65-125% for alpha-chlordane in both the MS and MSD at 62% and 53%, respectively. The MSD recovered below control limits of 50-110% for endosulfan I at 40% and for endrin ketone at 68% (control limits 75-125%). The alpha-chlordane, endrin ketone and endosulfan I results for sample FWGLL2mw-271-0438-GW were qualified as estimated, "UJ".

Surrogate Recovery
The surrogate, DCB, recovered below control limits of 30-135% in sample FWGLL1mw-088-0437-GW at 21%. The results for sample FWGLL1mw-088-0437-GW were qualified as estimated, "UJ".

Second Column Confirmation
Second column confirmation was not required as there were no detected concentrations reported for the field samples.

PCB- 8082
The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Preservation, holding time 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

Holding Time
Samples FWGEQUIPRINSE1-0443-GW was extracted outside of hold but within two times hold. The aroclor results for samples FWGEQUIPRINSE1-0443-GW was qualified as estimated, "UJ".

MRL Recovery
The MRL analyzed 1/31/14@1434 recovered above limits of 70-130% for aroclor 1016 @ 132%. No qualifications were made as there were no detected concentrations reported for the bracketed field samples.

Matrix Spike Analysis
The matrix spike and spike duplicate analyzed on sample FWGLL2mw-271-0438-GW had an MS/MSD RPD above control limits of 30% for aroclor 1260 at 53%. No qualification of the data was required as there were no detected aroclor 1260 results reported for sample FWGLL2mw-271-0438-GW.

Surrogate Recovery
The surrogate, DCB, recovered below control limits of 40-140% for sample FWGLL1mw-088-437-GW at 21%. The aroclor results for sample FWGLL1mw-088-437-GW were qualified as estimated, "UJ".

Second Column Confirmation
No detected concentrations were reported that required confirmation.

Site: Ravenna Army Ammunition Plant
Sampling Event: May 2014 **Date:** August 18, 2014
Sample Delivery Group: 240-37114 **Revision:** 1

Metals - 6010B

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
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

Blanks

The CCB analyzed 5/15/14 @ 1059 had vanadium detected at 2.66 µg/L. No qualifications were made as there were no detected vanadium concentrations reported for the associated environmental samples.

Vanadium was detected in the method blank at 1.37 µg/L. No qualifications were made as there were no detected vanadium concentrations reported for the associated field samples.

Lead was detected in FWGEQUIPRINSE2-0444-GW at 1.7 µg/L. The lead result for sample FWGLL1mw-088-0437-GF was qualified, "B" as the detected concentration was less than five times the equipment rinse contamination.

Metals - 6020

The following QC criteria were reviewed and determined to be acceptable, except as noted below:

- Holding times, preservation, 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

No QC outliers were noted.

Mercury - 7470A

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
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Lab and Field duplicate RPD criteria

No QC outliers were noted.

Site: Ravenna Army Ammunition Plant
Sampling Event: May 2014 **Date:** August 18, 2014
Sample Delivery Group: 240-37114 **Revision:** 1

Cyanide – 9012A

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
- LOD and MRL verification criteria
- LCS percent recovery criteria
- Matrix Spike Recovery
- Field duplicate RPD criteria

MRL Recovery Criteria

No closing MRL check was analyzed on 5/20/14. Opening MRL checks recovered within control limits. The cyanide results for samples FWGLL1MW-088-0437-GW, FWGEQUIPRINSE2-0444-GW, FWGLL3MW-246-0439-GW, FWGLL3MW-DUP1-0442-GW, FWGLL2MW-271-0438-GW and FWGEQUIPRINSE1-0443-GW were qualified as estimated, "UJ".

Explosives- 8330

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
- Retention time criteria
- LOD and MRL verification criteria
- Surrogate recovery criteria
- Method /field blank criteria
- LCS/LCD Recovery and RPD Criteria
- Matrix spike and spike duplicate recovery criteria
- Second column confirmation

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

No QC outliers were noted.

Site: Ravenna Army Ammunition Plant
Sampling Event: May 2014 **Date:** August 18, 2014
Sample Delivery Group: 240-37114 **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

No QC outliers were noted.

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Sample Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-37114-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-37114-1	FWGTEAM3-TRIP050814	Water	05/08/14 08:00	05/08/14 14:50
240-37114-2	FWGLL1MW-088-0437-GW	Water	05/08/14 10:29	05/08/14 14:50
240-37114-3	FWGLL1MW-088-0437-GF	Water	05/08/14 10:29	05/08/14 14:50
240-37114-4	FWGEQUIPRINSE2-0444-GW	Water	05/08/14 13:00	05/08/14 14:50
240-37114-5	FWGTEAM3-TRIP	Water	05/07/14 07:30	05/08/14 14:50
240-37114-6	FWGLL3MW-246-0439-GW	Water	05/07/14 09:43	05/08/14 14:50
240-37114-7	FWGLL3MW-246-0439-GF	Water	05/07/14 09:43	05/08/14 14:50
240-37114-8	FWGLL3MW-DUP1-0442-GW	Water	05/07/14 10:43	05/08/14 14:50
240-37114-9	FWGLL3MW-DUP1-0442-GF	Water	05/07/14 10:43	05/08/14 14:50
240-37114-10	FWGLL2MW-271-0438-GW	Water	05/07/14 12:59	05/08/14 14:50
240-37114-11	FWGLL2MW-271-0438-GF	Water	05/07/14 12:59	05/08/14 14:50
240-37114-12	FWGLL1MW-064C-0436-GW	Water	05/07/14 16:34	05/08/14 14:50
240-37114-13	FWGLL1MW-064C-0436-GF	Water	05/07/14 16:37	05/08/14 14:50
240-37114-14	FWGTEAM2-TRIP	Water	05/07/14 07:30	05/08/14 14:50
240-37114-15	FWGSCFMW-004-0440-GW	Water	05/07/14 09:32	05/08/14 14:50
240-37114-16	FWGSCFMW-004-0440-GF	Water	05/07/14 09:32	05/08/14 14:50
240-37114-17	FWGEQUIPRINSE1-0443-GW	Water	05/07/14 13:42	05/08/14 14:50

Method Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-37114-1

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

Job ID: 240-37114-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE
REVISED

Client: Environmental Quality Mgt., Inc.

Project: RVAAP (OH)

Report Number: 240-37114-1

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.

REVISION 1: The case narrative has been revised to remove comments that were not applicable for this job. A pesticide CCV comment was not applicable as data was not reported from that analytical sequence. A Metals sample dup RPD comment was also not applicable to this job.

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 5/8/2014 2:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 12 coolers at receipt time were 2.4° C, 3.2° C, 3.4° C, 3.4° C, 3.4° C, 3.8° C, 4.0° C, 4.1° C, 4.8° C, 5.2° C, 5.6° C and 5.8° C.

Job ID: 240-37114-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Except:

The following sample(s) was submitted for analysis; however, it was not listed on the Chain-of-Custody (COC): Received #17 not listed on COC and did not receive preserved bottles for 353.2.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGTEAM3-TRIP050814 (240-37114-1), FWGLL1MW-088-0437-GW (240-37114-2), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGTEAM3-TRIP (240-37114-5), FWGLL3MW-246-0439-GW (240-37114-6), FWGLL3MW-DUP1-0442-GW (240-37114-8), FWGLL2MW-271-0438-GW (240-37114-10), FWGTEAM2-TRIP (240-37114-14) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B DoD. The samples were analyzed on 05/19/2014.

2-Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Bromodichloromethane, Bromoform, Carbon disulfide and Carbon tetrachloride failed the recovery criteria low for MRL 240-131127/18. Bromomethane failed the recovery criteria high. Vinyl chloride failed the recovery criteria high for MRL 240-131127/4. Refer to the QC report for details.

No other difficulties were encountered during the VOCs analysis. All other quality control parameters were within the acceptance limits.

SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWGLL1MW-088-0437-GW (240-37114-2), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GW (240-37114-6), FWGLL3MW-DUP1-0442-GW (240-37114-8), FWGLL2MW-271-0438-GW (240-37114-10), FWGLL1MW-064C-0436-GW (240-37114-12), FWGSCFMW-004-0440-GW (240-37114-15) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8270C. The samples were prepared on 05/12/2014 and analyzed on 05/16/2014 and 05/30/2014.

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.

Hexachlorocyclopentadiene failed the recovery criteria low for LCS 240-130172/24-A. No corrective action was taken due to the length of time elapsed since sampling; therefore, the data have been reported.

No other difficulties were encountered during the SVOCs analysis. All other quality control parameters were within the acceptance limits.

NITROGUANIDINE (HPLC)

Samples FWGLL1MW-088-0437-GW (240-37114-2), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GW (240-37114-6), FWGLL3MW-DUP1-0442-GW (240-37114-8), FWGLL2MW-271-0438-GW (240-37114-10), FWGLL1MW-064C-0436-GW (240-37114-12), FWGSCFMW-004-0440-GW (240-37114-15) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for nitroguanidine (HPLC) in accordance with EPA SW-846 Method 8330_Ngu. The samples were prepared on 05/12/2014 and 05/15/2014 and analyzed on 05/13/2014 and 05/19/2014.

No difficulties were encountered during the explosives analysis. All quality control parameters were within the acceptance limits.

CHLORINATED PESTICIDES

Samples FWGLL1MW-088-0437-GW (240-37114-2), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GW (240-37114-6), FWGLL3MW-DUP1-0442-GW (240-37114-8), FWGLL2MW-271-0438-GW (240-37114-10), FWGLL1MW-064C-0436-GW (240-37114-12), FWGSCFMW-004-0440-GW (240-37114-15) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for chlorinated pesticides in accordance with EPA SW-846 Method 8081A DoD. The samples were prepared on 05/10/2014 and 05/14/2014 and analyzed on 05/16/2014 and 05/20/2014.

DCB Decachlorobiphenyl failed the surrogate recovery criteria low for FWGLL1MW-088-0437-GW (240-37114-2) and FWGLL2MW-271-0438-GWMS (240-37114-10MS). surrogate (DCB) failed low but above 10%. Data reportable as per PM.

Endosulfan I failed the recovery criteria low for LCS 240-130591/3-A. Refer to the QC report for details.

Job ID: 240-37114-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

alpha-Chlordane failed the recovery criteria low for the MS of sample FWGLL2MW-271-0438-GWMS (240-37114-10) in batch 240-130948.

alpha-Chlordane, Endosulfan I and Endrin ketone failed the recovery criteria low for the MSD of sample FWGLL2MW-271-0438-GWMSD (240-37114-10) in batch 240-130948.

Sample FWGSCFMW-004-0440-GW (240-37114-15)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The opening MRL failed low on confirmation column for 4,4'-DDD and 4,4'-DDT. These compounds passed on primary column. Since all samples are ND, the data is considered reportable.

The MRL was high on the confirmation column for 4,4'-DDD, but passed on the primary column. The samples were ND for the compound and data is reported.

The LCS failed low for Endosulfan I on both columns and Endosulfan II on the confirmation column. The sample was re-extracted but was outside the 2 times hold time window. Only the original data is reported.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 130591.

No other difficulties were encountered during the pesticides analysis. All other quality control parameters were within the acceptance limits.

POLYCHLORINATED BIPHENYLS (PCBS)

Samples FWGLL1MW-088-0437-GW (240-37114-2), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GW (240-37114-6), FWGLL3MW-DUP1-0442-GW (240-37114-8), FWGLL2MW-271-0438-GW (240-37114-10) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082 DoD. The samples were prepared on 05/10/2014 and 05/20/2014 and analyzed on 05/13/2014 and 05/22/2014.

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.

DCB Decachlorobiphenyl failed the surrogate recovery criteria low for FWGLL1MW-088-0437-GW (240-37114-2) and FWGLL2MW-271-0438-GWMS (240-37114-10MS).

Aroclor-1260 exceeded the RPD limit for the MSD of sample FWGLL2MW-271-0438-GWMSD (240-37114-10) in batch 240-130494.

Two surrogates are used for this analysis. The laboratory's SOP allows one of these surrogates to be outside acceptance criteria without performing re-extraction. The following sample(s) contained an allowable number of surrogate compounds outside limits but above 10% and were re-analyzed to confirm: FWGLL1MW-088-0437-GW (240-37114-2), FWGLL2MW-271-0438-GW (240-37114-10 MS). These results have been reported and qualified per client.

Reanalysis of the following sample was performed outside of the analytical holding time due to suspicious hit in the original extract. Only the re-extract data being reported only: FWGEQUIPRINSE1-0443-GW (240-37114-17).

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 130590, 8082.

No other difficulties were encountered during the PCBs analysis. All other quality control parameters were within the acceptance limits.

EXPLOSIVES

Samples FWGLL1MW-088-0437-GW (240-37114-2), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GW (240-37114-6), FWGLL3MW-DUP1-0442-GW (240-37114-8), FWGLL2MW-271-0438-GW (240-37114-10), FWGLL1MW-064C-0436-GW (240-37114-12), FWGSCFMW-004-0440-GW (240-37114-15) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for

Job ID: 240-37114-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

explosives in accordance with EPA SW-846 Method 8330A. The samples were prepared on 05/12/2014 and 05/13/2014 and analyzed on 05/16/2014, 05/17/2014, 05/19/2014 and 05/21/2014.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 42254.

No other difficulties were encountered during the explosives analysis. All quality control parameters were within the acceptance limits.

TOTAL RECOVERABLE METALS (ICP)

Samples FWGLL1MW-088-0437-GF (240-37114-3), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GF (240-37114-7), FWGLL3MW-DUP1-0442-GF (240-37114-9), FWGLL2MW-271-0438-GF (240-37114-11), FWGLL1MW-064C-0436-GF (240-37114-13), FWGSCFMW-004-0440-GF (240-37114-16) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010B DoD. The samples were prepared on 05/14/2014 and analyzed on 05/15/2014.

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.

Vanadium was detected in method blank MB 240-130550/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

No other difficulties were encountered during the metals analysis. All other quality control parameters were within the acceptance limits.

TOTAL RECOVERABLE METALS (ICPMS)

Samples FWGLL1MW-088-0437-GF (240-37114-3), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GF (240-37114-7), FWGLL3MW-DUP1-0442-GF (240-37114-9), FWGLL2MW-271-0438-GF (240-37114-11), FWGLL1MW-064C-0436-GF (240-37114-13), FWGSCFMW-004-0440-GF (240-37114-16) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020 DoD. The samples were prepared on 05/14/2014 and analyzed on 05/21/2014.

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 difficulties were encountered during the metals analysis. All quality control parameters were within the acceptance limits.

TOTAL MERCURY

Samples FWGLL1MW-088-0437-GF (240-37114-3), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GF (240-37114-7), FWGLL3MW-DUP1-0442-GF (240-37114-9), FWGLL2MW-271-0438-GF (240-37114-11), FWGLL1MW-064C-0436-GF (240-37114-13), FWGSCFMW-004-0440-GF (240-37114-16) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for total mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 05/14/2014 and analyzed on 05/15/2014.

No difficulties were encountered during the mercury analysis. All quality control parameters were within the acceptance limits.

NITROCELLULOSE

Samples FWGLL1MW-088-0437-GW (240-37114-2), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GW (240-37114-6), FWGLL3MW-DUP1-0442-GW (240-37114-8), FWGLL2MW-271-0438-GW (240-37114-10), FWGLL1MW-064C-0436-GW (240-37114-12), FWGSCFMW-004-0440-GW (240-37114-15) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for Nitrocellulose in accordance with EPA Method 353.2. The samples were prepared on 05/14/2014 and analyzed on 05/15/2014.

No difficulties were encountered during the Nitrocellulose analysis. All quality control parameters were within the acceptance limits.

TOTAL CYANIDE

Job ID: 240-37114-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Samples FWGLL1MW-088-0437-GW (240-37114-2), FWGEQUIPRINSE2-0444-GW (240-37114-4), FWGLL3MW-246-0439-GW (240-37114-6), FWGLL3MW-DUP1-0442-GW (240-37114-8), FWGLL2MW-271-0438-GW (240-37114-10) and FWGEQUIPRINSE1-0443-GW (240-37114-17) were analyzed for total cyanide in accordance with EPA SW-846 Method 9012A DoD. The samples were prepared and analyzed on 05/20/2014.

No difficulties were encountered during the cyanide analysis. All quality control parameters were within the acceptance limits.

Client Sample ID: FWGTEAM3-TRIP050814
Date Collected: 05/08/14 08:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 10:51	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 10:51	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 10:51	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 10:51	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 10:51	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 10:51	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 10:51	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 10:51	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 10:51	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 10:51	1
Acetone	1.1	U	10	1.1	1.1	ug/L		05/19/14 10:51	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 10:51	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 10:51	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 10:51	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 10:51	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 10:51	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 10:51	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 10:51	1
Chloroform	**0.35**	**J**	1.0	0.25	0.16	ug/L		05/19/14 10:51	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 10:51	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 10:51	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 10:51	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 10:51	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 10:51	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 10:51	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 10:51	1
2-Butanone (MEK)	0.57	U	10	0.57	0.57	ug/L		05/19/14 10:51	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 10:51	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 10:51	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 10:51	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 10:51	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 10:51	1
Toluene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 10:51	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 10:51	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 10:51	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 10:51	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 10:51	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 10:51	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 10:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 120*		*05/19/14 10:51*	*1*
4-Bromofluorobenzene (Surr)	*94*		*75 - 120*		*05/19/14 10:51*	*1*
Toluene-d8 (Surr)	*104*		*85 - 120*		*05/19/14 10:51*	*1*
Dibromofluoromethane (Surr)	*90*		*85 - 115*		*05/19/14 10:51*	*1*

Client Sample ID: FWGLL1MW-088-0437-GW
Date Collected: 05/08/14 10:29
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-2
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 11:16	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 11:16	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 11:16	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 11:16	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 11:16	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 11:16	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 11:16	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 11:16	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 11:16	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 11:16	1
Acetone	1.1	U	10	1.1	1.1	ug/L		05/19/14 11:16	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:16	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 11:16	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 11:16	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:16	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:16	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 11:16	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 11:16	1
Chloroform	0.25	U	1.0	0.25	0.16	ug/L		05/19/14 11:16	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 11:16	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 11:16	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 11:16	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 11:16	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 11:16	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 11:16	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 11:16	1
2-Butanone (MEK)	0.57	U	10	0.57	0.57	ug/L		05/19/14 11:16	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 11:16	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 11:16	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 11:16	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 11:16	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 11:16	1
Toluene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:16	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 11:16	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 11:16	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 11:16	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 11:16	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 11:16	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 11:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 120*		*05/19/14 11:16*	*1*
4-Bromofluorobenzene (Surr)	*98*		*75 - 120*		*05/19/14 11:16*	*1*
Toluene-d8 (Surr)	*103*		*85 - 120*		*05/19/14 11:16*	*1*
Dibromofluoromethane (Surr)	*93*		*85 - 115*		*05/19/14 11:16*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.10	U	0.20	0.10	0.045	ug/L		05/30/14 10:08	1
Acenaphthylene	0.10	U	0.20	0.10	0.049	ug/L		05/30/14 10:08	1

Client Sample ID: FWGLL1MW-088-0437-GW
Date Collected: 05/08/14 10:29
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-2
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	0.20	0.10	0.089	ug/L		05/30/14 10:08	1
Benzo[a]anthracene	0.10	U	0.20	0.10	0.030	ug/L		05/30/14 10:08	1
Benzo[a]pyrene	0.10	U	0.20	0.10	0.052	ug/L		05/30/14 10:08	1
Benzo[b]fluoranthene	0.10	U	0.20	0.10	0.040	ug/L		05/30/14 10:08	1
Benzo[g,h,i]perylene	0.10	U	0.20	0.10	0.047	ug/L		05/30/14 10:08	1
Benzoic acid	20	U	25	20	10	ug/L		05/30/14 10:08	1
Benzo[k]fluoranthene	0.10	U	0.20	0.10	0.045	ug/L		05/30/14 10:08	1
Benzyl alcohol	0.51	U	5.1	0.51	0.38	ug/L		05/30/14 10:08	1
Bis(2-chloroethoxy)methane	0.51	U	1.0	0.51	0.32	ug/L		05/30/14 10:08	1
Bis(2-chloroethyl)ether	0.10	U	1.0	0.10	0.10	ug/L		05/30/14 10:08	1
Bis(2-ethylhexyl) phthalate	5.1	U	5.1	5.1	1.7	ug/L		05/30/14 10:08	1
4-Bromophenyl phenyl ether	0.51	U	2.0	0.51	0.22	ug/L		05/30/14 10:08	1
Butyl benzyl phthalate	0.51	U	5.1	0.51	0.26	ug/L		05/30/14 10:08	1
Carbazole	0.51	U	1.0	0.51	0.28	ug/L		05/30/14 10:08	1
4-Chloroaniline	0.51	U	2.0	0.51	0.21	ug/L		05/30/14 10:08	1
4-Chloro-3-methylphenol	0.51	U	2.0	0.51	0.21	ug/L		05/30/14 10:08	1
2-Chloronaphthalene	0.51	U	1.0	0.51	0.10	ug/L		05/30/14 10:08	1
2-Chlorophenol	0.51	U	1.0	0.51	0.29	ug/L		05/30/14 10:08	1
4-Chlorophenyl phenyl ether	0.51	U	2.0	0.51	0.30	ug/L		05/30/14 10:08	1
Chrysene	0.10	U	0.20	0.10	0.051	ug/L		05/30/14 10:08	1
Dibenz(a,h)anthracene	0.10	U	0.20	0.10	0.045	ug/L		05/30/14 10:08	1
Dibenzofuran	0.10	U	1.0	0.10	0.020	ug/L		05/30/14 10:08	1
1,2-Dichlorobenzene	0.51	U	1.0	0.51	0.29	ug/L		05/30/14 10:08	1
1,3-Dichlorobenzene	0.51	U	1.0	0.51	0.23	ug/L		05/30/14 10:08	1
1,4-Dichlorobenzene	0.51	U	1.0	0.51	0.34	ug/L		05/30/14 10:08	1
3,3'-Dichlorobenzidine	1.0	U	5.1	1.0	0.37	ug/L		05/30/14 10:08	1
2,4-Dichlorophenol	0.51	U	2.0	0.51	0.19	ug/L		05/30/14 10:08	1
Diethyl phthalate	1.0	U	2.0	1.0	0.61	ug/L		05/30/14 10:08	1
2,4-Dimethylphenol	0.51	U	2.0	0.51	0.25	ug/L		05/30/14 10:08	1
Dimethyl phthalate	0.51	U	2.0	0.51	0.29	ug/L		05/30/14 10:08	1
Di-n-butyl phthalate	5.1	U	5.1	5.1	1.7	ug/L		05/30/14 10:08	1
4,6-Dinitro-2-methylphenol	4.0	U	5.1	4.0	2.4	ug/L		05/30/14 10:08	1
2,4-Dinitrophenol	1.0	U	5.1	1.0	0.32	ug/L		05/30/14 10:08	1
Di-n-octyl phthalate	0.51	U	2.0	0.51	0.23	ug/L		05/30/14 10:08	1
Fluoranthene	0.10	U	0.20	0.10	0.045	ug/L		05/30/14 10:08	1
Fluorene	0.10	U	0.20	0.10	0.041	ug/L		05/30/14 10:08	1
Hexachlorobenzene	0.10	U	0.20	0.10	0.086	ug/L		05/30/14 10:08	1
Hexachlorobutadiene	0.51	U	1.0	0.51	0.27	ug/L		05/30/14 10:08	1
Hexachlorocyclopentadiene	0.51	U Q	10	0.51	0.24	ug/L		05/30/14 10:08	1
Hexachloroethane	0.51	U	1.0	0.51	0.19	ug/L		05/30/14 10:08	1
Indeno[1,2,3-cd]pyrene	0.10	U	0.20	0.10	0.044	ug/L		05/30/14 10:08	1
Isophorone	0.51	U	1.0	0.51	0.27	ug/L		05/30/14 10:08	1
2-Methylnaphthalene	0.10	U	0.20	0.10	0.091	ug/L		05/30/14 10:08	1
2-Methylphenol	0.51	U	1.0	0.51	0.17	ug/L		05/30/14 10:08	1
3 & 4 Methylphenol	1.0	U	2.0	1.0	0.81	ug/L		05/30/14 10:08	1
Naphthalene	**0.15**	**J**	0.20	0.10	0.063	ug/L		05/30/14 10:08	1
2-Nitroaniline	0.51	U	2.0	0.51	0.21	ug/L		05/30/14 10:08	1
3-Nitroaniline	0.51	U	2.0	0.51	0.28	ug/L		05/30/14 10:08	1
4-Nitroaniline	0.51	U	2.0	0.51	0.22	ug/L		05/30/14 10:08	1

Client Sample ID: FWGLL1MW-088-0437-GW
Date Collected: 05/08/14 10:29
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-2
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.51	U	2.0	0.51	0.28	ug/L		05/30/14 10:08	1
4-Nitrophenol	4.0	U	5.1	4.0	0.29	ug/L		05/30/14 10:08	1
N-Nitrosodi-n-propylamine	0.51	U	1.0	0.51	0.24	ug/L		05/30/14 10:08	1
N-Nitrosodiphenylamine	0.51	U	1.0	0.51	0.31	ug/L		05/30/14 10:08	1
2,2'-oxybis[1-chloropropane]	0.51	U	1.0	0.51	0.40	ug/L		05/30/14 10:08	1
Pentachlorophenol	1.0	U	5.1	1.0	0.27	ug/L		05/30/14 10:08	1
Phenanthrene	**0.10**	**J**	0.20	0.10	0.063	ug/L		05/30/14 10:08	1
Phenol	1.0	U	1.0	1.0	0.61	ug/L		05/30/14 10:08	1
Pyrene	**0.10**	**J**	0.20	0.10	0.042	ug/L		05/30/14 10:08	1
1,2,4-Trichlorobenzene	0.51	U	1.0	0.51	0.28	ug/L		05/30/14 10:08	1
2,4,5-Trichlorophenol	0.51	U	5.1	0.51	0.30	ug/L		05/30/14 10:08	1
2,4,6-Trichlorophenol	0.51	U	5.1	0.51	0.24	ug/L		05/30/14 10:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*50 - 110*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
2-Fluorophenol (Surr)	*75*		*20 - 110*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
Nitrobenzene-d5 (Surr)	*73*		*40 - 110*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
Phenol-d5 (Surr)	*78*		*10 - 115*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
Terphenyl-d14 (Surr)	*86*		*50 - 135*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
2,4,6-Tribromophenol (Surr)	*89*		*40 - 125*	*05/12/14 07:34*	*05/30/14 10:08*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.019	U	0.048	0.019	0.0091	ug/L		05/16/14 15:08	1
4,4'-DDE	0.019	U	0.048	0.019	0.0092	ug/L		05/16/14 15:08	1
4,4'-DDT	0.019	U	0.048	0.019	0.015	ug/L		05/16/14 15:08	1
Aldrin	0.019	U	0.029	0.019	0.0078	ug/L		05/16/14 15:08	1
alpha-BHC	0.019	U	0.029	0.019	0.0067	ug/L		05/16/14 15:08	1
alpha-Chlordane	0.019	U	0.048	0.019	0.013	ug/L		05/16/14 15:08	1
beta-BHC	0.019	U	0.048	0.019	0.0080	ug/L		05/16/14 15:08	1
delta-BHC	0.019	U	0.048	0.019	0.0083	ug/L		05/16/14 15:08	1
Dieldrin	0.019	U	0.029	0.019	0.0071	ug/L		05/16/14 15:08	1
Endosulfan I	0.019	U	0.048	0.019	0.012	ug/L		05/16/14 15:08	1
Endosulfan II	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:08	1
Endosulfan sulfate	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 15:08	1
Endrin	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 15:08	1
Endrin aldehyde	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 15:08	1
Endrin ketone	0.019	U	0.048	0.019	0.0074	ug/L		05/16/14 15:08	1
gamma-BHC (Lindane)	0.019	U	0.048	0.019	0.0061	ug/L		05/16/14 15:08	1
gamma-Chlordane	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:08	1
Heptachlor	0.019	U	0.029	0.019	0.0076	ug/L		05/16/14 15:08	1
Heptachlor epoxide	0.019	U	0.029	0.019	0.0068	ug/L		05/16/14 15:08	1
Methoxychlor	0.048	U	0.095	0.048	0.030	ug/L		05/16/14 15:08	1
Toxaphene	0.76	U	1.9	0.76	0.30	ug/L		05/16/14 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*21*	*Q*	*30 - 135*	*05/10/14 10:23*	*05/16/14 15:08*	*1*
DCB Decachlorobiphenyl	*21*	*Q*	*30 - 135*	*05/10/14 10:23*	*05/16/14 15:08*	*1*
Tetrachloro-m-xylene	*81*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:08*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:08*	*1*

Client Sample ID: FWGLL1MW-088-0437-GW
Date Collected: 05/08/14 10:29
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-2
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.48	0.19	0.16	ug/L		05/13/14 14:33	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		05/13/14 14:33	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 14:33	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		05/13/14 14:33	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		05/13/14 14:33	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 14:33	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		05/13/14 14:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*92*		*40 - 140*	*05/10/14 10:20*	*05/13/14 14:33*	*1*
Tetrachloro-m-xylene	*99*		*40 - 140*	*05/10/14 10:20*	*05/13/14 14:33*	*1*
DCB Decachlorobiphenyl	*21*	*Q*	*40 - 135*	*05/10/14 10:20*	*05/13/14 14:33*	*1*
DCB Decachlorobiphenyl	*21*	*Q*	*40 - 135*	*05/10/14 10:20*	*05/13/14 14:33*	*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		05/13/14 15:05	1

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		05/19/14 22:47	1
1,3-Dinitrobenzene	0.11	U	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
2,4,6-Trinitrotoluene	0.11	U M	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
2,4-Dinitrotoluene	0.11	U	0.14	0.11	0.053	ug/L		05/19/14 22:47	1
2,6-Dinitrotoluene	0.11	U	0.14	0.11	0.053	ug/L		05/19/14 22:47	1
2-Amino-4,6-dinitrotoluene	0.11	U	0.16	0.11	0.016	ug/L		05/19/14 22:47	1
2-Nitrotoluene	0.11	U M	0.53	0.11	0.094	ug/L		05/19/14 22:47	1
3-Nitrotoluene	0.11	U	0.53	0.11	0.061	ug/L		05/19/14 22:47	1
4-Nitrotoluene	0.11	U	0.53	0.11	0.094	ug/L		05/19/14 22:47	1
4-Amino-2,6-dinitrotoluene	0.11	U	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
HMX	0.053	U M	0.16	0.053	0.038	ug/L		05/19/14 22:47	1
RDX	0.053	U M	0.16	0.053	0.038	ug/L		05/19/14 22:47	1
Nitrobenzene	0.11	U M	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
Tetryl	0.11	U M	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
Nitroglycerin	0.53	U	0.69	0.53	0.35	ug/L		05/19/14 22:47	1
PETN	0.53	U	0.69	0.53	0.32	ug/L		05/19/14 22:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*100*		*79 - 111*	*05/12/14 14:49*	*05/17/14 07:08*	*1*
3,4-Dinitrotoluene	*95*	*M*	*79 - 111*	*05/12/14 14:49*	*05/19/14 22:47*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0032	mg/L		05/20/14 10:30	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		05/15/14 16:37	1

Client Sample ID: FWGLL1MW-088-0437-GF
Date Collected: 05/08/14 10:29
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-3
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**18**		10	10	3.3	ug/L		05/15/14 09:56	1
Chromium	4.0	U	7.0	4.0	1.4	ug/L		05/15/14 09:56	1
Cobalt	4.0	U	7.0	4.0	1.5	ug/L		05/15/14 09:56	1
Lead	**2.0**	**J**	10	5.0	1.7	ug/L		05/15/14 09:56	1
Selenium	10	U	15	10	4.0	ug/L		05/15/14 09:56	1
Silver	5.0	U	7.0	5.0	1.7	ug/L		05/15/14 09:56	1
Vanadium	4.0	U	7.0	4.0	1.3	ug/L		05/15/14 09:56	1
Barium	**44**	**J**	200	5.0	2.8	ug/L		05/15/14 09:56	1
Calcium	**84000**		5000	1000	630	ug/L		05/15/14 09:56	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 09:56	1
Magnesium	**39000**		5000	300	120	ug/L		05/15/14 09:56	1
Manganese	**86**		15	5.0	1.8	ug/L		05/15/14 09:56	1
Nickel	5.0	U	40	5.0	2.2	ug/L		05/15/14 09:56	1
Potassium	**3400**	**J**	5000	900	300	ug/L		05/15/14 09:56	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		05/21/14 14:26	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		05/21/14 14:26	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 14:26	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 14:26	1
Iron	**550**		150	100	44	ug/L		05/21/14 14:26	1
Sodium	**24000**		1000	400	160	ug/L		05/21/14 14:26	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		05/21/14 14:26	1
Zinc	50	U	50	50	27	ug/L		05/21/14 14:26	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.12	ug/L		05/15/14 15:05	1

Client Sample ID: FWGEQUIPRINSE2-0444-GW
Date Collected: 05/08/14 13:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-4
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 12:02	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 12:02	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 12:02	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 12:02	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 12:02	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 12:02	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 12:02	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 12:02	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 12:02	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 12:02	1
Acetone	**14**		10	1.1	1.1	ug/L		05/19/14 12:02	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 12:02	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 12:02	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 12:02	1
Carbon disulfide	**0.69**	**J M**	1.0	0.25	0.13	ug/L		05/19/14 12:02	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 12:02	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 12:02	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 12:02	1
Chloroform	0.25	U	1.0	0.25	0.16	ug/L		05/19/14 12:02	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 12:02	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 12:02	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 12:02	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 12:02	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 12:02	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 12:02	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 12:02	1
2-Butanone (MEK)	**3.6**	**J**	10	0.57	0.57	ug/L		05/19/14 12:02	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 12:02	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 12:02	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 12:02	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 12:02	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 12:02	1
Toluene	**0.22**	**J**	1.0	0.25	0.13	ug/L		05/19/14 12:02	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 12:02	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 12:02	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 12:02	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 12:02	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 12:02	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 12:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 120*		*05/19/14 12:02*	*1*
4-Bromofluorobenzene (Surr)	*92*		*75 - 120*		*05/19/14 12:02*	*1*
Toluene-d8 (Surr)	*99*		*85 - 120*		*05/19/14 12:02*	*1*
Dibromofluoromethane (Surr)	*90*		*85 - 115*		*05/19/14 12:02*	*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		05/30/14 10:33	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		05/30/14 10:33	1

Client Sample ID: FWGEQUIPRINSE2-0444-GW
Lab Sample ID: 240-37114-4
Date Collected: 05/08/14 13:00
Matrix: Water
Date Received: 05/08/14 14:50

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		05/30/14 10:33	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		05/30/14 10:33	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		05/30/14 10:33	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		05/30/14 10:33	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		05/30/14 10:33	1
Benzoic acid	19	U	24	19	9.5	ug/L		05/30/14 10:33	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		05/30/14 10:33	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		05/30/14 10:33	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		05/30/14 10:33	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		05/30/14 10:33	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/30/14 10:33	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		05/30/14 10:33	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		05/30/14 10:33	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		05/30/14 10:33	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 10:33	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 10:33	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		05/30/14 10:33	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		05/30/14 10:33	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		05/30/14 10:33	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		05/30/14 10:33	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		05/30/14 10:33	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		05/30/14 10:33	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		05/30/14 10:33	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		05/30/14 10:33	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		05/30/14 10:33	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		05/30/14 10:33	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		05/30/14 10:33	1
Diethyl phthalate	**2.7**		1.9	0.95	0.57	ug/L		05/30/14 10:33	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		05/30/14 10:33	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		05/30/14 10:33	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/30/14 10:33	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		05/30/14 10:33	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		05/30/14 10:33	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		05/30/14 10:33	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		05/30/14 10:33	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		05/30/14 10:33	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		05/30/14 10:33	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		05/30/14 10:33	1
Hexachlorocyclopentadiene	0.48	U Q	9.5	0.48	0.23	ug/L		05/30/14 10:33	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		05/30/14 10:33	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		05/30/14 10:33	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		05/30/14 10:33	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		05/30/14 10:33	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		05/30/14 10:33	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		05/30/14 10:33	1
Naphthalene	**0.14**	**J**	0.19	0.095	0.060	ug/L		05/30/14 10:33	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 10:33	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		05/30/14 10:33	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		05/30/14 10:33	1

Client Sample ID: FWGEQUIPRINSE2-0444-GW
Date Collected: 05/08/14 13:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-4
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.48	U	1.9	0.48	0.27	ug/L		05/30/14 10:33	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		05/30/14 10:33	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		05/30/14 10:33	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		05/30/14 10:33	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		05/30/14 10:33	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		05/30/14 10:33	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		05/30/14 10:33	1
Phenol	**0.73**	**J**	0.95	0.95	0.57	ug/L		05/30/14 10:33	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		05/30/14 10:33	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		05/30/14 10:33	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		05/30/14 10:33	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		05/30/14 10:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*50 - 110*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
2-Fluorophenol (Surr)	*75*		*20 - 110*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
Nitrobenzene-d5 (Surr)	*72*		*40 - 110*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
Phenol-d5 (Surr)	*75*		*10 - 115*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
Terphenyl-d14 (Surr)	*93*		*50 - 135*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
2,4,6-Tribromophenol (Surr)	*77*		*40 - 125*	*05/12/14 07:34*	*05/30/14 10:33*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.019	U	0.048	0.019	0.0092	ug/L		05/16/14 15:30	1
4,4'-DDE	0.019	U	0.048	0.019	0.0093	ug/L		05/16/14 15:30	1
4,4'-DDT	0.019	U	0.048	0.019	0.015	ug/L		05/16/14 15:30	1
Aldrin	0.019	U	0.029	0.019	0.0079	ug/L		05/16/14 15:30	1
alpha-BHC	0.019	U	0.029	0.019	0.0067	ug/L		05/16/14 15:30	1
alpha-Chlordane	0.019	U	0.048	0.019	0.013	ug/L		05/16/14 15:30	1
beta-BHC	0.019	U	0.048	0.019	0.0081	ug/L		05/16/14 15:30	1
delta-BHC	0.019	U	0.048	0.019	0.0084	ug/L		05/16/14 15:30	1
Dieldrin	0.019	U	0.029	0.019	0.0072	ug/L		05/16/14 15:30	1
Endosulfan I	0.019	U	0.048	0.019	0.013	ug/L		05/16/14 15:30	1
Endosulfan II	0.019	U	0.048	0.019	0.012	ug/L		05/16/14 15:30	1
Endosulfan sulfate	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:30	1
Endrin	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:30	1
Endrin aldehyde	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:30	1
Endrin ketone	0.019	U	0.048	0.019	0.0075	ug/L		05/16/14 15:30	1
gamma-BHC (Lindane)	0.019	U	0.048	0.019	0.0062	ug/L		05/16/14 15:30	1
gamma-Chlordane	0.019	U	0.048	0.019	0.012	ug/L		05/16/14 15:30	1
Heptachlor	0.019	U	0.029	0.019	0.0077	ug/L		05/16/14 15:30	1
Heptachlor epoxide	0.019	U	0.029	0.019	0.0068	ug/L		05/16/14 15:30	1
Methoxychlor	0.048	U	0.096	0.048	0.031	ug/L		05/16/14 15:30	1
Toxaphene	0.77	U	1.9	0.77	0.31	ug/L		05/16/14 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*84*		*30 - 135*	*05/10/14 10:23*	*05/16/14 15:30*	*1*
DCB Decachlorobiphenyl	*77*		*30 - 135*	*05/10/14 10:23*	*05/16/14 15:30*	*1*
Tetrachloro-m-xylene	*84*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:30*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:30*	*1*

Client Sample ID: FWGEQUIPRINSE2-0444-GW
Date Collected: 05/08/14 13:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-4
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		05/13/14 14:49	1
Aroclor-1221	0.19	U	0.48	0.19	0.13	ug/L		05/13/14 14:49	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 14:49	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		05/13/14 14:49	1
Aroclor-1248	0.19	U	0.48	0.19	0.096	ug/L		05/13/14 14:49	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 14:49	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		05/13/14 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*88*		*40 - 140*	*05/10/14 10:20*	*05/13/14 14:49*	*1*
Tetrachloro-m-xylene	*94*		*40 - 140*	*05/10/14 10:20*	*05/13/14 14:49*	*1*
DCB Decachlorobiphenyl	*83*		*40 - 135*	*05/10/14 10:20*	*05/13/14 14:49*	*1*
DCB Decachlorobiphenyl	*80*		*40 - 135*	*05/10/14 10:20*	*05/13/14 14:49*	*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		05/13/14 15:23	1

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.055	U	0.16	0.055	0.034	ug/L		05/21/14 06:50	1
1,3-Dinitrobenzene	0.11	U	0.16	0.11	0.055	ug/L		05/21/14 06:50	1
2,4,6-Trinitrotoluene	0.11	U	0.16	0.11	0.055	ug/L		05/21/14 06:50	1
2,4-Dinitrotoluene	0.11	U M	0.14	0.11	0.055	ug/L		05/21/14 06:50	1
2,6-Dinitrotoluene	0.11	U M	0.14	0.11	0.055	ug/L		05/21/14 06:50	1
2-Amino-4,6-dinitrotoluene	0.11	U	0.16	0.11	0.016	ug/L		05/21/14 06:50	1
2-Nitrotoluene	0.11	U	0.55	0.11	0.096	ug/L		05/21/14 06:50	1
3-Nitrotoluene	0.11	U	0.55	0.11	0.062	ug/L		05/21/14 06:50	1
4-Nitrotoluene	0.11	U	0.55	0.11	0.096	ug/L		05/21/14 06:50	1
4-Amino-2,6-dinitrotoluene	0.11	U	0.16	0.11	0.055	ug/L		05/21/14 06:50	1
HMX	0.055	U M	0.16	0.055	0.039	ug/L		05/21/14 06:50	1
RDX	0.055	U	0.16	0.055	0.039	ug/L		05/21/14 06:50	1
Nitrobenzene	0.11	U	0.16	0.11	0.055	ug/L		05/21/14 06:50	1
Tetryl	0.11	U	0.16	0.11	0.055	ug/L		05/21/14 06:50	1
Nitroglycerin	0.55	U	0.71	0.55	0.36	ug/L		05/21/14 06:50	1
PETN	0.55	U	0.71	0.55	0.33	ug/L		05/21/14 06:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*100*		*79 - 111*	*05/12/14 14:49*	*05/17/14 08:14*	*1*
3,4-Dinitrotoluene	*95*		*79 - 111*	*05/12/14 14:49*	*05/21/14 06:50*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	3.3	ug/L		05/15/14 10:08	1
Chromium	4.0	U	7.0	4.0	1.4	ug/L		05/15/14 10:08	1
Cobalt	4.0	U	7.0	4.0	1.5	ug/L		05/15/14 10:08	1
Lead	**1.7**	**J**	10	5.0	1.7	ug/L		05/15/14 10:08	1
Selenium	10	U	15	10	4.0	ug/L		05/15/14 10:08	1
Silver	5.0	U	7.0	5.0	1.7	ug/L		05/15/14 10:08	1
Vanadium	4.0	U	7.0	4.0	1.3	ug/L		05/15/14 10:08	1
Barium	5.0	U	200	5.0	2.8	ug/L		05/15/14 10:08	1

Client Sample ID: FWGTEAM3-TRIP050814
Date Collected: 05/08/14 08:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 10:51	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 10:51	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 10:51	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 10:51	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 10:51	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 10:51	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 10:51	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 10:51	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 10:51	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 10:51	1
Acetone	1.1	U	10	1.1	1.1	ug/L		05/19/14 10:51	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 10:51	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 10:51	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 10:51	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 10:51	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 10:51	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 10:51	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 10:51	1
Chloroform	**0.35**	**J**	1.0	0.25	0.16	ug/L		05/19/14 10:51	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 10:51	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 10:51	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 10:51	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 10:51	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 10:51	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 10:51	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 10:51	1
2-Butanone (MEK)	0.57	U	10	0.57	0.57	ug/L		05/19/14 10:51	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 10:51	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 10:51	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 10:51	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 10:51	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 10:51	1
Toluene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 10:51	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 10:51	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 10:51	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 10:51	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 10:51	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 10:51	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 10:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 120*		*05/19/14 10:51*	*1*
4-Bromofluorobenzene (Surr)	*94*		*75 - 120*		*05/19/14 10:51*	*1*
Toluene-d8 (Surr)	*104*		*85 - 120*		*05/19/14 10:51*	*1*
Dibromofluoromethane (Surr)	*90*		*85 - 115*		*05/19/14 10:51*	*1*

Client Sample ID: FWGLL1MW-088-0437-GW
Date Collected: 05/08/14 10:29
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-2
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 11:16	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 11:16	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 11:16	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 11:16	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 11:16	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 11:16	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 11:16	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 11:16	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 11:16	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 11:16	1
Acetone	1.1	U	10	1.1	1.1	ug/L		05/19/14 11:16	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:16	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 11:16	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 11:16	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:16	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:16	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 11:16	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 11:16	1
Chloroform	0.25	U	1.0	0.25	0.16	ug/L		05/19/14 11:16	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 11:16	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 11:16	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 11:16	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 11:16	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 11:16	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 11:16	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 11:16	1
2-Butanone (MEK)	0.57	U	10	0.57	0.57	ug/L		05/19/14 11:16	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 11:16	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 11:16	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 11:16	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 11:16	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 11:16	1
Toluene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:16	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 11:16	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 11:16	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 11:16	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 11:16	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 11:16	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 11:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 120*		*05/19/14 11:16*	*1*
4-Bromofluorobenzene (Surr)	*98*		*75 - 120*		*05/19/14 11:16*	*1*
Toluene-d8 (Surr)	*103*		*85 - 120*		*05/19/14 11:16*	*1*
Dibromofluoromethane (Surr)	*93*		*85 - 115*		*05/19/14 11:16*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acenaphthene	0.10	U	0.20	0.10	0.045	ug/L		05/30/14 10:08	1
Acenaphthylene	0.10	U	0.20	0.10	0.049	ug/L		05/30/14 10:08	1

Client Sample ID: FWGLL1MW-088-0437-GW
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Lab Sample ID: 240-37114-2
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	0.20	0.10	0.089	ug/L		05/30/14 10:08	1
Benzo[a]anthracene	0.10	U	0.20	0.10	0.030	ug/L		05/30/14 10:08	1
Benzo[a]pyrene	0.10	U	0.20	0.10	0.052	ug/L		05/30/14 10:08	1
Benzo[b]fluoranthene	0.10	U	0.20	0.10	0.040	ug/L		05/30/14 10:08	1
Benzo[g,h,i]perylene	0.10	U	0.20	0.10	0.047	ug/L		05/30/14 10:08	1
Benzoic acid	20	U	25	20	10	ug/L		05/30/14 10:08	1
Benzo[k]fluoranthene	0.10	U	0.20	0.10	0.045	ug/L		05/30/14 10:08	1
Benzyl alcohol	0.51	U	5.1	0.51	0.38	ug/L		05/30/14 10:08	1
Bis(2-chloroethoxy)methane	0.51	U	1.0	0.51	0.32	ug/L		05/30/14 10:08	1
Bis(2-chloroethyl)ether	0.10	U	1.0	0.10	0.10	ug/L		05/30/14 10:08	1
Bis(2-ethylhexyl) phthalate	5.1	U	5.1	5.1	1.7	ug/L		05/30/14 10:08	1
4-Bromophenyl phenyl ether	0.51	U	2.0	0.51	0.22	ug/L		05/30/14 10:08	1
Butyl benzyl phthalate	0.51	U	5.1	0.51	0.26	ug/L		05/30/14 10:08	1
Carbazole	0.51	U	1.0	0.51	0.28	ug/L		05/30/14 10:08	1
4-Chloroaniline	0.51	U	2.0	0.51	0.21	ug/L		05/30/14 10:08	1
4-Chloro-3-methylphenol	0.51	U	2.0	0.51	0.21	ug/L		05/30/14 10:08	1
2-Chloronaphthalene	0.51	U	1.0	0.51	0.10	ug/L		05/30/14 10:08	1
2-Chlorophenol	0.51	U	1.0	0.51	0.29	ug/L		05/30/14 10:08	1
4-Chlorophenyl phenyl ether	0.51	U	2.0	0.51	0.30	ug/L		05/30/14 10:08	1
Chrysene	0.10	U	0.20	0.10	0.051	ug/L		05/30/14 10:08	1
Dibenz(a,h)anthracene	0.10	U	0.20	0.10	0.045	ug/L		05/30/14 10:08	1
Dibenzofuran	0.10	U	1.0	0.10	0.020	ug/L		05/30/14 10:08	1
1,2-Dichlorobenzene	0.51	U	1.0	0.51	0.29	ug/L		05/30/14 10:08	1
1,3-Dichlorobenzene	0.51	U	1.0	0.51	0.23	ug/L		05/30/14 10:08	1
1,4-Dichlorobenzene	0.51	U	1.0	0.51	0.34	ug/L		05/30/14 10:08	1
3,3'-Dichlorobenzidine	1.0	U	5.1	1.0	0.37	ug/L		05/30/14 10:08	1
2,4-Dichlorophenol	0.51	U	2.0	0.51	0.19	ug/L		05/30/14 10:08	1
Diethyl phthalate	1.0	U	2.0	1.0	0.61	ug/L		05/30/14 10:08	1
2,4-Dimethylphenol	0.51	U	2.0	0.51	0.25	ug/L		05/30/14 10:08	1
Dimethyl phthalate	0.51	U	2.0	0.51	0.29	ug/L		05/30/14 10:08	1
Di-n-butyl phthalate	5.1	U	5.1	5.1	1.7	ug/L		05/30/14 10:08	1
4,6-Dinitro-2-methylphenol	4.0	U	5.1	4.0	2.4	ug/L		05/30/14 10:08	1
2,4-Dinitrophenol	1.0	U	5.1	1.0	0.32	ug/L		05/30/14 10:08	1
Di-n-octyl phthalate	0.51	U	2.0	0.51	0.23	ug/L		05/30/14 10:08	1
Fluoranthene	0.10	U	0.20	0.10	0.045	ug/L		05/30/14 10:08	1
Fluorene	0.10	U	0.20	0.10	0.041	ug/L		05/30/14 10:08	1
Hexachlorobenzene	0.10	U	0.20	0.10	0.086	ug/L		05/30/14 10:08	1
Hexachlorobutadiene	0.51	U	1.0	0.51	0.27	ug/L		05/30/14 10:08	1
Hexachlorocyclopentadiene	0.51	U Q	10	0.51	0.24	ug/L		05/30/14 10:08	1
Hexachloroethane	0.51	U	1.0	0.51	0.19	ug/L		05/30/14 10:08	1
Indeno[1,2,3-cd]pyrene	0.10	U	0.20	0.10	0.044	ug/L		05/30/14 10:08	1
Isophorone	0.51	U	1.0	0.51	0.27	ug/L		05/30/14 10:08	1
2-Methylnaphthalene	0.10	U	0.20	0.10	0.091	ug/L		05/30/14 10:08	1
2-Methylphenol	0.51	U	1.0	0.51	0.17	ug/L		05/30/14 10:08	1
3 & 4 Methylphenol	1.0	U	2.0	1.0	0.81	ug/L		05/30/14 10:08	1
Naphthalene	**0.15**	**J**	0.20	0.10	0.063	ug/L		05/30/14 10:08	1
2-Nitroaniline	0.51	U	2.0	0.51	0.21	ug/L		05/30/14 10:08	1
3-Nitroaniline	0.51	U	2.0	0.51	0.28	ug/L		05/30/14 10:08	1
4-Nitroaniline	0.51	U	2.0	0.51	0.22	ug/L		05/30/14 10:08	1

Client Sample ID: FWGLL1MW-088-0437-GW
Date Collected: 05/08/14 10:29
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-2
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.51	U	2.0	0.51	0.28	ug/L		05/30/14 10:08	1
4-Nitrophenol	4.0	U	5.1	4.0	0.29	ug/L		05/30/14 10:08	1
N-Nitrosodi-n-propylamine	0.51	U	1.0	0.51	0.24	ug/L		05/30/14 10:08	1
N-Nitrosodiphenylamine	0.51	U	1.0	0.51	0.31	ug/L		05/30/14 10:08	1
2,2'-oxybis[1-chloropropane]	0.51	U	1.0	0.51	0.40	ug/L		05/30/14 10:08	1
Pentachlorophenol	1.0	U	5.1	1.0	0.27	ug/L		05/30/14 10:08	1
Phenanthrene	**0.10**	**J**	0.20	0.10	0.063	ug/L		05/30/14 10:08	1
Phenol	1.0	U	1.0	1.0	0.61	ug/L		05/30/14 10:08	1
Pyrene	**0.10**	**J**	0.20	0.10	0.042	ug/L		05/30/14 10:08	1
1,2,4-Trichlorobenzene	0.51	U	1.0	0.51	0.28	ug/L		05/30/14 10:08	1
2,4,5-Trichlorophenol	0.51	U	5.1	0.51	0.30	ug/L		05/30/14 10:08	1
2,4,6-Trichlorophenol	0.51	U	5.1	0.51	0.24	ug/L		05/30/14 10:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*50 - 110*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
2-Fluorophenol (Surr)	*75*		*20 - 110*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
Nitrobenzene-d5 (Surr)	*73*		*40 - 110*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
Phenol-d5 (Surr)	*78*		*10 - 115*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
Terphenyl-d14 (Surr)	*86*		*50 - 135*	*05/12/14 07:34*	*05/30/14 10:08*	*1*
2,4,6-Tribromophenol (Surr)	*89*		*40 - 125*	*05/12/14 07:34*	*05/30/14 10:08*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.019	U	0.048	0.019	0.0091	ug/L		05/16/14 15:08	1
4,4'-DDE	0.019	U	0.048	0.019	0.0092	ug/L		05/16/14 15:08	1
4,4'-DDT	0.019	U	0.048	0.019	0.015	ug/L		05/16/14 15:08	1
Aldrin	0.019	U	0.029	0.019	0.0078	ug/L		05/16/14 15:08	1
alpha-BHC	0.019	U	0.029	0.019	0.0067	ug/L		05/16/14 15:08	1
alpha-Chlordane	0.019	U	0.048	0.019	0.013	ug/L		05/16/14 15:08	1
beta-BHC	0.019	U	0.048	0.019	0.0080	ug/L		05/16/14 15:08	1
delta-BHC	0.019	U	0.048	0.019	0.0083	ug/L		05/16/14 15:08	1
Dieldrin	0.019	U	0.029	0.019	0.0071	ug/L		05/16/14 15:08	1
Endosulfan I	0.019	U	0.048	0.019	0.012	ug/L		05/16/14 15:08	1
Endosulfan II	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:08	1
Endosulfan sulfate	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 15:08	1
Endrin	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 15:08	1
Endrin aldehyde	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 15:08	1
Endrin ketone	0.019	U	0.048	0.019	0.0074	ug/L		05/16/14 15:08	1
gamma-BHC (Lindane)	0.019	U	0.048	0.019	0.0061	ug/L		05/16/14 15:08	1
gamma-Chlordane	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:08	1
Heptachlor	0.019	U	0.029	0.019	0.0076	ug/L		05/16/14 15:08	1
Heptachlor epoxide	0.019	U	0.029	0.019	0.0068	ug/L		05/16/14 15:08	1
Methoxychlor	0.048	U	0.095	0.048	0.030	ug/L		05/16/14 15:08	1
Toxaphene	0.76	U	1.9	0.76	0.30	ug/L		05/16/14 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*21*	*Q*	*30 - 135*	*05/10/14 10:23*	*05/16/14 15:08*	*1*
DCB Decachlorobiphenyl	*21*	*Q*	*30 - 135*	*05/10/14 10:23*	*05/16/14 15:08*	*1*
Tetrachloro-m-xylene	*81*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:08*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:08*	*1*

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Lab Sample ID: 240-37114-2
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.48	0.19	0.16	ug/L		05/13/14 14:33	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		05/13/14 14:33	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 14:33	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		05/13/14 14:33	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		05/13/14 14:33	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 14:33	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		05/13/14 14:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*92*		*40 - 140*	*05/10/14 10:20*	*05/13/14 14:33*	*1*
Tetrachloro-m-xylene	*99*		*40 - 140*	*05/10/14 10:20*	*05/13/14 14:33*	*1*
DCB Decachlorobiphenyl	*21*	*Q*	*40 - 135*	*05/10/14 10:20*	*05/13/14 14:33*	*1*
DCB Decachlorobiphenyl	*21*	*Q*	*40 - 135*	*05/10/14 10:20*	*05/13/14 14:33*	*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		05/13/14 15:05	1

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		05/19/14 22:47	1
1,3-Dinitrobenzene	0.11	U	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
2,4,6-Trinitrotoluene	0.11	U M	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
2,4-Dinitrotoluene	0.11	U	0.14	0.11	0.053	ug/L		05/19/14 22:47	1
2,6-Dinitrotoluene	0.11	U	0.14	0.11	0.053	ug/L		05/19/14 22:47	1
2-Amino-4,6-dinitrotoluene	0.11	U	0.16	0.11	0.016	ug/L		05/19/14 22:47	1
2-Nitrotoluene	0.11	U M	0.53	0.11	0.094	ug/L		05/19/14 22:47	1
3-Nitrotoluene	0.11	U	0.53	0.11	0.061	ug/L		05/19/14 22:47	1
4-Nitrotoluene	0.11	U	0.53	0.11	0.094	ug/L		05/19/14 22:47	1
4-Amino-2,6-dinitrotoluene	0.11	U	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
HMX	0.053	U M	0.16	0.053	0.038	ug/L		05/19/14 22:47	1
RDX	0.053	U M	0.16	0.053	0.038	ug/L		05/19/14 22:47	1
Nitrobenzene	0.11	U M	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
Tetryl	0.11	U M	0.16	0.11	0.053	ug/L		05/19/14 22:47	1
Nitroglycerin	0.53	U	0.69	0.53	0.35	ug/L		05/19/14 22:47	1
PETN	0.53	U	0.69	0.53	0.32	ug/L		05/19/14 22:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*100*		*79 - 111*	*05/12/14 14:49*	*05/17/14 07:08*	*1*
3,4-Dinitrotoluene	*95*	*M*	*79 - 111*	*05/12/14 14:49*	*05/19/14 22:47*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0032	mg/L		05/20/14 10:30	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		05/15/14 16:37	1

Client Sample ID: FWGLL1MW-088-0437-GF
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Lab Sample ID: 240-37114-3
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**18**		10	10	3.3	ug/L		05/15/14 09:56	1
Chromium	4.0	U	7.0	4.0	1.4	ug/L		05/15/14 09:56	1
Cobalt	4.0	U	7.0	4.0	1.5	ug/L		05/15/14 09:56	1
Lead	**2.0**	**J**	10	5.0	1.7	ug/L		05/15/14 09:56	1
Selenium	10	U	15	10	4.0	ug/L		05/15/14 09:56	1
Silver	5.0	U	7.0	5.0	1.7	ug/L		05/15/14 09:56	1
Vanadium	4.0	U	7.0	4.0	1.3	ug/L		05/15/14 09:56	1
Barium	**44**	**J**	200	5.0	2.8	ug/L		05/15/14 09:56	1
Calcium	**84000**		5000	1000	630	ug/L		05/15/14 09:56	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 09:56	1
Magnesium	**39000**		5000	300	120	ug/L		05/15/14 09:56	1
Manganese	**86**		15	5.0	1.8	ug/L		05/15/14 09:56	1
Nickel	5.0	U	40	5.0	2.2	ug/L		05/15/14 09:56	1
Potassium	**3400**	**J**	5000	900	300	ug/L		05/15/14 09:56	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		05/21/14 14:26	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		05/21/14 14:26	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 14:26	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 14:26	1
Iron	**550**		150	100	44	ug/L		05/21/14 14:26	1
Sodium	**24000**		1000	400	160	ug/L		05/21/14 14:26	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		05/21/14 14:26	1
Zinc	50	U	50	50	27	ug/L		05/21/14 14:26	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.12	ug/L		05/15/14 15:05	1

Client Sample ID: FWGEQUIPRINSE2-0444-GW
Date Collected: 05/08/14 13:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-4
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 12:02	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 12:02	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 12:02	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 12:02	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 12:02	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 12:02	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 12:02	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 12:02	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 12:02	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 12:02	1
Acetone	**14**		10	1.1	1.1	ug/L		05/19/14 12:02	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 12:02	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 12:02	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 12:02	1
Carbon disulfide	**0.69**	**J M**	1.0	0.25	0.13	ug/L		05/19/14 12:02	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 12:02	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 12:02	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 12:02	1
Chloroform	0.25	U	1.0	0.25	0.16	ug/L		05/19/14 12:02	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 12:02	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 12:02	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 12:02	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 12:02	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 12:02	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 12:02	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 12:02	1
2-Butanone (MEK)	**3.6**	**J**	10	0.57	0.57	ug/L		05/19/14 12:02	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 12:02	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 12:02	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 12:02	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 12:02	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 12:02	1
Toluene	**0.22**	**J**	1.0	0.25	0.13	ug/L		05/19/14 12:02	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 12:02	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 12:02	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 12:02	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 12:02	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 12:02	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 12:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 120*		*05/19/14 12:02*	*1*
4-Bromofluorobenzene (Surr)	*92*		*75 - 120*		*05/19/14 12:02*	*1*
Toluene-d8 (Surr)	*99*		*85 - 120*		*05/19/14 12:02*	*1*
Dibromofluoromethane (Surr)	*90*		*85 - 115*		*05/19/14 12:02*	*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		05/30/14 10:33	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		05/30/14 10:33	1

Client Sample ID: FWGEQUIPRINSE2-0444-GW
Lab Sample ID: 240-37114-4
Date Collected: 05/08/14 13:00
Matrix: Water
Date Received: 05/08/14 14:50

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		05/30/14 10:33	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		05/30/14 10:33	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		05/30/14 10:33	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		05/30/14 10:33	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		05/30/14 10:33	1
Benzoic acid	19	U	24	19	9.5	ug/L		05/30/14 10:33	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		05/30/14 10:33	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		05/30/14 10:33	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		05/30/14 10:33	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		05/30/14 10:33	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/30/14 10:33	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		05/30/14 10:33	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		05/30/14 10:33	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		05/30/14 10:33	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 10:33	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 10:33	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		05/30/14 10:33	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		05/30/14 10:33	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		05/30/14 10:33	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		05/30/14 10:33	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		05/30/14 10:33	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		05/30/14 10:33	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		05/30/14 10:33	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		05/30/14 10:33	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		05/30/14 10:33	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		05/30/14 10:33	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		05/30/14 10:33	1
Diethyl phthalate	**2.7**		1.9	0.95	0.57	ug/L		05/30/14 10:33	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		05/30/14 10:33	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		05/30/14 10:33	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/30/14 10:33	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		05/30/14 10:33	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		05/30/14 10:33	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		05/30/14 10:33	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		05/30/14 10:33	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		05/30/14 10:33	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		05/30/14 10:33	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		05/30/14 10:33	1
Hexachlorocyclopentadiene	0.48	U Q	9.5	0.48	0.23	ug/L		05/30/14 10:33	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		05/30/14 10:33	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		05/30/14 10:33	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		05/30/14 10:33	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		05/30/14 10:33	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		05/30/14 10:33	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		05/30/14 10:33	1
Naphthalene	**0.14**	**J**	0.19	0.095	0.060	ug/L		05/30/14 10:33	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 10:33	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		05/30/14 10:33	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		05/30/14 10:33	1

Client Sample ID: FWGEQUIPRINSE2-0444-GW
Date Collected: 05/08/14 13:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-4
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrophenol	0.48	U	1.9	0.48	0.27	ug/L		05/30/14 10:33	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		05/30/14 10:33	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		05/30/14 10:33	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		05/30/14 10:33	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		05/30/14 10:33	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		05/30/14 10:33	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		05/30/14 10:33	1
Phenol	**0.73**	**J**	0.95	0.95	0.57	ug/L		05/30/14 10:33	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		05/30/14 10:33	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		05/30/14 10:33	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		05/30/14 10:33	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		05/30/14 10:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*50 - 110*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
2-Fluorophenol (Surr)	*75*		*20 - 110*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
Nitrobenzene-d5 (Surr)	*72*		*40 - 110*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
Phenol-d5 (Surr)	*75*		*10 - 115*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
Terphenyl-d14 (Surr)	*93*		*50 - 135*	*05/12/14 07:34*	*05/30/14 10:33*	*1*
2,4,6-Tribromophenol (Surr)	*77*		*40 - 125*	*05/12/14 07:34*	*05/30/14 10:33*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.019	U	0.048	0.019	0.0092	ug/L		05/16/14 15:30	1
4,4'-DDE	0.019	U	0.048	0.019	0.0093	ug/L		05/16/14 15:30	1
4,4'-DDT	0.019	U	0.048	0.019	0.015	ug/L		05/16/14 15:30	1
Aldrin	0.019	U	0.029	0.019	0.0079	ug/L		05/16/14 15:30	1
alpha-BHC	0.019	U	0.029	0.019	0.0067	ug/L		05/16/14 15:30	1
alpha-Chlordane	0.019	U	0.048	0.019	0.013	ug/L		05/16/14 15:30	1
beta-BHC	0.019	U	0.048	0.019	0.0081	ug/L		05/16/14 15:30	1
delta-BHC	0.019	U	0.048	0.019	0.0084	ug/L		05/16/14 15:30	1
Dieldrin	0.019	U	0.029	0.019	0.0072	ug/L		05/16/14 15:30	1
Endosulfan I	0.019	U	0.048	0.019	0.013	ug/L		05/16/14 15:30	1
Endosulfan II	0.019	U	0.048	0.019	0.012	ug/L		05/16/14 15:30	1
Endosulfan sulfate	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:30	1
Endrin	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:30	1
Endrin aldehyde	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:30	1
Endrin ketone	0.019	U	0.048	0.019	0.0075	ug/L		05/16/14 15:30	1
gamma-BHC (Lindane)	0.019	U	0.048	0.019	0.0062	ug/L		05/16/14 15:30	1
gamma-Chlordane	0.019	U	0.048	0.019	0.012	ug/L		05/16/14 15:30	1
Heptachlor	0.019	U	0.029	0.019	0.0077	ug/L		05/16/14 15:30	1
Heptachlor epoxide	0.019	U	0.029	0.019	0.0068	ug/L		05/16/14 15:30	1
Methoxychlor	0.048	U	0.096	0.048	0.031	ug/L		05/16/14 15:30	1
Toxaphene	0.77	U	1.9	0.77	0.31	ug/L		05/16/14 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*84*		*30 - 135*	*05/10/14 10:23*	*05/16/14 15:30*	*1*
DCB Decachlorobiphenyl	*77*		*30 - 135*	*05/10/14 10:23*	*05/16/14 15:30*	*1*
Tetrachloro-m-xylene	*84*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:30*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:30*	*1*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-37114-1

Client Sample ID: FWGEQUIPRINSE2-0444-GW
Date Collected: 05/08/14 13:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-4
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	630	ug/L		05/15/14 10:08	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 10:08	1
Magnesium	300	U	5000	300	120	ug/L		05/15/14 10:08	1
Manganese	5.0	U	15	5.0	1.8	ug/L		05/15/14 10:08	1
Nickel	5.0	U	40	5.0	2.2	ug/L		05/15/14 10:08	1
Potassium	900	U	5000	900	300	ug/L		05/15/14 10:08	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		05/21/14 14:33	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		05/21/14 14:33	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 14:33	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 14:33	1
Iron	100	U	150	100	44	ug/L		05/21/14 14:33	1
Sodium	400	U	1000	400	160	ug/L		05/21/14 14:33	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		05/21/14 14:33	1
Zinc	50	U	50	50	27	ug/L		05/21/14 14:33	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.12	ug/L		05/15/14 15:07	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0032	mg/L		05/20/14 10:30	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		05/15/14 16:39	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-37114-1

Client Sample ID: FWGEQUIPRINSE2-0444-GW
Date Collected: 05/08/14 13:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-4
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	630	ug/L		05/15/14 10:08	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 10:08	1
Magnesium	300	U	5000	300	120	ug/L		05/15/14 10:08	1
Manganese	5.0	U	15	5.0	1.8	ug/L		05/15/14 10:08	1
Nickel	5.0	U	40	5.0	2.2	ug/L		05/15/14 10:08	1
Potassium	900	U	5000	900	300	ug/L		05/15/14 10:08	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		05/21/14 14:33	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		05/21/14 14:33	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 14:33	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 14:33	1
Iron	100	U	150	100	44	ug/L		05/21/14 14:33	1
Sodium	400	U	1000	400	160	ug/L		05/21/14 14:33	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		05/21/14 14:33	1
Zinc	50	U	50	50	27	ug/L		05/21/14 14:33	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.12	ug/L		05/15/14 15:07	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0032	mg/L		05/20/14 10:30	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		05/15/14 16:39	1

Client Sample ID: FWGTEAM3-TRIP
Date Collected: 05/07/14 07:30
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-5
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 13:34	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 13:34	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 13:34	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 13:34	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 13:34	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 13:34	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 13:34	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 13:34	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 13:34	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 13:34	1
Acetone	1.1	U	10	1.1	1.1	ug/L		05/19/14 13:34	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 13:34	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 13:34	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 13:34	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 13:34	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 13:34	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 13:34	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 13:34	1
Chloroform	**0.29**	**J**	1.0	0.25	0.16	ug/L		05/19/14 13:34	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 13:34	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 13:34	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 13:34	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 13:34	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 13:34	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 13:34	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 13:34	1
2-Butanone (MEK)	0.57	U	10	0.57	0.57	ug/L		05/19/14 13:34	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 13:34	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 13:34	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 13:34	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 13:34	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 13:34	1
Toluene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 13:34	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 13:34	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 13:34	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 13:34	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 13:34	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 13:34	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 120*		*05/19/14 13:34*	*1*
4-Bromofluorobenzene (Surr)	*95*		*75 - 120*		*05/19/14 13:34*	*1*
Toluene-d8 (Surr)	*102*		*85 - 120*		*05/19/14 13:34*	*1*
Dibromofluoromethane (Surr)	*92*		*85 - 115*		*05/19/14 13:34*	*1*

Client Sample ID: FWGLL3MW-246-0439-GW
Date Collected: 05/07/14 09:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-6
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 13:57	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 13:57	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 13:57	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 13:57	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 13:57	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 13:57	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 13:57	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 13:57	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 13:57	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 13:57	1
Acetone	1.1	U	10	1.1	1.1	ug/L		05/19/14 13:57	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 13:57	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 13:57	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 13:57	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 13:57	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 13:57	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 13:57	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 13:57	1
Chloroform	0.25	U	1.0	0.25	0.16	ug/L		05/19/14 13:57	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 13:57	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 13:57	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 13:57	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 13:57	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 13:57	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 13:57	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 13:57	1
2-Butanone (MEK)	0.57	U	10	0.57	0.57	ug/L		05/19/14 13:57	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 13:57	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 13:57	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 13:57	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 13:57	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 13:57	1
Toluene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 13:57	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 13:57	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 13:57	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 13:57	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 13:57	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 13:57	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 13:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 120*		*05/19/14 13:57*	*1*
4-Bromofluorobenzene (Surr)	*96*		*75 - 120*		*05/19/14 13:57*	*1*
Toluene-d8 (Surr)	*105*		*85 - 120*		*05/19/14 13:57*	*1*
Dibromofluoromethane (Surr)	*94*		*85 - 115*		*05/19/14 13:57*	*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		05/30/14 10:58	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		05/30/14 10:58	1

Client Sample ID: FWGLL3MW-246-0439-GW
Date Collected: 05/07/14 09:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-6
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		05/30/14 10:58	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		05/30/14 10:58	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		05/30/14 10:58	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		05/30/14 10:58	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		05/30/14 10:58	1
Benzoic acid	19	U	24	19	9.5	ug/L		05/30/14 10:58	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		05/30/14 10:58	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		05/30/14 10:58	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		05/30/14 10:58	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		05/30/14 10:58	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/30/14 10:58	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		05/30/14 10:58	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		05/30/14 10:58	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		05/30/14 10:58	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 10:58	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 10:58	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		05/30/14 10:58	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		05/30/14 10:58	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		05/30/14 10:58	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		05/30/14 10:58	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		05/30/14 10:58	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		05/30/14 10:58	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		05/30/14 10:58	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		05/30/14 10:58	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		05/30/14 10:58	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		05/30/14 10:58	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		05/30/14 10:58	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		05/30/14 10:58	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		05/30/14 10:58	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		05/30/14 10:58	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/30/14 10:58	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		05/30/14 10:58	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		05/30/14 10:58	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		05/30/14 10:58	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		05/30/14 10:58	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		05/30/14 10:58	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		05/30/14 10:58	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		05/30/14 10:58	1
Hexachlorocyclopentadiene	0.48	U Q	9.5	0.48	0.23	ug/L		05/30/14 10:58	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		05/30/14 10:58	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		05/30/14 10:58	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		05/30/14 10:58	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		05/30/14 10:58	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		05/30/14 10:58	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		05/30/14 10:58	1
Naphthalene	**0.10**	**J**	0.19	0.095	0.060	ug/L		05/30/14 10:58	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 10:58	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		05/30/14 10:58	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		05/30/14 10:58	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-37114-1

Client Sample ID: FWGLL3MW-246-0439-GW
Date Collected: 05/07/14 09:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-6
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		05/30/14 10:58	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		05/30/14 10:58	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		05/30/14 10:58	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		05/30/14 10:58	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		05/30/14 10:58	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		05/30/14 10:58	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		05/30/14 10:58	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		05/30/14 10:58	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		05/30/14 10:58	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		05/30/14 10:58	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		05/30/14 10:58	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		05/30/14 10:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*68*		*50 - 110*	*05/12/14 07:34*	*05/30/14 10:58*	*1*
2-Fluorophenol (Surr)	*71*		*20 - 110*	*05/12/14 07:34*	*05/30/14 10:58*	*1*
Nitrobenzene-d5 (Surr)	*71*		*40 - 110*	*05/12/14 07:34*	*05/30/14 10:58*	*1*
Phenol-d5 (Surr)	*74*		*10 - 115*	*05/12/14 07:34*	*05/30/14 10:58*	*1*
Terphenyl-d14 (Surr)	*85*		*50 - 135*	*05/12/14 07:34*	*05/30/14 10:58*	*1*
2,4,6-Tribromophenol (Surr)	*80*		*40 - 125*	*05/12/14 07:34*	*05/30/14 10:58*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.019	U	0.048	0.019	0.0091	ug/L		05/16/14 15:52	1
4,4'-DDE	0.019	U	0.048	0.019	0.0092	ug/L		05/16/14 15:52	1
4,4'-DDT	0.019	U	0.048	0.019	0.015	ug/L		05/16/14 15:52	1
Aldrin	0.019	U	0.029	0.019	0.0078	ug/L		05/16/14 15:52	1
alpha-BHC	0.019	U	0.029	0.019	0.0067	ug/L		05/16/14 15:52	1
alpha-Chlordane	0.019	U	0.048	0.019	0.013	ug/L		05/16/14 15:52	1
beta-BHC	0.019	U	0.048	0.019	0.0080	ug/L		05/16/14 15:52	1
delta-BHC	0.019	U	0.048	0.019	0.0083	ug/L		05/16/14 15:52	1
Dieldrin	0.019	U	0.029	0.019	0.0071	ug/L		05/16/14 15:52	1
Endosulfan I	0.019	U	0.048	0.019	0.012	ug/L		05/16/14 15:52	1
Endosulfan II	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:52	1
Endosulfan sulfate	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 15:52	1
Endrin	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 15:52	1
Endrin aldehyde	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 15:52	1
Endrin ketone	0.019	U	0.048	0.019	0.0074	ug/L		05/16/14 15:52	1
gamma-BHC (Lindane)	0.019	U	0.048	0.019	0.0061	ug/L		05/16/14 15:52	1
gamma-Chlordane	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 15:52	1
Heptachlor	0.019	U	0.029	0.019	0.0076	ug/L		05/16/14 15:52	1
Heptachlor epoxide	0.019	U	0.029	0.019	0.0068	ug/L		05/16/14 15:52	1
Methoxychlor	0.048	U	0.095	0.048	0.030	ug/L		05/16/14 15:52	1
Toxaphene	0.76	U	1.9	0.76	0.30	ug/L		05/16/14 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*86*		*30 - 135*	*05/10/14 10:23*	*05/16/14 15:52*	*1*
DCB Decachlorobiphenyl	*74*		*30 - 135*	*05/10/14 10:23*	*05/16/14 15:52*	*1*
Tetrachloro-m-xylene	*85*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:52*	*1*
Tetrachloro-m-xylene	*86*		*25 - 140*	*05/10/14 10:23*	*05/16/14 15:52*	*1*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-37114-1

Client Sample ID: FWGLL3MW-246-0439-GW
Date Collected: 05/07/14 09:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-6
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		05/13/14 15:06	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		05/13/14 15:06	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 15:06	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		05/13/14 15:06	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		05/13/14 15:06	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 15:06	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		05/13/14 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*102*		*40 - 140*	*05/10/14 10:20*	*05/13/14 15:06*	*1*
Tetrachloro-m-xylene	*109*		*40 - 140*	*05/10/14 10:20*	*05/13/14 15:06*	*1*
DCB Decachlorobiphenyl	*85*		*40 - 135*	*05/10/14 10:20*	*05/13/14 15:06*	*1*
DCB Decachlorobiphenyl	*84*		*40 - 135*	*05/10/14 10:20*	*05/13/14 15:06*	*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		05/13/14 15:41	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	0.032	ug/L		05/19/14 16:58	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 16:58	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 16:58	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		05/19/14 16:58	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		05/19/14 16:58	1
2-Amino-4,6-dinitrotoluene	**0.36**		0.15	0.10	0.015	ug/L		05/19/14 16:58	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		05/19/14 16:58	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		05/19/14 16:58	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		05/19/14 16:58	1
4-Amino-2,6-dinitrotoluene	**0.35**		0.15	0.10	0.051	ug/L		05/19/14 16:58	1
HMX	**0.039**	**J M**	0.15	0.051	0.037	ug/L		05/19/14 16:58	1
RDX	**0.18**	**M**	0.15	0.051	0.037	ug/L		05/19/14 16:58	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 16:58	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 16:58	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		05/19/14 16:58	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		05/19/14 16:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*99*		*79 - 111*	*05/12/14 13:43*	*05/17/14 00:35*	*1*
3,4-Dinitrotoluene	*92*		*79 - 111*	*05/12/14 13:43*	*05/19/14 16:58*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0032	mg/L		05/20/14 10:30	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		05/15/14 16:41	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-37114-1

Client Sample ID: FWGLL3MW-246-0439-GF
Date Collected: 05/07/14 09:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-7
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	3.3	ug/L		05/15/14 10:12	1
Chromium	4.0	U	7.0	4.0	1.4	ug/L		05/15/14 10:12	1
Cobalt	4.0	U	7.0	4.0	1.5	ug/L		05/15/14 10:12	1
Lead	5.0	U	10	5.0	1.7	ug/L		05/15/14 10:12	1
Selenium	10	U	15	10	4.0	ug/L		05/15/14 10:12	1
Silver	5.0	U	7.0	5.0	1.7	ug/L		05/15/14 10:12	1
Vanadium	4.0	U	7.0	4.0	1.3	ug/L		05/15/14 10:12	1
Barium	**16**	**J**	200	5.0	2.8	ug/L		05/15/14 10:12	1
Calcium	**22000**		5000	1000	630	ug/L		05/15/14 10:12	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 10:12	1
Magnesium	**7400**		5000	300	120	ug/L		05/15/14 10:12	1
Manganese	**300**		15	5.0	1.8	ug/L		05/15/14 10:12	1
Nickel	**5.3**	**J**	40	5.0	2.2	ug/L		05/15/14 10:12	1
Potassium	**1600**	**J**	5000	900	300	ug/L		05/15/14 10:12	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		05/21/14 14:40	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		05/21/14 14:40	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 14:40	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 14:40	1
Iron	**1800**		150	100	44	ug/L		05/21/14 14:40	1
Sodium	**3900**		1000	400	160	ug/L		05/21/14 14:40	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		05/21/14 14:40	1
Zinc	50	U	50	50	27	ug/L		05/21/14 14:40	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.12	ug/L		05/15/14 15:10	1

Client Sample ID: FWGLL3MW-DUP1-0442-GW
Date Collected: 05/07/14 10:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-8
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 14:20	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 14:20	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 14:20	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 14:20	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 14:20	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 14:20	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 14:20	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 14:20	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 14:20	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 14:20	1
Acetone	1.1	U	10	1.1	1.1	ug/L		05/19/14 14:20	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 14:20	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 14:20	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 14:20	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 14:20	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 14:20	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 14:20	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 14:20	1
Chloroform	0.25	U	1.0	0.25	0.16	ug/L		05/19/14 14:20	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 14:20	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 14:20	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 14:20	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 14:20	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 14:20	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 14:20	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 14:20	1
2-Butanone (MEK)	0.57	U	10	0.57	0.57	ug/L		05/19/14 14:20	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 14:20	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 14:20	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 14:20	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 14:20	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 14:20	1
Toluene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 14:20	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 14:20	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 14:20	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 14:20	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 14:20	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 14:20	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 14:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 120*		*05/19/14 14:20*	*1*
4-Bromofluorobenzene (Surr)	*94*		*75 - 120*		*05/19/14 14:20*	*1*
Toluene-d8 (Surr)	*103*		*85 - 120*		*05/19/14 14:20*	*1*
Dibromofluoromethane (Surr)	*91*		*85 - 115*		*05/19/14 14:20*	*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		05/30/14 11:23	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		05/30/14 11:23	1

Client Sample ID: FWGLL3MW-DUP1-0442-GW
Date Collected: 05/07/14 10:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-8
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		05/30/14 11:23	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		05/30/14 11:23	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		05/30/14 11:23	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		05/30/14 11:23	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		05/30/14 11:23	1
Benzoic acid	19	U	24	19	9.5	ug/L		05/30/14 11:23	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		05/30/14 11:23	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		05/30/14 11:23	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		05/30/14 11:23	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		05/30/14 11:23	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/30/14 11:23	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		05/30/14 11:23	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		05/30/14 11:23	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		05/30/14 11:23	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 11:23	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 11:23	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		05/30/14 11:23	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		05/30/14 11:23	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		05/30/14 11:23	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		05/30/14 11:23	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		05/30/14 11:23	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		05/30/14 11:23	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		05/30/14 11:23	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		05/30/14 11:23	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		05/30/14 11:23	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		05/30/14 11:23	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		05/30/14 11:23	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		05/30/14 11:23	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		05/30/14 11:23	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		05/30/14 11:23	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/30/14 11:23	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		05/30/14 11:23	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		05/30/14 11:23	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		05/30/14 11:23	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		05/30/14 11:23	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		05/30/14 11:23	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		05/30/14 11:23	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		05/30/14 11:23	1
Hexachlorocyclopentadiene	0.48	U Q	9.5	0.48	0.23	ug/L		05/30/14 11:23	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		05/30/14 11:23	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		05/30/14 11:23	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		05/30/14 11:23	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		05/30/14 11:23	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		05/30/14 11:23	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		05/30/14 11:23	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		05/30/14 11:23	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/30/14 11:23	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		05/30/14 11:23	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		05/30/14 11:23	1

Client Sample ID: FWGLL3MW-DUP1-0442-GW
Date Collected: 05/07/14 10:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-8
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		05/30/14 11:23	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		05/30/14 11:23	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		05/30/14 11:23	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		05/30/14 11:23	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		05/30/14 11:23	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		05/30/14 11:23	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		05/30/14 11:23	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		05/30/14 11:23	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		05/30/14 11:23	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		05/30/14 11:23	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		05/30/14 11:23	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		05/30/14 11:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*69*		*50 - 110*	*05/12/14 07:34*	*05/30/14 11:23*	*1*
2-Fluorophenol (Surr)	*74*		*20 - 110*	*05/12/14 07:34*	*05/30/14 11:23*	*1*
Nitrobenzene-d5 (Surr)	*72*		*40 - 110*	*05/12/14 07:34*	*05/30/14 11:23*	*1*
Phenol-d5 (Surr)	*76*		*10 - 115*	*05/12/14 07:34*	*05/30/14 11:23*	*1*
Terphenyl-d14 (Surr)	*90*		*50 - 135*	*05/12/14 07:34*	*05/30/14 11:23*	*1*
2,4,6-Tribromophenol (Surr)	*86*		*40 - 125*	*05/12/14 07:34*	*05/30/14 11:23*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.019	U	0.048	0.019	0.0091	ug/L		05/16/14 16:14	1
4,4'-DDE	0.019	U	0.048	0.019	0.0092	ug/L		05/16/14 16:14	1
4,4'-DDT	0.019	U	0.048	0.019	0.015	ug/L		05/16/14 16:14	1
Aldrin	0.019	U	0.029	0.019	0.0078	ug/L		05/16/14 16:14	1
alpha-BHC	0.019	U	0.029	0.019	0.0067	ug/L		05/16/14 16:14	1
alpha-Chlordane	0.019	U	0.048	0.019	0.013	ug/L		05/16/14 16:14	1
beta-BHC	0.019	U	0.048	0.019	0.0080	ug/L		05/16/14 16:14	1
delta-BHC	0.019	U	0.048	0.019	0.0083	ug/L		05/16/14 16:14	1
Dieldrin	0.019	U	0.029	0.019	0.0071	ug/L		05/16/14 16:14	1
Endosulfan I	0.019	U	0.048	0.019	0.012	ug/L		05/16/14 16:14	1
Endosulfan II	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 16:14	1
Endosulfan sulfate	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 16:14	1
Endrin	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 16:14	1
Endrin aldehyde	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 16:14	1
Endrin ketone	0.019	U	0.048	0.019	0.0074	ug/L		05/16/14 16:14	1
gamma-BHC (Lindane)	0.019	U	0.048	0.019	0.0061	ug/L		05/16/14 16:14	1
gamma-Chlordane	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 16:14	1
Heptachlor	0.019	U	0.029	0.019	0.0076	ug/L		05/16/14 16:14	1
Heptachlor epoxide	0.019	U	0.029	0.019	0.0068	ug/L		05/16/14 16:14	1
Methoxychlor	0.048	U	0.095	0.048	0.030	ug/L		05/16/14 16:14	1
Toxaphene	0.76	U	1.9	0.76	0.30	ug/L		05/16/14 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*63*		*30 - 135*	*05/10/14 10:23*	*05/16/14 16:14*	*1*
DCB Decachlorobiphenyl	*57*		*30 - 135*	*05/10/14 10:23*	*05/16/14 16:14*	*1*
Tetrachloro-m-xylene	*81*		*25 - 140*	*05/10/14 10:23*	*05/16/14 16:14*	*1*
Tetrachloro-m-xylene	*81*		*25 - 140*	*05/10/14 10:23*	*05/16/14 16:14*	*1*

Client Sample ID: FWGLL3MW-DUP1-0442-GW
Date Collected: 05/07/14 10:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-8
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		05/13/14 15:22	1
Aroclor-1221	0.19	U	0.48	0.19	0.12	ug/L		05/13/14 15:22	1
Aroclor-1232	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 15:22	1
Aroclor-1242	0.38	U	0.48	0.38	0.21	ug/L		05/13/14 15:22	1
Aroclor-1248	0.19	U	0.48	0.19	0.095	ug/L		05/13/14 15:22	1
Aroclor-1254	0.19	U	0.48	0.19	0.15	ug/L		05/13/14 15:22	1
Aroclor-1260	0.19	U	0.48	0.19	0.16	ug/L		05/13/14 15:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*91*		*40 - 140*	*05/10/14 10:20*	*05/13/14 15:22*	*1*
Tetrachloro-m-xylene	*101*		*40 - 140*	*05/10/14 10:20*	*05/13/14 15:22*	*1*
DCB Decachlorobiphenyl	*66*		*40 - 135*	*05/10/14 10:20*	*05/13/14 15:22*	*1*
DCB Decachlorobiphenyl	*66*		*40 - 135*	*05/10/14 10:20*	*05/13/14 15:22*	*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		05/13/14 15:58	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		05/19/14 17:42	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		05/19/14 17:42	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.050	ug/L		05/19/14 17:42	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		05/19/14 17:42	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.050	ug/L		05/19/14 17:42	1
2-Amino-4,6-dinitrotoluene	**0.35**		0.15	0.10	0.015	ug/L		05/19/14 17:42	1
2-Nitrotoluene	0.10	U	0.50	0.10	0.088	ug/L		05/19/14 17:42	1
3-Nitrotoluene	0.10	U	0.50	0.10	0.057	ug/L		05/19/14 17:42	1
4-Nitrotoluene	0.10	U M	0.50	0.10	0.088	ug/L		05/19/14 17:42	1
4-Amino-2,6-dinitrotoluene	**0.33**		0.15	0.10	0.050	ug/L		05/19/14 17:42	1
HMX	**0.036**	**J M**	0.15	0.050	0.036	ug/L		05/19/14 17:42	1
RDX	**0.20**	**M**	0.15	0.050	0.036	ug/L		05/19/14 17:42	1
Nitrobenzene	0.10	U	0.15	0.10	0.050	ug/L		05/19/14 17:42	1
Tetryl	0.10	U	0.15	0.10	0.050	ug/L		05/19/14 17:42	1
Nitroglycerin	0.50	U	0.65	0.50	0.33	ug/L		05/19/14 17:42	1
PETN	0.50	U	0.65	0.50	0.30	ug/L		05/19/14 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*99*		*79 - 111*	*05/12/14 13:43*	*05/17/14 01:40*	*1*
3,4-Dinitrotoluene	*92*		*79 - 111*	*05/12/14 13:43*	*05/19/14 17:42*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0032	mg/L		05/20/14 10:30	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		05/15/14 16:43	1

Client Sample ID: FWGLL3MW-DUP1-0442-GF
Date Collected: 05/07/14 10:43
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-9
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	3.3	ug/L		05/15/14 10:16	1
Chromium	4.0	U	7.0	4.0	1.4	ug/L		05/15/14 10:16	1
Cobalt	4.0	U	7.0	4.0	1.5	ug/L		05/15/14 10:16	1
Lead	5.0	U	10	5.0	1.7	ug/L		05/15/14 10:16	1
Selenium	10	U	15	10	4.0	ug/L		05/15/14 10:16	1
Silver	5.0	U	7.0	5.0	1.7	ug/L		05/15/14 10:16	1
Vanadium	4.0	U	7.0	4.0	1.3	ug/L		05/15/14 10:16	1
Barium	**16**	**J**	200	5.0	2.8	ug/L		05/15/14 10:16	1
Calcium	**22000**		5000	1000	630	ug/L		05/15/14 10:16	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 10:16	1
Magnesium	**7600**		5000	300	120	ug/L		05/15/14 10:16	1
Manganese	**310**		15	5.0	1.8	ug/L		05/15/14 10:16	1
Nickel	**5.6**	**J**	40	5.0	2.2	ug/L		05/15/14 10:16	1
Potassium	**1600**	**J**	5000	900	300	ug/L		05/15/14 10:16	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		05/21/14 14:47	1
Antimony	**0.35**	**J**	2.0	1.0	0.33	ug/L		05/21/14 14:47	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 14:47	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 14:47	1
Iron	**1900**		150	100	44	ug/L		05/21/14 14:47	1
Sodium	**4000**		1000	400	160	ug/L		05/21/14 14:47	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		05/21/14 14:47	1
Zinc	50	U	50	50	27	ug/L		05/21/14 14:47	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.12	ug/L		05/15/14 15:12	1

Client Sample ID: FWGLL2MW-271-0438-GW
Date Collected: 05/07/14 12:59
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-10
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 11:39	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 11:39	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 11:39	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 11:39	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 11:39	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 11:39	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 11:39	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 11:39	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 11:39	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 11:39	1
Acetone	1.1	U	10	1.1	1.1	ug/L		05/19/14 11:39	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:39	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 11:39	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 11:39	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:39	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:39	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 11:39	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 11:39	1
Chloroform	0.25	U	1.0	0.25	0.16	ug/L		05/19/14 11:39	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 11:39	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 11:39	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 11:39	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 11:39	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 11:39	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 11:39	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 11:39	1
2-Butanone (MEK)	0.57	U	10	0.57	0.57	ug/L		05/19/14 11:39	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 11:39	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 11:39	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 11:39	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 11:39	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 11:39	1
Toluene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 11:39	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 11:39	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 11:39	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 11:39	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 11:39	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 11:39	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 11:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 120*		*05/19/14 11:39*	*1*
4-Bromofluorobenzene (Surr)	*94*		*75 - 120*		*05/19/14 11:39*	*1*
Toluene-d8 (Surr)	*104*		*85 - 120*		*05/19/14 11:39*	*1*
Dibromofluoromethane (Surr)	*88*		*85 - 115*		*05/19/14 11:39*	*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		05/16/14 14:34	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		05/16/14 14:34	1

Client Sample ID: FWGLL2MW-271-0438-GW
Date Collected: 05/07/14 12:59
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-10
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		05/16/14 14:34	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		05/16/14 14:34	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		05/16/14 14:34	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		05/16/14 14:34	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		05/16/14 14:34	1
Benzoic acid	19	U	24	19	9.5	ug/L		05/16/14 14:34	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		05/16/14 14:34	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		05/16/14 14:34	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		05/16/14 14:34	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		05/16/14 14:34	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/16/14 14:34	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		05/16/14 14:34	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		05/16/14 14:34	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		05/16/14 14:34	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/16/14 14:34	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		05/16/14 14:34	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		05/16/14 14:34	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		05/16/14 14:34	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		05/16/14 14:34	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		05/16/14 14:34	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		05/16/14 14:34	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		05/16/14 14:34	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		05/16/14 14:34	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		05/16/14 14:34	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		05/16/14 14:34	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		05/16/14 14:34	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		05/16/14 14:34	1
Diethyl phthalate	**0.64**	**J**	1.9	0.95	0.57	ug/L		05/16/14 14:34	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		05/16/14 14:34	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		05/16/14 14:34	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/16/14 14:34	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		05/16/14 14:34	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		05/16/14 14:34	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		05/16/14 14:34	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		05/16/14 14:34	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		05/16/14 14:34	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		05/16/14 14:34	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		05/16/14 14:34	1
Hexachlorocyclopentadiene	0.48	U	9.5	0.48	0.23	ug/L		05/16/14 14:34	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		05/16/14 14:34	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		05/16/14 14:34	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		05/16/14 14:34	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		05/16/14 14:34	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		05/16/14 14:34	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		05/16/14 14:34	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		05/16/14 14:34	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/16/14 14:34	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		05/16/14 14:34	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		05/16/14 14:34	1

Client Sample ID: FWGLL2MW-271-0438-GW
Date Collected: 05/07/14 12:59
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-10
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		05/16/14 14:34	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		05/16/14 14:34	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		05/16/14 14:34	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		05/16/14 14:34	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		05/16/14 14:34	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		05/16/14 14:34	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		05/16/14 14:34	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		05/16/14 14:34	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		05/16/14 14:34	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		05/16/14 14:34	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		05/16/14 14:34	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		05/16/14 14:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*50 - 110*	*05/12/14 07:40*	*05/16/14 14:34*	*1*
2-Fluorophenol (Surr)	*71*		*20 - 110*	*05/12/14 07:40*	*05/16/14 14:34*	*1*
Nitrobenzene-d5 (Surr)	*71*		*40 - 110*	*05/12/14 07:40*	*05/16/14 14:34*	*1*
Phenol-d5 (Surr)	*78*		*10 - 115*	*05/12/14 07:40*	*05/16/14 14:34*	*1*
Terphenyl-d14 (Surr)	*96*		*50 - 135*	*05/12/14 07:40*	*05/16/14 14:34*	*1*
2,4,6-Tribromophenol (Surr)	*84*		*40 - 125*	*05/12/14 07:40*	*05/16/14 14:34*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.020	U	0.050	0.020	0.0095	ug/L		05/16/14 16:35	1
4,4'-DDE	0.020	U	0.050	0.020	0.0096	ug/L		05/16/14 16:35	1
4,4'-DDT	0.020	U	0.050	0.020	0.016	ug/L		05/16/14 16:35	1
Aldrin	0.020	U	0.030	0.020	0.0081	ug/L		05/16/14 16:35	1
alpha-BHC	0.020	U	0.030	0.020	0.0069	ug/L		05/16/14 16:35	1
alpha-Chlordane	0.020	U J	0.050	0.020	0.014	ug/L		05/16/14 16:35	1
beta-BHC	0.020	U	0.050	0.020	0.0083	ug/L		05/16/14 16:35	1
delta-BHC	0.020	U	0.050	0.020	0.0086	ug/L		05/16/14 16:35	1
Dieldrin	0.020	U	0.030	0.020	0.0074	ug/L		05/16/14 16:35	1
Endosulfan I	0.020	U J	0.050	0.020	0.013	ug/L		05/16/14 16:35	1
Endosulfan II	0.020	U	0.050	0.020	0.012	ug/L		05/16/14 16:35	1
Endosulfan sulfate	0.020	U	0.050	0.020	0.011	ug/L		05/16/14 16:35	1
Endrin	0.020	U	0.050	0.020	0.011	ug/L		05/16/14 16:35	1
Endrin aldehyde	0.020	U	0.050	0.020	0.011	ug/L		05/16/14 16:35	1
Endrin ketone	0.020	U J	0.050	0.020	0.0077	ug/L		05/16/14 16:35	1
gamma-BHC (Lindane)	0.020	U	0.050	0.020	0.0063	ug/L		05/16/14 16:35	1
gamma-Chlordane	0.020	U	0.050	0.020	0.012	ug/L		05/16/14 16:35	1
Heptachlor	0.020	U	0.030	0.020	0.0079	ug/L		05/16/14 16:35	1
Heptachlor epoxide	0.020	U	0.030	0.020	0.0070	ug/L		05/16/14 16:35	1
Methoxychlor	0.050	U	0.099	0.050	0.032	ug/L		05/16/14 16:35	1
Toxaphene	0.79	U	2.0	0.79	0.32	ug/L		05/16/14 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*45*		*30 - 135*	*05/10/14 10:23*	*05/16/14 16:35*	*1*
DCB Decachlorobiphenyl	*43*		*30 - 135*	*05/10/14 10:23*	*05/16/14 16:35*	*1*
Tetrachloro-m-xylene	*81*		*25 - 140*	*05/10/14 10:23*	*05/16/14 16:35*	*1*
Tetrachloro-m-xylene	*79*		*25 - 140*	*05/10/14 10:23*	*05/16/14 16:35*	*1*

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-37114-1

Client Sample ID: FWGLL2MW-271-0438-GW
Date Collected: 05/07/14 12:59
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-10
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.20	U	0.50	0.20	0.17	ug/L		05/13/14 15:39	1
Aroclor-1221	0.20	U	0.50	0.20	0.13	ug/L		05/13/14 15:39	1
Aroclor-1232	0.20	U	0.50	0.20	0.16	ug/L		05/13/14 15:39	1
Aroclor-1242	0.40	U	0.50	0.40	0.22	ug/L		05/13/14 15:39	1
Aroclor-1248	0.20	U	0.50	0.20	0.099	ug/L		05/13/14 15:39	1
Aroclor-1254	0.20	U	0.50	0.20	0.16	ug/L		05/13/14 15:39	1
Aroclor-1260	0.20	U J	0.50	0.20	0.17	ug/L		05/13/14 15:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*89*		*40 - 140*	*05/10/14 10:20*	*05/13/14 15:39*	*1*
Tetrachloro-m-xylene	*97*		*40 - 140*	*05/10/14 10:20*	*05/13/14 15:39*	*1*
DCB Decachlorobiphenyl	*48*		*40 - 135*	*05/10/14 10:20*	*05/13/14 15:39*	*1*
DCB Decachlorobiphenyl	*49*		*40 - 135*	*05/10/14 10:20*	*05/13/14 15:39*	*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		05/13/14 16:16	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	0.031	ug/L		05/19/14 18:25	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 18:25	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 18:25	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		05/19/14 18:25	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		05/19/14 18:25	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		05/19/14 18:25	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		05/19/14 18:25	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		05/19/14 18:25	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.089	ug/L		05/19/14 18:25	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 18:25	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		05/19/14 18:25	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		05/19/14 18:25	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 18:25	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 18:25	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		05/19/14 18:25	1
PETN	0.51	U	0.66	0.51	0.30	ug/L		05/19/14 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*95*	*M*	*79 - 111*	*05/12/14 13:43*	*05/19/14 18:25*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0032	mg/L		05/20/14 10:24	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		05/15/14 16:45	1

Client Sample ID: FWGLL2MW-271-0438-GF
Date Collected: 05/07/14 12:59
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-11
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**5.5**	**J**	10	10	3.3	ug/L		05/15/14 09:36	1
Chromium	4.0	U	7.0	4.0	1.4	ug/L		05/15/14 09:36	1
Cobalt	**9.2**		7.0	4.0	1.5	ug/L		05/15/14 09:36	1
Lead	5.0	U	10	5.0	1.7	ug/L		05/15/14 09:36	1
Selenium	10	U	15	10	4.0	ug/L		05/15/14 09:36	1
Silver	5.0	U	7.0	5.0	1.7	ug/L		05/15/14 09:36	1
Vanadium	4.0	U	7.0	4.0	1.3	ug/L		05/15/14 09:36	1
Barium	**3.4**	**J**	200	5.0	2.8	ug/L		05/15/14 09:36	1
Calcium	**56000**		5000	1000	630	ug/L		05/15/14 09:36	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 09:36	1
Magnesium	**19000**		5000	300	120	ug/L		05/15/14 09:36	1
Manganese	**520**		15	5.0	1.8	ug/L		05/15/14 09:36	1
Nickel	**37**	**J**	40	5.0	2.2	ug/L		05/15/14 09:36	1
Potassium	**1000**	**J**	5000	900	300	ug/L		05/15/14 09:36	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		05/21/14 13:36	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		05/21/14 13:36	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 13:36	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 13:36	1
Iron	**4400**		150	100	44	ug/L		05/21/14 13:36	1
Sodium	**4300**		1000	400	160	ug/L		05/21/14 13:36	1
Thallium	**0.83**	**J**	2.0	1.5	0.79	ug/L		05/21/14 13:36	1
Zinc	50	U	50	50	27	ug/L		05/21/14 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	0.12	ug/L		05/15/14 14:56	1

Client Sample ID: FWGLL1MW-064C-0436-GW
Date Collected: 05/07/14 16:34
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-12
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		05/16/14 16:18	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		05/16/14 16:18	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		05/16/14 16:18	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		05/16/14 16:18	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/16/14 16:18	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		05/16/14 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*81*		*50 - 110*	*05/12/14 07:40*	*05/16/14 16:18*	*1*
2-Fluorophenol (Surr)	*72*		*20 - 110*	*05/12/14 07:40*	*05/16/14 16:18*	*1*
Nitrobenzene-d5 (Surr)	*79*		*40 - 110*	*05/12/14 07:40*	*05/16/14 16:18*	*1*
Phenol-d5 (Surr)	*81*		*10 - 115*	*05/12/14 07:40*	*05/16/14 16:18*	*1*
Terphenyl-d14 (Surr)	*107*		*50 - 135*	*05/12/14 07:40*	*05/16/14 16:18*	*1*
2,4,6-Tribromophenol (Surr)	*83*		*40 - 125*	*05/12/14 07:40*	*05/16/14 16:18*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.019	U	0.048	0.019	0.0091	ug/L		05/16/14 18:24	1
4,4'-DDE	0.019	U	0.048	0.019	0.0092	ug/L		05/16/14 18:24	1
4,4'-DDT	0.019	U	0.048	0.019	0.015	ug/L		05/16/14 18:24	1
Aldrin	0.019	U	0.029	0.019	0.0078	ug/L		05/16/14 18:24	1
alpha-BHC	0.019	U	0.029	0.019	0.0067	ug/L		05/16/14 18:24	1
alpha-Chlordane	0.019	U	0.048	0.019	0.013	ug/L		05/16/14 18:24	1
beta-BHC	0.019	U	0.048	0.019	0.0080	ug/L		05/16/14 18:24	1
delta-BHC	0.019	U	0.048	0.019	0.0083	ug/L		05/16/14 18:24	1
Dieldrin	0.019	U	0.029	0.019	0.0071	ug/L		05/16/14 18:24	1
Endosulfan I	0.019	U	0.048	0.019	0.012	ug/L		05/16/14 18:24	1
Endosulfan II	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 18:24	1
Endosulfan sulfate	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 18:24	1
Endrin	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 18:24	1
Endrin aldehyde	0.019	U	0.048	0.019	0.010	ug/L		05/16/14 18:24	1
Endrin ketone	0.019	U	0.048	0.019	0.0074	ug/L		05/16/14 18:24	1
gamma-BHC (Lindane)	0.019	U	0.048	0.019	0.0061	ug/L		05/16/14 18:24	1
gamma-Chlordane	0.019	U	0.048	0.019	0.011	ug/L		05/16/14 18:24	1
Heptachlor	0.019	U	0.029	0.019	0.0076	ug/L		05/16/14 18:24	1
Heptachlor epoxide	0.019	U	0.029	0.019	0.0068	ug/L		05/16/14 18:24	1
Methoxychlor	0.048	U	0.095	0.048	0.030	ug/L		05/16/14 18:24	1
Toxaphene	0.76	U	1.9	0.76	0.30	ug/L		05/16/14 18:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*73*		*30 - 135*	*05/10/14 10:23*	*05/16/14 18:24*	*1*
DCB Decachlorobiphenyl	*68*		*30 - 135*	*05/10/14 10:23*	*05/16/14 18:24*	*1*
Tetrachloro-m-xylene	*92*		*25 - 140*	*05/10/14 10:23*	*05/16/14 18:24*	*1*
Tetrachloro-m-xylene	*85*		*25 - 140*	*05/10/14 10:23*	*05/16/14 18:24*	*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		05/13/14 17:27	1

Client Sample ID: FWGLL1MW-064C-0436-GW
Date Collected: 05/07/14 16:34
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-12
Matrix: Water

Method: 8330A - Nitroaromatics and Nitramines

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.052	U	0.15	0.052	0.032	ug/L		05/19/14 21:20	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.052	ug/L		05/19/14 21:20	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.052	ug/L		05/19/14 21:20	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.052	ug/L		05/19/14 21:20	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.052	ug/L		05/19/14 21:20	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		05/19/14 21:20	1
2-Nitrotoluene	0.10	U	0.52	0.10	0.091	ug/L		05/19/14 21:20	1
3-Nitrotoluene	0.10	U	0.52	0.10	0.059	ug/L		05/19/14 21:20	1
4-Nitrotoluene	0.10	U	0.52	0.10	0.091	ug/L		05/19/14 21:20	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.052	ug/L		05/19/14 21:20	1
HMX	0.052	U M	0.15	0.052	0.037	ug/L		05/19/14 21:20	1
RDX	0.052	U	0.15	0.052	0.037	ug/L		05/19/14 21:20	1
Nitrobenzene	0.10	U	0.15	0.10	0.052	ug/L		05/19/14 21:20	1
Tetryl	0.10	U	0.15	0.10	0.052	ug/L		05/19/14 21:20	1
Nitroglycerin	0.52	U	0.67	0.52	0.34	ug/L		05/19/14 21:20	1
PETN	0.52	U	0.67	0.52	0.31	ug/L		05/19/14 21:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*96*		*79 - 111*	*05/12/14 13:43*	*05/19/14 21:20*	*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		05/15/14 16:51	1

Client Sample ID: FWGLL1MW-064C-0436-GF
Date Collected: 05/07/14 16:37
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-13
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	3.3	ug/L		05/15/14 10:20	1
Chromium	4.0	U	7.0	4.0	1.4	ug/L		05/15/14 10:20	1
Cobalt	4.0	U	7.0	4.0	1.5	ug/L		05/15/14 10:20	1
Lead	5.0	U	10	5.0	1.7	ug/L		05/15/14 10:20	1
Selenium	10	U	15	10	4.0	ug/L		05/15/14 10:20	1
Silver	5.0	U	7.0	5.0	1.7	ug/L		05/15/14 10:20	1
Vanadium	4.0	U	7.0	4.0	1.3	ug/L		05/15/14 10:20	1
Barium	**48**	**J**	200	5.0	2.8	ug/L		05/15/14 10:20	1
Calcium	**58000**		5000	1000	630	ug/L		05/15/14 10:20	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 10:20	1
Magnesium	**9800**		5000	300	120	ug/L		05/15/14 10:20	1
Manganese	**120**		15	5.0	1.8	ug/L		05/15/14 10:20	1
Nickel	**2.5**	**J**	40	5.0	2.2	ug/L		05/15/14 10:20	1
Potassium	**800**	**J**	5000	900	300	ug/L		05/15/14 10:20	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		05/21/14 14:54	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		05/21/14 14:54	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 14:54	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 14:54	1
Iron	**760**		150	100	44	ug/L		05/21/14 14:54	1
Sodium	**5000**		1000	400	160	ug/L		05/21/14 14:54	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		05/21/14 14:54	1
Zinc	50	U	50	50	27	ug/L		05/21/14 14:54	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.12	ug/L		05/15/14 15:15	1

Client Sample ID: FWGTEAM2-TRIP
Date Collected: 05/07/14 07:30
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-14
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 14:43	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 14:43	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 14:43	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 14:43	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 14:43	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 14:43	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 14:43	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 14:43	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 14:43	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 14:43	1
Acetone	1.1	U	10	1.1	1.1	ug/L		05/19/14 14:43	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 14:43	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 14:43	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 14:43	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 14:43	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 14:43	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 14:43	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 14:43	1
Chloroform	**0.34**	**J**	1.0	0.25	0.16	ug/L		05/19/14 14:43	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 14:43	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 14:43	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 14:43	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 14:43	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 14:43	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 14:43	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 14:43	1
2-Butanone (MEK)	0.57	U	10	0.57	0.57	ug/L		05/19/14 14:43	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 14:43	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 14:43	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 14:43	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 14:43	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 14:43	1
Toluene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 14:43	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 14:43	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 14:43	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 14:43	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 14:43	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 14:43	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 120*		*05/19/14 14:43*	*1*
4-Bromofluorobenzene (Surr)	*92*		*75 - 120*		*05/19/14 14:43*	*1*
Toluene-d8 (Surr)	*103*		*85 - 120*		*05/19/14 14:43*	*1*
Dibromofluoromethane (Surr)	*92*		*85 - 115*		*05/19/14 14:43*	*1*

Client Sample ID: FWGSCFMW-004-0440-GW
Date Collected: 05/07/14 09:32
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-15
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/16/14 16:44	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		05/16/14 16:44	1
Diethyl phthalate	0.95	U	1.9	0.95	0.57	ug/L		05/16/14 16:44	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		05/16/14 16:44	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/16/14 16:44	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		05/16/14 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*65*		*50 - 110*	*05/12/14 07:40*	*05/16/14 16:44*	*1*
2-Fluorophenol (Surr)	*62*		*20 - 110*	*05/12/14 07:40*	*05/16/14 16:44*	*1*
Nitrobenzene-d5 (Surr)	*60*		*40 - 110*	*05/12/14 07:40*	*05/16/14 16:44*	*1*
Phenol-d5 (Surr)	*69*		*10 - 115*	*05/12/14 07:40*	*05/16/14 16:44*	*1*
Terphenyl-d14 (Surr)	*100*		*50 - 135*	*05/12/14 07:40*	*05/16/14 16:44*	*1*
2,4,6-Tribromophenol (Surr)	*78*		*40 - 125*	*05/12/14 07:40*	*05/16/14 16:44*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.095	U	0.24	0.095	0.046	ug/L		05/16/14 19:07	5
4,4'-DDE	0.095	U	0.24	0.095	0.046	ug/L		05/16/14 19:07	5
4,4'-DDT	0.095	U	0.24	0.095	0.076	ug/L		05/16/14 19:07	5
Aldrin	0.095	U	0.14	0.095	0.039	ug/L		05/16/14 19:07	5
alpha-BHC	0.095	U	0.14	0.095	0.033	ug/L		05/16/14 19:07	5
alpha-Chlordane	0.095	U	0.24	0.095	0.067	ug/L		05/16/14 19:07	5
beta-BHC	0.095	U	0.24	0.095	0.040	ug/L		05/16/14 19:07	5
delta-BHC	0.095	U	0.24	0.095	0.041	ug/L		05/16/14 19:07	5
Dieldrin	0.095	U	0.14	0.095	0.036	ug/L		05/16/14 19:07	5
Endosulfan I	0.095	U	0.24	0.095	0.062	ug/L		05/16/14 19:07	5
Endosulfan II	0.095	U	0.24	0.095	0.057	ug/L		05/16/14 19:07	5
Endosulfan sulfate	0.095	U	0.24	0.095	0.052	ug/L		05/16/14 19:07	5
Endrin	0.095	U	0.24	0.095	0.052	ug/L		05/16/14 19:07	5
Endrin aldehyde	0.095	U	0.24	0.095	0.052	ug/L		05/16/14 19:07	5
Endrin ketone	0.095	U	0.24	0.095	0.037	ug/L		05/16/14 19:07	5
gamma-BHC (Lindane)	0.095	U	0.24	0.095	0.030	ug/L		05/16/14 19:07	5
gamma-Chlordane	0.095	U	0.24	0.095	0.057	ug/L		05/16/14 19:07	5
Heptachlor	0.095	U	0.14	0.095	0.038	ug/L		05/16/14 19:07	5
Heptachlor epoxide	0.095	U	0.14	0.095	0.034	ug/L		05/16/14 19:07	5
Methoxychlor	0.24	U	0.48	0.24	0.15	ug/L		05/16/14 19:07	5
Toxaphene	3.8	U	9.5	3.8	1.5	ug/L		05/16/14 19:07	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*92*		*30 - 135*	*05/10/14 10:23*	*05/16/14 19:07*	*5*
DCB Decachlorobiphenyl	*90*		*30 - 135*	*05/10/14 10:23*	*05/16/14 19:07*	*5*
Tetrachloro-m-xylene	*89*		*25 - 140*	*05/10/14 10:23*	*05/16/14 19:07*	*5*
Tetrachloro-m-xylene	*83*		*25 - 140*	*05/10/14 10:23*	*05/16/14 19:07*	*5*

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		05/13/14 17:45	1

Client Sample ID: FWGSCFMW-004-0440-GW
Date Collected: 05/07/14 09:32
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-15
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		05/19/14 22:04	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 22:04	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 22:04	1
2,4-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		05/19/14 22:04	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		05/19/14 22:04	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		05/19/14 22:04	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		05/19/14 22:04	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.058	ug/L		05/19/14 22:04	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		05/19/14 22:04	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 22:04	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		05/19/14 22:04	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		05/19/14 22:04	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 22:04	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 22:04	1
Nitroglycerin	0.51	U	0.66	0.51	0.34	ug/L		05/19/14 22:04	1
PETN	0.51	U	0.66	0.51	0.31	ug/L		05/19/14 22:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*97*		*79 - 111*	*05/12/14 13:43*	*05/19/14 22:04*	*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		05/15/14 17:01	1

Client Sample ID: FWGSCFMW-004-0440-GF
Date Collected: 05/07/14 09:32
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-16
Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	3.3	ug/L		05/15/14 10:24	1
Chromium	4.0	U	7.0	4.0	1.4	ug/L		05/15/14 10:24	1
Cobalt	4.0	U	7.0	4.0	1.5	ug/L		05/15/14 10:24	1
Lead	5.0	U	10	5.0	1.7	ug/L		05/15/14 10:24	1
Selenium	10	U	15	10	4.0	ug/L		05/15/14 10:24	1
Silver	5.0	U	7.0	5.0	1.7	ug/L		05/15/14 10:24	1
Vanadium	4.0	U	7.0	4.0	1.3	ug/L		05/15/14 10:24	1
Barium	**76**	**J**	200	5.0	2.8	ug/L		05/15/14 10:24	1
Calcium	**150000**		5000	1000	630	ug/L		05/15/14 10:24	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 10:24	1
Magnesium	**59000**		5000	300	120	ug/L		05/15/14 10:24	1
Manganese	**720**		15	5.0	1.8	ug/L		05/15/14 10:24	1
Nickel	5.0	U	40	5.0	2.2	ug/L		05/15/14 10:24	1
Potassium	**2800**	**J**	5000	900	300	ug/L		05/15/14 10:24	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		05/21/14 15:01	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		05/21/14 15:01	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 15:01	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 15:01	1
Iron	100	U	150	100	44	ug/L		05/21/14 15:01	1
Sodium	**10000**		1000	400	160	ug/L		05/21/14 15:01	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		05/21/14 15:01	1
Zinc	50	U	50	50	27	ug/L		05/21/14 15:01	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.12	ug/L		05/15/14 15:23	1

Client Sample ID: FWGEQUIPRINSE1-0443-GW
Date Collected: 05/07/14 13:42
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-17
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 15:06	1
1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 15:06	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.27	ug/L		05/19/14 15:06	1
1,1-Dichloroethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 15:06	1
1,1-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 15:06	1
1,2-Dichloroethane	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 15:06	1
1,2-Dichloroethene, Total	0.25	U	2.0	0.25	0.17	ug/L		05/19/14 15:06	1
1,2-Dichloropropane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 15:06	1
2-Hexanone	0.50	U	10	0.50	0.41	ug/L		05/19/14 15:06	1
Bromochloromethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 15:06	1
Acetone	**12**		10	1.1	1.1	ug/L		05/19/14 15:06	1
Benzene	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 15:06	1
Bromoform	0.64	U	1.0	0.64	0.64	ug/L		05/19/14 15:06	1
Bromomethane	0.50	U	1.0	0.50	0.41	ug/L		05/19/14 15:06	1
Carbon disulfide	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 15:06	1
Carbon tetrachloride	0.25	U	1.0	0.25	0.13	ug/L		05/19/14 15:06	1
Chlorobenzene	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 15:06	1
Chloroethane	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 15:06	1
Chloroform	0.25	U	1.0	0.25	0.16	ug/L		05/19/14 15:06	1
Chloromethane	0.50	U	1.0	0.50	0.30	ug/L		05/19/14 15:06	1
cis-1,2-Dichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 15:06	1
cis-1,3-Dichloropropene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 15:06	1
Bromodichloromethane	0.25	U	1.0	0.25	0.15	ug/L		05/19/14 15:06	1
Ethylbenzene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 15:06	1
1,2-Dibromoethane	0.25	U	1.0	0.25	0.24	ug/L		05/19/14 15:06	1
m-Xylene & p-Xylene	0.50	U	2.0	0.50	0.24	ug/L		05/19/14 15:06	1
2-Butanone (MEK)	**1.5**	**J**	10	0.57	0.57	ug/L		05/19/14 15:06	1
4-Methyl-2-pentanone (MIBK)	0.50	U	10	0.50	0.32	ug/L		05/19/14 15:06	1
Methylene Chloride	0.50	U	1.0	0.50	0.33	ug/L		05/19/14 15:06	1
o-Xylene	0.25	U	1.0	0.25	0.14	ug/L		05/19/14 15:06	1
Styrene	0.25	U	1.0	0.25	0.11	ug/L		05/19/14 15:06	1
Tetrachloroethene	0.50	U	1.0	0.50	0.29	ug/L		05/19/14 15:06	1
Toluene	**0.20**	**J**	1.0	0.25	0.13	ug/L		05/19/14 15:06	1
trans-1,2-Dichloroethene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 15:06	1
trans-1,3-Dichloropropene	0.25	U	1.0	0.25	0.19	ug/L		05/19/14 15:06	1
Trichloroethene	0.25	U	1.0	0.25	0.17	ug/L		05/19/14 15:06	1
Vinyl chloride	0.25	U	1.0	0.25	0.22	ug/L		05/19/14 15:06	1
Xylenes, Total	0.25	U	2.0	0.25	0.14	ug/L		05/19/14 15:06	1
Dibromochloromethane	0.25	U	1.0	0.25	0.18	ug/L		05/19/14 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 120*		*05/19/14 15:06*	*1*
4-Bromofluorobenzene (Surr)	*96*		*75 - 120*		*05/19/14 15:06*	*1*
Toluene-d8 (Surr)	*104*		*85 - 120*		*05/19/14 15:06*	*1*
Dibromofluoromethane (Surr)	*90*		*85 - 115*		*05/19/14 15:06*	*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		05/16/14 15:52	1
Acenaphthylene	0.095	U	0.19	0.095	0.046	ug/L		05/16/14 15:52	1

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Lab Sample ID: 240-37114-17
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		05/16/14 15:52	1
Benzo[a]anthracene	0.095	U	0.19	0.095	0.028	ug/L		05/16/14 15:52	1
Benzo[a]pyrene	0.095	U	0.19	0.095	0.049	ug/L		05/16/14 15:52	1
Benzo[b]fluoranthene	0.095	U	0.19	0.095	0.038	ug/L		05/16/14 15:52	1
Benzo[g,h,i]perylene	0.095	U	0.19	0.095	0.044	ug/L		05/16/14 15:52	1
Benzoic acid	19	U	24	19	9.5	ug/L		05/16/14 15:52	1
Benzo[k]fluoranthene	0.095	U	0.19	0.095	0.043	ug/L		05/16/14 15:52	1
Benzyl alcohol	0.48	U	4.8	0.48	0.36	ug/L		05/16/14 15:52	1
Bis(2-chloroethoxy)methane	0.48	U	0.95	0.48	0.30	ug/L		05/16/14 15:52	1
Bis(2-chloroethyl)ether	0.095	U	0.95	0.095	0.095	ug/L		05/16/14 15:52	1
Bis(2-ethylhexyl) phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/16/14 15:52	1
4-Bromophenyl phenyl ether	0.48	U	1.9	0.48	0.21	ug/L		05/16/14 15:52	1
Butyl benzyl phthalate	0.48	U	4.8	0.48	0.25	ug/L		05/16/14 15:52	1
Carbazole	0.48	U	0.95	0.48	0.27	ug/L		05/16/14 15:52	1
4-Chloroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/16/14 15:52	1
4-Chloro-3-methylphenol	0.48	U	1.9	0.48	0.20	ug/L		05/16/14 15:52	1
2-Chloronaphthalene	0.48	U	0.95	0.48	0.095	ug/L		05/16/14 15:52	1
2-Chlorophenol	0.48	U	0.95	0.48	0.28	ug/L		05/16/14 15:52	1
4-Chlorophenyl phenyl ether	0.48	U	1.9	0.48	0.29	ug/L		05/16/14 15:52	1
Chrysene	0.095	U	0.19	0.095	0.048	ug/L		05/16/14 15:52	1
Dibenz(a,h)anthracene	0.095	U	0.19	0.095	0.042	ug/L		05/16/14 15:52	1
Dibenzofuran	0.095	U	0.95	0.095	0.019	ug/L		05/16/14 15:52	1
1,2-Dichlorobenzene	0.48	U	0.95	0.48	0.28	ug/L		05/16/14 15:52	1
1,3-Dichlorobenzene	0.48	U	0.95	0.48	0.22	ug/L		05/16/14 15:52	1
1,4-Dichlorobenzene	0.48	U	0.95	0.48	0.32	ug/L		05/16/14 15:52	1
3,3'-Dichlorobenzidine	0.95	U	4.8	0.95	0.35	ug/L		05/16/14 15:52	1
2,4-Dichlorophenol	0.48	U	1.9	0.48	0.18	ug/L		05/16/14 15:52	1
Diethyl phthalate	**3.2**		1.9	0.95	0.57	ug/L		05/16/14 15:52	1
2,4-Dimethylphenol	0.48	U	1.9	0.48	0.24	ug/L		05/16/14 15:52	1
Dimethyl phthalate	0.48	U	1.9	0.48	0.28	ug/L		05/16/14 15:52	1
Di-n-butyl phthalate	4.8	U	4.8	4.8	1.6	ug/L		05/16/14 15:52	1
4,6-Dinitro-2-methylphenol	3.8	U	4.8	3.8	2.3	ug/L		05/16/14 15:52	1
2,4-Dinitrophenol	0.95	U	4.8	0.95	0.30	ug/L		05/16/14 15:52	1
Di-n-octyl phthalate	0.48	U	1.9	0.48	0.22	ug/L		05/16/14 15:52	1
Fluoranthene	0.095	U	0.19	0.095	0.042	ug/L		05/16/14 15:52	1
Fluorene	0.095	U	0.19	0.095	0.039	ug/L		05/16/14 15:52	1
Hexachlorobenzene	0.095	U	0.19	0.095	0.081	ug/L		05/16/14 15:52	1
Hexachlorobutadiene	0.48	U	0.95	0.48	0.26	ug/L		05/16/14 15:52	1
Hexachlorocyclopentadiene	0.48	U	9.5	0.48	0.23	ug/L		05/16/14 15:52	1
Hexachloroethane	0.48	U	0.95	0.48	0.18	ug/L		05/16/14 15:52	1
Indeno[1,2,3-cd]pyrene	0.095	U	0.19	0.095	0.041	ug/L		05/16/14 15:52	1
Isophorone	0.48	U	0.95	0.48	0.26	ug/L		05/16/14 15:52	1
2-Methylnaphthalene	0.095	U	0.19	0.095	0.086	ug/L		05/16/14 15:52	1
2-Methylphenol	0.48	U	0.95	0.48	0.16	ug/L		05/16/14 15:52	1
3 & 4 Methylphenol	0.95	U	1.9	0.95	0.76	ug/L		05/16/14 15:52	1
Naphthalene	0.095	U	0.19	0.095	0.060	ug/L		05/16/14 15:52	1
2-Nitroaniline	0.48	U	1.9	0.48	0.20	ug/L		05/16/14 15:52	1
3-Nitroaniline	0.48	U	1.9	0.48	0.27	ug/L		05/16/14 15:52	1
4-Nitroaniline	0.48	U	1.9	0.48	0.21	ug/L		05/16/14 15:52	1

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Date Collected: 05/07/14 13:42
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Lab Sample ID: 240-37114-17
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		05/16/14 15:52	1
4-Nitrophenol	3.8	U	4.8	3.8	0.28	ug/L		05/16/14 15:52	1
N-Nitrosodi-n-propylamine	0.48	U	0.95	0.48	0.23	ug/L		05/16/14 15:52	1
N-Nitrosodiphenylamine	0.48	U	0.95	0.48	0.30	ug/L		05/16/14 15:52	1
2,2'-oxybis[1-chloropropane]	0.48	U	0.95	0.48	0.38	ug/L		05/16/14 15:52	1
Pentachlorophenol	0.95	U	4.8	0.95	0.26	ug/L		05/16/14 15:52	1
Phenanthrene	0.095	U	0.19	0.095	0.059	ug/L		05/16/14 15:52	1
Phenol	0.95	U	0.95	0.95	0.57	ug/L		05/16/14 15:52	1
Pyrene	0.095	U	0.19	0.095	0.040	ug/L		05/16/14 15:52	1
1,2,4-Trichlorobenzene	0.48	U	0.95	0.48	0.27	ug/L		05/16/14 15:52	1
2,4,5-Trichlorophenol	0.48	U	4.8	0.48	0.29	ug/L		05/16/14 15:52	1
2,4,6-Trichlorophenol	0.48	U	4.8	0.48	0.23	ug/L		05/16/14 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*50 - 110*	*05/12/14 07:40*	*05/16/14 15:52*	*1*
2-Fluorophenol (Surr)	*82*		*20 - 110*	*05/12/14 07:40*	*05/16/14 15:52*	*1*
Nitrobenzene-d5 (Surr)	*80*		*40 - 110*	*05/12/14 07:40*	*05/16/14 15:52*	*1*
Phenol-d5 (Surr)	*88*		*10 - 115*	*05/12/14 07:40*	*05/16/14 15:52*	*1*
Terphenyl-d14 (Surr)	*111*		*50 - 135*	*05/12/14 07:40*	*05/16/14 15:52*	*1*
2,4,6-Tribromophenol (Surr)	*92*		*40 - 125*	*05/12/14 07:40*	*05/16/14 15:52*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.020	U	0.050	0.020	0.0096	ug/L		05/20/14 17:36	1
4,4'-DDE	0.020	U	0.050	0.020	0.0097	ug/L		05/20/14 17:36	1
4,4'-DDT	0.020	U	0.050	0.020	0.016	ug/L		05/20/14 17:36	1
Aldrin	0.020	U	0.030	0.020	0.0082	ug/L		05/20/14 17:36	1
alpha-BHC	0.020	U	0.030	0.020	0.0070	ug/L		05/20/14 17:36	1
alpha-Chlordane	0.020	U	0.050	0.020	0.014	ug/L		05/20/14 17:36	1
beta-BHC	0.020	U	0.050	0.020	0.0084	ug/L		05/20/14 17:36	1
delta-BHC	0.020	U	0.050	0.020	0.0087	ug/L		05/20/14 17:36	1
Dieldrin	0.020	U	0.030	0.020	0.0075	ug/L		05/20/14 17:36	1
Endosulfan I	0.020	U Q	0.050	0.020	0.013	ug/L		05/20/14 17:36	1
Endosulfan II	0.020	U	0.050	0.020	0.012	ug/L		05/20/14 17:36	1
Endosulfan sulfate	0.020	U	0.050	0.020	0.011	ug/L		05/20/14 17:36	1
Endrin	0.020	U	0.050	0.020	0.011	ug/L		05/20/14 17:36	1
Endrin aldehyde	0.020	U	0.050	0.020	0.011	ug/L		05/20/14 17:36	1
Endrin ketone	0.020	U	0.050	0.020	0.0078	ug/L		05/20/14 17:36	1
gamma-BHC (Lindane)	0.020	U	0.050	0.020	0.0064	ug/L		05/20/14 17:36	1
gamma-Chlordane	0.020	U	0.050	0.020	0.012	ug/L		05/20/14 17:36	1
Heptachlor	0.020	U	0.030	0.020	0.0080	ug/L		05/20/14 17:36	1
Heptachlor epoxide	0.020	U	0.030	0.020	0.0071	ug/L		05/20/14 17:36	1
Methoxychlor	0.050	U	0.10	0.050	0.032	ug/L		05/20/14 17:36	1
Toxaphene	0.80	U	2.0	0.80	0.32	ug/L		05/20/14 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*82*		*30 - 135*	*05/14/14 09:10*	*05/20/14 17:36*	*1*
DCB Decachlorobiphenyl	*82*		*30 - 135*	*05/14/14 09:10*	*05/20/14 17:36*	*1*
Tetrachloro-m-xylene	*80*		*25 - 140*	*05/14/14 09:10*	*05/20/14 17:36*	*1*
Tetrachloro-m-xylene	*75*		*25 - 140*	*05/14/14 09:10*	*05/20/14 17:36*	*1*

Client Sample ID: FWGEQUIPRINSE1-0443-GW
Date Collected: 05/07/14 13:42
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Lab Sample ID: 240-37114-17
Matrix: Water

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aroclor-1016	0.20	U H	0.50	0.20	0.17	ug/L		05/22/14 10:13	1
Aroclor-1221	0.20	U H	0.50	0.20	0.13	ug/L		05/22/14 10:13	1
Aroclor-1232	0.20	U H	0.50	0.20	0.16	ug/L		05/22/14 10:13	1
Aroclor-1242	0.40	U H	0.50	0.40	0.22	ug/L		05/22/14 10:13	1
Aroclor-1248	0.20	U H	0.50	0.20	0.099	ug/L		05/22/14 10:13	1
Aroclor-1254	0.20	U H	0.50	0.20	0.16	ug/L		05/22/14 10:13	1
Aroclor-1260	0.20	U H	0.50	0.20	0.17	ug/L		05/22/14 10:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*74*		*40 - 140*	*05/20/14 07:42*	*05/22/14 10:13*	*1*
Tetrachloro-m-xylene	*72*		*40 - 140*	*05/20/14 07:42*	*05/22/14 10:13*	*1*
DCB Decachlorobiphenyl	*86*		*40 - 135*	*05/20/14 07:42*	*05/22/14 10:13*	*1*
DCB Decachlorobiphenyl	*81*		*40 - 135*	*05/20/14 07:42*	*05/22/14 10:13*	*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		05/19/14 14:02	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		05/19/14 14:47	1
1,3-Dinitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 14:47	1
2,4,6-Trinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 14:47	1
2,4-Dinitrotoluene	0.10	U M	0.13	0.10	0.051	ug/L		05/19/14 14:47	1
2,6-Dinitrotoluene	0.10	U	0.13	0.10	0.051	ug/L		05/19/14 14:47	1
2-Amino-4,6-dinitrotoluene	0.10	U	0.15	0.10	0.015	ug/L		05/19/14 14:47	1
2-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		05/19/14 14:47	1
3-Nitrotoluene	0.10	U	0.51	0.10	0.059	ug/L		05/19/14 14:47	1
4-Nitrotoluene	0.10	U	0.51	0.10	0.090	ug/L		05/19/14 14:47	1
4-Amino-2,6-dinitrotoluene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 14:47	1
HMX	0.051	U	0.15	0.051	0.037	ug/L		05/19/14 14:47	1
RDX	0.051	U	0.15	0.051	0.037	ug/L		05/19/14 14:47	1
Nitrobenzene	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 14:47	1
Tetryl	0.10	U	0.15	0.10	0.051	ug/L		05/19/14 14:47	1
Nitroglycerin	0.51	U	0.67	0.51	0.34	ug/L		05/19/14 14:47	1
PETN	0.51	U	0.67	0.51	0.31	ug/L		05/19/14 14:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
3,4-Dinitrotoluene	*94*		*79 - 111*	*05/13/14 13:31*	*05/16/14 22:23*	*1*
3,4-Dinitrotoluene	*89*		*79 - 111*	*05/13/14 13:31*	*05/19/14 14:47*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	10	U	10	10	3.3	ug/L		05/15/14 10:28	1
Chromium	4.0	U	7.0	4.0	1.4	ug/L		05/15/14 10:28	1
Cobalt	4.0	U	7.0	4.0	1.5	ug/L		05/15/14 10:28	1
Lead	5.0	U	10	5.0	1.7	ug/L		05/15/14 10:28	1
Selenium	10	U	15	10	4.0	ug/L		05/15/14 10:28	1
Silver	5.0	U	7.0	5.0	1.7	ug/L		05/15/14 10:28	1
Vanadium	4.0	U	7.0	4.0	1.3	ug/L		05/15/14 10:28	1
Barium	5.0	U	200	5.0	2.8	ug/L		05/15/14 10:28	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH)

TestAmerica Job ID: 240-37114-1

Client Sample ID: FWGEQUIPRINSE1-0443-GW
Date Collected: 05/07/14 13:42
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37114-17
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	630	ug/L		05/15/14 10:28	1
Copper	10	U	25	10	4.4	ug/L		05/15/14 10:28	1
Magnesium	300	U	5000	300	120	ug/L		05/15/14 10:28	1
Manganese	5.0	U	15	5.0	1.8	ug/L		05/15/14 10:28	1
Nickel	5.0	U	40	5.0	2.2	ug/L		05/15/14 10:28	1
Potassium	900	U	5000	900	300	ug/L		05/15/14 10:28	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		05/21/14 15:08	1
Antimony	1.0	U	2.0	1.0	0.33	ug/L		05/21/14 15:08	1
Beryllium	1.0	U	1.0	1.0	0.50	ug/L		05/21/14 15:08	1
Cadmium	1.0	U	2.0	1.0	0.40	ug/L		05/21/14 15:08	1
Iron	100	U	150	100	44	ug/L		05/21/14 15:08	1
Sodium	400	U	1000	400	160	ug/L		05/21/14 15:08	1
Thallium	1.5	U	2.0	1.5	0.79	ug/L		05/21/14 15:08	1
Zinc	50	U	50	50	27	ug/L		05/21/14 15:08	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hg	0.20	U	0.20	0.20	0.12	ug/L		05/15/14 15:25	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0032	mg/L		05/20/14 10:33	1
Nitrocellulose	1.0	U	2.0	1.0	0.48	mg/L		05/15/14 17:03	1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-37114 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: NORTH CANTON

Regulatory program: ☐ DW ☐ NPDES ☒ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: EQM	Client Project Manager: JOHN MILLER	Site Contact: ERIK CORBIN	Lab Contact: MARK LOEB	COC No: CAL050714
Address: 1800 CARILLON BLVD	Telephone: 513 ~~619~~ 7330	Telephone: 513 742 7049	Telephone: 330.497.9396	1 of 1 COCs
City/State/Zip: CINCINNATI OH 45240	Email: ecorbin@eqm.com	Analysis Turnaround Time (in BUS days)	Analyses	For Lab use only
Phone: 513.825.7500		TAT if different from below ____		Walk-in client: ☐
Project Name: Former RVAAP	Method of Shipment/Carrier: LAB PICKUP	Per SOW: ☒ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab pickup: ☐
Project Number: 30174.0016.01.11.1	Shipping/Tracking No: N/A			Lab shipping: ☐
PO#				Job SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite (C)/Grab (G)	VOC 8260	SVOC 8270	SVOC 8270	Pesticides 8081	PCB 8082	EXPLO 8330	Propellants	Cyanide 9012	Metals 6010/6020/7470	Sample Specific Notes / Special Instructions: Cooler ID#
FWGTeam2-Trip	5/7/14	0730		X						X							X									E-120
FWGSCFMW-004-0440-GW		0932		X						X3			7						X	X		X	X			C-111
FWGSCFMW-004-0440-GF		1		X					1																X	filtered C-111
FWGEQUIPRinse1-0443-GW		1342		X					1	3	1		9				X	X		X	X	X	X	X	X	E-120
	CAO	5/8/14																								

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

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

Special Instructions/QC Requirements & Comments:

All VOAs in Cooler E120

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	EQ	5/8/14 1400	TC	TestAmerica	5-8-14 1400
Relinquished by: TC	Company: TestAmerica	Date/Time: 5-8-14 1450	Received by:	Company: TAC	Date/Time: 5/8/14 1450
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: North Canton

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other DOD QSM / NJ/NJS 5/7/14

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: EQM	Client Project Manager: John Miller	Site Contact: A. Dragotta	Lab Contact: Mark Loeb	COC No: 56010
Address: 1800 Carillon Blvd	Telephone: 513 825-7500	Telephone: 513-825-7500	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Cincinnati OHIO 45240	Email: adragotta@eqm.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 513-825-7500		TAT if different from below 7d SW ☒ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: RVAAP (01)	Method of Shipment/Carrier: Lab Pickup			
Project Number: C30174.0016.0011.1	Shipping/Tracking No: N/A			Job/SDG No:
PO #				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite-C / Grab-G	VOA 8260	SVOC 1 8270	Pesticides 8081	PCB 8082	Explosive/Propellants	Cyanide 9012	Metals 6010/6020/7470	SVOC 1 8270	Sample Specific Notes / Special Instructions:
FWGTeam3 - TRIP	05/7/14	0730		X						2					N	G									TAO
FWGLL3MW-246-0439-GW		0943		X							1		9		N	G	X	X	X	X	X	X			STIS
FWGLL3MW-246-0439-GF		↓		X					1						Y	G							X		↓
FWGLL3MW-DUP1-0442-GW		1043		X							1		9		N	G	X	X	X	X	X	X			TAO
FWGLL3MW-DUP1-0442-GF		↓		X					1						Y	G							X		↓
FWGLL2MW-271-0438-GW		1259		X					3X (HNO3 5/7/14)			NaOH 5/7/14	9		N	G	X	X	X	X	X	X			E115, ID27, M23 MS/MSD
FWGLL2MW-271-0438-GF		↓		X					X3						Y	G							X		↓
FWGLL1MW-064C-0436-GW		1637		X									7		N	G			X		X			X	8
FWGLL1MW-064C-0436-GF		↓		X					1						Y	G							X		8
								HCl 5/7/14																	

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

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

Special Instructions/QC Requirements & Comments: Metals field filtered All VOAs in cooler TAO MS/MSD on sample FWGLL2MW-271-0438-GW/GF

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EQ	5/8/14 1400	RC	TestAmerica	5-8-14-1400
Relinquished by: RC	Company: TestAmerica	Date/Time: 5-8-14-1650	Received by: [signature]	Company: TAC	Date/Time: 5/8/14 1450
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Chain of Custody Record

TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: North Canton

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other ~~DOD QSM~~ WPLS

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: EQM	Client Project Manager: John Miller	Site Contact: A. Dragotta	Lab Contact: Mark Loeb	COC No: 56011
Address: 1800 Carillon Blvd	Telephone: 513-825-7500	Telephone: 513-825-7500	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Cincinnati, Ohio 45240	Email: adragotta@eqm.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 513-825-7500		TAT if different from below: ☒ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (per SOW)		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: RVAAP (OH)	Method of Shipment/Carrier: Lab Pickup			
Project Number: 030174.0016.061.11.1	Shipping/Tracking No: N/A			Job/SDG No:
PO#				

Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	VOC 8260	SVOC 8270	Pest 8081	PCB 8082	Explosive/Propell	Cyanide 9012	Metals 6010/6020 7470	Sample Specific Notes / Special Instructions: Cooler ID
FWG Team 3-TRIP 050814	05/8/14	0800		X						2							X							465
FWGLL1mw-088-0437-GW	↓	1029		X						3	1		9				X	X	X	X	X	X		465
FWGLL1mw-088-0437-GF	↓	1029		X					1														X	↓
FWGEQUIPRINSE2-0444-GW	↓	1300		X					1	3	1		9				X	X	X	X	X	X	X	114

AD 5/8/14

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

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

Special Instructions/QC Requirements & Comments: Sample collected near pickup time may not meet temp requirements. VOAs in cooler 465. All metals for LL1mw-088-0437-GF field filtered, Rinse is not.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EQ	5/8/14 1400	[signature]	TestAmerica	5-8-14-1400
[signature]	TestAmerica	5-8-14-1450	[signature]	TAC	5/8/14 1450
			Received in Laboratory by:		

TAL 0018-1 (04/10)

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 37114

Client EQM Site Name

Cooler unpacked by:

Cooler Received on 5/8/14 Opened on 5/8/14

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

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 +0 °C) Observed Cooler Temp. °C	Corrected Cooler Temp. °C	
IR GUN# 4	(CF -1 °C) Observed Cooler Temp. °C	Corrected Cooler Temp. °C	☒ See Multiple Cooler Form
IR GUN# 5	(CF +1 °C) Observed Cooler Temp. °C	Corrected Cooler Temp. °C	
IR GUN# 8	(CF +1 °C) Observed Cooler Temp. °C	Corrected Cooler Temp. °C	

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1EA	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. Did all bottles arrive in good condition (Unbroken)?	Yes	No
7. Could all bottle labels be reconciled with the COC?	Yes	No
8. Were correct bottle(s) used for the test(s) indicated?	Yes	No
9. Sufficient quantity received to perform indicated analyses?	Yes	No
10. Were sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC391902
11. Were VOAs on the COC?	Yes	No
12. Were air bubbles >6 mm in any VOA vials?	Yes	No NA
13. Was a trip blank present in the cooler(s)?	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 #: 37114

Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
client	5	3.1	4.1	ice
client	5	3.8	4.8	
* client	5	4.6	5.6	
client		2.4	3.4	
client		4.8	5.8	
client		2.8	3.8	
client		3.0	4.0	
client		2.4	3.4	
client		4.2	5.2	
ELO		2.2	3.2	
client		1.4	2.4	
client		2.4	3.4	

Appendix I

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8260B
Data Reviewer/Date: Angye Dragotta/August 18, 2014

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 A3UX9–4/3/14	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, carbon disulfide, trans-1,2-dichloroethene 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 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8260B
Data Reviewer/Date: Angye Dragotta/August 18, 2014

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			5/19/14 @ 1005 and 1529	
10. Were the QC/MRL recoveries 70-130%		X		• The opening MRL analyzed 5/19/14 @ 1005 recovered above control limits of 70-130% for vinyl chloride at 137%. • The closing MRL analyzed 5/19/14 @ 1529 recovered above control limits of 70-130% for bromomethane at 138% and below control limits of 70-130% for 2-hexanone at 67%, bromoform at 69%, carbon disulfide at 55%, carbon tetrachloride at 63%, 2-butanone at 66% and MIBK at 67%. A verification check sample was analyzed following the closing MRL with detected results for the outlier analytes. The 2-hexanone, bromoform, carbon disulfide, carbon tetrachloride, 2-butanone and MIBK results for samples FWGTEAM3-TRIP050814, FWGLL1MW-088-0437-GW, FWGEQUIPRINSE2-0444-GW, FWGTEAM3-TRIP, FWGLL3MW-246-0439-GW, FWGLL3MW-DUP1-0442-GW, FWGLL2MW-271-0438-GW, FWGTEAM2-TRIP and FWGEQUIPRINSE1-0443-GW were qualified as estimated, "J/ UJ". No qualifications were required for the bromomethane or vinyl chloride outliers as there were no detected concentrations of bromomethane or vinyl chloride reported for the bracketed field samples.	Louisville Supplement to the DOD QSM
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			4/3/14 @2204	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			5/19/14 @0907	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 $\leq$ 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	X				QSM Table F-4

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?					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) collected and analyzed?	**X**				
16a. Were target analytes detected in the field blanks?	**X**			Checked by ADR. Chloroform was detected in FWGTEAM3-Trip050814 at 0.35µg/L, FWGTEAM3-Trip at 0.29µg/L and at 0.34µg/L in sample FWGTEAM2-Trip. FWGEQUIPRINSE2-0444-GW had acetone detected at 14µg/L, carbon disulfide at 0.69µg/L, 2-butanone at 3.6µg/L and toluene at 0.22µg/L. FWGEQUIPRINSE1-0443-GW had acetone detected at 12µg/L, 2-butanone at 1.5µg/L and toluene at 0.20µg/L. There were no detected acetone, chloroform, carbon disulfide, 2-butanone or toluene concentrations reported for the associated field samples, so no qualifications were required.	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**				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**				QSM Table F-4,
19a. Were the field duplicates RPDs within ±30%?	**X**				QSM Table F-4, RPD >30=J Parent sample only

Project Number: 030174.0016
Sample Event: May 2014
Data Reviewer/Date: Angye Dragotta/August 18, 2014

SDG: 240-37114, rev1
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
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:

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 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8270
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

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 A4HP9–5/28/14 Instrument A4HP7–5/14/14	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			Instrument A4HP7; 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol used a linear fit. Instrument A4HP9; Benzoic acid and 4,6-dinitro-2-methylphenol 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

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8270
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
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**			Instrument A4HP7–5/16/14 @ 1108, 1710 Instrument A4HP9–5/30/14 @0853, 1148	Louisville Supplement to the DOD QSM
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	**X**			Instrument A4HP7–5/14/14 @ 2018 Instrument A4HP9–5/28/14 @1644	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**			Instrument A4HP7–5/16/14 @ 0956 Instrument A4HP9–5/30/14 @0823	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**			FWGEQUIPRINSE2-0444-GW and FWGEQUIPRINSE1-0443-GW	
16a. Were target analytes detected in the field blank?	**X**			• FWGEQUIPRINSE2-0444-GW had diethylphthalate detected at 2.7 µg/L, naphthalene at 0.14 µg/L and phenol at 0.73 µg/L. • FWGEQUIPRINSE1-0443-GW had diethylphthalate detected at 3.2 µg/L.	QSM Table F-4 <5/10X =B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8270
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				The naphthalene result for sample FWGLL1mw-088-0437-GW and the diethyl phthalate result for sample FWGLL2mw-271-0438-GW were qualified, "B", as the reported concentrations were less than 5x the associated 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-6 of the DoD QSM?		**X**		ADR checked section; Hexachlorocyclopentadiene recovered below control limits of 10-115% in LCS 240-130172 at 9%. The hexachlorocyclopentadiene results for the associated samples (FWGLl1mw-088-0437-GW, FWGLL3mw-246-0439-GW and FWGLL3mw-DUP1-0442-GW) were qualified as estimated, "UJ".	QSM Table F-4, Table G-6 J/UJ
18. Was a MS/MSD prepared with each batch?	**X**				
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**				
19a. Were the field duplicates RPDs within ±50%?		**X**		The field duplicate analyzed on sample FWGLL3mw-246-0439-GW, had an RPD above control limits of 50% for naphthalene at 200%. The naphthalene result for sample FWGLL3mw-246-0439-GW was qualified as estimated, "J".	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:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: May 2014
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

SDG: 240-37114, rev1
Analysis: SW846 8270

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	0.050
Hexachlorocyclopentadiene	0.050
2,4-Dinitrophenol	0.050
4-Nitrophenol	0.050

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: May 2014
Data Reviewer/Date: Angela Dragotta / June 13, 2014

SDG: 240-37114, rev1
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			Instrument A2HP3 4/30/14 & 5/20/14, 4/30/14 (tox)	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			Only the primary column recoveries were evaluated as there were no detected concentrations reported requiring confirmation.	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			A2HP3 5/1/14 @0118 and 5/20/14 @ 1544 4/30/14 @ 2007 (tox)	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			A2HP3; 5/16/14 @ 1403, 1846 and 2139. 5/16/14 (tox) @ 1342 and 2118. 5/20/14 @ 2017 and tox on 5/20/14 @1607 and 1954.	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> ½ the RL?		X			QSM Table F-2 <5x=B
15. Was a field blank collected and analyzed?	X				
16. Were target analytes detected in the field blank		X			QSM Table F-2

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: May 2014
Data Reviewer/Date: Angela Dragotta / June 13, 2014

SDG: 240-37114, rev1
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
analyses >1/2 the MRL?					<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. Endosulfan I recovered below control limits of 50-110% at 46%. The endosulfan I sample result associated with the outlier LCS, FEGEQUIPRINSE1-0443-GW, was qualified as estimated, "UJ".	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				
21. Were MS/MSD recoveries and RPD within limits specified in QSM Table G-14?	X			The matrix spike analysis performed on sample FWGLL2mw-271-0438-GW recovered below control limits of 65-125% for alpha-chlordane in both the MS and MSD at 62% and 53%, respectively. The MSD recovered below control limits of 50-110% for endosulfan I at 40% and for endrin ketone at 68% (control limits 75-125%). The alpha-chlordane, endrin ketone and endosulfan I results for sample FWGLL2mw-271-0438-GW were qualified as estimated, "UJ".	QSM Table F-2 Pj with >UL=J; <LL=J/UJ/R
22. Were surrogate recoveries as specified in QSM table G-3?		X		Decachlorobiphenyl recovered below control limits of 30-135% in sample FWGLL1mw-088-0437-GW at 21%. The results for sample FWGLL1mw-088-0437-GW were qualified as estimated, "UJ".	QSM Table F-2 >LL=J; <LL=UJ/J/R
23. Was a field duplicate analyzed? Were the RPDs ≤50%?	X			Checked by ADR.	RPD >50=J parent sample only
24. Were all positive results verified by a second column confirmation? Were the RPD's ≤ 40?			X	There were no detected concentrations greater than the LOQ, so no evaluation was made.	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

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8082
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

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**		Samples FWGEQUIPRINSE1-0443-GW was extracted outside of hold but within two times hold. The aroclor results for samples FWGEQUIPRINSE1-0443-GW was qualified as estimated, "UJ".	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 1/28/14, 5/20/14 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**				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**			1/28/14, 5/21/14	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**			5/13/14@1400, 1701 and 5/22/14@0744, 1102	QSM Table F-2

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8082
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
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
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				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			The matrix spike and spike duplicate analyzed on sample FWGLL2mw-271-0438-GW had an MS/MSD RPD above control limits of 30% for aroclor 1260 at 53%. No qualification of the data was required as there were no detected aroclor 1260 results reported for sample FWGLL2mw-271-0438-GW.	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. The surrogate, DCB, recovered below control limits of 40-140% for sample FWGLL1mw-088-437-GW at 21%. The aroclor results for sample FWGLL1mw-088-437-GW were qualified as estimated, "UJ".	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 for analysis with this set of samples.	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:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8260B
Data Reviewer/Date: Angye Dragotta/August 18, 2014

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 A3UX9–4/3/14	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, carbon disulfide, trans-1,2-dichloroethene 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 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8260B
Data Reviewer/Date: Angye Dragotta/August 18, 2014

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			5/19/14 @ 1005 and 1529	
10. Were the QC/MRL recoveries 70-130%		X		• The opening MRL analyzed 5/19/14 @ 1005 recovered above control limits of 70-130% for vinyl chloride at 137%. • The closing MRL analyzed 5/19/14 @ 1529 recovered above control limits of 70-130% for bromomethane at 138% and below control limits of 70-130% for 2-hexanone at 67%, bromoform at 69%, carbon disulfide at 55%, carbon tetrachloride at 63%, 2-butanone at 66% and MIBK at 67%. A verification check sample was analyzed following the closing MRL with detected results for the outlier analytes. The 2-hexanone, bromoform, carbon disulfide, carbon tetrachloride, 2-butanone and MIBK results for samples FWGTEAM3-TRIP050814, FWGLL1MW-088-0437-GW, FWGEQUIPRINSE2-0444-GW, FWGTEAM3-TRIP, FWGLL3MW-246-0439-GW, FWGLL3MW-DUP1-0442-GW, FWGLL2MW-271-0438-GW, FWGTEAM2-TRIP and FWGEQUIPRINSE1-0443-GW were qualified as estimated, "J/ UJ". No qualifications were required for the bromomethane or vinyl chloride outliers as there were no detected concentrations of bromomethane or vinyl chloride reported for the bracketed field samples.	Louisville Supplement to the DOD QSM
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	X			4/3/14 @2204	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			5/19/14 @0907	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 $\leq$ 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	X				QSM Table F-4

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8260B
Data Reviewer/Date: Angye Dragotta/August 18, 2014

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
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?					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) collected and analyzed?	**X**				
16a. Were target analytes detected in the field blanks?	**X**			Checked by ADR. Chloroform was detected in FWGTEAM3-Trip050814 at 0.35µg/L, FWGTEAM3-Trip at 0.29µg/L and at 0.34µg/L in sample FWGTEAM2-Trip. FWGEQUIPRINSE2-0444-GW had acetone detected at 14µg/L, carbon disulfide at 0.69µg/L, 2-butanone at 3.6µg/L and toluene at 0.22µg/L. FWGEQUIPRINSE1-0443-GW had acetone detected at 12µg/L, 2-butanone at 1.5µg/L and toluene at 0.20µg/L. There were no detected acetone, chloroform, carbon disulfide, 2-butanone or toluene concentrations reported for the associated field samples, so no qualifications were required.	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**				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**				QSM Table F-4,
19a. Were the field duplicates RPDs within ±30%?	**X**				QSM Table F-4, RPD >30=J Parent sample only

Project Number: 030174.0016
Sample Event: May 2014
Data Reviewer/Date: Angye Dragotta/August 18, 2014

SDG: 240-37114, rev1
Analysis: SW846 8260B

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
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:

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 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8270
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

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 A4HP9–5/28/14 Instrument A4HP7–5/14/14	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			Instrument A4HP7; 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol used a linear fit. Instrument A4HP9; Benzoic acid and 4,6-dinitro-2-methylphenol 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

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8270
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
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**			Instrument A4HP7–5/16/14 @ 1108, 1710 Instrument A4HP9–5/30/14 @0853, 1148	Louisville Supplement to the DOD QSM
11. Was a second source verification (ICV) analyzed? Were results 80-120%?	**X**			Instrument A4HP7–5/14/14 @ 2018 Instrument A4HP9–5/28/14 @1644	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**			Instrument A4HP7–5/16/14 @ 0956 Instrument A4HP9–5/30/14 @0823	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**			FWGEQUIPRINSE2-0444-GW and FWGEQUIPRINSE1-0443-GW	
16a. Were target analytes detected in the field blank?	**X**			• FWGEQUIPRINSE2-0444-GW had diethylphthalate detected at 2.7 µg/L, naphthalene at 0.14 µg/L and phenol at 0.73 µg/L. • FWGEQUIPRINSE1-0443-GW had diethylphthalate detected at 3.2 µg/L.	QSM Table F-4 <5/10X =B

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8270
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
				The naphthalene result for sample FWGLL1mw-088-0437-GW and the diethyl phthalate result for sample FWGLL2mw-271-0438-GW were qualified, "B", as the reported concentrations were less than 5x the associated 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-6 of the DoD QSM?		**X**		ADR checked section; Hexachlorocyclopentadiene recovered below control limits of 10-115% in LCS 240-130172 at 9%. The hexachlorocyclopentadiene results for the associated samples (FWGLl1mw-088-0437-GW, FWGLL3mw-246-0439-GW and FWGLL3mw-DUP1-0442-GW) were qualified as estimated, "UJ".	QSM Table F-4, Table G-6 J/UJ
18. Was a MS/MSD prepared with each batch?	**X**				
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**				
19a. Were the field duplicates RPDs within ±50%?		**X**		The field duplicate analyzed on sample FWGLL3mw-246-0439-GW, had an RPD above control limits of 50% for naphthalene at 200%. The naphthalene result for sample FWGLL3mw-246-0439-GW was qualified as estimated, "J".	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:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: May 2014
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

SDG: 240-37114, rev1
Analysis: SW846 8270

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	0.050
Hexachlorocyclopentadiene	0.050
2,4-Dinitrophenol	0.050
4-Nitrophenol	0.050

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: May 2014
Data Reviewer/Date: Angela Dragotta / June 13, 2014

SDG: 240-37114, rev1
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			Instrument A2HP3 4/30/14 & 5/20/14, 4/30/14 (tox)	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			Only the primary column recoveries were evaluated as there were no detected concentrations reported requiring confirmation.	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			A2HP3 5/1/14 @0118 and 5/20/14 @ 1544 4/30/14 @ 2007 (tox)	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			A2HP3; 5/16/14 @ 1403, 1846 and 2139. 5/16/14 (tox) @ 1342 and 2118. 5/20/14 @ 2017 and tox on 5/20/14 @1607 and 1954.	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> ½ the RL?		X			QSM Table F-2 <5x=B
15. Was a field blank collected and analyzed?	X				
16. Were target analytes detected in the field blank		X			QSM Table F-2

Ravenna, OH Data Review Checklist

Project Number: 030174.0016
Sample Event: May 2014
Data Reviewer/Date: Angela Dragotta / June 13, 2014

SDG: 240-37114, rev1
Analysis: SW846 8081A

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
analyses >1/2 the MRL?					<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. Endosulfan I recovered below control limits of 50-110% at 46%. The endosulfan I sample result associated with the outlier LCS, FEGEQUIPRINSE1-0443-GW, was qualified as estimated, "UJ".	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				
21. Were MS/MSD recoveries and RPD within limits specified in QSM Table G-14?	X			The matrix spike analysis performed on sample FWGLL2mw-271-0438-GW recovered below control limits of 65-125% for alpha-chlordane in both the MS and MSD at 62% and 53%, respectively. The MSD recovered below control limits of 50-110% for endosulfan I at 40% and for endrin ketone at 68% (control limits 75-125%). The alpha-chlordane, endrin ketone and endosulfan I results for sample FWGLL2mw-271-0438-GW were qualified as estimated, "UJ".	QSM Table F-2 Pj with >UL=J; <LL=J/UJ/R
22. Were surrogate recoveries as specified in QSM table G-3?		X		Decachlorobiphenyl recovered below control limits of 30-135% in sample FWGLL1mw-088-0437-GW at 21%. The results for sample FWGLL1mw-088-0437-GW were qualified as estimated, "UJ".	QSM Table F-2 >LL=J; <LL=UJ/J/R
23. Was a field duplicate analyzed? Were the RPDs ≤50%?	X			Checked by ADR.	RPD >50=J parent sample only
24. Were all positive results verified by a second column confirmation? Were the RPD's ≤ 40?			X	There were no detected concentrations greater than the LOQ, so no evaluation was made.	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

Additional Comments:

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8082
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

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**		Samples FWGEQUIPRINSE1-0443-GW was extracted outside of hold but within two times hold. The aroclor results for samples FWGEQUIPRINSE1-0443-GW was qualified as estimated, "UJ".	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 1/28/14, 5/20/14 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**				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**			1/28/14, 5/21/14	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**			5/13/14@1400, 1701 and 5/22/14@0744, 1102	QSM Table F-2

Ravenna, OH Data Review Checklist

Project Number: 030174.0016 **SDG**: 240-37114, rev1
Sample Event: May 2014 **Analysis**: SW846 8082
Data Reviewer/Date: Angela Dragotta/ August 18, 2014

Review Questions:	Yes	No	N/A	Comments	Qual/Criteria
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
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				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			The matrix spike and spike duplicate analyzed on sample FWGLL2mw-271-0438-GW had an MS/MSD RPD above control limits of 30% for aroclor 1260 at 53%. No qualification of the data was required as there were no detected aroclor 1260 results reported for sample FWGLL2mw-271-0438-GW.	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. The surrogate, DCB, recovered below control limits of 40-140% for sample FWGLL1mw-088-437-GW at 21%. The aroclor results for sample FWGLL1mw-088-437-GW were qualified as estimated, "UJ".	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 for analysis with this set of samples.	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:

Appendix II

Overall Qualified Results

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
SDG: 240-37114-1										
6010B	FWGEQUIPRINSE2-0444-GW	AQ	EB							
				LEAD	5.0	1.7J		J	ug/L	Rl
6010B	FWGLL1MW-064C-0436-GF	AQ	N							
				ARSENIC	10	4.5J		J	ug/L	Rl
				NICKEL	5.0	2.5J		J	ug/L	Rl
				POTASSIUM	900	800J		J	ug/L	Rl
6010B	FWGLL1MW-088-0437-GF	AQ	N							
				LEAD	5.0	2.0J		B	ug/L	Eb
6010B	FWGLL2MW-271-0438-GF	AQ	N							
				ARSENIC	10	5.5J		J	ug/L	Rl
				BARIUM	5.0	3.4J		J	ug/L	Rl
6020	FWGLL2MW-271-0438-GF	AQ	N							
				THALLIUM	1.5	0.83J		J	ug/L	Rl
6020	FWGLL3MW-DUP1-0442-GF	AQ	FD							
				ANTIMONY	1.0	0.35J		J	ug/L	Rl
8081A	FWGEQUIPRINSE1-0443-GW	AQ	EB							
				ENDOSULFAN I	0.020	0.020U Q		UJ	ug/L	Lcs

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: 240-37114-1										
8081A	FWGLL1MW-088-0437-GW	AQ	N							
				4,4'-DDD	0.019	0.019U		UJ	ug/L	Surr
				4,4'-DDE	0.019	0.019U		UJ	ug/L	Surr
				4,4'-DDT	0.019	0.019U		UJ	ug/L	Surr
				ALDRIN	0.019	0.019U		UJ	ug/L	Surr
				ALPHA-BHC	0.019	0.019U		UJ	ug/L	Surr
				ALPHA-CHLORDANE	0.019	0.019U		UJ	ug/L	Surr
				BETA-BHC	0.019	0.019U		UJ	ug/L	Surr
				DELTA-BHC	0.019	0.019U		UJ	ug/L	Surr
				DIELDRIN	0.019	0.019U		UJ	ug/L	Surr
				ENDOSULFAN I	0.019	0.019U		UJ	ug/L	Surr
				ENDOSULFAN II	0.019	0.019U		UJ	ug/L	Surr
				ENDOSULFAN SULFATE	0.019	0.019U		UJ	ug/L	Surr
				ENDRIN	0.019	0.019U		UJ	ug/L	Surr
				ENDRIN ALDEHYDE	0.019	0.019U		UJ	ug/L	Surr
				ENDRIN KETONE	0.019	0.019U		UJ	ug/L	Surr
				gamma-BHC (Lindane)	0.019	0.019U		UJ	ug/L	Surr
				GAMMA-CHLORDANE	0.019	0.019U		UJ	ug/L	Surr
				HEPTACHLOR	0.019	0.019U		UJ	ug/L	Surr
				HEPTACHLOR EPOXIDE	0.019	0.019U		UJ	ug/L	Surr
				METHOXYCHLOR	0.048	0.048U		UJ	ug/L	Surr
				TOXAPHENE	0.76	0.76U		UJ	ug/L	Surr
8081A	FWGLL2MW-271-0438-GW	AQ	N							
				ALPHA-CHLORDANE	0.020	0.020U J		UJ	ug/L	Ms
				ENDOSULFAN I	0.020	0.020U J		UJ	ug/L	Ms
				ENDRIN KETONE	0.020	0.020U J		UJ	ug/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: 240-37114-1										
8082	FWGEQUIPRINSE1-0443-GW	AQ	EB							
				AROCLOR 1016	0.20	0.20U H		UJ	ug/L	StoE
				AROCLOR 1221	0.20	0.20U H		UJ	ug/L	StoE
				AROCLOR 1232	0.20	0.20U H		UJ	ug/L	StoE
				AROCLOR 1242	0.40	0.40U H		UJ	ug/L	StoE
				AROCLOR 1248	0.20	0.20U H		UJ	ug/L	StoE
				AROCLOR 1254	0.20	0.20U H		UJ	ug/L	StoE
				AROCLOR 1260	0.20	0.20U H		UJ	ug/L	StoE
8082	FWGLL1MW-088-0437-GW	AQ	N							
				AROCLOR 1016	0.19	0.19U		UJ	ug/L	Surr
				AROCLOR 1221	0.19	0.19U		UJ	ug/L	Surr
				AROCLOR 1232	0.19	0.19U		UJ	ug/L	Surr
				AROCLOR 1242	0.38	0.38U		UJ	ug/L	Surr
				AROCLOR 1248	0.19	0.19U		UJ	ug/L	Surr
				AROCLOR 1254	0.19	0.19U		UJ	ug/L	Surr
				AROCLOR 1260	0.19	0.19U		UJ	ug/L	Surr
8260B	FWGEQUIPRINSE1-0443-GW	AQ	EB							
				2-BUTANONE	0.57	1.5J		J	ug/L	ProfJudg
				2-HEXANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				4-METHYL-2-PENTANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				BROMODICHLOROMETHANE	0.25	0.25U		UJ	ug/L	ProfJudg
				BROMOFORM	0.64	0.64U		UJ	ug/L	ProfJudg
				CARBON DISULFIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				CARBON TETRACHLORIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				TOLUENE	0.25	0.20J		J	ug/L	Rl

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: 240-37114-1										
8260B	FWGEQUIPRINSE2-0444-GW	AQ	EB							
				2-BUTANONE	0.57	3.6J		J	ug/L	ProfJudg
				2-HEXANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				4-METHYL-2-PENTANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				BROMODICHLOROMETHANE	0.25	0.25U		UJ	ug/L	ProfJudg
				BROMOFORM	0.64	0.64U		UJ	ug/L	ProfJudg
				CARBON DISULFIDE	0.25	0.69J M		J	ug/L	ProfJudg
				CARBON TETRACHLORIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				TOLUENE	0.25	0.22J		J	ug/L	RI
8260B	FWGLL1MW-088-0437-GW	AQ	N							
				2-BUTANONE	0.57	0.57U		UJ	ug/L	ProfJudg
				2-HEXANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				4-METHYL-2-PENTANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				BROMODICHLOROMETHANE	0.25	0.25U		UJ	ug/L	ProfJudg
				BROMOFORM	0.64	0.64U		UJ	ug/L	ProfJudg
				CARBON DISULFIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				CARBON TETRACHLORIDE	0.25	0.25U		UJ	ug/L	ProfJudg
8260B	FWGLL2MW-271-0438-GW	AQ	N							
				2-BUTANONE	0.57	0.57U		UJ	ug/L	ProfJudg
				2-HEXANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				4-METHYL-2-PENTANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				BROMODICHLOROMETHANE	0.25	0.25U		UJ	ug/L	ProfJudg
				BROMOFORM	0.64	0.64U		UJ	ug/L	ProfJudg
				CARBON DISULFIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				CARBON TETRACHLORIDE	0.25	0.25U		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: 240-37114-1										
8260B	FWGLL3MW-246-0439-GW	AQ	N							
				2-BUTANONE	0.57	0.57U		UJ	ug/L	ProfJudg
				2-HEXANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				4-METHYL-2-PENTANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				BROMODICHLOROMETHANE	0.25	0.25U		UJ	ug/L	ProfJudg
				BROMOFORM	0.64	0.64U		UJ	ug/L	ProfJudg
				CARBON DISULFIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				CARBON TETRACHLORIDE	0.25	0.25U		UJ	ug/L	ProfJudg
8260B	FWGLL3MW-DUP1-0442-GW	AQ	FD							
				2-BUTANONE	0.57	0.57U		UJ	ug/L	ProfJudg
				2-HEXANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				4-METHYL-2-PENTANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				BROMODICHLOROMETHANE	0.25	0.25U		UJ	ug/L	ProfJudg
				BROMOFORM	0.64	0.64U		UJ	ug/L	ProfJudg
				CARBON DISULFIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				CARBON TETRACHLORIDE	0.25	0.25U		UJ	ug/L	ProfJudg
8260B	FWGTEAM2-TRIP	AQ	TB							
				2-BUTANONE	0.57	0.57U		UJ	ug/L	ProfJudg
				2-HEXANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				4-METHYL-2-PENTANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				BROMODICHLOROMETHANE	0.25	0.25U		UJ	ug/L	ProfJudg
				BROMOFORM	0.64	0.64U		UJ	ug/L	ProfJudg
				CARBON DISULFIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				CARBON TETRACHLORIDE	0.25	0.25U		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: 240-37114-1										
8260B	FWGTEAM3-TRIP	AQ	TB							
				2-BUTANONE	0.57	0.57U		UJ	ug/L	ProfJudg
				2-HEXANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				4-METHYL-2-PENTANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				BROMODICHLOROMETHANE	0.25	0.25U		UJ	ug/L	ProfJudg
				BROMOFORM	0.64	0.64U		UJ	ug/L	ProfJudg
				CARBON DISULFIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				CARBON TETRACHLORIDE	0.25	0.25U		UJ	ug/L	ProfJudg
8260B	FWGTEAM3-TRIP050814	AQ	TB							
				2-BUTANONE	0.57	0.57U		UJ	ug/L	ProfJudg
				2-HEXANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				4-METHYL-2-PENTANONE	0.50	0.50U		UJ	ug/L	ProfJudg
				BROMODICHLOROMETHANE	0.25	0.25U		UJ	ug/L	ProfJudg
				BROMOFORM	0.64	0.64U		UJ	ug/L	ProfJudg
				CARBON DISULFIDE	0.25	0.25U		UJ	ug/L	ProfJudg
				CARBON TETRACHLORIDE	0.25	0.25U		UJ	ug/L	ProfJudg
8270C-SVOC4	FWGEQUIPRINSE2-0444-GW	AQ	EB							
				HEXACHLOROCYCLOPENTADIENE	0.48	0.48U Q		UJ	ug/L	Lcs
				PHENOL	0.95	0.73J		J	ug/L	Rl
8270C-SVOC4	FWGLL1MW-088-0437-GW	AQ	N							
				HEXACHLOROCYCLOPENTADIENE	0.51	0.51U Q		UJ	ug/L	Lcs
				NAPHTHALENE	0.10	0.15J		B	ug/L	Eb
8270C-SVOC4	FWGLL2MW-271-0438-GW	AQ	N							
				Diethylphthalate	0.95	0.64J		B	ug/L	Eb
8270C-SVOC4	FWGLL3MW-246-0439-GW	AQ	N							
				HEXACHLOROCYCLOPENTADIENE	0.48	0.48U Q		UJ	ug/L	Lcs
				NAPHTHALENE	0.095	0.10J		J	ug/L	Fd

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: 240-37114-1										
8270C-SVOC4	FWGLL3MW-DUP1-0442-GW	AQ	FD	HEXACHLOROCYCLOPENTADIENE	0.48	0.48U Q		UJ	ug/L	Lcs
8330	FWGLL3MW-246-0439-GW	AQ	N	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.051	0.039J M		J	ug/L	Rl
8330	FWGLL3MW-DUP1-0442-GW	AQ	FD	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.050	0.036J M		J	ug/L	Rl
9012A	FWGEQUIPRINSE1-0443-GW	AQ	EB	CYANIDE	0.0050	0.0050U		UJ	mg/L	ProfJudg
9012A	FWGEQUIPRINSE2-0444-GW	AQ	EB	CYANIDE	0.0050	0.0050U		UJ	mg/L	ProfJudg
9012A	FWGLL1MW-088-0437-GW	AQ	N	CYANIDE	0.0050	0.0050U		UJ	mg/L	ProfJudg
9012A	FWGLL2MW-271-0438-GW	AQ	N	CYANIDE	0.0050	0.0050U		UJ	mg/L	ProfJudg
9012A	FWGLL3MW-246-0439-GW	AQ	N	CYANIDE	0.0050	0.0050U		UJ	mg/L	ProfJudg
9012A	FWGLL3MW-DUP1-0442-GW	AQ	FD	CYANIDE	0.0050	0.0050U		UJ	mg/L	ProfJudg

N = Normal Sample *TB = Trip Blank*
FD = Field Duplicate *FB = Field Blank*

Data Qualifier Summary

Lab Reporting Batch ID: 240-37114-1 **Laboratory: TA CAN**

EDD Filename: Prep240-37114-1revA3 **eQAPP Name: RVAAP 66-rev June 2014**

Method Category: GENCHEM

Method: 9012A **Matrix: AQ**

Sample ID: FWGEQUIPRINSE1-0443-GW **Collected:** 5/7/2014 1:42:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CYANIDE	0.0050	U	0.0032	MDL	0.0050	LOD	mg/L	UJ	ProfJudg

Sample ID: FWGEQUIPRINSE2-0444-GW **Collected:** 5/8/2014 1:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CYANIDE	0.0050	U	0.0032	MDL	0.0050	LOD	mg/L	UJ	ProfJudg

Sample ID: FWGLL1MW-088-0437-GW **Collected:** 5/8/2014 10:29:00 **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CYANIDE	0.0050	U	0.0032	MDL	0.0050	LOD	mg/L	UJ	ProfJudg

Sample ID: FWGLL2MW-271-0438-GW **Collected:** 5/7/2014 12:59:00 **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CYANIDE	0.0050	U	0.0032	MDL	0.0050	LOD	mg/L	UJ	ProfJudg

Sample ID: FWGLL3MW-246-0439-GW **Collected:** 5/7/2014 9:43:00 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	0.0050	U	0.0032	MDL	0.0050	LOD	mg/L	UJ	ProfJudg

Sample ID: FWGLL3MW-DUP1-0442-GW **Collected:** 5/7/2014 10:43:00 **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CYANIDE	0.0050	U	0.0032	MDL	0.0050	LOD	mg/L	UJ	ProfJudg

Method Category: METALS

Method: 6010B **Matrix: AQ**

Sample ID: FWGEQUIPRINSE2-0444-GW **Collected:** 5/8/2014 1:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
LEAD	1.7	J	1.7	MDL	5.0	LOD	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 30174.0016.01.11.1 - USACE Project: USACE Project: RVAAP (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-37114-1 **Laboratory: TA CAN**

EDD Filename: Prep240-37114-1revA3 **eQAPP Name: RVAAP 66-rev June 2014**

Method Category: METALS

Method: 6010B **Matrix: AQ**

Sample ID: FWGLL1MW-064C-0436-GF **Collected:** 5/7/2014 4:37:00 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	3.3	MDL	10	LOD	ug/L	J	RI
NICKEL	2.5	J	2.2	MDL	5.0	LOD	ug/L	J	RI
POTASSIUM	800	J	300	MDL	900	LOD	ug/L	J	RI

Sample ID: FWGLL1MW-088-0437-GF **Collected:** 5/8/2014 10:29:00 **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
LEAD	2.0	J	1.7	MDL	5.0	LOD	ug/L	U	Eb

Sample ID: FWGLL2MW-271-0438-GF **Collected:** 5/7/2014 12:59:00 **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	5.5	J	3.3	MDL	10	LOD	ug/L	J	RI
BARIUM	3.4	J	2.8	MDL	5.0	LOD	ug/L	J	RI

Method Category: METALS

Method: 6020 **Matrix: AQ**

Sample ID: FWGLL2MW-271-0438-GF **Collected:** 5/7/2014 12:59:00 **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
THALLIUM	0.83	J	0.79	MDL	1.5	LOD	ug/L	J	RI

Sample ID: FWGLL3MW-DUP1-0442-GF **Collected:** 5/7/2014 10:43:00 **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.35	J	0.33	MDL	1.0	LOD	ug/L	J	RI

Method Category: SVOA

Method: 8081A **Matrix: AQ**

Sample ID: FWGEQUIPRINSE1-0443-GW **Collected:** 5/7/2014 1:42:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ENDOSULFAN I	0.020	U Q	0.013	MDL	0.020	LOD	ug/L	UJ	Lcs

* denotes a non-reportable result

Project Name and Number: 30174.0016.01.11.1 - USACE Project: USACE Project: RVAAP (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-37114-1 **Laboratory: TA CAN**

EDD Filename: Prep240-37114-1revA3 **eQAPP Name: RVAAP 66-rev June 2014**

Method Category: SVOA

Method: 8081A **Matrix:** AQ

Sample ID: FWGLL1MW-088-0437-GW **Collected:** 5/8/2014 10:29:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDD	0.019	U	0.0091	MDL	0.019	LOD	ug/L	UJ	Surr
4,4'-DDE	0.019	U	0.0092	MDL	0.019	LOD	ug/L	UJ	Surr
4,4'-DDT	0.019	U	0.015	MDL	0.019	LOD	ug/L	UJ	Surr
ALDRIN	0.019	U	0.0078	MDL	0.019	LOD	ug/L	UJ	Surr
ALPHA-BHC	0.019	U	0.0067	MDL	0.019	LOD	ug/L	UJ	Surr
ALPHA-CHLORDANE	0.019	U	0.013	MDL	0.019	LOD	ug/L	UJ	Surr
BETA-BHC	0.019	U	0.0080	MDL	0.019	LOD	ug/L	UJ	Surr
DELTA-BHC	0.019	U	0.0083	MDL	0.019	LOD	ug/L	UJ	Surr
DIELDRIN	0.019	U	0.0071	MDL	0.019	LOD	ug/L	UJ	Surr
ENDOSULFAN I	0.019	U	0.012	MDL	0.019	LOD	ug/L	UJ	Surr
ENDOSULFAN II	0.019	U	0.011	MDL	0.019	LOD	ug/L	UJ	Surr
ENDOSULFAN SULFATE	0.019	U	0.010	MDL	0.019	LOD	ug/L	UJ	Surr
ENDRIN	0.019	U	0.010	MDL	0.019	LOD	ug/L	UJ	Surr
ENDRIN ALDEHYDE	0.019	U	0.010	MDL	0.019	LOD	ug/L	UJ	Surr
ENDRIN KETONE	0.019	U	0.0074	MDL	0.019	LOD	ug/L	UJ	Surr
gamma-BHC (Lindane)	0.019	U	0.0061	MDL	0.019	LOD	ug/L	UJ	Surr
GAMMA-CHLORDANE	0.019	U	0.011	MDL	0.019	LOD	ug/L	UJ	Surr
HEPTACHLOR	0.019	U	0.0076	MDL	0.019	LOD	ug/L	UJ	Surr
HEPTACHLOR EPOXIDE	0.019	U	0.0068	MDL	0.019	LOD	ug/L	UJ	Surr
METHOXYCHLOR	0.048	U	0.030	MDL	0.048	LOD	ug/L	UJ	Surr
TOXAPHENE	0.76	U	0.30	MDL	0.76	LOD	ug/L	UJ	Surr

Sample ID: FWGLL2MW-271-0438-GW **Collected:** 5/7/2014 12:59:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALPHA-CHLORDANE	0.020	U J	0.014	MDL	0.020	LOD	ug/L	UJ	Ms
ENDOSULFAN I	0.020	U J	0.013	MDL	0.020	LOD	ug/L	UJ	Ms
ENDRIN KETONE	0.020	U J	0.0077	MDL	0.020	LOD	ug/L	UJ	Ms

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 240-37114-1 **Laboratory: TA CAN**

EDD Filename: Prep240-37114-1revA3 **eQAPP Name: RVAAP 66-rev June 2014**

Method Category: SVOA

Method: 8082 **Matrix: AQ**

Sample ID: FWGEQUIPRINSE1-0443-GW **Collected:** 5/7/2014 1:42:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1016	0.20	U H	0.17	MDL	0.20	LOD	ug/L	UJ	StoE
AROCLOR 1221	0.20	U H	0.13	MDL	0.20	LOD	ug/L	UJ	StoE
AROCLOR 1232	0.20	U H	0.16	MDL	0.20	LOD	ug/L	UJ	StoE
AROCLOR 1242	0.40	U H	0.22	MDL	0.40	LOD	ug/L	UJ	StoE
AROCLOR 1248	0.20	U H	0.099	MDL	0.20	LOD	ug/L	UJ	StoE
AROCLOR 1254	0.20	U H	0.16	MDL	0.20	LOD	ug/L	UJ	StoE
AROCLOR 1260	0.20	U H	0.17	MDL	0.20	LOD	ug/L	UJ	StoE

Sample ID: FWGLL1MW-088-0437-GW **Collected:** 5/8/2014 10:29:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1016	0.19	U	0.16	MDL	0.19	LOD	ug/L	UJ	Surr
AROCLOR 1221	0.19	U	0.12	MDL	0.19	LOD	ug/L	UJ	Surr
AROCLOR 1232	0.19	U	0.15	MDL	0.19	LOD	ug/L	UJ	Surr
AROCLOR 1242	0.38	U	0.21	MDL	0.38	LOD	ug/L	UJ	Surr
AROCLOR 1248	0.19	U	0.095	MDL	0.19	LOD	ug/L	UJ	Surr
AROCLOR 1254	0.19	U	0.15	MDL	0.19	LOD	ug/L	UJ	Surr
AROCLOR 1260	0.19	U	0.16	MDL	0.19	LOD	ug/L	UJ	Surr

Method Category: SVOA

Method: 8270C-SVOC4 **Matrix: AQ**

Sample ID: FWGEQUIPRINSE2-0444-GW **Collected:** 5/8/2014 1:00:00 PM **Analysis Type:** RES-ACID **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PHENOL	0.73	J	0.57	MDL	0.95	LOD	ug/L	J	Rl

Sample ID: FWGEQUIPRINSE2-0444-GW **Collected:** 5/8/2014 1:00:00 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
HEXACHLOROCYCLOPENTADIENE	0.48	U Q	0.23	MDL	0.48	LOD	ug/L	UJ	Lcs

* denotes a non-reportable result

Project Name and Number: 30174.0016.01.11.1 - USACE Project: USACE Project: RVAAP (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-37114-1 **Laboratory: TA CAN**

EDD Filename: Prep240-37114-1revA3 **eQAPP Name: RVAAP 66-rev June 2014**

Method Category: SVOA

Method: 8270C-SVOC4 **Matrix: AQ**

Sample ID: FWGLL1MW-088-0437-GW **Collected:** 5/8/2014 10:29:00 **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXACHLOROCYCLOPENTADIENE	0.51	U Q	0.24	MDL	0.51	LOD	ug/L	UJ	Lcs
NAPHTHALENE	0.15	J	0.063	MDL	0.10	LOD	ug/L	U	Eb

Sample ID: FWGLL2MW-271-0438-GW **Collected:** 5/7/2014 12:59:00 **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	0.64	J	0.57	MDL	0.95	LOD	ug/L	U	Eb

Sample ID: FWGLL3MW-246-0439-GW **Collected:** 5/7/2014 9:43:00 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
HEXACHLOROCYCLOPENTADIENE	0.48	U Q	0.23	MDL	0.48	LOD	ug/L	UJ	Lcs
NAPHTHALENE	0.10	J	0.060	MDL	0.095	LOD	ug/L	J	Fd

Sample ID: FWGLL3MW-DUP1-0442-GW **Collected:** 5/7/2014 10:43:00 **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXACHLOROCYCLOPENTADIENE	0.48	U Q	0.23	MDL	0.48	LOD	ug/L	UJ	Lcs

Method Category: SVOA

Method: 8330 **Matrix: AQ**

Sample ID: FWGLL3MW-246-0439-GW **Collected:** 5/7/2014 9:43:00 AM **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)	0.039	J M	0.037	MDL	0.051	LOD	ug/L	J	RI

Sample ID: FWGLL3MW-DUP1-0442-GW **Collected:** 5/7/2014 10:43:00 **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	0.050	LOD	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 240-37114-1 **Laboratory: TA CAN**

EDD Filename: Prep240-37114-1revA3 **eQAPP Name: RVAAP 66-rev June 2014**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **FWGEQUIPRINSE1-0443-GW** ***Collected:*** **5/7/2014 1:42:00 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	1.5	J	0.57	MDL	0.57	LOD	ug/L	J	ProfJudg
2-HEXANONE	0.50	U	0.41	MDL	0.50	LOD	ug/L	UJ	ProfJudg
4-METHYL-2-PENTANONE	0.50	U	0.32	MDL	0.50	LOD	ug/L	UJ	ProfJudg
BROMODICHLOROMETHANE	0.25	U	0.15	MDL	0.25	LOD	ug/L	UJ	ProfJudg
BROMOFORM	0.64	U	0.64	MDL	0.64	LOD	ug/L	UJ	ProfJudg
CARBON DISULFIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
CARBON TETRACHLORIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
TOLUENE	0.20	J	0.13	MDL	0.25	LOD	ug/L	J	RI

Sample ID: **FWGEQUIPRINSE2-0444-GW** ***Collected:*** **5/8/2014 1:00:00 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	3.6	J	0.57	MDL	0.57	LOD	ug/L	J	ProfJudg
2-HEXANONE	0.50	U	0.41	MDL	0.50	LOD	ug/L	UJ	ProfJudg
4-METHYL-2-PENTANONE	0.50	U	0.32	MDL	0.50	LOD	ug/L	UJ	ProfJudg
BROMODICHLOROMETHANE	0.25	U	0.15	MDL	0.25	LOD	ug/L	UJ	ProfJudg
BROMOFORM	0.64	U	0.64	MDL	0.64	LOD	ug/L	UJ	ProfJudg
CARBON DISULFIDE	0.69	J M	0.13	MDL	0.25	LOD	ug/L	J	ProfJudg
CARBON TETRACHLORIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
TOLUENE	0.22	J	0.13	MDL	0.25	LOD	ug/L	J	RI

Sample ID: **FWGLL1MW-088-0437-GW** ***Collected:*** **5/8/2014 10:29:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	0.57	U	0.57	MDL	0.57	LOD	ug/L	UJ	ProfJudg
2-HEXANONE	0.50	U	0.41	MDL	0.50	LOD	ug/L	UJ	ProfJudg
4-METHYL-2-PENTANONE	0.50	U	0.32	MDL	0.50	LOD	ug/L	UJ	ProfJudg
BROMODICHLOROMETHANE	0.25	U	0.15	MDL	0.25	LOD	ug/L	UJ	ProfJudg
BROMOFORM	0.64	U	0.64	MDL	0.64	LOD	ug/L	UJ	ProfJudg
CARBON DISULFIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
CARBON TETRACHLORIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg

* denotes a non-reportable result

Project Name and Number: 30174.0016.01.11.1 - USACE Project: USACE Project: RVAAP (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-37114-1 **Laboratory: TA CAN**

EDD Filename: Prep240-37114-1revA3 **eQAPP Name: RVAAP 66-rev June 2014**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **FWGLL2MW-271-0438-GW** ***Collected:*** **5/7/2014 12:59:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	0.57	U	0.57	MDL	0.57	LOD	ug/L	UJ	ProfJudg
2-HEXANONE	0.50	U	0.41	MDL	0.50	LOD	ug/L	UJ	ProfJudg
4-METHYL-2-PENTANONE	0.50	U	0.32	MDL	0.50	LOD	ug/L	UJ	ProfJudg
BROMODICHLOROMETHANE	0.25	U	0.15	MDL	0.25	LOD	ug/L	UJ	ProfJudg
BROMOFORM	0.64	U	0.64	MDL	0.64	LOD	ug/L	UJ	ProfJudg
CARBON DISULFIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
CARBON TETRACHLORIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg

Sample ID: **FWGLL3MW-246-0439-GW** ***Collected:*** **5/7/2014 9:43:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	0.57	U	0.57	MDL	0.57	LOD	ug/L	UJ	ProfJudg
2-HEXANONE	0.50	U	0.41	MDL	0.50	LOD	ug/L	UJ	ProfJudg
4-METHYL-2-PENTANONE	0.50	U	0.32	MDL	0.50	LOD	ug/L	UJ	ProfJudg
BROMODICHLOROMETHANE	0.25	U	0.15	MDL	0.25	LOD	ug/L	UJ	ProfJudg
BROMOFORM	0.64	U	0.64	MDL	0.64	LOD	ug/L	UJ	ProfJudg
CARBON DISULFIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
CARBON TETRACHLORIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg

Sample ID: **FWGLL3MW-DUP1-0442-GW** ***Collected:*** **5/7/2014 10:43:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	0.57	U	0.57	MDL	0.57	LOD	ug/L	UJ	ProfJudg
2-HEXANONE	0.50	U	0.41	MDL	0.50	LOD	ug/L	UJ	ProfJudg
4-METHYL-2-PENTANONE	0.50	U	0.32	MDL	0.50	LOD	ug/L	UJ	ProfJudg
BROMODICHLOROMETHANE	0.25	U	0.15	MDL	0.25	LOD	ug/L	UJ	ProfJudg
BROMOFORM	0.64	U	0.64	MDL	0.64	LOD	ug/L	UJ	ProfJudg
CARBON DISULFIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
CARBON TETRACHLORIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg

Sample ID: **FWGTEAM2-TRIP** ***Collected:*** **5/7/2014 7:30:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	0.57	U	0.57	MDL	0.57	LOD	ug/L	UJ	ProfJudg
2-HEXANONE	0.50	U	0.41	MDL	0.50	LOD	ug/L	UJ	ProfJudg

* denotes a non-reportable result

Project Name and Number: 30174.0016.01.11.1 - USACE Project: USACE Project: RVAAP (OH)

Data Qualifier Summary

Lab Reporting Batch ID: 240-37114-1 **Laboratory: TA CAN**

EDD Filename: Prep240-37114-1revA3 **eQAPP Name: RVAAP 66-rev June 2014**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **FWGTEAM2-TRIP** ***Collected:*** **5/7/2014 7:30:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-METHYL-2-PENTANONE	0.50	U	0.32	MDL	0.50	LOD	ug/L	UJ	ProfJudg
BROMODICHLOROMETHANE	0.25	U	0.15	MDL	0.25	LOD	ug/L	UJ	ProfJudg
BROMOFORM	0.64	U	0.64	MDL	0.64	LOD	ug/L	UJ	ProfJudg
CARBON DISULFIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
CARBON TETRACHLORIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg

Sample ID: **FWGTEAM3-TRIP** ***Collected:*** **5/7/2014 7:30:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	0.57	U	0.57	MDL	0.57	LOD	ug/L	UJ	ProfJudg
2-HEXANONE	0.50	U	0.41	MDL	0.50	LOD	ug/L	UJ	ProfJudg
4-METHYL-2-PENTANONE	0.50	U	0.32	MDL	0.50	LOD	ug/L	UJ	ProfJudg
BROMODICHLOROMETHANE	0.25	U	0.15	MDL	0.25	LOD	ug/L	UJ	ProfJudg
BROMOFORM	0.64	U	0.64	MDL	0.64	LOD	ug/L	UJ	ProfJudg
CARBON DISULFIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
CARBON TETRACHLORIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg

Sample ID: **FWGTEAM3-TRIP050814** ***Collected:*** **5/8/2014 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
2-BUTANONE	0.57	U	0.57	MDL	0.57	LOD	ug/L	UJ	ProfJudg
2-HEXANONE	0.50	U	0.41	MDL	0.50	LOD	ug/L	UJ	ProfJudg
4-METHYL-2-PENTANONE	0.50	U	0.32	MDL	0.50	LOD	ug/L	UJ	ProfJudg
BROMODICHLOROMETHANE	0.25	U	0.15	MDL	0.25	LOD	ug/L	UJ	ProfJudg
BROMOFORM	0.64	U	0.64	MDL	0.64	LOD	ug/L	UJ	ProfJudg
CARBON DISULFIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg
CARBON TETRACHLORIDE	0.25	U	0.13	MDL	0.25	LOD	ug/L	UJ	ProfJudg

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 240-37114-1 **Laboratory: TA CAN**

EDD Filename: Prep240-37114-1revA3 **eQAPP Name: RVAAP 66-rev June 2014**

Reason Code Legend

Reason Code	*Description*
Eb	Equipment Blank Contamination
Fd	Field Duplicate Precision
Lcs	Laboratory Control Spike Lower Estimation
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
ProfJudg	Professional Judgment
RI	Reporting Limit Trace Value
StoE	Sampling to Extraction Estimation
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

APPENDIX D

INVESTIGATION-DERIVED WASTE CHARACTERIZATION AND DISPOSAL PLAN

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

July 1, 2014

Mr. Brett Merkel
Army National Guard Directorate
ARNGD-ILE Clean Up
111 South George Mason Drive
Arlington, VA 22203

RE: RAVENNA ARMY AMMUNITION PLANT, PORTAGE/TRUMBULL COUNTIES, RE: APPROVAL, INVESTIGATION DERIVED WASTE CHARACTERIZATION AND DISPOSAL PLAN, MAY 2014 GROUNDWATER SAMPLING EVENT FOR RVAAP-66 FWGMP, Ohio EPA # 267000859036

Dear Mr. Merkel:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the, "Draft Investigation Derived Waste Disposal Plan" (IDW), associated with the May 2014 Groundwater Sampling Event in support of the Facility-Wide Groundwater Monitoring Program at the Ravenna Army Ammunition Plant, Ravenna, OH. This document was received at Ohio EPA, Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on June 9, 2014, and is dated June 3, 2014. The document was prepared for the U.S. Army Corps of Engineers (USACE) – Louisville District, by Environmental Quality Management, Inc. (EQM), under contract no. W912QR-11-F-0266.

The IDW consists of purge water from the ground water sampling event and decontamination wastewater. Six monitoring wells were sampled during this event. The total volume of water is estimated at 37 gallons and is stored in two drums. One drum contained approximately two gallons of decontamination/rinse water and the other contained approximately 35 gallons of purge water. Based on the analytical results, the drum containing approximately 35 gallons of purge water will be classified as nonhazardous and be sent offsite for disposal at a permitted water treatment facility. The drum containing two gallons of decontamination/rinse water was also sampled and analyzed and the water determined to be nonhazardous. Based on the minimal amount of fluid remaining in the second drum, EQM suggested that this drum be retained for use during the next sampling event, scheduled for July 2014. This drum will be resampled after it is filled during that sampling event. Ohio EPA has no problem with

this recommendation; however, since both drums were determined to be nonhazardous, the wastewater could be consolidated into one drum and sent off for disposal. If the second drum remains, it should simply be dated and labeled nonhazardous.

The Plan is approved and Ohio EPA concurs that the wastewater be disposed of as nonhazardous waste and be sent off-site for disposal to a permitted water treatment or waste disposal facility.

Pursuant to the CERCLA process, the property owner usually can provide the expected land uses to assist in ensuring that the investigation addresses all receptors for both current and future land uses. Be advised that due to land use uncertainty, Ohio EPA may require additional work in the future, to address data gaps. It is incumbent upon the Army to finalize land use at Camp Ravenna as soon as possible, otherwise additional work and schedule slippage may result.

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
Mark Nichter, USACE
Rebecca Haney/Gail Harris, Vista Sciences Corp.

ec: Nancy Zikmanis, Ohio EPA, NEDO DERR
Justin Burke, Ohio EPA, CO, DERR
Rod Beals, Ohio EPA, NEDO DERR

FINAL

FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RVAPP-66 FACILITY-WIDE GROUNDWATER

INVESTIGATION-DERIVED WASTE CHARACTERIZATION AND DISPOSAL PLAN
MAY 2014 GROUNDWATER SAMPLING EVENT REPORT

FORMER RAVENNA ARMY AMMUNITION PLANT,
PORTAGE AND TRUMBULL COUNTIES, OHIO

June 3, 2014

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

TABLE OF CONTENTS

TABLES

APPENDICES

ACRONYMS

AOC	area of concern
CFR	Code of Federal Regulations
EQM	Environmental Quality Management, Inc.
EPA	Environmental Protection Agency
^{o}F	degrees Fahrenheit
FWG	Facility-Wide Groundwater
FWGWMPP	Facility-Wide Groundwater Monitoring Program Plan
FWSAP	Facility-Wide Sampling and Analysis Plan
gal	gallon
IDW	investigation-derived waste
MEK	methyl ethyl ketone (2-butanone)
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
SCF	Sharon Conglomerate Formation
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 sampling events in May 2014 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 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 May 2014 sampling event (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 2014-5	55-gal Steel	Decontamination/Rinse Water	~2 gallons	Equipment Rinse/ Decontamination
EQM 2014-6	55-gal Steel	Purge Water	~35 gallons	Load Lines 1, 2, 3, SCF, and FWG wells

SCF = Sharon Conglomerate Formation
FWG = New Facility-Wide Groundwater

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 the 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 FWGWMP 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 May 2014 groundwater sampling event were compared against these criteria to determine whether the waste streams generated were potentially hazardous or non-hazardous.

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 drum containing purged groundwater will be classified as nonhazardous and 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. Following collection of decontamination fluids from the drum for waste characterization analysis, only a minimal amount of fluid was retained in the drum (estimated as less than 2 gal). The analytical results indicated that all analytes were below TCLP threshold values. Therefore, the decontamination wastewater should be classified as non-hazardous and sent offsite to a permitted water treatment facility for disposal in accordance with Section 8.0 of the FWSAP.

Alternatively, and solely due to the minimal amount of fluid remaining in this drum, EQM suggests retaining the drum for the collection of decontamination fluids that will be generated during the next sampling event, which is planned for late July 2014. The drummed decontamination fluids will again be resampled to determine waste disposal options at that time.

5.3 Summary of Disposal Recommendations

All drums will be classified as contaminated but non-hazardous. The purge water drum shall be sent offsite to a permitted water treatment facility for disposal; with permission, the drum containing residual decontamination fluid will be maintained on site for reuse during the July 2014 sampling episode. 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.

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)	Regulatory Level[1] (mg/L)	Above Regulatory Yes/No
FWG-IDW-MWPURGEMAY2014	Barium	0.037 J B	100	No
	Lead	0.0019 J B	5.0	No
	Flashpoint	>180°F	<140°F	No
	pH[2]	7.51	<2 or >12.5	No
FWG-IDW-MWDECONMAY2014	2-Butanone (MEK)	0.030 J	200	No
	Arsenic	0.0045 J	5.0	No
	Barium	0.0058 J B	100	No
	Cadmium	0.00087 J	1.0	No
	Chromium	0.015 J	5.0	No
	Lead	0.0096 J B	5.0	No
	Flashpoint	>180°F	<140°F	No
	pH[2]	9.33	<2 or >12.5	No
FWG-IDW-MWTBMAY2014	Chloroform	0.42 J	6.0	No

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.
NA = not applicable.

Table 5-2. Summary of Drum Containers, TCLP/Characteristic Waste Criteria, and Disposal Recommendations

Drum Container Label	Media	TCLP Criteria	Disposal Recommendation
EQM 2014-5 Decontamination/ Rinse Water	Water	Regulatory limits not exceeded.	Retain on site for next sampling event.
EQM 2014-6 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: 240-37132-1
Client Project/Site: RVAAP (OH) - IDW

For:
Environmental Quality Mgt., Inc.
1800 Carillon Blvd
Cincinnati, Ohio 45240

Attn: Mr. Erik Corbin

Jennifer Stiller

Authorized for release by:
5/20/2014 5:25:40 PM
Jennifer Stiller, Project Management Assistant II
jennifer.stiller@testamericainc.com

Designee for

Mark Loeb, Project Manager II
(330)966-9387
mark.loeb@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
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.

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.
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.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-37132-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Environmental Quality Mgt., Inc.

Project: RVAAP (OH) - IDW

Report Number: 240-37132-1

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 5/8/2014 2:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 12 coolers at receipt time were 2.4° C, 3.2° C, 3.4° C, 3.4° C, 3.4° C, 3.8° C, 4.0° C, 4.1° C, 4.8° C, 5.2° C, 5.6° C and 5.8° C.

TCLP VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for TCLP volatile organic compounds (GCMS) in accordance with EPA SW-846 Methods 1311/8260B. The samples were leached on 05/12/2014 and analyzed on 05/14/2014.

The continuing calibration verification (CCV) associated with batch 130706 recovered above the upper control limit for vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

No other difficulties were encountered during the VOCs analysis. All quality control parameters were within the acceptance limits.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Sample FWG-IDW-MWTB MAY 2014 (240-37132-3) was analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/14/2014.

Job ID: 240-37132-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

No difficulties were encountered during the VOCs analysis. All quality control parameters were within the acceptance limits.

TCLP SEMIVOLATILE ORGANIC COMPOUNDS (GCMS)

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for TCLP semivolatile organic compounds (GCMS) in accordance with EPA SW-846 Methods 1311/8270C. The samples were leached on 05/12/2014, prepared on 05/13/2014 and analyzed on 05/14/2014.

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 difficulties were encountered during the SVOCs analysis. All quality control parameters were within the acceptance limits.

TCLP CHLORINATED PESTICIDES

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for TCLP chlorinated pesticides in accordance with EPA SW-846 Methods 1311/8081A. The samples were leached on 05/12/2014, prepared on 05/13/2014 and analyzed on 05/17/2014.

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-MWDECON MAY 2014 (240-37132-2). Refer to the QC report for details.

The continuing calibration verification (CCV) associated with batch 131000 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-MWDECON MAY 2014, FWG-IDW-MWPURGE MAY 2014.

2 surrogates are used for this analysis. The laboratory's SOP allows 1 of these surrogates to be outside acceptance criteria without performing re-extraction/re-analysis. The following sample(s) contained an allowable number of surrogate compounds outside limits: FWG-IDW-MWDECON MAY 2014. These results have been reported and qualified.

No other difficulties were encountered during the pesticides analysis. All other quality control parameters were within the acceptance limits.

TCLP CHLORINATED HERBICIDES

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for TCLP chlorinated herbicides in accordance with EPA SW-846 Methods 1311/8151A. The samples were leached on 05/12/2014, prepared on 05/13/2014 and analyzed on 05/15/2014.

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.

No difficulties were encountered during the herbicides analysis. All quality control parameters were within the acceptance limits.

TCLP METALS (ICP)

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for TCLP metals (ICP) in accordance with EPA SW-846 Methods 1311/6010B. The samples were leached on 05/12/2014, prepared on 05/13/2014 and analyzed on 05/14/2014.

Barium, Lead and Selenium were detected in method blank LB 240-130323/1-C at levels that were above the method detection limit but below the reporting limit. Barium was detected in method blank MB 240-130439/2-A at a level that was 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: 240-37132-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

No other difficulties were encountered during the metals analysis. All other quality control parameters were within the acceptance limits.

TCLP MERCURY

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for TCLP mercury in accordance with EPA SW-846 Methods 1311/7470A. The samples were leached on 05/12/2014, prepared on 05/13/2014 and analyzed on 05/14/2014.

No difficulties were encountered during the mercury analysis. All quality control parameters were within the acceptance limits.

FLASHPOINT

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for flashpoint in accordance with EPA SW-846 Method 1010. The samples were analyzed on 05/13/2014.

No difficulties were encountered during the flashpoint analysis. All quality control parameters were within the acceptance limits.

TOTAL CYANIDE

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for total cyanide in accordance with EPA SW-846 Method 9012A. The samples were prepared and analyzed on 05/14/2014.

No difficulties were encountered during the cyanide analysis. All quality control parameters were within the acceptance limits.

SULFIDE

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for sulfide in accordance with EPA SW-846 Method 9034. The samples were prepared and analyzed on 05/13/2014.

No difficulties were encountered during the sulfide analysis. All quality control parameters were within the acceptance limits.

PH

Samples FWG-IDW-MWPURGE MAY 2014 (240-37132-1) and FWG-IDW-MWDECON MAY 2014 (240-37132-2) were analyzed for pH in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 05/10/2014.

FWG-IDW-MWDECON MAY 2014, FWG-IDW-MWPURGE MAY 2014The following sample(s) was 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-MWDECON MAY 2014, FWG-IDW-MWPURGE MAY 2014.

No other difficulties were encountered during the pH analysis. All quality control parameters were within the acceptance limits.

Method Summary

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-37132-1

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: 240-37132-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-37132-1	FWG-IDW-MWPURGE MAY 2014	Water	05/08/14 12:55	05/08/14 14:50
240-37132-2	FWG-IDW-MWDECON MAY 2014	Water	05/08/14 13:00	05/08/14 14:50
240-37132-3	FWG-IDW-MWTB MAY 2014	Water	05/08/14 12:50	05/08/14 14:50

Client Sample ID: FWG-IDW-MWPURGE MAY 2014 — Lab Sample ID: 240-37132-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.037	J B	10	0.00067	mg/L	1		6010B	TCLP
Lead	0.0019	J B	0.50	0.0019	mg/L	1		6010B	TCLP
Flashpoint	>180		1.00	1.00	Degrees F	1		1010	Total/NA
pH	7.51	H	0.100	0.100	SU	1		9040B	Total/NA

Client Sample ID: FWG-IDW-MWDECON MAY 2014 — Lab Sample ID: 240-37132-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Butanone (MEK)	0.030	J	0.25	0.029	mg/L	1		8260B	TCLP
Arsenic	0.0045	J	0.50	0.0032	mg/L	1		6010B	TCLP
Barium	0.0058	J B	10	0.00067	mg/L	1		6010B	TCLP
Cadmium	0.00087	J	0.10	0.00066	mg/L	1		6010B	TCLP
Chromium	0.015	J	0.50	0.0022	mg/L	1		6010B	TCLP
Lead	0.0096	J B	0.50	0.0019	mg/L	1		6010B	TCLP
Flashpoint	>180		1.00	1.00	Degrees F	1		1010	Total/NA
pH	9.33	H	0.100	0.100	SU	1		9040B	Total/NA

Client Sample ID: FWG-IDW-MWTB MAY 2014 — Lab Sample ID: 240-37132-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.42	J	1.0	0.16	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: FWG-IDW-MWPURGE MAY 2014
Date Collected: 05/08/14 12:55
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37132-1
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			05/14/14 20:37	1
1,2-Dichloroethane	0.025	U	0.025	0.011	mg/L			05/14/14 20:37	1
2-Butanone (MEK)	0.25	U	0.25	0.029	mg/L			05/14/14 20:37	1
Benzene	0.025	U	0.025	0.0065	mg/L			05/14/14 20:37	1
Carbon tetrachloride	0.025	U	0.025	0.0065	mg/L			05/14/14 20:37	1
Chlorobenzene	0.025	U	0.025	0.0075	mg/L			05/14/14 20:37	1
Chloroform	0.025	U	0.025	0.0080	mg/L			05/14/14 20:37	1
Tetrachloroethene	0.025	U	0.025	0.015	mg/L			05/14/14 20:37	1
Trichloroethene	0.025	U	0.025	0.0085	mg/L			05/14/14 20:37	1
Vinyl chloride	0.025	U	0.025	0.011	mg/L			05/14/14 20:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*80 - 121*		*05/14/14 20:37*	*1*
4-Bromofluorobenzene (Surr)	*96*		*70 - 124*		*05/14/14 20:37*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*05/14/14 20:37*	*1*
Dibromofluoromethane (Surr)	*94*		*80 - 128*		*05/14/14 20:37*	*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		05/13/14 11:46	05/14/14 14:57	1
2,4,5-Trichlorophenol	0.020	U	0.020	0.00030	mg/L		05/13/14 11:46	05/14/14 14:57	1
2,4,6-Trichlorophenol	0.020	U	0.020	0.00024	mg/L		05/13/14 11:46	05/14/14 14:57	1
2,4-Dinitrotoluene	0.020	U	0.020	0.00025	mg/L		05/13/14 11:46	05/14/14 14:57	1
Hexachlorobenzene	0.020	U	0.020	0.000085	mg/L		05/13/14 11:46	05/14/14 14:57	1
Hexachlorobutadiene	0.020	U	0.020	0.00027	mg/L		05/13/14 11:46	05/14/14 14:57	1
Hexachloroethane	0.020	U	0.020	0.00019	mg/L		05/13/14 11:46	05/14/14 14:57	1
3 & 4 Methylphenol	0.040	U	0.040	0.00080	mg/L		05/13/14 11:46	05/14/14 14:57	1
2-Methylphenol	0.0040	U	0.0040	0.00017	mg/L		05/13/14 11:46	05/14/14 14:57	1
Nitrobenzene	0.0040	U	0.0040	0.000040	mg/L		05/13/14 11:46	05/14/14 14:57	1
Pentachlorophenol	0.040	U	0.040	0.00027	mg/L		05/13/14 11:46	05/14/14 14:57	1
Pyridine	0.020	U	0.020	0.00035	mg/L		05/13/14 11:46	05/14/14 14:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*80*		*30 - 110*	*05/13/14 11:46*	*05/14/14 14:57*	*1*
2-Fluorophenol (Surr)	*39*		*20 - 110*	*05/13/14 11:46*	*05/14/14 14:57*	*1*
2,4,6-Tribromophenol (Surr)	*71*		*23 - 110*	*05/13/14 11:46*	*05/14/14 14:57*	*1*
Nitrobenzene-d5 (Surr)	*82*		*28 - 110*	*05/13/14 11:46*	*05/14/14 14:57*	*1*
Phenol-d5 (Surr)	*39*		*21 - 110*	*05/13/14 11:46*	*05/14/14 14:57*	*1*
Terphenyl-d14 (Surr)	*103*		*48 - 110*	*05/13/14 11:46*	*05/14/14 14:57*	*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	0.000033	mg/L		05/13/14 11:58	05/17/14 07:07	1
Endrin	0.00050	U	0.00050	0.000011	mg/L		05/13/14 11:58	05/17/14 07:07	1
Heptachlor	0.00050	U	0.00050	0.0000080	mg/L		05/13/14 11:58	05/17/14 07:07	1
Heptachlor epoxide	0.00050	U	0.00050	0.0000071	mg/L		05/13/14 11:58	05/17/14 07:07	1
gamma-BHC (Lindane)	0.00050	U	0.00050	0.0000064	mg/L		05/13/14 11:58	05/17/14 07:07	1
Methoxychlor	0.0010	U	0.0010	0.000032	mg/L		05/13/14 11:58	05/17/14 07:07	1
Toxaphene	0.020	U	0.020	0.00032	mg/L		05/13/14 11:58	05/17/14 07:07	1

Client Sample ID: FWG-IDW-MWPURGE MAY 2014
Date Collected: 05/08/14 12:55
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37132-1
Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*96*		*40 - 129*	*05/13/14 11:58*	*05/17/14 07:07*	*1*
Tetrachloro-m-xylene	*96*		*40 - 129*	*05/13/14 11:58*	*05/17/14 07:07*	*1*
DCB Decachlorobiphenyl	*82*		*40 - 152*	*05/13/14 11:58*	*05/17/14 07:07*	*1*
DCB Decachlorobiphenyl	*75*		*40 - 152*	*05/13/14 11:58*	*05/17/14 07:07*	*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	0.00041	mg/L		05/13/14 12:01	05/15/14 18:53	1
Silvex (2,4,5-TP)	0.0010	U	0.0010	0.00020	mg/L		05/13/14 12:01	05/15/14 18:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*79*		*56 - 120*	*05/13/14 12:01*	*05/15/14 18:53*	*1*
2,4-Dichlorophenylacetic acid	*81*		*56 - 120*	*05/13/14 12:01*	*05/15/14 18:53*	*1*

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.50	U	0.50	0.0032	mg/L		05/13/14 10:24	05/14/14 17:38	1
Barium	**0.037**	**J B**	10	0.00067	mg/L		05/13/14 10:24	05/14/14 17:38	1
Cadmium	0.10	U	0.10	0.00066	mg/L		05/13/14 10:24	05/14/14 17:38	1
Chromium	0.50	U	0.50	0.0022	mg/L		05/13/14 10:24	05/14/14 17:38	1
Lead	**0.0019**	**J B**	0.50	0.0019	mg/L		05/13/14 10:24	05/14/14 17:38	1
Selenium	0.25	U	0.25	0.0041	mg/L		05/13/14 10:24	05/14/14 17:38	1
Silver	0.50	U	0.50	0.0022	mg/L		05/13/14 10:24	05/14/14 17:38	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0020	0.00012	mg/L		05/13/14 14:15	05/14/14 12:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		1.00	1.00	Degrees F			05/13/14 08:06	1
Cyanide, Total	0.010	U	0.010	0.0032	mg/L		05/14/14 12:34	05/14/14 15:47	1
Sulfide	3.0	U	3.0	0.94	mg/L		05/13/14 08:09	05/13/14 08:09	1
pH	**7.51**	**H**	0.100	0.100	SU			05/10/14 15:17	1

Client Sample ID: FWG-IDW-MWDECON MAY 2014
Date Collected: 05/08/14 13:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37132-2
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			05/14/14 20:58	1
1,2-Dichloroethane	0.025	U	0.025	0.011	mg/L			05/14/14 20:58	1
2-Butanone (MEK)	**0.030**	**J**	0.25	0.029	mg/L			05/14/14 20:58	1
Benzene	0.025	U	0.025	0.0065	mg/L			05/14/14 20:58	1
Carbon tetrachloride	0.025	U	0.025	0.0065	mg/L			05/14/14 20:58	1
Chlorobenzene	0.025	U	0.025	0.0075	mg/L			05/14/14 20:58	1
Chloroform	0.025	U	0.025	0.0080	mg/L			05/14/14 20:58	1
Tetrachloroethene	0.025	U	0.025	0.015	mg/L			05/14/14 20:58	1
Trichloroethene	0.025	U	0.025	0.0085	mg/L			05/14/14 20:58	1
Vinyl chloride	0.025	U	0.025	0.011	mg/L			05/14/14 20:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 121*		*05/14/14 20:58*	*1*
4-Bromofluorobenzene (Surr)	*96*		*70 - 124*		*05/14/14 20:58*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*05/14/14 20:58*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 128*		*05/14/14 20:58*	*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		05/13/14 11:46	05/14/14 15:21	1
2,4,5-Trichlorophenol	0.020	U	0.020	0.00030	mg/L		05/13/14 11:46	05/14/14 15:21	1
2,4,6-Trichlorophenol	0.020	U	0.020	0.00024	mg/L		05/13/14 11:46	05/14/14 15:21	1
2,4-Dinitrotoluene	0.020	U	0.020	0.00025	mg/L		05/13/14 11:46	05/14/14 15:21	1
Hexachlorobenzene	0.020	U	0.020	0.000085	mg/L		05/13/14 11:46	05/14/14 15:21	1
Hexachlorobutadiene	0.020	U	0.020	0.00027	mg/L		05/13/14 11:46	05/14/14 15:21	1
Hexachloroethane	0.020	U	0.020	0.00019	mg/L		05/13/14 11:46	05/14/14 15:21	1
3 & 4 Methylphenol	0.040	U	0.040	0.00080	mg/L		05/13/14 11:46	05/14/14 15:21	1
2-Methylphenol	0.0040	U	0.0040	0.00017	mg/L		05/13/14 11:46	05/14/14 15:21	1
Nitrobenzene	0.0040	U	0.0040	0.000040	mg/L		05/13/14 11:46	05/14/14 15:21	1
Pentachlorophenol	0.040	U	0.040	0.00027	mg/L		05/13/14 11:46	05/14/14 15:21	1
Pyridine	0.020	U	0.020	0.00035	mg/L		05/13/14 11:46	05/14/14 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*30 - 110*	*05/13/14 11:46*	*05/14/14 15:21*	*1*
2-Fluorophenol (Surr)	*55*		*20 - 110*	*05/13/14 11:46*	*05/14/14 15:21*	*1*
2,4,6-Tribromophenol (Surr)	*82*		*23 - 110*	*05/13/14 11:46*	*05/14/14 15:21*	*1*
Nitrobenzene-d5 (Surr)	*81*		*28 - 110*	*05/13/14 11:46*	*05/14/14 15:21*	*1*
Phenol-d5 (Surr)	*49*		*21 - 110*	*05/13/14 11:46*	*05/14/14 15:21*	*1*
Terphenyl-d14 (Surr)	*96*		*48 - 110*	*05/13/14 11:46*	*05/14/14 15:21*	*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	0.000033	mg/L		05/13/14 11:58	05/17/14 07:29	1
Endrin	0.00050	U	0.00050	0.000011	mg/L		05/13/14 11:58	05/17/14 07:29	1
Heptachlor	0.00050	U	0.00050	0.0000080	mg/L		05/13/14 11:58	05/17/14 07:29	1
Heptachlor epoxide	0.00050	U	0.00050	0.0000071	mg/L		05/13/14 11:58	05/17/14 07:29	1
gamma-BHC (Lindane)	0.00050	U	0.00050	0.0000064	mg/L		05/13/14 11:58	05/17/14 07:29	1
Methoxychlor	0.0010	U	0.0010	0.000032	mg/L		05/13/14 11:58	05/17/14 07:29	1
Toxaphene	0.020	U	0.020	0.00032	mg/L		05/13/14 11:58	05/17/14 07:29	1

Client: Environmental Quality Mgt., Inc.
Project/Site: RVAAP (OH) - IDW

TestAmerica Job ID: 240-37132-1

Client Sample ID: FWG-IDW-MWDECON MAY 2014
Date Collected: 05/08/14 13:00
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37132-2
Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*60*		*40 - 129*	*05/13/14 11:58*	*05/17/14 07:29*	*1*
Tetrachloro-m-xylene	*56*		*40 - 129*	*05/13/14 11:58*	*05/17/14 07:29*	*1*
DCB Decachlorobiphenyl	*10*	*X*	*40 - 152*	*05/13/14 11:58*	*05/17/14 07:29*	*1*
DCB Decachlorobiphenyl	*11*	*X*	*40 - 152*	*05/13/14 11:58*	*05/17/14 07:29*	*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	0.00041	mg/L		05/13/14 12:01	05/15/14 19:16	1
Silvex (2,4,5-TP)	0.0010	U	0.0010	0.00020	mg/L		05/13/14 12:01	05/15/14 19:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*85*		*56 - 120*	*05/13/14 12:01*	*05/15/14 19:16*	*1*
2,4-Dichlorophenylacetic acid	*92*		*56 - 120*	*05/13/14 12:01*	*05/15/14 19:16*	*1*

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0045**	**J**	0.50	0.0032	mg/L		05/13/14 10:24	05/14/14 17:42	1
Barium	**0.0058**	**J B**	10	0.00067	mg/L		05/13/14 10:24	05/14/14 17:42	1
Cadmium	**0.00087**	**J**	0.10	0.00066	mg/L		05/13/14 10:24	05/14/14 17:42	1
Chromium	**0.015**	**J**	0.50	0.0022	mg/L		05/13/14 10:24	05/14/14 17:42	1
Lead	**0.0096**	**J B**	0.50	0.0019	mg/L		05/13/14 10:24	05/14/14 17:42	1
Selenium	0.25	U	0.25	0.0041	mg/L		05/13/14 10:24	05/14/14 17:42	1
Silver	0.50	U	0.50	0.0022	mg/L		05/13/14 10:24	05/14/14 17:42	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0020	0.00012	mg/L		05/13/14 14:15	05/14/14 12:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		1.00	1.00	Degrees F			05/13/14 09:58	1
Cyanide, Total	0.010	U	0.010	0.0032	mg/L		05/14/14 12:34	05/14/14 15:47	1
Sulfide	3.0	U	3.0	0.94	mg/L		05/13/14 08:09	05/13/14 08:09	1
pH	**9.33**	**H**	0.100	0.100	SU			05/10/14 15:17	1

Client Sample ID: FWG-IDW-MWTB MAY 2014
Date Collected: 05/08/14 12:50
Date Received: 05/08/14 14:50

Lab Sample ID: 240-37132-3
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	0.19	ug/L			05/14/14 15:53	1
1,2-Dichloroethane	1.0	U	1.0	0.22	ug/L			05/14/14 15:53	1
Benzene	1.0	U	1.0	0.13	ug/L			05/14/14 15:53	1
Carbon tetrachloride	1.0	U	1.0	0.13	ug/L			05/14/14 15:53	1
Chlorobenzene	1.0	U	1.0	0.15	ug/L			05/14/14 15:53	1
Chloroform	**0.42**	**J**	1.0	0.16	ug/L			05/14/14 15:53	1
2-Butanone (MEK)	10	U	10	0.57	ug/L			05/14/14 15:53	1
Tetrachloroethene	1.0	U	1.0	0.29	ug/L			05/14/14 15:53	1
Trichloroethene	1.0	U	1.0	0.17	ug/L			05/14/14 15:53	1
Vinyl chloride	1.0	U	1.0	0.22	ug/L			05/14/14 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*05/14/14 15:53*	*1*
4-Bromofluorobenzene (Surr)	*87*		*66 - 120*		*05/14/14 15:53*	*1*
Toluene-d8 (Surr)	*85*		*74 - 120*		*05/14/14 15:53*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 121*		*05/14/14 15:53*	*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)
240-37132-3	FWG-IDW-MWTB MAY 2014	102	87	85	98
LCS 240-130598/4	Lab Control Sample	96	96	87	99
MB 240-130598/5	Method Blank	99	91	83	97

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 240-130522/9	Lab Control Sample	95	99	106	93

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)
240-37132-1	FWG-IDW-MWPURGE MAY 2014	99	96	103	94
240-37132-2	FWG-IDW-MWDECON MAY 2014	100	96	106	95
LB 240-130318/1-A MB	Method Blank	98	95	103	92

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 240-130471/17-A	Lab Control Sample	85	72	100	90	64	108
MB 240-130471/16-A	Method Blank	83	70	97	90	59	106

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)
240-37132-1	FWG-IDW-MWPURGE MAY 2014	80	39	71	82	39	103
240-37132-2	FWG-IDW-MWDECON MAY 2014	72	55	82	81	49	96

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 240-130474/7-A	Lab Control Sample	89	88	94	93
MB 240-130474/6-A	Method Blank	95	96	84	84

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)
240-37132-1	FWG-IDW-MWPURGE MAY 2014	96	96	82	75
240-37132-2	FWG-IDW-MWDECON MAY 2014	60	56	10 X	11 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: 240-37132-1

Method: 8151A - Herbicides (GC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPA1	DCPA2
Lab Sample ID	Client Sample ID	(56-120)	(56-120)
LCS 240-130477/7-A	Lab Control Sample	77	94
MB 240-130477/6-A	Method Blank	84	96

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Method: 8151A - Herbicides (GC)

Matrix: Water — **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPA1	DCPA2
Lab Sample ID	Client Sample ID	(56-120)	(56-120)
240-37132-1	FWG-IDW-MWPURGE MAY 2014	79	81
240-37132-2	FWG-IDW-MWDECON MAY 2014	85	92

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

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

Lab Sample ID: LCS 240-130522/9
Matrix: Water
Analysis Batch: 130522

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	1.04		mg/L		104	71 - 133
1,2-Dichloroethane	1.00	0.990		mg/L		99	80 - 120
Benzene	1.00	1.05		mg/L		105	80 - 120
2-Butanone (MEK)	2.00	1.99		mg/L		99	49 - 120
Carbon tetrachloride	1.00	0.927		mg/L		93	54 - 122
Chlorobenzene	1.00	1.01		mg/L		101	80 - 120
Chloroform	1.00	0.940		mg/L		94	80 - 123
Tetrachloroethene	1.00	1.08		mg/L		108	79 - 134
Trichloroethene	1.00	0.965		mg/L		97	78 - 130
Vinyl chloride	1.00	1.10		mg/L		110	56 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 121*
4-Bromofluorobenzene (Surr)	*99*		*70 - 124*
Toluene-d8 (Surr)	*106*		*80 - 120*
Dibromofluoromethane (Surr)	*93*		*80 - 128*

Lab Sample ID: MB 240-130598/5
Matrix: Water
Analysis Batch: 130598

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	0.19	ug/L			05/14/14 12:00	1
1,2-Dichloroethane	1.0	U	1.0	0.22	ug/L			05/14/14 12:00	1
Benzene	1.0	U	1.0	0.13	ug/L			05/14/14 12:00	1
2-Butanone (MEK)	10	U	10	0.57	ug/L			05/14/14 12:00	1
Carbon tetrachloride	1.0	U	1.0	0.13	ug/L			05/14/14 12:00	1
Chlorobenzene	1.0	U	1.0	0.15	ug/L			05/14/14 12:00	1
Chloroform	1.0	U	1.0	0.16	ug/L			05/14/14 12:00	1
Tetrachloroethene	1.0	U	1.0	0.29	ug/L			05/14/14 12:00	1
Trichloroethene	1.0	U	1.0	0.17	ug/L			05/14/14 12:00	1
Vinyl chloride	1.0	U	1.0	0.22	ug/L			05/14/14 12:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 129*		*05/14/14 12:00*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 120*		*05/14/14 12:00*	*1*
Toluene-d8 (Surr)	*83*		*74 - 120*		*05/14/14 12:00*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 121*		*05/14/14 12:00*	*1*

Lab Sample ID: LCS 240-130598/4
Matrix: Water
Analysis Batch: 130598

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	8.78		ug/L		88	78 - 131
1,2-Dichloroethane	10.0	11.0		ug/L		110	71 - 127
Benzene	10.0	9.77		ug/L		98	80 - 120

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

Lab Sample ID: LCS 240-130598/4
Matrix: Water
Analysis Batch: 130598

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	17.0		ug/L		85	60 - 126
Carbon tetrachloride	10.0	10.1		ug/L		101	66 - 128
Chlorobenzene	10.0	10.0		ug/L		100	80 - 120
Chloroform	10.0	10.6		ug/L		106	79 - 120
Tetrachloroethene	10.0	9.81		ug/L		98	79 - 120
Trichloroethene	10.0	11.1		ug/L		111	76 - 120
Vinyl chloride	10.0	9.21		ug/L		92	53 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 129*
4-Bromofluorobenzene (Surr)	*96*		*66 - 120*
Toluene-d8 (Surr)	*87*		*74 - 120*
Dibromofluoromethane (Surr)	*99*		*75 - 121*

Lab Sample ID: LB 240-130318/1-A MB
Matrix: Water
Analysis Batch: 130522

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			05/13/14 19:56	1
1,2-Dichloroethane	0.025	U	0.025	0.011	mg/L			05/13/14 19:56	1
Benzene	0.025	U	0.025	0.0065	mg/L			05/13/14 19:56	1
2-Butanone (MEK)	0.25	U	0.25	0.029	mg/L			05/13/14 19:56	1
Carbon tetrachloride	0.025	U	0.025	0.0065	mg/L			05/13/14 19:56	1
Chlorobenzene	0.025	U	0.025	0.0075	mg/L			05/13/14 19:56	1
Chloroform	0.025	U	0.025	0.0080	mg/L			05/13/14 19:56	1
Tetrachloroethene	0.025	U	0.025	0.015	mg/L			05/13/14 19:56	1
Trichloroethene	0.025	U	0.025	0.0085	mg/L			05/13/14 19:56	1
Vinyl chloride	0.025	U	0.025	0.011	mg/L			05/13/14 19:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 121*		*05/13/14 19:56*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 124*		*05/13/14 19:56*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*05/13/14 19:56*	*1*
Dibromofluoromethane (Surr)	*92*		*80 - 128*		*05/13/14 19:56*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-130471/16-A
Matrix: Water
Analysis Batch: 130607

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 130471

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		05/13/14 11:46	05/14/14 11:50	1
2,4,5-Trichlorophenol	0.020	U	0.020	0.00030	mg/L		05/13/14 11:46	05/14/14 11:50	1
2,4,6-Trichlorophenol	0.020	U	0.020	0.00024	mg/L		05/13/14 11:46	05/14/14 11:50	1
2,4-Dinitrotoluene	0.020	U	0.020	0.00025	mg/L		05/13/14 11:46	05/14/14 11:50	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-130471/16-A
Matrix: Water
Analysis Batch: 130607

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 130471

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	0.020	U	0.020	0.000085	mg/L		05/13/14 11:46	05/14/14 11:50	1
Hexachlorobutadiene	0.020	U	0.020	0.00027	mg/L		05/13/14 11:46	05/14/14 11:50	1
Hexachloroethane	0.020	U	0.020	0.00019	mg/L		05/13/14 11:46	05/14/14 11:50	1
3 & 4 Methylphenol	0.040	U	0.040	0.00080	mg/L		05/13/14 11:46	05/14/14 11:50	1
2-Methylphenol	0.0040	U	0.0040	0.00017	mg/L		05/13/14 11:46	05/14/14 11:50	1
Nitrobenzene	0.0040	U	0.0040	0.000040	mg/L		05/13/14 11:46	05/14/14 11:50	1
Pentachlorophenol	0.040	U	0.040	0.00027	mg/L		05/13/14 11:46	05/14/14 11:50	1
Pyridine	0.020	U	0.020	0.00035	mg/L		05/13/14 11:46	05/14/14 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*30 - 110*	*05/13/14 11:46*	*05/14/14 11:50*	*1*
2-Fluorophenol (Surr)	*70*		*20 - 110*	*05/13/14 11:46*	*05/14/14 11:50*	*1*
2,4,6-Tribromophenol (Surr)	*97*		*23 - 110*	*05/13/14 11:46*	*05/14/14 11:50*	*1*
Nitrobenzene-d5 (Surr)	*90*		*28 - 110*	*05/13/14 11:46*	*05/14/14 11:50*	*1*
Phenol-d5 (Surr)	*59*		*21 - 110*	*05/13/14 11:46*	*05/14/14 11:50*	*1*
Terphenyl-d14 (Surr)	*106*		*48 - 110*	*05/13/14 11:46*	*05/14/14 11:50*	*1*

Lab Sample ID: LCS 240-130471/17-A
Matrix: Water
Analysis Batch: 130607

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 130471

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0800	0.0624		mg/L		78	52 - 110
2,4,5-Trichlorophenol	0.0800	0.0681		mg/L		85	51 - 110
2,4,6-Trichlorophenol	0.0800	0.0683		mg/L		85	46 - 110
2,4-Dinitrotoluene	0.0800	0.0741		mg/L		93	54 - 110
Hexachlorobenzene	0.0800	0.0735		mg/L		92	50 - 110
Hexachlorobutadiene	0.0800	0.0625		mg/L		78	34 - 110
Hexachloroethane	0.0800	0.0621		mg/L		78	41 - 110
3 & 4 Methylphenol	0.0800	0.0635		mg/L		79	48 - 110
2-Methylphenol	0.0800	0.0635		mg/L		79	44 - 111
Nitrobenzene	0.0800	0.0684		mg/L		86	40 - 110
Pentachlorophenol	0.160	0.133		mg/L		83	12 - 110
Pyridine	0.0800	0.0632		mg/L		79	30 - 110

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*85*		*30 - 110*
2-Fluorophenol (Surr)	*72*		*20 - 110*
2,4,6-Tribromophenol (Surr)	*100*		*23 - 110*
Nitrobenzene-d5 (Surr)	*90*		*28 - 110*
Phenol-d5 (Surr)	*64*		*21 - 110*
Terphenyl-d14 (Surr)	*108*		*48 - 110*

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 240-130474/6-A
Matrix: Water
Analysis Batch: 131000

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 130474

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	0.0050	U	0.0050	0.000033	mg/L		05/13/14 11:58	05/17/14 08:58	1
Endrin	0.00050	U	0.00050	0.000011	mg/L		05/13/14 11:58	05/17/14 08:58	1
Heptachlor	0.00050	U	0.00050	0.0000080	mg/L		05/13/14 11:58	05/17/14 08:58	1
Heptachlor epoxide	0.00050	U	0.00050	0.0000071	mg/L		05/13/14 11:58	05/17/14 08:58	1
gamma-BHC (Lindane)	0.00050	U	0.00050	0.0000064	mg/L		05/13/14 11:58	05/17/14 08:58	1
Methoxychlor	0.0010	U	0.0010	0.000032	mg/L		05/13/14 11:58	05/17/14 08:58	1
Toxaphene	0.020	U	0.020	0.00032	mg/L		05/13/14 11:58	05/17/14 08:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*95*		*40 - 129*	*05/13/14 11:58*	*05/17/14 08:58*	*1*
Tetrachloro-m-xylene	*96*		*40 - 129*	*05/13/14 11:58*	*05/17/14 08:58*	*1*
DCB Decachlorobiphenyl	*84*		*40 - 152*	*05/13/14 11:58*	*05/17/14 08:58*	*1*
DCB Decachlorobiphenyl	*84*		*40 - 152*	*05/13/14 11:58*	*05/17/14 08:58*	*1*

Lab Sample ID: LCS 240-130474/7-A
Matrix: Water
Analysis Batch: 131000

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 130474

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Endrin	0.00200	0.00195	J	mg/L		98	73 - 146
Heptachlor	0.00200	0.00183	J	mg/L		91	60 - 140
Heptachlor epoxide	0.00200	0.00217	J	mg/L		108	73 - 158
gamma-BHC (Lindane)	0.00200	0.00188	J	mg/L		94	63 - 157
Methoxychlor	0.00400	0.00351	J	mg/L		88	49 - 160

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*89*		*40 - 129*
Tetrachloro-m-xylene	*88*		*40 - 129*
DCB Decachlorobiphenyl	*94*		*40 - 152*
DCB Decachlorobiphenyl	*93*		*40 - 152*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 240-130477/6-A
Matrix: Water
Analysis Batch: 130851

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 130477

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	0.0040	U	0.0040	0.00041	mg/L		05/13/14 12:01	05/15/14 20:51	1
Silvex (2,4,5-TP)	0.0010	U	0.0010	0.00020	mg/L		05/13/14 12:01	05/15/14 20:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*84*		*56 - 120*	*05/13/14 12:01*	*05/15/14 20:51*	*1*
2,4-Dichlorophenylacetic acid	*96*		*56 - 120*	*05/13/14 12:01*	*05/15/14 20:51*	*1*

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCS 240-130477/7-A
Matrix: Water
Analysis Batch: 130851

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 130477

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-D	0.0200	0.0154		mg/L		77	50 - 120
Silvex (2,4,5-TP)	0.00500	0.00379		mg/L		76	45 - 129

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*77*		*56 - 120*
2,4-Dichlorophenylacetic acid	*94*		*56 - 120*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-130439/2-A
Matrix: Water
Analysis Batch: 130613

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 130439

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.50	U	0.50	0.0032	mg/L		05/13/14 10:24	05/14/14 09:51	1
Barium	0.00102	J	10	0.00067	mg/L		05/13/14 10:24	05/14/14 09:51	1
Cadmium	0.10	U	0.10	0.00066	mg/L		05/13/14 10:24	05/14/14 09:51	1
Chromium	0.50	U	0.50	0.0022	mg/L		05/13/14 10:24	05/14/14 09:51	1
Lead	0.50	U	0.50	0.0019	mg/L		05/13/14 10:24	05/14/14 09:51	1
Selenium	0.25	U	0.25	0.0041	mg/L		05/13/14 10:24	05/14/14 09:51	1
Silver	0.50	U	0.50	0.0022	mg/L		05/13/14 10:24	05/14/14 09:51	1

Lab Sample ID: LCS 240-130439/3-A
Matrix: Water
Analysis Batch: 130613

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 130439

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.00	1.97		mg/L		98	50 - 150
Barium	2.00	1.83	J	mg/L		91	50 - 150
Cadmium	0.0500	0.0493	J	mg/L		99	50 - 150
Chromium	0.200	0.194	J	mg/L		97	50 - 150
Lead	0.500	0.439	J	mg/L		88	50 - 150
Selenium	2.00	2.03		mg/L		101	50 - 150
Silver	0.0500	0.0510	J	mg/L		102	50 - 150

Lab Sample ID: LB 240-130323/1-C
Matrix: Water
Analysis Batch: 130613

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 130439

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.50	U	0.50	0.0032	mg/L		05/13/14 10:24	05/14/14 09:47	1
Barium	0.00173	J	10	0.00067	mg/L		05/13/14 10:24	05/14/14 09:47	1
Cadmium	0.10	U	0.10	0.00066	mg/L		05/13/14 10:24	05/14/14 09:47	1
Chromium	0.50	U	0.50	0.0022	mg/L		05/13/14 10:24	05/14/14 09:47	1
Lead	0.00379	J	0.50	0.0019	mg/L		05/13/14 10:24	05/14/14 09:47	1
Selenium	0.00527	J	0.25	0.0041	mg/L		05/13/14 10:24	05/14/14 09:47	1
Silver	0.50	U	0.50	0.0022	mg/L		05/13/14 10:24	05/14/14 09:47	1

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-130443/2-A
Matrix: Water
Analysis Batch: 130680

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 130443

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0020	0.00012	mg/L		05/13/14 14:15	05/14/14 12:16	1

Lab Sample ID: LCS 240-130443/3-A
Matrix: Water
Analysis Batch: 130680

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 130443

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00500		mg/L		100	50 - 150

Lab Sample ID: LB 240-130323/1-D
Matrix: Water
Analysis Batch: 130680

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 130443

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0020	0.00012	mg/L		05/13/14 14:15	05/14/14 12:14	1

Method: 1010 - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 240-130504/1
Matrix: Water
Analysis Batch: 130504

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	83.00		Degrees F		102	97 - 103

Lab Sample ID: 240-37132-1 DU
Matrix: Water
Analysis Batch: 130504

Client Sample ID: FWG-IDW-MWPURGE MAY 2014
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Flashpoint	>180		>180		Degrees F		NC	20

Method: 9012A - Cyanide, Total and/or Amenable

Lab Sample ID: MB 240-130669/1-A
Matrix: Water
Analysis Batch: 130712

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 130669

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U	0.010	0.0032	mg/L		05/14/14 12:34	05/14/14 15:42	1

Lab Sample ID: LCS 240-130669/2-A
Matrix: Water
Analysis Batch: 130712

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 130669

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0168	0.0186		mg/L		111	69 - 118

Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 240-130378/1-A
Matrix: Water
Analysis Batch: 130482

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 130378

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	3.0	U	3.0	0.94	mg/L		05/13/14 08:09	05/13/14 08:09	1

Lab Sample ID: LCS 240-130378/2-A
Matrix: Water
Analysis Batch: 130482

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 130378

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	7.87	6.53		mg/L		83	70 - 130

Lab Sample ID: 240-37132-1 MS
Matrix: Water
Analysis Batch: 130482

Client Sample ID: FWG-IDW-MWPURGE MAY 2014
Prep Type: Total/NA
Prep Batch: 130378

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	3.0	U	7.87	6.93		mg/L		88	27 - 124

Lab Sample ID: 240-37132-1 MSD
Matrix: Water
Analysis Batch: 130482

Client Sample ID: FWG-IDW-MWPURGE MAY 2014
Prep Type: Total/NA
Prep Batch: 130378

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	3.0	U	7.87	6.13		mg/L		78	27 - 124	12	20

Method: 9040B - pH

Lab Sample ID: LCS 240-130116/19
Matrix: Water
Analysis Batch: 130116

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	6.47	6.510		SU		101	97 - 103

Lab Sample ID: LCS 240-130116/2
Matrix: Water
Analysis Batch: 130116

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	6.47	6.490		SU		100	97 - 103

GC/MS VOA

Leach Batch: 130318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	1311	
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	1311	
LB 240-130318/1-A MB	Method Blank	TCLP	Water	1311	

Analysis Batch: 130522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 240-130318/1-A MB	Method Blank	TCLP	Water	8260B	130318
LCS 240-130522/9	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 130598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-3	FWG-IDW-MWTB MAY 2014	Total/NA	Water	8260B	
LCS 240-130598/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-130598/5	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 130706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	8260B	130318
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	8260B	130318

GC/MS Semi VOA

Leach Batch: 130323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	1311	
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	1311	

Prep Batch: 130471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	3510C	130323
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	3510C	130323
LCS 240-130471/17-A	Lab Control Sample	Total/NA	Water	3510C	
MB 240-130471/16-A	Method Blank	Total/NA	Water	3510C	

Analysis Batch: 130607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	8270C	130471
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	8270C	130471
LCS 240-130471/17-A	Lab Control Sample	Total/NA	Water	8270C	130471
MB 240-130471/16-A	Method Blank	Total/NA	Water	8270C	130471

GC Semi VOA

Leach Batch: 130323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	1311	
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	1311	

GC Semi VOA (Continued)

Prep Batch: 130474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	3510C	130323
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	3510C	130323
LCS 240-130474/7-A	Lab Control Sample	Total/NA	Water	3510C	
MB 240-130474/6-A	Method Blank	Total/NA	Water	3510C	

Prep Batch: 130477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	8151A	130323
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	8151A	130323
LCS 240-130477/7-A	Lab Control Sample	Total/NA	Water	8151A	
MB 240-130477/6-A	Method Blank	Total/NA	Water	8151A	

Analysis Batch: 130851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	8151A	130477
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	8151A	130477
LCS 240-130477/7-A	Lab Control Sample	Total/NA	Water	8151A	130477
MB 240-130477/6-A	Method Blank	Total/NA	Water	8151A	130477

Analysis Batch: 131000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	8081A	130474
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	8081A	130474
LCS 240-130474/7-A	Lab Control Sample	Total/NA	Water	8081A	130474
MB 240-130474/6-A	Method Blank	Total/NA	Water	8081A	130474

Metals

Leach Batch: 130323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	1311	
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	1311	
LB 240-130323/1-C	Method Blank	TCLP	Water	1311	
LB 240-130323/1-D	Method Blank	TCLP	Water	1311	

Prep Batch: 130439

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	3010A	130323
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	3010A	130323
LB 240-130323/1-C	Method Blank	TCLP	Water	3010A	130323
LCS 240-130439/3-A	Lab Control Sample	Total/NA	Water	3010A	
MB 240-130439/2-A	Method Blank	Total/NA	Water	3010A	

Prep Batch: 130443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	7470A	130323
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	7470A	130323
LB 240-130323/1-D	Method Blank	TCLP	Water	7470A	130323
LCS 240-130443/3-A	Lab Control Sample	Total/NA	Water	7470A	
MB 240-130443/2-A	Method Blank	Total/NA	Water	7470A	

Metals (Continued)

Analysis Batch: 130613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	6010B	130439
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	6010B	130439
LB 240-130323/1-C	Method Blank	TCLP	Water	6010B	130439
LCS 240-130439/3-A	Lab Control Sample	Total/NA	Water	6010B	130439
MB 240-130439/2-A	Method Blank	Total/NA	Water	6010B	130439

Analysis Batch: 130680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	TCLP	Water	7470A	130443
240-37132-2	FWG-IDW-MWDECON MAY 2014	TCLP	Water	7470A	130443
LB 240-130323/1-D	Method Blank	TCLP	Water	7470A	130443
LCS 240-130443/3-A	Lab Control Sample	Total/NA	Water	7470A	130443
MB 240-130443/2-A	Method Blank	Total/NA	Water	7470A	130443

General Chemistry

Analysis Batch: 130116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	9040B	
240-37132-2	FWG-IDW-MWDECON MAY 2014	Total/NA	Water	9040B	
LCS 240-130116/19	Lab Control Sample	Total/NA	Water	9040B	
LCS 240-130116/2	Lab Control Sample	Total/NA	Water	9040B	

Prep Batch: 130378

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	9030B	
240-37132-1 MS	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	9030B	
240-37132-1 MSD	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	9030B	
240-37132-2	FWG-IDW-MWDECON MAY 2014	Total/NA	Water	9030B	
LCS 240-130378/2-A	Lab Control Sample	Total/NA	Water	9030B	
MB 240-130378/1-A	Method Blank	Total/NA	Water	9030B	

Analysis Batch: 130482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	9034	130378
240-37132-1 MS	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	9034	130378
240-37132-1 MSD	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	9034	130378
240-37132-2	FWG-IDW-MWDECON MAY 2014	Total/NA	Water	9034	130378
LCS 240-130378/2-A	Lab Control Sample	Total/NA	Water	9034	130378
MB 240-130378/1-A	Method Blank	Total/NA	Water	9034	130378

Analysis Batch: 130504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	1010	
240-37132-1 DU	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	1010	
240-37132-2	FWG-IDW-MWDECON MAY 2014	Total/NA	Water	1010	
LCS 240-130504/1	Lab Control Sample	Total/NA	Water	1010	

General Chemistry (Continued)

Prep Batch: 130669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	9012A	
240-37132-2	FWG-IDW-MWDECON MAY 2014	Total/NA	Water	9012A	
LCS 240-130669/2-A	Lab Control Sample	Total/NA	Water	9012A	
MB 240-130669/1-A	Method Blank	Total/NA	Water	9012A	

Analysis Batch: 130712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-37132-1	FWG-IDW-MWPURGE MAY 2014	Total/NA	Water	9012A	130669
240-37132-2	FWG-IDW-MWDECON MAY 2014	Total/NA	Water	9012A	130669
LCS 240-130669/2-A	Lab Control Sample	Total/NA	Water	9012A	130669
MB 240-130669/1-A	Method Blank	Total/NA	Water	9012A	130669

Client Sample ID: FWG-IDW-MWPURGE MAY 2014

Lab Sample ID: 240-37132-1

Date Collected: 05/08/14 12:55

Matrix: Water

Date Received: 05/08/14 14:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			130318	05/12/14 16:29	SMH	TAL CAN
TCLP	Analysis	8260B		1	130706	05/14/14 20:37	TJL1	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN
TCLP	Prep	3510C			130471	05/13/14 11:46	SDE	TAL CAN
TCLP	Analysis	8270C		1	130607	05/14/14 14:57	JMG	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN
TCLP	Prep	3510C			130474	05/13/14 11:58	SDE	TAL CAN
TCLP	Analysis	8081A		1	131000	05/17/14 07:07	BPM	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN
TCLP	Prep	8151A			130477	05/13/14 12:01	SDE	TAL CAN
TCLP	Analysis	8151A		1	130851	05/15/14 18:53	DEB	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN
TCLP	Prep	3010A			130439	05/13/14 10:24	DEE	TAL CAN
TCLP	Analysis	6010B		1	130613	05/14/14 17:38	KLC	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN
TCLP	Prep	7470A			130443	05/13/14 14:15	DEE	TAL CAN
TCLP	Analysis	7470A		1	130680	05/14/14 12:43	ADS	TAL CAN
Total/NA	Analysis	1010		1	130504	05/13/14 08:06	TPH	TAL CAN
Total/NA	Prep	9012A			130669	05/14/14 12:34	NJE	TAL CAN
Total/NA	Analysis	9012A		1	130712	05/14/14 15:47	NJE	TAL CAN
Total/NA	Analysis	9034		1	130482	05/13/14 08:09	WAL	TAL CAN
Total/NA	Prep	9030B			130378	05/13/14 08:09	WAL	TAL CAN
Total/NA	Analysis	9040B		1	130116	05/10/14 15:17	WAL	TAL CAN

Client Sample ID: FWG-IDW-MWDECON MAY 2014

Lab Sample ID: 240-37132-2

Date Collected: 05/08/14 13:00

Matrix: Water

Date Received: 05/08/14 14:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			130318	05/12/14 16:29	SMH	TAL CAN
TCLP	Analysis	8260B		1	130706	05/14/14 20:58	TJL1	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN
TCLP	Prep	3510C			130471	05/13/14 11:46	SDE	TAL CAN
TCLP	Analysis	8270C		1	130607	05/14/14 15:21	JMG	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN
TCLP	Prep	3510C			130474	05/13/14 11:58	SDE	TAL CAN
TCLP	Analysis	8081A		1	131000	05/17/14 07:29	BPM	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN
TCLP	Prep	8151A			130477	05/13/14 12:01	SDE	TAL CAN
TCLP	Analysis	8151A		1	130851	05/15/14 19:16	DEB	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN
TCLP	Prep	3010A			130439	05/13/14 10:24	DEE	TAL CAN
TCLP	Analysis	6010B		1	130613	05/14/14 17:42	KLC	TAL CAN
TCLP	Leach	1311			130323	05/12/14 16:20	SMH	TAL CAN

Client Sample ID: FWG-IDW-MWDECON MAY 2014

Lab Sample ID: 240-37132-2

Date Collected: 05/08/14 13:00

Matrix: Water

Date Received: 05/08/14 14:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Prep	7470A			130443	05/13/14 14:15	DEE	TAL CAN
TCLP	Analysis	7470A		1	130680	05/14/14 12:44	ADS	TAL CAN
Total/NA	Analysis	1010		1	130504	05/13/14 09:58	TPH	TAL CAN
Total/NA	Prep	9012A			130669	05/14/14 12:34	NJE	TAL CAN
Total/NA	Analysis	9012A		1	130712	05/14/14 15:47	NJE	TAL CAN
Total/NA	Analysis	9034		1	130482	05/13/14 08:09	WAL	TAL CAN
Total/NA	Prep	9030B			130378	05/13/14 08:09	WAL	TAL CAN
Total/NA	Analysis	9040B		1	130116	05/10/14 15:17	WAL	TAL CAN

Client Sample ID: FWG-IDW-MWTB MAY 2014

Lab Sample ID: 240-37132-3

Date Collected: 05/08/14 12:50

Matrix: Water

Date Received: 05/08/14 14:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	130598	05/14/14 15:53	LEE	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: 240-37132-1

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 *
Connecticut	State Program	1	PH-0590	12-31-14
Florida	NELAP	4	E87225	06-30-14 *
Georgia	State Program	4	N/A	06-30-14 *
Illinois	NELAP	5	200004	07-31-14 *
Kansas	NELAP	7	E-10336	01-31-15
Kentucky (UST)	State Program	4	58	06-30-14 *
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-14
Nevada	State Program	9	OH-000482008A	07-31-14 *
New Jersey	NELAP	2	OH001	06-30-14 *
New York	NELAP	2	10975	03-31-15
Ohio VAP	State Program	5	CL0024	10-31-15
Pennsylvania	NELAP	3	68-00340	08-31-14
Texas	NELAP	6		08-31-14
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-14
Washington	State Program	10	C971	01-12-15
West Virginia DEP	State Program	3	210	12-31-14
Wisconsin	State Program	5	999518190	08-31-14

* Expired certification is currently pending renewal and is considered valid.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

14

240-37132 Chain of Custody

Chain of Custody Record

TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: North Canton

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other DOD QSM / w/CS

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: EQM	Client Project Manager: John Miller	Site Contact: A. Dragotta	Lab Contact: Mark Loeb.	COC No: 56030
Address: 1800 Carillon Blvd	Telephone: 513-825-7500	Telephone: 513-825-7500	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Cincinnati, Ohio 45240	Email: adragotta@eqm.com	Analysis Turnaround Time (in BUS days)		For lab use only
Phone: 513-825-7500		TAT if different from below; ☒ 3 weeks; ☐ 2 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client ☐; Lab pickup ☐; Lab sampling ☐
Project Name: RVAAP (OH)	Method of Shipment/Carrier: ~~Fed Ex~~ Lab Pickup			Job/SDG No:
Project Number: 030174 0016.001.11.1	Shipping/Tracking No: N/A			
PO#				

Matrix: Air, Aqueous, Sediment, Solid, Other. Containers & Preservatives: H2SO4, HNO3, HCl, NaOH, ZnAc/NaOH, Unpres, Other. Filtered Sample (Y/N); Composite=C / Grab=G.

Analyses: VOA 8260, TCLP VOA, TCLP-Herb, Pest, Metals, TCLP-SVOC, Total Cyanide, Total Sulfide, Flashpoint, pH

Sample Identification	Sample Date	Sample Time	Aqueous	HCl	NaOH	Unpres	VOA 8260	TCLP VOA	TCLP-Herb, Pest, Metals	TCLP-SVOC	Total Cyanide	Total Sulfide	Flashpoint	pH	Sample Specific Notes / Special Instructions
~~FWG IDW - TRIP~~	05/08/14	~~1250~~	~~X~~	~~2~~			~~X~~								AD 5/8/14
~~FWG PURGE - May 2014~~	↓	~~1205~~	~~X~~		~~1~~	~~8~~		~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	AD 5/8/14
~~FWG DECON - May 2014~~	↓	~~1300~~	~~X~~		~~1~~	~~8~~		~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	AD 5/8/14
FWG-IDW MWPURGE MAY 2014		1255	X		1	8		X	X	X	X	X	X	X	STL-1
FWG IDW-MWDECON MAY 2014		1300	X		1	8/6		X	X	X	X	X	X	X	SH1
FWG-IDW MWTB MAY 2014		1250	X	2		AD 5/8/14	X								STL-1

AD 5/8/14

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

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

Special Instructions/QC Requirements & Comments: Samples collected near pickup may not meet temp requirements. All VOAs in STL-1

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	EQ	5/8/14 1400	[signature]	TestAmerica	5-8-14 1400
Relinquished by: [signature]	Company: TestAmerica	Date/Time: 5-8-14 - 1450	Received by: [signature]	Company: TAC	Date/Time: 5/8/14 1450
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

TAL 0018-1 (04/10)

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 37132

Client EQM Site Name

Cooler unpacked by:

Cooler Received on 5/8/14 Opened on 5/8/14

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off (TestAmerica Courier) Other

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 +0 °C)	Observed Cooler Temp. °C	Corrected Cooler Temp. °C	
IR GUN# 4	(CF -1 °C)	Observed Cooler Temp. °C	Corrected Cooler Temp. °C	X See Multiple Cooler Form
IR GUN# 5	(CF +1 °C)	Observed Cooler Temp. °C	Corrected Cooler Temp. °C	
IR GUN# 8	(CF +1 °C)	Observed Cooler Temp. °C	Corrected Cooler Temp. °C	

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1EA	(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. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
7. Could all bottle labels be reconciled with the COC?	(Yes)	No
8. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
9. Sufficient quantity received to perform indicated analyses?	(Yes)	No
10. Were sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# HC391902
11. Were VOAs on the COC?	(Yes)	No
12. Were air bubbles >6 mm in any VOA vials?	Yes	(No) NA
13. Was a trip blank present in the cooler(s)?	(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 # : 37132

Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
CLIENT	5	3.1	4.1	ICE
CLIENT	5	3.8	4.8	
CLIENT	5	4.6	5.6	
CLIENT		2.4	3.4	
CLIENT		4.8	5.8	
CLIENT		2.8	3.8	
CLIENT		3.0	4.0	
CLIENT		2.4	3.4	
CLIENT		4.2	5.2	
ECNO		2.2	3.2	
CLIENT		1.4	2.4	
CLIENT		2.4	3.4	

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
FWG-IDW-MWPURGE MAY 2014	240-37132-A-1	Plastic 250ml - with Sodium Hydro>	>12		
FWG-IDW-MWPURGE MAY 2014	240-37132-B-1	Plastic 500ml - with Zn Acetate and	>9		
FWG-IDW-MWDECON MAY 2014	240-37132-A-2	Plastic 250ml - with Sodium Hydro>	>12		
FWG-IDW-MWDECON MAY 2014	240-37132-B-2	Plastic 500ml - with Zn Acetate and	>9		

APPENDIX E

REPORTING LIMITS THAT CURRENTLY DO NOT MEET THE RVAAP QAPP PROJECT ACTION REQUIRMENTS, MCLS, AND/OR RSL

VOCs

CAS No.	Analyte Name	Units	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
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	0.24	0.25	1	1	NS	0.0075
107-06-2	1,2-Dichloroethane	µg/L	0.22	0.25	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	0.18	0.25	1	1	NS	0.17
75-01-4	Vinyl chloride	µg/L	0.22	0.25	1	1	2	0.019

SVOCS

CAS No.	Analyte Name	Units	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
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	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
309-00-2	Aldrin	µg/L	0.0082	0.02	0.03	0.03	NS	0.00046
319-84-6	alpha-BHC	µg/L	0.007	0.02	0.03	0.03	NS	0.0071
60-57-1	Dieldrin	µg/L	0.0075	0.02	0.03	0.03	NS	0.0017
76-44-8	Heptachlor	µg/L	0.008	0.02	0.03	0.03	0.4	0.002
1024-57-3	Heptachlor epoxide	µg/L	0.0071	0.02	0.03	0.03	0.2	0.0038
8001-35-2	Toxaphene	µg/L	0.32	0.79	2	2	3	0.015

PCB

CAS No.	Analyte Name	Units	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
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	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
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	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
7440-38-2	Arsenic	µg/L	3.3	10	10	5	10	0.052
7440-70-2	Calcium	µg/L	630	1000	5000	100	NS	NS
7440-09-7	Potassium	µg/L	300	900	5000	200	NS	NS
7439-95-4	Magnesium	µg/L	120	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	0.01	0.01	0.0032	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

NS= No Standard

APPENDIX F

CORRESPONDENCE AND COMMENTS/RESPONSES

OhioEPA

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

October 6, 2014

Mr. Brett Merkel
Army National Guard Directorate
ARNGD-ILE Clean Up
111 South George Mason Drive
Arlington, VA 22203

Re: **US Army Ravenna Ammunition Plt RVAAP**
Assessment
Remedial Response
Portage
267000859

Subject: Ravenna Army Ammunition Plant Portage/Trumbull Counties, Comment Letter, Re. FWGWMP Draft Facility-Wide Ground Water Report on the May, 2014, Sampling Event, Dated August 22, 2014, Ohio EPA ID # 267-000859-036

Dear Mr. Merkel:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Draft Facility-Wide Groundwater Monitoring Program (FWGWMP), RVAAP-66 Facility-Wide Groundwater Report for the May 2014 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 August 25, 2014, and is dated August 22, 2014. The document was prepared for the U.S. Army Corps of Engineers (USACE)-Louisville District, by Environmental Quality Management, Inc. (EQM), under contract no. GS-10F-0293K.

The report summarizes the results of the ground water sampling event conducted May 7 and 8, 2014. Six wells were sampled during this event. This was an interim sampling event between two scheduled semi-annual sampling events. Note: Beginning in January, 2013, sampling frequency was changed from quarterly to semiannual. To date, 281 of 284 wells at the facility have been sampled at least four quarters.

Comments on the document based on Ohio EPA review are provided below. Please provide responses to the enclosed comments in accordance with the Directors Findings and Orders.

EMAILED 10-09-2014

COMMENTS

1. **Agreement on Need for Additional Wells.** Considering the concentrations of arsenic (LL1mw-088 and LL2mw-271), thallium (LL2mw-271), cobalt (LL2mw-271), and manganese (LL2mw-246) exceeding their respective (primary or secondary) MCLs and/or RSLs and the low concentrations of perchlorates and explosives/propellants present in one of the "new" monitoring wells (LL3mw-246), Ohio EPA agrees in principle with the National Guard's proposal at the May 21, 2014, RAB Meeting to install three additional monitoring wells near the southeast corner of the facility near Load Lines # 1 through # 3. The details of such a proposal, including the location and construction of

Scanned
By:
Date: 10-09-2014

Northeast District Office • 2110 East Aurora Road • Twinsburg, OH 44087-1924
www.epa.ohio.gov • (330) 963-1200 • (330) 487-0769 (fax)

RECEIVED 10-09-2014

planned wells, would have to be reviewed and approved by Ohio EPA. Ohio EPA had made a similar comment based on its review of the January 2014 ground water sampling data from the facility. To date, no such proposal to install additional monitoring wells has been submitted to the Agency.

2. **Time-Series Graphs of pH Measurements.** Ohio EPA recommends that the facility present historic pH data for FWGmw-002 and other wells that the facility may be monitoring for potential pH issues on a time-series graph. Such representation of the data will aid in its interpretation.

3. **"New" Wells Not Tested for Perchlorates.** It is not clear why the three "new" wells were not tested for perchlorates. Low levels of this compound were detected in samples from two of the "new" wells (LL2mw-271 and LL3MW-246) collected during the January 2014 sampling event. This issue needs to be explained.

Pursuant to the CERCLA process, the property owner usually can provide the expected land uses to assist in ensuring that the investigation addresses all receptors for both current and future land uses. Be advised that due to land use uncertainty, Ohio EPA may require additional work in the future, to address data gaps. It is incumbent upon the Army to finalize land use at Camp Ravenna as soon as possible, otherwise additional work and schedule slippage may result.

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
Mark Nichter, USACE
Rebecca Haney/Gail Harris, Vista Sciences Corp.

ec: Nancy Zikmanis, Ohio EPA, NEDO DERR
Justin Burke, Ohio EPA, CO DERR
Rod Beals, Ohio EPA NEDO DERR
Al Muller, Ohio EPA NEDO DDAGW

NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

November 7, 2014

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
Draft Facility-Wide Groundwater Report on the May 2014 Sampling Event
Ohio EPA I.D. 267-000859-036

Dear Mr. Palombo:

On October 9, 2014 the Army received a letter of correspondence from the Ohio Environmental Protection Agency (Ohio EPA), dated October 6, 2014. The letter presented the Ohio EPA comments on the "Draft Facility-Wide Groundwater Report on the May 2014 Sampling Event" for the Ravenna Army Ammunition Plant in Portage/Trumbull Counties Ohio. Below please find the responses to the Ohio EPA comments. This document was prepared for the US Army Corps of Engineers (USACE) - Louisville District, by Environmental Quality Management, Inc. under Contract No. W912QR-11-F-0266.

Ohio EPA Comment 1: Agreement on Need for Additional Wells. Considering the concentrations of arsenic (LL1mw-088 and LL2mw-271) , thallium (LL2mw-271), cobalt (LL2mw-271), and manganese (LL2mw-246) exceeding their respective (primary or secondary) MCLs and/or RSLs and the low concentrations of perchlorates and explosives/propellants present in one of the "new" monitoring wells (LL3mw-246), Ohio EPA agrees in principle with the National Guard' s proposal at the May 21, 2014, RAB Meeting to install three additional monitoring wells near the southeast corner of the facility near Load Lines # 1 through # 3. The details of such a proposal, including the location and construction of planned wells, would have to be reviewed and approved by Ohio EPA. Ohio EPA had made a similar comment based on its review of the January 2014 ground water sampling data from the facility. To date, no such proposal to install additional monitoring wells has been submitted to the Agency.

Response: A new contract is currently being generated and is anticipated to be awarded by March 2014. The primary tasks to be accomplished under this new contract in 2015 are the preparation of the RI WP; which will include a background study, development of a conceptual site model, a proposed new sampling program, and the installation of additional monitoring wells "outside" the fence, as needed.

Ohio EPA Comment 2: Time-Series Graphs of pH Measurements. Ohio EPA recommends that the facility present historic pH data for FWGmw-002 and other wells that the facility may be monitoring for potential pH issues on a time-series graph. Such representation of the data will aid in its interpretation.

Subject: Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Response to Comments for the Draft Facility-Wide Groundwater Report on the May 2014 Sampling Event Portage/Trumbull Counties

Response: A pH time-series graph is included as Attachment 1. Additionally, this graph will be updated and included in future annual groundwater reports.

Ohio EPA Comment 3. "New" Wells Not Tested for Perchlorates. It is not clear why the three "new" wells were not tested for perchlorates. Low levels of this compound were detected in samples from two of the "new" wells (LL2mw-271 and LL3MW-246) collected during the January 2014 sampling event. This issue needs to be explained.

Response: Historically, each well at RVAAP has only been sampled once for perchlorates. There have been 195 wells that have had perchlorate detections above the reporting limit, ranging from 0.0089 J µg/L to 0.19 µg/L (note that the RSL is 14 µg /L and the Interim Drinking Water Health Advisory is 15 µg/L). Given the locations of the detections in LL2mw-271 and LL3MW-246 (i.e., outside the perimeter fence), the Army will include perchlorates in the semiannual sampling for these two wells in 2015.

Finalization of this document will occur in accordance with the Director's Final Findings and Orders upon receipt of the Ohio Environmental Protection Agency approval letter.

Please contact the undersigned at (703) 601-7785 or brett.a.merkel.civ@mail.mil if there are issues or concerns with this submission.

Sincerely,

Brett Merkel

Brett A. Merkel
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Nancy Zikmanis, Ohio EPA, NEDO-DERR
Rod Beals, Ohio EPA, NEDO-DERR
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

ATTACHMENT 1

pH TIME-SERIES GRAPH

Subject: Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Response to Comments for the Draft Facility-Wide Groundwater Report on the May 2014 Sampling Event Portage/Trumbull Counties

WellID	SampleDate	pH	SampleTime
FWGmw-002	25-Jul-14	8.16	9:18
FWGmw-002	07-May-14	8.07	11:48
FWGmw-002	19-Aug-13	8.95	15:38
FWGmw-002	22-Jan-13	9.38	12:25
FWGmw-002	15-Oct-12	8.42	15:18
FWGmw-002	25-Jul-12	7.88	10:29
FWGmw-002	01-May-12	7.62	12:08
LL1mw-086	24-Jul-14	8.57	15:10
LL1mw-086	20-Jan-14	8.05	16:29
LL1mw-086	21-Aug-13	9.4	13:33
LL1mw-086	21-Jan-13	7.59	14:14
LL1mw-086	17-Oct-12	6.91	15:15
LL1mw-086	23-Jul-12	9.63	14:34
LL1mw-086	30-Apr-12	10.62	13:53

OhioEPA

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

November 21, 2014

Mr. Brett Merkel
Army National Guard Directorate
ARNGD-ILE Clean Up
111 South George Mason Drive
Arlington, VA 22203

Re: US Army Ammunition Plt RVAAP
Assessment
Remedial Response
Portage
267000859

Subject: Ravenna Army Ammunition Plant, Portage/Trumbull Counties. Approval of Response to Comments on the RVAAP-66 Draft Facility-Wide Groundwater Report on the May 2014 Sampling Event, Dated November 7, 2014, Ohio EPA ID # 267-000859-036

Dear Mr. Merkel:

The Ohio Environmental Protection Agency (Ohio EPA) has received the response to Ohio EPA comments on the "Draft Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Report on the May 2014 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 November 10, 2014. 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 concurs with the responses to comments. We look forward to receiving the Final Report on the May 2014 Groundwater Sampling Event.

Pursuant to the CERCLA process, the property owner usually can provide the expected land uses to assist in ensuring that the investigation addresses all receptors for both current and future land uses. Be advised that due to land use uncertainty, Ohio EPA may require additional work in the future to address data gaps. It is incumbent upon the Army to finalize land use at camp Ravenna as soon as possible, otherwise additional work and schedule slippage may result.

E-MAILED 11-24-2014

Scanned
By: RMH
Date: 11-24-2014

Northeast District Office • 2110 East Aurora Road • Twinsburg, OH 44087-1924
www.epa.ohio.gov • (330) 963-1200 • (330) 487-0769 (fax)

RECEIVED 11-24-2014

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

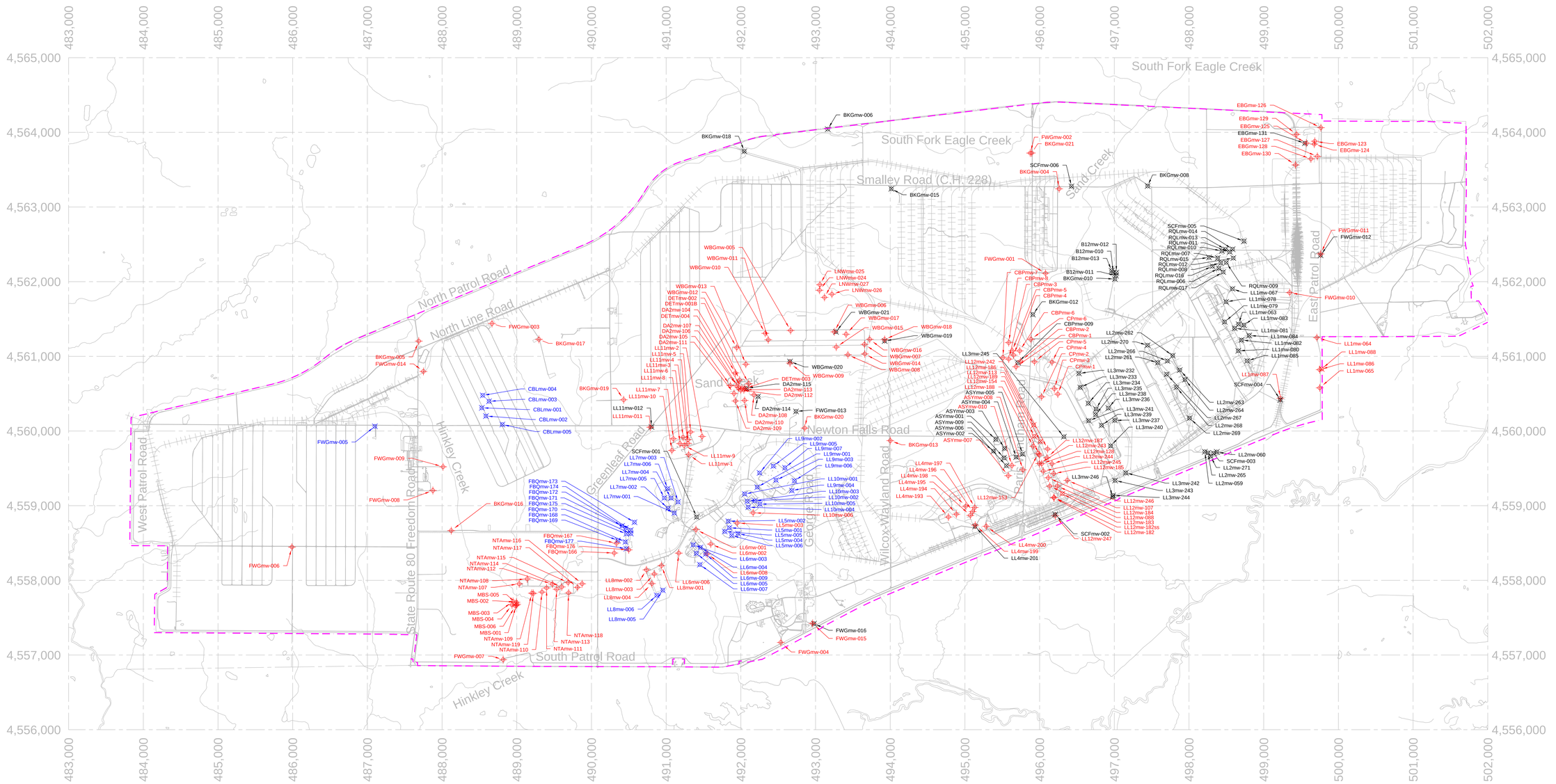
Sincerely,

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
Mark Nichter, USACE
Rebecca Haney/Gail Harris, VISTA Sciences Corp.

ec: Nancy Zikmanis, Ohio EPA, NEDO DERR
Rodney Beals, Ohio EPA NEDO DERR
Justin Burke, Ohio EPA, CO DERR



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

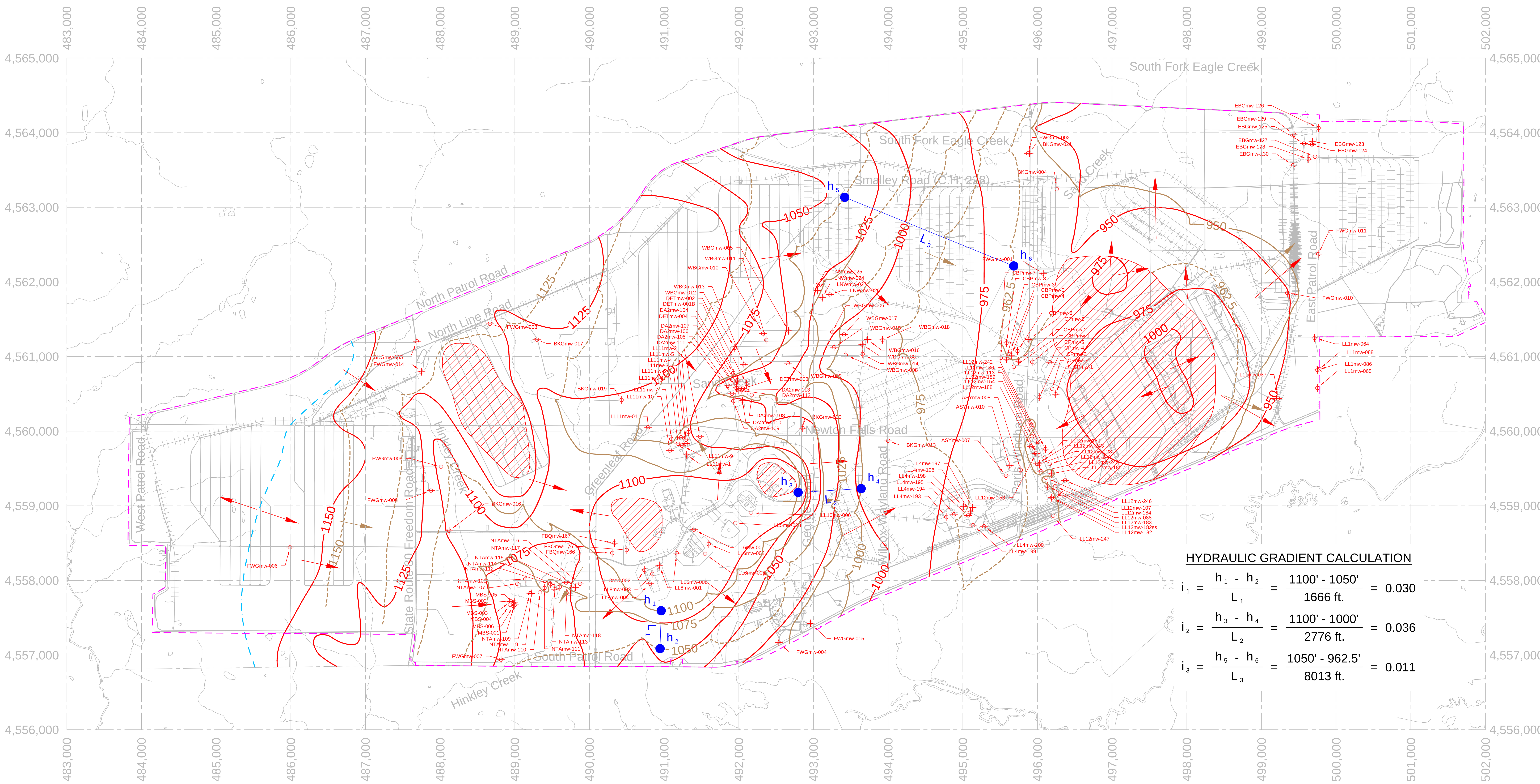
REVISIONS

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

$$i_1 = \frac{h_1 - h_2}{L_1} = \frac{1100' - 1050'}{1666 \text{ ft.}} = 0.030$$

$$i_2 = \frac{h_3 - h_4}{L_2} = \frac{1100' - 1000'}{2776 \text{ ft.}} = 0.036$$

$$i_3 = \frac{h_5 - h_6}{L_3} = \frac{1050' - 962.5'}{8013 \text{ ft.}} = 0.011$$

RVAAP Area	Well ID	Potentiometric Elevation August 2013 (ft, amsl)
Load Line 1	LL1mw-064	934.75
	LL1mw-065	934.80
	LL1mw-086	934.67
	LL1mw-087	939.66
	LL1mw-088	934.69
Load Line 4	LL4mw-193	977.29
	LL4mw-194	977.56
	LL4mw-195	972.89
	LL4mw-196	972.03
	LL4mw-197	971.74
	LL4mw-198	978.08
	LL4mw-199	971.08
	LL4mw-200	971.08
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	1084.22
	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	978.51
	LL12mw-182ss	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	939.41
	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	1069.66
	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	1078.48
	NTAmw-116	1089.47
	NTAmw-117	1082.33
	NTAmw-118	1074.17
	NTAmw-119	1069.25
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	1106.62
	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

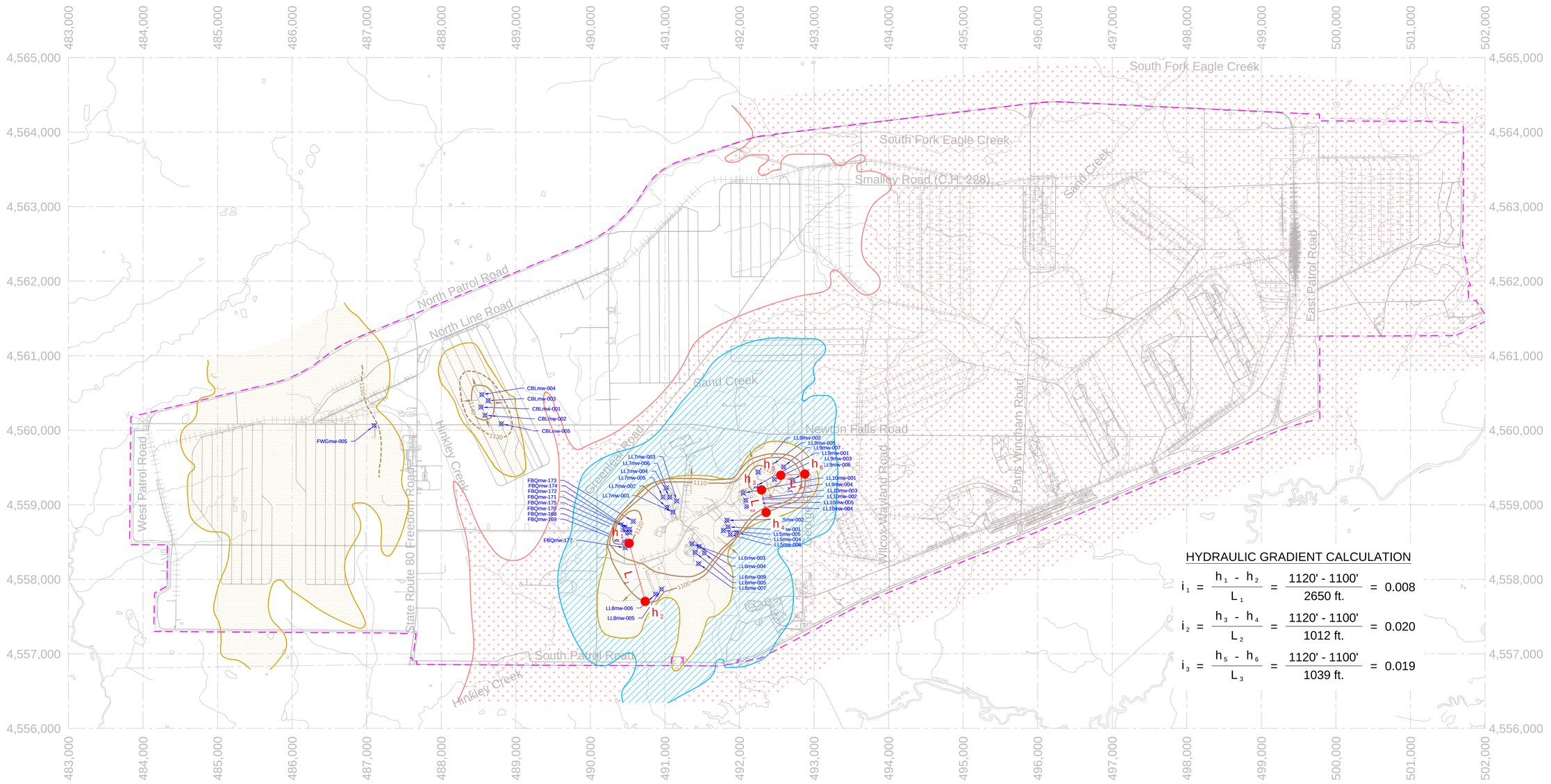
REVISIONS

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) (INTERMEDIATE DASHED) 1030
- 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

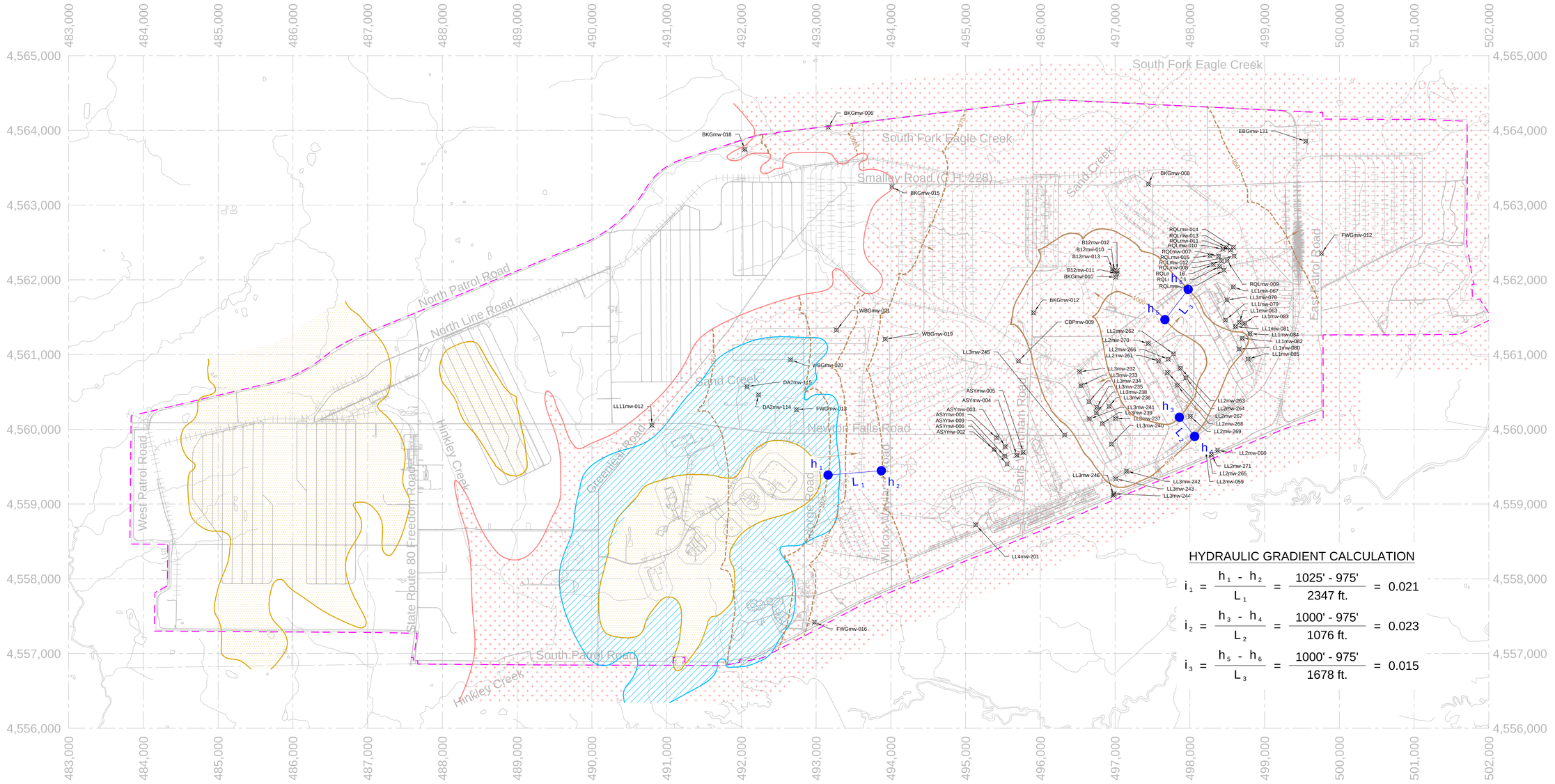
REVISIONS

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



HYDRAULIC GRADIENT CALCULATION

$$i_1 = \frac{h_1 - h_2}{L_1} = \frac{1025' - 975'}{2347\ ft.} = 0.021$$

$$i_2 = \frac{h_3 - h_4}{L_2} = \frac{1000' - 975'}{1076\ ft.} = 0.023$$

$$i_3 = \frac{h_5 - h_6}{L_3} = \frac{1000' - 975'}{1678\ ft.} = 0.015$$

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-010	960.86
	BKGmw-012	993.06
	BKGmw-015	992.59
	BKGmw-018	1030.15

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

- 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

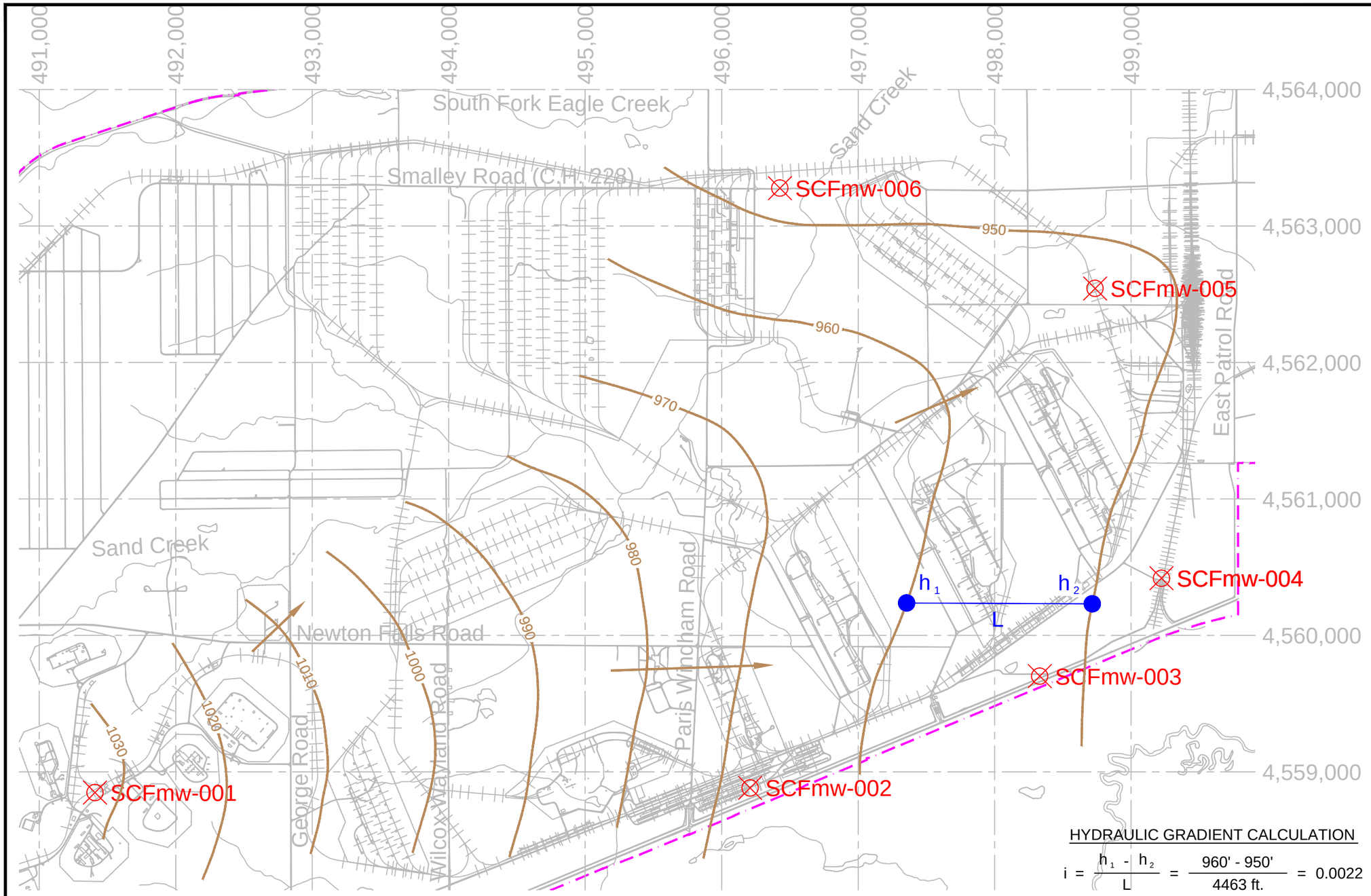
REVISIONS

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 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.
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SCALE: AS SHOWN

POTENTIOMETRIC SURFACE OF SHARON CONGLOMERATE (MAY 2014)

ORIGINAL SIZE	PROJECT NO.	DWG NO.	REV
B	30174.0016.001	PLATE 5	0