Final
Interim Removal Action
Historical Well Abandonment Completion Report

Camp Ravenna
Portage and Trumbull Counties, Ohio

Contract: W912QR-12-D-0010
Task Order: 0012

Prepared for:

United States Army Corps of Engineers
Louisville District
600 Dr. Martin Luther King Jr. Place
Louisville, Kentucky 40202-2239

Prepared by:

Plexus Scientific Corporation
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Alexandria, Virginia 22310-2304

March 2016

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STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Final Interim Removal Action Historical Well Abandonment Completion Report
Former Ravenna Arm Ammunition Plant, Portage and Trumbull Counties, Ohio
U.S. Army Corps of Engineers
Louisville District

Plexus Scientific Corporation has completed the preparation of the Final Interim Removal Action Work Plan for Well Abandonment. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the 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 to be 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 U. S. Army Corps of Engineers policy.

Significant concerns and explanation of the resolutions are documented within the project file. As noted above, all concerns resulting from independent technical review of the project have been considered.

3/11/2016

Craig Hebert
Project Manager

Date

3/11/2016

D. Jarett McDonald
Independent Technical Reviewer

Date

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Ohio Environmental Protection Agency

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

March 18, 2016

Mr. Mark Leeper
Army National Guard Directorate
ARNGD-ILE Clean Up
111 South George Mason Drive
Arlington, VA 22204

Re: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
267000859207

Subject: Ravenna Army Ammunition Plant, Portage/Trumbull Counties. Approval of the Final Interim Removal Action Historical Well Abandonment Completion Report, Dated March 2016, Ohio EPA ID # 267-000859-207

Dear Mr. Leeper:

The Ohio Environmental Protection Agency (Ohio EPA) has received the "Final Interim Removal Action Historical Well Abandonment Completion Report" at the Camp Ravenna, Portage/Trumbull Counties, Ohio. This document was received at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on March 14, 2016. The report was prepared for the US Army Corps of Engineers (USACE) Louisville District by Plexus Scientific Corporation under Contract Number W912QR-12-D-0010.

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

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

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/nvr

cc: Katie Tait, OHARNG RTLS
Kevin Sedlak, ARNG
Gregory F. Moore, USACE
Rebecca Haney/Gail Harris, VISTA Sciences Corp.

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Prepared by:

Plexus Scientific Corporation
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March 11, 2016

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Ohio EPA – NEDO-DERR, Rod Beals	0	Email
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Camp Ravenna Restoration Program Administrative Records Manager, Gail Harris	2	2
Plexus Program Manager, Ali Sadrieh	0	1
Plexus Project Manager, Craig Hebert	1	1

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LIST OF ACRONYMS

AAP SSHP	Facility-Wide Accident Prevention Plan and Site Safety and Health Plan
ARNG	Army National Guard
bgs	Below Ground Surface
CFR	Code of Federal Regulations
COR	Contracting Officer's Representative
^{o}	Degrees
ft	Feet
FWSAP	Facility-Wide Sampling and Analysis Plan
IDW	Investigation-Derived Waste
INRMP	Integrated Natural Resources Management Plan
IRA	Interim Removal Action
IRAWP	Interim Removal Action Work Plan
MCLs	Maximum Contaminant Levels
OWRC	Ohio Water Resources Council
Ohio EPA	Ohio Environmental Protection Agency
OHARNG	Ohio Army National Guard
%	percent
PALs	Project Action Levels
Plexus	Plexus Scientific Corporation
RSLs	Regional Screening Levels
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOC	Top-of-Casing
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USP&FO	United States Property and Fiscal Officer
Vista	Vista Sciences Corporation
VOCs	Volatile Organic Compounds

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1.0 INTRODUCTION

This Final Interim Removal Action Historical Well Abandonment and Completion Report (Completion Report) outlines the activities that occurred during the implementation of the *Final Interim Removal Action Work Plan* (IRAWP; Plexus Scientific Corporation [Plexus], 2015) and describes the activities associated with the interim removal action (IRA) for the abandonment of 25 former groundwater production wells at Camp Ravenna in Portage and Trumbull counties, Ohio (**Figure 1-1**). The work was performed in accordance with the Final IRAWP (July 2015). This Completion Report has been prepared by under contract number W912QR-12-D-0010, task order number 0012, for the U.S. Army Corps of Engineers (USACE), Louisville District at Camp Ravenna.

1.1 Completion Report Purpose

The purpose of this Completion Report is to outline the activities that occurred during the well abandonment process as described in the Final IRAWP. The abandonment of the production wells served to eliminate potential chemical hazard pathways by preventing a conduit for potential groundwater contamination migration into and between aquifers. Additionally, physical hazards were also eliminated by the removal of a direct physical exposure through contact with the wells and structures related to the wells. All work was completed in compliance with the project-specific, Facility-Wide Accident Prevention Plan and Site Safety and Health Plan (APP SSHP).

The list of wells to be abandoned was outlined in the Final IRAWP, and all work was performed in accordance with the Final IRAWP, *State of Ohio Regulations and Technical Guidance for Sealing Unused Water Wells and Boreholes* (Ohio Water Resources Council [OWRC], 2015), Ohio Revised Code 1521.05(B), and relevant portions of *The Facility-Wide Sampling and Analysis Plan* (FWSAP; Science Applications International Corporation [SAIC], 2011).

1.2 Report Organization

This Completion Report is comprised of the following sections:

- **Section 1.0** – Introduction
- **Section 2.0** – Facility Description
- **Section 3.0** – Production Well Abandonment – Pre Abandonment Activities
- **Section 4.0** – Well Abandonment Activities
- **Section 5.0** – Investigation-Derived Waste (IDW)
- **Section 6.0** – Site Restoration and Inspections
- **Section 7.0** – References

Figures, tables, and appendices are provided after **Section 7.0**.

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2.0 FACILITY DESCRIPTION

2.1 Facility Background

Camp Ravenna consists of approximately 21,683 acres, and is located 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. As of September 2013, administrative accountability for the entire acreage of the facility has been transferred to the United States Property and Fiscal Officer (USP&FO) for Ohio and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a military training site (Camp Ravenna). References in this document to the Former Ravenna Army Ammunition Plant (RVAAP) relate to previous activities at the facility as related to former munitions production activities, or to activities being conducted under the restoration/clean-up program. Therefore, references to the RVAAP in this document, unless otherwise stated, will include the acreage of both the Former RVAAP and Camp Ravenna.

2.2 Historical Production Well Information

A 2013 survey report (Vista Sciences Corporation [Vista], 2013) identified 44 former production wells at the facility (**Figure 2-1**). Of the 44 wells located, 38 wells were identified visually, and six wells were identified as geophysical anomalies at their expected locations. The Final IRAWP described the selection and process for abandonment of 25 of the 44 production wells.

2.3 Geology and Hydrogeology

The regional geology at the Former RVAAP/Camp Ravenna consists of horizontal to gently dipping bedrock strata of Mississippian- and Pennsylvanian-age overlain by varying thicknesses of unconsolidated glacial deposits.

The unconsolidated glacial deposits at the Former RVAAP/Camp Ravenna are overlain by deposits of the Wisconsin-aged Lavery Till and is located in the western portion of the facility. The younger Hiram Till and associated outwash deposits are found in the eastern two-thirds of the facility and vary considerably in their character and thickness across the facility. The bedrock underlying the unconsolidated glacial deposits consists of sedimentary deposits predominately Pennsylvanian in age with minor deposits of Mississippian age rocks.

Groundwater at the Former RVAAP/Camp Ravenna is present in both the overlying unconsolidated glacial deposits and in selected bedrock units. Groundwater from both unconsolidated glacial deposits and bedrock aquifers predominantly flows in an eastward direction. Groundwater in the unconsolidated aquifer generally flows in a northeasterly direction. However, there are local groundwater flow variations that are influenced by topography and drainage patterns on the western portion of Former RVAAP/Camp Ravenna and results in surface discharge of the groundwater in some of the lower lying drainage areas.

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3.0 PRODUCTION WELL ABANDONMENT – PRE-ABANDONMENT ACTIVITIES

3.1 Wetland Delineation and Access Route/Tree Cutting Removal Event

Potential wetland areas identified in the vicinity of the wells based on National Wetlands Inventory and the data provided in the *Integrated Natural Resources Management Plan for the Ravenna Training and Logistics Site, Portage and Trumbull Counties, Ohio* (INRMP; AMEC, 2008), were identified in the Final IRAWP. In order to verify field conditions prior to submittal of the IRAWP, a planning level wetlands and streams survey was completed on November 13, 2014 by a qualified wetlands biologist. It was determined that avoidance of wetlands was achievable at all 25 well locations.

During the week of March 15-20, 2015, a wetlands biologist from AECOM delineated the wetlands along the identified temporary access routes presented in the Final IRAWP. The findings of that site-walk were reported in the Water Resource Delineation Memorandum (AECOM, 2015); refer to **Appendix A**. As outlined in the memorandum, avoidance of wetlands could be achieved at all locations and all access routes identified during the initial November 2014 site-walk and the Final IRAWP. A verification walk was conducted in September 2015 prior to the beginning of the abandonment process the details of which are outlined in **Section 3.2** below.

In order to access the well locations with the equipment necessary for abandonment, it was determined that some limited tree removal was necessary at several of the well locations. In accordance with the OHARNG and Camp Ravenna management practices with regard to the Northern Long-Eared Bat, cutting of the trees to clear access routes to the wells was required to occur between October 1 - March 31, 2015. During the week of March 15-20, 2015, the tree removal activities occurred concurrently with the wetland delineation activities. Prior to cutting activities, trees 3 inches or greater (in diameter) were marked for removal under Camp Ravenna/ OHARNG guidelines. The tree removal was conducted in accordance with the Final IRAWP by Lumber Jack Incorporated. The felled trees were cut into logs and staged for use as firewood and biomass as designated by the OHARNG and as outlined in the INRMP. The stumps of the felled trees were cut to approximately 3 inches above ground surface at each location, and all non-timber portions were chipped and spread over areas identified by the OHARNG.

3.2 Utility Clearances and Wetlands Verification Site Walk

On September 2, 2015, Ground Penetrating Radar Services conducted a utility clearance at all 25 well locations prior to the beginning of any abandonment activities as outlined in the Final IRAWP.

A wetlands verification visit was also conducted on September 3, 2015 by AECOM and Plexus. The purpose of this visit was to ensure the pathways identified in March 2015 were still accessible, and to determine if more direct routes could be taken since September and October conditions were much drier than March conditions. The following modifications to the March 2015 recommendations were made:

- At well 3, it was determined that the access route from the south presented in the Final IRAWP was accessible and could be used to access the wellhead. This path avoided crossing the ditch and stream located to the east of the well.

- At well 36 it was determined that due to the proximity of an access road to the wellhead and the drier conditions, the well could be accessed without the utilization of erosion controls.
- At well 62, it was determined that the least invasive route to access well 62 would be to take a shorter, more direct path, and use marsh mats and timber boards to cross a small wetlands area instead of using a longer route through a denser wooded area. As shown in **Appendix B**, a modified access route utilizing a path along the north side of the site along the fence was found to be more appropriate.

No wetlands or streams were impacted during well closure activities.

3.2.1 Brush Cutting and Clearance of Access Routes

Prior to the beginning of the well abandonment activities, Vista conducted the brush clearance of the temporary well access routes in accordance with the paths outlined in the Final IRAWP and in accordance with the Water Resource Delineation Memorandum (**Appendix A**).

3.2.2 Well Locating and Buried Wells

As identified in the 2013 Vista survey report, 10 of the 44 wells were buried below the surface, including wells 5, 10, 20, 31, 32, 36, 38, 39, 50, and 51. The remaining 34 wells had portions of casing or lids visible at the ground surface. In accordance with the Final IRAWP, Cascade Drilling executed the uncovering of the buried wells with the use of a mini-excavator. The suspected well locations were verified using both geospatial coordinates and a Schonstedt metal detector (Schonstedt). Five of the 10 buried wells were not discovered, including wells 5, 10, 20, 32, and 36. At each of the wells, soil was removed to a depth of at least 4 feet (ft) below ground surface (bgs). The conditions observed at locations where wells were not confirmed are discussed below.

On September 14, 2015, the location of well 20 was investigated. The soil in the area of the suspected well was removed to a total depth of approximately 4.5 ft bgs. Cinder block and slabs of concrete containing rebar were uncovered; however, no well casing was discovered. Plexus consulted with the USACE Contracting Officer's Representative (COR) representative, resulting in the decision that additional digging was not necessary due to the lack of anything indicative of a water well. The excavated area was subsequently backfilled. The cinder blocks and concrete were placed in a 20-yard roll-off bin provided by Scott Disposal Service of Kent, Ohio. All loose rebar recovered was removed and placed in the Camp Ravenna facility scrap metal recycling bin. The details outlining the disposal of the materials uncovered is discussed in detail in **Section 5.0** below. All waste material were properly managed and disposed.

Well 36 was excavated to a depth of 3.5 ft bgs by Cascade Drilling on September 14, 2015. A large concrete slab with an 8-inch diameter borehole was exposed. An additional 9 inches of soil was removed from the borehole; however, no well casing or evidence of an existing water well was discovered. Both the USACE COR representative and the Army National Guard (ARNG) were consulted before the decision was made to backfill the location.

Well 10 was excavated to a depth of 4 ft bgs on September 17, 2015. No well casing was uncovered; however, parts of a metal sign were found, which was thought to be the source of "pull" with the Schonstedt. USACE COR and the ARNG were contacted to discuss the discovery. Plexus was then advised to backfill the location by both the USACE and the ARNG due to the lack of evidence of a water well. The uncovered metal sign was placed in the Camp Ravenna facility scrap metal bin for recycling.

On September 25, 2015 well 5 was investigated. Cascade Drilling excavated to 4 ft bgs and uncovered 5.5 ft of an 8-inch steel pipe. The pipe was found to be laying at an angle of 10 degrees (10°) - 15° from vertical. The piping was removed from the excavation and it was found to be plugged with soil and clay. An additional 1 foot of soil was removed from the suspected well location under the pipe and no well casing was uncovered. Consultation with the USACE COR via telephone led to the decision that no additional excavation would occur as there was no sign of a water well and the location was backfilled. The recovered piping was placed in the Camp Ravenna facility scrap metal bin for recycling.

The location of well 32 was investigated on September 25, 2015. At 3.5 ft bgs, an 8-inch diameter steel casing was uncovered. The casing was found to be plugged solid with a grout-like material. Consultation with the USACE COR via telephone led to the decision to backfill the excavation; if the pipe was the former well, the pathway to the groundwater appeared to have been eliminated. The recovered metal was placed in the Camp Ravenna facility scrap metal bin for recycling.

All observations made were recorded in field notes located in **Appendix C**. **Appendix D** includes photographs of these locations.

3.2.3 Well Housing Removal Activities

Two wells (7 and 95) required the demolition and removal of concrete structures. The housing of the wells were demolished the week of September 14-19, 2015. All concrete structures were demolished with the use of a mini-excavator equipped with a breaker bar, and all concrete debris was placed in a roll-off bin and properly managed and disposed. Following concrete housing removal, in accordance with the INRMP guidelines and the Final IRAWP, silt fence was installed at both well locations.

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4.0 WELL ABANDONMENT ACTIVITIES

In accordance with the Final IRAWP, 25 former production well locations were investigated, and wells were identified and abandoned at 20 locations. Abandonment activities occurred between September 14, and October 8, 2015. In accordance with the Final IRAWP, the well locations were verified using geospatial coordinates. As outlined in the Final IRAWP, all field activities were performed in accordance with the project-specific APP SSHP.

In accordance with the Final IRAWP, on August 19, 2014, Plexus composed a letter for the Army notifying the Ohio Environmental Protection Agency (Ohio EPA) of the intent to commence abandonment activities (ARNG, 2015).

4.1 Disinfection

The 20 wells abandoned were disinfected using calcium hypochlorite granules approximately 12 hours prior to abandonment, in accordance with the Final IRAWP, at a concentration of approximately 100 milligrams per liter. During the abandonment activities, the calcium hypochlorite was stored in accordance with the Camp Ravenna Joint Military Training Center Hazardous Materials Management guidelines and was inventoried on a weekly basis. The Safety Data Sheet was submitted to the Camp Ravenna Environmental Office in accordance with the FWSAP.

4.2 Gauging Activities

Prior to beginning abandonment activities at each location, depths to water and depths to bottom measurements from the top-of-casing (TOC) were recorded at each well. **Table 4-2** includes recorded well measurements. All observations made during the abandonment process were recorded in field notes located in **Appendix C.**

4.3 Well Abandonment Procedures

The 20 wells were abandoned via pressure grout using a neat cement mix of 5 pounds of dry bentonite per one 94-pound sack of dry Portland cement. The neat cement mix was applied in one continuous motion to prevent segregation and bridging within the well. The tremie pipe was raised and lowered while the bottom of the pipe remained submerged below the mix. The wells were considered completely filled when all of the displaced water had been removed and the slurry was at approximately 2 – 3 ft bgs. All water displaced during abandonment activities was captured and transported to 550-gallon totes staged at Building 1036. Following the grouting process, the slurry was allowed to settle and then topped off with additional grout.

Following the grouting process, the area surrounding the well casing was excavated using a mini-excavator to allow the casing to be cut at least 2 ft below the surface at all locations, with the exception of wells 49 and 49A. Wells 49 and 49A were located within a concrete slab of a former building; consequently, following grouting of the wells, the well casing was cut flush with the top of the slab. The well sealing reports for the 20 abandoned wells (including well 32, which appeared to have been previously abandoned), are located in **Appendix E**. Following casing removal, the excavations were backfilled with the excavated soil and the area surrounding the depression was slightly mounded to ensure drainage of surface water occurred away from the well. In accordance with the Final IRAWP, all soil disturbance activities were performed in a manner that limited the impact to the surrounding areas and reduced the risk of erosion and sedimentation. Silt fencing

was installed at wells 51 and 54 due to proximity to wetlands, and silt fencing was installed at wells 7 and 95 due to the large area of soil disturbance. The site restoration activities are discussed in further detail in **Section 6.0**. **Appendix D** contains photographs of abandonment activities.

The appropriate copies of the well sealing reports for the 20 wells abandoned during this event were submitted to the Ohio Department of Natural Resources and the Portage County Water Resources Department on March 4, 2016.

5.0 INVESTIGATION-DERIVED WASTE (IDW)

5.1 Metal and Concrete Waste

All concrete removed from the well housing demolition and buried well locations was placed in a 20-yard concrete bin provided by Scott Disposal Service of Kent, Ohio. The waste concrete was sent for recycling to Brimfield Aggregate in Kent, Ohio. All scrap metal removed from the well casing and well housing structures was placed in a Camp Ravenna facility scrap metal recycling bin as identified by the OHARNG. The disposal Bill of Lading for the concrete waste is provided in **Appendix F**. Approximately 1,600 pounds of scrap metal were placed into the Camp Ravenna recycling containers. No disposal or recycling paperwork was provided to the Camp Ravenna Environmental Office since the material will be recycled by the facility at a later date.

5.2 Liquid Investigation-Derived Waste (IDW)

Following the abandonment process, all the liquid IDW (approximately 1,500 gallons) was stored in 550-gallon totes, and sampled for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), TCL herbicides, TCL pesticides, Target Analyte List (TAL) metals, explosives, total sulfide, total cyanide, corrosivity, and flashpoint in accordance with Section 8.4 of the FWSAP. All samples were collected on October 9, 2015 in laboratory-provided containers and were shipped to Eurofins Laboratory in Lancaster, Pennsylvania for analysis. The laboratory analytical results are located in the Waste Characterization Report included as **Appendix G.** In accordance with the Final IRAWP and Camp Ravenna Waste Management Guidelines, the waste containers were inspected weekly from the time of collection until disposal on December 17, 2015.

As outlined in the FWSAP, the results from the IDW samples were compared against the maximum concentration of contaminants for toxicity characterization of hazardous wastes as specified in 40 Code of Federal Regulations (CFR) 261.24 and the maximum concentrations for non-Toxicity Characteristic Leaching Procedure (non-TCLP) analytes for hazardous waste determination (pH, corrosivity, total cyanide, flashpoint, and total sulfide). The results were also compared to United States Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCLs), USEPA Regional Screening Levels (RSLs), and Camp Ravenna Project Action Limits (PALs).

5.3 IDW Sample Results

As shown in Attachment 1 of **Appendix G** the only exceedance of the hazardous criteria was corrosivity. The sample taken from one container (Tank 2) failed for the hazardous criteria with a pH greater than 12.5. As discussed in the Final IRAWP, the pH was adjusted with the addition of muriatic acid on November 10 and November 13, 2015. Since the pH in tanks 1 and 3 were also close to the screening criteria (12.4 pH in each tank), these containers were also treated with acid. Following the November 13, 2015 treatment, the pH values in Tanks 1, 2, and 3 were 2.5, 8.9, and 5.7, respectively.

The results of the analytical results comparison indicated there were several exceedances of the PALs. Of these PAL exceedances, only two analytes were detected above MCLs or RSLs. Chromium was detected above both the RSL and MCL. Antimony was detected above the MCL; there is no RSL for antimony. Calcium and potassium both had exceedances of their respective PALs in all three samples, but there are no MCLs or RSLs for these analytes because calcium and

potassium do not pose a threat to human health. Calcium and potassium are non-enforceable contaminants that may cause cosmetic or aesthetic effects such as taste, odor, or color.

5.4 IDW Disposal Details

As shown in **Appendix G**, due to exceedance of the regulatory criteria for chromium and antimony, the wastewater was disposed of off-site as a non-hazardous waste. The wastewater was sent to the Vexor Technology, Inc. treatment facility on December 17, 2015. During the liquid IDW removal, approximately 4 inches of sediment precipitated at the base of one of the three storage tanks was noted. The sediment was sent to Vexor Technology, Inc. and disposed of as solid waste on January 7, 2016. The manifests associated with the IDW disposal are located in **Appendix H**.

6.0 SITE RESTORATION AND INSPECTIONS

In accordance with the Final IRAWP, all soil disturbed during the well abandonment activities was restored to match the existing grade. The approved soil source identified in the Final IRAWP and provided by Patrick Excavating was used as the backfill material. Approximately 40 cubic yards of backfill were used at well locations 7 and 95. All areas that were made bare during the abandonment process were re-vegetated by Vista using straw and the OHARNG-approved native seed mix as specified in the Final IRAWP. In accordance with the Final IRAWP, the former locations of wells 7 and 95, where larger ground disturbance occurred during concrete removal, were inspected on a weekly basis and after any rain event. These inspections were conducted by Vista and continued until November 20, 2015, where at that time approximately 70 percent (%) of the groundcover was reestablished and seasonal regrowth had stopped due to the change of seasons. A summary of the weekly inspections along with photographs showing the revegetation are presented in **Appendix I**.

The three containers of wastewater were inventoried and inspected weekly by Vista until the off-site disposal occurred on December 17, 2015. The weekly waste inventory inspection sheets are located in **Appendix I**.

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7.0 REFERENCES

AECOM, 2015. Water Resource Delineation Memorandum - Historical Well Abandonment Activities, Former Ravenna Army Ammunition Plan Portage and Trumbull Counties, Ohio.

AMEC, 2008. *Integrated Natural Resources Management Plan, Ravenna Training and Logistics Site*, Portage and Trumbull Counties, Ohio.

ARNG, 2015. Former Ravenna Army Ammunition Plant Restoration Program, Camp Ravenna, Portage/Trumbull Counties, Ohio, Interim Removal Action Well Abandonment Activities. Letter.

OWRC, 2015. *State of Ohio Regulations and Technical Guidance for Sealing Unused Wells and Boreholes*.

Plexus, 2015. *Final Work Plan for Interim Removal Action Historical Well Abandonment Activities*, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio.

SAIC Engineering of Ohio, 2011. *Facility-Wide Sampling and Analysis Plan for Environmental Investigations*, Ravenna Army Ammunition Plant, Ravenna, Ohio.

Vista, 2013. *Final Former Water Production Wells and Oil and Gas Wells Survey at Ravenna Army Ammunition Plant and Camp Ravenna*, Ravenna Army Ammunition Plant, Ravenna, Ohio.

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FIGURES

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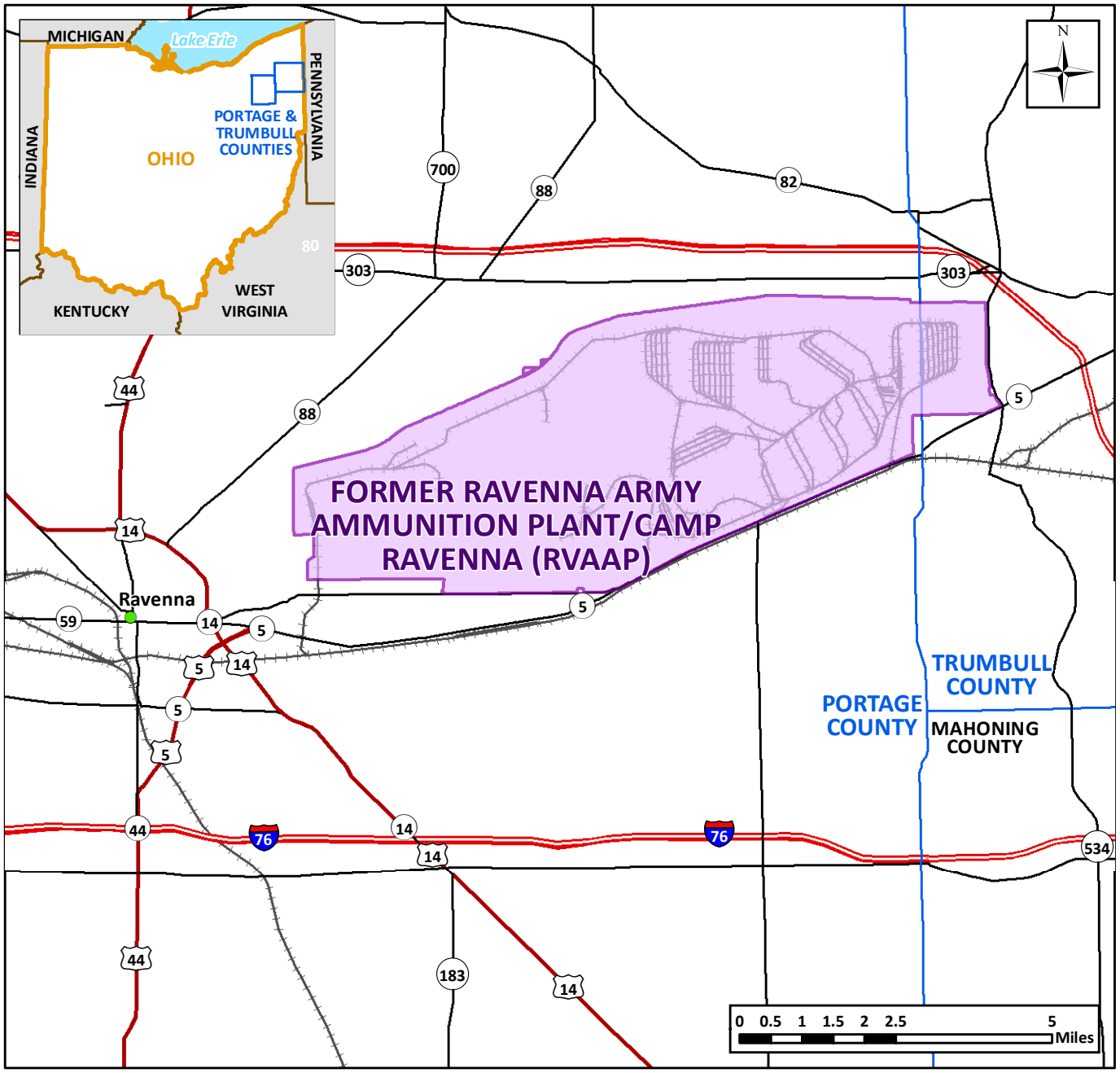

Map Key:

- State Boundary
- County Boundary
- Former Ravenna Army Ammunition Plant/Camp Ravenna (RVAAP)
- Ravenna
- Railroad
- Interstate
- Highway
- Major Road

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Date: November 2015

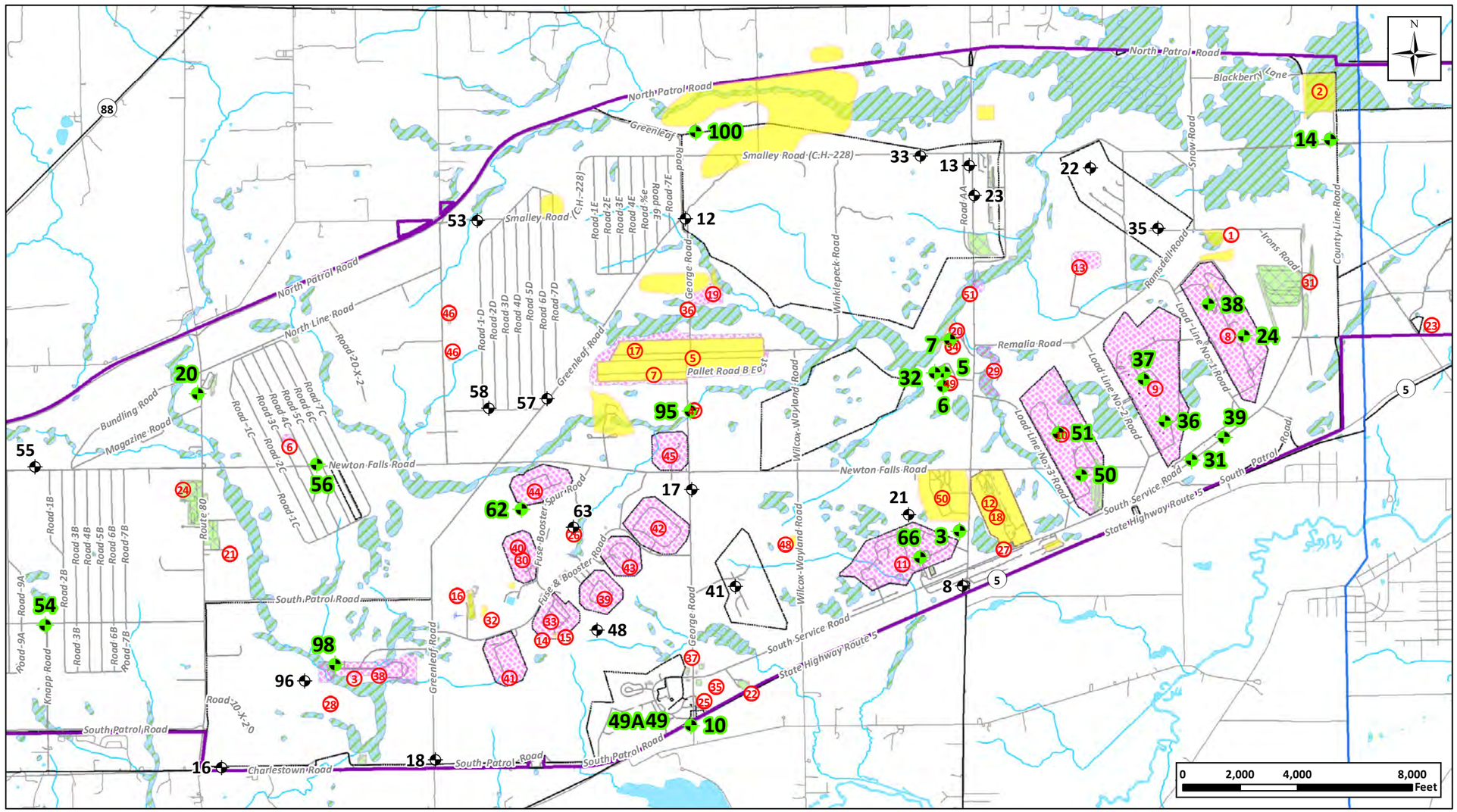
FIGURE 1-1

Former Ravenna Army Ammunition Plant/Camp Ravenna (RVAAP) Site Location Map

Final Interim Removal Action Work Plan
For Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plant, Ohio

K:\GIS_PRJ\Ravenna\Maps\Work Plan\Figure 1-1 - Ravenna Location Map.mxd

11/02/2015 15:28



Map Key:

- Former RVAAP/Camp Ravenna Installation Boundary
- County Boundary
- Groundwater Production Well
- Groundwater Production Well Identified for Abandonment
- ① IRP Sites - CERCLA

Areas of Concern (AOCs):

- MMRP Sites
- IRP Sites
- CRS Sites
- Wetland Areas
- Rivers/Waterbodies
- Creeks/Streams
- Interstates
- Major Roads
- Local Roads

Abbreviation Key:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
IRP = Installation Restoration Program
MMRP = Military Munitions Response Program

Note:
The wetlands identified on this figure were taken from the USGS National Wetlands Inventory digitized layer in the Ravenna Environmental Information Management System. These were used for scoping purposes only and any wetlands relevant to well abandonment activities will be delineated prior to commencing abandonment operations.

IRP SITES - CERCLA

1	RVAAP-01	RAMSDELL QUARRY LANDFILL	
2	RVAAP-02	ERIE BURNING GROUNDS	
3	RVAAP-03	OPEN DEMOLITION AREA #1	
5	RVAAP-05	WINKLEPECK BURNING GROUNDS	
6	RVAAP-06	C BLOCK QUARRY	
7	RVAAP-07	BUILDING 1601 HAZARDOUS WASTE STORAGE	
8	RVAAP-08	LOAD LINE 1	
9	RVAAP-09	LOAD LINE 2	
10	RVAAP-10	LOAD LINE 3	
11	RVAAP-11	LOAD LINE 4	
12	RVAAP-12	LOAD LINE 12	
13	RVAAP-13	BUILDING 1200 - DILUTION\SETTLING POND	
14	RVAAP-14	LOAD LINE 6, EVAPORATION UNIT	
15	RVAAP-15	LOAD LINE 6, TREATMENT PLANT	
16	RVAAP-16	FUZE & BOOSTER QUARRY LANDFILL/PONDS	
17	RVAAP-17	DEACTIVATION FURNACE	
18	RVAAP-18	LOAD LINE 12, PINK WASTEWATER TREATMENT	
19	RVAAP-19	LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS	
20	RVAAP-20	SAND CREEK SEWAGE TREATMENT PLANT	
21	RVAAP-21	DEPOT SEWAGE TREATMENT PLANT	
22	RVAAP-22	GEORGE RD. SEWAGE TREATMENT PLANT	
23	RVAAP-23	UNIT TRAINING EQUIPMENT SITE UST	
24	RVAAP-24	DEPOT AREA	
25	RVAAP-25	BUILDING 1034 MOTOR POOL AST	
26	RVAAP-26	FUZE BOOSTER AREA SETTLING TANKS	
27	RVAAP-27	BUILDING 854-PCB STORAGE	
28	RVAAP-28	MUSTARD AGENT BURIAL SITE	
29	RVAAP-29	UPPER AND LOWER COBBS PONDS	
30	RVAAP-30	LOAD LINE 7, TREATMENT PLANT	
31	RVAAP-31	ORE PILE RETENTION POND	
32	RVAAP-32	40 & 60MM FIRING RANGE	
33	RVAAP-33	LOAD LINE 6	
34	RVAAP-34	SAND CREEK DISPOSAL ROAD LANDFILL	
35	RVAAP-35	BUILDING 1037 LAUNDRY	
36	RVAAP-36	PISTOL RANGE	
37	RVAAP-37	PESTICIDE STORAGE BUILDING T-4452	
38	RVAAP-38	NACA TEST AREA	
39	RVAAP-39	LOAD LINE 5	
40	RVAAP-40	LOAD LINE 7	
41	RVAAP-41	LOAD LINE 8	
42	RVAAP-42	LOAD LINE 9	
43	RVAAP-43	LOAD LINE 10	
44	RVAAP-44	LOAD LINE 11	
45	RVAAP-45	WET STORAGE AREA	
46	RVAAP-46	BUILDING F-15 AND F-16	
47	RVAAP-47	BUILDING T-5301 DECONTAMINATION	
48	RVAAP-48	ANCHOR TEST AREA	
49	RVAAP-49	CENTRAL BURN PITS	
50	RVAAP-50	ATLAS SCRAP YARD	
51	RVAAP-51	DUMP ALONG PARIS WINDHAM RD.	

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Created By: Betsy Bouton
Date: December 2015

FIGURE 2-1

Locations of Former Production Wells to be Abandoned

**Final Interim Removal Action Work Plan
For Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plant, Ohio**

TABLES

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TABLE 4-2
Well Information - September 2015

Final Interim Removal Action Historical Well Abandonment Completion Report
Camp Ravenna
Portage and Trumbull Counties, OH

Former Production Well Number	State Plane-Northing	State Plane - Easting	Casing Diameter (in) and Length (feet)*	Confirmed Well Casing?	Depth (feet) Top of Casing			Casing Height from Ground Surface (feet)	Ground Surface Survey Elevations (recorded 2013)	Ground Water Elevations (measured 2015)	
					Recorded (2013)	DTW (measured 2015)	DTB (measured 2015)				
3	556387	2367248	8" x 38.5'	X	149	12.1	25.2	3.2	977	968.1	Well Abandoned
5	561922	2366730	8" x 34		100	NA	NA	NA	974	NA	N/A : Well casing not found
6	561452	2366670	8" x 50'	X	95	16.05	23.8	0.5	977	961.5	Well Abandoned
7	563056	2366910	6" x 34.5'	X	60	Dry	13.3	6	974	NA	Well Abandoned
10	549618	2357892	6" x 52'		250	NA	NA	NA	987	NA	N/A : Well casing not found
14	570036	2380168	6" x 36'	X	170	9.95	153.6	2.2	1014	1006.3	Well Abandoned
20	561168	2340712	6" x 158'		195	NA	NA	NA	1148	NA	N/A : Well casing not found
24	563190	2377157	6" x 8.8'	X	167	Dry	23.5	1.4	1000	NA	Well Abandoned
31	558868	2375326	6" x 8.5'	X	101	16.5	110.4	0	992	975.5	Well Abandoned
32	561916	2366388	8" x 41'		106	NA	NA	NA	977	NA	N/A : Well casing not found
36	560215	2374395	6" x 14.5'	X	118	NA	NA	NA	1013	NA	N/A : Well casing not found
37	561682	2373666	6" x 16'	X	155	17	123.27	0.5	1017	1000.5	Well Abandoned
38	564287	2375918	6" x 9'		169	19.6	38.1	-2	994	972.4	Well Abandoned
39	559647	2376468	6" x 12'	X	137	Dry	10.5	0	987	NA	Well Abandoned
49	549780	2356709	12" x 37.7'	X	173	40.2	170.4	1.3	1043	1004.1	Well Abandoned
49A	549776	2356724	4" x Unknown	X	Unknown	Dry	6.5	1.1	1043	NA	Well Abandoned
50	558338	2371487	6" x 19'	X	136	22.3	71.2	0	1007	984.7	Well Abandoned
51	559817	2370696	6" x 9'	X	142	40.2	130.1	0	1010	969.8	Well Abandoned
54	553102	2335387	6" x 17'	X	150	8.45	54.6	1.9	1181	1174.5	Well Abandoned
56	558709	2344846	6" x 27.4'	X	148	20.78	23.6	2.6	1148	1129.8	Well Abandoned
62	557152	2351981	12" x 43'	X	221	51.1	202.1	2.3	1092	1043.2	Well Abandoned
66	555471	2365874	6" x 50'	X	172	Dry	13.3	1.6	987	NA	Well Abandoned
95	560572	2357876	6" x Unknown	X	Unknown	15.5	64.8	4	1023	1011.5	Well Abandoned
98	551728	2345492	6" x Unknown	X	Unknown	12.9	89	-2.5	1076	1060.6	Well Abandoned
100	570306	2358044	6" x Unknown	X	Unknown	14.2	49.3	1.2	1056	1043	Well Abandoned

Notes:
DTW: Depth to Water
DTB: Depth to Bottom
Notes: NA: Not Applicable
*Source: Table 4-1 of Final Former Water Production Wells and Oil and Gas Wells Survey at Ravenna Army Ammunition Plant and Camp Ravenna, Ravenna, Ohio. Vista Sciences Corporation (Vista, 2013).
Well coordinates in State Plane NAD 83, Ohio State Plane, North Zone

APPENDIX A
Water Resource Delineation Memorandum

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[redacted]

Memo

To: Cindy Nawal, Plexus Scientific

From: Betsy Ewoldt, AECOM

CC: Auggie Ruggiero, AECOM

Date: 5/15/2015

Re: Water Resource Delineation - Historical Well Abandonment Activities, Former Ravenna Army Ammunition Plan Portage and Trumbull Counties, Ohio

---

Wetland Delineation
3/17-18

Well #54: Well is located just inside the edge of the PFO wetland. There is an existing access road to the east of the well that runs north-south. The well is accessible via access road and small upland area east of the well. Erosion controls should be utilized.

Well #20: Well is located west of road in wooded area. No wetlands. No issues.

Well #98: Well is located north of access road in an old field. There is an existing access road and concrete pad south of the well that can access the well without impacting the wetlands located along the access road.

Well #62: Well is in a wooded area surrounded by wetlands. Most of these being vernal pools, but they are all connected to the PFO that encompasses most of the site. We walked in from the west last year, but determined the wetland and stream crossing to be a less desirable option. Access to the well is manageable by using timber mats to cross the wetland on the north side of the site along the fence line. The wetland continues south outside of the survey area.

Well #49/49A: Wells are located just inside the tree line in an old homestead foundation.

Well #10: Well has existing access road to the east. There is a road side ditch along the highway, but it should not be impacted.

Well #3: Well is in the middle of a woodlot, surrounded by wetland and streams. Best course of action is to walk in and hand excavate the pipe and run a pump in from a truck that will stay on the street.

Well #6: Well is in a shrub/scrub area located on a ridge. There is a linear wetland along the old railroad bed that can be used to access the well. The wetland will have to be crossed, but can be done at a narrow location for minimal impacts.

Well #5: Well is located on an upland area surrounded by wetland.

Well #51: Well is located just outside a large wetland complex. Work can be done with no impacts to the wetland; however, erosion controls are recommended due to proximity to wetland.

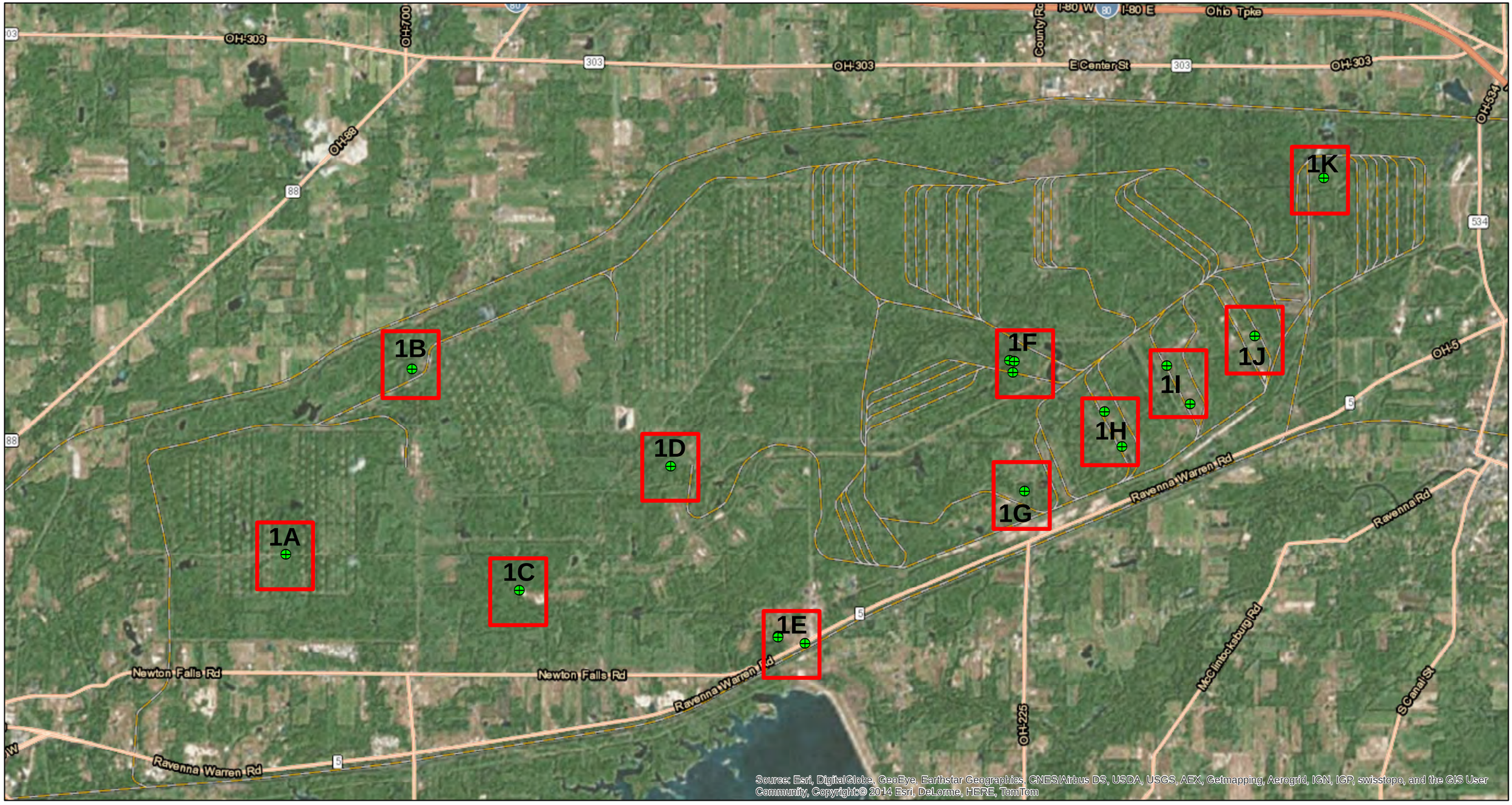
Well #50: No issues. No recommendations.

Well #36: Well is located in a field with a wetland just to the southeast and another one along the access road. The access road to the east of the wetland can be utilized to avoid impacts. Erosion controls are recommended due to proximity to wetland.

Well #37: No issues. No recommendations.

Well #24: No issues. No recommendations.

Well #14: No issues. No recommendations.



0 0.5 1 2 3 4 Miles

Water Resource Location Map (FIGURE KEY)

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

Figure 1-KEY

AECOM

Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

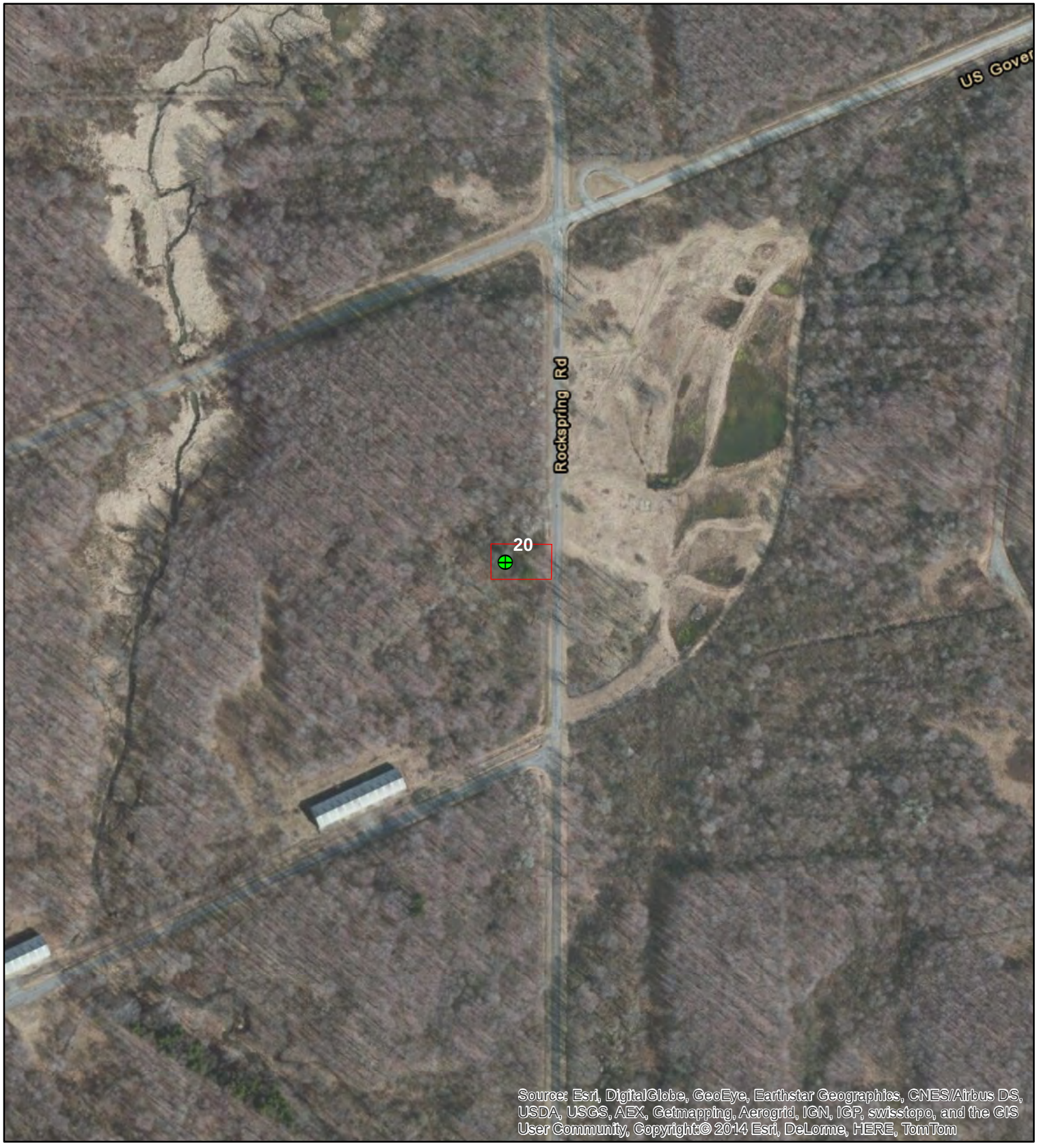
*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

Figure 1A

AECOM



Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

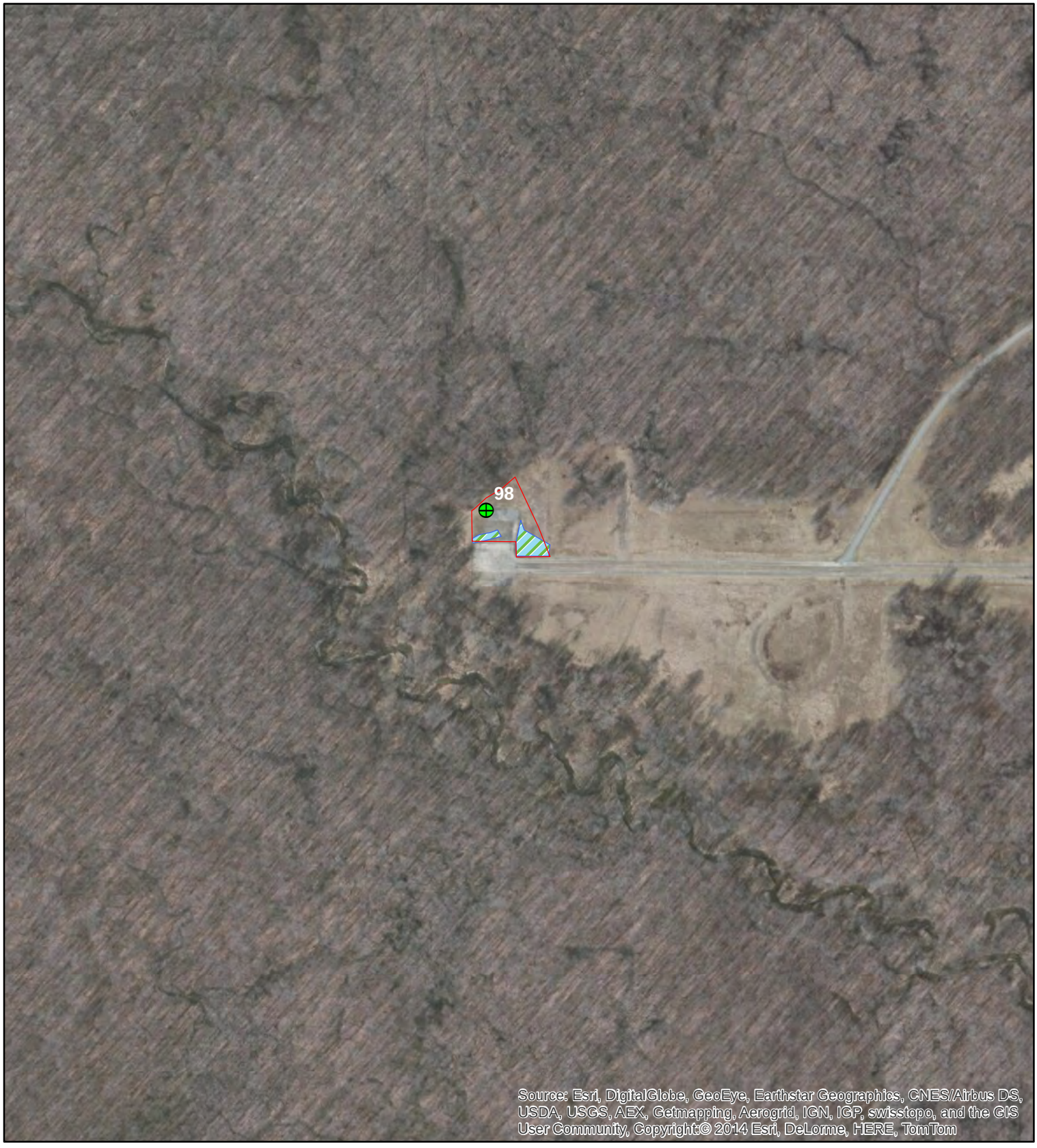
*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

Figure 1B

AECOM



Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

AECOM

Figure 1C

Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

AECOM

Figure 1D

Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

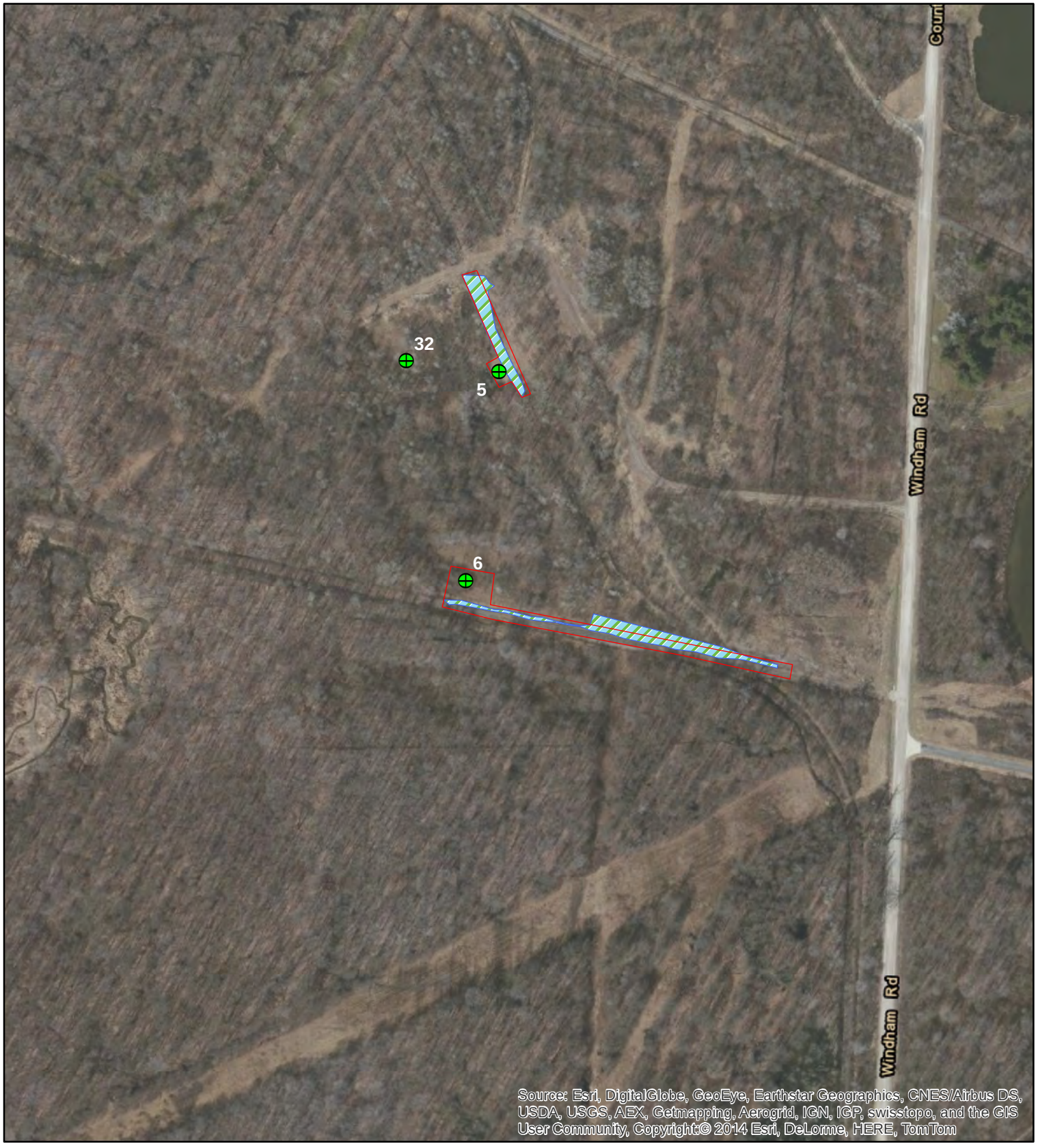
*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

AECOM

Figure 1E



Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

Figure 1F

AECOM

Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

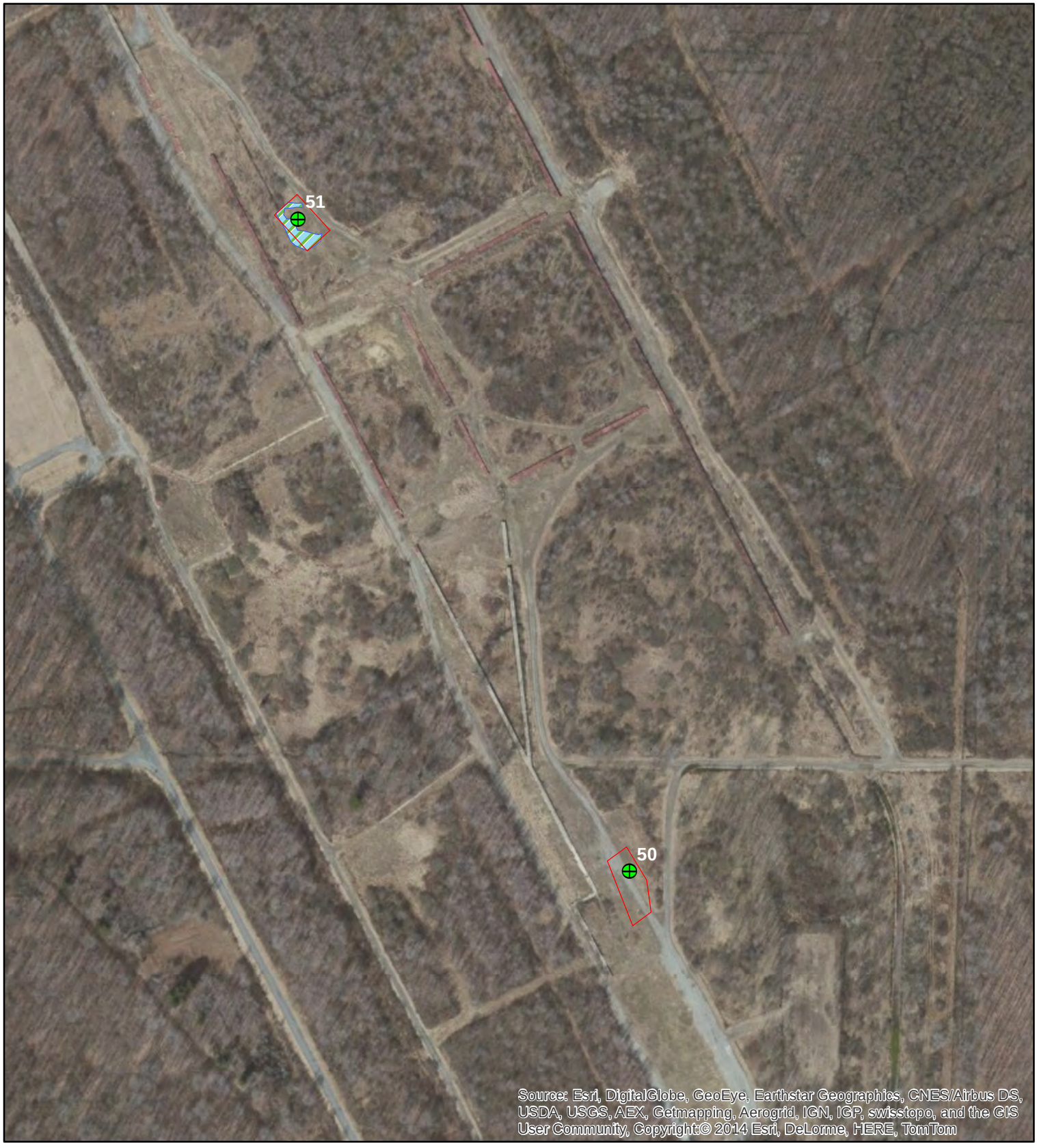
*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

Figure 1G

AECOM



Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

Figure 1H

AECOM

Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

Figure 1I

AECOM

Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

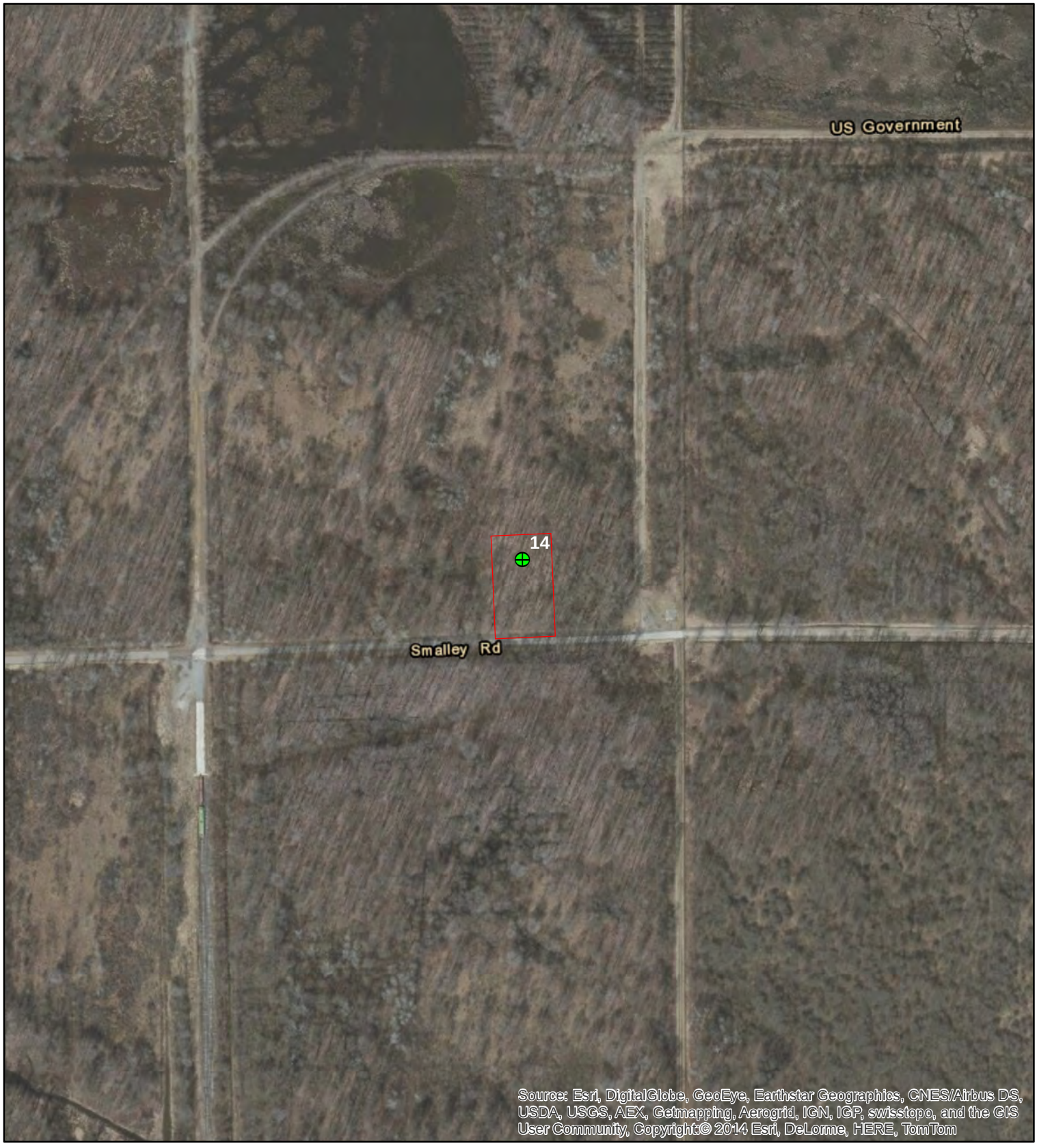
*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

Figure 1J

AECOM



Area Surveyed

Approximate Well Location

Delineated Wetland*

Delineated Stream

0 200 400 800 1,200 1,600 Feet

*Wetlands delineated in March 2015.

Water Resource Location Map

Plexus Scientific Corporation
Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plan
Portage and Trumbull Counties, Ohio

Figure 1K

AECOM

APPENDIX B
Modified Well 62 Access Route

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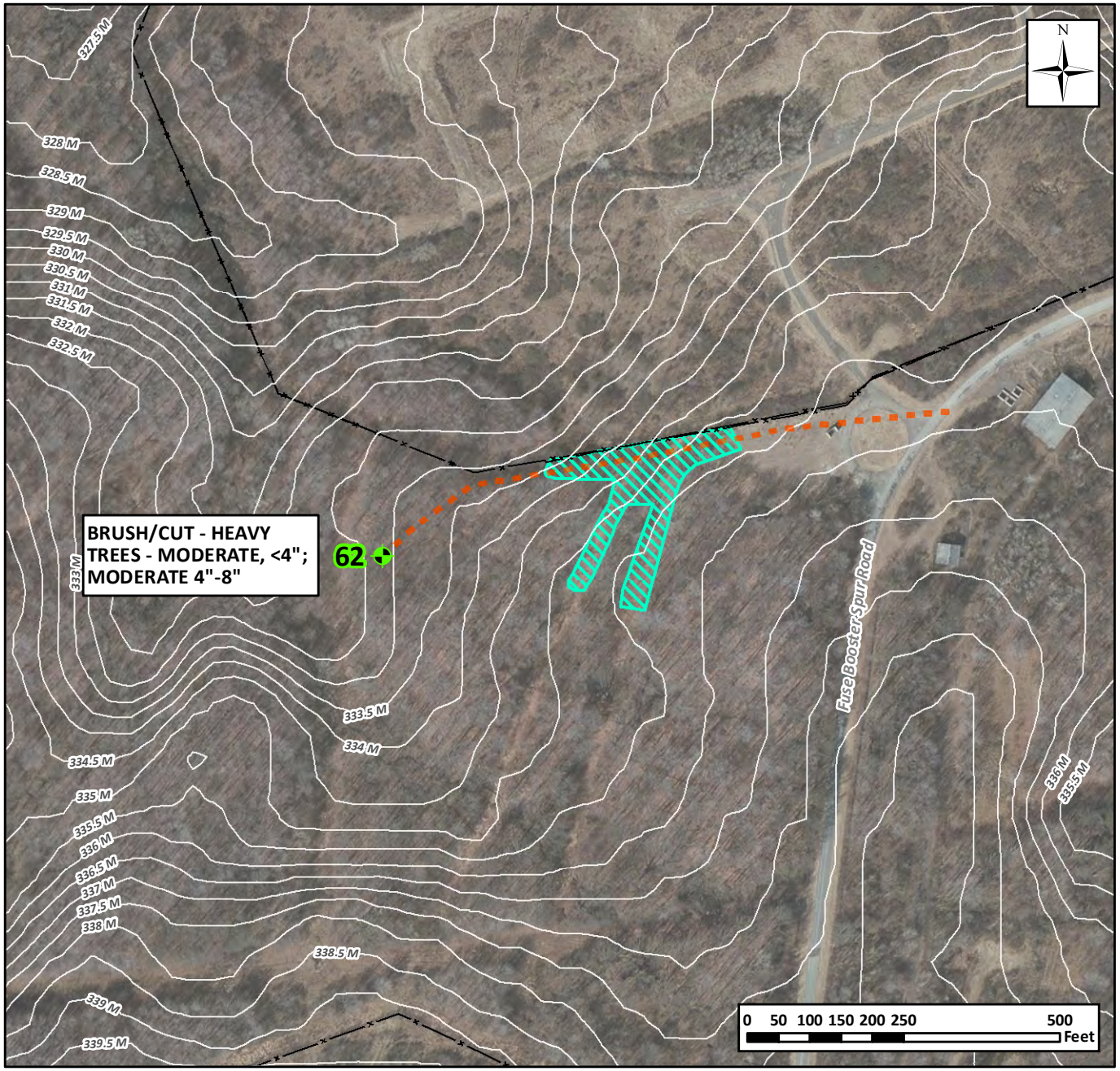

Map Key:

- Groundwater Production Well
- Groundwater Production Well Identified for Abandonment
- Gate
- Well Access Route
- Off Road Well Access Route
- Wet Areas Identified at Site Walk
- Wetland Area
- Rivers/Waterbodies
- Creeks/Streams
- Former RVAAP/Camp Ravenna

Abbreviation Key:
RVAAP = Ravenna Army Ammunition Plant

Note:
The wetlands identified on this figure were taken from the USGS National Wetlands Inventory digitized layer in the Ravenna Environmental Information Management System. These were used for scoping purposes only and any wetlands relevant to well abandonment activities will be delineated prior to commencing abandonment operations.

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Created By: Betsy Bouton
Date: November 2015

FIGURE A-14

Groundwater Production Well Access Path - #62

Final Interim Removal Action Work Plan
For Historical Well Abandonment Activities
Former Ravenna Army Ammunition Plant, Ohio

APPENDIX C
Production Well Abandonment Field Notes

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OHARNG REP Katie Tait 614-336-6136 (w)

ARNG REP Kevin Sedlak Restoration PM
(o) 614-336-6000 x2053
(c) 210-639-9719

VISTA REP AL Brillinger 330-880-1289
Gary Brunswick 330-842-2222 Ethan Brunswick 330-993-7975
CASCADE REP MIKE BENTLEY (c) 740-350-8508 (off) 740-373-3970

RANGE CONTROL DAVE STRAGER
EMERGENCY# 614-336-6041

MK 19 RANGE (well 95)
call day before to let know time open next day.
M-W-F 0830 TU+TH 0730

USACE Louisville District Rep
Quyet La 502-338-0922(c)
502-315-6892(w)

SCOTT DISPOSAL MCLAWIE 330-606-5594

FREEDOM MATERIAL TIM PATRICK
330-296-7790

Mon 14 Sep 15

0800 Air ARNG/USARNG office complex -
MET ARNG/USARNG/ RANGE CONTROL / VISTA REPS
0858 - Scott Disposal drops 20 yrd dumpster @ well #7
1145 - DRILLER ARV ONSITE
1230 - Completed Initial Safety brief / Tailgate mtg.
1245 - TOTES ARRV
1250 - Porta John ARRV on site
1315 - USACE REP ONSITE
1430 - Tagged #93
450 - Arrv'd #20 (buried)
500 - STARTED EXCAVATION @ #20 - uncovered cinder block & rebar + concrete.
530 - called Range Control - MK19 Range George Rd Gate closed request gate open @1230 TOES 15 Sept (DS)
540 - EXCAVATED #20 to 4-4½', exposed cinder block + slabs of w/Rebar concrete. consulted with ~~concurrence of~~ USACE Rep (QL) to stop excavation since WELL was not Found. Collected concrete for removal. Backfilled excavation.
610 Loaded Equipment. Headed back to 7036
630 Secured for the Day

CINDY WELLS
GATOR DRILLING

Tue 15 Sep '15

0700 ARRIVED ONSITE
0715 Completed daily Safety Tail gate.
0740 ARRIVED WELL SITE 50
0745 CALIBRATED PID
0748 Proceeded to well 50 location
0758 Located well 50. pipe
0810 EXPOSED well 50
0815 Gauged to water 22.3' and 71.2' to bottom.
0830 moved to well 51 Location
0850 ARRIVED well 51 Location
0853 Located well 51
0911 exposed well 51
0915 Gauged 51, 40.1' to water and 138.2 to bottom
0930 Proceeded to well 39 Location to investigate
0952 Arrived well 39
0957 Proceeded to well 38 Location
1009 Arrived well 38 Location
1025 Located well 38 - 6" pipe bend over @75° horizontal angle from vertical
1100 Exposed pipe to bend. used hole in side of pipe near bend try & Gauge. NO good. couldn't gauge well
1125 Discussed procedure to cut into pipe near bend to try & gauge and get tremie pipe through.
1140 Proceeded to well 36 location.
1155 Arrived well 36 Location
1200 Break for Lunch
1230 Back to work
1235 Located 36 Started Excavation

1315 Excavated 36 location site to depth of 3½ ft. Exposed concrete slab with @ 8" core hole through slab. Excavated @ 5" of soil from core hole. No well casing discovered. Consulted with onsite USACE Rep (QL) to determine next step. Corps rep to talk to ARNG Rep before making final decision.

1330 Escorted drillers to 103E to pick up water.

1350 Arrived 1036

1440 Rcvd 1000 Gals water.

1440 Proceeded to #7 to grout.

1505 Arrived well 7

1510 Shock treat well per manufacturers instruction (Dry Well)

1525 Pumped 27 Gals neat cement mix in well 7. could not see mix.

1545 Pumped additional 27 gals neat into well 7. mix over flowed casing then completely settled back into well. could not see mix. Discussed w/ onsite USACE Rep (QL). Will let harden over night. then revisit w/ ARNG Rep tomorrow.

1600 Decon'ed/cleaned up equipment.

1645 Secured for the day.

CMMJ WELLS
GATE DEMO

WED 16 Sep '15
0700 ONSITE
0715 COMPLETED SAFETY TAILGATE + HE INSPECTIONS. CAL'D
0745 ARRIVED ~~ON~~ WELL 7.
0750 VISTA HE DELIVERED.
0755 GAUGED 7 @ 24'
0800 CRAIG OFF TO GAUGE WELLS
0800 DRILLERS STARTED TOPPING OFF WELL 7. GAUGED to 24'.
0840 COMPLETED SEALING 7.
0915 COMPLETED IMTIAL SAFETY BRIEFS FOR VISTA SUBCONS. COMPLETED SAFETY TAILGATE + HE INSPECT
0915 DRILLERS DEPARTED FOR WELL LOCATION 95.
0925 VISTA CREW STARTED DEMO OF WELL 7 PAD + VAULT
1030 DRILLER COMPLETE WELL 95.
1045 RCVD LOAD OF BACKFILL AT 7 + 95'
1045 DRILLER START GROUTING WELL 3.
1145 LUNCH
1215 RESUME WORK
1400 ROUTE TO 6 CLEARED.
1550 DRILLER FINISHED WITH WELL 3. NEED TO RETURN TO TOP OFF.
1600 START CLEAN UP.
1645 SECURED FOR THE DAY.

CINDY WELLS
GATOR DEMO

THUR 17 SEP '15

0700 ON SITE

PJD 0715 COMPLETED SAFETY TAILGATE, HE INSPECTIONS & CAL P.I.D.

0730 MOVE MOB EQUIPMENT FM 7 to 95

0800 COMMENCED DEMO of 95

0800 TOPPING OFF WELL 3

0915 REPLACEMENT DUMPSTER ARRIVES, Placed @ 95. Picked up compromised dumpster from 7

0930 WELL 3 COMPLETED. - commenced backfill

1030 RING CONCRETE RING REMOVED FM 95 COMMENCED BACKFILLING.

DMS

1100 MOB TO 10 to EXPOSE - WELL NOT DISCOVERED @ 4' ADVISED TO BACKFILL by PM + Kevin Sedlack Sedlack.

1145 CASCADE LUNCH BREAK

1200 95 BACKFILL COMPLETE

1205 COMMENCED INSTALL of SILT FENCE @ 95. proximity to CREEK.

1215 BACK to WORK

1215 DRILLERS MOB to 39.

1315 DUMPSTER MOVED FM 95 to 7

1400 39 COMPLETE

1405 MOB to 31. (DRILLERS)

1442 MOB to 51 to INSTALL SILT FENCE

1545 REBUILDED 31 SINCE DRILLERS WELL CAP WELDED ON AND THEY HAVE NO TOOL to CUT OFF.

1545 COMPLETED SILT FENCE INSTALL @ 51. MOB TO 7 to CONTINUE REMOVING DEBRIS FM VAULT.

1615 DRILLER TOP OFF 39.

1620 SECURED WPS

1630 CREW OFF SITE.

CINDY WELLS
GATER DEMO

FRI 18SEP15

0700 ARRIVED ONSITE

0715 completed Safety Tailgate, HE Inspection, D+D + Explosi
meter CALibration

0730 continued ~~commenced~~ Demo of well 7.

1630 SECURED FOR THE DAY.

CAROL BLOMO

SAT 19 Sept 15

0715 Arrived on site

0730 completed Safety tailgate, H&S Inspection.

0745 Commenced Demo of well 7

0915 completed Demo of 7 and removal of Debris

0925 Started Backfill.

1200 Secured Gang for Day.

1200 Started Shock treating wells.

1300 CC needs to be mowed.

1435 Completed Shock treating wells 19, 24, 31, 50, 51, 54, 56, 66, 98, 100.

1500 SECURED FOR THE DAY

Mon 21 Sep '15

0700 Arrived onsite
0800 VISTA STARTED INSTALLING SILT FENCE @ 7+54
1030 Drillers arrived
1110 Started filling water tanks - Driller had wrong adapter
1200 VISTA COMPLETED INSTALLING SILT FENCE. EXCAVATOR DOWN
1240 Arrv well 57 Location
1325 Kevin Sedlak + Katie Tait onsite.
1500 Completed Seal./Start clean up
1538 Completed Backfill.
1630 Secured for the day.

TUE 22 SEP '15

0700 Arrive onsite

0715 Completed Safety tailgate & HE inspections

0750 DIRT/SOIL ARR'D

0815 SOIL DELIVERED TO WELL 7

0850 CREW ARR'D WELL 24.

0930 WELL 24 SEALED

0955 CLEAN UP + MOVE TO WELL 100'

1030 START WELL 100

1045 SOIL SPREAD OVER WELL 7

1110 PICK UP GAS FOR DRILLERS

1115 DUMPSTER PICK - DRIVER STATES PATRICKS WON'T TAKE W/ REBAR

1230 FREEDOM MATLS REFUSES CONCRETE - TOO MUCH REBAR - WEIGHT NET 43240 lbs 21.62 TONS.

1245 CONCRETE DUMPSTER PLACED IN LAYDOWN AREA

1415 COMPLETED REMOVAL OF INTERNAL PIPING + PUMP FROM 100. 43'11" PIPE 16" PUMP

1445 COMMENCED SEALING 100

1510 COMPLETED SEALING 100 - CUT CASING.

1610 DEMOBED FROM WELL 100

1630 DEPARTED FOR THE DAY.

TIME

WED 23SEP'15

0700 ARRIVO ONSITE - STOPPED AT GATE
COCO FENDLER NOT ON LIST.
CONDUCT SAFETY TAIL GATE, COMPLETED ATE
INSPECTIONS & CALIBRATED INSTRUMENTS.
0815 DEPARTED GATE FOR WELL 100.
0830 TOPPED OFF 100 -
0845 completed backfill of 100
0910 PLANT GATE TO PICK UP New Pump & more Gel,
Barrel.
1014 ARRIVD 24 to cut casing
1050 CUT CASING, TOP OFF & BACKFILLED
1120 MOVED TO 14
1130 BREAK FOR LUNCH
1140 VISTA completed mounting of 49/49A, 62 + 66
1230 EXPOSED 14
1535 completed sealing of 14 - Top of tomorrow
1455 Departed Site

8 a.m. Pacific

Thur 24 Sep 15

0900 Arrvd on site

0715 Completed safety tailgate HS inspections & cal equip

0815 Arrvd well 14 11' to water 26.5' to bottom. Typed off, cut casing + pipe, backfilled.

1030 moved to well 31. Drilled hole, tested CGI-negative, cut larger hole for probe. 16.5' to water 110.4 to bottom. Shock treated. Well 31 was previously exposed first week. Asphalt destroyed 5'x5'. Decision to be made on how to backfill.

1120 During mob to 49/49a noticed concrete dumpster gone. contacted Cindy - Procured required docs.

1130 Arrvd 49/49A

1150 Break for Lunch.

~~1300~~ 1215 ~~Drill~~ cut 4" pipe flush to slab on 49a

1300 Drilled hole in cover of 49. Experience pressure release. Sampled w/CGI positive CH_4 100% LEL + Low oxygen. Let vent 20 mins - same readings. Drilled additional vent holes, will let vent to Mon 9/28.

1350 Arrvd well 50.

1510 completed grouting of 50 - will let settle over night

1600 Moved to lay down area

1630 Departed Site.

FRI 25 SEP 15

0700 ARR'd ON SITE

0715 completed Safety tailgate, HZ Inspections & Cal Instr

0740 TOPPED off + BACKFILLED 50

0825 MOBED TO 5'

0840 @4' UNCOVERED 5½' of 8" steel PIPE laying at a 15-20° angle. Pipe was broken off from casing. Removed pipe from hole. Pipe plugged solid w clay + soil. Remove 2 more buckets of soil in location of hit from shonstect. Down about 5'. Co not locate casing. Removed cinder blocks fr hole. Craig called Duquette (USACE rep) for decision.

1000 Mobed to 32. 32 buried. Exposed/uncover 8" Dia casing @ 3½ bgs. Casing plugged solid wi what appears to be a grout mat'l. Grey ish in c See photos. Called Craig for decision.

1100 Backfilled 32.

1125 Mobed to 49 to drill bigger hole to gauge

1140 49 — LEL 6% Water @ 41.2' bottom 170.4'. Shack treate

1205 Mobed to 5 to start backfill.

1245 Mobed to Lay down area to off load mat'l & Equipment. Pumped out Dirty Water.

1400 Crew departed site.

1430 completed Non Haz Waste Labeling & Inspection Photo's

1545 Shack Treated #62.

1600 Departed Site.

Mon 28 SEP 15

0800 ARRVD ONSITE BLDG 1036 TO PICK UP NONHAZ INSPECTION SHEET TO TAKE OVER TO OHARB REP. RCVD ADDITIONAL DOCUMENT (CONTAINER LOG) NEED FOR EACH CONTAINER. TO BE UPDATED EACH TIME QTY PER CONT CHGS.

~~0830~~ ~~ARRVD~~ DISCUSSED UPCOMING OFF EPA VISIT AND REQST TO ONLY DO WELLS ON WEST SIDE OF CAMP.

0930 ARRVD ONSITE.

1035 DRILL CREW ARRVD

1140 ARRVD WELL 31 - EXPOSED WELL CASING + COV CAP OFF. BEGAN SEALING PROCESS.

1310 INJECTED 200 GALS NCM WITH NO WATER EXTRACTION OF VISUAL OF NCM IN CASING. WILL LET HALOGEN OVERNIGHT AND RETURN WEDNESDAY TO CONT. CONTACTED PM. 16 BAGS / 80 lbs 200 GALS.

1325 LUNCH BREAK

1435 ARRVD WELL 54. EXPOSED WELL CASING. ~~BEGAN INJECTING NCM~~ SEALING PROCESS. INJECTED 150 GALS. NO WATER EXTRACTION. NCM NOT IN SITE IN CASING. WILL LET HALOGEN + RETURN TOMORROW TO GAUGE + TOP OFF. 12 bags / 60 lbs 150 Gals.

1600 CREW DEPARTED SITE

1650 BACK AT 31 to MEASURE DEPTH. NO WATER DEPTH TO BOT NCM is 34.5 FT.

TUE 29 SEP 15

0655 Arrvd onsite.

0705 Completed Safety Tailgate, HE inspection & Instrum Calibration.

0720 ARRVD 54 to TAG & Top off
Water 9' Bottom 32.8 - Added 50 gals NCM
4 Bags cement / 20 lbs bent

0745 USACE rep Puget LA arrvd onsite

0830 Completed Sealing, cut casing & backfilled.

0915 Arrvd 98 - Keem Sedlacek & Katie Tad was "Ta

0930 KS & KT departed to pick up EPA at Main G

0935 Exposed 98 to 3 bgs. Casing Pluged @ ground level. Tapping on pipe @ 2-3 ft bgs could he mat'l falling inside and dropping into weber Cut casing below plug and discovered well open below 1 ft blockage at ground level

0945 Off EPA arrvd onsite.

0950 Conducted initial Safety brief.
Discussed situation with 98 w/ all Onsite. Cal not continue ~~to~~ w/ sealing because well had not b Stock treated. Tagged 98 Water 12.9, bottom 8

1035 Moved to 31 since EPA wanted to watch gradtons and water capture process.

1055 Arrvd at 1036 to pick up longer tremie pi

1125 Arrvd at 31. Decided to complete 31 since EPA only had about an hour left onsite. To o 37 and Seal would take rest of the day.

1130 Topped off 31 with 75 gallons NCM
6 bags cem / 30 lbs Bent. Casing on 31 was suppo to be only 8'. Was loose in hole. Decided to pull added extra NCM to hole around casing so casing was pulled the NCM would fall up the ga

8 a.m. Pacific

TOC 29 Sep 05 Cont

1145 Pulled casing. Hole seated. EPA wanted us to wait until NCM had hardened before backfill

1215 Break for lunch.

1220 EPA & ARNG RORS wanted to visit 39.

1230 EPA Departed site. EPA wanted to know where we get our water from. Contacted PM for answer.

1360 Arrived 66

1330 66 Exposed. Top 2' fell off. Rusted around casing. Removed stones from casing and revealing open casing. Well dry 13.3' to bottom.

1405 Completed Sealing of 66 cut casing & backfill. 20 gals NCM 2 bags cement / 10 lbs bent

1425 Moved to dump recycling for scrap metal IA recycling bin.

1505 Dropped off equip. and trucks at 315 so we can backfill 1st thing tomorrow. 9/30.

1515 Knock off due to heavy Rain.

1530 Departed Site.

TIME

Wed 30 Sept 15

0700 Arrived Onsite

0705 Completed Safety Tailgate, HE Inspections, Equip calibration.

0715 Topped off water & Supplies

0800 Backfilled 31

~~1020~~ Arrived 98 - hole full of rain/ground water 4-5" to TOC. pumped into grass.

1130 Completed sealing 98. Extracted ~~80~~ gals wa Inserted 100 gal NCM. 8 bags/40 lbs.

1145 completed backfill of 98. Departed for bay da area to pick up cement

1230 Lunch Break.

1300 Departed for 37.

1320 HE Truck stuck in mud near 37 ~~enroute 37~~.

1340 offloaded HE and posted with Skid Steer to free truck.

1350 Exposed casing @ 37.

1500 37 overflowed casing @ 100 gals. should tak approx 180. Let settle. NCM seeping back down ~~casing~~ well. Will let settle overnight. 100 gals 8 bags/40 lbs Extracted 75 gals

1545 Departed Site

1041 ARRVD WELL SG LOCATION.

0920 Sealed well SG 36 gals NCM 36 bags/1440 lbs. NO water extracted.

8 a.m. Pacific

Thur 1 Oct 15

0700 Arrived onsite

0705 completed Safety tailgate, HE Inspections + Calibration

0715 Topped off water + Supplies

0750 Topped off 37. 35 gals 36 bags/1576 lbs no water extracted. Cut Casing.

0825 Backfilled 37. Moved to lay down area

0920 Picked up mats + pumped waste water 175 gals to container #1

1000 Arrived 62. Could not find safe or cleared route to 62 except via mowed area across wetland area. Only had enough marsh mats for 2x40 ft sections. Using tray frog method w/ mats determined would take too long. Call PM + Cindy to discuss.

1045 Moved to 49 white decision made btwn PM + TM + Bentley fm Cascade.

1155 Cap cut off 49.

1200 Lunch Break.

1245 Start setting up to seal 49.

1330 First Barrel of NCM to 49.

1400 More discussions on how to proceed w/ 62.

1430 Visited 62 with Vista (Elton).

1500 Determined no route possible to clear due to trees >3" in dia that had to be cut on minimal disturbance to wetland areas. Forwarded photos to PM. PM asked me to rewalk area to try + discover "orange" route cleared previously by tree cutters. No path found. Tried backing out from well. No cleared path found. Fwd'd photos to PM.

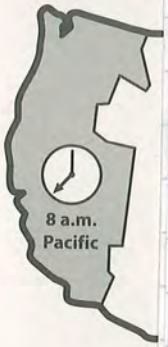
TIME

10/1/15 cont.

1545.- Discussed temporary repair of drainage through wetlands PM. will purchase 4x6's, piece 3/4 plywood to fill drainage to proceed.

1620 Last batch/barrel well 9 for the day. Total of 165 well. No water

1645 Departed site.



FRI 10/2/15

0700 Arrived onsite

0705 Completed Safety tail gate, HE 115 & Equip Eval

0750 Tagged 49 water 39.7 to Hom 114.

0814 Pumped 1st Barrel Ncm.

0950 Last Barrel pumped. 490 gals / 39 bags / 1956 lbs gel. Water was at 15.8. pumped 100 gals out to tote. Called PM to discuss status. Will let harden over weekend & check Mon.

0955 Sealed 49A. 4 gals .5 bags / 2.5 lbs. ~~no~~ water 4 bags

1010 Started C/cleanup.

1020 Moved to 1036 to await arrival of Marsh Mats. to take out to 62.

1040 Mats arrive.

1050 White xfrins Mats to our trucks Kevin & Katie arrive and ask whats going on. I explain the mats are for the mowed area of the wetlands for 62. They both say that it's not wetlands. Katie Lus and says she'll check w/"Tim" and get back to me. We still have to build temp support for HE to pass over ditch in mowed area. Katie texts @ 1112 to say we should Lay down mats and "Tim" and her will look @ & discuss por plan to get equipment to well.

1200 Complete Laying of mats and send Photos to Katie, Kevin, PM & Cindy.

1210 Crew departs for weekend. Departed for Home Depot & Lunch.

1302 Rcvd text from Kevin saying Looks good. No wetlands.

1545 ~~Returned~~ Departed HO for comp Ravenna to build temp Bridge.

TIME

Fri. ~~10~~ 10/2/15

1807 Completed welding Temp bents 6, Septa

1820 Departed Site

8 a.m. Pacific

Mon 10/5/15

0800 ARRVD on site

0835 Completed Second section of drainage ditch bridge to 62

1040 Completed clearing brush out to 62

1110 Tagged 49. water 12.4 bottom 46.9.

1120 finally got hold of drill crew. Expect to be here in 30 mins. Had to stop & get portland.

1140 Cascade crew arrvs.

1145 Completed Safety Pat gate, HE inspections & Equip calibrations.

1150 Moved to 47 & start setting up.

1240 Kevin Seldak on site.

1245 Started pumping NCM.

1250 Kevin Seldak departs.

1400 49 Sealed. 325 gals NCM 26 bags / 130 lbs bent. 325 gals water Extracted.

(TOTAL for 49) 3 days.
1265 gals
101 bags cement
505 lbs bent. 325 gals water extracted.

1415 Started packing up.

1435 Skid Steer Stuck down the access ramp: rain & combination of slick tracks making it difficult to carry full water tote up slope.

1500 Skid Steer out.

1550 Moved to Lay down area to prep for tomorrow @ 62.

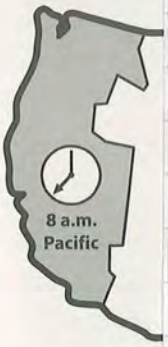
1600 Water tote valve plugged w/ NCM.

1630 Pumped 325 gals IDW to # II container.

1650 Topped off water tank.

1700 Departed Site.

TIME



Tues 10/6/15
0700 Arrvd onsite
0705 Completed Safety Pretgate, HE Inspections + Instru
Calibration.
0715 Moved to 62.
0735 Started moving equip to well + set up.
0815 1st pid Readings 0.0.
0900 Tagged 62 water @ 51.1 bottom 202.1
Est. 1174 gals NCM 23 barrels 92 bags cem
1040 1st Barrel. Read email from Katie about statics.
1300 last barrel. out of cement/water. pumped left hande
550 gals, 44 bags/2201bs, 11 barrels. overnight
1345 Departed for Laydown area to pick up cem
Water, + complete placing asphalt grindings @
1430 Loaded asphalt grindings
1530 completed 31.
1615 Back @ 62 to set up for tomorrow.
1700 Departed site.

WEDS 10/7/15

0700 Arrived on site

0710 Completed Safety Tailgate, HE Inspections + Instrument Calibration

0720 Checked 49. Needs 1' Top off.

0740 Arrived 62.

0750 Started mowing marsh mats from front to back due to heavy rutting and trucks getting stuck. Added logs to segment temp bridge across access rd.

0810 PID initial reading 0.1

0815 Topped 62 water @ 41.2 bottom @ 138. Est 801 gal NCM.

0830 Grout pump + hose locked up. Will have to rotate between pumping grout + extracting water.

1145 pumped 500 gals NCM 40 bags/200 lbs 275 gal IDW.

1200 Lunch Break.

1300 Log down area to pick up water and pump IDW. Pumped 250 gals to container III

1345 Back at 62.

1530 Pumped additional 200 gals water 16 bag/80 lbs collected 100 gals IDW water.

1545 Started clean up.

1620 Topped off 49.

1645 Crew departs.

1700 Affixed label to container III and started Log sheet.

1715 Departed site

62 total today 62

700 gals NCM

56 bags

280 lbs.

375 gals IDW water.

Thur 10/8/15

0700 Arrvd onsite
0710 Completed Safety Tailgate, HE Inspections.
0730 Arrvd 62
0805 Topped off 62 with 20 Gals NCM 2 bags/10 lbs
0815 Well 62 Sealed. Started clean up.
0830 Met Kevin + Katie @ bldg 1036 to conduct Field inspection
0850 62 Back filled — TOTAL for 62: 1270 NCM Gals, 102 bags/5
0945 Completed inspection — 375 gals water
1000 continued packing up.
1030 Dropped of Casing for 62 @ recycling bin.
1050 Front gate to drop off Track Hoe for Ha Rentals Pick up
1110 1036 to pump POW to totes.
1140 Back to 62 to load mats, Lumber from Temp Bridge & Skid steer.
1200 Break for Lunch.
1230 Continued loading equipment
1400 Back to Laydown area to drop off fr and fuel trucks.
1500 Crew departs Camp Ravenna
1510 Start getting stuff ready to ~~go~~ samples.
1520 Katie ~~was~~ wanted different labels on + markings.
1530 Back to work on COC & Labels.
1645 Contacted Cindy because was not going get samples done tonight.
1700 Departed Site.

0805 commenced preparing labels & started sampling

0900 Porta John pickedup

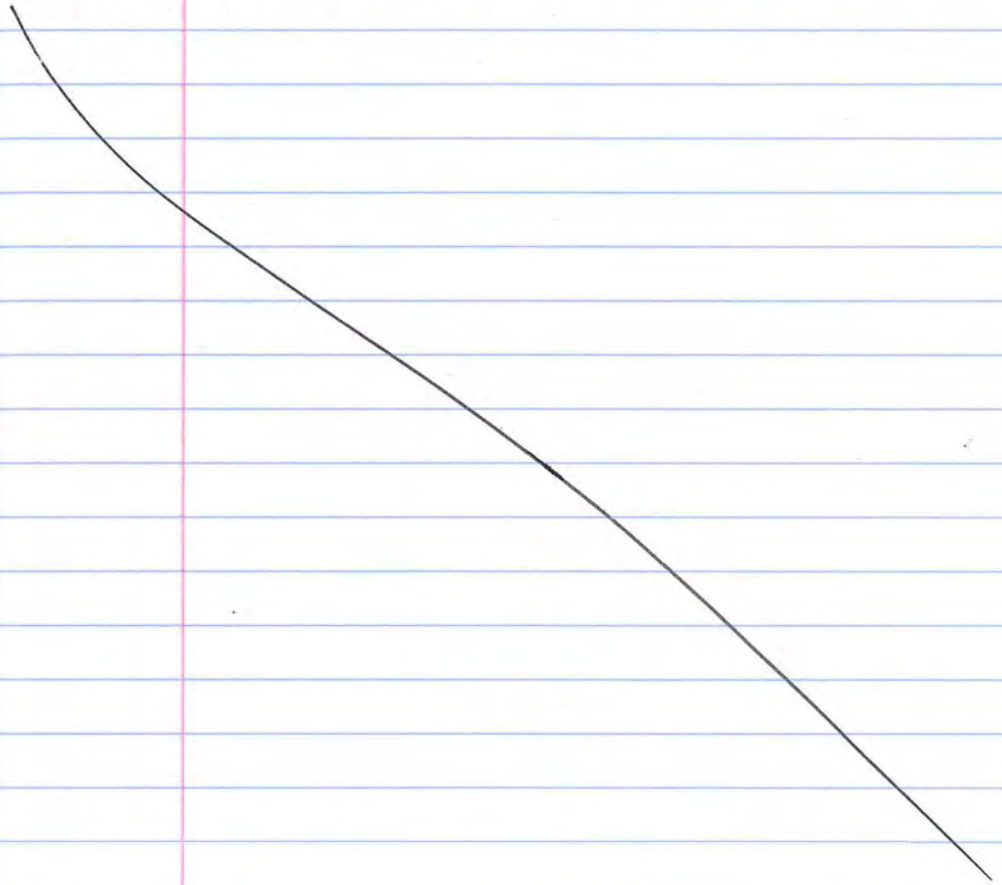
1000 Dumpster pickedup.

1240 completed sampling - Started packaging

1330 Dropped off keys & ~~[illegible]~~ Inspection Form & Loss @ HQ

1500 Dropped off samples at FedEx

1505 Departed for home.



APPENDIX D
Photographs of Well Abandonment Activities

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WELL 3

Well 3 prior to abandonment activities.

Well 3 following casing being cut and prior to abandonment.

Well 3 following grouting.

WELL 5

Well 5 with casing exposed.

Well 5 after broken casing removed.

Well 5 following backfill.

WELL 6

Well 6 Prior to abandonment.

Well 6 following grouting and removal of casing and piping.

Well 6 following backfill.

WELL 7

Well 7 during grouting.

Well 7 during concrete vault removal.

Well 7 following backfill.

WELL 10

Excavation at Well 10.

Bottom of excavation at Well 10.

WELL 14

Well 14 with casing exposed.

Well 14 during grouting.

Well 14 following backfill.

WELL 20

Well 20 at beginning of excavation.

Well 20 during excavation

Well 20 prior to backfill.

WELL 24

Well 24 following grouting.

Well 24 following backfill.

WELL 31

Well 31 following casing exposure

Well 31 during grouting.

Well 31 following backfill and surface restoration.

WELL 32

Well 32 prior to excavation.

Exposed top of casing at Well 32 with historical grout shown.

Well 32 following backfill.

WELL 36

Well 36 prior to excavation.

Well 36 during excavation

Bottom of Well 36 excavation.

WELL 37

Well 37 with casing exposed.

Well 37 following grouting

Well 37 following backfill.

WELL 38

Well 38 with broken buried casing exposed.

Well 38 following grouting.

WELL 39

Well 39 with casing exposed.

Well 39 during grouting.

Well 39 following completion of grouting.

WELL 49

Well 49 during grouting.

Well 49 at completion of grouting.

WELL 49 A

Well 49A at completion of grouting.

WELL 50

Well 50 at completion of grouting.

Well 50 following backfill.

WELL 51

Well 51 during grouting.

Well 51 following backfill.

WELL 54

Well 54 during grouting.

Well 54 at completion of grouting.

Well 54 following backfill.

WELL 56

Well 56 with casing exposed.

Well 56 at completion of grouting.

Well 56 following backfill

WELL 62

Well 62 during grouting.

Well 62 marsh mats along access path.

Well 62 following backfill.

WELL 66

Blocked casing removed from Well 66.

Well 66 at completion of grouting.

Well 66 following backfill.

WELL 95

Well 95 during grouting.

Well 95 during concrete removal.

Well 95 following backfill

WELL 98

Well 98 with casing exposed.

Well 98 following grouting.

Well 98 following backfill.

WELL 100

Pump and piping removed from Well 100.

Well 100 following grouting.

Well 100 following backfill.

APPENDIX E
Ohio Well Sealing Reports

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DNR 7810.13

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218260

LOCATION PRODUCTION WELL #F-3

County Portage Township MISSION Section/Lot Number (Circle One or Both) –

Owner/Builder (Circle One or Both) Camp Ravenna, Ohio Army National Guard

Address of Well Location 1438 (Number) State Route 534 SW (Street Name)

City Newton Falls Zip Code 44444

Property Location Description: 250 ft miles (n, e, s, w) of Paris Windham & South Service Rd. (nearest intersection) on the WEST (n, e, s, w) side of PARIS WINDHAM ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2367248.[ ] +/- ___ ft. or m Y 5756387.[ ] +/- ___ ft. or m
OR Latitude/Longitude Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.
Latitude – Longitude –

Elevation of Well 977.[ ] +/- ___ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other –

ORIGINAL WELL ODNR Well Log Number – Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/15/15

Depth of Well Historic Record/49 2015 Measured 25.2 Static Water Level 12.1
Size of Casing 8 Length of casing 38.5 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	25.2	3	Neat Cement Mix	60 gals
	3	0	Backfill Soil	½ cubic yd.

Was Casing Removed? Yes or (No) (circle one)

Condition of Casing Intact

Perforations: From N/A To N/A
From N/A To N/A

Date Sealing Performed 9/17/15

Reason(s) for Sealing Performed IAW July '15 Final IRA Workplan for Historical Well Abandonment Activities as approved by Ohio EPA. Well no longer used, sealed, abandoned to prevent potential conduit to groundwater.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green Street
City/State/Zip Marietta, OH 45750

Signature
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
ORIGINAL COPY TO - ODNR, DIVISION OF SOIL AND WATER RESOURCES,
2045 MORSE ROAD BLDG. B, COLS., OHIO 43229-6693
Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

DNR 7810.13

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218261

LOCATION RADIATION WELL # 6

County Portage Township Mission Section/Lot Number (Circle One or Both) NA

Owner/Builder (Circle One or Both) Camp Ravenna OHIO Army National Guard

Address of Well Location 1438 State Route 534 SW
(Number) (Street Name)

City Newton Falls Zip Code 44444

Property Location Description: 1200ft. miles WEST (n, e, s, w) of PALIS WINDHAM & RAILROAD ST ROAD (nearest intersection)
on the NORTH (n, e, s, w) side of NEWTON FALLS ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2366670.[ ] +/- ____ ft. or m Y 561452.[ ] +/- ____ ft. or m
OR Latitude/Longitude { Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec. } Latitude ____ Longitude ____

Elevation of Well 974.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/18/15

Depth of Well Historic Record 95-2015 Measured 23.8 Static Water Level 16.05
Size of Casing 6 Length of casing 50 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	23.8	3	Neat Cement Mix	75 gals.
	3	0	Backfill Soil	1/2 cubic yd.

Was Casing Removed? Yes or (No) (circle one)

Condition of Casing Intact

Perforations: From N.A To N.A
From N.A To N.A

Date Sealing Performed 9/18/15
Reason(s) for Sealing Performed IAW July 2015 final IEA Work Plan for Historical well Abandonment Activities as approved by OHEPA. Well no longer used. Sealed abandoned to prevent Potential conduit to groundwater.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green St
City/State/Zip Marietta, OH 45750

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
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Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

DNR 7810.13

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218262

LOCATION Production well # 7

County Portage Township Mission Circle One or Both Section/Lot Number N/A

Owner/Builder Camp Ravenna Ohio Army National Guard
Circle One or Both

Address of Well Location 1438 State Route 534 SW
Number Street Name

City Newton Falls. Zip Code 44444

Property Location Description: 0.15 miles (n, e, s, w) WEST of PARIS NORTH HAVEN nearest intersection; on the WEST (n, e, s, w) side of RENAULT ROAD road name

Location of Well in either: State Plane (N ☐ S ☐) X 2316910.[ ] +/- ____ ft. or m Y 530576.[ ] +/- ____ ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude ____ Longitude ____

Elevation of Well 974.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number N/A Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/15/15

Depth of Well Historic Record 60 - 2015 Measured 13.3 Static Water Level Dry
Size of Casing 6 Length of casing 34.5 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	13.3	To	7	Neat Cement Mix	140 gals.
From	7	To	0	Backfill Soil	6.5 cubic yds.
From		To			

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations: From N/A To N/A
From N/A To N/A

Date Sealing Performed 9/16/15
Reason(s) for Sealing Performed IAW July 2015 Final IRA Workplan for Historical Well Abandonment Activities, as approved by OHEPA well no longer used sealed + abandoned to prevent potential conduit to groundwater

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Greene Street
City/State/Zip Marietta, OH 45750.

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
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DNR 7810.13

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218263

LOCATION PRODUCTION WELL #F 14

County Portage Township Mission Section/Lot Number (Circle One or Both) NA

Owner/Builder (Circle One or Both) Camp Ravenna Ohio Army National Guard.

Address of Well Location 1438 State Route 534 SW (Number / Street Name)

City Newton Falls Zip Code 44444

Property Location Description: 0.03 miles (n, e, s, w) WEST of COUNTY LINE (nearest intersection) on the NORTH (n, e, s, w) side of SMALLEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2381681.[ ] +/- ____ ft. or m Y 570036.[ ] +/- ____ ft. or m
OR Latitude/Longitude { Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec. } Latitude ____ Longitude ____

Elevation of Well 945.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/17/15

Depth of Well Historic Record 170 - 2015 measured 153.6 Static Water Level 9.95
Size of Casing 6 Length of casing 36 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	153.6	To	3	Neat Cement Mix	350 Gals.
From	3	To	0	Backfill Soil	½ cubic yd
From		To			

Was Casing Removed? Yes or (No) (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/23/15

Reason(s) for Sealing Performed IAW July 2015 Final IRA Workplan for Historical Well Abandonment Activities as approved by OHEPA. Well no longer used. Sealed/Abandoned to prevent potential conduit to groundwater

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green Street
City/State/Zip Marietta, OH 45750.

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

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WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218264

LOCATION PRODUCTION WELL # 24

County Portage Township Mission Section/Lot Number NA
(Circle One or Both)
Owner/Builder Camp Ravenna Ohio Army National Guard
(Circle One or Both)
Address of Well Location 1438 State Route 534 SW
Number Street Name
City Newton Falls Zip Code 44444
Property Location Description 0.2 miles EAST (n, e, s, w) of REMALIA ROAD (nearest intersection)
on the SOUTH (n, e, s, w) side of SNOLO ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2377157.[ ] +/- ____ ft. or m Y 5763170.[ ] +/- ____ ft. or m
OR Latitude/Longitude { Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec. } Latitude ____ Longitude ____

Elevation of Well 1000.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/17/15

Depth of Well Historic Record 67 - Measured 2015 23.5 Static Water Level Dry
Size of Casing 6 Length of casing 8.8 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	23.5	To	3	Neat Cement Mix	35 gals.
From	3	To	0	Backfill Soil	1/2 cubic yds.
From		To			

Was Casing Removed? Yes or (No) (circle one)
Condition of Casing Intact
Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/22/15
Reason(s) for Sealing Performed IAW July 2015 Final IRA Work Plan for Historical Well Abandonment Activities as approved by OH EPA - well no longer used sealed / abandoned to prevent potential conduit to groundwater

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green St
City/State/Zip Marietta, OH 45750

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

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WATER WELL SEALING REPORT
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Division of Soil and Water Resources
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Columbus, OH 43229-6693
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0218265

LOCATION PRODUCTION WELL # 31

County Portage Township Mission Circle One or Both Section/Lot Number NA

Owner/Builder Camp Ravenna Ohio Army National Guard.
Circle One or Both

Address of Well Location 1438 State Route 534 SW
Number Street Name

City Newton Falls Zip Code 44444

Property Location Description 0.03 miles WEST of PARIS LONDEHAM
n, e, s, w nearest intersection

on the NORTH side of SOUTH SERVICE ROAD
n, e, s, w road name

Location of Well in either: State Plane N ☐ S ☐ X 2375326.[ ] +/- ____ ft. or m Y 558816.[ ] +/- ____ ft. or m
OR
Latitude/Longitude Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.
Latitude ____ Longitude ____

Elevation of Well 992.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No
(circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/24/15

Depth of Well Historic Record/01 2015 measured 110.4 Static Water Level 16.5
Size of Casing 6 Length of casing 8.5 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	110.4	3	Neat Cement Mix	275 gals
	3	0	Backfill Soil	1/2 cubic yd

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations:	From	To
	NA	NA
	NA	NA

Date Sealing Performed 9/29/15
Reason(s) for Sealing Performed IAW July 2015 Final IRA Workplan for Historical Well Abandonment Activities as approved by OHEPA. Well no longer used, sealed/abandoned to prevent potential conduit to gw.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 green Street
City/State/Zip Marietta, OH 45750

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

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WATER WELL SEALING REPORT
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Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218266

LOCATION Production Well # 37.

County Portage Township Mission Circle One or Both Section/Lot Number NA

Owner/Builder Camp Ravenna Ohio Army National Guard
Circle One or Both

Address of Well Location 1438 State Route 534 SW
Number Street Name

City Newton Falls Zip Code 44444

Property Location Description: 0.22 miles E4S T (n, e, s, w) of LOAD LINE 2 ROAD (nearest intersection)
on the SOUTH (n, e, s, w) side of REMALIA ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2373666.[ ] +/- ____ ft. or m Y 576/6821.[ ] +/- ____ ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.)
Latitude ____ Longitude ____

Elevation of Well 1014.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☑ NAD83

Source of Coordinates: ☑ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/15/15

Depth of Well Historic Record 155 2015 Measured 123.2 Static Water Level 17
Size of Casing 6 Length of casing 16 (Historic)
Well Condition ____

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	123.2	To	3	Neat Cement Mix	135 Gals
From	3	To	0	Backfill Soil	1/2 Cubic yd
From		To			

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 10/1/15

Reason(s) for Sealing Performed IAW July 2015 FINAL IRA Work Plan OAEPA. Well no longer used. for Historical Well Abandonment Activities as approved by OAEPA - Sealed/Abandoned to prevent potential conduit to ground water.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green St
City/State/Zip Marietta, OH 45750

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

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WATER WELL SEALING REPORT
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Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218267

LOCATION REDUCTION WELL # 38

County Portage Township MISSION Section/Lot Number (Circle One or Both) N/A

Owner/Builder Camp Ravenna Ohio Army National Guard (Circle One or Both)

Address of Well Location 1438 (Number) State Route 534 SW (Street Name)

City Newton Falls Zip Code 44444

Property Location Description: 0.03 miles (n, e, s, w) EAST of CORD LINE NO 4 ROAD (nearest intersection) on the NORTH (n, e, s, w) side of RAVENNA ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2375918.[ ] +/- ____ ft. or m Y 564287.[ ] +/- ____ ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude ____ Longitude ____

Elevation of Well 994.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/16/15

Depth of Well Historic Record 169 2015 Measured 38.1 Static Water Level 19.6
Size of Casing 6 Length of casing 9 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	19.6	To	3	Neat Cement Mix	185 gals
From	3	To	0	Backfill Soil	½ cubic yd.
From		To			

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations: From N/A To N/A
From N/A To N/A

Date Sealing Performed 9/15/15

Reason(s) for Sealing Performed IAW July 2015 Final IRA Work Plan for Historical Well Abandonment Activities as approved by OH EPA. Well no longer used. Sealed abandoned to prevent Potential conduit to groundwater.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 green St
City/State/Zip Marietta OH 45750.

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

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WATER WELL SEALING REPORT
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Division of Soil and Water Resources
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Columbus, OH 43229-6693
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0218268

LOCATION PRODUCTION WELL # 39

County Portage Township MISSION Circle One or Both Section/Lot Number NA

Owner/Builder Camp Ravenna Ohio Army National Guard.
Circle One or Both

Address of Well Location 1438 State Route 534 SW
Number Street Name

City Newton Falls Zip Code 44444

Property Location Description: 0.09 miles WEST (n, e, s, w) of LOAD LINE NO 1 ROAD (nearest intersection) on the SOUTH (n, e, s, w) side of SOUTH SCHOOL ROAD (road name)

Location of Well in either: State Plane (N ☐ S ☐) X 2376468.[ ] +/- ____ ft. or m Y 559647.[ ] +/- ____ ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.)
Latitude ____ Longitude ____

Elevation of Well 987.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☑ NAD83

Source of Coordinates: ☑ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/17/15

Depth of Well Historic record 137 2015 measured 10.5 Static Water Level Dry
Size of Casing 6 Length of casing 12 (Historic)
Well Condition ____

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	10.5	3	Neat Cement Mix	50 Gals
	3	0	Backfill Soil	½ Cubic yd

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/17/15
Reason(s) for Sealing Performed IAW July 2015 Final IRA Work Plan for Historical Well Abandonment Activities as approved by OHEPA. Well no longer used Sealed/Abandoned to prevent potential conduct to groundwater.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 green st.
City/State/Zip Marietta, OH 45750.

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

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WATER WELL SEALING REPORT
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Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
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0218269

LOCATION Production well #49

County Portage Township Mission Circle One or Both Section/Lot Number NA

Owner/Builder Camp Ravenna Ohio Army National Guard.
Circle One or Both

Address of Well Location 1438 State Route 534 SW
Number Street Name

City Newton Falls Zip Code 44444

Property Location Description: 0.09 miles (n, e, s, w) South of (nearest intersection) South Service Road; on the (n, e, s, w) West side of (road name) Greene Road

Location of Well in either: State Plane N ☐ S ☐ X 2135670 9 .[ ][ ] +/- [ ] ft. or m Y 544978 0 .[ ][ ] +/- [ ] ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude [ ] Longitude [ ]

Elevation of Well 1043 .[ ][ ] +/- [ ] ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other

ORIGINAL WELL ODNR Well Log Number [ ] Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/25/15

Depth of Well Historic Record - Unknown 170.4 (2015 measured) Static Water Level 40.2
Size of Casing 12 Length of casing 37.7 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	170.4	0	Neat Cement Mix	126.5 gals.

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 10/5/15

Reason(s) for Sealing Well no longer used. Sealed/Abandoned to prevent potential conduit to groundwater. 12" well casing imbedded in historical foundation/slab with 1.3' stick up. Directed not to demo slab/foundation. Cut stick up flush to slab/foundation

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green St.
City/State/Zip Marietta, OH 45750.

Signature [signature]
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
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WATER WELL SEALING REPORT
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Division of Soil and Water Resources
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Columbus, OH 43229-6693
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0218270

LOCATION PRODUCTION WELL # 49A

County Portage Township MISSION Circle One or Both Section/Lot Number NA

Owner/Builder Camp Ravenna Ohio Army National Guard
Circle One or Both

Address of Well Location 1438 State Route 534 SW
Number Street Name

City Newton Falls Zip Code 44444

Property Location Description: 0.09 miles (n, e, s, w) SOUTH of SOUTH SERVICE ROAD (nearest intersection) on the WEST (n, e, s, w) side of GEORGE ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2356724.[ ] +/- ____ ft. or m Y 5497706.[ ] +/- ____ ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude ____ Longitude ____

Elevation of Well 1043.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☑ NAD83

Source of Coordinates: ☑ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/14/15

Depth of Well Historic Record Unknown 7.6 (2015 measured) Static Water Level 7.6
Size of Casing 4 Length of casing unknown (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	7.6	0	Neat Cement Mix	4 gals
	From	To		
	From	To		

Was Casing Removed? Yes or No (circle one)

Condition of Casing INTACT

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 10/2/15

Reason(s) for Sealing Performed IAW July 2015 Final IRA Work Plan for Historical well abandonment activities as approved by OHEPA 4" pipe/well casing imbedded in historical slab foundation with 1.1' stickup. Directed not to demo - Put stick up flush to slab/ground.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green St.
City/State/Zip Marietta, OH 45750

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

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WATER WELL SEALING REPORT
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Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
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0218271

LOCATION PRODUCTION WELL #50

County Portage Township MISSION Circle One or Both Section/Lot Number NA

Owner/Builder Camp Ravenna OH Army National Guard.
Circle One or Both

Address of Well Location 1438 (Number) State Route 534 SW (Street Name)

City Newton Falls Zip Code 44444

Property Location Description: 0.38 miles (n, e, s, w) SOUTH of NEWTON FALLS ROAD (nearest intersection)
on the NORTH (n, e, s, w) side of SOUTH SERVICE ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2371487.| | +/- ____ ft. or m Y 5558338.| | +/- ____ ft. or m
OR Latitude/Longitude {Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.
Latitude ____ Longitude ____}

Elevation of Well 1007.| | +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/25/15

Depth of Well Historic Record 136 2015 Measured 71.2 Static Water Level 22.3
Size of Casing 6 Length of casing 19 (Historic)
Well Condition ____

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	71.2	To	3	Neat Cement Mix	100 gal
From	3	To	0	Backfill Soil	1/2 cubic yd
From		To			

Was Casing Removed? Yes or (No) (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/24/15
Reason(s) for Sealing Performed IAW July 2015 FINAL IRA Workplan for Historical Well Abandonment Activities as approved by OHEPA. Well no longer used - sealed/abandoned to prevent potential conduit to groundwater.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 green st
City/State/Zip Marietta, OH 45750

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

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WATER WELL SEALING REPORT
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Division of Soil and Water Resources
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Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218272

LOCATION PRODUCTION WELL # 51

County Portage Township Mission Section/Lot Number (Circle One or Both) NA.

Owner/Builder Camp Ravenna Ohio Army National Guard. (Circle One or Both)

Address of Well Location 1438 (Number) State Route 534 SW (Street Name)

City Newton Falls Zip Code 444444

Property Location Description: 0.30 miles WEST (n, e, s, w) of INTERSECTION OF REMALIA LD & PARIS WINDHAM LD (nearest intersection)

on the WEST (n, e, s, w) side of REMALIA RD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2370696.[ ] +/- ____ ft. or m Y 558817.[ ] +/- ____ ft. or m

OR Latitude/Longitude: Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.
Latitude NA Longitude NA

Elevation of Well 1010.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☑ NAD83

Source of Coordinates: ☑ GPS ☐ Survey ☐ Other

ORIGINAL WELL ODNR Well Log Number NA Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/15/15

Depth of Well Historic Record 142 2015 measured 130.1 Static Water Level 40.2.
Size of Casing 6 Length of casing 9 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	130.1	3	Neat Cement Mix	150 sacks.
	3	0	Backfill Soil	1/2 cubic yd.

Was Casing Removed? Yes or (No) (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/21/15

Reason(s) for Sealing Performed IAW July 2015 Final IRA Workplan for Historical Well Abandonment Activities as approved by OH EPA. Well no longer used. Sealed/Abandoned to prevent potential conduit to groundwater.

CONTRACTOR
Name CASCADE DRILLING ODH Registration # 3506
Address 1010 GREEN STREET
City/State/Zip MARIETTA, OH 45750

Signature

I hereby certify the information given is accurate and correct to the best of my knowledge.

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WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218273

LOCATION PRODUCTION WELL NO: 54

County Portage Township Mission Circle One or Both Section/Lot Number NA

Owner/Builder Camp Ravenna Ohio Army National Guard
Circle One or Both

Address of Well Location 1438 State Route 534 SW
Number Street Name

City Newton Falls Zip Code 44444

Property Location Description .005 miles EAST of KNAPP ROAD
n, e, s, w nearest intersection

on the SOUTH side of MC GOLRICK ROAD
n, e, s, w road name

Location of Well in either: State Plane N ☐ S ☐ X 2385387.[ ] +/- ____ ft. or m Y 553102.[ ] +/- ____ ft. or m
OR Latitude/Longitude Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.
Latitude ____ Longitude ____

Elevation of Well 1187.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number NA Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/24/15

Depth of Well Historic Record 150 2015 measured 54.6 Static Water Level 8.45
Size of Casing 6 Length of casing 17 (historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	54.6	To	3	Neat Cement Mix	200 Gals
From	3	To	0	Backfill Soil	½ cubic yds.
From		To			

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/29/15

Reason(s) for Sealing Performed IAW July 2015 Final IRA Work Plan for Historical Well Abandonment Activities as approved by OH-EPA. Well no longer used, sealed, abandoned to prevent potential conduit to groundwater.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green St.
City/State/Zip Marietta OH 45750

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
ORIGINAL COPY TO - ODNR, DIVISION OF SOIL AND WATER RESOURCES,
2045 MORSE ROAD BLDG. B, COLS., OHIO 43229-6693
Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

DNR 7810.13

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218274

LOCATION PRODUCTION WELL # 36

County Portage Township Mission Section/Lot Number NA
(Circle One or Both)
Owner/Builder Camp Ravenna Ohio Army National Guard.
(Circle One or Both)
Address of Well Location 1438 State Route 534 SW
(Number) (Street Name)
City Newton Falls. Zip Code 44444
Property Location Description 0.2 miles (n, e, s, w) EAST of NEWTON FALLS AND STATE ROUTE 5 (nearest intersection)
on the EAST (n, e, s, w) side of NEWTON FALLS ROAD (road name)

Location of Well in either: State Plane (N ☐ S ☐) X 2344846.___ +/- ___ ft. or m Y 558709.___ +/- ___ ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.)
Latitude ___ Longitude ___

Elevation of Well 1148.___ +/- ___ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ___

ORIGINAL WELL ODNR Well Log Number NA Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/15/15.

Depth of Well Historic Record 148 2015 measured 23.6 Static Water Level 20.7
Size of Casing 6 Length of casing 27.4 (Historic)
Well Condition ___

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	20.7	3	Neat Cement Mix	36 Sels.
	3	0	Backfill Soil	½ cubic yd.

Was Casing Removed? Yes or (No) (circle one)
Condition of Casing Intact
Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/30/15
Reason(s) for Sealing Performed IAW July 2015 Final IRA Work Plan for the Historic Well Abandonment Activities as approved by OH EPA. Well no longer used. Sealed/abandoned to prevent potential conduit to groundwater.

CONTRACTOR
Name CASCADE DRILLING ODH Registration # 3506
Address 1010 GREEN STREET
City/State/Zip MARIETTA, OH 45750

Signature ___
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
ORIGINAL COPY TO - ODNR, DIVISION OF SOIL AND WATER RESOURCES,
2045 MORSE ROAD BLDG. B, COLS., OHIO 43229-6693
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DNR 7810.13

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218275

LOCATION PRODUCTION WELL #62

County Portage Township Mission Circle One or Both Section/Lot Number NA

Owner/Builder Camp Ravenna Ohio Army National Guard
Circle One or Both

Address of Well Location 1438 State Route 534 SW
Number Street Name

City Newton Falls Zip Code 44444

Property Location Description: 0.2 miles (n, e, s, w) SOUTH of NEWTON FALLS ROAD (nearest intersection) on the WEST (n, e, s, w) side of FASE BOOSTER SPUR ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2351981.[ ] +/- ___ ft. or m Y 557152.[ ] +/- ___ ft. or m
OR Latitude/Longitude: Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.
Latitude ___ Longitude ___

Elevation of Well 1092.[ ] +/- ___ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ___

ORIGINAL WELL ODNR Well Log Number ___ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/15/15

Depth of Well Historic Record 221 2015 measured 202.1 Static Water Level 57.1
Size of Casing 12 Length of casing 43 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	202.1	3	Neat Cement Mix	1270 Gals.
	3	0	Backfill Soil	½ cubic yd

Was Casing Removed? Yes or (No) (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 10/8/15

Reason(s) for Sealing Performed IAW July 2015 Final IRA Work Plan for Historical Well Abandonment Activities as approved by OH EPA. Well no longer used. Sealed/abandoned to prevent potential conduit to groundwater.

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green St
City/State/Zip Marietta, OH 45750

Signature ___
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
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DNR 7810.13

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218276

LOCATION PRODUCTION WELL #66

County Portage Township MISSION Section/Lot Number (Circle One or Both) NA

Owner/Builder (Circle One or Both) Camp. Ravenna Ohio Army National Guard

Address of Well Location 1438 (Number) State Route 534 SW (Street Name)

City Newton Fall Zip Code 44444.

Property Location Description: 0.11 miles (n, e, s, w) NORTH of SOUTH SERVICE ROAD (nearest intersection) on the WEST (n, e, s, w) side of PARIS WINDHAM ROAD (road name)

Location of Well in either: State Plane (N ☐ S ☐) X 2365874.[ ] +/- ____ ft. or m Y 554471[ ].[ ] +/- ____ ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude ____ Longitude ____

Elevation of Well 987.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/16/15

Depth of Well Historic Record 176 2015 measured 13.3 Static Water Level DRY
Size of Casing 6 Length of casing 50 (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:	From	To	Sealing Material	Volume
	13.3	3	Neat Cement Mix	20 sacks
	3	0	Backfill Soil	½ cubic yd

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/29/15

Reason(s) for Sealing Performed IAW July 2015 Final DRAFT Work Plan for Historical Well Abandonment Activities as approved by OH EPA. Well no longer used. Sealed/abandoned to prevent potential conduit to groundwater

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 green St.
City/State/Zip Marietta OH 45750

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
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DNR 7810.13

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218277

LOCATION RECLAMATION WELL # 95

County Portage Township MISSION Section/Lot Number (Circle One or Both) NA

Owner/Builder (Circle One or Both) Camp Ravenna Ohio Army National Guard

Address of Well Location 1438 (Number) State Route 534 SW (Street Name)

City Newton Falls Zip Code 44444

Property Location Description: 0.009 miles (n, e, s, w) NORTH of NEWTON FALLS ROAD (nearest intersection) on the WEST (n, e, s, w) side of GEORGE ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2357676.___ +/- ___ ft. or m Y 576057 2.___ +/- ___ ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude ___ Longitude ___

Elevation of Well 1023.___ +/- ___ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ___

ORIGINAL WELL ODNR Well Log Number ___ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/14/15

Depth of Well Historic Record - Unknown 2015 measured 64.8 Static Water Level 15.5
Size of Casing 6 Length of casing unknown (Historic)
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	64.8	To	4	Neat Cement Mix	215 gals
From	4	To	0	Backfill Soil	1 cubic yd.
From		To			

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/16/15

Reason(s) for Sealing Performed IAW July 2015 Final IRA Work Plan for Historical well Abandonment activities as approved by OH EPA. Well no longer used, sealed/abandoned to prevent potential conduit to groundwater

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green St
City/State/Zip Marietta, OH 45750

Signature ___
I hereby certify the information given is accurate and correct to the best of my knowledge.

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DNR 7810.13

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218278

LOCATION Production well #98

County Portage Township Mission Section/Lot Number (Circle One or Both) N/A

Owner/Builder (Circle One or Both) Camp Bayerstra Ohio Army National Guard.

Address of Well Location 1438 (Number) State Route 534 SW (Street Name)

City Newton Falls Zip Code 44444.

Property Location Description: 0.17 miles (n, e, s, w) SOUTH of SOUTH PATROL ROAD (nearest intersection)

on the WEST (n, e, s, w) side of GREEN LEAF ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X 2345492.[ ] +/- ____ ft. or m Y 557728[ ].[ ] +/- ____ ft. or m

OR Latitude/Longitude Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.

Latitude ____ Longitude ____

Elevation of Well 1076.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/16/15

Depth of Well Historic record-unknown 2015 measured 89 Static Water Level 12.9

Size of Casing 6 Length of casing unknown (historical)

Well Condition ____

SEALING PROCEDURE

Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	89	To	3	Neat Cement Mix	100 gals
From	3	To	0	Backfill Soil	1/2 Cubic Yd.
From		To			

Was Casing Removed? Yes or (No) (circle one)

Condition of Casing Intact

Perforations: From N/A To N/A

From N/A To N/A

Date Sealing Performed 9/30/15

Reason(s) for Sealing Performed IAW July 2015 Final IRA Workplan for Historical Well Abandonment Activities as approved by OHEPA Well no longer used. Sealed/abandoned to prevent conduit to groundwater

CONTRACTOR

Name Cascade Drilling ODH Registration # 3506

Address 1010 Green St.

City/State/Zip Marietta, OH 45750

Signature ____

I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.

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WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0218279

LOCATION PRODUCTION WELL #100

County Portage Township Mission Circle One or Both Section/Lot Number NA

Owner/Builder Camp Ravenna Ohio Army National Guard
Circle One or Both

Address of Well Location 1438 State Route 534 SW
Number Street Name

City Newton Falls Zip Code 44444

Property Location Description: 0.09 miles EAST (n, e, s, w) of GREEN LEAF ROAD (nearest intersection) on the SOUTH (n, e, s, w) side of NORTH PATROL ROAD (road name)

Location of Well in either: State Plane (N ☐ S ☐) X 2358044.[ ] +/- ____ ft. or m Y 570306.[ ] +/- ____ ft. or m
OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude ____ Longitude ____

Elevation of Well 1056.[ ] +/- ____ ft. or m Datum Plain: ☐ NAD27 ☑ NAD83

Source of Coordinates: ☑ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 9/16/15

Depth of Well Historic Record unknown 2015 Measured 49.3 Static Water Level 14.2
Size of Casing 6 Length of casing Historic - unknown
Well Condition

SEALING PROCEDURE
Method of Placement Pressure Tremie

Placement:				Sealing Material	Volume
From	49.3	To	3	Neat Cement Mix	90 gals.
From	3	To	0	Backfill Soil	
From		To			

Was Casing Removed? Yes or No (circle one)

Condition of Casing Intact

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9/22/15
Reason(s) for Sealing Performed CAU July 2005 Final IRA Work Plan for Historical well abandonment Activities as approved by OH EPA Well no longer used drilled/abandoned to prevent potential conduit to groundwater

CONTRACTOR
Name Cascade Drilling ODH Registration # 3506
Address 1010 Green St.
City/State/Zip Marietta, OH 45750

Signature ____
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
ORIGINAL COPY TO - ODNR, DIVISION OF SOIL AND WATER RESOURCES,
2045 MORSE ROAD BLDG. B, COLS., OHIO 43229-6693
Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

APPENDIX F
Concrete Waste Disposal Bill of Lading

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GEN0112

SCOTT DISPOSAL SERVICE

2006 MELOY RD
KENT, OHIO 44240
330-677-0627

RENTAL AGREEMENT

1191

Plexus Scientific LLC
Name

Date and Time Out 9-22-15

Address

Date and Time In

Total Time

Driver's License No. | Registration No. | Phone | Due Back

Address where item is to be used

Item Rented	Period of Time	Rate	Amount
Pick up Contract Container @ 10:15 AM			
Return to Patriot excavating			
Hauled BACK to Comp Recovery @ 1:00 pm 9-24-15			

Merchandise Sold	Qty. Out	Qty. Used	@	Amount
10:00 AM - Container picked up and taken to Brimfield Aggregate - Ravenna / camp				

This is a contract of renting only and not of sale, the undersigned renter agrees that he has rented the item(s) herein described upon the express condition that it will at all times remain the property of the rental agent named above; that he has examined said item, found it to be in good condition and will return it in as good condition as when he received it, ordinary wear and tear excepted; that he will return at once to the rental agent any item not functioning normally; that he will pay promptly when due all charges which accrue because of this rental, including damages to said item. In the event the renter fails to return said item at the agreed time, or fails to abide by any of the other terms of this contract, the rental agent may repossess it without notice to the renter, and the rental agent is hereby released from all claims arising therefrom. All charges are based on the time item is in renter's possession whether in use or not. The rental agent is not responsible for accidents or injuries caused or indirectly in the use of the rented item.

Signature W Gyla

Total Rent	accepted
Total Merchandise	
Tax	
Total Charges	
Less Deposit	
Total Due	
Refund	

container - debris taken to Brimfield 10:3 AG 9-24-15

Thank Yo

32000

FREEDOM MATERIALS

P.O. Box 1010 • Ravenna, Ohio 44266
330-296-7790

LAND DEVELOPMENT LLC.

DATE 9-22-15
12:22 PM

SOLD TO:

DELIVER TO: Plexus Scientific

ADDRESS:

HAULED BY:

SOLD BY	CHARGE OK'D BY	C.O.D.	QUOTE NO.	TRUCK TYPE

WEIGHED BY	TRUCK NO.	DRIVER'S SIGNATURE

MATERIAL:		
Concrete Weight.	GROSS	75240
	TARE	32000
	NET	43240
	TONS	21.62

NOTICE OF FURNISHING

By furnishing t... materials described in this invoice, the su... that is improv... provide the sup... Commencemen... will take noti... accordance w... MATERIALS w... by Ohio law.

UNIT PRICE

12:22 PM 09/22/15

DELIVERY INS...

INVOICES ... PER MONT...

I, the unders... the curbline ... thereby and ... including an...

...S,

ID. NO.
75240 lb GR
32000 lb TR
43240 lb NT

No. 4

ROD

APPENDIX G
Waste Characterization Report

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December 7, 2015

Mr. Quyet La
Technical Manager
U.S. Army Corps of Engineers, Louisville District
600 Martin Luther King Jr. Place
Louisville, Kentucky 40202-0059

Reference: Contract No. W912QR-12-D-0010
Task Order No. 0012

Subject: Investigation Derived Waste Disposal Letter Report
Interim Removal Action, Historical Production Well Abandonment
Camp Ravenna, Portage and Trumbull Counties, Ohio

Dear Mr. La:

Plexus Scientific Corporation (Plexus) performed well abandonment activities at 25 former production well locations from September 14 to October 9, 2015. All work was performed in accordance with the Interim Removal Action Work Plan (IRAWP). These activities resulted in the generation of Investigation Derived Waste (IDW) consisting of decontamination and purge water. The purpose of this letter report is to characterize and classify IDW for disposal and to propose methods for disposing of the IDW. This letter report follows guidance established by the following:

1) The Facility-Wide Sampling and Analysis Plan (FWSAP; SAIC, 2011), and

2) Final Work Plan for Interim Removal Action, Historical Well Abandonment Activities (IRAWP; Plexus, 2015)

The well abandonment wastewater was containerized in three (3) 550 gallon storage containers and totaled approximately 1,500 gallons. Each container contained a combination of decontamination water and purge water from the well abandonment. On October 9, 2015 each of the three containers were sampled per the requirements outlined in Section 7.0 of the FWSAP and the IRAWP. Each of the three samples was analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-VOCs

5510 Cherokee Avenue
Suite 350
Alexandria, VA 22312
Tel: 703-820-3339

7130 Minstrel Way
Suite 215
Columbia, MD 21045
Tel: 443-319-8055

(SVOCs), TCL herbicides, TCL pesticides, Target Analyte List (TAL) metals, explosives, total sulfide, total cyanide, corrosivity, and flashpoint.

Hazardous Waste Screening

Upon receipt of the laboratory results, the analytical data was reviewed to determine if the waste was potentially hazardous. The data was compared to the maximum concentration of contaminants for toxicity characterization of hazardous wastes as specified in 40 Code of Federal Regulations (CFR) 261.24 and the maximum concentrations for non-Toxicity Characteristic Leaching Procedure (non-TCLP) analytes for hazardous waste determination (pH, corrosivity, total cyanide, flashpoint, and total sulfide). The only exceedance of the hazardous criteria was corrosivity, which failed in the sample from one container (Tank 2) due to having a pH above 12.5.

Per the IRAWP pH exceedances can be treated onsite to bring the pH below the hazardous value. On November 10 and 13, 2015 field treatment was performed by adding of muriatic acid to the tanks. Since all three containers had pH values near or above 12.5, treatment was performed at all three tanks. Following the November 13, 2015 treatment the pH values in Tanks 1, 2, and 3 were 2.5, 8.9, and 5.7. Attachment 1 shows the sample results compared to the hazardous screening criteria. A summary of the pH adjustment activities are included as Attachment 2.

Non-Hazardous Disposal Screening

Following the onsite pH adjustment, which made the wastewater in all three containers characteristically non-hazardous, the results were also compared to Camp Ravenna Project Action Limits (PALs), U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCLs), and USEPA Regional Screening Levels (RSLs) to determine the recommendation for final disposal. The PALs were taken from the *Final Facility-Wide Groundwater Monitoring Program, RVAAP-66 Facility-Wide Groundwater Quality Assurance Project Plan Addendum* (EQM, 2012).The screening criteria used were to first compare the concentrations to the PALs. If a concentration exceeded a PAL then the detection would be compared to the MCL. If no MCL was available then the concentration was compared to the RSL. The detected compounds and their respective screening values are summarized in Attachment 3.

The results of the screening indicated that there were several exceedances of the PALs but only two analytes had exceedances of an applicable MCL or RSL. Chromium and antimony both had exceedances of their PALs as well as their respective MCLs in all three samples.

Calcium and potassium both had exceedances of their respective PALs in all three samples but there are no MCLs or RSLs for these analytes. Calcium and potassium do not have regulatory screening values because elements are common as dissolved phase constituents in natural waters and do not pose a threat to human health Calcium and potassium do not have regulatory screening values because elements are common as dissolved phase constituents in natural waters and do not pose a threat to human health

Quality Control Samples

A field quality control (QC) sample (trip blank) was included with the IDW samples. The sample (sample ID TB-100815) was analyzed for volatile organic compounds (VOCS). There were no detections of VOCS in the sample.

The laboratory analytical report for all four samples is located in Attachment 4.

Recommendations

Based on the results of the laboratory data, which was collected and analyzed in accordance with the FWSAP and IRAWP, the wastewater in the three tanks is not characteristically hazardous. Furthermore, comparison of the sample results against PALs and applicable regulatory criteria indicate that two metals (antimony and chromium) are in exceedance of both PALs and the regulatory screening value.

Since all three containers of IDW have exceedances of screening criteria for antimony and chromium, it is recommended that the water be disposed of off-site as a non-hazardous waste at a licensed wastewater treatment facility.

Since Camp Ravenna, under the Resource Conservation and Recovery Act (RCRA), is the generator of this material, Plexus requests concurrence or direction in the waste classification prior to disposal to ensure materials are properly disposed.

Following your direction and approval, Plexus will proceed with appropriate waste disposal.

Should you have any questions concerning this submittal, I can be reached via email at chebert@plexsci.com, or in the office at (443) 319-8055 ext. 108.

Sincerely,

Craig Hebert, PG
Project Manager

Attachments: Attachment 1 – Waste Characterization Results
Attachment 2 – Summary of Wastewater pH Adjustment
Attachment 3 – Summary of Analytical Detections
Attachment 4 – Laboratory Analytical Report

ATTACHMENT 1
Waste Characterization Results

Attachment 1 - Waste Characterization Results

Contaminant	Units	TCLP Limit (mg/L)	Detection Limit	Sample Number		
				WSC-1-100815	WSC-2-100815	WSC-3-100815
Arsenic	mg/L	5	0.007	N.D.	N.D.	N.D.
Barium	mg/L	100	0.0003	**0.272**	**0.251**	**0.296**
Benzene	mg/L	0.5	0.0005	N.D.	N.D.	N.D.
Cadmium	mg/L	1	0.0007	N.D.	N.D.	N.D.
Chromium	mg/L	5	0.0015	**0.515**	**0.955**	**0.546**
Lead	mg/L	5	0.0051	N.D.	N.D.	N.D.
Mercury	mg/L	0.2	0.00005	N.D.	**0.00023**	N.D.
Carbon Tetrachloride	mg/L	0.5	0.0005	N.D.	N.D.	N.D.
Chlordane	mg/L	0.03	0.0000098	N.D.	N.D.	N.D.
Chlorobenzene	mg/L	100	0.0005	N.D.	N.D.	N.D.
Chloroform	mg/L	6	0.0005	**0.019**	**0.054**	**0.019**
Selenium	mg/L	1	0.0082	N.D.	N.D.	N.D.
Silver	mg/L	5	0.0014	N.D.	N.D.	N.D.
o-Cresol	mg/L	200	0.0005	N.D.	N.D.	N.D.
m-Cresol	mg/L	200	0.0005	N.D.	N.D.	N.D.
p-Cresol	mg/L	200	0.0005	N.D.	N.D.	N.D.
2,4-D	mg/L	10	0.00015	N.D.	**0.00025 JP**	N.D.
1,4-Dichlorobenzene	mg/L	7.5	0.001	N.D.	N.D.	N.D.
1,2-Dichloroethane	mg/L	0.5	0.0005	N.D.	N.D.	N.D.
1,1-Dichloroethene	mg/L	0.7	0.0005	N.D.	N.D.	N.D.
2,4-Dinitrotoluene	mg/L	0.13	0.001	N.D.	N.D.	N.D.
Endrin	mg/L	0.02	0.0000079	N.D.	N.D.	N.D.
Heptachlor (and its epoxide)	mg/L	0.008	0.0000022	N.D.	N.D.	N.D.
Hexachlorobenzene	mg/L	0.1	0.001	N.D.	N.D.	N.D.
Hexachlorobutadiene	mg/L	0.5	0.0005	N.D.	N.D.	N.D.
Hexachloroethane	mg/L	3	0.001	N.D.	N.D.	N.D.
Lindane	mg/L	0.4	0.0000019	N.D.	N.D.	N.D.
Methoxychlor	mg/L	10	0.000029	N.D.	N.D.	N.D.
Methyl ethyl ketone (2-Butanone)	mg/L	200	0.003	N.D.	N.D.	N.D.
Nitrobenzene	mg/L	2	0.0005	N.D.	N.D.	N.D.
Pentachlorophenol	mg/L	100	0.001	N.D.	N.D.	N.D.
Pyridine	mg/L	5	0.002	N.D.	N.D.	N.D.
Tetrachloroethene	mg/L	0.7	0.0005	N.D.	N.D.	N.D.
Toxaphene	mg/L	0.5	0.00029	N.D.	N.D.	N.D.
Trichloroethene	mg/L	0.5	0.0005	N.D.	N.D.	N.D.
2,4,5-Trichlorophenol	mg/L	400	0.0005	**0.001**	**0.002**	**0.002**
2,4,6-Trichlorophenol	mg/L	2	0.0005	N.D.	N.D.	N.D.
2,4,5-TP (Silvex)	mg/L	1	0.0000097	N.D.	N.D. V	**0.000016 J**
Vinyl Chloride	mg/L	0.2	0.0005	N.D.	N.D.	N.D.
pH/Corrosivity	Standard unit for pH	2 ≤ pH ≤ 12.5	0.1	**12.4 J (2.5 following treatment)**	**12.6 J (8.9 following treatment)**	**12.4 J (5.7 following treatment)**
Cyanide, total	mg/L	0.01 mg/L	0.005	N.D.	**0.016**	N.D.
Flashpoint	Degrees Fahrenheit	<140°F	50	None Observed	None Observed	None Observed
Sulfide, total	mg/L	3.0 mg/L	0.68	N.D.	N.D.	N.D.

Notes:

Bold: Analyte detected above the method detection limit

Bold and Shaded : Analyte detected above the regualtory limit

b : Quantitation limit is greater than the calculated regulatory level. The quantitation limit, therefore, becomes the regulatory level.

-- : No standard exists

J - estimated value, greater than the Method Detection Limit (MDL) or Detection Limit (DL) and less than the Limit of Quantitation (LOQ) or Reporting Limit (RL)

mg/L - milligrams per liter

P - Concentration difference between the primary and confirmation column greater than 40%. The lower result is reported

ATTACHMENT 2
Summary of Wastewater pH Adjustment

ATTACHMENT 3
Summary of Analytical Detections

ATTACHMENT 4
Laboratory Analytical Report

REVISED

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

November 25, 2015

Project: Camp Ravenna

Submittal Date: 10/10/2015
Group Number: 1599917
SDG: PSX09
PO Number: 3443
State of Sample Origin: OH

Client Sample Description	Lancaster Labs (LL) #
WSC-1-100815 Grab Water	8084670
WSC-2-100815 Grab Water	8084671
WSC-3-100815 Grab Water	8084672
TB-100815 Water	8084673

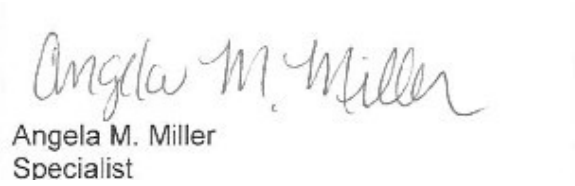
The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

ELECTRONIC COPY TO Plexus Scientific Corporation Attn: Cindy Nawal

REVISED

Respectfully Submitted,



Angela M. Miller
Specialist

(717) 556-7260

Project Name: Camp Ravenna
LL Group #: 1599917

General Comments:

All analyses have been performed in accordance with DOD QSM Version 5.0 unless otherwise noted below.

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

SW-846 8260B, GC/MS Volatiles

Sample #s: 8084670, 8084671, 8084672, 8084673

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance: Cyclohexane and Methylcyclohexane

Batch #: L152882AA (Sample number(s): 8084670-8084673)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: Cyclohexane, Methylcyclohexane

SW-846 8270C, GC/MS Semivolatiles

Sample #s: 8084670, 8084671, 8084672

The holding time was not met due to a laboratory error.

SW-846 8081A, Pesticides/PCBs

Sample #s: 8084671, 8084672

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary.

Sample #s: 8084670

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary.
Reporting limits were raised due to interference from the sample matrix.

Batch #: 152890003A (Sample number(s): 8084670-8084672)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias: Alpha Chlordane, Gamma Chlordane, Alpha BHC, Beta BHC, Gamma BHC - Lindane, Delta BHC, Heptachlor, Heptachlor Epoxide, p,p-DDE, Dieldrin, Endosulfan I

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 8084670, LCSD

SW-846 8151A, Herbicides

Sample #s: 8084671, 8084672

Reporting limits were raised due to interference from the sample matrix.

SW-846 6010B, Metals

Batch #: 152931848004 (Sample number(s): 8084670-8084672 UNSPK: 8084670 BKG: 8084670)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Calcium, Potassium, Arsenic, Antimony, Copper

SW-846 1010A, Wet Chemistry

Sample #s: 8084671

No flash observed below 151F.
Test flame extinguished at 125F.
Flash point was determined using Pensky Martens closed cup apparatus.

Sample #s: 8084670

No flash observed below 151F.
Test flame extinguished at 127F.
Flash point was determined using Pensky Martens closed cup apparatus.

Sample #s: 8084672

No flash observed below 164F.
Test flame extinguished at 144F.
Flash point was determined using Pensky Martens closed cup apparatus.

SW-846 Chapter 7, Wet Chemistry

Sample #s: 8084672

The pH of the sample is 12.37 indicating that the sample is not corrosive. A sample is corrosive if it exhibits a pH equal to or less than 2 or equal to or greater than 12.5.

Sample #s: 8084670

The pH of the sample is 12.39 indicating that the sample is not corrosive. A sample is corrosive if it exhibits a pH equal to or less than 2 or equal to or greater than 12.5.

Sample #s: 8084671

The pH of the sample is 12.57 indicating that the sample is corrosive. A sample is corrosive if it exhibits a pH equal to or less than 2 or equal to or greater than 12.5.

REVISED

Sample Description: WSC-1-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084670
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:25 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW1 SDG#: PSX09-01

CAT No.	Analysis Name	CAS Number	Result		Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B**		ug/l		ug/l	ug/l	ug/l	
10335	Acetone	67-64-1	13	J	6	20	20	1
10335	Benzene	71-43-2	N.D.		0.5	1	1	1
10335	Bromodichloromethane	75-27-4	N.D.		0.5	1	1	1
10335	Bromoform	75-25-2	N.D.		0.5	1	4	1
10335	Bromomethane	74-83-9	N.D.		0.5	1	1	1
10335	2-Butanone	78-93-3	N.D.		3	8	10	1
10335	Carbon Disulfide	75-15-0	N.D.		1	2	5	1
10335	Carbon Tetrachloride	56-23-5	N.D.		0.5	1	1	1
10335	Chlorobenzene	108-90-7	N.D.		0.5	1	1	1
10335	Chloroethane	75-00-3	N.D.		0.5	1	1	1
10335	Chloroform	67-66-3	19		0.5	1	1	1
10335	Chloromethane	74-87-3	N.D.		0.5	1	1	1
10335	Cyclohexane	110-82-7	N.D.		2	4	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	4	5	1
10335	Dibromochloromethane	124-48-1	N.D.		0.5	1	1	1
10335	1,2-Dibromoethane	106-93-4	N.D.		0.5	1	1	1
10335	1,2-Dichlorobenzene	95-50-1	N.D.		1	2	5	1
10335	1,3-Dichlorobenzene	541-73-1	N.D.		1	2	5	1
10335	1,4-Dichlorobenzene	106-46-7	N.D.		1	2	5	1
10335	Dichlorodifluoromethane	75-71-8	N.D.		0.5	1	1	1
10335	1,1-Dichloroethane	75-34-3	N.D.		0.5	1	1	1
10335	1,2-Dichloroethane	107-06-2	N.D.		0.5	1	1	1
10335	1,1-Dichloroethene	75-35-4	N.D.		0.5	1	1	1
10335	cis-1,2-Dichloroethene	156-59-2	N.D.		0.5	1	1	1
10335	trans-1,2-Dichloroethene	156-60-5	N.D.		0.5	1	1	1
10335	1,2-Dichloropropane	78-87-5	N.D.		0.5	1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.5	1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.5	1	1	1
10335	Ethylbenzene	100-41-4	N.D.		0.5	1	1	1
10335	Freon 113	76-13-1	N.D.		2	4	10	1
10335	2-Hexanone	591-78-6	N.D.		3	8	10	1
10335	Isopropylbenzene	98-82-8	N.D.		1	2	5	1
10335	Methyl Acetate	79-20-9	N.D.		1	2	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.5	1	1	1
10335	4-Methyl-2-pentanone	108-10-1	N.D.		3	8	10	1
10335	Methylcyclohexane	108-87-2	N.D.		1	2	5	1
10335	Methylene Chloride	75-09-2	N.D.		2	4	4	1
10335	Styrene	100-42-5	N.D.		1	2	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.5	1	1	1
10335	Tetrachloroethene	127-18-4	N.D.		0.5	1	1	1
10335	Toluene	108-88-3	N.D.		0.5	1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	N.D.		1	2	5	1
10335	1,1,1-Trichloroethane	71-55-6	N.D.		0.5	1	1	1
10335	1,1,2-Trichloroethane	79-00-5	N.D.		0.5	1	1	1
10335	Trichloroethene	79-01-6	N.D.		0.5	1	1	1
10335	Trichlorofluoromethane	75-69-4	N.D.		0.5	1	1	1
10335	Vinyl Chloride	75-01-4	N.D.		0.5	1	1	1
10335	Xylene (Total)	1330-20-7	N.D.		0.5	1	1	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-1-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084670
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:25 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW1 SDG#: PSX09-01

CAT No.	Analysis Name	CAS Number	Result		Detection Limit*	Limit of Detection	Limit of Quantitation	DF
	analytes are accepted based on this allowance: Cyclohexane and Methylcyclohexane							
GC/MS Semivolatiles SW-846 8270C			**ug/l**		**ug/l**	**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.		0.1	0.4	0.5	1
04678	Acenaphthylene	208-96-8	N.D.		0.1	0.4	0.5	1
04678	Acetophenone	98-86-2	N.D.		0.5	1	1	1
04678	Anthracene	120-12-7	N.D.		0.1	0.4	0.5	1
04678	Atrazine	1912-24-9	N.D.		2	4	5	1
04678	Benzaldehyde	100-52-7	1	J	1	4	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.		0.1	0.4	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.		0.1	0.4	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	N.D.		0.1	0.4	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.		0.1	0.4	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.		0.1	0.4	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.		0.5	1	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.		0.5	1	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.		2	4	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.		2	4	5	1
04678	Caprolactam	105-60-2	N.D.		5	14	14	1
04678	Carbazole	86-74-8	N.D.		0.5	1	1	1
04678	4-Chloro-3-methylphenol	59-50-7	2		0.5	1	1	1
04678	4-Chloroaniline	106-47-8	N.D.		0.5	1	1	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.		0.5	1	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.		0.5	1	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.		0.4	1	1	1
04678	2-Chlorophenol	95-57-8	N.D.		0.5	1	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.		0.5	1	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		0.5	1	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.							
04678	Chrysene	218-01-9	N.D.		0.1	0.4	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.		0.1	0.4	0.5	1
04678	Dibenzofuran	132-64-9	N.D.		0.5	1	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.		2	4	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.		0.5	1	1	1
04678	Diethylphthalate	84-66-2	N.D.		2	4	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.		0.5	1	1	1
04678	Dimethylphthalate	131-11-3	N.D.		2	4	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		5	14	14	1
04678	2,4-Dinitrophenol	51-28-5	N.D.		10	29	29	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.		1	4	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.		0.5	1	1	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		2	4	5	1
04678	Fluoranthene	206-44-0	N.D.		0.1	0.4	0.5	1
04678	Fluorene	86-73-7	N.D.		0.1	0.4	0.5	1
04678	Hexachlorobenzene	118-74-1	N.D.		0.1	0.4	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.		0.5	1	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.		5	14	14	1
04678	Hexachloroethane	67-72-1	N.D.		1	4	5	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-1-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084670
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:25 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW1 SDG#: PSX09-01

CAT No.	Analysis Name	CAS Number	Result		Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**		**ug/l**	**ug/l**	**ug/l**	
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.1	0.4	0.5	1
04678	Isophorone	78-59-1	N.D.		0.5	1	1	1
04678	2-Methylnaphthalene	91-57-6	N.D.		0.1	0.4	0.5	1
04678	2-Methylphenol	95-48-7	N.D.		0.5	1	1	1
04678	4-Methylphenol	106-44-5	N.D.		0.5	1	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
04678	Naphthalene	91-20-3	0.1	J	0.1	0.4	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.		0.5	1	1	1
04678	3-Nitroaniline	99-09-2	N.D.		0.5	1	1	1
04678	4-Nitroaniline	100-01-6	N.D.		0.5	1	1	1
04678	Nitrobenzene	98-95-3	N.D.		0.5	1	1	1
04678	2-Nitrophenol	88-75-5	N.D.		0.5	1	1	1
04678	4-Nitrophenol	100-02-7	N.D.		10	29	29	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.		0.5	1	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.		0.5	1	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
04678	Di-n-octylphthalate	117-84-0	N.D.		2	4	5	1
04678	Pentachlorophenol	87-86-5	N.D.		1	4	5	1
04678	Phenanthrene	85-01-8	N.D.		0.1	0.4	0.5	1
04678	Phenol	108-95-2	0.7	J	0.5	1	1	1
04678	Pyrene	129-00-0	N.D.		0.1	0.4	0.5	1
04678	Pyridine	110-86-1	N.D.		2	4	5	1
04678	2,4,5-Trichlorophenol	95-95-4	1		0.5	1	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.		0.5	1	1	1
	The holding time was not met due to a laboratory error.							
Explosives	**SW-846 8330**		**ug/l**		**ug/l**	**ug/l**	**ug/l**	
06916	4-Amino-2,6-Dinitrotoluene	19406-51-0	N.D.		0.30	0.60	0.60	1
06916	2-Amino-4,6-Dinitrotoluene	35572-78-2	N.D.		0.20	0.40	0.60	1
06916	1,3-Dinitrobenzene	99-65-0	N.D.		0.20	0.40	0.60	1
06916	2,4-Dinitrotoluene	121-14-2	N.D.		0.72	1.5	2.0	1
06916	2,6-Dinitrotoluene	606-20-2	N.D.		0.45	0.90	1.3	1
06916	HMX	2691-41-0	N.D.		0.65	1.5	2.0	1
06916	Nitrobenzene	98-95-3	N.D.		0.20	0.40	0.60	1
06916	Nitroglycerin	55-63-0	N.D.		5.2	14	15	1
06916	2-Nitrotoluene	88-72-2	N.D.		0.25	0.60	0.75	1
06916	3-Nitrotoluene	99-08-1	N.D.		0.40	0.80	1.2	1
06916	4-Nitrotoluene	99-99-0	N.D.		0.60	1.2	1.2	1
06916	PETN	78-11-5	N.D.		6.0	14	18	1
06916	RDX	121-82-4	N.D.		0.20	0.40	0.50	1
06916	Tetryl	479-45-8	N.D.		0.40	0.80	0.80	1
06916	1,3,5-Trinitrobenzene	99-35-4	N.D.		0.20	0.40	0.60	1
06916	2,4,6-Trinitrotoluene	118-96-7	N.D.		0.20	0.40	0.60	1
Herbicides	**SW-846 8151A**		**ug/l**		**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.		0.15	0.31	0.48	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-1-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084670
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:25 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW1 SDG#: PSX09-01

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	Dalapon	75-99-0	N.D.	0.24	0.48	1.2	1
10407	2,4-DB	94-82-6	N.D.	0.29	0.58	0.97	1
10407	Dicamba	1918-00-9	N.D.	0.077	0.15	0.29	1
10407	Dinoseb	88-85-7	N.D.	0.12	0.23	0.48	1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4-DP (Dichlorprop)	120-36-5	N.D.	0.15	0.31	0.48	1
10407	MCPA	94-74-6	N.D.	48	97	190	1
10407	MCPP	93-65-2	N.D.	48	97	190	1
10407	Pentachlorophenol	87-86-5	N.D.	0.026	0.048	0.048	1
10407	2,4,5-T	93-76-5	N.D.	0.015	0.029	0.048	1
10407	2,4,5-TP	93-72-1	N.D.	0.0097	0.019	0.048	1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0019	0.0068	0.0097	1
00177	Alpha BHC	319-84-6	N.D.	0.0029	0.0068	0.0097	1
00177	Beta BHC	319-85-7	N.D.	0.0033	0.0068	0.0097	1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0019	0.0068	0.0097	1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0029	0.0068	0.0097	1
00177	Gamma Chlordane	5103-74-2	N.D. V	0.0098	0.020	0.020	1
00177	p,p-DDD	72-54-8	N.D.	0.0049	0.0097	0.019	1
00177	p,p-DDE	72-55-9	N.D.	0.0049	0.0097	0.019	1
00177	p,p-DDT	50-29-3	0.0080 JP	0.0050	0.0097	0.019	1
00177	Delta BHC	319-86-8	N.D.	0.0033	0.0068	0.0097	1
00177	Dieldrin	60-57-1	0.0065 JP	0.0051	0.0097	0.019	1
00177	Endosulfan I	959-98-8	N.D.	0.0042	0.0087	0.0097	1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.029	0.029	1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0056	0.012	0.019	1
00177	Endrin	72-20-8	N.D.	0.0079	0.019	0.019	1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.019	0.039	0.097	1
00177	Endrin Ketone	53494-70-5	N.D.	0.0049	0.0097	0.019	1
00177	Heptachlor	76-44-8	N.D.	0.0019	0.0068	0.0097	1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0022	0.0068	0.0097	1
00177	Methoxychlor	72-43-5	N.D.	0.029	0.068	0.097	1
00177	Toxaphene	8001-35-2	N.D.	0.29	0.58	0.97	1
	The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0841	0.200	0.200	1
07044	Antimony	7440-36-0	0.0084 J	0.0058	0.0100	0.0200	1
07035	Arsenic	7440-38-2	N.D.	0.0070	0.0200	0.0200	1
07046	Barium	7440-39-3	0.272	0.00030	0.00063	0.0050	1
07047	Beryllium	7440-41-7	N.D.	0.00070	0.0013	0.0050	1
07049	Cadmium	7440-43-9	N.D.	0.00030	0.00063	0.0050	1
01750	Calcium	7440-70-2	406	0.0333	0.0500	0.200	1
07051	Chromium	7440-47-3	0.515	0.0015	0.0038	0.0150	1
07052	Cobalt	7440-48-4	N.D.	0.00090	0.0025	0.0050	1
07053	Copper	7440-50-8	0.0060 J	0.0025	0.0050	0.0100	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: WSC-1-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084670
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:25 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW1 SDG#: PSX09-01

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01754	Iron	7439-89-6	N.D.	0.0333	0.0500	0.200	1
07055	Lead	7439-92-1	N.D.	0.0051	0.0150	0.0150	1
01757	Magnesium	7439-95-4	0.192	0.0167	0.0500	0.100	1
07058	Manganese	7439-96-5	N.D.	0.00080	0.0013	0.0050	1
07061	Nickel	7440-02-0	0.0025 J	0.0013	0.0025	0.0100	1
01762	Potassium	7440-09-7	425	0.192	0.500	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0082	0.0200	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0014	0.0025	0.0050	1
01767	Sodium	7440-23-5	103	0.167	0.500	1.00	1
07022	Thallium	7440-28-0	N.D.	0.0084	0.0150	0.0300	1
07071	Vanadium	7440-62-2	N.D.	0.0014	0.0050	0.0050	1
07072	Zinc	7440-66-6	N.D.	0.0039	0.0100	0.0200	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00010	0.00020	1
Wet Chemistry	**SW-846 9012A**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
10704	Total Cyanide in Water	57-12-5	N.D.	0.0050	0.010	0.010	1
	EPA 170.1		**Degrees C**	**Degrees C**	**Degrees C**	**Degrees C**	
12151	Temperature of pH	n.a.	18.6	0.010	0.010	0.010	1
	SM 4500-H+ B-2000		**Std. Units**	**Std. Units**	**Std. Units**	**Std. Units**	
12152	pH	n.a.	12.4 J	0.010	0.010	0.010	1
	SM 4500-S2 F-2000		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01333	Sulfide	18496-25-8	N.D.	0.68	2.0	2.0	1
	SW-846 1010A		**Degrees F**	**Degrees F**	**Degrees F**	**Degrees F**	
00430	Flash Point	n.a.	No Flash Observed	50	50	50	1

No flash observed below 151F.
Test flame extinguished at 127F.
Flash point was determined using Pensky Martens closed cup apparatus.

	SW-846 Chapter 7						
00496	Corrosivity	n.a.	See Below				1

The pH of the sample is 12.39 indicating that the sample is not corrosive. A sample is corrosive if it exhibits a pH equal to or less than 2 or equal to or greater than 12.5.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-1-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084670
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:25 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW1 SDG#: PSX09-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	L152882AA	10/15/2015 03:45	Stephanie A Selis	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	L152882AA	10/15/2015 03:45	Stephanie A Selis	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	15293WAI026	10/22/2015 17:54	Linda M Hartenstine	1
00813	BNA Water Extraction	SW-846 3510C	2	15293WAI026	10/21/2015 11:00	Denise L Trimby	1
06916	Nitroaromatics/Amines in Water	SW-846 8330	1	152860004A	10/14/2015 19:59	James H Place	1
10407	Herb water 8151A Master	SW-846 8151A	1	152880018A	10/17/2015 06:20	Richard A Shober	1
00177	OC Pesticides in Water	SW-846 8081A	1	152890003A	10/21/2015 06:59	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	152890003A	10/16/2015 16:40	JoElla L Rice	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	152880018A	10/16/2015 00:45	Sherry L Morrow	1
06915	Nitroaromatics/Amines Wat Ext	SW-846 8330	1	152860004A	10/13/2015 14:45	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07044	Antimony	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07035	Arsenic	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07046	Barium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07047	Beryllium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07049	Cadmium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
01750	Calcium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07051	Chromium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07052	Cobalt	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07053	Copper	SW-846 6010B	1	152931848004	10/23/2015 20:53	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07055	Lead	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
01757	Magnesium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07058	Manganese	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07061	Nickel	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
01762	Potassium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07036	Selenium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07066	Silver	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-1-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084670
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:25 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW1 SDG#: PSX09-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01767	Sodium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07022	Thallium	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
07071	Vanadium	SW-846 6010B	1	152931848004	10/23/2015 20:53	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	152931848004	10/22/2015 22:08	Elaine F Stoltzfus	1
00259	Mercury	SW-846 7470A	1	152935713007	10/22/2015 03:59	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	152931848004	10/21/2015 11:15	Katlin N Cataldi	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	152935713007	10/21/2015 12:30	Katlin N Cataldi	1
10704	Total Cyanide in Water	SW-846 9012A	1	15295960101A	10/23/2015 03:45	Joseph E McKenzie	1
10706	Total Cyanide Prep (Water)	SW-846 9012A	1	15295960101A	10/22/2015 07:25	Nancy J Shoop	1
12151	Temperature of pH	EPA 170.1	1	15287121521A	10/14/2015 18:40	Michelle L Lalli	1
12152	pH	SM 4500-H+ B-2000	3	15287121521A	10/14/2015 18:40	Michelle L Lalli	1
01333	Sulfide	SM 4500-S2 F-2000	1	15288133302A	10/15/2015 10:15	Susan E Hibner	1
00430	Flash Point	SW-846 1010A	1	15292043001A	10/19/2015 08:20	Susan A Engle	1
00496	Corrosivity	SW-846 Chapter 7	1	15287121521A	10/14/2015 18:40	Michelle L Lalli	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-2-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084671
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:35 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW2 SDG#: PSX09-02

CAT No.	Analysis Name	CAS Number	Result		Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B**		ug/l		ug/l	ug/l	ug/l	
10335	Acetone	67-64-1	13	J	6	20	20	1
10335	Benzene	71-43-2	N.D.		0.5	1	1	1
10335	Bromodichloromethane	75-27-4	N.D.		0.5	1	1	1
10335	Bromoform	75-25-2	N.D.		0.5	1	4	1
10335	Bromomethane	74-83-9	N.D.		0.5	1	1	1
10335	2-Butanone	78-93-3	N.D.		3	8	10	1
10335	Carbon Disulfide	75-15-0	N.D.		1	2	5	1
10335	Carbon Tetrachloride	56-23-5	N.D.		0.5	1	1	1
10335	Chlorobenzene	108-90-7	N.D.		0.5	1	1	1
10335	Chloroethane	75-00-3	N.D.		0.5	1	1	1
10335	Chloroform	67-66-3	54		0.5	1	1	1
10335	Chloromethane	74-87-3	N.D.		0.5	1	1	1
10335	Cyclohexane	110-82-7	N.D.		2	4	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	4	5	1
10335	Dibromochloromethane	124-48-1	N.D.		0.5	1	1	1
10335	1,2-Dibromoethane	106-93-4	N.D.		0.5	1	1	1
10335	1,2-Dichlorobenzene	95-50-1	N.D.		1	2	5	1
10335	1,3-Dichlorobenzene	541-73-1	N.D.		1	2	5	1
10335	1,4-Dichlorobenzene	106-46-7	N.D.		1	2	5	1
10335	Dichlorodifluoromethane	75-71-8	N.D.		0.5	1	1	1
10335	1,1-Dichloroethane	75-34-3	N.D.		0.5	1	1	1
10335	1,2-Dichloroethane	107-06-2	N.D.		0.5	1	1	1
10335	1,1-Dichloroethene	75-35-4	N.D.		0.5	1	1	1
10335	cis-1,2-Dichloroethene	156-59-2	N.D.		0.5	1	1	1
10335	trans-1,2-Dichloroethene	156-60-5	N.D.		0.5	1	1	1
10335	1,2-Dichloropropane	78-87-5	N.D.		0.5	1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.5	1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.5	1	1	1
10335	Ethylbenzene	100-41-4	1		0.5	1	1	1
10335	Freon 113	76-13-1	N.D.		2	4	10	1
10335	2-Hexanone	591-78-6	N.D.		3	8	10	1
10335	Isopropylbenzene	98-82-8	N.D.		1	2	5	1
10335	Methyl Acetate	79-20-9	N.D.		1	2	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.5	1	1	1
10335	4-Methyl-2-pentanone	108-10-1	N.D.		3	8	10	1
10335	Methylcyclohexane	108-87-2	N.D.		1	2	5	1
10335	Methylene Chloride	75-09-2	N.D.		2	4	4	1
10335	Styrene	100-42-5	N.D.		1	2	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.5	1	1	1
10335	Tetrachloroethene	127-18-4	N.D.		0.5	1	1	1
10335	Toluene	108-88-3	0.9	J	0.5	1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	N.D.		1	2	5	1
10335	1,1,1-Trichloroethane	71-55-6	N.D.		0.5	1	1	1
10335	1,1,2-Trichloroethane	79-00-5	N.D.		0.5	1	1	1
10335	Trichloroethene	79-01-6	N.D.		0.5	1	1	1
10335	Trichlorofluoromethane	75-69-4	N.D.		0.5	1	1	1
10335	Vinyl Chloride	75-01-4	N.D.		0.5	1	1	1
10335	Xylene (Total)	1330-20-7	9		0.5	1	1	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-2-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084671
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:35 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW2 SDG#: PSX09-02

CAT No.	Analysis Name	CAS Number	Result		Detection Limit*	Limit of Detection	Limit of Quantitation	DF
	analytes are accepted based on this allowance: Cyclohexane and Methylcyclohexane							
GC/MS Semivolatiles SW-846 8270C			**ug/l**		**ug/l**	**ug/l**	**ug/l**	
04678	Acenaphthene	83-32-9	N.D.		0.1	0.4	0.5	1
04678	Acenaphthylene	208-96-8	N.D.		0.1	0.4	0.5	1
04678	Acetophenone	98-86-2	0.7	J	0.5	1	1	1
04678	Anthracene	120-12-7	N.D.		0.1	0.4	0.5	1
04678	Atrazine	1912-24-9	N.D.		2	4	5	1
04678	Benzaldehyde	100-52-7	N.D.		1	4	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.		0.1	0.4	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.		0.1	0.4	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	N.D.		0.1	0.4	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.		0.1	0.4	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.		0.1	0.4	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.		0.5	1	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.		0.5	1	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.		2	4	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.		2	4	5	1
04678	Caprolactam	105-60-2	N.D.		5	15	15	1
04678	Carbazole	86-74-8	N.D.		0.5	1	1	1
04678	4-Chloro-3-methylphenol	59-50-7	3		0.5	1	1	1
04678	4-Chloroaniline	106-47-8	N.D.		0.5	1	1	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.		0.5	1	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.		0.5	1	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.		0.4	1	1	1
04678	2-Chlorophenol	95-57-8	N.D.		0.5	1	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.		0.5	1	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.		0.5	1	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.							
04678	Chrysene	218-01-9	N.D.		0.1	0.4	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.		0.1	0.4	0.5	1
04678	Dibenzofuran	132-64-9	N.D.		0.5	1	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.		2	4	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.		0.5	1	1	1
04678	Diethylphthalate	84-66-2	N.D.		2	4	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.		0.5	1	1	1
04678	Dimethylphthalate	131-11-3	N.D.		2	4	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		5	15	15	1
04678	2,4-Dinitrophenol	51-28-5	N.D.		10	29	29	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.		1	4	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.		0.5	1	1	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		2	4	5	1
04678	Fluoranthene	206-44-0	N.D.		0.1	0.4	0.5	1
04678	Fluorene	86-73-7	N.D.		0.1	0.4	0.5	1
04678	Hexachlorobenzene	118-74-1	N.D.		0.1	0.4	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.		0.5	1	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.		5	15	15	1
04678	Hexachloroethane	67-72-1	N.D.		1	4	5	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-2-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084671
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:35 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW2 SDG#: PSX09-02

CAT No.	Analysis Name	CAS Number	Result		Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles SW-846 8270C			ug/l		ug/l	ug/l	ug/l	
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.1	0.4	0.5	1
04678	Isophorone	78-59-1	N.D.		0.5	1	1	1
04678	2-Methylnaphthalene	91-57-6	0.8		0.1	0.4	0.5	1
04678	2-Methylphenol	95-48-7	N.D.		0.5	1	1	1
04678	4-Methylphenol	106-44-5	N.D.		0.5	1	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
04678	Naphthalene	91-20-3	2		0.1	0.4	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.		0.5	1	1	1
04678	3-Nitroaniline	99-09-2	N.D.		0.5	1	1	1
04678	4-Nitroaniline	100-01-6	N.D.		0.5	1	1	1
04678	Nitrobenzene	98-95-3	N.D.		0.5	1	1	1
04678	2-Nitrophenol	88-75-5	N.D.		0.5	1	1	1
04678	4-Nitrophenol	100-02-7	N.D.		10	29	29	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.		0.5	1	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.		0.5	1	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
04678	Di-n-octylphthalate	117-84-0	N.D.		2	4	5	1
04678	Pentachlorophenol	87-86-5	N.D.		1	4	5	1
04678	Phenanthrene	85-01-8	N.D.		0.1	0.4	0.5	1
04678	Phenol	108-95-2	N.D.		0.5	1	1	1
04678	Pyrene	129-00-0	N.D.		0.1	0.4	0.5	1
04678	Pyridine	110-86-1	N.D.		2	4	5	1
04678	2,4,5-Trichlorophenol	95-95-4	2		0.5	1	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.		0.5	1	1	1
	The holding time was not met due to a laboratory error.							
Explosives SW-846 8330			ug/l		ug/l	ug/l	ug/l	
06916	4-Amino-2,6-Dinitrotoluene	19406-51-0	N.D.		0.30	0.60	0.60	1
06916	2-Amino-4,6-Dinitrotoluene	35572-78-2	N.D.		0.20	0.40	0.60	1
06916	1,3-Dinitrobenzene	99-65-0	N.D.		0.20	0.40	0.60	1
06916	2,4-Dinitrotoluene	121-14-2	N.D.		0.72	1.5	2.0	1
06916	2,6-Dinitrotoluene	606-20-2	N.D.		0.45	0.90	1.3	1
06916	HMX	2691-41-0	N.D.		0.65	1.5	2.0	1
06916	Nitrobenzene	98-95-3	N.D.		0.20	0.40	0.60	1
06916	Nitroglycerin	55-63-0	N.D.		5.2	14	15	1
06916	2-Nitrotoluene	88-72-2	N.D.		0.25	0.60	0.75	1
06916	3-Nitrotoluene	99-08-1	N.D.		0.40	0.80	1.2	1
06916	4-Nitrotoluene	99-99-0	N.D.		0.60	1.2	1.2	1
06916	PETN	78-11-5	N.D.		6.0	14	18	1
06916	RDX	121-82-4	N.D.		0.20	0.40	0.50	1
06916	Tetryl	479-45-8	N.D.		0.40	0.80	0.80	1
06916	1,3,5-Trinitrobenzene	99-35-4	N.D.		0.20	0.40	0.60	1
06916	2,4,6-Trinitrotoluene	118-96-7	N.D.		0.20	0.40	0.60	1
Herbicides SW-846 8151A			ug/l		ug/l	ug/l	ug/l	
10407	2,4-D	94-75-7	0.25	JP	0.15	0.30	0.47	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-2-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084671
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:35 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW2 SDG#: PSX09-02

CAT No.	Analysis Name	CAS Number	Result		Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Herbicides	**SW-846 8151A**		**ug/l**		**ug/l**	**ug/l**	**ug/l**	
10407	Dalapon	75-99-0	N.D.		0.24	0.47	1.2	1
10407	2,4-DB	94-82-6	N.D.		0.28	0.57	0.95	1
10407	Dicamba	1918-00-9	N.D.		0.076	0.15	0.28	1
10407	Dinoseb	88-85-7	N.D.		0.11	0.23	0.47	1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10407	2,4-DP (Dichlorprop)	120-36-5	N.D.		0.15	0.30	0.47	1
10407	MCPA	94-74-6	N.D.		47	95	190	1
10407	MCPP	93-65-2	N.D.	V	84	170	190	1
10407	Pentachlorophenol	87-86-5	N.D.		0.026	0.047	0.047	1
10407	2,4,5-T	93-76-5	N.D.		0.014	0.028	0.047	1
10407	2,4,5-TP	93-72-1	N.D.	V	0.017	0.034	0.047	1
	Reporting limits were raised due to interference from the sample matrix.							
Pesticides/PCBs	**SW-846 8081A**		**ug/l**		**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.		0.0019	0.0067	0.0096	1
00177	Alpha BHC	319-84-6	N.D.		0.0029	0.0067	0.0096	1
00177	Beta BHC	319-85-7	N.D.		0.0033	0.0067	0.0096	1
00177	Gamma BHC - Lindane	58-89-9	N.D.		0.0019	0.0067	0.0096	1
00177	Alpha Chlordane	5103-71-9	N.D.		0.0029	0.0067	0.0096	1
00177	Gamma Chlordane	5103-74-2	N.D.		0.0067	0.019	0.019	1
00177	p,p-DDD	72-54-8	N.D.		0.0048	0.0096	0.019	1
00177	p,p-DDE	72-55-9	0.0051	JP	0.0048	0.0096	0.019	1
00177	p,p-DDT	50-29-3	0.018	J	0.0050	0.0096	0.019	1
00177	Delta BHC	319-86-8	N.D.		0.0033	0.0067	0.0096	1
00177	Dieldrin	60-57-1	0.011	J	0.0051	0.0096	0.019	1
00177	Endosulfan I	959-98-8	N.D.		0.0041	0.0087	0.0096	1
00177	Endosulfan II	33213-65-9	N.D.		0.014	0.029	0.029	1
00177	Endosulfan Sulfate	1031-07-8	N.D.		0.0056	0.012	0.019	1
00177	Endrin	72-20-8	N.D.		0.0078	0.019	0.019	1
00177	Endrin Aldehyde	7421-93-4	N.D.		0.019	0.038	0.096	1
00177	Endrin Ketone	53494-70-5	N.D.		0.0048	0.0096	0.019	1
00177	Heptachlor	76-44-8	N.D.		0.0019	0.0067	0.0096	1
00177	Heptachlor Epoxide	1024-57-3	N.D.		0.0022	0.0067	0.0096	1
00177	Methoxychlor	72-43-5	N.D.		0.029	0.067	0.096	1
00177	Toxaphene	8001-35-2	N.D.		0.29	0.58	0.96	1
	The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary.							
Metals	**SW-846 6010B**		**mg/l**		**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.107	J	0.0841	0.200	0.200	1
07044	Antimony	7440-36-0	0.0143	J	0.0058	0.0100	0.0200	1
07035	Arsenic	7440-38-2	N.D.		0.0070	0.0200	0.0200	1
07046	Barium	7440-39-3	0.251		0.00030	0.00063	0.0050	1
07047	Beryllium	7440-41-7	N.D.		0.00070	0.0013	0.0050	1
07049	Cadmium	7440-43-9	N.D.		0.00030	0.00063	0.0050	1
01750	Calcium	7440-70-2	612		0.167	0.250	1.00	5
07051	Chromium	7440-47-3	0.955		0.0015	0.0038	0.0150	1
07052	Cobalt	7440-48-4	N.D.		0.00090	0.0025	0.0050	1
07053	Copper	7440-50-8	N.D.		0.0025	0.0050	0.0100	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-2-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084671
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:35 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW2 SDG#: PSX09-02

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01754	Iron	7439-89-6	N.D.	0.0333	0.0500	0.200	1
07055	Lead	7439-92-1	N.D.	0.0051	0.0150	0.0150	1
01757	Magnesium	7439-95-4	0.189	0.0167	0.0500	0.100	1
07058	Manganese	7439-96-5	N.D.	0.00080	0.0013	0.0050	1
07061	Nickel	7440-02-0	N.D.	0.0013	0.0025	0.0100	1
01762	Potassium	7440-09-7	371	0.192	0.500	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0082	0.0200	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0014	0.0025	0.0050	1
01767	Sodium	7440-23-5	149	0.167	0.500	1.00	1
07022	Thallium	7440-28-0	N.D.	0.0084	0.0150	0.0300	1
07071	Vanadium	7440-62-2	N.D.	0.0014	0.0050	0.0050	1
07072	Zinc	7440-66-6	N.D.	0.0039	0.0100	0.0200	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	0.00023	0.000050	0.00010	0.00020	1
Wet Chemistry	**SW-846 9012A**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
10704	Total Cyanide in Water	57-12-5	0.016	0.0050	0.010	0.010	1
	EPA 170.1		**Degrees C**	**Degrees C**	**Degrees C**	**Degrees C**	
12151	Temperature of pH	n.a.	19.9	0.010	0.010	0.010	1
	SM 4500-H+ B-2000		**Std. Units**	**Std. Units**	**Std. Units**	**Std. Units**	
12152	pH	n.a.	12.6 J	0.010	0.010	0.010	1
	SM 4500-S2 F-2000		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01333	Sulfide	18496-25-8	N.D.	0.68	2.0	2.0	1
	SW-846 1010A		**Degrees F**	**Degrees F**	**Degrees F**	**Degrees F**	
00430	Flash Point	n.a.	No Flash Observed	50	50	50	1

No flash observed below 151F.
Test flame extinguished at 125F.
Flash point was determined using Pensky Martens closed cup apparatus.

	SW-846 Chapter 7						
00496	Corrosivity	n.a.	See Below				1

The pH of the sample is 12.57 indicating that the sample is corrosive. A sample is corrosive if it exhibits a pH equal to or less than 2 or equal to or greater than 12.5.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-2-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084671
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:35 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW2 SDG#: PSX09-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	L152882AA	10/15/2015 04:07	Stephanie A Selis	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	L152882AA	10/15/2015 04:07	Stephanie A Selis	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	15293WAI026	10/22/2015 18:16	Linda M Hartenstine	1
00813	BNA Water Extraction	SW-846 3510C	2	15293WAI026	10/21/2015 11:00	Denise L Trimby	1
06916	Nitroaromatics/Amines in Water	SW-846 8330	1	152860004A	10/14/2015 20:42	James H Place	1
10407	Herb water 8151A Master	SW-846 8151A	1	152880018A	10/17/2015 06:53	Richard A Shober	1
00177	OC Pesticides in Water	SW-846 8081A	1	152890003A	10/21/2015 07:26	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	152890003A	10/16/2015 16:40	JoElla L Rice	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	152880018A	10/16/2015 00:45	Sherry L Morrow	1
06915	Nitroaromatics/Amines Wat Ext	SW-846 8330	1	152860004A	10/13/2015 14:45	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07044	Antimony	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07035	Arsenic	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07046	Barium	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07047	Beryllium	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07049	Cadmium	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
01750	Calcium	SW-846 6010B	1	152931848004	10/23/2015 21:13	Suzanne M Will	5
07051	Chromium	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07052	Cobalt	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07053	Copper	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
01754	Iron	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07055	Lead	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
01757	Magnesium	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07058	Manganese	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07061	Nickel	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
01762	Potassium	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07036	Selenium	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07066	Silver	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-2-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084671
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:35 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW2 SDG#: PSX09-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01767	Sodium	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07022	Thallium	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
07071	Vanadium	SW-846 6010B	1	152931848004	10/23/2015 21:23	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	152931848004	10/22/2015 22:28	Elaine F Stoltzfus	1
00259	Mercury	SW-846 7470A	1	152935713007	10/22/2015 04:01	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	152931848004	10/21/2015 11:15	Katlin N Cataldi	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	152935713007	10/21/2015 12:30	Katlin N Cataldi	1
10704	Total Cyanide in Water	SW-846 9012A	1	15295960101A	10/23/2015 03:46	Joseph E McKenzie	1
10706	Total Cyanide Prep (Water)	SW-846 9012A	1	15295960101A	10/22/2015 07:25	Nancy J Shoop	1
12151	Temperature of pH	EPA 170.1	1	15287121521A	10/14/2015 18:40	Michelle L Lalli	1
12152	pH	SM 4500-H+ B-2000	2	15287121521A	10/14/2015 18:40	Michelle L Lalli	1
01333	Sulfide	SM 4500-S2 F-2000	1	15288133302A	10/15/2015 10:15	Susan E Hibner	1
00430	Flash Point	SW-846 1010A	1	15292043001A	10/19/2015 08:20	Susan A Engle	1
00496	Corrosivity	SW-846 Chapter 7	1	15287121521A	10/14/2015 18:40	Michelle L Lalli	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-3-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084672
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:45 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW3 SDG#: PSX09-03

CAT No.	Analysis Name	CAS Number	Result		Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B**		ug/l		ug/l	ug/l	ug/l	
10335	Acetone	67-64-1	8	J	6	20	20	1
10335	Benzene	71-43-2	N.D.		0.5	1	1	1
10335	Bromodichloromethane	75-27-4	0.7	J	0.5	1	1	1
10335	Bromoform	75-25-2	N.D.		0.5	1	4	1
10335	Bromomethane	74-83-9	N.D.		0.5	1	1	1
10335	2-Butanone	78-93-3	N.D.		3	8	10	1
10335	Carbon Disulfide	75-15-0	N.D.		1	2	5	1
10335	Carbon Tetrachloride	56-23-5	N.D.		0.5	1	1	1
10335	Chlorobenzene	108-90-7	N.D.		0.5	1	1	1
10335	Chloroethane	75-00-3	N.D.		0.5	1	1	1
10335	Chloroform	67-66-3	19		0.5	1	1	1
10335	Chloromethane	74-87-3	N.D.		0.5	1	1	1
10335	Cyclohexane	110-82-7	N.D.		2	4	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	4	5	1
10335	Dibromochloromethane	124-48-1	N.D.		0.5	1	1	1
10335	1,2-Dibromoethane	106-93-4	N.D.		0.5	1	1	1
10335	1,2-Dichlorobenzene	95-50-1	N.D.		1	2	5	1
10335	1,3-Dichlorobenzene	541-73-1	N.D.		1	2	5	1
10335	1,4-Dichlorobenzene	106-46-7	N.D.		1	2	5	1
10335	Dichlorodifluoromethane	75-71-8	N.D.		0.5	1	1	1
10335	1,1-Dichloroethane	75-34-3	N.D.		0.5	1	1	1
10335	1,2-Dichloroethane	107-06-2	N.D.		0.5	1	1	1
10335	1,1-Dichloroethene	75-35-4	N.D.		0.5	1	1	1
10335	cis-1,2-Dichloroethene	156-59-2	N.D.		0.5	1	1	1
10335	trans-1,2-Dichloroethene	156-60-5	N.D.		0.5	1	1	1
10335	1,2-Dichloropropane	78-87-5	N.D.		0.5	1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.5	1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.5	1	1	1
10335	Ethylbenzene	100-41-4	N.D.		0.5	1	1	1
10335	Freon 113	76-13-1	N.D.		2	4	10	1
10335	2-Hexanone	591-78-6	N.D.		3	8	10	1
10335	Isopropylbenzene	98-82-8	N.D.		1	2	5	1
10335	Methyl Acetate	79-20-9	N.D.		1	2	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.5	1	1	1
10335	4-Methyl-2-pentanone	108-10-1	N.D.		3	8	10	1
10335	Methylcyclohexane	108-87-2	N.D.		1	2	5	1
10335	Methylene Chloride	75-09-2	N.D.		2	4	4	1
10335	Styrene	100-42-5	N.D.		1	2	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.5	1	1	1
10335	Tetrachloroethene	127-18-4	N.D.		0.5	1	1	1
10335	Toluene	108-88-3	N.D.		0.5	1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	N.D.		1	2	5	1
10335	1,1,1-Trichloroethane	71-55-6	N.D.		0.5	1	1	1
10335	1,1,2-Trichloroethane	79-00-5	N.D.		0.5	1	1	1
10335	Trichloroethene	79-01-6	N.D.		0.5	1	1	1
10335	Trichlorofluoromethane	75-69-4	N.D.		0.5	1	1	1
10335	Vinyl Chloride	75-01-4	N.D.		0.5	1	1	1
10335	Xylene (Total)	1330-20-7	N.D.		0.5	1	1	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-3-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084672
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:45 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW3 SDG#: PSX09-03

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
	analytes are accepted based on this allowance: Cyclohexane and Methylcyclohexane						
GC/MS Semivolatiles SW-846 8270C			ug/l	ug/l	ug/l	ug/l	
04678	Acenaphthene	83-32-9	N.D.	0.1	0.4	0.5	1
04678	Acenaphthylene	208-96-8	N.D.	0.1	0.4	0.5	1
04678	Acetophenone	98-86-2	N.D.	0.5	1	1	1
04678	Anthracene	120-12-7	N.D.	0.1	0.4	0.5	1
04678	Atrazine	1912-24-9	N.D.	2	4	5	1
04678	Benzaldehyde	100-52-7	N.D.	1	4	5	1
04678	Benzo(a)anthracene	56-55-3	N.D.	0.1	0.4	0.5	1
04678	Benzo(a)pyrene	50-32-8	N.D.	0.1	0.4	0.5	1
04678	Benzo(b)fluoranthene	205-99-2	N.D.	0.1	0.4	0.5	1
04678	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	0.4	0.5	1
04678	Benzo(k)fluoranthene	207-08-9	N.D.	0.1	0.4	0.5	1
04678	1,1'-Biphenyl	92-52-4	N.D.	0.5	1	1	1
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1	1	1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	4	5	1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	4	5	1
04678	Caprolactam	105-60-2	N.D.	5	14	14	1
04678	Carbazole	86-74-8	N.D.	0.5	1	1	1
04678	4-Chloro-3-methylphenol	59-50-7	2	0.5	1	1	1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1	1	1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1	1	1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1	1	1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1	1	1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1	1	1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1	1	1
04678	2,2'-oxybis(1-Chloropropane)	108-60-1	N.D.	0.5	1	1	1
	Bis(2-chloroisopropyl) ether CAS #39638-32-9 and 2,2'-Oxybis(1-chloropropane) CAS #108-60-1 cannot be separated chromatographically. The reported result represents the combined total of both compounds.						
04678	Chrysene	218-01-9	N.D.	0.1	0.4	0.5	1
04678	Dibenz(a,h)anthracene	53-70-3	N.D.	0.1	0.4	0.5	1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1	1	1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	4	5	1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1	1	1
04678	Diethylphthalate	84-66-2	N.D.	2	4	5	1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1	1	1
04678	Dimethylphthalate	131-11-3	N.D.	2	4	5	1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	14	14	1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	29	29	1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	4	5	1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1	1	1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	4	5	1
04678	Fluoranthene	206-44-0	N.D.	0.1	0.4	0.5	1
04678	Fluorene	86-73-7	N.D.	0.1	0.4	0.5	1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.4	0.5	1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1	1	1
04678	Hexachlorocyclopentadiene	77-47-4	N.D.	5	14	14	1
04678	Hexachloroethane	67-72-1	N.D.	1	4	5	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-3-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084672
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:45 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW3 SDG#: PSX09-03

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.1	0.4	0.5	1
04678	Isophorone	78-59-1	N.D.	0.5	1	1	1
04678	2-Methylnaphthalene	91-57-6	N.D.	0.1	0.4	0.5	1
04678	2-Methylphenol	95-48-7	N.D.	0.5	1	1	1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1	1	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	Naphthalene	91-20-3	0.1 J	0.1	0.4	0.5	1
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1	1	1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1	1	1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1	1	1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1	1	1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1	1	1
04678	4-Nitrophenol	100-02-7	N.D.	10	29	29	1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1	1	1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1	1	1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	4	5	1
04678	Pentachlorophenol	87-86-5	N.D.	1	4	5	1
04678	Phenanthrene	85-01-8	N.D.	0.1	0.4	0.5	1
04678	Phenol	108-95-2	N.D.	0.5	1	1	1
04678	Pyrene	129-00-0	N.D.	0.1	0.4	0.5	1
04678	Pyridine	110-86-1	N.D.	2	4	5	1
04678	2,4,5-Trichlorophenol	95-95-4	2	0.5	1	1	1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1	1	1
	The holding time was not met due to a laboratory error.						
Explosives	**SW-846 8330**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
06916	4-Amino-2,6-Dinitrotoluene	19406-51-0	N.D.	0.30	0.60	0.60	1
06916	2-Amino-4,6-Dinitrotoluene	35572-78-2	N.D.	0.20	0.40	0.60	1
06916	1,3-Dinitrobenzene	99-65-0	N.D.	0.20	0.40	0.60	1
06916	2,4-Dinitrotoluene	121-14-2	N.D.	0.72	1.5	2.0	1
06916	2,6-Dinitrotoluene	606-20-2	N.D.	0.45	0.90	1.3	1
06916	HMX	2691-41-0	N.D.	0.65	1.5	2.0	1
06916	Nitrobenzene	98-95-3	N.D.	0.20	0.40	0.60	1
06916	Nitroglycerin	55-63-0	N.D.	5.2	14	15	1
06916	2-Nitrotoluene	88-72-2	N.D.	0.25	0.60	0.75	1
06916	3-Nitrotoluene	99-08-1	N.D.	0.40	0.80	1.2	1
06916	4-Nitrotoluene	99-99-0	N.D.	0.60	1.2	1.2	1
06916	PETN	78-11-5	N.D.	6.0	14	18	1
06916	RDX	121-82-4	N.D.	0.20	0.40	0.50	1
06916	Tetryl	479-45-8	N.D.	0.40	0.80	0.80	1
06916	1,3,5-Trinitrobenzene	99-35-4	N.D.	0.20	0.40	0.60	1
06916	2,4,6-Trinitrotoluene	118-96-7	N.D.	0.20	0.40	0.60	1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.15	0.31	0.48	1

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REVISED

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Camp Ravenna

LL Sample # WW 8084672
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Account # 20808

Project Name: Camp Ravenna

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Alexandria VA 22312

RAVW3 SDG#: PSX09-03

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	Dalapon	75-99-0	N.D.	0.24	0.48	1.2	1
10407	2,4-DB	94-82-6	N.D.	0.29	0.58	0.96	1
10407	Dicamba	1918-00-9	N.D.	0.077	0.15	0.29	1
10407	Dinoseb	88-85-7	N.D.	0.12	0.23	0.48	1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4-DP (Dichlorprop)	120-36-5	N.D.	0.15	0.31	0.48	1
10407	MCPA	94-74-6	N.D.	48	96	190	1
10407	MCPP	93-65-2	N.D. V	77	150	190	1
10407	Pentachlorophenol	87-86-5	N.D.	0.026	0.048	0.048	1
10407	2,4,5-T	93-76-5	N.D.	0.014	0.029	0.048	1
10407	2,4,5-TP	93-72-1	0.016 J	0.0096	0.019	0.048	1
	Reporting limits were raised due to interference from the sample matrix.						
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0019	0.0068	0.0097	1
00177	Alpha BHC	319-84-6	N.D.	0.0029	0.0068	0.0097	1
00177	Beta BHC	319-85-7	N.D.	0.0033	0.0068	0.0097	1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0019	0.0068	0.0097	1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0029	0.0068	0.0097	1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0068	0.019	0.019	1
00177	p,p-DDD	72-54-8	N.D.	0.0048	0.0097	0.019	1
00177	p,p-DDE	72-55-9	0.0052 JP	0.0048	0.0097	0.019	1
00177	p,p-DDT	50-29-3	N.D.	0.0050	0.0097	0.019	1
00177	Delta BHC	319-86-8	N.D.	0.0033	0.0068	0.0097	1
00177	Dieldrin	60-57-1	0.010 J	0.0051	0.0097	0.019	1
00177	Endosulfan I	959-98-8	N.D.	0.0042	0.0087	0.0097	1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.029	0.029	1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0056	0.012	0.019	1
00177	Endrin	72-20-8	N.D.	0.0078	0.019	0.019	1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.019	0.039	0.097	1
00177	Endrin Ketone	53494-70-5	N.D.	0.0048	0.0097	0.019	1
00177	Heptachlor	76-44-8	N.D.	0.0019	0.0068	0.0097	1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0022	0.0068	0.0097	1
00177	Methoxychlor	72-43-5	N.D.	0.029	0.068	0.097	1
00177	Toxaphene	8001-35-2	N.D.	0.29	0.58	0.97	1
	The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary.						
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0841	0.200	0.200	1
07044	Antimony	7440-36-0	0.0070 J	0.0058	0.0100	0.0200	1
07035	Arsenic	7440-38-2	N.D.	0.0070	0.0200	0.0200	1
07046	Barium	7440-39-3	0.296	0.00030	0.00063	0.0050	1
07047	Beryllium	7440-41-7	N.D.	0.00070	0.0013	0.0050	1
07049	Cadmium	7440-43-9	N.D.	0.00030	0.00063	0.0050	1
01750	Calcium	7440-70-2	471	0.0333	0.0500	0.200	1
07051	Chromium	7440-47-3	0.546	0.0015	0.0038	0.0150	1
07052	Cobalt	7440-48-4	N.D.	0.00090	0.0025	0.0050	1
07053	Copper	7440-50-8	0.0061 J	0.0025	0.0050	0.0100	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-3-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084672
LL Group # 1599917
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Project Name: Camp Ravenna

Collected: 10/09/2015 09:45 by WC

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Plexus Scientific Corporation
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RAVW3 SDG#: PSX09-03

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01754	Iron	7439-89-6	N.D.	0.0333	0.0500	0.200	1
07055	Lead	7439-92-1	N.D.	0.0051	0.0150	0.0150	1
01757	Magnesium	7439-95-4	0.347	0.0167	0.0500	0.100	1
07058	Manganese	7439-96-5	N.D.	0.00080	0.0013	0.0050	1
07061	Nickel	7440-02-0	0.0027 J	0.0013	0.0025	0.0100	1
01762	Potassium	7440-09-7	207	0.192	0.500	0.500	1
07036	Selenium	7782-49-2	N.D.	0.0082	0.0200	0.0200	1
07066	Silver	7440-22-4	N.D.	0.0014	0.0025	0.0050	1
01767	Sodium	7440-23-5	90.4	0.167	0.500	1.00	1
07022	Thallium	7440-28-0	N.D.	0.0084	0.0150	0.0300	1
07071	Vanadium	7440-62-2	N.D.	0.0014	0.0050	0.0050	1
07072	Zinc	7440-66-6	N.D.	0.0039	0.0100	0.0200	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000050	0.00010	0.00020	1
Wet Chemistry	**SW-846 9012A**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
10704	Total Cyanide in Water	57-12-5	N.D.	0.0050	0.010	0.010	1
	EPA 170.1		**Degrees C**	**Degrees C**	**Degrees C**	**Degrees C**	
12151	Temperature of pH	n.a.	20.0	0.010	0.010	0.010	1
	SM 4500-H+ B-2000		**Std. Units**	**Std. Units**	**Std. Units**	**Std. Units**	
12152	pH	n.a.	12.4 J	0.010	0.010	0.010	1
	SM 4500-S2 F-2000		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01333	Sulfide	18496-25-8	N.D.	0.68	2.0	2.0	1
	SW-846 1010A		**Degrees F**	**Degrees F**	**Degrees F**	**Degrees F**	
00430	Flash Point	n.a.	No Flash Observed	50	50	50	1

No flash observed below 164F.
Test flame extinguished at 144F.
Flash point was determined using Pensky Martens closed cup apparatus.

SW-846 Chapter 7

00496	Corrosivity	n.a.	See Below				1

The pH of the sample is 12.37 indicating that the sample is not corrosive. A sample is corrosive if it exhibits a pH equal to or less than 2 or equal to or greater than 12.5.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-3-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084672
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:45 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW3 SDG#: PSX09-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	L152882AA	10/15/2015 04:29	Stephanie A Selis	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	L152882AA	10/15/2015 04:29	Stephanie A Selis	1
04678	TCL SW846 8270C Water	SW-846 8270C	1	15293WAI026	10/22/2015 18:38	Linda M Hartenstine	1
00813	BNA Water Extraction	SW-846 3510C	2	15293WAI026	10/21/2015 11:00	Denise L Trimby	1
06916	Nitroaromatics/Amines in Water	SW-846 8330	1	152860004A	10/14/2015 21:24	James H Place	1
10407	Herb water 8151A Master	SW-846 8151A	1	152880018A	10/17/2015 07:26	Richard A Shober	1
00177	OC Pesticides in Water	SW-846 8081A	1	152890003A	10/21/2015 07:40	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	152890003A	10/16/2015 16:40	JoElla L Rice	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	152880018A	10/16/2015 00:45	Sherry L Morrow	1
06915	Nitroaromatics/Amines Wat Ext	SW-846 8330	1	152860004A	10/13/2015 14:45	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07044	Antimony	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07035	Arsenic	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07046	Barium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07047	Beryllium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07049	Cadmium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
01750	Calcium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07051	Chromium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07052	Cobalt	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07053	Copper	SW-846 6010B	1	152931848004	10/23/2015 21:27	Suzanne M Will	1
01754	Iron	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07055	Lead	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
01757	Magnesium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07058	Manganese	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07061	Nickel	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
01762	Potassium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07036	Selenium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07066	Silver	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: WSC-3-100815 Grab Water
Camp Ravenna

LL Sample # WW 8084672
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:45 by WC

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVW3 SDG#: PSX09-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01767	Sodium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07022	Thallium	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
07071	Vanadium	SW-846 6010B	1	152931848004	10/23/2015 21:27	Suzanne M Will	1
07072	Zinc	SW-846 6010B	1	152931848004	10/22/2015 22:31	Elaine F Stoltzfus	1
00259	Mercury	SW-846 7470A	1	152935713007	10/22/2015 03:51	Damary Valentin	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	152931848004	10/21/2015 11:15	Katlin N Cataldi	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	152935713007	10/21/2015 12:30	Katlin N Cataldi	1
10704	Total Cyanide in Water	SW-846 9012A	1	15295960101A	10/23/2015 03:47	Joseph E McKenzie	1
10706	Total Cyanide Prep (Water)	SW-846 9012A	1	15295960101A	10/22/2015 07:25	Nancy J Shoop	1
12151	Temperature of pH	EPA 170.1	1	15287121521A	10/14/2015 18:40	Michelle L Lalli	1
12152	pH	SM 4500-H+ B-2000	2	15287121521A	10/14/2015 18:40	Michelle L Lalli	1
01333	Sulfide	SM 4500-S2 F-2000	1	15288133302A	10/15/2015 10:15	Susan E Hibner	1
00430	Flash Point	SW-846 1010A	1	15292043001A	10/19/2015 08:20	Susan A Engle	1
00496	Corrosivity	SW-846 Chapter 7	1	15287121521A	10/14/2015 18:40	Michelle L Lalli	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: TB-100815 Water
Camp Ravenna

LL Sample # WW 8084673
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:50

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVTB SDG#: PSX09-04TB

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	ug/l	ug/l	
10335	Acetone	67-64-1	N.D.	6	20	20	1
10335	Benzene	71-43-2	N.D.	0.5	1	1	1
10335	Bromodichloromethane	75-27-4	N.D.	0.5	1	1	1
10335	Bromoform	75-25-2	N.D.	0.5	1	4	1
10335	Bromomethane	74-83-9	N.D.	0.5	1	1	1
10335	2-Butanone	78-93-3	N.D.	3	8	10	1
10335	Carbon Disulfide	75-15-0	N.D.	1	2	5	1
10335	Carbon Tetrachloride	56-23-5	N.D.	0.5	1	1	1
10335	Chlorobenzene	108-90-7	N.D.	0.5	1	1	1
10335	Chloroethane	75-00-3	N.D.	0.5	1	1	1
10335	Chloroform	67-66-3	N.D.	0.5	1	1	1
10335	Chloromethane	74-87-3	N.D.	0.5	1	1	1
10335	Cyclohexane	110-82-7	N.D.	2	4	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	2	4	5	1
10335	Dibromochloromethane	124-48-1	N.D.	0.5	1	1	1
10335	1,2-Dibromoethane	106-93-4	N.D.	0.5	1	1	1
10335	1,2-Dichlorobenzene	95-50-1	N.D.	1	2	5	1
10335	1,3-Dichlorobenzene	541-73-1	N.D.	1	2	5	1
10335	1,4-Dichlorobenzene	106-46-7	N.D.	1	2	5	1
10335	Dichlorodifluoromethane	75-71-8	N.D.	0.5	1	1	1
10335	1,1-Dichloroethane	75-34-3	N.D.	0.5	1	1	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.5	1	1	1
10335	1,1-Dichloroethene	75-35-4	N.D.	0.5	1	1	1
10335	cis-1,2-Dichloroethene	156-59-2	N.D.	0.5	1	1	1
10335	trans-1,2-Dichloroethene	156-60-5	N.D.	0.5	1	1	1
10335	1,2-Dichloropropane	78-87-5	N.D.	0.5	1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.5	1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.5	1	1	1
10335	Ethylbenzene	100-41-4	N.D.	0.5	1	1	1
10335	Freon 113	76-13-1	N.D.	2	4	10	1
10335	2-Hexanone	591-78-6	N.D.	3	8	10	1
10335	Isopropylbenzene	98-82-8	N.D.	1	2	5	1
10335	Methyl Acetate	79-20-9	N.D.	1	2	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1	1	1
10335	4-Methyl-2-pentanone	108-10-1	N.D.	3	8	10	1
10335	Methylcyclohexane	108-87-2	N.D.	1	2	5	1
10335	Methylene Chloride	75-09-2	N.D.	2	4	4	1
10335	Styrene	100-42-5	N.D.	1	2	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.5	1	1	1
10335	Tetrachloroethene	127-18-4	N.D.	0.5	1	1	1
10335	Toluene	108-88-3	N.D.	0.5	1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	N.D.	1	2	5	1
10335	1,1,1-Trichloroethane	71-55-6	N.D.	0.5	1	1	1
10335	1,1,2-Trichloroethane	79-00-5	N.D.	0.5	1	1	1
10335	Trichloroethene	79-01-6	N.D.	0.5	1	1	1
10335	Trichlorofluoromethane	75-69-4	N.D.	0.5	1	1	1
10335	Vinyl Chloride	75-01-4	N.D.	0.5	1	1	1
10335	Xylene (Total)	1330-20-7	N.D.	0.5	1	1	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: TB-100815 Water
Camp Ravenna

LL Sample # WW 8084673
LL Group # 1599917
Account # 20808

Project Name: Camp Ravenna

Collected: 10/09/2015 09:50

Submitted: 10/10/2015 09:55
Reported: 11/25/2015 16:29

Plexus Scientific Corporation
Suite 350
5510 Cherokee Avenue
Alexandria VA 22312

RAVTB SDG#: PSX09-04TB

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
	analytes are accepted based on this allowance: Cyclohexane and Methylcyclohexane						

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	L152882AA	10/15/2015 04:51	Stephanie A Selis	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	L152882AA	10/15/2015 04:51	Stephanie A Selis	1

*=This limit was used in the evaluation of the final result

REVISED

Quality Control Summary

Client Name: Plexus Scientific Corporation Group Number: 1599917
Reported: 11/25/2015 16:29

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank DL**	Blank LOD	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: L152882AA	Sample number(s): 8084670-8084673									
Acetone	N.D.	6	20	20	ug/l	96	90	39-160	6	30
Benzene	N.D.	0.5	1	1	ug/l	98	99	79-120	1	30
Bromodichloromethane	N.D.	0.5	1	1	ug/l	104	103	79-125	0	30
Bromoform	N.D.	0.5	1	4	ug/l	94	95	66-130	2	30
Bromomethane	N.D.	0.5	1	1	ug/l	121	123	53-141	2	30
2-Butanone	N.D.	3	8	10	ug/l	88	90	56-143	2	30
Carbon Disulfide	N.D.	1	2	5	ug/l	82	84	64-133	2	30
Carbon Tetrachloride	N.D.	0.5	1	1	ug/l	104	107	72-136	3	30
Chlorobenzene	N.D.	0.5	1	1	ug/l	100	102	82-118	2	30
Chloroethane	N.D.	0.5	1	1	ug/l	112	114	60-138	2	30
Chloroform	N.D.	0.5	1	1	ug/l	105	105	79-124	0	30
Chloromethane	N.D.	0.5	1	1	ug/l	102	106	50-139	3	30
Cyclohexane	N.D.	2	4	5	ug/l	69*	72	71-130	4	30
1,2-Dibromo-3-chloropropane	N.D.	2	4	5	ug/l	88	89	62-128	1	30
Dibromochloromethane	N.D.	0.5	1	1	ug/l	100	101	74-126	1	30
1,2-Dibromoethane	N.D.	0.5	1	1	ug/l	100	102	77-121	2	30
1,2-Dichlorobenzene	N.D.	1	2	5	ug/l	94	98	80-119	3	30
1,3-Dichlorobenzene	N.D.	1	2	5	ug/l	95	99	80-119	4	30
1,4-Dichlorobenzene	N.D.	1	2	5	ug/l	96	98	79-118	2	30
Dichlorodifluoromethane	N.D.	0.5	1	1	ug/l	92	95	32-152	3	30
1,1-Dichloroethane	N.D.	0.5	1	1	ug/l	97	98	77-125	1	30
1,2-Dichloroethane	N.D.	0.5	1	1	ug/l	113	113	73-128	0	30
1,1-Dichloroethene	N.D.	0.5	1	1	ug/l	90	95	71-131	6	30
cis-1,2-Dichloroethene	N.D.	0.5	1	1	ug/l	101	101	78-123	0	30
trans-1,2-Dichloroethene	N.D.	0.5	1	1	ug/l	102	102	75-124	0	30
1,2-Dichloropropane	N.D.	0.5	1	1	ug/l	98	99	78-122	1	30
cis-1,3-Dichloropropene	N.D.	0.5	1	1	ug/l	90	92	75-124	2	30
trans-1,3-Dichloropropene	N.D.	0.5	1	1	ug/l	95	99	73-127	4	30
Ethylbenzene	N.D.	0.5	1	1	ug/l	96	98	79-121	2	30
Freon 113	N.D.	2	4	10	ug/l	84	86	70-136	2	30
2-Hexanone	N.D.	3	8	10	ug/l	86	87	57-139	2	30
Isopropylbenzene	N.D.	1	2	5	ug/l	92	94	72-131	3	30
Methyl Acetate	N.D.	1	2	5	ug/l	89	91	56-136	1	30
Methyl Tertiary Butyl Ether	N.D.	0.5	1	1	ug/l	90	94	71-124	5	30
4-Methyl-2-pentanone	N.D.	3	8	10	ug/l	85	85	67-130	1	30
Methylcyclohexane	N.D.	1	2	5	ug/l	71*	74	72-132	5	30
Methylene Chloride	N.D.	2	4	4	ug/l	97	99	74-124	1	30
Styrene	N.D.	1	2	5	ug/l	95	98	78-123	3	30
1,1,2,2-Tetrachloroethane	N.D.	0.5	1	1	ug/l	92	95	71-121	3	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
(3) The surrogate spike amount was less than the LOD.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

REVISED

Quality Control Summary

Client Name: Plexus Scientific Corporation Group Number: 1599917
Reported: 11/25/2015 16:29

Analysis Name	Blank Result	Blank DL**	Blank LOD	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Tetrachloroethene	N.D.	0.5	1	1	ug/l	99	101	74-129	2	30
Toluene	N.D.	0.5	1	1	ug/l	97	101	80-121	3	30
1,2,4-Trichlorobenzene	N.D.	1	2	5	ug/l	81	85	69-130	5	30
1,1,1-Trichloroethane	N.D.	0.5	1	1	ug/l	90	91	74-131	1	30
1,1,2-Trichloroethane	N.D.	0.5	1	1	ug/l	102	100	80-119	1	30
Trichloroethene	N.D.	0.5	1	1	ug/l	102	101	79-123	1	30
Trichlorofluoromethane	N.D.	0.5	1	1	ug/l	109	111	65-141	2	30
Vinyl Chloride	N.D.	0.5	1	1	ug/l	109	113	58-137	4	30
Xylene (Total)	N.D.	0.5	1	1	ug/l	96	97	79-121	0	30
Batch number: 15293WAI026	Sample number(s): 8084670-8084672									
Acenaphthene	N.D.	0.1	0.4	0.5	ug/l	95	99	47-122	4	30
Acenaphthylene	N.D.	0.1	0.4	0.5	ug/l	95	97	41-130	2	30
Acetophenone	N.D.	0.5	1	1	ug/l	91	90	46-118	0	30
Anthracene	N.D.	0.1	0.4	0.5	ug/l	102	103	57-123	1	30
Atrazine	N.D.	2	4	5	ug/l	104	103	44-142	1	30
Benzaldehyde	N.D.	1	4	5	ug/l	35	36	10-123	1	30
Benzo(a)anthracene	N.D.	0.1	0.4	0.5	ug/l	105	105	58-125	0	30
Benzo(a)pyrene	N.D.	0.1	0.4	0.5	ug/l	98	98	54-128	1	30
Benzo(b)fluoranthene	N.D.	0.1	0.4	0.5	ug/l	112	102	53-131	9	30
Benzo(g,h,i)perylene	N.D.	0.1	0.4	0.5	ug/l	90	88	50-134	2	30
Benzo(k)fluoranthene	N.D.	0.1	0.4	0.5	ug/l	97	107	57-129	10	30
1,1'-Biphenyl	N.D.	0.5	1	1	ug/l	84	87	49-115	3	30
4-Bromophenyl-phenylether	N.D.	0.5	1	1	ug/l	111	111	55-124	1	30
Butylbenzylphthalate	N.D.	2	4	5	ug/l	107	108	53-134	0	30
Di-n-butylphthalate	N.D.	2	4	5	ug/l	107	107	59-127	0	30
Caprolactam	N.D.	5	15	15	ug/l	30	32	10-58	6	30
Carbazole	N.D.	0.5	1	1	ug/l	100	99	60-122	1	30
4-Chloro-3-methylphenol	N.D.	0.5	1	1	ug/l	106	105	52-119	1	30
4-Chloroaniline	N.D.	0.5	1	1	ug/l	68	70	33-117	3	30
bis(2-Chloroethoxy)methane	N.D.	0.5	1	1	ug/l	99	100	48-120	1	30
bis(2-Chloroethyl)ether	N.D.	0.5	1	1	ug/l	96	94	43-118	2	30
2-Chloronaphthalene	N.D.	0.4	1	1	ug/l	91	95	40-116	5	30
2-Chlorophenol	N.D.	0.5	1	1	ug/l	98	97	38-117	0	30
4-Chlorophenyl-phenylether	N.D.	0.5	1	1	ug/l	100	102	53-121	2	30
2,2'-oxybis(1-Chloropropane)	N.D.	0.5	1	1	ug/l	92	92	56-128	0	30
Chrysene	N.D.	0.1	0.4	0.5	ug/l	102	102	59-123	1	30
Dibenz(a,h)anthracene	N.D.	0.1	0.4	0.5	ug/l	93	92	51-134	1	30
Dibenzofuran	N.D.	0.5	1	1	ug/l	94	97	53-118	3	30
3,3'-Dichlorobenzidine	N.D.	2	4	5	ug/l	70	71	27-129	1	30
2,4-Dichlorophenol	N.D.	0.5	1	1	ug/l	107	108	47-121	2	30
Diethylphthalate	N.D.	2	4	5	ug/l	101	104	56-125	3	30
2,4-Dimethylphenol	N.D.	0.5	1	1	ug/l	98	98	31-124	0	30
Dimethylphthalate	N.D.	2	4	5	ug/l	97	99	45-127	2	30
4,6-Dinitro-2-methylphenol	N.D.	5	15	15	ug/l	101	101	44-137	1	30
2,4-Dinitrophenol	N.D.	10	30	30	ug/l	89	94	23-143	5	30
2,4-Dinitrotoluene	N.D.	1	4	5	ug/l	106	105	57-128	1	30
2,6-Dinitrotoluene	N.D.	0.5	1	1	ug/l	107	108	57-124	1	30
bis(2-Ethylhexyl)phthalate	N.D.	2	4	5	ug/l	109	108	55-135	0	30
Fluoranthene	N.D.	0.1	0.4	0.5	ug/l	101	101	57-128	1	30
Fluorene	N.D.	0.1	0.4	0.5	ug/l	100	104	52-124	3	30
Hexachlorobenzene	N.D.	0.1	0.4	0.5	ug/l	104	105	53-125	1	30

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REVISED

Quality Control Summary

Client Name: Plexus Scientific Corporation Group Number: 1599917
Reported: 11/25/2015 16:29

Analysis Name	Blank Result	Blank DL**	Blank LOD	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Hexachlorobutadiene	N.D.	0.5	1	1	ug/l	69	69	22-124	1	30
Hexachlorocyclopentadiene	N.D.	5	15	15	ug/l	52	54	14-105	4	30
Hexachloroethane	N.D.	1	4	5	ug/l	61	59	21-115	4	30
Indeno(1,2,3-cd)pyrene	N.D.	0.1	0.4	0.5	ug/l	90	89	52-134	1	30
Isophorone	N.D.	0.5	1	1	ug/l	98	99	42-124	2	30
2-Methylnaphthalene	N.D.	0.1	0.4	0.5	ug/l	89	91	40-121	1	30
2-Methylphenol	N.D.	0.5	1	1	ug/l	102	102	30-117	0	30
4-Methylphenol	N.D.	0.5	1	1	ug/l	96	96	25-120	0	30
Naphthalene	N.D.	0.1	0.4	0.5	ug/l	86	86	40-121	1	30
2-Nitroaniline	N.D.	0.5	1	1	ug/l	104	107	55-127	2	30
3-Nitroaniline	N.D.	0.5	1	1	ug/l	99	101	41-128	2	30
4-Nitroaniline	N.D.	0.5	1	1	ug/l	77	78	66-110	1	30
Nitrobenzene	N.D.	0.5	1	1	ug/l	92	93	45-121	1	30
2-Nitrophenol	N.D.	0.5	1	1	ug/l	108	108	47-123	0	30
4-Nitrophenol	N.D.	10	30	30	ug/l	44	47	11-88	6	30
N-Nitroso-di-n-propylamine	N.D.	0.5	1	1	ug/l	94	94	49-119	0	30
N-Nitrosodiphenylamine	N.D.	0.5	1	1	ug/l	97	100	51-123	3	30
Di-n-octylphthalate	N.D.	2	4	5	ug/l	121	121	51-140	0	30
Pentachlorophenol	N.D.	1	4	5	ug/l	94	94	35-138	1	30
Phenanthrene	N.D.	0.1	0.4	0.5	ug/l	96	98	59-120	2	30
Phenol	N.D.	0.5	1	1	ug/l	50	49	13-89	0	30
Pyrene	N.D.	0.1	0.4	0.5	ug/l	96	97	57-126	1	30
Pyridine	N.D.	2	4	5	ug/l	59	63	13-104	6	30
2,4,5-Trichlorophenol	N.D.	0.5	1	1	ug/l	102	106	53-123	4	30
2,4,6-Trichlorophenol	N.D.	0.5	1	1	ug/l	102	105	50-125	3	30
Batch number: 152860004A	Sample number(s): 8084670-8084672									
4-Amino-2,6-Dinitrotoluene	N.D.	0.30	0.60	0.60	ug/l	105	95	76-125	9	30
2-Amino-4,6-Dinitrotoluene	N.D.	0.20	0.40	0.60	ug/l	102	93	79-120	9	30
1,3-Dinitrobenzene	N.D.	0.20	0.40	0.60	ug/l	113	100	78-120	12	30
2,4-Dinitrotoluene	N.D.	0.72	1.5	2.0	ug/l	95	87	78-120	9	30
2,6-Dinitrotoluene	N.D.	0.45	0.90	1.3	ug/l	101	92	77-127	9	30
HMX	N.D.	0.65	1.5	2.0	ug/l	77	67	65-135	14	30
Nitrobenzene	N.D.	0.20	0.40	0.60	ug/l	104	93	65-134	11	30
Nitroglycerin	N.D.	5.2	14	15	ug/l	99	84	74-127	16	30
2-Nitrotoluene	N.D.	0.25	0.60	0.75	ug/l	99	95	70-127	5	30
3-Nitrotoluene	N.D.	0.40	0.80	1.2	ug/l	99	92	73-125	7	30
4-Nitrotoluene	N.D.	0.60	1.2	1.2	ug/l	102	96	71-127	6	30
PETN	N.D.	6.0	14	18	ug/l	102	87	73-127	15	30
RDX	N.D.	0.20	0.40	0.50	ug/l	100	86	68-130	16	30
Tetryl	N.D.	0.40	0.80	0.80	ug/l	87	75	64-128	14	30
1,3,5-Trinitrobenzene	N.D.	0.20	0.40	0.60	ug/l	92	81	73-125	13	30
2,4,6-Trinitrotoluene	N.D.	0.20	0.40	0.60	ug/l	98	88	71-123	11	30
Batch number: 152880018A	Sample number(s): 8084670-8084672									
2,4-D	N.D.	0.16	0.32	0.50	ug/l	109	122	45-152	11	30
Dalapon	N.D.	0.25	0.50	1.3	ug/l	53	60	19-139	12	30
2,4-DB	N.D.	0.30	0.60	1.0	ug/l	111	120	35-153	7	30
Dicamba	N.D.	0.080	0.16	0.30	ug/l	101	114	50-141	11	30
Dinoseb	N.D.	0.12	0.24	0.50	ug/l	94	109	16-163	15	30
2,4-DP (Dichlorprop)	N.D.	0.16	0.32	0.50	ug/l	116	126	46-159	8	30
MCPA	N.D.	50	100	200	ug/l	101	108	35-144	7	30

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REVISED

Quality Control Summary

Client Name: Plexus Scientific Corporation Group Number: 1599917
Reported: 11/25/2015 16:29

Analysis Name	Blank Result	Blank DL**	Blank LOD	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
MCPP	N.D.	50	100	200	ug/l	97	109	33-157	12	30
Pentachlorophenol	N.D.	0.027	0.050	0.050	ug/l	97	108	56-139	10	30
2,4,5-T	N.D.	0.015	0.030	0.050	ug/l	109	126	42-147	14	30
2,4,5-TP	N.D.	0.010	0.020	0.050	ug/l	104	116	51-134	11	30
Batch number: 152890003A	Sample number(s): 8084670-8084672									
Aldrin	N.D.	0.0020	0.0070	0.010	ug/l	120	123	45-134	2	30
Alpha BHC	N.D.	0.0030	0.0070	0.010	ug/l	131	142*	54-138	8	30
Beta BHC	N.D.	0.0034	0.0070	0.010	ug/l	128	140*	56-136	9	30
Gamma BHC - Lindane	N.D.	0.0020	0.0070	0.010	ug/l	131	141*	59-134	7	30
Alpha Chlordane	N.D.	0.0030	0.0070	0.010	ug/l	126	137*	60-129	8	30
Gamma Chlordane	N.D.	0.0070	0.020	0.020	ug/l	130	142*	56-136	9	30
p,p-DDD	N.D.	0.0050	0.010	0.020	ug/l	127	141	56-143	10	30
p,p-DDE	N.D.	0.0050	0.010	0.020	ug/l	129	144*	57-135	11	30
p,p-DDT	N.D.	0.0052	0.010	0.020	ug/l	124	137	51-143	10	30
Delta BHC	N.D.	0.0034	0.0070	0.010	ug/l	135	148*	52-142	9	30
Dieldrin	N.D.	0.0053	0.010	0.020	ug/l	125	137*	60-136	9	30
Endosulfan I	N.D.	0.0043	0.0090	0.010	ug/l	117	128*	62-126	9	30
Endosulfan II	N.D.	0.015	0.030	0.030	ug/l	118	130	52-135	9	30
Endosulfan Sulfate	N.D.	0.0058	0.012	0.020	ug/l	123	130	62-133	5	30
Endrin	N.D.	0.0081	0.020	0.020	ug/l	100	121	60-138	19	30
Endrin Aldehyde	N.D.	0.020	0.040	0.10	ug/l	114	119	51-132	4	20
Endrin Ketone	N.D.	0.0050	0.010	0.020	ug/l	125	130	58-134	4	30
Heptachlor	N.D.	0.0020	0.0070	0.010	ug/l	124	132*	54-130	7	30
Heptachlor Epoxide	N.D.	0.0023	0.0070	0.010	ug/l	125	140*	61-133	12	30
Methoxychlor	N.D.	0.030	0.070	0.10	ug/l	124	135	54-145	9	30
Toxaphene	N.D.	0.30	0.60	1.0	ug/l					
Batch number: 152931848004	Sample number(s): 8084670-8084672									
Aluminum	N.D.	0.0841	0.200	0.200	mg/l	104		86-115		
Antimony	N.D.	0.0058	0.0100	0.0200	mg/l	109		88-113		
Arsenic	N.D.	0.0070	0.0200	0.0200	mg/l	107		87-113		
Barium	N.D.	0.00030	0.00063	0.0050	mg/l	108		88-113		
Beryllium	N.D.	0.00070	0.0013	0.0050	mg/l	110		89-112		
Cadmium	N.D.	0.00030	0.00063	0.0050	mg/l	107		88-113		
Calcium	N.D.	0.0333	0.0500	0.200	mg/l	105		87-113		
Chromium	N.D.	0.0015	0.0038	0.0150	mg/l	109		90-113		
Cobalt	N.D.	0.00090	0.0025	0.0050	mg/l	107		89-114		
Copper	N.D.	0.0025	0.0050	0.0100	mg/l	113		86-114		
Iron	N.D.	0.0333	0.0500	0.200	mg/l	103		87-115		
Lead	N.D.	0.0051	0.0150	0.0150	mg/l	109		86-113		
Magnesium	N.D.	0.0167	0.0500	0.100	mg/l	104		85-113		
Manganese	N.D.	0.00080	0.0013	0.0050	mg/l	109		90-114		
Nickel	N.D.	0.0013	0.0025	0.0100	mg/l	107		88-113		
Potassium	N.D.	0.192	0.500	0.500	mg/l	103		86-114		
Selenium	N.D.	0.0082	0.0200	0.0200	mg/l	102		83-114		
Silver	N.D.	0.0014	0.0025	0.0050	mg/l	98		84-115		
Sodium	N.D.	0.167	0.500	1.00	mg/l	101		87-115		
Thallium	N.D.	0.0084	0.0150	0.0300	mg/l	111		85-114		
Vanadium	N.D.	0.0014	0.0050	0.0050	mg/l	103		90-111		
Zinc	N.D.	0.0039	0.0100	0.0200	mg/l	104		87-115		

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REVISED

Quality Control Summary

Client Name: Plexus Scientific Corporation Group Number: 1599917
Reported: 11/25/2015 16:29

Analysis Name	Blank Result	Blank DL**	Blank LOD	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 152935713007	Sample number(s): 8084670-8084672									
Mercury	N.D.	0.00005 0	0.00010	0.00020	mg/l	97		82-119		
Batch number: 15295960101A	Sample number(s): 8084670-8084672									
Total Cyanide in Water	N.D.	0.0050	0.010	0.010	mg/l	95		83-116		
Batch number: 15287121521A	Sample number(s): 8084670-8084672									
Corrosivity						101		89-110		
pH						101		95-105		
Batch number: 15288133302A	Sample number(s): 8084670-8084672									
Sulfide	N.D.	0.68	2.0	2.0	mg/l	97		80-120		
Batch number: 15292043001A	Sample number(s): 8084670-8084672									
Flash Point						100	97	97-103	4	4

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 152931848004	Sample number(s): 8084670-8084672 UNSPK: 8084670 BKG: 8084670								
Aluminum	108	108	86-115	0	20	N.D.	N.D.	0 (1)	20
Antimony	116*	113	88-113	2	20	0.0084 J	0.0084 J	1 (1)	20
Arsenic	118*	113	87-113	4	20	N.D.	N.D.	0 (1)	20
Barium	104	102	88-113	2	20	0.272	0.276	1	20
Beryllium	111	109	89-112	2	20	N.D.	N.D.	0 (1)	20
Cadmium	105	102	88-113	3	20	N.D.	N.D.	0 (1)	20
Calcium	136 (2)	140 (2)	87-113	0	20	406	418	3	20
Chromium	109	102	90-113	2	20	0.515	0.526	2	20
Cobalt	105	102	89-114	3	20	N.D.	N.D.	0 (1)	20
Copper	116*	112	86-114	3	20	0.0060 J	0.0050 J	18 (1)	20
Iron	106	105	87-115	1	20	N.D.	N.D.	0 (1)	20
Lead	105	101	86-113	4	20	N.D.	N.D.	0 (1)	20
Magnesium	106	105	85-113	1	20	0.192	0.193	0 (1)	20
Manganese	107	105	90-114	2	20	N.D.	N.D.	0 (1)	20
Nickel	103	101	88-113	2	20	0.0025 J	0.0022 J	15 (1)	20
Potassium	108 (2)	117 (2)	86-114	0	20	425	434	2	20
Selenium	112	108	83-114	3	20	N.D.	N.D.	0 (1)	20
Silver	101	98	84-115	3	20	N.D.	N.D.	0 (1)	20
Sodium	105 (2)	113 (2)	87-115	1	20	103	105	2	20
Thallium	97	95	85-114	2	20	N.D.	N.D.	0 (1)	20
Vanadium	104	105	90-111	1	20	N.D.	N.D.	0 (1)	20
Zinc	110	107	87-115	3	20	N.D.	N.D.	0 (1)	20

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REVISED

Quality Control Summary

Client Name: Plexus Scientific Corporation Group Number: 1599917
Reported: 11/25/2015 16:29

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 152935713007	Sample number(s): 8084670-8084672 UNSPK: 8084672 BKG: 8084672								
Mercury	99	95	82-119	4	20	N.D.	N.D.	0 (1)	20
Batch number: 15295960101A	Sample number(s): 8084670-8084672 UNSPK: 8084672 BKG: 8084672								
Total Cyanide in Water	97		83-116			N.D.	N.D.	0 (1)	15
Batch number: 15287121521A	Sample number(s): 8084670-8084672 BKG: P086706								
Corrosivity						8.3	8.3	0	2
pH						8.3	8.3	0	3
Temperature of pH						15.2	15.2	0	5
Batch number: 15288133302A	Sample number(s): 8084670-8084672 UNSPK: P085964 BKG: P085964								
Sulfide	92	94	80-120	2	6	N.D.	N.D.	0 (1)	20

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 5ml Water by 8260B
Batch number: L152882AA

	Dibromofluoromethane		1,2-Dichloroethane-d4		Toluene-d8		4-Bromofluorobenzene	
	%Rec	LOD (ug/l)	%Rec	LOD (ug/l)	%Rec	LOD (ug/l)	%Rec	LOD (ug/l)
8084670	87	1	105	1	100	1	97	1
8084671	87	1	107	1	100	1	100	1
8084672	91	1	106	1	99	1	96	1
8084673	110	1	104	1	99	1	95	1
Blank	108	1	106	1	99	1	97	1
LCS	106	1	107	1	102	1	101	1
LCSD	104	1	102	1	102	1	100	1
Limits:	80-119		81-118		89-112		85-114	

Analysis Name: TCL SW846 8270C Water
Batch number: 15293WAI026

	2-Fluorophenol		Phenol-d6		2,4,6-Tribromophenol		Nitrobenzene-d5		2-Fluorobiphenyl		Terphenyl-d14	
	%Rec	LOD (ug/l)	%Rec	LOD (ug/l)	%Rec	LOD (ug/l)	%Rec	LOD (ug/l)	%Rec	LOD (ug/l)	%Rec	LOD (ug/l)
8084670	53	19	36	19	109	19	89	10	88	10	103	10
8084671	29	19	33	19	70	19	87	10	85	10	99	10
8084672	50	19	37	19	103	19	90	10	87	10	103	10
Blank	56	20	41	20	101	20	83	10	78	10	95	10
LCS	69	20	52	20	110	20	93	10	92	10	105	10
LCSD	67	20	50	20	110	20	91	10	92	10	104	10

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REVISED

Quality Control Summary

Client Name: Plexus Scientific Corporation Group Number: 1599917
Reported: 11/25/2015 16:29

Surrogate Quality Control

Limits: 19-119 10-85 43-140 44-120 44-119 50-134

Analysis Name: Nitroaromatics/Amines in Water
Batch number: 152860004A

	2-Nitro-m-xylene %Rec	LOD (ug/l)
8084670	100	4.0
8084671	95	4.0
8084672	90	4.0
Blank	102	4.0
LCS	103	4.0
LCSD	95	4.0
Limits:	49-135	

Analysis Name: Herb water 8151A Master
Batch number: 152880018A

	2,4-Dichlorophenylacetic acid %Rec	LOD (ug/l)
8084670	102	0.19
8084671	92	0.19
8084672	99	0.19
Blank	83	0.20
LCS	95	0.20
LCSD	104	0.20
Limits:	32-138	

Analysis Name: OC Pesticides in Water
Batch number: 152890003A

	Tetrachloro-m-xylene %Rec	LOD (ug/l)	Decachlorobiphenyl %Rec	LOD (ug/l)
8084670	133*	0.029	130	0.029
8084671	118	0.029	119	0.029
8084672	121	0.029	106	0.029
Blank	116	0.030	111	0.030
LCS	117	0.030	113	0.030
LCSD	136*	0.030	127	0.030
Limits:	44-124		32-149	

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Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 20508 Group # 159917 Sample # 6084670-73

COC # 389013

Client Information

Client: PLEXUS SCIENTIFIC | Acct. #: N/A

Project Name/#: CAMP RAVENNA | PWSID #:

Project Manager: CRAIG HEBERT | P.O. #:

Sampler: WALLACE CZAPLA | Quote #: 213466A

State where samples were collected: OHIO | For Compliance: Yes ☐ No ☐

Matrix

Soil ☐ Sediment ☐ Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ Other: LIQUID RD W

Analysis Requested

Preservation Codes: B, H

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	TOTAL CYANIDE	PH/TEMPERATURE/FTR SULFIDES	FLASH POINT CORROSIVITY	TCL METHYL/TCL SVOCS TCL DIETHEXYL/EXPLOSIVES	TCL VOCs	VOCs - 5ML WATER BY 8260
WSC-1-100815	10/9/15	0925	X		13	X	X	X	X	X	
WSC-2-100815	10/9/15	0935	X		13	X	X	X	X	X	
WSC-3-100815	10/9/15	0945	X		13	X	X	X	X	X	
TB-100815	10/9/15	0950			2						X

For Lab Use Only: FSC: ____ SCR#: 178428

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

Remarks

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: AS PER CONTRACT

E-mail address: ____

Data Package Options (circle if required)

(Type I (EPA Level 3 Equivalent/non-CLP)) Type VI (Raw Data Only)

Type III (Reduced non-CLP) TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
	10/9/15	1130	FEDEX		
				10/10/15	955

EDD Required? (Yes) No

If yes, format: PLEXUS

Site-Specific QC (MS/MSD/Dup)? Yes (No)

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx X Other ____

Temperature upon receipt 08-1.6 °C

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank
C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Attachment 3 - Summary of Analytical Detections

Analysis Name	Units	Detection Limit	Project Action Level (1)	MCL	USEPA RSL (June 2015)	Result		
						WSC-1-100815	WSC-2-100815	WSC-3-100815
VOCs								
Acetone	ug/l	6	10	NS	14000	**13 J**	**13 J**	8 J
Bromodichloromethane	ug/l	0.5	1.0	80	0.13	N.D.	N.D.	0.7 J
Chloroform	ug/l	0.5	1.0	80	0.22	**19**	**54**	**19**
Ethylbenzene	ug/l	0.5	1.0	700	1.50	N.D.	**1**	N.D.
Toluene	ug/l	0.5	1.0	1000	1100	N.D.	0.9 J	N.D.
Xylenes (Total)	ug/l	0.5	2.0	10000	190	N.D.	**9**	N.D.
SVOCs								
Acetophenone	ug/l	0.5	NS	NS	1900	N.D.	0.7 J	N.D.
Benzaldehyde	ug/l	1	NS	NS	1900	1 J	N.D.	N.D.
4-Chloro-3-	ug/l	0.5	10	NS	1400	2	3	2
2-Methylnaphthalene	ug/l	0.1	10	NS	36	N.D.	0.8	N.D.
Naphthalene	ug/l	0.1	10	NS	0.17	0.1 J	2	0.1 J
Phenol	ug/l	0.5	10	NS	5800	0.7 J	N.D.	N.D.
2,4,5-Trichlorophenol	ug/l	0.5	25	NS	1200	1	2	2
Herbicides								
2,4-D	ug/l	0.15	NS	70	170	N.D.	0.25 JP	N.D.
2,4,5-TP	ug/l	0.0096 (0.017 for WSC-2-100815)	NS	NS	1200	N.D.	N.D. V	0.016 J
Pesticides								
4,4-DDE (2)	ug/l	0.0048	0.05	NS	0.05	N.D.	0.0051 JP	0.0052 JP
p,p-DDT	ug/l	0.005	0.05	NS	0.23	0.0080 JP	0.018 J	N.D.
Dieldrin	ug/l	0.0051	0.03	NS	0.0017	0.0065 JP	0.011 J	0.010 J
Metals								
Aluminum	mg/l	0.0841	0.05	NS	20	N.D.	**0.107 J**	N.D.
Antimony	mg/l	0.0058	0.002	0.006	0.0078	0.0084 J	0.0143 J	0.0070 J
Barium	mg/l	0.0003	0.01	2	33.8	**0.272**	**0.251**	**0.296**
Calcium	mg/l	0.0333	0.1	NS	NS	**406**	**612**	**471**
Chromium	mg/l	0.0015	0.005	0.1	NS	**0.515**	**0.955**	**0.546**
Copper	mg/l	0.0025	0.005	1.3	0.8	**0.0060 J**	N.D.	**0.0061 J**
Magnesium	mg/l	0.0167	0.1	NS	NS	**0.192**	**0.189**	**0.347**
Nickel	mg/l	0.0013	0.01	NS	0.39	0.0025 J	N.D.	0.0027 J
Potassium	mg/l	0.192	0.2	NS	NS	**425**	**371**	**207**
Sodium	mg/l	0.167	0.2	NS	NS	**103**	**149**	**90.4**
Mercury	mg/l	0.00005	0.0002	0.002	0.00063	N.D.	**0.00023**	N.D.
General Chemistry								
Total Cyanide in Water	mg/l	0.005	0.01	0.2	0.0015	N.D.	**0.016**	N.D.

Notes:

Bold = Exceeds Project Action Requirement

Bold with highlight = Exceeds Project Action Requirement and screening value (MCL is primary screening value. If no MCL is available then RSL is used as screening value.)

NS= No Standard

ND: Not detected above the method detection limit

MCL: United States Environemntal Protection Agency (USEPA) Maximum Contaminant Level

USEPA RSL : United States Environemntal Protection Agency (USEPA) Risk Screening Level (June 2015)

J - estimated value, greater than the Method Detection Limit (MDL) or Detection Limit (DL) and less than the Limit of Quantitation (LOQ) or Reporting Limit (RL)

P - Concentration difference between the primary and confirmation column greater than 40%. The lower result is reported

V - Concentration of difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity.

(1) Project Action Requirements from Section 4 of the Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility Wide QAPP Addendum (EQM, 2012)

(2) 4,4-DDE is not listed in the QAPP tables but 4,4-DDD is listed twice so it is assumed the second value is a typo and should be 4,4-DDE.

From: Allan Brillinger
To: Craig Hebert; Cindy Nawal
Subject: REVISED Camp Ravenna IDW Treatment
Date: Wednesday, November 18, 2015 8:31:47 AM

Hi Cindy and Craig,
I completed the IDW treatment on Friday November 13...here's the details of what I did last week:

Monday November 10

I arrived at the tanks at 2:20pm. I calibrated the pH meter and took initial pH readings.
Tank 1 – 13.51
Tank 2 – 13.8
Tank 3 – 13.63

I added 'Green' Muriatic Acid (manufactured by Klean-Strip). This brand of muriatic acid is at a concentration of 20.0% HCl. I added 1 gallon to Tank 2, and ½-gallon to each of Tanks 1 and 3. I stirred each of the tanks vigorously and checked the pH after about a half hour.
Tank 1 – 12.98
Tank 2 – 13.19
Tank 3 – 13.13

Unfortunately, the initial acid treatment did not bring the pH to within acceptable levels. I didn't have any more muriatic acid, so planned to come back the next work day (Thursday November 12) with additional acid for further treatment..

Thursday November 12
I arrived at the tanks at 10:00am and tried to take initial pH reading. The pH mater was reading "Over" and would not calibrate. I made arrangements with Pine (Hudson, OH office) to drop off the defective meter and pick up a replacement meter on my way home from work.

Friday November 13
I arrived at the tanks at 9:00 and took initial pH readings in each tank.
Tank 1 – 12.96
Tank 2 – 13.21
Tank 3 – 13.14

I added Sunnyside Muriatic Acid (HCl at 31.45%) to each of the tanks. I added 1 gallon to Tank 2, and ½-gallon to each of Tanks 1 and 3, mixed each tank vigorously, then took pH readings after about a half-hour.
Tank 1 – 2.45
Tank 2 – 8.94
Tank 3 – 12.75

I added about 40 oz. of additional muriatic acid to Tank 3, remixed, then re-measured the pH after about 15 minutes. The pH in Tank 3 is now at 5.72.

Since each of the IDW tanks now had pHs between 2.0 and 12.5, they are considered as non-corrosive according to Ohio EPA guidelines. I re-labelled each of the tanks with a green Non-Hazardous label.

Please feel free to contact me with any questions or concerns.

Regards,

Al Brillinger
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Camp Ravenna
Vista Sciences Corporation
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