Final

RVAAP-66 Facility-wide Groundwater Production Well Abandonment Report

Former Ravenna Army Ammunition Plant Portage and Trumbull Counties, Ohio

Contract No. W912QR-16-D-0003 Delivery Order No. W912QR-18-F-0337

Prepared for:



U.S. Army Corps of Engineers Louisville District

Prepared by:



Twinsburg, Ohio 44087

August 6, 2020

Final

RVAAP-66 Facility-wide Groundwater Production Well Abandonment Report

REPORT DO	Form Approved OMB No. 0704-0188					
The public reporting burden for this collection of inf gathering and maintaining the data needed, and comp of information, including suggestions for reducing (0704-0183), 1215 Jefferson Davis Highway, Suite subject to any penalty for failing to comply with a co PLEASE DO NOT RETURN YOUR FORM	ormation is estimated to average 1 hour p leting and reviewing the collection of infor the burden, to Department of Defense, 1204, Arlington, VA 22202-4302. Respo lection of information if it does not display TO THE ABOVE ADDRESS.	er response, includi nation. Send comm Washington Headd ndents should be av a currently valid OM	Ing the time for reviewing instructions, searching existing data sources, rents regarding this burden estimate or any other aspect of this collection puarters Services, Directorate for Information Operations and Reports ware that notwithstanding any other provision of law, no person shall be IB control number.			
1. REPORT DATE (DD-MM-YYYY) 2 06-08-2020	. REPORT TYPE Technical		3. DATES COVERED (From - To) Aug 2018-Aug 2020			
4. TITLE AND SUBTITLE Final Facility-wide Groundwater Monitorin Production Well Abandonment Repor Groundwater Investigation and Repor Ravenna Army Ammunition Plant Re	g Program t ting Services storation Program	3 2 1	5a. CONTRACT NUMBER W912QR-16-D-0003, DOW912QR-18-F-0337 5b. GRANT NUMBER NA 5c. PROGRAM ELEMENT NUMBER			
Portage and Trumbull Counties, Ohio	storation regium		NA			
6. AUTHOR(S) Stefansky, Jasmine		5	id. PROJECT NUMBER NA ie. TASK NUMBER NA if. WORK UNIT NUMBER			
			NA			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Leidos 8866 Commons Boulevard, Suite 201 Twinsburg, Ohio 44087			8. PERFORMING ORGANIZATION REPORT NUMBER NA			
 9. SPONSORING/MONITORING AGENC USACE - Louisville District U.S. Army Corps of Engineers 600 Martin Luther King Jr., Place PO Box 59 Louisville, Kentucky 40202-0059 12. DISTRIBUTION/AVAILABILITY STAT Reference distribution page. 	Y NAME(S) AND ADDRESS(ES)		USACE 11, SPONSOR/MONITOR'S REPORT NUMBER(S) NA			
13. SUPPLEMENTARY NOTES None.						
14. ABSTRACT This Production Well Abandonment F August and October 2019.	Report describes the abandonm	ent activities o	of ten historical production wells that took place in			
15. SUBJECT TERMS groundwater, production well, well at	andonment					
16. SECURITY CLASSIFICATION OF:a. REPORTb. ABSTRACTc. THISUUU	PAGE 17. LIMITATION OF 1 ABSTRACT U	8. NUMBER 1 OF PAGES 1 142	9a. NAME OF RESPONSIBLE PERSON Jay Trumble 9b. TELEPHONE NUMBER (Include area code) 502.315.6349			



Mike DeWine, Governor Jon Husted, Lt. Governor Laurie A. Stevenson, Director

August 19, 2020

TRANSMITTED ELECTRONICALLY

Mr. Kevin M. Sedlak Army National Guard Installation and Environment Clean-up Branch IPA Designation 1438 State Route 534 SW Newton Falls, OH 44444 RE: US Army Ammunition Plt RVAAP Remediation Response Project Records Remedial Response Portage County ID # 267000859207

Subject: Approval of the "RVAAP-66 Facility-wide Groundwater, Final Production Well Abandonment Report"

Dear Mr. Sedlak:

The Ohio Environmental Protection Agency (Ohio EPA) has received the "RVAAP-66 Facility-wide Groundwater, Final Production Well Abandonment Report" at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio dated August 6, 2020. This document was received via email at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on August 6, 2020. The document was prepared for the U.S. Army Corps of Engineers on behalf of the Army National Guard Directorate by Leidos.

The final 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.

As a precautionary response to COVID-19, Ohio EPA is currently operating with most staff working remotely. During this time, we will not be issuing hard-copy mail. This letter is an official response from Ohio EPA that will be maintained as a public record.

RECEIVED AUG 1 9 2020 MR. KEVIN M. SEDLAK RVAAP-66 FWGW AUGUST 19, 2020 PAGE 2 OF 2

If you have any questions, please contact me by email at <u>kevin.palombo@epa.ohio.gov</u>, or call me at (330) 963-1292.

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Sincerely,

Kumlel

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

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CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Leidos has completed the RVAAP-66 Facility-wide Groundwater Production Well Abandonment Report. 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 (USACE) policy.

Jasmine Stefansky Study/Design Team Leader

ldam

Heather Adams, P.G. Independent Review Team Leader

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

Lisa Jones-Bateman, PMP Senior Program Manager

August 6, 2020 Date

August 6, 2020 Date

August 6, 2020 Date

Final

RVAAP-66 Facility-wide Groundwater Production Well Abandonment Report

Former Ravenna Army Ammunition Plant Portage and Trumbull Counties, Ohio

Contract No. W912QR-16-D-0003 Delivery Order No. W912QR-18-F-0337

Prepared for:

U.S. Army Corps of Engineers 600 Martin Luther King, Jr. Place Louisville, Kentucky 40202

Prepared by: Leidos 8866 Commons Boulevard, Suite 201 Twinsburg, Ohio 44087

August 6, 2020

DOCUMENT DISTRIBUTION for the Final RVAAP-66 Facility-wide Groundwater Production Well Abandonment Report Former Ravenna Army Ammunition Plant Portage and Trumbull Counties, Ohio

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ARNG = Army National Guard NEDO = Northeast District Office

OHARNG = Ohio Army National Guard

Ohio EPA = Ohio Environmental Protection Agency

PDF = Portable Document Format

SWDO = Southwest District Office

USACE = U.S. Army Corps of Engineers

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ACRONYMS AND ABBREVIATIONS

ARNG	Army National Guard
bgs	Below Ground Surface
btoc	Below Top of Casing
CJAG	Camp James A. Garfield
DFFO	Director's Final Findings and Orders
FCR	Field Change Request
FWSAP	Facility-wide Sampling and Analysis Plan
H&C	Hunkin-Conley Construction Company
IDW	Investigation-derived Waste
ODNR	Ohio Department of Natural Resources
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PCB	Polychlorinated Biphenyl
PVC	Polyvinyl Chloride
RCRA	Resource Conservation and Recovery Act
RVAAP	Ravenna Army Ammunition Plant
S.U.	Standard Unit
SVOC	Semi-volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USP&FO	U.S. Property and Fiscal Officer
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Leidos has been contracted by the U.S. Army Corps of Engineers (USACE), Louisville District to execute the performance work statement titled "Groundwater Investigation and Reporting Services, Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Camp James A. Garfield (CJAG) Joint Military Training Center, Portage and Trumbull Counties, Ohio." This work is being performed under a firm-fixed price basis in accordance with USACE, Louisville District Contract No. W912QR-16-D-0003, Delivery Order No. W912QR-18-F-0337.

1.1 PURPOSE

Ten historical production wells, determined to be no longer necessary, were abandoned pursuant to the procedures identified within the *Well Abandonment Work Plan for Groundwater and Environmental Investigation Services for RVAAP-66 Facility-Wide Groundwater* (TEC-Weston 2016), herein referred to as the Well Abandonment Work Plan. The purpose of this report is to summarize and document the abandonment of these 10 production wells.

1.2 SCOPE

The scope of this Production Well Abandonment Report is to describe the abandonment activities of 10 historical production wells. Field activities were conducted in August and October 2019 and were conducted as specified in the Well Abandonment Work Plan (TEC-Weston 2016). Applicable field change requests (FCRs) and deviations also are discussed throughout this report.

1.3 REPORT ORGANIZATION

The remaining sections of this report are organized as follows:

- Section 2.0 Background
- Section 3.0 Notifications and Clearances
- Section 4.0 Summary of Field Activities
- Section 5.0 Investigation-Derived Waste
- Section 6.0 References.

The following subsections provide the facility description and the information available from historical production wells within the facility.

2.1 FACILITY DESCRIPTION

The former RVAAP, now known as CJAG, located in northeastern Ohio within Portage and Trumbull counties, is approximately 3 miles east/northeast of the city of Ravenna and 1 mile north/northwest of the city of Newton Falls (Figures 2-1 and 2-2). The facility is approximately 11 miles long and 3.5 miles wide. The facility is bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad to the south; Garrett, McCormick, and Berry Roads to the west; the Norfolk Southern Railroad to the north; and State Route 534 to the east. In addition, the facility is federal property, which has had multiple accountability transfers amongst multiple Army agencies, making the property ownership and transfer history complex. The most recent administrative accountability transfer occurred in September 2013 when the remaining acreage (not previously transferred) was transferred to the U.S. Property and Fiscal Officer for Ohio (USP&FO) and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a military training site (Camp James A. Garfield).

2.2 HISTORICAL PRODUCTION WELL INFORMATION

Limited information exists regarding the historical production wells located at CJAG. With the exception of Production Well 96, which is located near a historical homestead, these production wells were installed at the former RVAAP during World War II. Most of these wells were drilled in the early 1940s by the Hunkin-Conkey Construction Company (H&C). At the time, they were considered "temporary construction wells." It is not believed that the temporary construction wells were used for drinking water. No records, public or otherwise, are available to document that these wells were sealed before their abandonment.

The *Former Water Production Wells and Oil and Gas Wells Survey* (Vista 2013) identified 44 historical production wells at the facility. Of the 44 wells located, 38 were identified visually and 6 were identified as geophysical anomalies at their expected locations. Prior to the well abandonment activities described in this report, 25 wells have been properly abandoned under the RVAAP restoration program and 9 wells were properly abandoned by OHARNG. The 10 remaining historical production wells, abandoned as discussed in this report, are presented in Figure 2-2.



Figure 2-1. General Location and Orientation of Camp James A. Garfield



Figure 2-2. Location of Production Wells Abandoned in August/October 2019

Groundwater Investigation and Reporting Services Facility-wide Groundwater Monitoring Program Production Well Abandonment Report

The following notifications were provided and clearances were obtained prior to mobilization and production well abandonment activities.

3.1 UTILITY CLEARANCE

On September 24, 2018, Leidos submitted via email to the Army National Guard (ARNG)/OHARNG the maps of the wells and access routes for utility clearance. ARNG coordinated utility clearance with the facility's Department of Public Works Office (Engineering), and the utility clearance was verbally provided to Leidos on September 25, 2018. No unknown subsurface utilities were encountered during any of the production well abandonment activities.

3.2 OHIO ENVIRONMENTAL PROTECTION AGENCY NOTIFICATION OF FIELD WORK

In accordance with the Director's Final Findings and Orders (DFFO), Section XIII, #28, for the RVAAP Restoration Program, two field activities notifications were submitted to the Ohio Environmental Protection Agency (Ohio EPA) on August 22, 2019 and September 10, 2019. These notifications are provided in Appendix A.

The following subsections describe the production well abandonment activities that were conducted in 2019. Appendix B contains the field notes and production well abandonment records used in the field. Appendix C contains applicable FCRs.

4.1 SITE RECONNAISSANCE

Leidos and Frontz Drilling, Inc. conducted an initial site visit on August 30, 2018. This site walk was performed to identify the production wells and assess if revisions to the Well Abandonment Work Plan (TEC-Weston 2016) were required. The coordinates provided on the *Former Water Production Wells and Oil and Gas Wells Survey* (Vista 2013) assisted in locating all of the production wells. These coordinates are provided in Table 4-1 (presented at the end of Section 4). All production wells were identified, with the exception of Production Well 18.

In addition to the physical location of the production wells within the facility, historical information regarding these production wells was gathered. Appendix D contains the Water Well Logs and Drilling Reports for all of the production wells, with the exception of Production Well 96. Due to the age of the wells, no well construction diagrams exist for the 10 production wells. The historical well records are limited to total depths, casing diameters, some general yield estimates, and general geologic descriptions.

Subsequent to the site walk conducted on August 30, 2018, it was agreed upon by the stakeholders that the well abandonment activities be postponed until the ground surface was drier so that less ground disturbance would occur.

4.2 MOBILIZATION

On August 26, 2019, a site reconnaissance was conducted to locate the production wells, measure the depths of the production wells, and disinfect the production wells that had water.

4.2.1 Well Depth Measurements

Table 4-1 presents the anticipated depths of the wells (based on historical records) and depths measured during the site walk on August 26, 2019. The well depth at Production Well 8 was measured on August 27, 2019 after the well cap was removed using a torch, as described in Section 4.3.1. The obtained depths of the wells were shallower than the record depths provided in the Well Abandonment Work Plan (TEC-Weston 2016) and the Water Well Logs and Drilling Reports.

Due to depth discrepancies between the measured depths of production wells during the site reconnaissance and historically reported depths, two split spoon samples at Production Well 35 were collected on August 27, 2019 to determine the origin of the potential obstruction. Samples consisted of soil, silt, clay, and some shale. After these samples were collected, confirmation from the Army was received to grout the wells in place without removal of obstructions.

As agreed to with the Army, to meet the intent of sealing the well to prevent infiltration from the ground surface, the approach to abandon the wells with obstructions was as follows:

- Add grout to the well up to the ground surface;
- Assess the well after 24 hours to determine if grout is deeper than the ground surface (i.e., from settling or obstruction breakthrough); and
- Add more grout up to the ground surface, if necessary.

4.2.2 Disinfection

The State of Ohio Technical Guidance suggests that unused potable water wells undergo disinfection with a chlorine solution to kill any bacterial organisms that may exist in the water and to prevent contamination of wells that are located downgradient in the aquifer. Although the production wells were not believed to be a potable water supply, the Well Abandonment Work Plan (TEC-Weston 2016) required disinfection of wells containing water that might come in contact with the aquifer during/after abandonment.

The Well Abandonment Work Plan (TEC-Weston 2016) recommended the use of calcium hypochlorite tablets in solution to disinfect the production wells. However, as agreed with ARNG on August 23, 2019, liquid chlorine was used to disinfect and prevent bacterial contamination of any wells that may be downgradient from the sealed well within the same aquifer. Since water from abandonment activities would not come in contact with the aquifer, chlorine was not placed in wells that did not have water or the artesian Production Well 63. Table 4-1 presents the quantity of chlorine placed into each well.

4.2.3 Access Routes and Vegetation Removal

Appendix D of the Well Abandonment Work Plan (TEC-Weston 2016) established access routes to the production wells. These access routes were used for the production well abandonment activities, with the exception of Production Wells 63 and 96. Revised access routes for Production Wells 63 and 96 are discussed in the following subsections.

To implement the well abandonment procedures, vegetation was cleared along the access routes where necessary. Vehicles capable of off-road travel were used to avoid disturbing the ground surface to the extent possible. Access routes to the well locations were cleared using a brush cutter and other relevant above-grade vegetation removal equipment. The field team was able to work around and gain access without removing trees larger than 3 inches in diameter.

4.2.3.1 Production Well 63

Since the time of the Well Abandonment Work Plan (TEC-Weston 2016), the pond at Production Well 63 had receded significantly. Using more updated site information, minor revisions to the access route to this production well were made, as presented in FCR LEIDOS_FWGW_008.

4.2.3.2 Production Well 96

During site visits to Production Well 96, the access route specified in the Well Abandonment Work Plan (TEC-Weston 2016) was heavily saturated, and it was anticipated that ground and wetland disturbance during field activities would be significant. In September 2019, a different access route was identified that would have less impact on the ground surface. Accordingly, FCR LEIDOS_FWGW_007 was submitted and approved.

The new well abandonment access route follows an older access route to the area. Using the newly established route resulted in only small saplings (estimated 20 total) being removed and previously fallen trees cleared. The new access route also required crossing a small ditch. The ditch was approximately 30 yards from the well. The FCR specified that mats were to be used such that heavy equipment will minimize impact to this ditch/wetland.

4.3 WELL ABANDONMENT ACTIVITIES

The first round of production well abandonment activities was conducted August 26-30, 2019. The second round of production well abandonment activities was conducted October 2-11, 2019. The well-specific summary of activities is presented in the following subsections. All equipment was decontaminated before moving to the next production well, and decontamination water was captured and stored as investigation-derived waste (IDW) in 55-gallon drums.

Due to the limited construction details of the historical production wells, along with the ages (greater than 70 years) of the wells, no attempt was made to remove the well casings. Other than cutting the casing below grade, the casing was left in place to prevent any mixing of groundwater between the saturated zones and bedrock.

4.3.1 Production Well 8

Access to Production Well 8 was gained on August 27, 2019 after the well cap was removed using a torch, as shown in Photograph 4-1. On August 28, 2019, 25 pounds of ³/₈-inch bentonite chips were poured into the well prior to grouting, and 105 gallons of grout were placed in batches into the production well via pressure grouting with a tremie pipe. During the pumping of grout, water was observed to bubble to the surface.

On August 29, 2019, the depth to the seal was measured at 99.7 feet below ground surface (bgs). Subsequently, 178 gallons of grout were placed in batches into the production well via pressure grouting with a tremie pipe. During the placement of grout, water was again observed to bubble to the surface.

On August 30, 2019, the depth to the seal was measured at 42 feet bgs, and the overall production well abandonment effort was temporarily postponed.

On October 3, 2019, the depth to the seal was measured at 40 feet bgs. Thirty-four gallons of grout were placed into the production well via pressure grouting with a tremie pipe. The water level did not

change. The field team suspected a fracture and placed one 50-pound bag of ³/₈-inch hole plug into the production well. At the end of the day, the depth to the seal was measured at 19 feet bgs.

On October 4, 2019, the depth to the seal was measured at 9 feet bgs. Fifteen gallons of grout were placed into the well. The grout reached 3 feet bgs, and the casing was cut. On October 8, 2019, the ground surface was restored by grading, seeding, and mulching the disturbed area at and around the location of the production well.



Photograph 4-1. Removal of Well Cap at Production Well 8

4.3.2 Production Well 17

On October 2, 2019, 68 gallons of grout were placed into the production well via pressure grouting with a tremie pipe to 3 feet bgs. Photograph 4-2 shows the field team performing abandonment activities at Production Well 17. On October 3, 2019, the depth to the seal was measured at 27 feet bgs.

On October 7, 2019, approximately 34 gallons of grout were placed into the production well via pressure grouting with a tremie pipe. On October 8, 2019, the measured depth to the well seal was 2.5 feet bgs. One 50-pound bag of ³/₈-inch bentonite chips was added, and the ground surface was restored by grading, seeding, and mulching the disturbed area at and around the location of the production well.



Photograph 4-2. Production Well 17 Abandonment Activities

4.3.3 Production Well 18

Production Well 18 could not be located. Excavation activities took place on August 28 and 29, 2019, as shown on Photograph 4-3. An approximately 39-square foot area was excavated at the previously surveyed and staked location. Once it was confirmed that the well could not be located, the ground surface was restored by backfilling, grading, seeding, and mulching on August 30, 2019. If Production Well 18 is encountered in the future, proper well abandonment activities will be completed in accordance with the means and methods specified in the Well Abandonment Work Plan for the 2019 production well abandonment activities.



Photograph 4-3. Production Well 18 Excavation Activities

4.3.4 Production Well 21

When the total depths were recorded on August 26, 2019, an obstruction was encountered at 19.2 feet below top of casing (btoc). On October 3, 2019, using pressure grouting tools, the obstruction was pushed to 50 feet btoc. Accordingly, 68 gallons of grout were placed into the production well via

pressure grouting with a tremie pipe. Grout was lost to formation. Suspecting a fracture, the field team placed two 50-pound bags of ³/₈-inch bentonite chips into the production well.

On October 4, 2019, the depth to seal was measured at 36.6 feet btoc, and 68 gallons of grout were placed into the production well via pressure grouting. On October 7, 2019, the depth to the seal was measured at 6 feet bgs. The field team placed two 50-pound bags of ³/₈-inch bentonite chips into the production well and torch cut the casing to 2 feet bgs. The surface was restored by grading, seeding, and mulching the disturbed area at and around the location of the production well.

4.3.5 Production Well 22

On August 30[,] 2019, 50 gallons of grout were placed into the production well. The grout reached 3 feet bgs. On October 10, 2019, the measured depth to the well seal was 5 ft bgs. The field team poured three 50-pound bags of ³/₈-inch bentonite chips to fill the casing to grade. Four feet of the casing were cut below grade, and the ground surface was restored by grading, seeding, and mulching the disturbed area at and around the location of the production well.

4.3.6 Production Well 35

On October 10, 2019, one 50-pound bag of ³/₈-inch bentonite chips and approximately 34 gallons of grout were placed into the production well via pressure grouting with a tremie pipe. The grout reached the surface of the casing, and the casing was cut to 2 ft below grade.

On October 11, 2019, the production well was inspected, and the grout did not settle. The surface was restored by grading, seeding, and mulching the disturbed area at and around the location of the production well.

4.3.7 Production Well 41

On August 27, 2019, 105 gallons of grout were placed in batches into the production well via pressure grouting with a tremie pipe. During the placement of the grout, water was observed to bubble to the surface.

On August 28, 2019, the depth to the seal was measured at 83 feet btoc. Suspecting a fracture, the field team placed four 50-pound bags of ³/₈-inch bentonite chips into the production well to try and seal the fracture. Subsequently, 90 gallons of grout were placed into the production well via pressure grouting with a tremie pipe. On August 29, 2019, the depth to the seal was measured at 18.20 feet btoc.

On August 30, 2019, one 45-gallon batch of grout was placed into the production well, and the grout reached the top of the well casing. On October 7, 2019, the measured depth to the seal was 1 foot bgs. The field team hand dug the well to 3 feet bgs, cut the casing with a grinder, and graded the area to the surrounding grade. The surface was restored by grading, seeding, and mulching the disturbed area at and around the location of the production well.

4.3.8 Production Well 48

On October 8, 2019, 40 gallons of grout were placed in the production well via pressure grouting with a tremie pipe. However, the water level or total depth of water after the addition of grout did not change, indicating a potential fracture.

On October 9, 2019, 2.5 50-pound bags of ³/₈-inch bentonite chips were placed in the production well to plug the potential fracture. In addition, 60 gallons of grout were placed in the production well, and the grout reached the ground surface. Two 50-pound bags of ³/₈-inch bentonite chips were placed on top of the grout.

On October 10, 2019, the production well was inspected, and the grout did not settle. The well casing was cut below grade, and the surface was restored by grading, seeding, and mulching the disturbed area at and around the location of the production well.

4.3.9 Production Well 63

Production Well 63 was an artesian well, as groundwater was flowing out of the top of the existing well casing. Due to the depth discrepancy between the historical record and the measured depth and artesian nature of Production Well 63, an adjusted abandonment procedure was approved in FCR LEIDOS_FWGW_008:

- Fill the production well with $\frac{1}{2} \times \frac{3}{4}$ silica gravel up to 100 feet bgs.
- After 24 hours, measure the depth of the well. If needed, add more silica gravel until the total depth is 100 feet bgs.
- Fill the production well with bentonite chips to a depth of at least 2 feet bgs.
- Cut the casing to a depth of at least 2 feet bgs.
- Backfill the hole with bentonite chips.

On October 8, 2019, a temporary polyvinyl chloride (PVC) riser pipe was placed on top of the existing well. The riser pipe was reinforced and surrounded by using two 50-pound bags of ³/₈-inch bentonite chips because of the artesian nature of Production Well 63.

A path was created to the production well using wetland mats to prevent disturbance to the wetland, and using that path, 21 bags of $\frac{1}{2} \times \frac{3}{4}$ quartz gravel were carried to and emptied in the production well. On October 9, 2019, 74 bags of $\frac{3}{8}$ -inch bentonite chips were added until the ground surface was reached. The temporary PVC riser was removed, and three bags of stone were placed around the wellhead to level the surface. On October 10, 2019, the well seal was examined and remained at the ground surface. Cement was used to plug the surface of the production well.

4.3.10 Production Well 96

On October 2, 2019, hand tools were used to remove soil around Production Well 96. It was discovered that this production well was previously sealed with concrete. In accordance with FCR

LEIDOS_FWGW_005, the concrete pad encasing the production well at the ground surface and all well material to a depth of 4 feet bgs were removed. The well seal was still intact at 4 feet bgs; therefore, the location of the well was backfilled with 10 50-pound bags of ³/₈-inch bentonite chips and was graded to the neighboring ground surface contour.

The well casing was disposed of in a metal scrap dumpster located on CJAG. The broken concrete was used to backfill an existing cistern (approximately 2 feet in diameter and 8 feet deep) previously used from the nearby former homestead. The cistern is shown on Photograph 4-4. The cistern was further demolished in place, and the hole was backfilled and graded to the neighboring ground surface, as shown on Photograph 4-5.



Photograph 4-4. Initial View Inside Camera of Cistern at Production Well 96



Photograph 4-5. Graded Areas After Backfilling of Cistern at Production Well 96

4.4 SITE RESTORATION

Disturbed areas were restored in accordance with the Well Abandonment Work Plan (TEC-Weston 2016). If an area was previously vegetated, the area was graded, seeded, and mulched after site activities were completed. Any ruts caused by vehicles or heavy equipment were tamped down to match the neighboring contour.

4.5 WELL SEALING REPORTS

Appendix E contains the Ohio Department of Natural Resources (ODNR) Water Well Sealing Report e-Forms for each production well that was identified and abandoned. At the direction of ODNR, an e-Form was not submitted for Production Well 18, which was not found.

							Recent Field		
							Measurements		Chlorine
				Casing	Casing	Recorded	Total	Water	Disinfectant
Production	ODNR Well			Diameter	Length	Well Depth	Depth	Level	Added
Well ID	Log Number	X-Coordinate	Y-Coordinate	(in.)	(f t)	(ft btoc)	(ft btoc)	(ft btoc)	(oz)
Well 8	9967214	2367368	554478	6	22.5	175	158.78	19.45	32
Well 17	9967219	2357916	557845	6	12	215	74.5	35.05	29
Well 18	9967081	2349002	548415	6	36.5	228	Well No	Well Not Found in October 2019	
Well 21	9967220	2365472	556968	8	55.5	158	50	10.00	28
Well 22	9967296	2371803	569037	6	11.2	91	26.8	dry	0
Well 35	9967290	2374164	566933	6	11	145	15.37	dry	0
Well 41	9967231	2359449	554449	6	36	130	131.15	4.5	21
Well 48	9967234	2354624	552949	12	10.67	175	28.2	21.58	19
Well 63	9967097	2353790	556509	12	41	214	152.44	Flowing	0
Well 96	None	2344436	551180	4	Unknown	Unknown	2	Dry	0

Table 4-1. Production Well Details

Survey data were obtained from the Former Water Production Wells and Oil and Gas Wells Survey (Vista 2013).

Chlorine disinfectant was not added to production wells that did not have water. Production Well 63 was artesian; therefore, chlorine was not added to disinfect the well.

Production Well 18 was not found during field reconnaissance. If Production Well 18 is encountered in the future, proper well abandonment activities will be completed in accordance with the means and methods specified in the Well Abandonment Work Plan for the 2019 production well abandonment activities.

The top of the well casing at Production Well 8 was greater than 3 feet bgs and not encountered during abandonment activities. The total depth and water levels were measured to ground surface.

On August 26, 2019, the total depth at Production Well 21 was measured at 19.2 feet bloc and water was not encountered. However, on October 3, 2019, the obstruction was pushed to 50 feet bgs, and water was encountered at 10 feet bgs.

A historical ODNR Well Log was not available for Production Well 96, and the casing length and total well depth are unknown.
5.0 INVESTIGATION-DERIVED WASTE

During production well abandonment activities, purge water was collected from each well via an overlay of a metal box (shown on Photograph 5-1), sealed with bentonite to the well casing. Water flowed into this metal box and was pumped into 55-gallon drums or holding tanks. At the end of each day, purge water was containerized in properly labeled containers (55-gallon drums) in a staging area in Building 1036.



Photograph 5-1. Purge Water Containment System

In total, eight 55-gallon drums containing approximately 307 gallons were generated during the production well abandonment activities and staged at Building 1036. These drums consisted of purge water from production well abandonment activities, purge water and decontamination fluids from groundwater sampling activities, and liquids used to neutralize the waste stream.

After the containerization of the IDW liquids from the production well abandonment activities, the pH of the liquid generally exceeded 12.5 standard units (S.U.), making it a potentially characteristic hazardous waste for corrosivity when disposed of. Ohio EPA regulations indicate that if the waste is only hazardous because of corrosivity and no other characteristics, it can be rendered non-hazardous in an elementary neutralization unit. The regulations also state that if the neutralized corrosive waste is subsequently discharged to a sewer or wastewater treatment system, it is not subject to the land disposal restriction. Based on generator knowledge from prior production well abandonment projects, it was assumed that the waste was only hazardous due to corrosivity and no other characteristics.

To neutralize the liquid in these drums, a total of 8 gallons of muriatic acid and 41 pounds of baking soda were added to the drums. The muriatic acid was added if the drum needed a reduction in pH, and baking soda was added when the liquid in a drum needed an increase in pH. The pH was measured using pH strips or a pH meter during the neutralization process.

Subsequent to this treatment, one composite sample of the eight drums were collected per Section 8.4 of the *Facility-wide Sampling and Analysis Plan for Environmental Investigations* (SAIC 2011), herein referred to as the Facility-wide Sampling and Analysis Pan (FWSAP), to characterize the IDW in these

drums. Sample FWGIDW-19100-WW was collected for laboratory analysis of 1) metals, herbicides, pesticides, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs) using the toxicity characteristic leaching procedure (TCLP); and 2) total polychlorinated biphenyls (PCBs), total sulfide, total cyanide, nitrate/nitrite, corrosivity (pH), and flashpoint to characterize the waste for disposal.

Upon receipt from the laboratory, the analytical results were reviewed against the TCLP criteria presented in the FWSAP (SAIC 2011) Table 8-1 (Maximum Concentration of Contaminants for the Toxicity Characteristic) (40 Code of Federal regulations [CFR] 261.24) and Table 8-2 (Maximum Concentration of Hazardous Waste Characterization Analytes) (40 CFR 261.21-23), as well as other applicable Resource Conservation and Recovery Act (RCRA) Hazardous Waste Regulations 40 CFR 261-265. The results are summarized below:

- All analytical results were below the Maximum Concentration for Toxicity Characteristic per 40 CFR 261.24;
- PCBs were not detected;
- The pH for the IDW was 7 and is considered neutral (2 S.U. < pH < 12.5 S.U.); and
- The flash point is $>60^{\circ}C$ (140°F).

Given the observed analytical results and the neutralization of the drums to a pH below 12.5 S.U., it was recommended that the liquid IDW be classified as non-hazardous and non-contaminated. Details of this IDW disposal will be provided in the 2020 Annual Report.

- TEC-Weston 2016. Well Abandonment Work Plan for Groundwater and Environmental Investigation Services for RVAAP-66 Facility-Wide Groundwater. May 2016.
- SAIC (Science Applications International Corporation) 2011. Facility-Wide Sampling and Analysis Plan for Environmental Investigations, Ravenna Army Ammunition Plant, Ravenna, Ohio. February 2011.
- Vista (Vista Sciences Corporation) 2013. Former Water Production Wells and Oil and Gas Wells Survey at Ravenna Army Ammunition Plant and Camp Ravenna, Ravenna Army Ammunition Plant, Ravenna, Ohio. April 2013.

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APPENDIX A

Ohio EPA Notifications of Field Activities

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NATIONAL GUARD BUREAU 111 SOUTH GEORGE MASON DRIVE ARLINGTON VA 22204-1373

August 22, 2019

Ohio Environmental Protection Agency DERR-NEDO Attn: Mr. Kevin Palombo, Project Coordinator 2110 East Aurora Road Twinsburg, OH 44087-1924

Subject: Notification of Field Work, Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, RVAAP-66 Facility-wide Groundwater (Work Activity No. 267-000-859-036)

Dear Mr. Palombo:

In accordance with the Director's Final Findings and Orders, Section XIII, #28, for the RVAAP Restoration Program, the Army National Guard (ARNG) is providing notification of field activities at the former RVAAP (Camp James A. Garfield) prior to the scheduled start date. These field activities involve the production well abandonment. It is anticipated that production well abandonment activities will take place during the week of August 26, 2019.

Please contact the undersigned at (703) 607-7589 or <u>david.m.connolly8.civ@mail.mil</u> if there are issues or concerns with this submission.

Sincerely,

SEDLAK.KEVIN.MIC Digitally signed by SEDLAK.KEVIN.MICHAEL.1254440 HAEL.1254440171 171 Date: 2019.08.22 11:11:21 -05'00'

FOR Mr. David Connolly RVAAP Restoration Program Manager Army National Guard Directorate

cc: Mark Johnson, Ohio EPA, DERR-NEDO Bob Princic, Ohio EPA, DERR-NEDO Liam McEvoy, Ohio EPA, DERR-NEDO Kevin Sedlak, ARNG, Camp James A. Garfield Katie Tait, OHARNG, Camp James A. Garfield Craig Coombs, USACE Louisville Jay Trumble, USACE Louisville Vasu Peterson, Leidos Jed Thomas, Leidos Gail Harris, Vista Sciences Corporation THIS PAGE INTENTIONALLY LEFT BLANK



NATIONAL GUARD BUREAU 111 SOUTH GEORGE MASON DRIVE ARLINGTON VA 22204-1373

September 10, 2019

Ohio Environmental Protection Agency DERR-NEDO Attn: Mr. Kevin Palombo, Project Coordinator 2110 East Aurora Road Twinsburg, OH 44087-1924

Subject: Notification of Field Work, Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, RVAAP-66 Facility-wide Groundwater (Work Activity No. 267-000-859-036)

Dear Mr. Palombo:

In accordance with the Director's Final Findings and Orders, Section XIII, #28, for the RVAAP Restoration Program, the Army National Guard (ARNG) is providing notification of field activities at the former RVAAP (Camp James A. Garfield) 15 days prior to the scheduled start date. These field activities include the groundwater sampling per the 2019 Addendum and continued abandonment of historical production wells. It is anticipated that the field activities will start on Monday, September 30, 2019.

Please contact the undersigned at (703) 607-7589 or <u>david.m.connolly8.civ@mail.mil</u> if there are issues or concerns with this submission.

Sincerely,

Date: 2019.09.10 14:59:25 -04'00'

Mr. David Connolly RVAAP Restoration Program Manager Army National Guard Directorate

cc: Natalie Oryshkewych, Ohio EPA, DERR-NEDO Bob Princic, Ohio EPA, DERR-NEDO Liam McEvoy, Ohio EPA, DERR-NEDO Kevin Sedlak, ARNG, Camp James A. Garfield Katie Tait, OHARNG, Camp James A. Garfield Craig Coombs, USACE Louisville Jay Trumble, USACE Louisville Vasu Peterson, Leidos Jed Thomas, Leidos Gail Harris, Vista Sciences Corporation THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B

Field Forms and Notes

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B.1 Task Team Activity Log

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TASK TEAM	ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well Aba	andonment
ate: (mm/dd/yy): 8126119	Page of
Task Team Members:	
Gabby Gromofsky	Kevin Sedlak (C)AG)
Heather Adams	Bruan Phillips (Frontz)
Katic Tait (RUAAPICIAG)	Brandon (arter (Frontz)
Narrative (include time and location):	
0809 (sabby onsite Heather, "	Latte, and Kevin already @1036
0815 Heather and Kattle offs:	te to Range Control Kevin offsite.
~ Prep for today's activit	-tes.
0829 Heather returns we have	e approval to go to all production
wells from Roinge contr	ol. Levin returns to 1036
0900 perform Health and Sa	Lety Tailgate (Frontz ousite @ 0880)
0950 Depart 1034 (Heather, Gabb,	y, Bryan, + Brandon)
0948 Arrive @ PW 41 DTW	450. DTB 131.15', Diameter 1"
Diginfect well with	21 oz Chlorine bleach Soln.
1005 Depart Well41.	
1012 Arrive @ Well 17. Arrea	is overgrown with push and
HUSKES DTW 35.05 1	DTB 74.50. 6" Diameter Wellis
recorded @~215', Disinfec	+ well with 29 oz chloring breach soln
1031 Depart well 17.	
1038 Avrive @ well 63 for si	He check
1056 Depart well (03	
1106 Arrive @ well 48- DTW 21	.58. DTB 28 20 Disinfect well with
19 oz chlorine hleach sou	1. 12" well
1136 Depart Well 48	
1142 Arrive @ well 18. (puld h	of De Gound. Well is marked but
burild and will require be	No cat to under. uncover.
1210 Depart well 18)
Daily Weather Condition: A.M. 58°	F, partly cloudy calm
PM 76°F	pouche charder /
	, put they clothang
Recorded By: (Signature) 8126/19	QC Checked by: (Signature)
(Oignataie)	(Signature)
07-162(NE)/102507	FTP-1715 Revision 0 4/07/99

TASK TEA	AM ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well	Abandonment
ate: (mm/dd/yy):8(26(19	Page of
Task Team Members:	
BIZIEILY	<u></u>
- turs	and e
Narrative (include time and location):	
1210 Arrive at Well 96 For	- site walk
1300 Dreart INPILAG	
1307 Arrive at well & Cap v	vill not rome off and hot work permit
is required to weld la	poff.
1317 Depart well 8.	
1377 Avril @ Well 21 DTB ;	5 19.20' and well is dry. Do not
disinfect percause well	is dery
1400 Depart Well 21.	
1412 Arrive C well 22 Well	is dry DTB 2680
1450 Depart Well 22.	
1459 Arrive @ well 35 I	STB 15 37 and well is dry Do not
disinfect.	5
1510 Depart well 35 and	leave bobat and traller on access
road	
1530 Arrive @ 1036	
HOUISUM Frontz OFFSILE Health	er and Gabby break down equipment
and demobilize for EOD	3
Leidos offsite Notify Para	ae control.
	0
21 21 8/2011	
Daily Weather Condition: A.M.	(13)
	714 81210111
P.M	
Pecorded By: And Blzwii	<u>ч</u> QC Checked by:
(Signature)	(Signature)
07-162(NE)/102507	FTP-1215, Revision 0, 4/07/99

	EAM ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production W	ell Abandonment
ate: (mm/dd/yy): <u>8127/19</u>	Page of3
Task Team Members:	
Gabby Gromofsky	Bravolon (arter (Frontz)
Heather Adams	Kevin Sedlak (CTAG)
Brygn Phillips (Frontz)	pr/ gkdis
Narrative (include time and location):	
0656 H- Adams arrives	at 1036.
0710 G. Gronofsky arriver	2 at 1036
(1713 H.Adams departs 1	036 to releive access from Range Control.
022 Roveye control access	approval at 22,35 8, and 18.
ND. SCUSS depth d. Efe	nences between yester day's depth to
bottom measurements	s and visionical depth to bottom data
with Kevin Sedlar.	Asked if he wants is to attempt to
remare obstruction	from well or growt above collapse!
possible obstruction	eun would vive us to grout about
BOH without attempti	ng to remove obstructions or collapse in
0802 Frontz (Brandon avol	Bryon) arrive at 1035.
0809 E-Tank frac tank ousit	ę
0812 Hold H+) Tailgate and	atistuss today's activities.
TBLE HEVIN DB32 Depart 1031	o for well abandemment activities (Gabby,
Bryon, Brandon).	
0842 Arrive @ Well 8. Dig a	wound well Hold health and safety brief for
OTTI Not work using woblers	torch to cut casing lid off of well
~ Cartifical welder has to	wear fine and cut resistent evenes leather
abran	····· · · · · · · · · · · · · · · · ·
~ Pull & me extinguisher or	st of truck for accessibility
0934 Well lid off and torch	no love en negoled wait for well to cool.
1003 Total Depty 158.78 a	d DTW is 1945; Disinfact well with lat
Daily Weather Condition: A.M.	F. F. Lant rain, Overcast, calm breeze
P.M. 7	4°F
Recorded By: 3, 3) A 3/2 (Signature)	1/13_ QC Checked by:(Signature)
07-162(NE)/102507	FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET PROJECT NAME: RVAAP Production Well Abandonment 3 2____ ate: (mm/dd/yy): 8/21/19 of Page _ Task Team Members: See Dal Narrative (include time and location): Chlorine Som. Text H. Adams readings. 1031 Receive call from H. Adams. we are not to growt in place on wells that name discrepances between actual depths and depths from historical construction data Plan is to get a sample material @ 15' in well 35 to determine what at shallow depths. ~ Depart well 18 1052 Avrive at well 35 1127 Collect split spoon sample to 17.0° B(5. 0.17'/1.68' Reaven ~ Organic Soil, Silt, 104R 212, wet, nonplastic, 90ft, little shale Gragments, leaves throughout sample. "Bryan returns to truck for another rad 1138 collect split spoon sample from 17' to 18.4' B6S. O.S.3'/1.4' Recovery ~ Same material as previous sample 1144 Receive cell from H. Adams. Decide that because we cannot get 558/274 dvill vig to well to advance split spoon deeper, we will move on to 4. 17. to determine what material is causing reposal @ shallow depths. 1230 Arrive at well IT. 1233 H. Adams arrives of 17. Discuss plan of action with Drill crew. ~ Discover we do not have enough rods to get to the historical depth of well It. Daide to move to well 41. Heather offsite 1252 Arrive at well 41 for abandonment. A.M. Seemal (Daily Weather Condition: P.M. _____ <u> ຕ ອີໄຂງ (ເຊິ</u> QC Checked by: _____ Recorded By: (Signature) 07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET PROJECT NAME: RVAAP Production Well Abandonment ate: (mm/dd/yy): 8[21[19 Page <u>S</u> of Task Team Members: See D. L alun Narrative (include time and location): 1306 Heather arrives at well 41 to drop off 2 drums for purge mater 1310 Heather receives call that we have the go-anead to abandon all wells in place without attempting to determine what material is causing refused at shallow deptus 1315 Heather offsile to 1036. 1322 Perform duill vig inspection. Clear path to well from access road using hand tools. 1430 Mix grout: 3 90 16 bags Type 1-11 portand cement, 12 165 Aquagel Gold Seal powdered bentonite, 27 gallons poteble water 30 gallon batch. Par 1505 Mix grout: 3 90 16 bags portional cement, 12 163 powdered Dentonite, 27 gallours polable water. 30 gallon batch. Pour into well using themie pipe. 1520 water is rising to ~3' BGS, large air bubbles float to surface, and water is retreating down hole. Suspect that there is a fracture in well. Decide to mix third batch to confirm. 1573 Alix gravet "4 9010 bags Type 1-11 portland cement, 15 165 Aquagel Gold seal powerloved bentomite, 36 gallons potable water. 45 gallon and water retreats down hele. Break down equipment 1611 Depart Well HI. 1615 Arrive @ 1036 and demobilize. 1630 All prosonnel offsite E.O.D. Daily Weather Condition: A.M. See p.1 P.M. See pl Becorded By: August Je 8127/11 QC Checked by: 20 (Signature) 07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM A	CTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well Aban	donment
ate: (mm/dd/yy): 828/19	Page 1 of 3
Task Team Members:	
Gabby Cromofeky	Levin Sedlar (CJAG)
Heather Adams	Bryan Phillips (Frontz)
Jed Thomas	Brandon Carter (Frontz)
Narrative (include time and location):	
0715 Heather arriver @ 1036.	
0717 Levin arrives @ 10310.	
0738 (rabby arrives @ 1036.	
0746 Frontz arriver @ 1036.	
0750 Jed Themas arrives @ 1034	,
0756 Hold H+S Tailgate.	
0802 Heather departs 1036 for	Range control approval.
0810 Heather reforms. We have	access to all wells. Drill crew departs 103
0822 Drill avers arrives at well 4	. Grout is at 83' BGS and we can feel
the crack in the casing at N	83' BGS. Noticy Heather.
0857 Pour 4 bagg (50 165) 318"	Bentonite chips (Holeplug) into well to seal
the crack in well.	
0843 Gabby, Alex, and Brandon depar	+ well 41 to pick up skid-Steer from
Randall Rd Truck cannot acce	ss well 41 due to soft ground near culupert
0913 Return to well 41. Lood Bolocat	with water, cement.
0950 Inspect Bobcat - horn workin	9. parking break working, trackane time
tor BUSIZONA CHECK CIME Rig Ki	Il switches begin intriner avout.
~27 gallong potable water, 3 900	o begs portland Type 1-11 cement, 12 165
powdered benfonite. 30 Gallon	batch.
1010 Begin powring grout. Tremie.	Diple Dide is @ 75' BGS. Suspect that
the Gracture is not sealed or to	ere is another fracture - water
came up vi' BGS and retreate	d back down the well as air bubbles rise.
Daily Weather Condition: A.M. $63^{\circ} F$,	SUMMY COULIN
PM 170C	
$r.w. \frac{\gamma + P}{\gamma + P}$	
Recorded By: Alust the 8/28/19	QC Checked by:
(ରାସ୍ମାଣଖେଟ)	(Signature)
07.1(7/815)100207	
07-102(NE)/102507	FTP-1215, Revision 0, 4/07/99

TASK TE	EAM ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production We	II Abandonment
ate: (mm/dd/yy): 8/28(19	Page 2 of 3
Task Team Members:	
Alex Louis (Frontz)	Liam (EPA)
Je bablissin	
Kevin (EPA)	/ diam
Narrative (include time and location):	
10 20 Mix second batch grout	to confirm suspected frecture. 30 gallon
batch same recipe as	first baten.
NPour - water came to s	ourface. Fracture may be sealing.
040 Begin mixing third batch	1 to attempt to plug fracture. 30 gallon/Same.
1944 Kevin Sedlar (CJAG), Kev	in (EPH) and Liam (EPH) ansite. Os al
1100 Pour third batch. Water	retreats as air bobbles rise. Tremie
pipe stuck in rement	@ ~ BB' BGS. Decision mode to let
Coment Settle and C	hell grout level later.
122 Jed Thomas ousife.	
1130 EPA, Jed, and Kevin a	offsite. Will meet is at well B.
1132 Jed offsite. will meet	- us at well B.
1152 Devil crew departs u	Jell 411
1200 Arrive at well B J	Jed onsite and EPA out to lunch
1702 Jed offsite Set upon we	11. Sionily pour N/2 Soib bag bentonite
chips into Well 8.	
BIO Begin mixing grout : 3-0	14 16 bags Type 1-11 Portland Coment, 1010 Bouder
bentonite, 30 gallous pok	able water 35 gallons in basen
Pour 30 gallons grout.	
350 Begin serond batch 3	- 90 16 Bags Cement, 10105 powdered
benforite, and 30 pallos	ns potable water 35 gallon batch.
1402 Pour second batch grow	+ NO water vising in casing, pull tremie
pipe out to see where	water, 5 (2151),
Daily Weather Condition: A.M. See	2 p. 1
P.M. See	
Proved A A alas	119 0001 111
(Signature)	QC Checked by: <u> </u>
(oignataio)	(oignature)
07 143(NE) 103507	
07-104(NE)/102307	r 1 P-1215, Kevision 0, 4/0 //99

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well Abandonment
Page 3 of 3
Task Team Members:
See p. 1 and 2
Narrative (include time and location):
1408 Begin mixing third batch grout: 3-20 16 bags Type 1-11 Portland
Cement, 15 165 pourdered bentonite, 30 gallons potable water
35 gallon baten.
1425 Pour grout. water is not visited to surface and team suspects
that there is a practure in the well Decide to let grout
Settle ouprnight and check top of grout level tomorrow
morning. Demobilize equipment, leave well setup for
abandonment, place compression cap on well, put up
cartion tape around work anea, equipment and well
1452 Pepart well 8.
- 1300 Avrive at well 18 to use stid steer to search for
burged missing well.
1515 begin excapating. Actuarite approp. 5 down. Dict MOP Find
Hall Dead - LICH 18 LAR SILLARED TO CAMP INCLA HI CILLEX OLD FIOLA
hack in to we but their their and Boolat
1622 TEAM ONVIORS OF 1036 DEWADILIZE
1630 All personnel offsite FOD
812 8128/19
Daily Weather Condition: A.M. See p. I
P.M. See al
Basandad Bur 91 91 D
(Signature)
07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM	M ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well A	bandonment
ate: (mm/dd/yy): 8/29/13	Page of3
Task Team Members:	
Galoby Groundtsky	Atex Louis (Frontz)
Amanda Sprinz !	Brandon (arter (Frontz)
Kevin Section (CJAG)	Bryan Phillips (Frontz)
Narrative (include time and location):	
Q740 Gabby and Amanda ar	rive @ 1036 Keyn already there.
Q752 Frontz avrives at 107	30
0805 Perform H+S Tailgate	2
0818 Amarda departs by R	was control for access approval.
0822 Amanda returns we h	are access to all wells.
OBSO Depart 10366 Gabby, Ano	inda, Frontz).
0836 Begin excavational activity	ries @ well 18. Did not go down to
3' neglerday, 30 we wi	ill resume diaging
0922 Excavation is 5.51 ×	7' and is 3' alore. well not wated
Begin back filling.	
0942 Back fill complete Surfac	e restoration not complete due to
limitations of equipment	I used Plan to return to smarth out
gurface.	
1006 Depart Well 18 location	
1015 Arrive @ well 8. Begin	abarelonment activities werity CME Will 3. He
1055 Awanda OFFSIH. Grout pour	ed 8128/19 is hardened and tap is @ 997'BGS
109 Begin miking grout: 27	gallons potable water, 3-94 16 bags Type
1-11 portland coment(Quick)	irele portland cement), 15 165 Holepiug Dowdered
bentonite. 35 gallon bate	ch Pour into well using themie dipe.
1/20 Begin mixing grout 27 gal	lons poterble water, 3 - 94 10 bags portland
_ cement, 15 1103 Holepiug pon	idered bentonite. 35 gallon batch. Pour into
well using tremie pipe-	0
Daily Weather Condition: A.M. <u>SS</u> °	F, Sunry, Calur
DM II.	E Suman Colus
A al l main	, sorrigi caure and the
Recorded By: ALT 124/19	QC Checked by: (Signature)
(Signature)	(Signature)
07-162(NE)/102507	FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well Abandonment
ate: (mm/dd/vv): 8/29/19 Page 2 of 3
Task Team Members:
See 0.1
e /alula
Narrative (include time and location):
1148 Mix baten grout: 27 gallous polable water, 3 9416 bays Quickerete
portland coment Type 1-11, 15 1105 Aquagel Gold Seal pourdered bentoning
1205 Anic hatala Ana his 27 a line & anticities interes of all the basis
1200 Mit bateri grout. 21 gallons potable walk, 5 94 10 bags
bentonite. 35 gallon batch. Pour into well osing tremit pipe
1220 Mit batch growt: 30 gallons potable water, 334 94 16 bags
portland cement, 15 105 poundared bentonite. 38 gallon batch.
Pour grout in well using freunce pipe.
* Mixed grout thicker to attempt to seal suspected first ture. Grout
Should be @ Surface but is > 30' BTOC.
1225 Levin Onsite
1235 Amanda calls to discuss taking one of the drillers to assess
access to well que.
1259 Kevin offsite. Still de not have grout @ surface. decide to
Bundband wore to well 41.
1223 Depart A9 well 8.
1349 Avrill af well 41. Amanda arrives @ well 41.
1405 Amanda and Bryan depart well 41 with for well 96.
1410 Depth to growt is 18.20' BTOC Prep for pouring growt @ WellUI.
1523 Amanda ralls and they are on their way back. We will not
have time to pour grout @ well Gabby and Alex depart
Daily Weather Condition: A.M. See p. 1
P.M. <u>Set p.1</u> Recorded By: <u>J. J. Blzglig</u> QC Checked by: <u>C. gluba</u> (Signature) (Signature)
07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

TASK TE	AM ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Wel	li Abandonment
ate: (mm/dd/yy): 8129 (19	Page 3 of 3
Task Team Members:	
See D. 1	
n alide	n falulus
Narrative (include time and location):	
Well 41 to gauge deat	to bottom at well 62
1532 Arrive @ well 63 Dept	n to votion is 152.44' BTOC. Depart.
1546 Return to well 41. Amour	la, Bruan and brandon presing well
for abundance so the	at we can start an avaiting tollow
mornina	
ISAS Demin Lipeli HI HARDE	SOME ME NEIL FOR DOMAGE
ward a stand council (The off and a shall a contact water around
unde porsidina centerra (a	DURER I VIEUR WEIL
1614 Arrive @ 1036 Call Ko	were control to let them know that
we are done for to	day
1018 Frontz offsite.	•
1622 Amanda and Gal	oby offsite. Call Jed Thomas and
Heather Adams to di	SLUSS progress and tomorrow's
activities.	
O 1648 Gabby and Aman	la depart CJAG E.O.D.
812911	
All -	
Doily Woother Condition: A M. 9 -	
	<u> </u>
P.M. 5	L PIL AD
Recorded By: Wast has Black	9 OC Checked by
(Signature)	(Signature)
07-162(NE)/102507	FTP-1215 Pawinian 0. 4/07/00
	117-1215, Kevision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well Abandonment
ate: (mm/dd/vv): 8/solly Page / of 2
Task Team Members:
Gabby Gromofsky Alex Louis (Frontz)
Jed Thomas Branden Carter (Figure 2)
Kevin Sedlak (CJAG) Bryan Phillips (Frontz)
Narrative (include time and location):
OG50 Gabby arrives @ CJAG gate. Prep for tolary's activities.
0708 Gabby arrives @ 1036
0725 Jed arrives @ 1036.
0734 Levin arriver @ 1036.
6802 Aroutz arrives @ 1036- Hold H+S Tailcate.
0817 Jed departs to asin access from savere control.
0823 Jed returns. We have approved to alless all wells. Drill crew
departs 1036.
OB28 Arrive @ Well 41. Confirm CME Kill Switches are working property.
OBSO Mix grout: 4 gor 94 10 bags Avictorete Portland Coment, 36 gallons
potable water 18 165 Aquagel Gold Seal, 45 gallon batch. Pour
USing memile pipe.
0912 Grout is at top of casing All grout used. Begin breaking
down equipment and collect approx. 45 gallons purge water. Label A
0917 Receive text from Jed Thomas that he is departing 1036 for
well 18 location recon, perform site walk @ well les, and paint SCL-
1003 Recipius text from Jed mat he has completed leveling seeding at
Well 13 location.
1020 Receive text from Jed that he has completed site walk @ Well 63.
1045 ALEP offsite with CME Drill Rig and Semi.
1102 Drill Crew departs well 444 41
Daily Weather Condition: A.M. 46°F, party sunny calm
P.M. 79°F Sunny, colm
Provide a production of all
(Signature) QC Checked by: (Signature)
07-162(NE)/102507

TASK TEAM A	ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well Abaa	ndonment
ate: (mm/dd/yy): _8[30117	Page 2 of 2
Task Team Members:	
See el	f,
	In /alala
- Altern	
Narrative (include time and location):	
Hoz Arrive @ well 22	
1320 Jed Thomas onsite @	Wey 22
1323 Jed and Gabby arrive	at well-Bryan and Brandon ane
missing grout in 5 stallow	batches.
* 1 batch grout à JOO mi p	owdered bentonite, 15 Liters Quickrehe
Type 1-11 por Hand cement, 4	Sgallons potable water
1410 10 botches in well. Top of	growt is 3' BGS Pack gear and prep
to depart well 22.	
1422 Jed departs well 22.	
1452 Drill crew departs wel	1 27. Receive text from Jed that we have until 1530
1502 Avrive at well 8. Top of	grout is hard and is @42' BGS. We
do not have enough tim	e to growt today. Brijan and
Braidon secure cargo fo	or travel and Grabby creates
exclusion zone for well.	Use wooden Stakes and caution
take to flag fuell. Photoo	Ingph.
1531 Depart well 8.	
1536 Arrive @ 1036. Unload 2 en	10ty 55 gallon Steel Closed 600 drums
and unload 1 55 gallon St	repl closed top dryn containing approx
HO gallons purge water From	n well HI (generated \$130/19).
1542 All personnel offsite. Itd y	rottfieg Raivee Control.
<u>ии</u> \$1301(1	6
Daily Weather Condition: A.M. See	
PM See a	
(Signature)	QC Checked by: (Signature)
(orgination)	
07 142/810/102607	
07-102(NE)/102507	FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET PROJECT NAME: RVAAP Production Well Abandonment (D8 30/19 ate: (mm/dd/yy): of Page Task Team Members: Jul Thomas - Leidos 9/4/14 alula Narrative (include time and location): \$72\$ Arrive at Blan 1836 have Frac Tank off s. t. ち OSPP Frontz Oh <Mitim в 4 35. ACCESS 18 (min) approval 0820 Gc The WH. s Gu P936 Control APONONA to accias 1000 At Friduction Ł zDart mixture, An Arrier 9101 63 (in wetlands). Ground surface JP to aroun 10 unds to NI VICh dru and 50 1020 ENVINE will 62 i VAAP ΠΦΦ Creck wells Head to Sand on site 1215 1245 Depart printin - ØØ1 Greek 01 Observe 1310 35 Acrus not 143P 35. Stop at Range Depart WE Contro 1540. onsi UNT. Bld 1\$36 1540 Gabb Fra 07 ~~ **Daily Weather Condition:** A.M. Clum. 70sSUMM Cleer P.M. Recorded By: QC Checked by: (Signature) (Signature) 07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well Abandonment
ate: (mm/dd/yy): (0/02/19 Page of 7
Task Team Members:
TIMOTHY Rinkle, Leidos
Bickie FRANTZ
Brandon CARETER FRANTE
Narrative (include time and location):
OT35 ARRIVE ONSITE, UNLOAD ICE TO FREEZER, JOIN THIGHTE AND HAS
MEETING AT 1050.
OBOC FRANTZ DOILING ARRIVES ONSITE (RICKIE + BRANDON) JOIN INZERING
OB35 LEAVE LOSG WITH DRIVERS FOR SHOTGON AND WELL + CISTERN.
0900 ABRIVE AT END OF GRAVES AGRESS ROAD AT 30 And WALAD ROBERT +
MATERIAL FROM FLATSED
0950 ARGINE AT SHOT GUN ANN'T WELL. MATS PLACED ONCE ONTER CREEK BED
RR655ING
1000 Brain Erging and weil 96. WELL IS pluggED/SCALED WITH CONSCRETE AT
n2' below surface. Dy to 4' to cot exsing.
1030 BRANDON DEADS BACK to SUPPORT TRUCK FOR BRINFOR, INVERTER,
EXOTENSION CORD 10 BASS OF HOLE PLUG PLACED IN CISTEN FOLLOWED
by BROKEN CONCRET REMAKE FROM ADduction Well No- SURFACE FILCED
VITH DISTURBED SOIL FROM ACOUND WELL, Clay her we resured to
3' below SURTACE ADOP FELLIN CISTON BEFOR BURGALE LING ENDITED
1100 BRANDAD BACK ONSITE WITH GRINDER
1105 Olde EPA Kavin + LEAN AND KAUNSIAGRAVE GNSME
1115 DRULERS OFFSITE TO GET POLER CARLES FOR INVERTER.
1130 BHO ERD AND KEVIN OFFSITZ
1150 DRILLES RETURN, DES" Cut CARING WITH GRINDZA, BACK FILL WITH
NATUR MATERIALS.
1215 LEAVE WELL & AREA. PALL EQUIPMENT MORE to well 17.
Daily Weather Condition: A.M. <u>OF</u> , clease, hom.d.
P.M. gl"F clear humid
Recorded By: Time & That QC Checked by: The Thomas
(Signature) (Signature)
07-162(NE)/102507 FTP-1215. Revision 0, 4/07/99

TASK TEAM A	CTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well Aban	donment
ate: (mm/dd/yy): 10/02/19	Page 2_ of ?
Task Team Members:	-
Tim Runk, leids	
Rickie FRONTZ	
Biandan Caeses FRONTZ	
Narrative (include time and location):	
1300 Unbacky Equipment At Production	well 17
1345 Begen Green & - great cell, Nosu	free CB-14 1t cuts previously broken off
belaugende. Graut missture a	onsister of 5, 90 16 by Typel-11 Portland,
43 5015 6 mg Benerik gowda with	21 gelles worker. Two mores 10-70 well
growted to 3' below surface. a	8 gallef growt
1445 PARK AND MOVE to PW 2	
1505 TRY to LOCATE PW21 Loc	ATED AND ROUTE ACCESS FOR TOMORROW
1545 DRIVE BACK to 108C	
1600 DRILLERS LEAVE SITE AF	TER CHECKING WITH HEATHER
16300 TUR OFFSITE	
J.	
Daily Weather Condition: A.M. 70	F CLEAR himsel
P.M. <u>&</u> (*	F clear, humid
Recorded By:	OC Checked by: Jul Thur
(Signature)	(Signature)
07-162(NE)/102507	FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET		
PROJECT NAME: RVAAP Production Well Abandonment		
ate: (mm/dd/yy): 10/03/19 Page 1 of Z		
Task Team Members:		
TIMOTHY RUNKLE, LEIDOS		
Rickie Frontz		
Biandon Charles Frantz		
Narrative (include time and location):		
0700 ARRIVE AT 1036 - BEGIN LOND OF EQUIPMENT		
OTOS FRANTZ Drilling ACTIVES ONSIDE		
0710 HAS TANGATE WITH HEATHER, HEATHER CONFIRMS SETUNTIES		
LOITH RANGE CONTROL		
0730 HEAD TO PWB, unloso Equipment, Tay well at ~40 ftbgs		
OBOT Begin themine provit wITH MUX OF 3 90% by Type 1-11 Fortland		
1/4 boy (5016) Dentonite powder writer 21gel water por botch.		
0832 1 batch grast (34g1403) fremito in tole w/ we change to dopth		
WATER is THICK FOR BOTTOM D left (growt usset), Place 1 big		
OF HOLE PLUG CHIPS IN HOLE. LUIII Allow to Sottle And REZURN		
1ATER, Call Sed and Hadher ABOUT STATUS, PARK op to Marc		
to Well 21.		
0930 Undered AT well ZI : Grange to of well AT 33' AND WATER At 10Pl.		
FUR OU OUTSIDE OF TODUNG, NOONSISTEDT MERSURSMENTS WITH PREVIOUS		
Will Measurgmenes. INSTRT GADUT TOLLING TO TRY AND FREE OBSTRUTION		
Obstruction CAMUST BE FASSED BUT UNS PUSCIED TO 50', Discuss		
1200 Observations with HEATHER HEATHER CALLS KEVINS, TEAM		
AGREES TO SHOCK WILL AND GROUT AS IS		
13/3 Black ARRIVES OUR TER LICU STHORK.		
1330 BRANCO IS NOTIFIED DAD OF FAMILY ZMERGENCY AND MUST LEAVE		
I'M NOTTES LEATHER, COLL EUCLEMENCE OF SUPPORT TREG		
Dille Mather Conditions AND 59°F Frank Child Ro		
Daily weather Condition: A.M. <u>371, roggy, Sight Drezze</u>		
P.M. SOSF, CLEAR, Workid		
Pecorded By: Timy 7 Rudd QC Checked by: Jul Threes		
(Signature) (Signature)		
07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99		

Task Team Members:			
SIMOTHY Runkle Leidos			
<u>(Rickie FRANtz</u>			
Brandon CARELER ERANTZ			
Narrative (include time and location):			
1400 Begin Growting of anell, 2 15Ateles (Go gA() of growt USED,			
MINSURED TO 2 50			
1440 TUR CALLS JED WITH OBSERVATIONS AND EXPLANS Grant LOSS.			
JED Countroles Revins, Appround RECIENCE TO Place Benbruk chip			
- Plug IN WELL TO SEAL OF FRACTURES. TJR AND Rickie Place 2			
Bigs of dup in Hour no plugo Fack in Equipment			
1530 Lesue well ZI AREA			
1535 TUR TAG TO AT PWS = 19 43			
1545 CHECKIN WITH HEATMER AT LOSG. Rickie Leaves Sit			
1555 TJR TAGS PULT AT 27' bys, Return to 1036			
1620 Lerve site			
Int			
Daily Weather Condition: A.M. <u>59°F, Forgy</u> , Straht basers			
PM BOSE, CLEAR, Humal			
him tom			
QC Checked by: (Signature)			
07-162(NE)/102507			

TASK TEAM ACTIVITY LOG SHEET				
PROJECT NAME: RVA	AP Production Well Ab	andonment		
ate: (mm/dd/yy): 10,	164/19	Page	1 of	
Task Team Members:				
JIMOTHY Runkle	LEIDOS	Kickie	FRANTZ	
Jed Thomas	Leidor	JEFF	FRANAZ	
Narrative (include time a	and location):			
0700 TIM AND	Jed ARRIVE Ons	site at 1036		
0710 Kovin SA	Reives AT 1036			
0735 Frontz An	IUES ONSITE	COMPLETE HAS	TAILGATE.	
0750 JED CON	FURMIS ALLESS WIT	TH RANGE CONROC		
0800 HEAD do ve	121			
0810 UnleAD EQ	UIDMENT AND MO	ove to well her	<u>p</u> _	
0850 STALT	TAG WELL AT S	36.6', START	TREMIE GROUT, BATCH	
OF GALLT &	FOULAUS 3,9016 by	AS PortLowo Kiby	Bostank pour dery, 21 gut 1 marca	
Two BATCHO	S OF GROUT TREASE	DIN WELLISMA I	rout to surfice. GB gallen of growthe	
0955 Begin pulli	in component at a	of well 21 Aeri	to lose on truck. IDW	
tank cont	Ains~90 gal of wal	LOR (FROM WELLS 17, 1	B, and 21)	
1035 More to	PW8. Tag WZ	ac AT 9 ft bas	. Dig out casing to s'	
(ut. 2.75	OASING OFF, MIX	2 by Perdlano w/t	enterite (15 galles bostch) two	
grant we	ell to 3!	0	-	
1205 Kevinspusite to observe condition and hences after Smin.				
1230 Surface Anish camplete, Been pretting commont				
1245 HEAD TO	BUILDING 1030	Phee Iow ,	US. DE RUILDING - CBIN FROM	
WELL 96 0	us taken to rehal	Scrap dumpster	by Kevins S. Has making	
1305 Fronte OFFS	ITE		L	
1330 TJR OFF	5178			
	- T <u>j</u> l	1 ///		
	\mathcal{O}	10/04/10		
Daily Weather Condition	n: A.M. <u>55</u>	F, Cloudy, S	Slight breeze	
	P.M. <u>60</u> 2	F, PArty claud	ly Suph wind	
Pecorded By: TIMOTHY Bunkly QC Checked by: JA Thank				
(Sig	gnature)	_	(Signature)	
07-162(NE)/102507			FTP-1215, Revision 0, 4/07/99	

TASK TEAM ACTIVITY LOG SHEET PROJECT NAME: RVAAP Production Well Abandonment Page 1 ate: (mm/dd/yy): 10/07/19 of Task Team Members: 500'2J LIMOTHY Reakh FRONTZ Brian Phillips BINNOW CROTTER FRONTZ Narrative (include time and location): OTOO ARRIVE AT 1036, Unload 155 MAD PREP CODER. Complete HAS TOURATE WAWS TEAM OB20 HEAD to BKG MINIOZI to watall was cap Ference Protection Fithing 0830 worker FITTING, complete Dawnet procedure 0845 Return to 1036 Fortz ARRIVES on Ste, TAIGATE IN, TRANSPOR GOUL or roduction well writer to drums in 1986. Loss trucks Mare to PW 17 intered groupment. Mix batch of grout & 9016 the 1010 PERTIANOL 1-11 depe and Ver bay boston teres the 21 gel entres R. to suffere change are I'll grout well 1100 Treme great complete. Clean up neer Mare to well PW 41. They were AT I' Below Son free, MAND 114N DIG were to 3' below surface. Cut with BRINDER AT 2' Sylow and brochill ARE. Pack up Glospont Move to PW21. Togenell at & ft.bgs. Place 2 buys of Lete pl 1315 Torch est cram 2" below grapts and Brekfill. 1530 Marcart of PW21 AREA and had to USG to unlong 1420 FRONTZ DRILLING Leaves Ste 1630 Tim bound Site A.M. 55°F. Overcast slight Breeze Daily Weather Condition: P.M. 58°F Quert, Shalt breeze Pecorded By: Timonty Rinkly QC Checked by: ____ (Signature) Signature) 07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET PROJECT NAME: RVAAP Production Well Abandonment ate: (mm/dd/yy): 10/08/19 of Page Task Team Members: LEDOP Truotity Kinkle Brim Philles Frontz RANden CARRER Fants Narrative (include time and location): ARRIVE ONSITE, Complete Hes + TAIDATE MEETING. LOAD EDUIDMONT 0730 FRONTZ DI, 11M ARRIVES COSIDE FOR TH LADOTT. (1750 UNIONO And pro Laurement les vell Co3 19010 of steel well crown Arres to sceno dumpster heads to well 63 Ponto 110,000 04 empokizen load gravel 0-140 germant/material 101,1163. Used 8 Sra hal casma, Benn cluseing PATA THEO UDDER FORESTED Apr. o 1045 Frail almared BCING MOTTING AND ADDUC INTO WETCHND LOSA SCO Ace 21 bays of 3/4x1/2 gurate gravelin Leave MATTING IN PLACE AND BLEG At 82' ANT TH Mare to PW17 1200 better 2.5-ft bro, Add I beg hole (HW17 At TOM 1720 R linch altopet sdears at PW8 1230 Cod 400 12.50 17 Seed and StRAC, Ad to site. Hother leads why to PW48 the 12.55 FRANTZ RALM LOBG QUEE TEAM HUAS AND PETURNS 4952555D 40 EGRESS AND INGRESS OF More Earonant to PW48 1320 A.M. SOSF, Desuse Feg. over CAST Daily Weather Condition: P.M. COSF, CKAR, NO BREEZE _____ QC Checked by: Pecorded By: 1mg (Signature) (Signature) 07-162(NE) 102507 FTP-1215, Revision 0, 4.07 99

PROJECT NAME: RVAR Production Well Abandonment			
ate: (mm/dd/yy): <u>Aro (0100(11</u>) Page of			
Task Team Wembers:			
Princip Furnice Const			
BIANDAN CARTER FRONTZ			
Narrative (include time and location):			
1430 Gre batch of post in hole 4.2 gold bry cemerk tube 1-11 ml			
1/4 bay beforte paudice with 36 gri untra. No allige is a the			
Tevel OR TO, 40 gillen BATCH OF GROWT			
1530 Begin a tell up expirment and more to 1036.			
1500 maleful 40 gallon of IDW water to drum in 1036.			
1615 FRONTZ offsile			
Maso The offen			
14/			
1 118			
16/00/11			
Daily Weather Condition: A.M. 503 Danse For Overeast			
P.M. Coo Mese No Breeze			
Pecorded By: Tem MAC OC Checked by: Tem Thing			
(Signature) (Signature)			
07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99			
TASK TEAM ACTIVITY LOG SHEET			

PROJECT NAME: RVAAP Production Well Abandonment			
ate: (mm/dd/yy): 10/09/19 Page 1 of 2			
Task Team Members:			
TIMETHY Righter Leidog			
Bruan Phillips Frontz			
Brundon CAREER Fronte			
Narrative (include time and location):			
OTOG APRILE ONSITE, FRONTE ONSIKE, Complete Has - Trangesk			
Medy wITH HEATHER, LOAD CEMENT ON TRUCK, Approve Rock			
WITH RANGE CONTROL			
0730 DRIVE to PW48 AREA			
OTHO ARRIVE AT PW 48 DEER - 2,5 Big OF HOLE PIUG PLACED IN LIGEL			
TREMis grant & Borces Good mus 12 Well (G BAG Portuned + Bert 60gs)			
much. Brant pump/hose clogged. Ray as weeks to elumand			
0730 Branden And TSK leave to pick up noce concernent the play			
from 1086			
1000 Brandon and TSR Return to PW48, Grand Dump thoses demed			
Mix ANOTHER 3 By Grant + Retend mo AND AREMIX w well. Graded			
to surface. Place 2 Boy have plug on Tol OF GROUT . Approximity			
BO ALLI & RUDR LATER IDW GENGRATED			
1070 Been pulling computent ar			
11 10 More to Bully 1036 to drawsfor DL2 mo pick up hole play			
1 DW TROUSFERED TO 8 droms			
1215 FRONTZ OFFITE FOR KUNCH.			
129) FROUTE RETURNS, march well les. LAy well At 71.3 for bes			
Move partiet Note Blog into parta. Place 10 buys Dillo in ware			
1400 LAY well At 57 feet, Vista Rathe, Kevin, and Jed Overla			
1915 VISA, KALIE, KOULD AND SEA TRAVE, PACE ANOTHER I'S			
Daily Mosther Condition: AM 54°F Place of 11 30 1000			
Daily Weather Condition. A.W. <u>Str Cours Stagur Dice 22</u>			
P.M. GO'S CLEAR, SI. 14t KREER			
Pecorded By: 1.moth 7 Runkle QC Checked by: Ju The			
(Signature) (Signature)			
07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99			

TASK TEAM	ACTIVITY LOG SHEET
PROJECT NAME: RVAAP Production Well Aba	ndonment
ate: (mm/dd/yy): 10/9/19	Page 2 of 2
Task Team Members:	
Timoty Riske Leidos	
Biyon Phillips Trente	
Poronder Caster Fronte	
Narrative (include time and location):	
1520 Placed HUDTHER 43 DA	as of whe plug inswell. Plugged to
Surface, Total of 74 6	ins used. 3 bys of store placed
Abouch wellhers to lovel	surface.
1530 Begen Polling Ellipment (aut AND Kend to 186
1600 Transfer patable custer	to IDW Drums At LO3C
1630 ALL OFFER	
2	M
	AF
	Lafelly
	101
Daily Weather Condition: A M 54	OE Maan Stalet Broom
	Fictural, staffer hand
P.M. <u>Leos</u>	3 Cleare Hy Darey
Pecorded By: Tang 7967	QC Checked by:
(Signature) ((Signature)
07-162(NE)/102507	FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET PROJECT NAME: RVAAP Production Well Abandonment _____ of ___2 ate: (mm/dd/yy): 10/10/9 Page Task Team Members: Turth Riskle Leikes Bruan (thillog Narrative (include time and location): IDW drom pH_ 6700 Serve ausite TSR tests FRANSTY NORIVER DUSITE Toplate 1. onth Heating Ann ALLESS WITH LENGE CONTRA 0715 nai FOR GADALAED Plus Surface with 1730 I and AREA. Stow trucked AREAS CUM 135 To the Borrow wells 22 0 on Mar to 0920 Pick up anomat Installes AF 10.3C More Edwardinit 0945 well 22/35 prep 40 Unlose comment at up 35 1000 1135 AT 15 feet Below Surfree. Add 1 by at 1045 Hen I botch af grout. 3 9016 brogs Type I-11 bag bestonde pourder with 21 gal of water 1110 Pull out current from well 35 ACTO Surface finished Loginde with BAG OF Top Soil. 2 chang 1122 More to well PW 27 Bentonite chip the well from 5' do grape apier 3 Sighde plus 1200 sheeps a 4' gosim oto, 12 below a Fullcover 2 ABae Topson 1. a Rolling Fourprient out of PW?? AREA Brek to 1036 1250 Bar 1330 FRONTZ 94 ATTACA "PHIENT OFFSITE TODAY A054D OF CONFIRMING SOffled Lell Puzz, ST PW35 50's clear sight breeze **Daily Weather Condition:** A.M. P.M. 505 clear, slight breeze Recorded By: _____ QC Checked by: ____ (Signature) (Signature) 07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET		
PROJECT NAME: RVAAP Production Well Abandonme	nt	
ate: (mm/dd/yy): <u>lolloll9</u> Task Team Members: <u>Tinjotary Rinke</u> LEioos Bryon Phillips Frante	Page 2 of 2	
Narrative (include time and location): 1400 Bryan CALLS Frontz's MARTA 1445 Frontz HAS directions From Mon Frontz Leaves site. TJR He Settling. No settling observed a scens his to dispose of cot & is no baser in place. Heattie Cosig at 1036. 1515 Return to 1036. Sign court with 1530 LEAVE SITE	RR MGER TO CEALLO GRAVE EQUIPPICATIONS. HE NOS 10 PU-48 to CONFIRM AT PW-48. TIK HEADS to tel CASING. Scrip dumpston confirms with Keurn to leave h HEATHER	
<u> </u>		
	2	
10119 1010119		
Daily Weather Condition: A.M. <u>50s</u> , <u>c(a</u> P.M. <u>50s</u> , <u>e(a</u>	AR, breeze	
Recorded By: Time J Ky/r QC C (Signature)	hecked by:(Signature)	
07-162(NE)/102507	FTP-1215, Revision 0, 4/07/99	

TASK TEAM ACT	IVITY LOG SHEI	ET]
PROJECT NAME: Facility-wide Groundwater RVAAP-66	PROJECT NO	: S eptember 2019 Sam N <i>B</i> SN <i>MENT</i>	pling Event
Date: (mm/dd/yy): <u>10/10/2019</u>	Page	l of	1
Taşk Team Members:			
HATHER Adams			
TIM Runkle			
BILLAN Phillips (FRONTZ)			
Narrative (include time and location):		all .	
DUSS HEATTHER AND TIM ONSITVE	. TIM TESTS	PHIN DRUMS	
0711 FRONTZ ONSITE.			
Q712 CONDUCT HTS TALLATE A	10 Party BI	LIEF.	
10720 HEATHER HEADS TO IDRE FOR	lange conteo	I FUL ALCESS Q	pppduer
AT PRODUCTION WELLS 48,03	, 22, 435.		
0730 TIM AND FRONTZ DEPART R	320		
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Daily Weather Condition: A.M. <u>42°F, C</u>	lan, col		
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(Signature)	С Спескед ру: _	(Signature)	
07-162(NE)/102507		FTP-1215, Revision	0. 4/07/99

TASK TEAM ACTIVITY LOG SHEET			
PROJECT NAME: Facility-wide Groundwater F	ROJECT NO: September 2019 Sampling Event		
RVAAP-66			
ate: (mm/dd/yy):	Page of1		
Task Team Members:			
TIMOTHY JUNKLE LEIDOS J	ED THOMAS CEIDOS		
Brandow CARTER FRONTZ			
Bry An (Phillips FRONTZ			
Narrative (include time and location):			
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RIDS 1036 13 chand up, swee	freezer and refridentor are		
chand out and detrested.			
Call Rance Control, depart fac	, i.t		
Daily Weather Condition: A.M. <u>503</u> , Most	ly Sunny, Slight breeze		
Р.М. <u>NA</u>			
ecorded By: Timeth Thankle OCC	checked by: Jul Ila		
(Signature)	(Signature)		
07-162(NE)/102507	FTP-1215, Revision 0, 4/07/99		

B.2 Production Well Abandonment Record

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Well/Borehole Number:
County: Portage Co. State: OHO
Address or Location: Former RV.BAP/Camp James A. GARfield, RAMMAR OH
Investigative Unit (if applicable): <u>RVAAP-66 Factory-wide Groundwaten</u> Reason for Abandonment: <u>Production well No Conger IN USE</u>
Geologist/Field Supervisor: <u>Gabby Gromodsky</u> Timuratt Runkle Drilling Company: <u>Freentz Drilling</u> Driller: <u>Bry an Phillips</u> Helpers: <u>Brandon Careter</u> JEFF Rickie
Static Water Level:19.45BTOC Date/Time Measured: $@/27/19$ $@1003$ Casing Stick-up Height: NA Total Well Depth: $158,78$ Type of Well Casing: $Stell$ Diameter: $@"$ Length of Well Casing Cutoff During Abandonment: $2.75'$ Final Casing Stick-up Height or Depth Below Ground Surface: $2.75'$
Abandonment Method/Procedure: Disinfect well with Igward of chlorine Solution on 8/27/19. Tremie growted, Surface completion on 10/7/19
Grout Mixture: Portland Cement (Ibs/bags) 90 hs/by x 29 Type: <u>Type 1-4</u> Bentonite (Ibs/bags) 50 hs/by x 2.5 Type: <u>Fast Mixey Paraleo</u> Water (gallons) <u>ZS7 gal</u> 730 korzer Vater (gallons) <u>ZS7 gal</u> 270 gal Total Amount of Grout Used: <u>270 gal</u> 327ga (gallons/lbs/buckets Surface Restoration: <u>Cosing cut below garde</u> , <u>AREA Dack Riled with</u> Matrine Soil, staw and seeded.
Recorded By: Timoth The QA Check By: Dut Thomas

Well/Borehole Number: <u></u> パイ	Abandonment Date: 10/8/19
County: Portage Co.	State: OH
Address or Location: Former RVAAP (La	np James A. Garfield, Ravenna,
Ohio	
Investigative Unit (if applicable): <u>RVAAP-66</u>	Facility-wich Groundweth
Reason for Abandonment: Production well	no longer needed
Geologist/Field Supervisor: Groppy Growno	SKA
Drilling Company: Front Dolling	<u> </u>
Driller: Box Que Plaillins Helpers: Rim when	a Carler NA
Dimen. 151 G-QA Volatips Metpers. By QV (A2)	
Static Water Level: 35.05 BTOC Date	Time Measured: 8/26/19 @ 1012
Casing Stick-up Height:	Total Well Depth: 74.50 BTOL
Type of Well Casing: <u>STERC</u>	Diameter: _6"
Length of Well Casing Cutoff During Abandonme	nt: <u>NA</u>
Final Casing Stick-up Height or Depth Below Grou	und Surface: 3. ft bqs
Abandonment Method/Procedure: Disinfect	vell with 29 oz chlorine bleach
on Stulia. Add 68 gall great on 10/02/1	9. Add 34 gall growt on 10/07/19
Add I by hole plug on 10/0/19 and	1 4016 pag top Soil with Serd/Streams
to complete surface on 10/3/19	
Grout Mixture: Portland Cement (lbs/bags) 90 k	1614 Type: Type 1-11
Bentonite (lbs/bags) <u>50 (6/5</u>	M X Sight ype: Fist-many pounded
Water (gallons) Zugat X 3	<u> </u>
Total Amount of Grout Used: 102 gal	gallons/lbs/buckets
Surface Restoration: Added Jopson (And S	red/straw to grade
-3 -1PM 10/3/	9
Recorded By: Trady Ronthy QA	Check By:
4	1

Well/Borehole Number: <u>21</u>	Abandonment Date: 10/7/19		
County: <u>Portage Co.</u> S	tate: OH		
Address or Location: Former RVAAP/(Amp JAn	nes A. BARFIELD, RAVEDA. OHIO		
Investigative Unit (if applicable): RVANP-66 F.	ic. 1.t wich Groundwister		
Reason for Abandonment: Production Well No longer Needed			
Geologist/Field Supervisor: <u>J.morug Runky</u> Drilling Company: <u>Frowtz Dr. Iling</u> Driller: <u>Bick'e</u> Helpers: <u>Brondon C</u>	NOZER LEFF		
Static Water Level: 15 BTOC Date/T Casing Stick-up Height: 21 1 Type of Well Casing: 5 1 Length of Well Casing Cutoff During Abandonment: 5 Final Casing Stick-up Height or Depth Below Ground	ime Measured: $10/03/19$ (0785 Total Well Depth: 50 Diameter: 71 I Surface: 21 bq3		
Abandonment Method/Procedure: <u>Disinfect wi</u> <u>graxt (68 gollon) lost to formation</u> , Add 2 <u>Add cement growt (68 gollon) on 10/04/19</u> <u>Brek filled on 10/7/19</u> Grout Mixture: Portland Cement (Ibs/bags) <u>90 lbs/18</u> Bentonite (Ibs/bags) <u>50 lbs/64</u> Water (gallons) <u>21 gollons x4</u> Total Amount of Grout Used: <u>136 gollon</u> Surface Restoration: <u>Casing cot below grade</u> <u>MATINE Soil</u>	<u>TH</u> 3.5 CUPS blanch ADD <u>cement</u> <u>bag hok plug to</u> 36.6 (10/03/.9). <u>Cosmy</u> Cot And AREA <u>Marken</u> Cot And AREA <u>y</u> K ¹² Type: <u>I-TI</u> <u>x 2</u> Type: <u>Fast mixing powder</u> <u>gallons/lbs/buckets</u> <u>And backfilled to gaspe with</u>		
Recorded By: Tim Alp QA C	heck By: Juithman		

► leidos production well abandonment record

Well/Borehole Number: 22 Abandonment Date: <u>8130/19 - 10/10/19</u>
County: Portage Co. State: OH
Address or Location: Former RUAAP/Comp James A. Granfield, Ravenna, OH
Investigative Unit (if applicable): RUAAP-66 Facility wide Groundwater
Reason for Abandonment: Production well no longer needed
Geologist/Field Supervisor: Gabby Gromo Esky
Drilling Company: Frontz Drilling
Driller: Bryan Phillips Helpers: Brandon Carter NA
Static Water Level:BTOC Date/Time Measured: 8126119 @ 1412
Casing Stick-up Height: 7 Total Well Depth: 26.80
Type of Well Casing: Steel Diameter:
Length of Well Casing Cutoff During Abandonment: 2
Final Casing Stick-up Height or Depth Below Ground Surface: 2' by s
Abandonment Method/Procedure: Mix grout in Sgallon buckets and four into
vell on 8130/19. (wout is v3' from top of case BGS on 8130/19.
10/10/19 & buy hole plug uses to bring level from 5' bys to ground
SURFACE, GARING out below grade and Surface restand with TOPSON
Grout Mixture: Portland Cement (lbs/bags) 45 168 Type: Type: Type 1-11
Une Valen Bentonite (Ibs/bags) 2.5 165 Type: Aque Seal pourdered bentonit
gallons grout Water (gallons) 4.5 gal
Total Amount of Grout Used: 50 you 10 J-gal buckles gallons/lbs/buckets
Surface Restoration: CASing end below grade and Topsoil applied to ground
SURfree
Recorded By: 21, 22 1-8/20/19 QA Check By:
-5, 21M

Well/Borehole Numbe	r: <u>35</u>	Abandonment Date: 10/10/19
County:	Portage Co.	State: CH10
Address or Location:	FORMER RUANP/Com	p James A. Greheld Ravens
53.	OHIO	
Investigative Unit (if a	applicable): <u>RVAAP-66</u>	Facility wich Groundwater
Reason for Abandonm	ient: <u>Production well</u>	to myer reeded
		V
Geologist/Field Super	visor: Timony Rudely	
Drilling Company:	FRONTE DRILLING	
Driller: Bryon Phillip	Helpers: Brandon	Coorren WA
Static Water Level:	NA BTOC Date	Time Measured: 6/10/19
Casing Stick-up Heigh	nt: Below Grape	_Total Well Depth:
Type of Well Casing:	STEEC	_ Diameter:
Length of Well Casing	g Cutoff During Abandonmer	nt: _2 '
Final Casing Stick-up	Height or Depth Below Grou	Ind Surface: <u>3</u>
		×
Abandonment Method	Procedure: Place o	HOLE PLUGAT
BOTTOM OF WELL	TREMIE GODUT TO SU	space with 27 gallon of groat mix
3,9015 by Poet	lind we 1/4 50 lb buy	pawdeked bentonik >
0		DINTIA
Grout Mixture: Portla	nd Cement (lbs/bags) 906	<u>s by</u> Type: 1-11
Bento	nite (lbs/bags) <u>14 bay x 50 l</u>	by Type: Bukeed bentont
Water	(gallons) 27 geller	
Total Amount of Grou	it Used: <u>3D gollan</u>	gallons/lbs/buckets
Surface Restoration: (int to I'blaugna05 ADR	ed topsal to grape
	- AN21, 10 col 19	
	100	
Recorded By: Tintof	7/1/ QA	Check By:
U		

leidos production well abandonment record

Well/Borehole Number: <u>4</u>	Abandonment Date: 8127119 - 10/7/19
County: Portage Co.	State: OH
Address or Location: <u>Former RVAAP/Lamp</u> Onio	James A. Garfield, Ravenna,
Investigative Unit (if applicable): <u>RVAAP-U</u>	Facility-wade Groundwater
Reason for Abandonment: Production well	no longer needed
<u> </u>	
Geologist/Field Supervisor: (abby Gromofsty Drilling Company: Frontz Drilling	<u>ل</u> ے۔
Driller: Bryan Phillips Helpers: Bravelor	<u>I (arter</u> <u>NA</u>
Static Water Level: <u>4.50</u> BTOC Date/ Casing Stick-up Height: <u>1.00</u> ' Type of Well Casing: <u>Steel</u> Length of Well Casing Cutoff During Abandonmen	Time Measured: $8126119 @ 0949$ Total Well Depth: $131.15' BTOC$ Diameter: $6''$
Final Casing Stick-up Height or Depth Below Group	nd Surface: 3.081
Abandonment Method/Procedure: Disinfect we Cement grout to 83 BGS on 81	27/19. Fracture @ 83' stated with
Granted to serface on 3/30/19, 518 this	Remarked on 10/7/19
Grout Mixture: Portland Cement (lbs/bags)	23 bilingType: <u>T-II</u>
Bentonite (lbs/bags) 50 105 / bo	og × 134 Type: Fastmixing pourder
Water (gallons) 27 gallons	x 7
Total Amount of Grout Used: 240 gallows	gallons/lbs/buckets
Surface Restoration: Cosing Removed below	gMDE AND SURPLER COVEREd
At grade with petrice Soil JR 10	0/7/19
Recorded By: Dull deleting QA	Check By: The Themas

Well/Borehole Number: 48	Abandonment Date: 10/09/19		
County: Portage Co.	State: OHIO		
Address or Location: Former RVAAR/CAMP	James A. Gaefeld, Rovenn		
Ottio	8		
Investigative Unit (if applicable): RVANP-h	6 Facility-wide Groundwater		
Reason for Abandonment: Reduction well	No longen needed		
	·		
Geologist/Field Supervisor: <u>Timority Pinkle</u> Drilling Company: <u>FRONTZ Prilling</u> Driller: <u>Bran Phillips</u> Helpers: <u>Branco</u>	J Coaka NA		
Static Water Level: 2158 BTOC Date/	Time Measured: 8/26/19		
Casing Stick-up Height: Black grape	Total Well Depth: Measure 28,2		
Type of Well Casing: Steel	Diameter: <u>12^{**}</u>		
Length of Well Casing Cutoff During Abandonmen	It: <u>Aud</u>		
Final Casing Stick-up Height or Depth Below Ground Surface: 2 by S			
Abandonment Method/Procedure: TRemie	growted on 10/8/19		
And 10/9/19.			
Tr 10 to the			
Grout Mixture: Portland Cement (lbs/bags) 와	<u>546 x 9</u> Type: <u>I-II</u>		
Bentonite (lbs/bags) 50bs/by y	3/4 by Type: Fast Mixing Pourdee		
Water (gallons) 90 gal			
Total Amount of Grout Used: 100 g.M	gallons/lbs/buckets		
Surface Restoration: ARCA Covered to g	rade with AUTTING Soil.		
Stutia			
Recorded By: Timortty Runkle QA	Check By: Jed Three		

Well/Borehole Number: <u> </u>	Abandonment Date: 16/10/19
County: Portage Co.	State: OH
Address or Location: Former RUAPP	Camp James A. Garfield, Ravenner,
Investigative Unit (if applicable): RVAAG	266 Faciliti-wide Groundwater
Reason for Abandonment: Production	well no longer needed
Geologist/Field Supervisor: (Jabby (uror Drilling Company: Frontz Drilling Driller: Bryon Phillips Helpers: Bra	oden Conter NA
Static Water Level: Flowing BTOC	Date/Time Measured: _1018/19
Casing Stick-up Height: Bellow grant	Total Well Depth: 152
Type of Well Casing: Skeel	Diameter: <u>12</u>
Length of Well Casing Cutoff During Abandon	nment: WA
Final Casing Stick-up Height or Depth Below	Ground Surface: NA
Abandonment Method/Procedure: 10/8/19	Place 21 bys (9016 each) of 1/2 1/4
Inch guarete gravel in well do 32' by	5. 10/5/19 vell tryger bottom or 77.3 Abys
ADD 74 bags of holeplug 3/8" chp	Haliburton 5016 bys to surface.
10/10/19 ADD CONCERTE END IN CASH	4. AND CONCE WITH TOPSIL to gMOC
Grout Mixture: Portland Cement (lbs/bags)	Type: Kat
Bentonite (lbs/bags)	Type:
Water (gallons)	
Total Amount of Grout Used:	gallons/lbs/buckets
Surface Restoration: Top Sall to grape	
, 0,	2 10/10/19
Recorded By: The The	QA Check By: Jut Thing

leidos production well abandonment record

Well/Borehole Number: 96 Abandonment Date: 10 ° 62 ° 19			
County: Portage Co. State: OH			
Address or Location: FORMER RVAAP / CAMP JAMES A. BARBeld			
RAVENDA, OH			
Investigative Unit (if applicable): RVAAP-66 Facility-wide Groundwater			
Reason for Abandonment: <u>Production well we longer needed</u>			
Geologist/Field Supervisor: <u>Tractity Rankle</u> Drilling Company: <u>Frantz Drilling</u> Driller: <u>Rickiz</u> Helpers: <u>Boondoo Cazter</u>			
Static Water Level: NA /DRY BTOC Date/Time Measured: 10/02/19			
Casing Stick-up Height: 1,000 Total Well Depth: 2,000			
Type of Well Casing: Steel Diameter: 4"			
Length of Well Casing Cutoff During Abandonment: 4 length			
Final Casing Stick-up Height or Depth Below Ground Surface: 31 below grant			
Abandonment Method/Procedure: WELL PREUDOSY filled with cement to			
2100' belen gropt. Romme awing to 3' Schon gropt. Backfill with			
NATING Soil			
Grout Mixture: Portland Cement (lbs/bags)			
Bentonite (lbs/bags)			
Water (gallons)			
Total Amount of Grout Used: gallons/lbs/buckets			
Surface Restoration: Native Soil			
To Intig			
Recorded By: I'moth Fruttle QA Check By: The Thomas			

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APPENDIX C

Field Change Requests

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FIELD CHANGE REQUEST NO .: LEIDOS_FWGW_005

PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337 BRIEF DESCRIPTION: Production Well 96 Abandonment Procedure

REQUESTOR IDENTIFICATION NAME/TITLE: Jed Thomas, Deputy Project Manager ORGANIZATION: Leidos PHONE: 330-405-5802
11/3/18
SIGNATURE
BASELINE IDENTIFICATION BASELINE(S) AFFECTED Cost Scope Milestone Method of Accomplishment
AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION): Final Well Abandonment Work Plan for RVAAP-66 Facility-wide Groundwater (May 2016) Section 3.3.2 Grouting/Sealing Process
DESCRIPTION OF CHANGE: Section 3.3.2 of the Well Abandonment Work Plan states the following:
"All wells (i.e., production and monitoring) will be grouted with a bentonite/cement slurry composed of Type I Portland cement in accordance with the Technical Guidance and the FWSAP. In accordance with the Technical Guidance, the bentonite/cement slurry will consist of 5 pounds of dry bentonite per one 94-pound sack of dry cement and approximately 9 gallons of water."
During the site walk and inspection of Production Well 96 on August 30, 2018, the production well appeared to have already been sealed/plugged. The concrete pad and all well material to a depth of 4 ft bgs will be removed. After the well material is removed, if the well is confirmed to be sealed, the production well will be considered abandoned and the area will be restored.
If the well does not appear to be sealed below 4 ft, the Army has approved the use of bentonite chips at Production Well 96 due to the remote location of this well. Additionally, the concrete well pad will be broken up and used as fill to abandon the cistern found adjacent to Production Well 96. The cistern is approximately 2 ft diameter by 8 ft deep.
JUSTIFICATION: There is a long, wooded access pathway to Production Well 96 that traverses around and near wetlands. The route to this production well goes over a small stream bed and near the wells by the SMABS groundwater wells. These areas are probably saturated year round. To minimize the impacts to the access route and these wetlands, bentonite chips will be used for well abandonment instead of the bentonite/cement slurry.
IMPACT OF NOT IMPLEMENTING REQUEST: The vehicles and equipment needed to abandon Production Well 96 will have significant impacts to the wooded access road and wetlands. Use of bentonite chips and reuse of the concrete pad will allow for the contractor to minimize site impacts.

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_005

PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337 BRIEF DESCRIPTION: Production Well 96 Abandonment Procedure

PARTICIPANTS AFFECTED BY I Well abandonment subcontractor.	MPLEMENTING REQUEST:	*****
COST ESTIMATE: \$0 (No cost im	pact to USACE)	
Estimator Signature:	Not applicable	DATE
PREVIOUS FCR AFFECTED 🗌 Y	ES 🛛 NO; IF YES, FCR NO.	
APPROVAL SIGNATURES:		
USACE Representative		7 Nov 2018
Ohio EPA Project Coordinator	Kunfer	<u>//-7-/8</u> DATE
Leidos H&S Manager (if applicable)	Not applicable	DATE
		DATE

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_007

PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337 BRIEF DESCRIPTION: Production Well 96 Access Route

REQUESTOR IDENTIFICATION
NAME/TITLE: Jed Thomas, Deputy Project Manager ORGANIZATION: Leidos
PHONE: 330-405-5802
SIGNATURE 9/11/19
DAGELINE IDENTIFICATION
BASELINE IDENTIFICATION BASELINE(S) AFFECTED Cost Scope Milestone Method of Accomplishment
AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION): Final Well Abandonment Work Plan for RVAAP-66 Facility-wide Groundwater (May 2016) Appendix D – Well Abandonment Access Routes
DESCRIPTION OF CHANGE: Figure D-8 presents the access route to Production Well 96, as specified in the Well Abandonment Work Plan. During a site walk of this access route, the ground was saturated and it was anticipated that ground disturbance may be significant, even with controls put in place.
A recent site reconnaissance has identified an easier access route that will have less impact on the ground surface. Attached is a proposed, revised route to access Production Well 96. The areas within the woods follow an older access route to the area. It is anticipated that only small saplings (estimated 20 total) will require removal and previously fallen trees will need cleared from the access route. There is one area (noted on the figure) in which a wetland will be crossed. This is at the location of a small ditch approximately 30 yards from the well. Mats will be used such that heavy equipment will minimize impact to this ditch/wetland.
JUSTIFICATION: During a site walk of the access route specified in the Well Abandonment Work Plan, the ground was saturated and it was anticipated that ground disturbance may be significant, even with controls put in place. A recent site reconnaissance has identified an easier access route that will have less impact on the ground surface.
IMPACT OF NOT IMPLEMENTING REQUEST: Using the access route specified in the Well Abandonment Work Plan has a potential of significant ground disturbance, even with controls put in place.
PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST:

Well abandonment subcontractor.

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_007 PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337 BRIEF DESCRIPTION: Production Well 96 Access Route

COST ESTIMATE: \$0 (No cost i	mpact to USACE)	
Estimator Signature:	Not applicable	
PREVIOUS FCR AFFECTED	YES 🛛 NO; IF YES, FCR NO.	DATE
APPROVAL SIGNATURES:		
USACE Representative	TRUMBLEJAMES.NAPOLEON Digitality signed by TRUMBLEJAMES.NAPOLEON.#II.1207239727 Jate: 2019.09.12 08:21:11 - 04'00'	12 Sep 2019
Ohio EPA Project Coordinator	Kannell	DATE 9-16-19
Leidos H&S Manager (if		DATE
applicable)	Not applicable	
		DALL

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_007 PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337 BRIEF DESCRIPTION: Production Well 96 Access Route



FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_008

PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337 BRIEF DESCRIPTION: Production Well 63 Abandonment Procedure

REQUESTOR IDENTIFICATION
NAME/TITLE: Jed Thomas, Deputy Project Manager ORGANIZATION: Leidos
PHONE: 330-405-5802
9/11/19
SIGNATURE DATE
BASELINE IDENTIFICATION
BASELINE(S) AFFECTED Cost Scope Milestone Method of Accomplishment
AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION): Final Well Abandonment Work Plan for RVAAP-66 Facility-wide Groundwater (May 2016) Section 3.3.2 Grouting/Sealing Process Appendix D – Well Abandonment Access Routes
DESCRIPTION OF CHANGE:
Well Access: Figure D-7 presents the access route to Production Well 63, as specified in the Well Abandonment Work Plan. Since the development and approval of the Work Plan, the ponded area around the well has receded. A recent site reconnaissance has identified an easier access route that will have less impact on the ground surface. Attached is a proposed, revised route (red arrows) to access Production Well 63.
It is anticipated that only small saplings (estimated 30 total) will require removal and previously fallen trees will need cleared from the access route. There is one area (noted on the figure) in which a wetland will be crossed. Mats will be used such that heavy equipment will minimize impact to this ditch/wetland.
Well Abandonment: Production well 63 has a historically recorded depth of 214 ft bgs and a recently measured total depth of 152 ft bgs. Due to the artesian nature of the well and specification presented in Section 3.3.2 that "pelletized benontite products can be used in wells up to 100 ft deep", the proposed abandonment procedure is as follows:
 Fill the production well with 1/4x1/2 or 1/2x3/4 silica gravel up to 100 ft bgs. After 24 hours, measure the total depth of the well. If needed, add additional silica gravel until the total depth is 100 ft bgs.
3) Fill the production well with bentonite chips to a depth of at least 2 feet bgs.
4) Cut the casing to a depth of at least 2 ft bgs.
5) Backfill the hole with bentonite chips.
JUSTIFICATION:
Well Access:
A recent site reconnaissance has identified an easier access route that will have less impact on the ground surface.
Well Abandonment:
Production Well 63 is artesian and the current total depth (152 ft bgs) is greater than what bentonite chips are
specified for use (up to 100 ft bgs).

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_008 PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337 BRIEF DESCRIPTION: Production Well 63 Abandonment Procedure

IMPACT OF NOT IMPLEMENT	ING REQUEST:	
Well Access:		
More ground and wetland disturba	nce may take place using the older access route.	
Well Abandonment:		
Bridging may occur during the we	ll plugging process if bentonite chips are used for d	epths greater than 100 ft
bgs.		
DADTIODANTS AFERIN		
Well aborderment subsection	IMPLEMENTING REQUEST:	
wen aballuonment subcontractor.		
COST ESTIMATE: \$0 (No cost in	mpact to USACE)	
	mpater to OBACE)	
Estimator Signature:	Not applicable	
		DATE
PREVIOUS FCR AFFECTED	YES 🖾 NO; IF YES, FCR NO.	······································
	N	
APPROVAL SIGNATURES:		
	TRUMBLE JAMES, NAPOLE ON UL 1207220727	12 Sen 2019
USACE Representative	Date: 2019.09.12 08;17:29-04'00'	
		DATE
Ohio EPA Project Coordinator	han the	9-16-19
Leidos H&S Manager (if		DATE
applicable)	Not applicable	
		DATE
L		-

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_008 PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337 BRIEF DESCRIPTION: Production Well 63 Abandonment Procedure



Former Groundwater Production Well 63 access route

APPENDIX D

Water Well Logs and Drilling Reports

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Well Log Number: 9967214

Water Well Log and Drilling Report

Ohio Department of Natural Resources Division of Soil and Water Phone: 614-265-6740 Fax: 614-265-6767



Well Log Number: 9967214		View Image of Original Well Log			ell Log
ORIGINAL OWNER AND LOCATION					· · · · ·
Original Owner Name: U.S.A. RAVENN	AORDIN				
County: PORTAGE	Township: PARIS		Sect	ion Number:	
Address:			Lot i	Number:	
City:	State: OH		Zip (Code:	
Location Number: 113	Location Map Year: 1945		Loca	ation Area:	
Latitude: 41,180756	Longitude: -81.051191				
CONSTRUCTION DETAILS					
Borehole Diameter: 1:	Borehole Depth: 1: 175 ft			Depth to Bedroc	k:
2:	2:				
Casing Diameter: 1: 6 in	Casing Length: 1:			Casing Thicknes	ss: 1:
2:	2:				2:
Casing Height Above Ground:	Aquifer Type: SHALE				
Date of Completion: 10/1/1942	Total Depth: 175 ft			Well Use:	
Driller's Name: LAYNE-OHIO, COLS					
Screen Diameter:	Slot Size:			Screen Length:	
Туре:	Material:				
Set Between:					
Gravel Pack Material/Size:	Vol/Wt Used:				
Method of Installation:	Placed:				
Grout Material/Size:	Vol/Wt Used:				
Method of Installation:	Placed				
WELL TEST DETAILS					
Static Water Level: 20 ft	Test Rate: 40 gpm			Associated Repo	orts
Drawdown: 80 ft	Test Duration: 8 hrs				
COMMENTS:					
	WELL LOG				
Formations	F	From	То		
YELLOW CLAY		0	15		
BLACK MUCK		15	34		
BLUE CLAY		34	42		
CONGLOMERATE		42	172		
GRAY SANDSTONE		42	172		
GRAY SHALE		172	175		

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Well log questions - Web site questions - Web policies

OHIO WATER SUPPLY BOARD	Well Record No113				
	AAITO HISTPATA	DEI	тн		
Co. Portage Twp. Paris Sec.	976/2/9 SIRAIA	From	To		
Well Location South of Bldg 838 Size 6"					
& W. of Paris-Windham Rd. Map Ravenna	Yellow clay		15		
ance Plant	Black muck	15	34		
Owner U. S.A. Rauenna Ordin Address	Blue clay	34	42		
Driller Layne Date 11/40	Gray S.S. & Congl.	42	172		
	Gray shale		175		
Well Head Elev. or M. P.			Reasonantitan		
Elev. of Ground at Well Approx. 985			1 1		
Pumping Test: 40 GPM-8 hrs., 80' D.D.	X = = A A A A A A				
Static Level	A=2,399,000				
Normal Pumpage	V= 554,800 N				
Quality					
Adequacy of supply					
-					
			· [
Owner's Well No. or Other Designation H.C. #8, Test					
			[]		
Source of Data Col. G.K. Franklin					
Collected by MJB & DHH Date 10/42					
	* Chief Aquifer				

Water Well Log and Drilling Report

Ohio Department of Natural Resources Division of Soil and Water Phone: 614-265-6740 Fax: 614-265-6767



Well Log Number: 9967219

View Image of Original Well Log

ORIGINAL OWNER AND LOCATION				
Original Owner Name: USA RAVENNA	DRDIN			
County: PORTAGE	Township: PARIS		Sectio	on Number:
Address: NEWTON FALLS RD S			Lot N	umber:
City:	State: OH		Zip Co	ode:
Location Number: 122	Location Map Year: 1945		Locat	ion Area:
Latitude: 41.189355	Longitude: -81 084028			1+1
CONSTRUCTION DETAILS				
Borehole Diameter: 1:	Borehole Depth: 1: 215 ft.			Depth to Bedrock:
2:	2:			
Casing Diameter: 1: 6 in	Casing Length: 1:		ł	Casing Thickness: 1:
2:	2:			2:
Casing Height Above Ground:	Aquifer Type: SHALE			
Date of Completion: 10/1/1942	Total Depth: 215 ft		١	Well Use:
Driller's Name: LAYNE-OHIO, COLS				
Screen Diameter:	Slot Size:		5	Screen Length:
Туре:	Material:			
Set Between:				
Gravel Pack Material/Size:	Vol/Wt Used:			
Method of Installation:	Placed:			
Grout Material/Size:	Vol/Wt Used:			
Method of Installation:	Placed			
WELL TEST DETAILS				
Static Water Level: 20 ft	Test Rate: 25 gpm		4	Associated Reports
Drawdown: 40 ft	Test Duration: 10 hrs.			
COMMENTS:				
	WELL LOG			
Formations		From	То	
CLAY		0	12	
GRAY SHALE		12	36	
RED CLAY		36	44	
SILTSTONE		44	100	
WHITE SANDSTONE		100	212	
BLUE SHALE		212	215	
	Printing Tips (opens in new w	vindow)		
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Well log questions - Web site questions - Web policies

https://apps.ohiodnr.gov/water/maptechs/wellogs/appNEW/report.aspx?wln=9967219 12/5/2019

OHIO WATER SUPPLY BOARD	Well Record No. 122				
1.12	O A COOLA STRATA	DE	PTH		
	9967277 SIRAIR	From	To		
Co. Portage Twp. Paris Sec.			~		
Well Location S. Newton Falls Rd. Size 6"					
& East of George Road Map Ravenna	Clay	0	12		
ance Plant	Gray shale	15	36		
Owner U.S.A. Ravenna OrdinAddress	Red clay	36	44		
Driller Layne Date 10/40	S.S. & shale alt.	44	100		
	White sandstone	100	212		
Well Head Elev. or M. P.	Blue shale	212	215		
Elev. of Ground at Well Approx. 1070	24				
Pumping Test: 25 GPM, 10 nPS., 40° d.u. Static Level 20'-60' Date 10/40 Normal Pumpage	X=2,389,500 V= 558,000N				
Quality Use					
Adequacy of supply					
Owner's Well No. or Other Designation H.C. #17, Test		•			
Source of Data Col. G.K. Frenklin Collected by RJB & DHH Date 10/42					
	* Chief Aquifer		_		

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Well Log Number: 9967081

Water Well Log and Drilling Report

Ohio Department of Natural Resources Division of Soil and Water Phone: 614-265-6740 Fax: 614-265-6767



Well Log Number: 9967081			View Image of Original Well Log			
ORIGINAL OWNER AND LOCATION						
Original Owner Name: U.S.A. RAVENN	A ORDIN					
County: PORTAGE	Township: CHARLESTOWN		Section Number:			
Address: GREENLEAF/5		Lot Number:				
City:	State: OH		Zip	Code:		
Location Number: 123	Location Map Year: 1945		Loc	ation Area:		
Latitude: 41.163712	Longitude: -81 117125					
CONSTRUCTION DETAILS						
Borehole Diameter: 1:	Borehole Depth: 1: 228 ft			Depth to Bedroc	k:	
2:	2.			-		
Casing Diamotor: 1: 5 m	Caping Longthy 1			Cooling Thisland		
Sasing Diameter. 1. 0m	Casing Length. 1.			Casing micknes	S: 1: 0.	
Casing Unight Above Crewed					2:	
Date of Completion: 10////042	Aquiter Type: SHALE			Well Lines		
Driller's Name: LAYNE-OHIO COLS	Total Depth: 228 h			well Use:		
Screen Diameter:	Slot Size			Scroop Longth:		
Type:	Material:			Screen Lengul.		
Set Between:						
Gravel Pack Material/Size:	Vol/Wt Used:					
Method of Installation:	Placed:					
Grout Material/Size:	Vol/Wt Used:					
Method of Installation:	Placed					
WELL TEST DETAILS						
Static Water Level: 50 ft	Test Rate: 40 gpm			Associated Repo	rts	
Drawdown: 25 ft	Test Duration: 10 hrs					
COMMENTS:						
	WELL LOG					
Formations		From	То			
YELLOW CLAY		0	26			
HARDPAN		26	30			
SANDY CLAY		30	37			
BLUE SHALE		37	110			
GRAY SANDSTONE		110	120			
		120	130			
		130	218			
		210	220			
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Well log questions - Web site questions - Web policies

https://apps.ohiodnr.gov/water/maptechs/wellogs/appNew/report.aspx?s=c&wln=9967081 12/5/2019

OHIO WATER SUPPLY BOARD	Well Record No. 123				
	DO / TO PISTRATA	DEPTH			
	916/08	From	То		
o. Portage (Twp.Charlestown. Sec.			<u> </u>		
Vell Location At Intersection of Size o	Volley clay		96		
Greenleal & Rt #5 Map Ravenna	Hend non	96	20		
ance Flant	Sandr olar	20	27		
wner U. D. A. Ravenna Ordin Address	Bine shole	27	1110		
riller Date 10/40	Diue share		110		
/	Blue shele	1 2 0	11 20		
Vell Head Elev. or M. P.	Biue snale	120	120		
lev. of Ground at Well Approx. 1100	White sandstone (Sharon	1,1,50	1210		
umping Test: 40 GPM, 10 hrs. 25' d.d.	Blue shale 4	818	228		
tatic Level 50'-75' Date 10/40					
Jormal Pumpage	$X_{=}^{2}$, 300, 100	-			
ormer a militage	V- 548,400N				
Puality Use	y =				
dequacy of supply					
Owner's Well No. or Other Designation H.C. #18, Test					
ource of Data Col. G.K. Franklin					
allocked by BJB & DHH Dets 10/42					
Water Well Log and Drilling Report

Ohio Department of Natural Resources Division of Soil and Water Phone: 614-265-6740 Fax: 614-265-6767



Well Log Number: 996/220		,	View Ima	age of Original We	ll Log
ORIGINAL OWNER AND LOCATION					
Original Owner Name: U.S.A. RAVENN	A ORDIN				
County: PORTAGE	Township: PARIS		Sec	tion Number:	
Address:			Lot	Number:	
City:	State: OH		Zip	Code:	
Location Number: 126	Location Map Year: 1945		Loc	ation Area:	
Latitude: 41.187401	Longitude: -81 057923				
CONSTRUCTION DETAILS					
Borehole Diameter: 1:	Borehole Depth: 1: 158 ft.			Depth to Bedrock	
2:	2:				
Casing Diameter: 1: 8 in	Casing Length: 1:			Casing Thickness	:: 1:
2:	2:				2:
Casing Height Above Ground:	Aquifer Type: SHALE				
Date of Completion: 10/1/1942	Total Depth: 158 ft			Well Use:	
Driller's Name: PUGH WELL DRILLING					
Screen Diameter:	Slot Size:			Screen Length:	
Туре:	Material:				
Set Between:					
Gravel Pack Material/Size:	Vol/Wt Used:				
Method of Installation:	Placed:				
Grout Material/Size:	Vol/Wt Used:				
Method of Installation:	Placed				
WELL TEST DETAILS					
Static Water Level: 27 ft	Test Rate: 57 gpm			Associated Repor	<u>ts</u>
Drawdown: 95 ft	Test Duration: 8 hrs				
COMMENTS:					
	WELL LOG				
Formations		From	То		
YELLOW CLAY		0	12		
BLUE CLAY		12	33		
GRAVEL & CLAY		33	51		
WHITE SANDSTONE		51	150		
SHALE		150	158		
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https://apps.ohiodnr.gov/water/maptechs/wellogs/appNEW/report.aspx?wln=9967220 12/5/2019

OHIO WATER SUPPLY BOARD	Well Record No.	126		
1.17	9967220STRATA	DEP	PTH	
Co. Portage Twp. Paris Sec. Well Location West of "S" Dorma-Size 8" tory & N. Bldg. WP 11 Map. Ravenna ance Plant Owner U.S.A.Ravenna Ordin Address Driller Pugh Date 11/40 Well Head Elev. or M. P. Elev. of Ground at Well Approx. 980 Pumping Test: 57 GPM, 8 hrs., 95' d.d.	Yellow clay Blue clay Clay & gravel White sandstone Shale	0 12 33 51 150	12 33 51 150 158	
Static Level 271 Date 11/40 Normal Pumpage	$\begin{array}{c c} X_{2}, 397, \infty \\ Y_{2}, 557, 000 \\ \end{array}$			
Quality	nois in		, • • •	
Owner's Well No. or Other Designation H.C. #21, Test Source of Data Col. G.K. Franklin Collected by RJB & DHH Date 10/42	••• • • • • • • • • • • • • • • • • •			
	* Chief Aquifer		PTI	

Water Well Log and Drilling Report

Ohio Department of Natural Resources Division of Soil and Water Phone: 614-265-6740 Fax: 614-265-6767



Well Log Number: 9967296

ORIGINAL OWNER AND LOCATION

View Image of Original Well Log

Original Owner Name: U.S.A. RAVENNA	ORDIN			
County: PORTAGE	Township: WINDHAM		Sect	tion Number:
Address:			Lot	Number:
City:	State: OH		Zip (Code:
Location Number: 127	Location Map Year: 1945	5	Loca	ation Area:
Latitude: 41 219102	Longitude: -81,032151			
CONSTRUCTION DETAILS				
Borehole Diameter: 1:	Borehole Depth: 1: 9	1 ft		Depth to Bedrock:
2:	2:			
Casing Diameter: 1: 6 in	Casing Length: 1:			Casing Thickness: 1:
2:	2:			2:
Casing Height Above Ground:	Aquifer Type: SHALE			
Date of Completion: 10/1/1942	Total Depth: 91 ft			Well Use:
Driller's Name: PUGH WELL DRILLING				
Screen Diameter:	Slot Size:			Screen Length:
Туре:	Material:			
Set Between:				
Gravel Pack Material/Size:	Vol/Wt Used:			
Method of Installation:	Piaced:			
Grout Material/Size:	Vol/Wt Used:			
Method of Installation:	Placed			
WELL TEST DETAILS				
Static Water Level: 35 ft	Test Rate: 24 gpm			Associated Reports
Drawdown:	Test Duration:			
COMMENTS:				
	WELL LOG			
Formations		From	То	
YELLOW CLAY		0	4	
BROWN SANDSTONE		4	29	
WHITE SANDSTONE		29	88	
SHALE		88	91	
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D.				
Pr	inclinis Page Return t	o County Search		

Well log questions - Web site questions - Web policies

OHIO WATER SUPPLY BOARD	Well Record No	127	
107 -18	GG67791 STRATA	DE	PTH
Portage Windham See	1107210	From	10
Vell Location Due North of Bldg. Size 6"			
407 & West of Track "B-C" Man Ravenna	Yellow clay	0	.4
ance Plant	Brown sandstone	.4	29
wner U.S.A. Ravenna OrdinAddress	White sandstone	29	88
Driller Pugh Date 11/40	Shale 4	88	91
Vell Head Elev. or M. P.	••• · · · · · · · · · · · · · · · · · ·		1
Elev. of Ground at Well Approx. 980	**		-
tatic Level	X=2,404,000 +2,000		
uality Use	$- \gamma = 56r, 700N$		
dequacy of supply			
Owner's Well No. or Other Designation H.C. #22, Test			
ource of Data Col. G.K. Franklin	· .		{
collected by RJB & DHH Date 10/42			
	* Chief Aquifer		070

Water Well Log and Drilling Report

Ohio Department of Natural Resources Division of Soil and Water Phone: 614-265-6740 Fax: 614-265-6767



Well Log Number: 9967290		V	/iew Ima	age of Original Well Log
ORIGINAL OWNER AND LOCATION	N			
Original Owner Name: U.S.A. RAVEN	NA ORDIN			
County: PORTAGE	Township: WINDHAM		Sect	tion Number:
Address:			Lot	Number:
City:	State: OH		Zip	Code:
Location Number: 140	Location Map Year: 1945		Loca	ation Area:
Latitude: 41 214572	Longitude: -81.027337			
CONSTRUCTION DETAILS				
Borehole Diameter: 1:	Borehole Depth: 1: 145 ft			Depth to Bedrock:
2:	2:			
Casing Diameter: 1: 6 in	Casing Length: 1:			Casing Thickness: 1:
2:	2:			2:
Casing Height Above Ground:	Aquifer Type: SHALE			
Date of Completion: 10/1/1942	Total Depth: 145 ft			Well Use:
Driller's Name:				
Screen Diameter:	Slot Size:			Screen Length:
Туре:	Material:			
Set Between:				
Gravel Pack Material/Size:	Vol/Wt Used:			
Method of Installation:	Placed:			
Grout Material/Size:	Vol/Wt Used:			
Method of Installation:	Placed			
WELL TEST DETAILS				
Static Water Level: 29 ft	Test Rate: 22 gpm			Associated Reports
Drawdown: 8 ft	Test Duration:			
COMMENTS:				
	WELL LOG			
Formations		From	То	
YELLOW CLAY		0	9	
BROWN SANDSTONE		9	30	
GRAY SANDSTONE		30	142	
SHALE		142	145	

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Well log questions - Web site questions - Web policies

OHIO WATER SUPPLY BOARD	Well Record No140		
12 - Il	90/779 DSTRATA	DEPTH	
a Pontage - Windham	110/210	From To	
Co. rorcageTwp. Bindham Sec.			
Well Location Har Of Hangle HBB!	Vellow clay		
ance Plant	Brown sandstone	9: 50	
a II S A Revenne Ordin	Grav sandstone	30 142	
Owner Octore Address	Shale	142 145	
Driller Date 6/91	<u> </u>		
Well Head Elev. or M. P.			
Elev. of Ground at WellApprox			
Pumping Test: <u>22 GPM</u> , Baled, 8! d.d.			
Static Level	X=2,405,000 +1,000'		
Normal Pumpage	VI 567.100 N		
Quality	γ=		
Quanty			
Adequacy of supply			
indequacy of suppry			
Owner's Well No. or Other DesignationH.C.#35., Test			
Source of Data Col. G.K. Franklin			
Collected by RJB & DHH Date 10/42			
	* Chief Aquifer	R.J.B.	

Water Well Log and Drilling Report

Ohio Department of Natural Resources Division of Soil and Water Phone: 614-265-6740 Fax: 614-265-6767



Well Log Number: 9967231

ORIGINAL OWNER AND LOCATION

View Image of Original Well Log

Original Owner Name: U.S.A. RAVENN	IA ORDIN			
County: PORTAGE	Township: PARIS		Secti	ion Number:
Address:			Lot N	Number:
City:	State: OH		Zip C	Code:
Location Number: 144	Location Map Year: 1945		Loca	tion Area:
Latitude: 41 180808	Longitude: -81.077173			
CONSTRUCTION DETAILS				
Borehole Diameter: 1:	Borehole Depth: 1: 130 ft			Depth to Bedrock:
2:	2:			
Casing Diameter: 1: 6 in	Casing Length: 1:			Casing Thickness: 1:
2:	2:			2:
Casing Height Above Ground:	Aquifer Type: SHALE			
Date of Completion: 10/1/1942	Total Depth: 130 ft			Well Use:
Driller's Name: PUGH WELL DRILLING				
Screen Diameter:	Slot Size:			Screen Length:
Туре:	Material:			-
Set Between:				
Gravel Pack Material/Size:	Vol/Wt Used:			
Method of Installation:	Placed:			
Grout Material/Size:	Vol/Wt Used:			
Method of Installation:	Placed			
WELL TEST DETAILS				
Static Water Level: 35 #	Test Rate: 40 gpm			Associated Reports
Drawdown: 14 tt	Test Duration:			
COMMENTS:				
	WELL LOG			
Formations		From	То	
CLAY		0	34	
GRAY SANDSTONE		34	107	
SHALE		107	111	
GRAY SANDSTONE		111	124	
SHALE		124	130	
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Well log questions - Web site questions - Web policies

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OHIO WATER SUPPLY BOARD Well Record No			
	AALTO DISTRATA	DEF	
Dentes Partie	990/231 SINAIA	From	To
Co. Portage Twp. Paris Sec. Well Location North of Tr. 28 & Size 6" west of tr. "JE" Map Ravenna ance Plant Owner U.S.A.Ravenna Ordin Address Driller Pugh Date 2/41	Clay Gray sandstone Shale Gray sandstone Shale	0 34 107 111 124	34 107 111 124 130
Well Head Elev. or M. P.			
Pumping Test: 40 GPM Baled, 14' d.d. Static Level 35' Date 2/41 Normal Pumpage 2	X=2,391,500 ± Y= 554,500 N		
Quality			
Owner's Well No. or Other Designation. H.C. #41, Test			
Source of Data Col. G.K. Franklin Collected by RJB & DHH Date 10/42			
	* Chief Aquifer	Ų	R.J.B.

Well Log Number: 9967234

Water Well Log and Drilling Report

Ohio Department of Natural Resources Division of Soil and Water Phone: 614-265-6740 Fax: 614-265-6767



Well Log Number: 9967234		,	View Ima	ge of Original W	ell Log
ORIGINAL OWNER AND LOCATION		<u></u>			
Original Owner Name: U.S.A. RAVENN	AORDIN				
County: PORTAGE	Township: PARIS		Sect	ion Number:	
Address:			Lot I	Number:	
City:	State: OH		Zip (Code:	
Location Number: 151	Location Map Year: 1945		Loca	ation Area:	
Latitude: 41 178774	Longitude: -81 097992				
CONSTRUCTION DETAILS					
Borehole Diameter: 1:	Borehole Depth: 1: 175 ft			Depth to Bedroc	k:
2:	2:			·	
Casing Diameter: 1: 12 in	Casing Length: 1.			Casing Thicknes	er 1.
9.	200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 -			Casing Theknes	9.
Casing Height Above Ground:	Aquifor Type: Skal 5				۷.
Date of Completion: 10/1/19/2	Total Depth: 175 ft			Well Lice:	
Driller's Name: LAYNE-OHIO COLS	total beput. Non			Well Use.	
Screen Diameter:	Slot Size:			Screen Length:	
	Material:			ooreen Eengui.	
Set Between:					
Gravel Pack Material/Size:	Vol/Wt Used:				
Method of Installation:	Placed:				
Grout Material/Size:	Vol/Wt Used:				
Method of Installation:	Placed				
WELL TEST DETAILS					
Static Water Level: 16 ft	Test Rate: 7 gpm			Associated Repo	orts
Drawdown: 63 ft	Test Duration: 3 hrs				
COMMENTS:					
	WELL LOG				
Formations		From	То		
YELLOW CLAY		0	18		
GRAY SHALE		18	43		
BLUE SHALE		43	72		
GRAY SANDY SHALE		72	85		
		85	119		
		119	153		
GRAY SANDSTONE		103	103		
GRAY SHALE		103	175		

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https://apps.ohiodnr.gov/water/maptechs/wellogs/appNEW/report.aspx?wln=9967234 12/5/2019

OHIO WATER SUPPLY BOARD	Well Record No	151	
111 11	DA (DA ALISTRATA	DEI	PTH
Co. PortageTwp. ParisSec.Well Location S. of Fuze L. #1Size 12"& W. of Fuze Line #2Map. Ravenna	Clay, yellow	From	т. 18
ance Plant Owner U.S.A.Ravenna Ordin Address Driller Layhe Date 6/41	Gray shale Blue shale Gray sandy shale Gray shale	18 43 72 85	43 72 85 119
Well Head Elev. or M. P. Elev. of Ground at Well. Approx. 1100 Pumping Test: 7 GPM 3 hrs. 63' d.d.	Blue shale Gray shale Gray sandstone Gray shale	119 153 163 170	153 163 170 175
Static Level	X=2,386000		
Quality Use	$\gamma_{=}$ 353,000 M		
Adequacy of supply			
Source of Data Col. G.K. Franklin			
Collected by	* Chief Aquifer	V R.J	T. B.

Water Well Log and Drilling Report

Ohio Department of Natural Resources Division of Soil and Water Phone: 614-265-6740 Fax: 614-265-6767



Well Log Number: 9967097

ORIGINAL OWNER AND LOCATION

View Image of Original Well Log

Original Owner Name: U.S.A. RAVENNA	ORDIN			
County: PORTAGE	Township: CHARLESTOW	N .	Section	Number:
Address:			Lot Num	ber:
City:	State: OH		Zip Code	:
Location Number: 166	Location Map Year: 194	5	Location	Area:
Latitude: 41 186906	Longitude: -81,099695			
CONSTRUCTION DETAILS				
Borehole Diameter: 1:	Borehole Depth: 1: 2	14 R	Dep	th to Bedrock:
2:	2:			
Casing Diameter: 1: 12 in	Casing Length: 1:		Cas	sing Thickness: 1:
2:	2:			2:
Casing Height Above Ground:	Aquifer Type: SHALE			
Date of Completion: 10/1/1942	Total Depth: 214 ft		Wel	l Use:
Driller's Name: LAYNE-OHIO, COLS				
Screen Diameter:	Slot Size:		Scr	een Length:
Туре:	Material:			
Set Between:				
Gravel Pack Material/Size:	Vol/Wt Used:			
Method of Installation:	Placed:			
Grout Material/Size:	Vol/Wt Used:			
Method of Installation:	Placed			
WELL TEST DETAILS				
Static Water Level: 21 ft	Test Rate: 40 gpm		<u>Ass</u>	ociated Reports
Drawdown: 100 ft	Test Duration: 24 hrs			
COMMENTS:				
	WELL LOG			
Formations		From	То	
CLAY		0	10	
SAND & GRAVEL		10	23	
		23	24	
SHALE		24	132	
SHALE		210	210	
OF MEL		210	217	
	Printing Tips (opens in n	ew window)		
	Print This Page	Close		
		0.000		

Well log questions - Web site questions - Web policies

https://apps.ohiodnr.gov/water/maptechs/wellogs/appNEW/report.aspx?wln=9967097 12/5/2019

OHIO WATER SUPPLY BOARD	Well Record No. 166				
	DO/ TAOTSTRATA	DEPTH			
	496704751A1A	From	T0		
Co. Portage Twp. Unarlestown Sec.					
Well Location DUC C. OI NELL #DU Size 16	Člev		1 10		
ance Plent	Sand & Gravel	110	23		
o II S A Revenue Ordin Adda	Coal	23	24		
Detter Lewne B/41	Shale	24	132		
Jriller	*Sand rock	132	Teio.		
Well Head Flex or M D	Shale 4	210	214		
Elev of Ground at Well ADDrox. 1089.34					
		· · · · ·			
Pumping Test: 40 GPM 24 hrs. 100' d.d.	· · · · · · · · · · · · · · · · · · ·				
011					
Static Level	- 1 = 2,385,500				
Normal Pumpage	V= 556,600 N				
011					
Quanty Use		-	1		
Adequacy of supply			1		
received of supply					
Owner's Well No. or Other Designation H.C. #63, Test					
Source of Data Col. G.K. Franklin	•	· ·			
Collected by <u>RJB & DHH</u> Date <u>10/42</u>					
· · · · · · · · · · · · · · · · · · ·	* Chief Aquifer	V	R.J. F.		

APPENDIX E

ODNR Water Well Sealing Report e-Forms

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WATER WELL SEALING REPORT e-FORM 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

	Voice: (614) 265-6740	Fax: (614) 265-6767	
LOCATION			
County PORTAGE	Township PARIS	Section No	Lot No.
Owner OHIO ARMY NATIONA	LGUARD		
Address of Well Location 8451 S	R 5		
City RAVENNA		Zip Code 44266	
Well Location Description (120 Characters)	TION WELL (PW)-8 D SOUTHWEST OF PARIS-WINI	DHAM ROAD, SOUTH SERVICE	ROAD INTERSECTION.
Location of Well in either: State Plane s OR	x	+/ft. Y	ftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftftft_ft
(Latitude/Longitud	e Latitude 41.180756	Longitude -81	1.051191
Elevation of Well 983.0 () +/ ft. Datum Plane	NAD27 🗶 NAD83	
Source of Coordinates: GPS Source of Elevation: GPS	Survey X Other MAP-	OTHERS OTHERS	
WELL IDENTIFICATION ODNR	Well Log Number 9967214	Project W	ell ID PW-8
3orehole Depth <u>175</u> Casing Diameter 6	ft. Borehole Diam in Casing Length	eter <u>6 in</u> 22.5 ft Casing	g Type Steel
	Sealing Materia	al Volume/Weight Us	sed Placement Method
From 0 th To 158	78 # Cement/bentonite mi	Units Required	Pumped w/ tremie pine
From 158,78 ft. To 1	75 ft Natural Collapse	0 LBS	Poured (gravity)
From _{ft.} To	ft		
Fromft. To	ft		
Condition of Casing GOOD		Was Casing R	emoved? Yes or XNo (check one)
f casing Not Removed , was it Pe	rforated?□Yes or ⊠No (check one)	Perforations: From	ft. To
Date Sealing Performed 10/7/20 Comments/Reason for Sealing WE)19 ELL INSTALLED APPROXIMATELY 1 RING WELL SEALING AT 158.78 F	940. PRODUCTION WELL NO LON T. BTOC. CASING CUT 2.75' BELC	GER NEEDED. OBSTRUCTION DW GRADE.
CONTRACTOR			
Name FRONTZ DRILLING INC Address 2031 MILLERSBURG !	/ ENVIRONMENTAL (ODH Registration # 0120	
City/State/Zip WOOSTER, OH	14691		
-Signature I hereby certify the informatic	STEPHEN R. WRIGHT	f my knowledge	ally on 12/16/2019
Completion of this form is re	quired by section 1521.05, Ohio F	Revised Code - file within 30 days	after completion of sealing

WATER WELL SEALING REPORT e-FORM 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

	Voice: (614)	265-6740 Fax	: (614) 265-6767	
LOCATION				
County PORTAGE	Township PA	RIS	Section No.	Lot No
Owner OHIO ARMY NATION	AL GUARD			
Address of Well Location	8451 SR 5			
City RAVENNA		Zip C	ode 44266	
Well Location Description PROD (120 Characters) LOCA	UCTION WELL (PW TED SOUTHEAST (/)-17. DF GEORGE RO	DAD, NEWTON FALLS ROA	AD INTERSECTION.
Location of Well in either: { State Plane OR	N X	. +/	ft. Y	+/ft.
(Latitude/Longit	ude Latitude 41.189	355	Longitude -81.084	4028
Elevation of Well 1 0 6 2 0	0 +/ ft_ D	atum Plane: 🔲	IAD27 🗶 NAD83	
Source of Coordinates: GPS Source of Elevation: GPS	Survey 🗶 O	ther MAP-OTHE ther MAP-OTHE	RS RS	
WELL IDENTIFICATION ODN	IR Well Log Number	9967219	Project Well ID	(PW)-17
	in_Cas	ng cengui 12	n, Casing Typ	
From 0_ft To From 74.5 ft To From ft To From ft To	Sea 74.5 ft. Cement/ber 215 ft. Natural Coll ft. ft.	ling Material ntonite mix apse	Volume/Weight Used Units Required 102 GALLONS 0 LBS	Placement Method Pumped w/ tremie pipe Poured (gravity)
Condition of Casing GOOD			Was Casing Remov	ved? Yes or XNo (check one)
If casing Not Removed , was it F	erforated?⊡Yes or I	No Perfo	ations: From	ft Toft
Date Sealing Performed <u>10/8/</u> Comments/Reason for Sealing \	2019 VELL INSTALLED APPRO DURING WELL SEALING	XIMATELY 1940. F AT 74.5 FT. BTOC	RODUCTION WELL NO LONGER I CASING CUT 2' BELOW GRADE	NEEDED. OBSTRUCTION
CONTRACTOR				
Name FRONTZ DRILLING IN Address 2031 MILLERSBURG City/State/Zip WOOSTER, OF	2 / ENVIRONMENTA ROAD I 44691	L ODH F	Registration # 0120	
e-Signature	STEPHEN R. WRIC	GHT	Filed electronically c	n 12/16/2019
Completion of this form is	required by section 152' Distribute additional copies	1.05, Ohio Revise to: Customer, Drille	d Code - file within 30 days after r and Local Health Department	completion of sealing.

WATER WELL SEALING REPORT e-FORM 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

	Voice: (614) 265-6740	Fax: (614) 265-6767	
LOCATION			
County PORTAGE	Township PARIS	Section No.	Lot No
Owner_OHIO ARMY NATIONA	L GUARD		
Address of Well Location 8451 9	SR 5		
City RAVENNA	2	Zip Code 44266	
Nell Location Description PROD (120 Characters)	UCTION WELL (PW)-21. TED NORTH OF LOAD LI	NE 4.	
Location of State Plane s		+/ft. Y	, +/ ft-
(Latitude/Longitue	Je Latitude <u>41.187401</u>	Longitude -81.05	7923
Elevation of Well 983.0	0 +/ ft Datum Plane:	NAD27 🗶 NAD83	
Source of Coordinates: GPS Source of Elevation: GPS	Survey 🗶 Other MAP-C	OTHERS OTHERS	
WELL IDENTIFICATION ODNE	Well Log Number 9967220	Project Well ID	(PW)-21
SEALING PROCEDURE	Soaling Material	Volume@/oight Lised	Placement Method
Placement:		Units Required	
From 50 ft To 1	50 # Cement/Dentonite mix	01BS	Pumped w/ tremie pipe
From ft To	ft.		, ourse (grandy)
Fromft, To	ft.		
Condition of Casing BAD		Was Casing Remo	ved? Yes or XNo
f casing Not Removed , was it Pe	rforated? XYes or No P	Perforations: From 50	ft. To <u>1</u> ft.
Date Sealing Performed <u>10/3/2</u> Comments/Reason for Sealing W	219 ELL INSTALLED APPROXIMATELY 19 JRING WELL SEALING AT 50 FT. BTO	40. PRODUCTION WELL NO LONGER OC. CASING CUT 2' BELOW GRADE.	NEEDED. OBSTRUCTION
CONTRACTOR			
Name FRONTZ DRILLING INC Address 2031 MILLERSBURG Dity/State/Zip WOOSTER, OH	/ ENVIRONMENTAL O ROAD 44691	DH Registration # 0120	
e-Signature	STEPHEN R. WRIGHT	Filed electronically c	on 12/16/2019
Completion of this form is re	quired by section 1521.05, Ohio Re	ту кложеаде. evised Code - file within 30 days after	completion of sealing.
D	stribute additional copies to: Customer,	Driller and Local Health Department.	

WATER WELL SEALING REPORT e-FORM 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

	Voice: (614) 265-6740 Fax: (61	14) 265-6767	
LOCATION			
County PORTAGE	Township WINDHAM	Section No	Lot No.
Owner OHIO ARMY NATIONAL	GUARD		
Address of Well Location 8451 SR	.5		
City RAVENNA	Zip Code	44266	
Well Location Description (120 Characters) WOODED	ION WELL (PW)-22. STERN PORTION OF FACILITY, SOUTH AREA.	OF SMALLEY ROAD, NEAR	BUILDING BB-407 IN
Location of Well in either:	X+/+/	ft, Y	, +/ ft.
(Latitude/Longitude	Latitude 41.219102	Longitude -81.032	2151
Elevation of Well 980.00	+/ft. Datum Plane:NAD	27 🗶 NAD83	
Source of Coordinates: GPS Source of Elevation: GPS	Survey X Other MAP-OTHERS		
WELL IDENTIFICATION ODNR V	Vell Log Number 9967296	Project Well ID	(PW)-22
Casing Diameter <u>6</u>	_{in_} Casing Length 11.2	ft, Casing Typ	e <u>Steel</u>
SEALING PROCEDURE Placement:	Sealing Material	Volume/Weight Used	Placement Method
From <u>O</u> ft. To	5 t. Bentonite pellets/chunks	150 LBS	Poured (gravity)
From 5 ft. To 26.	8 ft. Cement/bentonite mix	50 GALLONS	Poured (gravity)
From 26.8 ft To 9 From ft To	1 ft. Natural Collapse	0 LBS	Poured (gravity)
Condition of Casing GOOD		Was Casing Remov	ved? Yes or KNo
f casing Not Removed , was it Perfo	orated? Yes or No Perforatio	ns: From	t, Toft
Date Sealing Performed 10/10/20 Comments/Reason for Sealing WELI DUR	INSTALLED APPROXIMATELY 1940. PROD NG WELL SEALING AT 26.8 FT. BTOC. CU	DUCTION WELL NO LONGER I T OFF 3' BELOW GRADE	NEEDED. OBSTRUCTION
CONTRACTOR			
Name FRONTZ DRILLING INC / Address 2031 MILLERSBURG RC City/State/ZipWOOSTER, OH 44	ENVIRONMENTAL ODH Regi DAD 1691	stration # 0120	
-Signature 5	TEPHEN R. WRIGHT	Filed electronically o	n 12/16/2019
Completion of this form is requ	lived by section 1521.05, Ohio Revised Co ribute additional copies to: Customer, Driller and	de - file within 30 days after d Local Health Department.	completion of sealing.

WATER WELL SEALING REPORT e-FORM 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

	Columbus, OH Voice: (614) 265-6740	43229-6693 Fax: (614) 265-6	5767	
LOCATION				
County PORTAGE	Township WINDHAM	Section No)	Lot No
Owner_OHIO ARMY NATIONAL	GUARD			
Address of Well Location 8451 SR	5			
City RAVENNA		Zip Code 44266		
Well Location Description LOCATED (120 Characters) INTERSEC NEAR BLD	NORTHEAST PORTION OF FAC TION, G. BB-413 IN WOODED AREA	ILITY, NEAR SNOV Product	V ROAD-SOUTH ion Well (P	SERVICE ROAD
Location of Well in either: {State Plane s] x	+/ ft. Y		+/ft.
(Latitude/Longitude	Latitude 41.214572	La	ongitude -81.027	7337
Elevation of Well 981.00	+/ ft. Datum Plane:	NAD27	NAD83	
Source of Coordinates: GPS Source of Elevation: GPS	Survey 🗶 Other MAP-C	OTHERS OTHERS		
WELL IDENTIFICATION ODNR W	/ell Log Number 9967290		Project Well ID	(PW)- <u>35</u>
MEASURED CONSTRUCTION DET Date of measurements 8/26/2019 Depth of Well 145	TAILS	Static Water Leve	No Water	Encountered
Borehole Depth 145	ft. Borehole Diame	ter 6	in.	
Casing Diameter 6	in. Casing Length	11	_ft, Casing Typ	e Steel
Placement:	Sealing Material	Volume	e/Weight Used	Placement Method
From 0 ft To 15	5 ft. Cement/bentonite mix	27 GALL	ONS	Pumped w/ tremie pipe
From 15 ft To 145	5 ft. Natural Collapse	0 LBS		Poured (gravity)
From ft. To	ftft			
Condition of Casing GOOD		Wa	s Casing Remo	ved? Yes or No
f casing Not Removed , was it Perfo	prated? Yes or No	Perforations: From		ft. Toft.
Date Sealing Performed <u>10/10/20</u> Comments/Reason for Sealing WELL DURI	19 . INSTALLED APPROXIMATELY 19 NG WELL SEALING AT 15 FT. BTO	40. PRODUCTION W OC. CUT OFF 3' BELC	ELL NO LONGER I	NEEDED. OBSTRUCTION
CONTRACTOR				
Name FRONTZ DRILLING INC / Address 2031 MILLERSBURG RC City/State/Zip WOOSTER, OH 44	ENVIRONMENTAL O DAD 691	DH Registration #	0120	
ST Signature	TEPHEN R. WRIGHT	Tileo	d electronically c	on 12/16/2019
Completion of this form is requ	ired by section 1521.05, Ohio Re	evised Code - file wi	thin 30 days after th Department.	completion of sealing

WATER WELL SEALING REPORT e-FORM 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

			Voice: (614) 265-67	40 Fax: (61	4) 265-6767	
LOCATION						2
County POF	RTAGE		Township PARIS	Se	ection No.	Lot No.
Owner OHI	O ARMY NAT	IONAL GUA	RD			
Address of W	Vell Location 8	451 SR 5				
City RAVEN	NA			Zip Code	44266	
Well Location (120 Cha	Description PF aracters) W	ODUCTION NEW TRAL PORT	NELL (PW)-41. TION OF FACILITY, EA	ST OF GEORG	GE ROAD, NEAR FORMER	BLDG. JA-626 IN
Location of Well in either	State Plane		<u> </u> ,	+/	ft. Y	• +/ ft.
	(Latitude/Lo	ngitude Lat	itude 41.180808		Longitude -81.07	7173
Elevation of V	Well 1 0 0 0	. 0 0 +/-	ft Datum Pla	ine: NAD2	27 🗶 NAD83	
Source of Co	ordinates: 🗌 (GPS 🗌 S	Survey 🗷 Other MA	P-OTHERS		
Source of I	Elevation: 🗌 (GPS 🗌 S	Survey 🗶 Other MA	P-OTHERS		
WELL IDENT	IFICATION	DDNR Well L	og Number 996723	1	Project Well ID	(PW)-41
MEASURED	CONSTRUCT	ION DETAILS	S			
Date of meas	urements 8/2	6/2019				
Depth of Well	130			ft Static Wa	ater Level 4.5	
Borehole Dep	oth 130		ft. Borehole Dia	ameter 6	ip	
Casing Diame	eter 6		in Casing Leng	th 36	# Casing Tv	ne Steel
0						
SEALING PR	OCEDURE		Sealing Mate	erial	Volume/Weight Used	Placement Method
Flacement.	0 . T-	120	~		Units Required	
From	Uft IO	130 ft	Cement/bentonite	mix	240 GALLONS	Pumped w/ tremie pipe
From	ft 10	ft.				
From	ft IO	ft.				
From	ft IO	ft				
Condition of C	Casing GOOD	_			Was Casing Remo	oved? Yes or No (check one)
If casing Not I	Removed, was	s it Perforated	d?□Yes or ⊠No	Perforation	ns: From	ft. To
	D () 10	17/2010	(check one)			
Date Sealing I	Performed 10	///2019				
Comments/Re	eason for Seali	ng WELL INS		7 1940, PRODU	JCTION WELL NO LONGER	NEEDED, CASING CUT 3'
		DELOW GI				
CONTRACTO	DR					
Name FRON	TZ DRILLING	INC / ENV	IRONMENTAL	ODH Regis	tration # 0120	
Address 2031	1 MILLERSBU	JRG ROAD		1 = 11 (0 910		
City/State/Zip	WOOSTER,	OH 44691				
e-Signaturo		STEPH	EN R. WRIGHT		Filed electronic - the	n = 12/16/2010
s-Signature	I hereby certify the in	formation given is	accurate and correct to the best	st of my knowledge	Flied electronically	OU 17/10/2019
Compl	letion of this forr	n is required b	by section 1521.05, Ohio	Revised Cod	le - file within 30 days afte	r completion of sealing.
			adomonal copies to. Ousto	ner onner and	Local nealth Department.	

WATER WELL SEALING REPORT e-FORM 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

	Voice: (614) 265-674	0 Fax: (614)) 265-6767	
LOCATION				
County PORTAGE	Township PARIS	Sec	tion No	Lot No
Owner OHIO ARMY NATIONA	L GUARD			
Address of Well Location 8451	SR 5			
City RAVENNA		Zip Code 4	4266	
Well Location Description PROD (120 Characters)	OUCTION WELL (PW)-4 TED SOUTH OF LOAD	8. LINE 5 IN	WOODED AREA	
Location of Well in either:	x	+/	ft. Y	,
	de Latitude 41.178774	_		97992
Elevation of Well 1 1 2 8.0	0 +/ ft Datum Pla	ne: NAD27	X NAD83	
Source of Coordinates: GPS Source of Elevation: GPS	Survey 🗶 Other MAI	P-OTHERS		
WELL IDENTIFICATION ODNI	R Well Log Number 9967234	ļ	Project Well I	D (PW)-48
SEALING PROCEDURE	Sealing Mate	rial	Volume/Weight Used	Placement Method
From 0 ft. To From 28 ft. To From ft. To From ft. To	28 ft Cement/bentonite r 175 ft Natural Collapse ft.	nix	0 LBS	Pumped w/ tremie pipe Poured (gravity)
Condition of Casing GOOD			Was Casing Rem	oved? Yes or KNo
If casing Not Removed , was it P	erforated? Tes or KNo	Perforations	: From	_ft. Toft.
Date Sealing Performed 10/7/2 Comments/Reason for Sealing ^W	(check one) 019 ELL INSTALLED APPROXIMATELY URING WELL SEALING AT 28 FT.	' 1940. PRODUC BTOC. CASING	CTION WELL NO LONGEF CUT 2' BELOW GRADE.	R NEEDED. OBSTRUCTION
CONTRACTOR				
Name FRONTZ DRILLING INC Address 2031 MILLERSBURG City/State/Zip WOOSTER, OH	/ ENVIRONMENTAL ROAD 44691	ODH Registr	ation # 0120	
e-Signature	STEPHEN R. WRIGHT	t of my knowledge	Filed electronically	on 12/16/2019
Completion of this form is r	equired by section 1521.05, Ohic Distribute additional copies to: Custor	Revised Code	- file within 30 days afte ocal Health Department.	er completion of sealing.

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	Voice: (614) 265-6740 Fax: (6	14) 265-6767	
LOCATION			
County PORTAGE	Township CHARLESTOWN	Section No	Lot No
Owner OHIO ARMY NATIONAL GL	JARD		
Address of Well Location 8451 SR 5			
City RAVENNA	Zip Code	44266	
Well Location Description PRODUCT (120 Characters) LOCATED	ION WELL (PW)-63. (ARTER: ADJACENT TO WETLAND EA	SIAN) ST OF FUZE AND BO	OSTER SPUR ROAD.
Location of Well in either: State Plane S	X+/	ft. Y	,
Latitude/Longitude	Latitude 41.186906	Longitude -81.099	9695
Elevation of Well 1 0 9 3 0 0 +/-	ft Datum Plane: NAD	027 🗶 NAD83	
Source of Coordinates: GPS	Survey 🗶 Other MAP-OTHERS		
	Survey S Other MAP-UTHERS		
WELL IDENTIFICATION ODNR Wel	Log Number 9967097	Project Well ID	(PW)-63
		it. Odding typ	
SEALING PROCEDURE	Sealing Material	Volume/Weight Used	Placement Method
From 0 ft. To 77.3 ft	Bentonite pellets/chunks	Units Required 3700 LBS	Poured (gravity)
From 77.3 ft. To 152 ft	Gravel	1890 LBS	Poured (gravity)
From <u>152</u> ft To <u>214</u> ft From ft To ft	Natural Collapse	0 LBS	Poured (gravity)
Condition of Casing GOOD		Was Casing Remov	/ed? Yes or No
If casing Not Removed , was it Perfora	ted? Yes or No Perforatio	ons: Fromf	t. To ft
Date Sealing Performed 10/10/2019 Comments/Reason for Sealing WELL IN DURING	ISTALLED APPROXIMATELY 1940. PROD WELL SEALING AT 152 FT. BTOC.	DUCTION WELL NO LONGER N	EEDED. OBSTRUCTION
CONTRACTOR			
Name FRONTZ DRILLING INC / EN Address 2031 MILLERSBURG ROAI City/State/Zip WOOSTER, OH 4469	VIRONMENTAL ODH Regi D	istration # 0120	
e-Signature STEI	PHEN R. WRIGHT	Filed electronically o	n 12/16/2019
I hereby certify the information given	is accurate and correct to the best of my knowledged		
Completion of this form is required Distribut	d by section 1521.05, Ohio Revised Co te additional copies to: Customer, Driller and	ode - file within 30 days after d Local Health Department	completion of sealing

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		Voice: (614) 265-6740 Fax:	(614) 265-6767	
LOCATION				
County PORTAGE		Township CHARLESTOWN	Section No.	Lot No.
Owner OHIO ARMY N	IATIONAL GU	ARD		
Address of Well Location	n 8451 SR 5			
City RAVENNA		Zip C	ode 44266	
Nell Location Description (120 Characters)	n PRODUCTIO SOUTHWEST	N WELL (PW)-96. T OF NACA TEST AREA, ADJA	CENT TO OLD HOMESTEAD	IN WOODED AREA.
Location of Well in either:		(+/+/	ft. Y	+/ft
				,007
Elevation of Well	+/-	ft Datum Plane:	IAD27 🗶 NAD83	
Source of Coordinates: [Source of Elevation:]	□gps □ □gps □	Survey Other GLOBAL PC	DSITIONING SYSTEM	
WELL IDENTIFICATION	ODNR Well	Log Number	Project Well ID	(PW)-96
SEALING PROCEDURE		Sealing Material	Volume/Weight Used	Placement Method
From0 #_ To	D 2 ft.	Bentonite pellets/chunks	50 LBS	Poured (gravity)
From 2 ft. To	0 4 ft	Natural Collapse	0 LBS	Poured (gravity)
From ft_Tc	D ft.	,		
From ft. To	D ft			
Condition of Casing PO(OR		Was Casing Remov	ved? Yes or No (check one)
f casing Not Removed,	was it Perforat	ed? Yes or No Perfor	ations From	ft. Tof
Date Sealing Performed Comments/Reason for S	10/10/2019 Sealing Well PREVI CASING CUT HAND DUG	OUSLY FILLED TO 2' BELOW GROUND SURFACE. 2' BELOW SURFACE AND COVERED WITH HOLE WELL.	PLUG AND NATIVE SOIL	
CONTRACTOR				
Name FRONTZ DRILLI Address 2031 MILLER City/State/Zip WOOST	ING INC / EN SBURG ROAD ER, OH 4469	VIRONMENTAL ODH F	Registration # 0120	
-Signature	STEP the information given	HEN R. WRIGHT	Filed electronically c	n <u>12/17/2019</u>

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APPENDIX F

Ohio EPA Comments

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Mike DeWine, Governor Jon Husted, Lt. Governor Laurie A. Stevenson, Director

July 28, 2020

RE: US Army Ammunition Plt RVAAP Remediation Response Project Records Remedial Response Portage County ID # 267000859207

TRANSMITTED ELECTRONICALLY

Mr. Kevin M. Sedlak Army National Guard Installation and Environment Clean-up Branch IPA Designation 1438 State Route 534 SW Newton Falls, OH 44444

Subject: Response to Ohio EPA Comments on the Draft "RVAAP-66 Facilitywide Groundwater Production Well Abandonment Report" dated July 6, 2020.

Dear Mr. Sedlak:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the response to Ohio EPA comments (RTC) on the "Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Production Well Abandonment Report." This document was received via email at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on July 6, 2020. The response was prepared for the U.S. Army Corps of Engineers (USACE) on behalf of the National Guard Bureau by Leidos under Contract Number W912QR-16-D-0003.

Although Ohio EPA finds that the comment from Ohio EPA's June 15, 2020 comment letter has been adequately addressed, please add the following statement to your response: "If Production Well 18 is encountered in the future, proper well abandonment activities will be completed at that time in accordance with the means and methods specified in the work plan for the 2019 production well abandonment activities." Upon agreement with this additional statement, please finalize the document with the changes according to the RTC correspondence.

RECEIVED

Northeast District Office • 2110 East Aurora Road • Twinsburg, OH 44087-1924 epa.ohio.gov • (330) 963-1200 • (330) 487-0769 (fax) MR. KEVIN SEDLAK RVAAP-66 FWGW JULY 28, 2020 PAGE 2 OF 2

If you have questions or would like to set up a meeting to discuss, please call me at (330) 963-1292, or email me at Kevin.palombo@epa.ohio.gov.

Sincerely,

Kumpel

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

KP/sc

ec: Katie Tait, OHARNG RTLS Rebecca Shreffler, Chenega Tri-Services Bob Princic, Ohio EPA, NEDO, DERR Natalie Oryshkewych, Ohio EPA, NEDO, DERR Liam McEvoy, Ohio EPA, NEDO, DERR Thomas Schneider, Ohio EPA, SWDO, DERR Nat Peters, USACE, Louisville District Craig Coombs, USACE, Louisville District



July 6, 2020

Ohio Environmental Protection Agency DERR-NEDO Attn: Mr. Kevin Palombo 2110 East Aurora Road Twinsburg, OH 44087-1924

Subject: Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, RVAAP-66 Facility-Wide Groundwater, Responses to Comments on the Production Well Abandonment Report (Work Activity No. 267-000-859-207)

Dear Mr. Palombo:

The Army appreciates your time and comment on the *Draft RVAAP-66 Facility-wide Groundwater Production Well Abandonment Report*. Enclosed for your review is the Army's response to your comment. Upon resolution and concurrence of this response, the Army will provide a Final version of the report for Ohio EPA concurrence.

This report was prepared for the Army National Guard in support of the RVAAP Restoration Program. Please contact the undersigned at 614-336-6000, ext 2053 or <u>kevin.m.sedlak.civ@mail.mil</u> if there are issues or concerns with this submission.

Sincerely,

SEDLAK.KEVIN.MIC Digitally signed by SEDLAK.KEVIN.MICHAEL.125444 HAEL.1254440171 0171 Date: 2020.07.06 09:21:37 -04'00'

Kevin M. Sedlak RVAAP Restoration Program Manager Army National Guard Directorate

cc: Natalie Oryshkewych, Ohio EPA, NEDO Bob Princic, Ohio EPA, NEDO Liam McEvoy, Ohio EPA, NEDO Tom Schneider, Ohio EPA, SWDO Katie Tait, OHARNG, Camp James A. Garfield Craig Coombs, USACE Louisville Jay Trumble, USACE Louisville Vasu Peterson, Leidos Jed Thomas, Leidos Jennifer Tierney, Vista Sciences Corporation Subject: Former Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, Production Well Abandonment Report (Work Activity No. 267-000-859-207)

<u>Ohio EPA Comment</u>: Please provide additional clarification regarding the confirmed absence of Production Well 18. Since the area was excavated in an attempt to locate the but no well was found, please confirm all investigatory efforts are suspended for Well 18 and it will be considered unlocated. Provide a demonstration (utilizing water well log information and local geology information) that leaving the well unlocated and potentially unabandoned will not adversely affect the environment by providing a conduit for vertical ground water migration.

Army Response: Clarification. All investigative efforts to find Well 18 are complete, and the well is considered unlocated. Based on the well installation log from 1940 provided in Appendix D of the Production Well Abandonment Report, yellow clay was observed from 0-26 ft bgs, hardpan from 26-30 ft bgs, sandy clay from 30-37 ft bgs, and alternating blue shale and sandstone from 37-228 ft bgs. The static water level was recorded from 50-70 ft bgs. The casing for the 6-inch well extends to 36.5 ft bgs. The casing sealed the unconsolidated units, preventing vertical migration into the bedrock aquifer. If not previously abandoned, the production well has been backfilled by sediment and debris that has accumulated over the last 80 years, causing a blockage to prevent future surface water migration to the well.



Mike DeWine, Governor Jon Husted, Lt. Governor Laurie A. Stevenson, Director

June 15, 2020

RE: US Army Ammunition Plt RVAAP Remediation Response Project Records Remedial Response Portage County ID # 267000859207

TRANSMITTED ELECTRONICALLY

Mr. Kevin M. Sedlak Army National Guard Installation and Environment Clean-up Branch IPA Designation 1438 State Route 534 SW Newton Falls, OH 44444

Subject: Ohio EPA Comments on the Draft "RVAAP-66 Facility-wide Groundwater Production Well Abandonment Report" dated April 16, 2020.

Dear Mr. Sedlak:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the *RVAAP-66 Facility-wide Groundwater Production Well Abandonment Report* for the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio (Camp Garfield). This document was received at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on April 16, 2020. The report was prepared for the United States Army Corps of Engineers (USACE) on behalf of the National Guard Bureau by Leidos under Contract Number W912QR-16-D-0003. Comments on the document based on Ohio EPA review are provided below. Please provide responses to the enclosed comments in accordance with the Directors Findings and Orders.

STATEMENT

According to the RVAAP-66 Facility-wide Groundwater Production Well Abandonment Report (2020 Production Well Abandonment Report), the Former Water Production Wells and Oil and Gas Wells Survey (Vista 2013) previously identified 44 historical production wells at the facility, primarily installed during the World War II years at the facility. These wells were reportedly utilized for on-site construction and production usage, not for potable water. Of the 44 wells located, 38 were identified visually and six were identified as geophysical anomalies at their expected locations. Prior to the well abandonment activities described in the 2020 Production Well Abandonment Report, 25 of these wells had been properly abandoned under the RVAAP restoration program and nine wells were properly abandoned by OHARNG.

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JUN 16 2020

MR. KEVIN SEDLAK RVAAP-66 FWGW JUNE 15, 2019 PAGE 2 OF 3

The 10 remaining historical production wells were abandoned as discussed in the 2020 *Production Well Abandonment Report*, in general accordance with the means and methods denoted in the previously reviewed *Well Abandonment Work Plan* 11 (*TEC-Weston 2016*), and locations of these 10 wells are presented in Figure 2-2 of the 2020 Production Well Abandonment Report.

Wells were located, gauged, and disinfected in August 2019, and two rounds of well abandonment activities occurred from August 26 to 30, 2019, and October 2 to 11, 2019. Well abandonment procedures were generally to pressure grout a Portland concrete/ bentonite slurry via tremie pipe in the well from the bottom up. Wells were partially grouted and measured the next day to see if settlement had occurred. In select wells that exhibited settlement (presumably due to loss in the formation), bagged bentonite chips were poured down the well, followed by additional grout after chips had properly hydrated. Steel well casings were left in place to prevent possible mixing of ground water between saturated unconsolidated zones and bedrock aquifers and cut off approximately three feet below surface grade. Surface grade was then restored to surrounding surface conditions.

Field activity notifications were submitted to Ohio EPA for review and approval on August 22, 2019, and September 10, 2019. Copies of these field notifications were included in Appendix A of the 2020 Production Well Abandonment Report.

Wells 8, 17, 21, 22, 35, 41, 48, and 63 were abandoned as planned. Well 18 could not be located at the previously surveyed and staked location. After exploratory excavation of approximately 39 square feet around that location, the excavation was restored with backfill. No further information was given as to future activities, if any, for this well.

Well 96 was found to be previously sealed with concrete; excavation down to three to four feet below grade confirmed the well was still sealed at that depth, so the excavation was backfilled with bentonite chips and graded to match surface elevations. Broken concrete from this well was used to fill an adjacent former homestead cistern, which was then backfilled to grade. Field Change Request form for Well 96 was submitted for approval and Ohio EPA signed copy of "LEIDOS_FWGW_005" for deviating from well abandonment Standard Operation Procedure is provided in Appendix C of the 2020 Production Well Abandonment Report. Two (2) other Field Change Request forms "LEIDOS_FWGW-007" and "LEIDOS_FWGW-008" were submitted for deviations in site access paths to two wells; Ohio EPA-approved and signed copies of these forms were also provided in Appendix C.

Ohio Department of Natural Resources well sealing report forms were submitted electronically for the nine abandoned wells; copies were attached in Appendix E of the 2020 Production Well Abandonment Report.

Investigation-derived waste (IDW) consisted of eight 55-gallon drums of purge water (307 gallons total) collected from the wells during grout placement. Purge water pH levels were found to exceed 12.5, so the water was neutralized to a pH of 7 and deemed to be

MR. KEVIN SEDLAK RVAAP-66 FWGW JUNE 15, 2019 PAGE 3 OF 3

classified as non-hazardous for disposal. IDW disposal records will be provided in the forthcoming 2020 Annual Report.

COMMENTS

Ohio EPA provides the following comment on the 2020 Production Well Abandonment Report:

1. Please provide additional clarification regarding the confirmed absence of Production Well 18. Since the area was excavated in an attempt to locate the well but no well was found, please confirm all investigatory efforts are suspended for Well 18 and it will be considered unlocated. Provide a demonstration (utilizing water well log information and local geology information) that leaving the well unlocated and potentially unabandoned will not adversely affect the environment by providing a conduit for vertical ground water migration.

This report was reviewed by personnel from Ohio EPA. Additional information is necessary to approve the document. If you have questions or would like to set up a meeting to discuss, please call me at (330) 963-1292 or email me at Kevin.palombo@epa.ohio.gov.

Sincerely,

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

KP/sc

ec: Katie Tait, OHARNG RTLS Nat Peters, USACE, Louisville District Craig Coombs, USACE, Louisville District Rebecca Shreffler, Chenega Tri-Services Bob Princic, Ohio EPA, NEDO, DERR Natalie Oryshkewych, Ohio EPA, NEDO, DERR Liam McEvoy, Ohio EPA, NEDO, DERR Thomas Schneider, Ohio EPA, SWDO, DERR THIS PAGE INTENTIONALLY LEFT BLANK.