APPENDIX K

Ohio EPA Comments

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Ohio Environmental Protection Agency

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

July 11, 2016

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

Re: US Army Ammunition PLT RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
267000859100

Subject: Ravenna Army Ammunition Plant, Portage/Trumbull Counties. "Response to Comments on the Draft, Remedial Investigation/Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-40, Load Line 7 (January 28, 2016)" Dated April 22, 2016

Dear Mr. Leeper:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Response to Comments on the Remedial Investigation (RI)/Feasibility Study (FS) Report for Soil, Sediment and Surface Water at RVAAP-40 Load Line 7 (January 28, 2016)" for the Ravenna Army Ammunition Plant, Portage/Trumbull Counties. This letter was dated April 22, 2016 and was received at Ohio EPA, Northeast District Office (NEDO) on April 26, 2016. The report was reviewed by various personnel in NEDO and Central Office (CO) in Columbus, Ohio.

The comments have been adequately addressed. Please forward the final RI/FS report with all agreed upon text changes and include Ohio EPA's comment letter/Army response to comment letter.

The RI/FS report proposes surface soil removal/remediation to address elevated levels of PAHs. Item #6 in the Army's Response to Comments states, "horizontal and Vertical extent of contamination has been defined in the removal area and therefore confirmation samples would not be required." Based on this response, Ohio EPA is requesting that if any additional evidence of soil contamination is observed (e.g., stained soil, odor, elevated instrument readings, etc.) during the soil removal beyond the remediation boundaries that this area be over excavated and included in the remedy. Additional confirmatory sampling for PAHs will be needed.

If you have any additional questions, please call me at (330) 963-1207.

Sincerely,

Vicki Deppisch
Hydrogeologist/Project Coordinator
Division of Environmental Response and Revitalization

VD/nvr

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

ec: Mark Leeper, ARNG
Bob Princic, Ohio EPA, NEDO, DERR
Rodney Beals, Ohio EPA, NEDO, DERR
Justin Burke, Ohio EPA, CO, DDAGW
Kelly Kaletsky, Ohio EPA, CO, DERR
Tim Christman, Ohio EPA, CO, DERR
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NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

April 22, 2016

Ohio Environmental Protection Agency
DERR-NEDO
Attn: Vicki Deppisch, Hydrogeologist/Project Coordinator
2110 East Aurora Road
Twinsburg, Ohio 44087-1924

Subject: Responses to Comments on the Draft, Remedial Investigation/Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-40, Load Line 7, Dated January 28, 2016 for the Former Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties (Work Activity No. 267000859100)

Dear Ms. Deppisch:

The Army appreciates your time and comments (dated March 30, 2016) on the *Draft Remedial Investigation/Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-40 Load Line 7*. Enclosed for your review are responses to your comments.

Upon the final resolution of these responses to comments, the Army will distribute the final version of this report and will begin developing the Draft Proposed Plan. Consistent with the RI/FS Report, the Draft Proposed Plan will identify "Alternative 4: Ex-situ Thermal Treatment" as the preferred alternative which will achieve Unrestricted (Residential) Land Use for soil, sediment, and surface water at Load Line 7.

Please contact the undersigned at (703) 607-7955 or Mark.S.Leeper.civ@mail.mil if there are issues or concerns with this submission.

Sincerely,

Mark Leeper
RVAAP Restoration Program Manager
Army National Guard Directorate

ec: Rodney Beals, Ohio EPA, NEDO-DERR
Robert Princic, Ohio EPA NEDO-DERR
Justin Burke, Ohio EPA, CO-DERR
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Greg Moore, USACE Louisville
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Jed Thomas, Leidos

Responses to Ohio EPA Comments (dated March 30, 2016)
Draft, Remedial Investigation/Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-40, Load Line 7
Former Ravenna Army Ammunition Plant (RVAAP), January 28, 2016
(Work Activity No. 267000859100)

1) The hard copy report should match the electronic copy, including the appendices. The appendices should be labeled appropriately in the hard copy. If the Army decides that an appendix, such as data, is too large to be included, the tab identifying that appendix should be included and indicate where this appendix is located for review (main CD, specific data CD attached to that appendix, etc.). The LL-7 report had appendices A-J and only E, G and H were included in the hard copy report. Appendix J, for example, which provided cost estimates for remediation, was not included and was only 12 pages.

Action item: Please ensure that the appendices in the hard copy, matches the electronic copy**.**

Response: *Agree. A tab directing the reader to the location of the appendices that are provided electronically on CD-ROM will be added to the front of the hard copy report appendices. Also, Appendix J (Cost Estimate) will be provided as a hard copy.*

These items will be provided as part of the distribution of the Final report. In addition, these changes will be implemented in future Revised Draft submittals.

2) The operational History section in the narrative portion of the report and table 2-1 does not adequately describe the overall process of this load line or the processes that occurred at each of the former buildings and surrounding areas. A more complete description of the activities at the various buildings/locations would provide a better understanding of this load line and rationale for sampling locations.

Action Items: Please revise the narrative and for all future RI and RI/FS reports.

Response: *Clarification and agree. All available information from known RVAAP historical documentation has been reviewed and included in the specific operations descriptions for the individual buildings presented in Table 2-1. To further clarify the munitions manufacturing, Section 2.2.1 Operational History has been revised as follows:*

Load Line 7, formerly known as Booster Line #1, is a 37-acre fenced AOC located north of Fuze and Booster Road and immediately west of Fuze and Booster Spur Road in the south-central portion of Camp Ravenna (Figure 1-2 and Figure 2-1). A description of the operational use at Load Line 7 is as follows:

- 1941–1945 – The site operated at full capacity to produce booster charges for artillery projectiles. Booster charges are explosive devices designed to receive the relatively weak detonating wave from a fuze and to amplify that wave so that it will have sufficient strength to insure complete functioning of the high explosive in the shell body. The explosive in the booster is usually tetryl. No bulk handling of explosives occurred at Load Line 7, as all primary explosive products were delivered to Load Line 7 as sealed, finished sub-assemblies. At the end of World War II, Load Line 7 was deactivated, and the process equipment was removed.

3) The Executive summary appears to be missing pages.

Action Items: Please verify, and if they are missing, submit the missing pages.

Response: *Clarification. Pages are not missing from the Executive Summary. Rather, the Plate (Figure ES-1) is located within pages ES-11 (front side) and ES-12 (backside). Figure ES-3 starts on page ES-13 and is the last element for the Executive Summary.*

4) It is the understanding of Ohio EPA that no soil samples were taken through asphalt structures or contained asphalt. It appears from Figure 2.2, aerial map, ISM sample LL7ss-074M did not include the parking lot, but matched the footprint of the former building. However, other figures that were drawn, such as Figure 5-11, identify the northwest corner of this sample overlapping the parking lot. In addition, the northeast corner of this sample was eliminated when the "C" shaped ISM samples were taken. If the northeast corner of ISM sample LL7ss-074M was not sampled through asphalt, please explain why this corner was omitted.

Action Items: Figure 2.2 (aerial) and all figures that include the "C" ISM sample shapes (i.e., figure 5.11) are different. Please revise all figures to match the aerial. Please discuss if the northeast corner was sampled through asphalt and if not, why this corner was omitted.

Response: *Clarification. Sample LL7ss-074M was collected in 2010 during the PBA08 RI and included the asphalt drive (see Figure 4-5) that resulted in an ISM sample with asphalt fragments, as described in the field sampling log (Appendix A). Sample LL7ss-074M does not represent the footprint of the former building, rather it was collected to delineate the horizontal extent of potential contamination associated with sample LL7ss-013M.*

The intent of Figure 5-11 is to present the results of sample locations LL7ss-096M to LL7ss-101M collected in April 2011. These samples were collected to refine potential contamination identified during the remedial investigation activities at sample locations LL7ss-013M (collected in 2004) and LL7ss-074M (collected in 2010), while excluding the asphalt drive.

For clarity, the following changes will be made:

- *Figure 5-11: The Building 1B-4 footprint will be made clearer in the inset. As noted above, the building footprint is not the same as the polygon for ISM sample LL7ss-074.*
- *Figure 5-11: The ghost images of sample locations LL7ss-013M and LL7ss-074M will be removed from the inset. The inset will solely present sample locations LL7ss-096M to LL7ss-101M collected in April 2011.*
- *Figures ES-1 and 4-7 will show the inset depicting sample locations LL7ss-096M to LL7ss-101M, similar to Figure 4-5 presenting the PBA08 RI sample locations.*

Please note that all figures in the report cannot present sample locations LL7ss-096 to LL7ss-101M (C ISM Samples), as that may not meet the intent of the figures. These ISM samples are depicted in the figures noted above, as well as in Figure 9-1 that presents the soil requiring remediation.

5) Figure ES-3, Estimated Extents of Surface Soil Requiring Remediation: This figure has eliminated part of ISM samples LL7ss-097, LL7ss-098M and LL7ss-013M in the northeast area due to the parking lot ISM "C" shape samples. These areas should be included in the total area requiring remediation.

Action Item: The area requiring remediation should include the entire footprint of the building.

Response: *Clarification. The entirety of sample locations LL7ss-097M and LL7ss-098M are included in the volume requiring remediation. The northern border of these sample locations is the outer perimeter of sample location LL7ss-101M. Sample location LL7ss-101M had only one COC (benzo(a)pyrene at 0.28 mg/kg) that exceeded the Resident Receptor CUG of 0.221 mg/kg and is not recommended for remediation.*

The entirety of sample location LL7ss-013M was not included in the area recommended for remediation. The purpose of samples LL7ss-096M to LL7ss-101M was to further delineate contamination identified in 2004 sample location LL7ss-013M. These samples excluded the asphalt drive. As discussed amongst the Army and Ohio EPA on 11/18/15, the results of this April 2011 sampling effort refined the areas requiring remediation under CERCLA to locations LL7ss-097M and LL7ss-098M.

6) Section 2.4.2: The RI report states 1,1-dichloroethene was above the MCL in monitoring well LL7mw-001 in 2009. This well is not located near the solvent storage 1B-22. According to Figure 3-1 depicting the ground water flow directions, it does not appear that the source area for this contamination was investigated.

Action Items: Please provide information related to the source area attributable to the contamination in MW LL7mw-001 and the rationale for its placement.

Response: *Monitoring well LL7mw-001 was installed during the Characterization of 14 AOCs on 2004. The Characterization of 14 AOCs Sampling and Analysis Plan (MKM 2004) states the rationale for the placement of the well was to characterize the "south end of explosives handling area".*

The nearby, upgradient buildings (Buildings PS-9 and T-3410) were used as storage sheds, and Building 1B-6 was used for Booster Assembly. None of these buildings are expected to be a source of 1,1-DCE contamination. Building 1B-22 was used for solvent storage, and the surface soil sample at that location did not have detectable concentrations of 1,1-DCE. In total, Load Line 7 has 17 soil samples collected and analyzed for 1,1-DCE. None of these 17 samples had detectable concentrations of 1,1-DCE.

The 1,1-DCE concentrations at LL7mw-001 are presented in the table below. Two of the four samples collected in 2009 had slight exceedances of the MCL (0.007 mg/L). Since the last exceedance in October 2009, all three groundwater samples collected from this well had 1,1-DCE concentrations below the MCL. In addition, all 1,1-DCE concentrations were well below the RSL at TR of 1E-05, HQ of 1 (0.280 mg/L).

Date Collected	*Chemical*	*Unit*	*Result*	*Exceed MCL (0.007 mg/L)?*	*Exceed RSL (0.280 mg/L)?*
1/24/2005	*1,1-Dichloroethene*	*mg/L*	*0.0026*	*N*	*N*
1/22/2009	*1,1-Dichloroethene*	*mg/L*	*0.0076*	*Y*	*N*
4/23/2009	*1,1-Dichloroethene*	*mg/L*	*0.0065*	*N*	*N*
7/13/2009	*1,1-Dichloroethene*	*mg/L*	*0.0064*	*N*	*N*
10/12/2009	*1,1-Dichloroethene*	*mg/L*	*0.0084*	*Y*	*N*
10/13/2010	*1,1-Dichloroethene*	*mg/L*	*0.0064*	*N*	*N*
3/11/2015	*1,1-Dichloroethene*	*mg/L*	*0.0044*	*N*	*N*
7/23/2015	*1,1-Dichloroethene*	*mg/L*	*0.0043*	*N*	*N*

Additional investigation of source areas is not warranted given that 1) current concentrations of 1,1-DCE are below the MCL and the concentrations have always been below the RSL, 2) nearby buildings were not potential sources of 1,1-DCE contamination, and 3) the one building used for solvent storage had nondetectable concentrations of 1,1-DCE.

7) The FS report, in various sections, states "Confirmation samples of the excavation footprint are not required, as previous sampling has already defined the extent of contamination." It must be demonstrated that the horizontal and vertical boundaries above and below the CUG has been adequately characterized. If this cannot be demonstrated, confirmatory sampling will be required.

Action Item: Please ensure sufficient samples are taken to demonstrate soils left in place, both horizontal and vertical, meet the CUG.

Response: *Clarification. Both horizontal and vertical extents of contamination requiring removal in surface soil (0-1 ft bgs) at locations LL7ss-097M and LL7ss-098M have been adequately characterized, as demonstrated in the RI/FS and as summarized below.*

Horiztonal extent - The northern border of these sample locations is the outer perimeter of sample location LL7ss-101M. Sample location LL7ss-101M had only one COC (benzo(a)pyrene at 0.28 mg/kg) that exceeded the Resident

Receptor CUG of 0.221 mg/kg and is not recommended for remediation. The remaining boundary of the removal extent is bound by surface soil sample LL7ss-099M that had all COC concentrations below the CUGs.

Vertical extent - No COCs or unacceptable risk were identified in subsurface soil (1-13 ft bgs). Accordingly, contaminant removal is only required to 0-1 ft bgs In addition, soil boring LL7sb-066 was collected near the middle of the removal area and had no detections of the PAH COCs in the subsurface soil (1-4 and 4-7 ft bgs).

Based on these details and results, horizontal and vertical extent of contamination has been defined in the removal area. Confirmation samples would not be required after implementation of the soil remedy. In the event that horizontal or vertical extent of contamination in a removal area is not adequately defined for remedial purposes, confirmation samples will be collected. Load Line 9 includes the requirement for collection of confirmation samples.

8) FS Report, ARARs: There appears to be a few mistakes in some of the citations; please verify. For instance, OAC 3745-400-49 and OAC 3745-400-48 should be OAC 3745-270-49 and OAC 3745-270-48. The reference to OAC 3745-400-44 should be OAC 3745-270-44.

Action Item: Please revise all ARAR citations to reflect the correct OAC rules.

Response: *Agree. The ARAR citations will be revised as suggested.*

9) FS Report, Cost Estimates: On page 8, Alternative 4 in-situ thermal treatment, the last item, restoration, states, "includes 12-inch lift of native fill assuming 20% swell." It is unclear why this phrase was included. The restoration plan calls for placing the treated soil back in the hold from which it was removed and covered with a 4-inch topsoil layer for re-vegetation.

Action Items: Please clarify the meaning of this phrase and why it is needed.

Response*: Agree. Although the thermally treated soil will be used to backfill the excavation, additional 4-inch lift of native fill will be required to restore the excavation back to grade and support vegetative growth. Page 8 of the Cost Estimate will be revised as follows: "Native Soil Backfill" will be changed to "Topsoil" and the first sentence of the note will be revised to "Includes 4-inch lift of topsoil". These revisions do not change the estimated cost for Alternative 4.*

10) Please note, any waste generated from the remedial action must be evaluated using the procedure in Ohio Administrate Code (OAC) rule 3745-52-11, to determine if the waste is a hazardous waste. Please identify how the waste(s) will be evaluated in compliance with OAC rule 3745-52-11 (e.g., specify sampling and analysis procedures), as well as plans for the on-site management and off-site disposal of the waste(s).

Action Items: Waste generated must be properly characterized and managed appropriately.

Response: *Comment noted and clarification. OAC 3745-52-11 is identified in the ARARs section to specify that generated waste will be evaluated to determine if the waste is a hazardous waste. All waste will be properly characterized and managed appropriately. As per previous protocol for remedial actions at the former RVAAP, a remedial design will be developed in advance of implementation of a remedial action. This remedial design will specify sampling and analysis procedures, plans characterization of waste, on-site management, and off-site disposal.*

Ohio Environmental Protection Agency

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

March 30, 2016

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

Re: US Army Ammunition PLT RVAAP
Remediation Response
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Subject: Ravenna Army Ammunition Plant, Portage/Trumbull Counties. "Draft, Remedial Investigation/Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-40, Load Line 7," Dated January 28, 2016

Dear Mr. Leeper:

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Load Line 7 (LL-7), formerly known as Booster Line #1, is a 37-acre, fenced area of concern (AOC), located north of Fuze and Booster Road. In 1970 the site was deactivated and process equipment was removed. From 1989-1993 the pink water treatment plant discharged under a National Pollutant Discharge Elimination System (NPDES) permit to the George Road Sewage Treatment Plant.

The following are Ohio EPA comments:

1. The hard copy report should match the electronic copy, including the appendices. The appendices should be labeled appropriately in the hard copy. If the Army decides that an appendix, such as data, is too large to be included, the tab

identifying that appendix should be included and indicate where this appendix is located for review (main CD, specific data CD attached to that appendix, etc.). The LL-7 report had appendices A-J and only E, G and H were included in the hard copy report. Appendix J, for example, which provided cost estimates for remediation, was not included and was only 12 pages.

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Action Items: Waste generated must be properly characterized and managed appropriately.

Please address the above comments. Ohio EPA is open to a conference call or meeting to discuss the above if needed. If you have any additional questions, please call me at (330) 963-1207.

Sincerely,

Vicki Deppisch

Vicki Deppisch
Hydrogeologist/Project Coordinator
Division of Environmental Response and Revitalization

VD/nvr

cc: Katie Tait/Kevin Sedlak OHARNG RTLS
Gregory F. Moore, USACE
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