



DEPARTMENT OF THE ARMY  
RAVENNA ARMY AMMUNITION PLANT  
8451 STATE ROUTE 5  
RAVENNA, OHIO 44266-9297

REPLY TO  
ATTENTION OF

December 11, 2002

Mr. Lynn Malcolm  
Administrator  
Akron Regional Air Quality Management District  
146 S. High Street, Room 904  
Akron, OH 44308

RE: Request of Open Burning Follow-on Submittal

Dear Mr. Malcolm:

In follow-up to our Thursday, December 5, meeting at your office to discuss the proposed open burning project at the Ravenna Army Ammunition Plant, (RVAAP), I am submitting the listed items in response to your request:

- The original Burn Permit Request and Maps dated November 19, 2002
- The completed and signed ARAQMD Application for Open Burning request form
- The Thermal Decomposition Position Paper with Appendices I – V
- The OEPA comments on the project Work Plans, the Response to Comment resolution matrices, and e-mail approval.

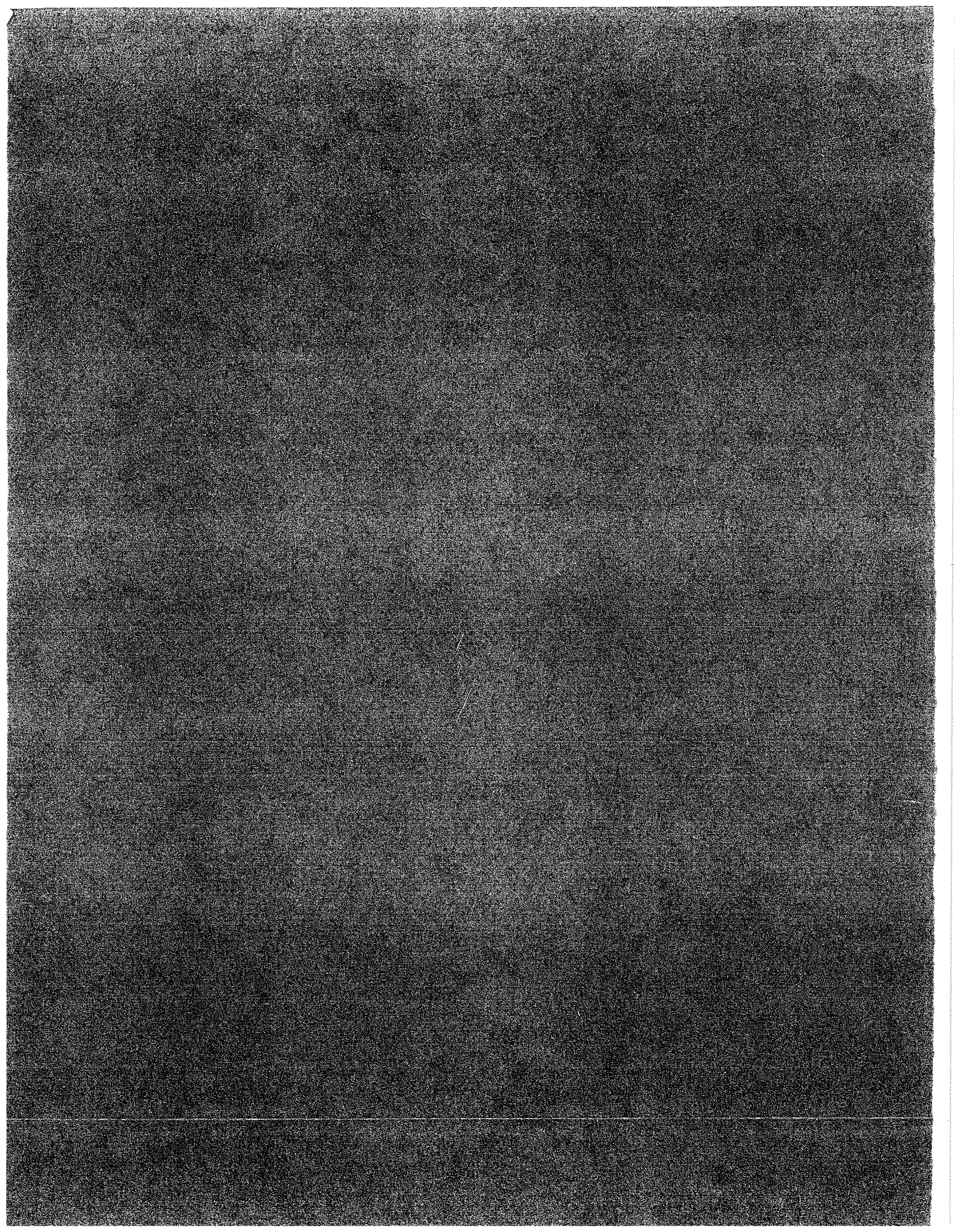
We believe that the combined information as presented will be supportive and sufficient for the open burning request. In addition, the RVAAP is discussing the PCB in paint issue with the USEPA this week. A determination on this is expected shortly.

We look forward to hearing from you.

Sincerely,

Mark Patterson  
Ravenna AAP  
Environmental Coordinator

Cc: Sean Vadas – ARAQMD  
Ohio EPA-NEDO  
Neal Environmental Services, LLC  
MKM Engineers, Inc.





DEPARTMENT OF THE ARMY  
RAVENNA ARMY AMMUNITION PLANT  
8451 STATE ROUTE 5  
RAVENNA, OHIO 44266-9297

REPLY TO  
ATTENTION OF

November 19, 2002

Mr. Lynn Malcolm  
Administrator  
Akron Regional Air Quality Management District  
146 S. High Street, Room 904  
Akron, OH 44308

RE: Request for Open Burning

Dear Mr. Malcolm:

In follow-up to a recent discussion you had with Ernie Neal, our environmental compliance contractor for the proposed open burning project at the Ravenna Army Ammunition Plant, (RVAAP), I am submitting the facility's request to perform open burning.

Attached to this letter is a document that provides necessary details of the open burning request. We believe that this information will be helpful in your review for the open burning project.

Prior to our planned meeting in December, we will also be forwarding to you two additional documents that will provide supplementary information on specific emission data in regard to the proposed burn.

We believe that the combined information will be supportive and sufficient for the open burning request. Considering the uniqueness of this project, we will plan to meet with you on December 5, 2002 at 10:00 am at your office to respond to any additional questions that you and your staff may have in regard to the information. You may call me at (330) 358-7311 if you need to speak with me prior to the meeting.

Sincerely,

Mark Patterson  
Ravenna AAP  
Environmental Coordinator

Cc: Sean Vadas – ARAQMD  
Ohio EPA-NEDO  
Neal Environmental Services, LLC  
MKM Engineers, Inc.

## Application for Permission to Conduct Open Burning

This presentation has been developed to answer the questions presented on the Akron Regional Air Quality Management District's questionnaire regarding a request to open burn. Based on the fact that the information being provided to ARAQMD is somewhat more extensive than what can be included on the form, we have drafted the questionnaire's answers in this document.

### **1. What is the purpose of the burning?**

The Ravenna Army Ammunition Plant (RVAAP) is planning to conduct a demolition project that will require a number of buildings to be thermally decontaminated prior to initiating the conventional demolition procedures. The RVAAP open burning process is necessary in order that all residual explosive materials residing within the facilities can be safely decomposed to avoid unplanned secondary detonations. The RVAAP and its contractor representatives made a presentation on Sept. 4, 2002 to the combined regulatory agencies, including the ARAQMD, providing details of thermal decontamination of specific buildings and necessary steps during open burning process that assures the safety of all workers involved. The schedule outlining which structures will be burned and the proposed date the burn is planned is provided below.

### **2. Describe the nature and quantities of the materials to be burned.**

The RVAAP structures scheduled to be burned include Load Line 6, 9 and Wet Storage Igloos 1, 1A, 2 and 2A. These facilities were utilized for production and storage of munitions charged with propellants and explosives. The majority these physical structures are comprised of concrete block or tile walls with steel beams supporting transite roofing. A few of the buildings scheduled to be burned have wood roof beams with asphalt roof coverings. Based on the fact that a 800° F temperature threshold must be met in order that all explosives are burned or detonated, the RVAAP contractor intends to purchase and place wood dunnage in order to be assured of reaching the necessary heat threshold. The purchased dunnage will be comprised of untreated wood pallets. In addition, it is important to note that all transite roofing will be removed and properly disposed of in accordance with applicable regulatory requirements prior to the burning event. The RVAAP will maintain contact with the ARAQMD during the planning and implementation phases of the project and provide the necessary details regarding quantities and materials burned.

**3. Can the materials be incinerated? Disposed in a landfill? Chipped mulched?**

The material cannot be incinerated, disposed, chipped or mulched. As noted earlier, the burn activity must be performed prior to any conventional demolition activities due to explosive and safety risks. The explosives and propellants must be thermally degraded prior to demolition. It is suspected that explosives may be present in unknown quantities and in unknown locations such as under floors and within the wall cavities. After completion of the burn, the remaining material will be recycled, reused and/or disposed in accordance with environmental requirements.

**4. Give the address of the burn site.**

Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266

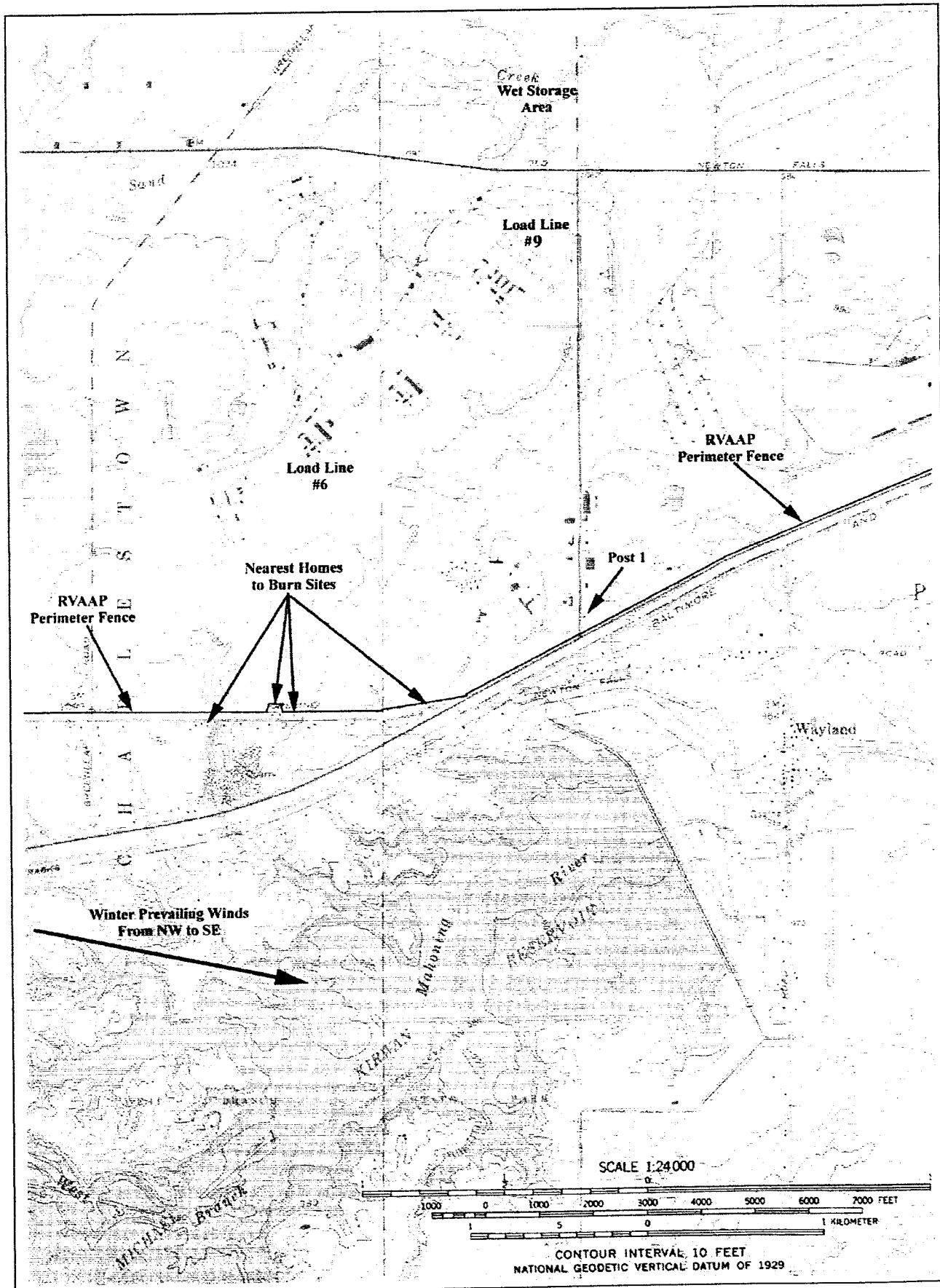
(The maps attached show the locations of the facility burning area, residences and other pertinent landmarks. Companion maps provide the layout of the Load Line 6, 9 and Wet Storage areas.)

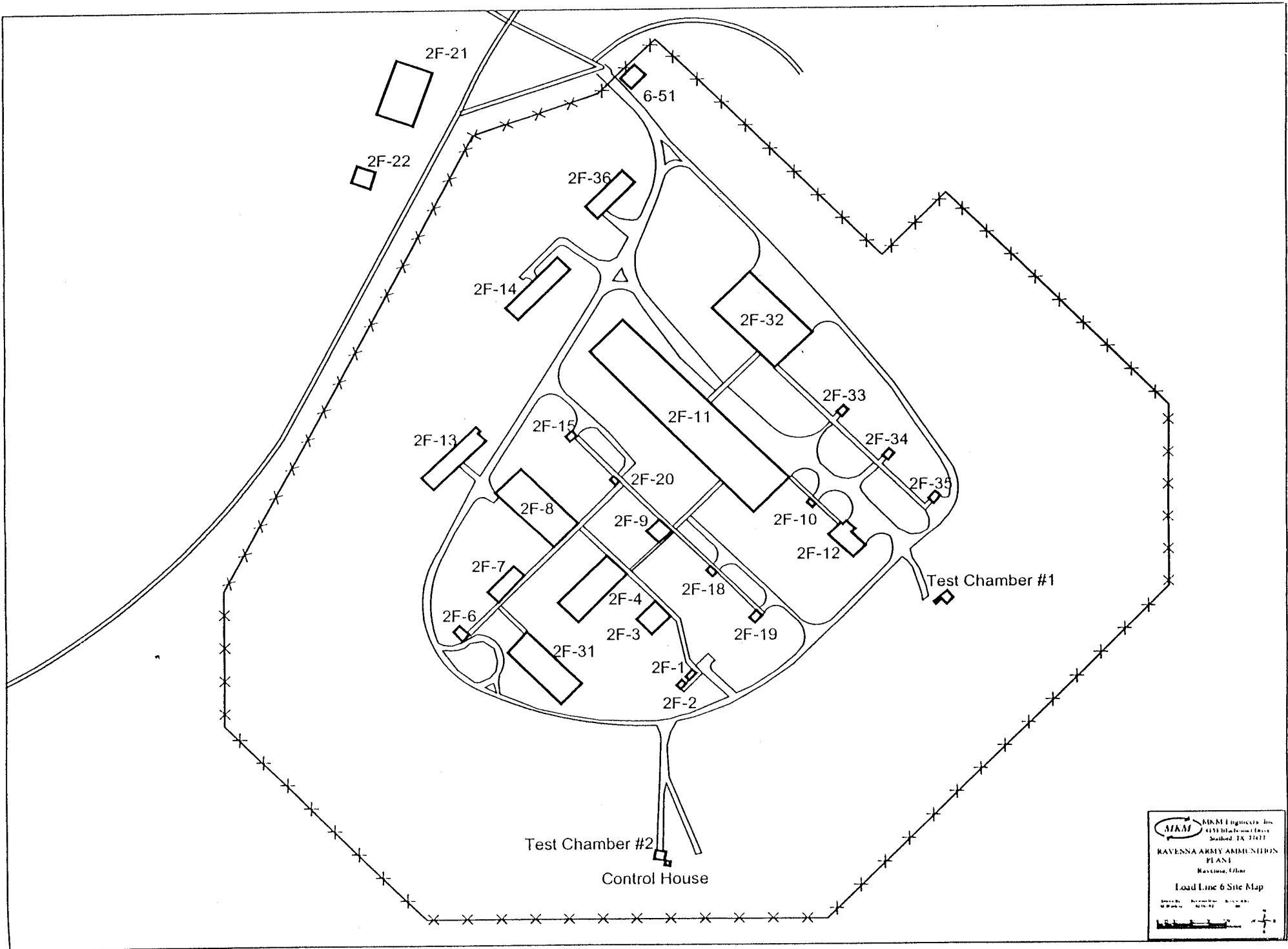
**5. Is the burn site located within a restricted area as that term is defined in the Ohio Administrative Code section 3745-19-01, Definitions?**

No.

**6. What methods or actions will be taken to reduce the emission of air contaminants?**

Since untreated wood dunnage will be the primary fuel in the burn, the generation of an excessive amount of emissions is not expected. In addition, transite roofing as well as other hazardous materials such as light ballasts, mercury gauges and switches will be removed prior to open burning. However, a selection of date and time for the burns will be dependent upon climatic conditions, wind direction and other pertinent factors. The ARAQMD, Portage County Health Dept., Ohio EPA, and local fire officials will be consulted for advisory and concurrence purposes.





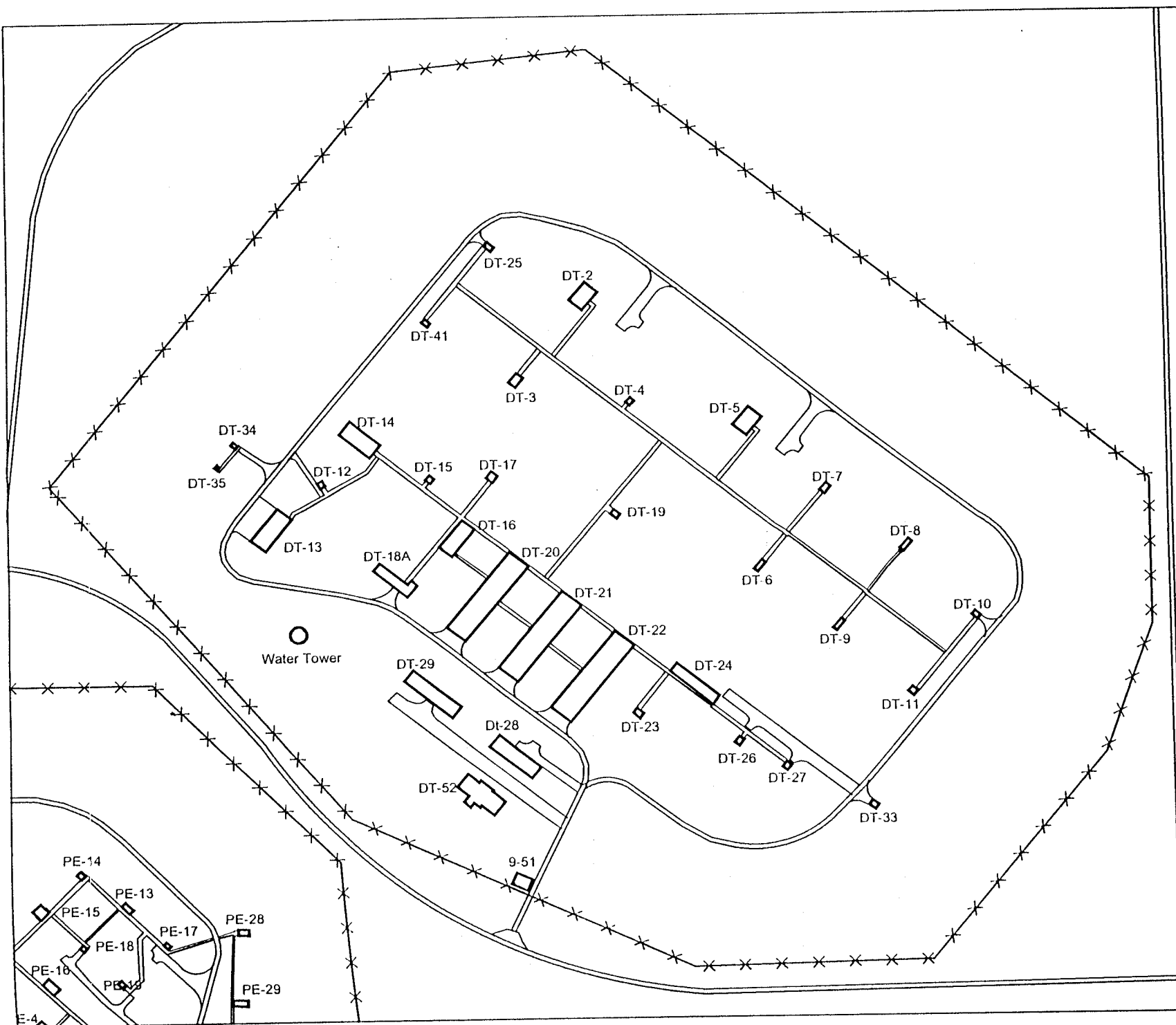

 AKAM Engineers, Inc.  
 4330 Old Farm Road  
 Bedford, TX 76011

RAVENNA ARMY AMMUNITION  
 PLANT  
 Ravenna, Ohio

Load Line 6 Site Map

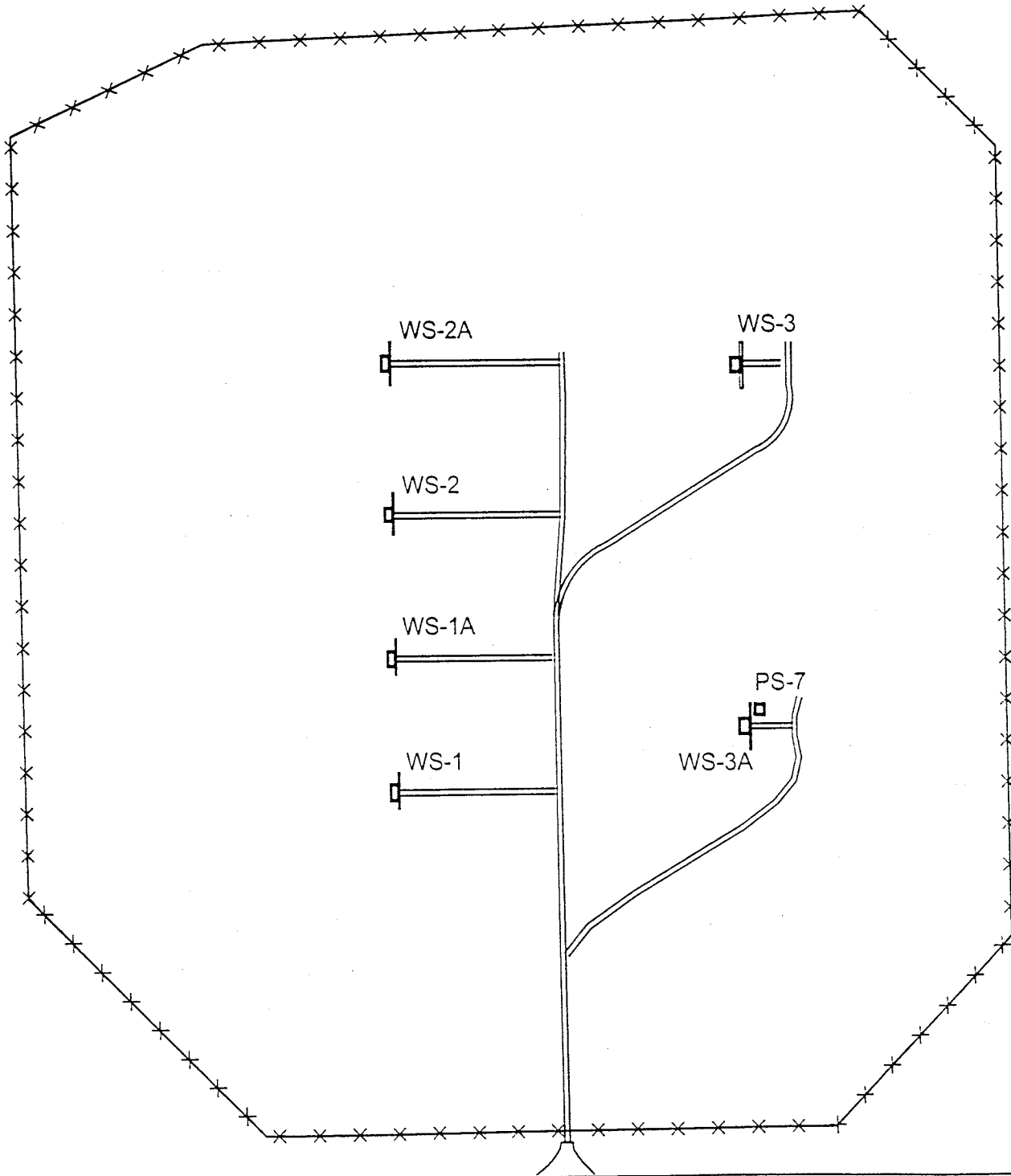
SHEET NUMBER: 6-1  
 DATE: 11/11/01






**MKM Engineers, Inc.**  
 4100 Wilshire Lane  
 Method, TX 75401  
**RAVENNA ARMY AMMUNITION  
 PLANT**  
 Ravenna, Ohio  
**Load Line 9 Site Map**  
 Scale: 1" = 100'





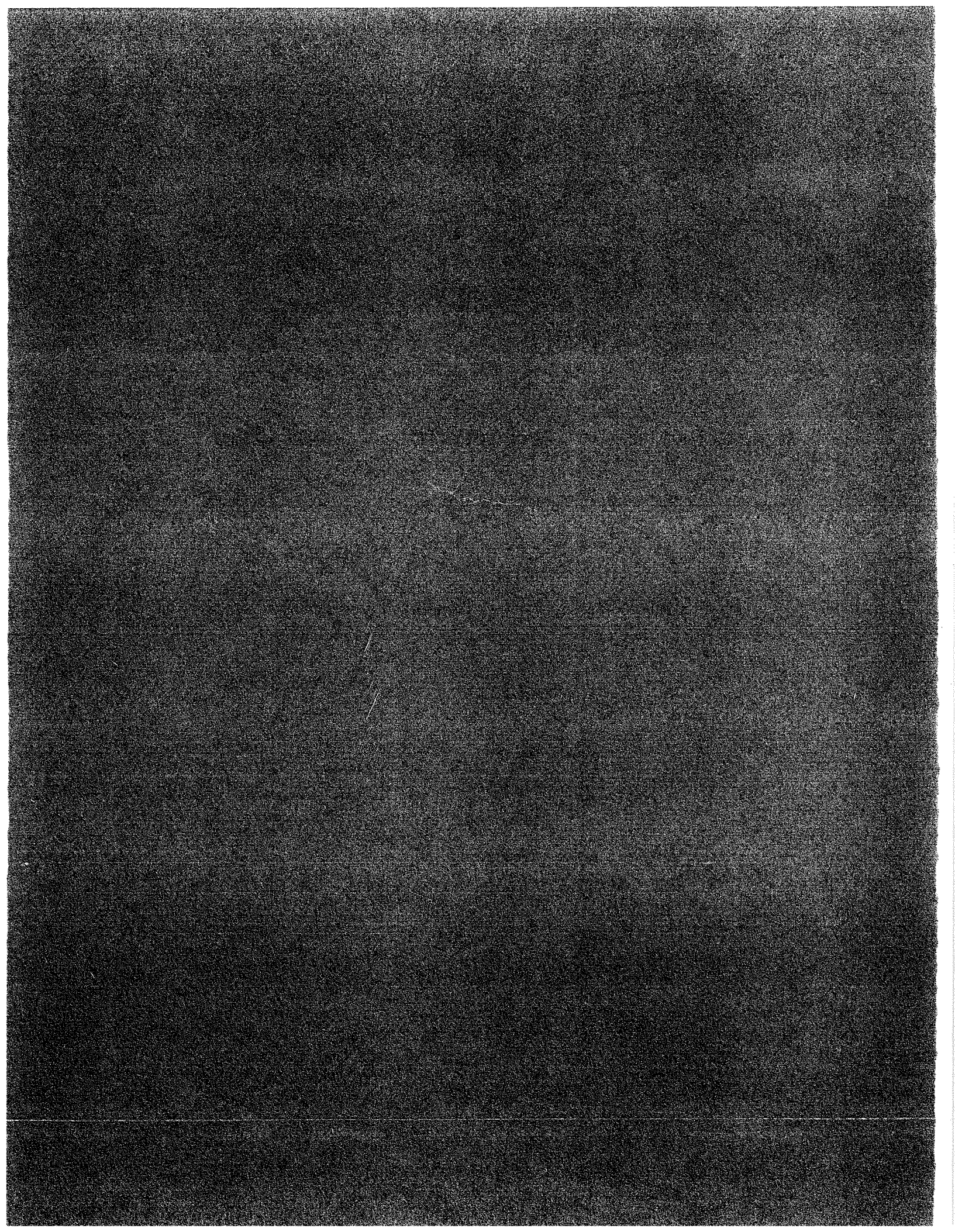
**MKM** MKM Engineers, Inc.  
 4153 Bluebonnet Drive  
 Stafford, TX 77477

**RAVENNA ARMY AMMUNITION PLANT**  
 Ravenna, Ohio

Wet Storage Site Map

Drawn by: M. Quinsey	Reviewed Date: 10/14/02	Approved by: BS
-------------------------	----------------------------	--------------------

0 5 10 20 30 40 Feet





AKRON REGIONAL  
**AIR QUALITY MANAGEMENT DISTRICT**

Agent of the Ohio Environmental Protection Agency • Division of the Akron Health Department  
★ Serving Medina, Portage and Summit Counties ★

TELEPHONE: (330) 375-2480  
FAX: (330) 375-2402

L. M. Malcolm, P.E.  
Administrator

APPLICATION FOR PERMISSION TO CONDUCT OPEN BURNING

**Important Note: A separate application must be filed for each specific project.**

1. What is the purpose of the burning?

See Attachment

2. Describe the nature and quantities of the materials to be burned:

See Attachment

3. Can the materials be incinerated? Disposed of in a landfill? Chipped or mulched?  
If not, Why?

See Attachment

4. Give the address of the burn site. (Attach a map to this application showing distances to residences, populated areas, roadways, air fields, and other pertinent landmarks.)

See Attachment

5. Is the burn site located within a restricted area as that term is defined in the Ohio Administrative Code section 3745-19-01, Definitions?

Yes \_\_\_\_\_ No   X  

6. What methods or actions will be taken to reduce the emission of air contaminants?

See Attachment

7. Give the subsection of the Ohio Administrative Code which authorizes the open burning described above:

3745-19-04(c)(1)

CITICENTER - SUITE 904  
146 SOUTH HIGH STREET • AKRON, OHIO 44308  
An equal opportunity employer and provider of services - CRA 1964



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APPLICATION FOR PERMISSION TO CONDUCT OPEN BURNING

Page 2

8. Give the date(s) and time(s) at which burning will occur: (be specific)


Will communicate and coordinate w/ARAQMD.

If you wish to conduct burning at any time other than during the hours between 10 a.m. and 4 p.m., please complete the following section:

I would like to receive permission to open burn between the hours of \_\_\_\_\_ and \_\_\_\_\_ for the following reasons:

Will communicate and coordinate w/ARAQMD.

I, Richard Callahan, HEREBY VERIFY THAT I AM DULY AUTHORIZED TO MAKE THE ABOVE APPLICATION ON BEHALF OF RVAAP, FOR PERMISSION TO CONDUCT OPEN BURNING; AND I DO VERILY BELIEVE THE INFORMATION SET FORTH ABOVE IS TRUE AND COMPLETE.

Signature:  Date: 12/11/02  
Title: Environmental Program Manager Telephone No: (330) 358-2920  
Address: 8451 State Route 5, Building 1038, Ravenna, OH 44266  
(Street) (City) (Zip)

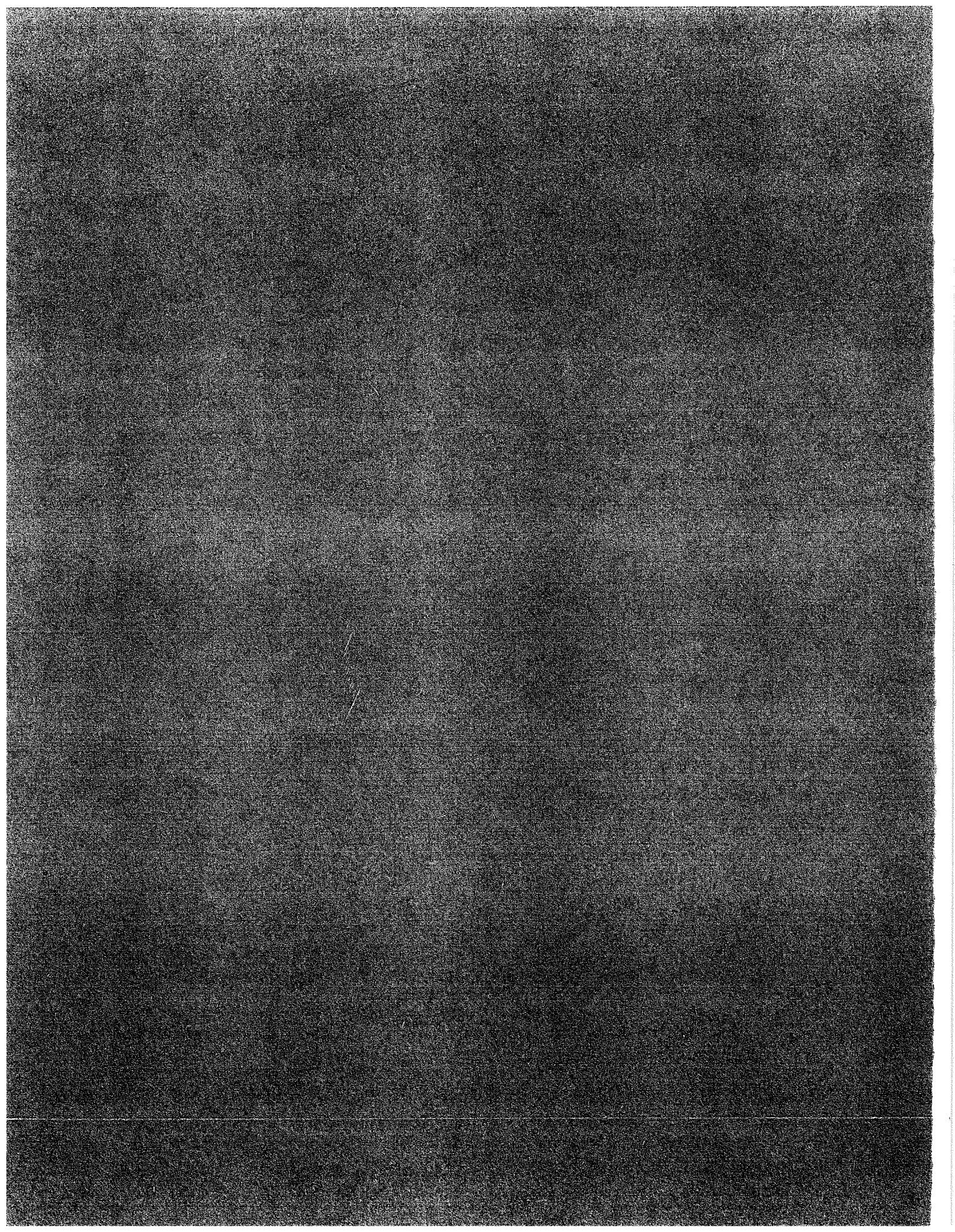
**For Office Use Only**

This application for permission to conduct open burning is hereby

Approved \_\_\_\_\_

Denied\* \_\_\_\_\_

\*Reason(s) for Denial: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**ENVIRONMENTAL POSITION PAPER  
ON THERMAL DECOMPOSITION  
FOR THE  
RAVENNA ARMY AMMUNITION PLANT**

**On behalf of  
MKM Engineers, Inc.  
Prime Contractor**

**Completed by Neal Environmental Services, LLC  
December 2002**

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## INTRODUCTION

The purpose of this paper is to provide a technical and regulatory overview in support of the Open Burn Application for the Ravenna Army Ammunition Plant (RVAAP). The RVAAP is located on approximately 22,000 acres of land in Portage and Trumbull Counties in northwestern Ohio. Potentially contaminated sites are currently undergoing investigation and restoration activities in preparation of fulfilling the intended use of the facility by the Ohio National Guard as a training facility. Concurrently, the RVAAP is proceeding with the liquidation and demolition of excess property and structures throughout the facility. From 1941 through 1992, the RVAAP produced munitions incorporating basic explosive manufacturing operations such as melt pour load lines, fuze and booster load lines, research and development of shaped charges and the demilitarization / disassembly of munitions. Due to the historical use of the site and the time period of its operations there are a number of hazards associated with the site restoration activities. One key and significant hazard of site operations is the potential presence of munitions as well as bulk explosives and propellants both in unknown quantities and unexpected locations. Explosives and propellants potentially present at the site include mercury fulminate, lead azide, lead styphnate, TNT, RDX, Comp B, HMX, black powder, tetryl, PETN, ammonium nitrate, aluminum chloride, nitroguanidine, nitrocellulose, and nitroglycerine. These materials have an NFPA Flammable Rating of 4, are Class 1.1 D explosives or greater and typically exhibit increased sensitivity over time.

The processes used to evaluate and decontaminate munitions production facilities across the country have evolved over time through trial and error experiences. Initially decontamination projects were handled much like conventional building demolition projects. Visual inspections were conducted of the facilities and any explosive materials that were found were removed and treated. Equipment was usually manually disassembled and removed from the buildings for scrap. However, it soon became clear that this "standard" approach did not always reveal the locations where residual explosives were residing. Explosive residues were being found in unexpected locations. Examples include inside fire suppression pipes, positive pressure air ductwork, behind and between walls, under floors and on building beams. In essence, every corner and cavity of these structures has proven to be a potential location for explosives, propellants, ordnance and munitions. In the past, the result of unexpectedly finding explosives or propellants during conventional demolition was disastrous resulting in personal injury and death. Subsequently, remote demolition processes (i.e. engineered shaped charges, perforators and detonation cord) were developed which lessened but did not eliminate the threat of detonating unknown explosives or propellants during the follow-on standard demolition activities. Consequently, it has been determined by the US Army Operations Support Command that the only safe and responsible way to decontaminate and demolish these structures is to add the step of thermal decomposition prior to physical demolition. Controlled thermal decomposition eliminates the threat of injury or death from



explosives, which are present yet not visible, and can potentially detonate during demolition activities.

With the use of open burning to thermally decompose the residual explosives within these structures, it is appropriate to examine the potential environmental consequences of this approach. The following sections provide a regulatory and environmental review with respect to the controlled thermal decomposition approach.

## GENERAL COMMENTS

The proposed thermal decomposition of the RVAAP Load Line #6, Load Line #9 and the Wet Storage Area (Igloos #1, #1A, #2 and #2A) involves the review of several Ohio EPA and U.S. EPA environmental regulations. These include the Ohio EPA Open Burning rules, the Asbestos Abatement rules, the De minimus air contaminant requirements, the Clean Air Act, the Ohio EPA Hazardous Waste Rules, and TSCA. The following information provides necessary detail in regard to the applicability and compliance of each of the referenced regulatory provisions.

However, given that the U.S. EPA has state primacy of the Toxic Substances Control Act (TSCA) in Ohio, a separate positions paper and discussion regarding the potential presence of PCBs (Polychlorinated Biphenols) will be developed for U.S. EPA Region V.

### 1. AIR POLLUTION CONTROL

#### **a) Open Burning Standards**

Three regulatory provisions of the Ohio Administrative Code (OAC) are considered regarding the open burning and disposal of explosives.

OAC 3745-19-01 specifies that open burning in a location more than one mile beyond a municipal corporation is determined to be an "Unrestricted area". The location of the proposed burning activity lies greater than 8 miles beyond a municipal corporation. The RVAAP action would be classified as an unrestricted area.

OAC 3745-19-04C(1) provides that open burning shall be permissible for the "*Disposal of ignitable or explosive materials where the Ohio EPA determines that there is no practical alternative method of disposal....*" Considering the serious human safety hazard involved with using standard demolition techniques on the project, we believe that this regulatory provision is applicable and the proposed open burning permissible under the existing circumstances. In review of the presentation to the combined environmental agencies on 9/4/02 and 10/31/02 and in consideration of the information provided, the RVAAP believes that there are no practical or conceivable alternatives that provide necessary safety protection while significantly limiting the existing risk.

OAC 3745-19-05 stipulates the necessary information that must be provided in an application for permission to conduct open burning. Several requirements are highlighted in the regulation including but not limited to the purpose of the burn, nature and quantities to be burned, date or dates when the burn will take place, location, maps, isolation distances and other information that the Akron Regional Air Quality Management District may require. This information is provided in

the attached open burning request formally submitted to ARAQMD on November 19, 2002.

It is the intention of the RVAAP and its contractors to meet the referenced regulatory provisions in the open burning requirements and proceed with the thermal decomposition project.

#### **b) Notification of Asbestos Demolition and Renovation**

Prior to the thermal decomposition of the load lines referenced in the earlier portion of this document, the RVAAP and its contractors will remove all recognizable asbestos containing materials in the load lines. During this effort, the RVAAP contractors will comply with **OAC 3745-20-01 through OAC 3745-20-08**. The specific issues regarding the asbestos remediation are addressed in section (3)(a) below. The RVAAP and its contractors have had prior experience in removing asbestos from other RVAAP facilities and will make every effort to again comply with the Ohio EPA asbestos demolition requirements.

#### **c) Potential Emissions of Lead Based Paint**

Previous analytical evaluations of dried paint from a melt and pour load line at the RVAAP indicated that the dried paint contained lead. Considering this fact, the Ohio EPA evaluated samples of applied dry paint from buildings in Load Line #6 and Load Line #9 intended to be thermally treated. The results of this sample analysis are provided in Appendix I and II of this report. In order to develop a more accurate estimate for potential lead emissions during the open burn process, MKM performed a laboratory experiment to determine the expected lead vaporization factor, (See Appendix V). The experimental emission factor was then used in determining potential lead emissions from the lead-based paint areas within the structures.

#### **d) Lead Floors in Load Line #6 and #9**

In addition to evaluating potential lead emissions in paint, MKM Engineers evaluated potential lead emissions from lead-lined floors that occur in both Load Line #6 and Load Line #9. These unpainted floors were originally constructed within specific explosive handling areas to eliminate the potential of static electricity buildup in and around the production process. In order to evaluate the potential lead emissions from these areas, MKM performed a laboratory experiment essentially duplicating the thermal burn process to effectively measure lead emissions that might evolve during the burn. Appendix V provides the testing procedure.

In review of the information on both painted surfaces and lead floors the total potential estimated emissions from all structures located in Load Line #6 is 16.66

pounds of lead while Load Line #9 has been determined to have 65.82 pounds of potential lead emissions. These results are presented in Appendix IV of the report.

#### e) Lead Box Liners in Wet Storage Igloos

The Wet Storage Area (Igloos #1, #1A, #2 and #2A) are earthen covered concrete structures with a single, steel high security door providing access. These structures were not painted and do not contain lead floors. However, located within these structures are lead-lined wooden boxes, which were used for the "wet" storage of highly shock sensitive primary explosives including lead azide and mercury fulminate. The

Appendix IV provides a summary an estimate of both the total and potential lead emissions, which may result from the thermal decomposition of the Wet Storage Igloos. The potential estimated emissions from the four Wet Storage igloos scheduled for open burning is 19.34 pounds of lead. Individually, the potential lead emissions from Igloos #1, #1A, #2 and #2A are 2.42 pounds, 2.42 pounds, 7.25 pounds and 7.25 pounds, respectively.

The laboratory test conducted to evaluate the potential lead emissions was conservatively designed, potentially yielding higher emissions due to the placement of the heat source below the sample in contrast to the actual placement above the lead floors, as it will occur during the open burn. In addition, it is important to note two other factors, which suggest that total potential lead emissions will be less than the estimated amount.

- Review of the lead paint data in Appendix I indicate that reported values for lead were significantly higher in paint samples collected from the metal surfaces, (i.e. steel doors and steel structures). There is little doubt that the aggressive lead sampling process required to separate the paint from the metal surfaces resulted in the inclusion of metal fragments from the surface in the sample. It is common knowledge that structural steel used during the 1930s and 1940s contained respectable amounts of lead. Although this fact makes little difference in the total potential emission calculation, it is a fact worth noting.
- In the process of planning each phase of the burn in Load Lines #6 and #9, MKM's preliminary plan involves completing three individual burns for each load line. In addition, the Wet Storage Igloos will be burned individually as well. This action will minimize the daily potential lead emissions during the project.

For comparison purposes we note that OAC 3745-15-05 ("De minimis air contaminant source exemption) provides that up to 10 lb/day (10 lbs/day – 365 days a year or 3,650 lbs) of potential emissions of lead is exempt from regulation unless more restrictive provisions are effective under the federal Clean Air Act or

other Ohio environmental regulations. At present, the RVAAP is unaware that more restrictive provisions exist under the Clean Air Act or OEPA. Thus, upon receipt of an open burning permit the RVAAP plans to proceed with the thermal decomposition projects and considers that the potential leads emissions are not a threat to health or environment.

#### **f) Heavy Metals**

Appendix III of this report indicates the potential emissions of seven heavy metals determined to be present on painted surfaces in Load Lines #6 and #9. The total sum of the weight of these metals in Load Line #6 is 2.73 pounds while the total weight in Load Line #9 is 3.67 pounds. Additionally, the RVAAP does not anticipate a 100% release of these metals from the paint during the open burn.

For comparison purposes, we note that **OAC 3745-15-05(B)(5) De minimis** air contaminant source exemption provides that if *"The source emits more than one ton per year of any hazardous air pollutant or combination of hazardous air pollutants"* that the source would be regulated. As a result, the potential to emit weight of hazardous air pollutants would be far below the established threshold. Considering the staggered burn schedule and the isolation distances to be realized at the RVAAP, we do not expect a negative impact on health or environment.

## **2. RESIDUAL EXPLOSIVE CONTAMINATION**

Explosive materials were stored and utilized in the production of munitions at the RVAAP facility. Rule **OAC 3745-68-82** provides for the open burning and detonation of waste explosives and military propellants that cannot safely be disposed of through other modes of treatment. The RVAAP and its contractors will comply with the minimum isolation distances and associated provisions as provided in **3745-68-82** in order to maintain a safe operation.

## **3. MATERIAL REMOVAL PRIOR TO THERMAL DECOMPOSITION**

Although residual explosives in the project facilities pose a significant safety hazard, the RVAAP's contractor has conducted a hazard analysis and determined that it is safe and appropriate to remove certain regulated materials that are readily visible from the structures to minimize environmental concerns with the open burn. The contractor's hazard analysis included a historical search of facility files to help identify any specific information on hazards within the project buildings. The removal of the regulated materials will provide the opportunity to eliminate them from the thermal decomposition and in turn provide for the appropriate management of the materials prior to final disposal. The following sections present the regulated materials identified and the methods by which they will be handled and disposed.

**a) Asbestos/Transite**

The majority of building roofs located in load lines #6 and #9 were constructed with transite sheets placed on steel framing. The RVAAP contractor's Scope of Work provides for the removal of the transite sheets in conformance with the asbestos removal and handling regulations as stated in 1b above. In addition, the explosion-proof lighting fixtures in these structures house asbestos gaskets, which will also be removed and appropriately disposed of.

**b) Lighting Ballasts**

Prior to thermal decomposition, the RVAAP contractor will remove light ballasts from each facility and evaluate the ballast material for regulated materials such as PCBs. If regulated materials are discovered, the wastes will be handled and disposed in accordance with regulatory requirements.

**c) Paint Chips and Floor Sweepings**

During the hazard evaluation sweep of each of the project buildings at the RVAAP, it was noted that significant amount of paint had peeled off the walls and resided on the building floors. A combination of "soft scrubbing" to remove additional loose paint from the walls and floor sweeping will be used to remove paint debris from the buildings. The contractor has determined that the "soft scrub" procedure does not cause additional increased safety risk. The floor sweepings will be collected, analyzed through the toxicity characteristic leaching procedure (TCLP) test and for PCBs prior to disposal according to the regulatory requirements.

**d) Switches and Gauges**

Prior to thermal decomposition, the RVAAP contractor will remove all mercury switches and gauges from the structures. These switches and gauges will be safely removed prior to thermal decomposition, following which they will be managed and disposed of in accordance with applicable regulations.

**4. DISPOSAL AND RECYCLING OF MATERIAL POST-THERMAL DECOMPOSITION**

Upon completion of the thermal decomposition exercise, all existing structures will have reached the 5X explosive safety level thus allowing the contractor to proceed with conventional demolition. Conventional demolition activities provide the opportunity to recycle, reuse and/or dispose of the demolition materials.

#### a) **Evaluation of Ash**

After completion of the open burn, the remaining ash and residue will be collected, tested and disposed of in accordance with local, state and federal regulations.

#### b) **Recycling of Metals**

The metal remaining in the buildings will be processed and transported for recycling and/or reuse.

#### c) **Concrete Block, Brick, Tile or Stone**

The clean hard fill material resulting from the conventional demolition process will be directed to one or more of the following options:

- Recycled into useable construction material, (i.e. road bed materials)
- Disposed in the RVAAP on-site clean hard fill disposal area

In addition and prior to final use or disposal, the clean hard fill material options will conform with evaluation and determination of applicable PCB bulk product waste requirements and will be handled and disposed in conformance with U.S. EPA guidelines for this activity.

### **5. CONSIDERATION AND SELECTION OF CLIMATIC CONDITIONS FOR THE OPEN BURN**

In preparation of the Thermal Decomposition of the structures at Load Lines 6, 9 and the Wet Storage Area, an evaluation of the appropriate climatic conditions will be conducted. This information will be gathered prior to and during the open burn to minimize the impact of emissions downwind of the site. The climatic variables, which will be evaluated, include:

- Temperature – Low ground-level temperatures
- Vertical Temperature Gradient – Measured at 1 foot and 6 feet above the ground surface in several areas.
  1. Lapse – Strong lapse temperature gradient preferred.
  2. Neutral – Weak neutral conditions preferred.
  3. Inversion Conditions - Undesirable
- Wind Speed – 5-10 miles per hour preferred.
- Wind Direction – East / Northeast
- Precipitation – Damp ground with zero precipitation on the day of the burn preferred.
- Cloud cover – minimal preferred

The assistance of the Ravenna City Fire Chief and local meteorologist will be incorporated to evaluate the climatic conditions on the days proceeding and during the open burn.

### **SUMMARY**

The proposed thermal decontamination of Load Lines #6 and #9 as well as the Wet Storage Area (Igloos #1, #1A, #2 and #2A) at the RVAAP will provide assurance that any residual explosives present in these facilities will be properly decomposed. Likewise, the thermal decontamination effort will eliminate the human safety threat from explosive hazards during follow-up conventional demolition of the buildings. In addition, the information presented in this paper provides that the RVVAP will comply with the applicable environmental regulations during the thermal decontamination process and that the RVAAP staff and its contractors plan to work closely and cooperatively with the local, state and federal regulatory agencies during the entire project.



# APPENDIX I

## LOAD LINE 6 RESIDUAL LEAD PAINT RESULTS

Paint Color	Pounds of Lead
GD-WP	2.86
GL-WP	0.20
GY-WP	2.36
WT-WP	3.78
BL-WP	0.19
WT-SS	32.18
SL-SS	17.70
YW-WP	0.11
MN-DP	3.48
OG-DP	10.02
<b>TOTAL</b>	<b>72.88</b>

## LOAD LINE 6 LEAD FLOOR CALCULATIONS

Cu. Ft. of Lead Floor	Pounds of Lead
3.54	2,490
5.83	4,101
<b>TOTAL 9.38</b>	<b>6,591</b>

## LOAD LINE 6 TOTAL POTENTIAL LEAD EMISSIONS

Source of Leads	Pounds of Potential Emissions
Paint	.18
Floors	16.48
<b>TOTAL</b>	<b>16.66</b>

**APPENDIX II**  
**LOAD LINE 9**  
**RESIDUAL LEAD PAINT RESULTS**

<b>Paint Color</b>	<b>Pounds of Lead</b>
GD-WP	3.13
GL-WP	0.21
GY-WP	2.59
WT-WP	4.13
BL-WP	0.21
WT-SS	41.84
SL-SS	23.01
MN-DP	7.89
OG-DP	22.77
<b>TOTAL</b>	<b>105.78</b>

**LOAD LINE 9**  
**LEAD FLOOR CALCULATIONS**

<b>Cu. Ft. of Lead Floor</b>	<b>Pounds of Lead</b>
10.45	7,345.5
10.45	7,345.5
6.25	4,394.0
7.50	5,272.9
1.61	1,135.1
<b>Total 37.30</b>	<b>26,225.4</b>

**LOAD LINE 9**  
**TOTAL POTENTIAL LEAD EMISSIONS**

<b>Source of Leads</b>	<b>Potential Pounds of Lead Emissions</b>
Paint	.26
Floors	65.56
<b>TOTAL</b>	<b>65.82</b>

# APPENDIX III

## LOAD LINE 6 & 9 RESIDUAL NESHAPS (COMBINED) METALS (Pounds)

Arsenic  
Cadmium  
Chromium  
Barium

Silver  
Mercury  
Selenium

### LOAD LINE 6

PAINT COLOR	POUNDS OF METALS
GD-WP	0.37
GL-WP	0.098
GY-WP	0.68
WT-WP	0.83
BL-WP	0.16
WT-SS	0.33
SL-SS	0.14
YW-WP	0.03
MN-DP	.023
OG-DP	0.07
<b>TOTAL</b>	<b>2.73</b>

### LOAD LINE 9

PAINT COLOR	POUNDS OF METALS
GD-WP	0.41
GL-WP	0.11
GY-WP	0.75
WT-WP	0.91
BL-WP	0.18
WT-SS	0.43
SL-SS	0.19
MN-DP	0.53
OG-DP	0.16
<b>TOTAL</b>	<b>3.67</b>

LOAD LINES #6 & #9 POTENTIAL COMBINED METALS EMISSIONS

## APPENDIX IV

### RVAAP LOAD LINE 6 & 9 SUMMARY OF POTENTIAL LEAD EMISSIONS FROM LEAD PAINT AND LEAD FLOORING

Load Line	Source of Lead	Pounds of Lead	Potential Lead Emissions (Pounds)
6	Floors	6,591	16.48
6	Paint	72	.18
6		Total	16.66
9	Floors	28,129	65.56
9	Paint	105.78	.26
9		Total	65.82

### RVAAP LOAD LINE 6 & 9 SUMMARY OF POTENTIAL NESHAPS EMISSIONS FROM PAINT

Load Line	Source of Metals	Total Metals	Potential Emissions (Pounds)
6	Walls and Structure	2.73	2.73
9	Walls and Structure	3.67	3.67
		Total	6.40

### RVAAP WET STORAGE AREA SUMMARY OF POTENTIAL LEAD EMISSIONS FROM LEAD LININGS

Igloo Number	Source of Lead	Pounds of Lead	Potential Lead Emissions (Pounds)
1	2 Box Linings	966.70	2.42
1A	2 Box Linings	966.70	2.42
2	6 Box Linings	2900.10	7.25
2A	6 Box Linings	2900.10	7.25
		Total	19.34

# APPENDIX V

## Lead Emission Test Procedure

The Ravenna Army Ammunition Plant (RVAAP) has formally requested to open burn structures within specific ammunition load lines located at the arsenal in order to facilitate the Thermal Destruction of residual explosives within the construction materials of the resident buildings. Due to the hazardous and reactive nature of the explosives handled in these facilities, several of the buildings have lead lined floors (1/8 inch thick) used to reduce the potential of static energy buildup while handling explosives within the structures. Given the potential for explosive accumulation between the lead lining and the concrete floor, removal of the lead lining by mechanical means is too hazardous to the work force and must be left in place within the structures when the Thermal Destruction (or burn) is carried out.

Therefore, a test was conducted at the RVAAP to calculate the potential lead emissions when the open burn is conducted. This paper provides a summary of the open burn parameters and the testing procedure used to calculate potential air emissions.

### 1. Open Burn Parameters

All explosives have a thermal decomposition threshold temperature at or below 800° F. Above this temperature all explosives are decomposed. In addition, in order to provide a strict level of quality assurance/quality control, the RVAAP contractor designs these open burns of explosively contaminated buildings in such a manner as to achieve 1200° F for a period of 20 minutes. This ensures that the necessary heat threshold is achieved.

### 2. Test Procedure

- a) Verify scale calibration and zero the scale, (accuracy to 0.1 grams).
- b) Place stainless steel cup on scale and zero scale.
- c) Weigh out a fixed amount of elemental lead and record, (grams).
- d) Place stainless steel container with measured quantity of lead on stand over propane torch.
- e) Conduct the internal calibration check on the thermocouple, (accuracy to 0.1 ° F)
- f) Suspend thermocouple over stainless steel container so that the tip is positioned just above the bottom of the container, without being in contact.

- g) Set the electronic timer for 20 minutes, (accuracy to 1/100 second).
- h) Ignite the propane torch and adjust the flame to provide maximum heating of the bottom of the steel container.
- i) Once the lead melts, verify that the tip of the thermocouple is submerged within the liquefied lead.
- j) Once the temperature of 1200° F is achieved, begin the timer.
- k) Observe and record the temperature of the liquefied lead at the beginning and every 4 minutes thereafter until the 20 minutes has expired and the timer goes off.
- l) Turn off the propane torch.
- m) Remove the thermocouple from the liquefied lead and set aside to cool.
- n) Allow the lead sample and steel container to cool.
- o) Once cooled, remove the sample and container and place on the calibrated scale.
- p) Record the weight of the sample and scale.
- q) Verify the scale calibration.
- r) Subtract the post-test weight from the pre-test weight.
- s) This is the measured mass of lead lost due to emissions from heating the sample.

### 3. Test Results

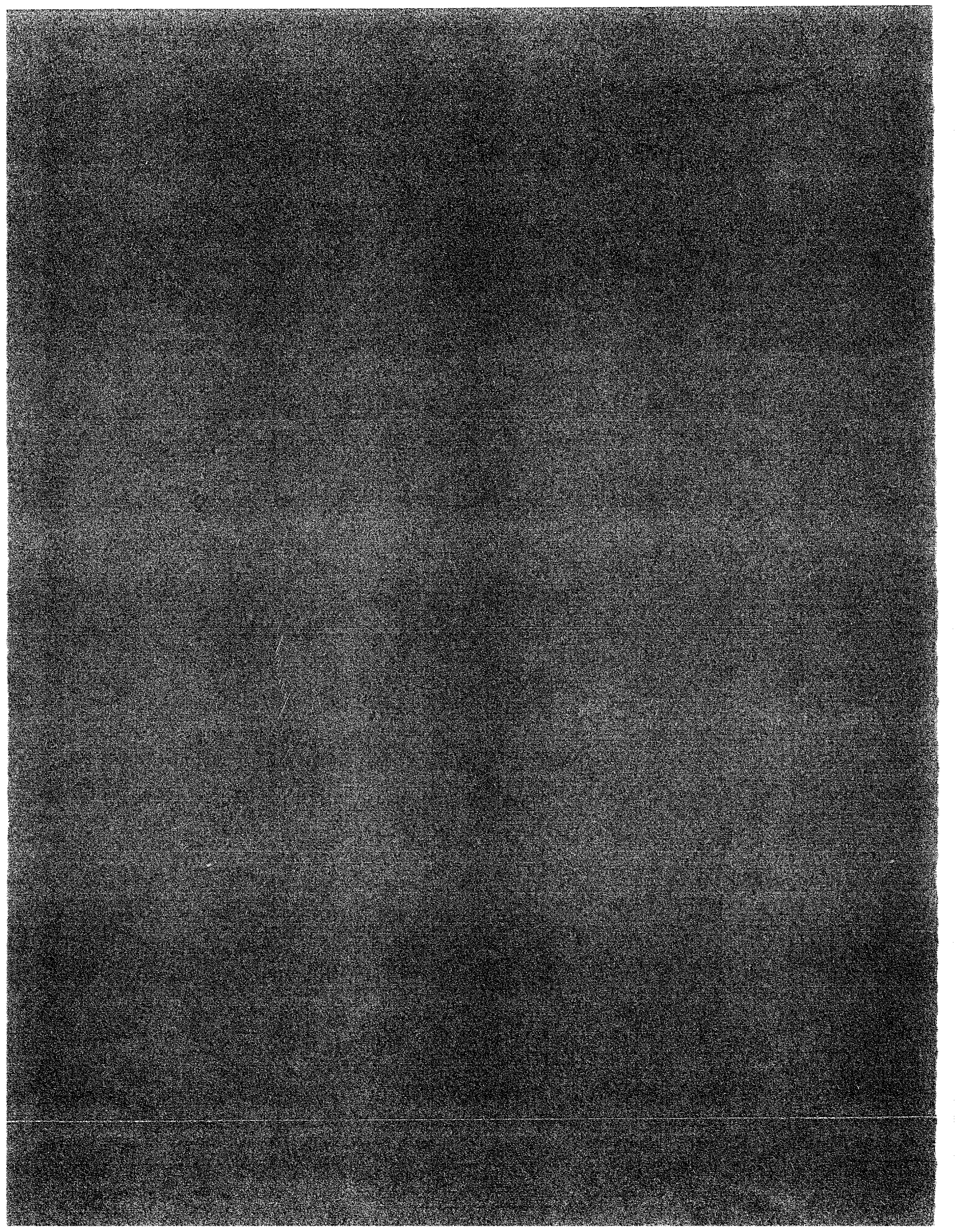
Initial Sample Weight:	80.0 grams
Final Sample Weight:	79.8 grams
Reduction in Mass of Lead:	0.2 grams
Percent Reduction of Lead:	0.25 %

### 4. Assumptions and Limitations of the Test Procedure

The test is conservative due to source of heat being applied beneath the lead sample unlike field conditions, which placed the source of heat (dunnage) above the elemental lead floor lining.

Amount of lead reduction is conservative, assuming 100 % air emission, when in reality, minute particles of lead had to be scraped off of thermocouple at the conclusion of the test. Residual on the thermocouple is highly likely.

The test was conducted only once, although it provides a solid theoretical value, it does not provide a firm statistical basis.





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

December 3, 2002

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
THERMAL DECOMPOSITION WORKPLAN

Mr. Mark Patterson  
Environmental Program Manager  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the following documents:

- A. "Work Plan for the Thermal Decomposition and 5X Certification of Load Lines 6 & 9 and Wet Storage Igloos 1, 1A, 2, and 2A, Ravenna Army Ammunition Plant, Ravenna, Ohio 44266;"
- B. "Explosive Safety Submission for the Thermal Decomposition and 5X Certification of Load Lines 6 & 9 and Wet Storage Igloos 1, 1A, 2, and 2A, Ravenna Army Ammunition Plant, Ravenna, Ohio 44266;" and
- C. "Safety and Health Plan for the Thermal Decomposition and 5X Certification of Load Lines 6 & 9 and Wet Storage Igloos 1, 1A, 2, and 2A, Ravenna Army Ammunition Plant, Ravenna, Ohio 44266."

The documents, dated October 2002 and received at NEDO on November 18, 2002, were prepared by MKM Engineers, Inc. for the U.S. Army Operations Support Command (OSC) under contract number DAAA-09-02-C-0029.

The Agency has the following comments on the documents (WP = Workplan; ESS = Explosives Safety Submission; and HASP = Health and Safety Plan) related to environmental issues. If comments are applicable to one or more documents, the comment will be made only once and the applicable section/page of the other document(s) will be referenced.

**General Comments:**

1. The initiation of the workplan (and supporting documents) is dependant upon the issuance of a burn permit from the Akron Regional Air Quality Management District (ARAQMD). In addition, the proposed thermal destruction (TD) hinges on the acceptability of the environmental position paper which, as of this date, has not been received.



MR. MARK PATTERSON  
DECEMBER 3, 2002  
PAGE 3

7. In future submissions, please ensure that Ravenna is referred to as being a city, not a town. (WP Section 1.2, page 2; HASP Section 3.1.1, page 9)
8. Update Section 1.3 (page 2) to reflect the latest transfer of land between the Army and the National Guard Bureau (NGB). (Also applicable to ESS Section 2.0, page 3; HASP Section 3.1.2, page 9)
9. Section 2.1.2 (page 5) indicates that RVAAP is not a known Chemical Warfare Materiel (CWM) site. Please revise the text to indicate that RVAAP is on the Non-Stockpile Chemical Materiel Project (NSCMP) list, due to the suspected Mustard Agent Burial Site. (Also applicable to ESS Section 12.3, page 19)
10. Please define what is meant by "slab removal restrictions." (WP Section 2.1.2, page 6)
11. Please provide additional explanation as to the rationale behind potentially using TD on non-explosive buildings (NEB). The main point of TD was based on the fact that it would be utilized on buildings that could not safely be demolished using more conventional techniques. The Agency requests further discussion on this issue. (Also applicable to WP Table 1; ESS Section 7.1, page 6; ESS Section 7.7, page 14; HASP Section 5.2.1.1, page 25)
12. Table 1 indicates that the majority of buildings at Load Line 6 may have handled mercury fulminate. It is Ohio EPA's understanding that Load Line 6 could have been retro-fitted to handle mercury fulminate, i.e., there was a design contingency to handle this compound, but that, based upon process information and history, the main primary explosive at this Load Line was lead azide. Please confirm and adjust the table accordingly. In addition, is there any existing de-classified information regarding the testing conducted at this Load Line, such that a more accurate list of explosives compounds used at this AOC could be generated?
13. Please provide additional information in Section 2.2.2 (page 9) regarding the amount of water that will be utilized to flood any cracks in the concrete floors at the WS igloos and Load Lines, prior to the slabs being demolished/removed. If there is any residual contamination in the buildings, it may be mobilized and enter the groundwater. This potential issue would be handled under any subsequent Remedial Investigation (RI) by the installation of monitoring wells. (Also applicable to HASP Section 5.10.1 page 32)
14. Please add Ohio EPA's spill number (1-800-282-9378) to the list of emergency response numbers in Section 2.4.3.1 on page 15. Additionally, in WP Sections 5.3.7 (page 39) and 5.4.1 (page 40), the spill number must be called if there is a discharge into the Waters of the State. (Also applicable to HASP Section 12.11.2, page 69)
15. Section 2.4.3.3 on page 16 indicates that "No other permits have been identified to be required for the execution of work under this scope of work." This has yet to be

20. Please provide additional information regarding the desensitization of the WS igloos. When will the "desensitization" take place? Please explain why fuel will be utilized instead of the "kill solution" that the US Army Corps of Engineers (USACE) typically utilizes. (WP Section 2.10.1.2, page 19; ESS Section 7.3, page 10; HASP Section 5.5.1, page 28)
21. Section 2.10.1.3 (page 20) indicates that the interior of the Load Lines and the WS igloos will be sprayed with fuel oil on the day of the proposed burn. Please provide an explanation for this departure from the presentation given to the regulatory agencies on September 04, 2002. Are there any floor drains in the vicinity where the fuel is proposed to be sprayed? If so, what precautions will be taken? With respect to potential health and safety issues (for example explosive atmospheres), have they been determined to be moot based upon the fact that the roofing will have been removed?
22. On page 23 (Section 2.10.4), please provide additional information as to the "designated location" for debris removal. (Also applicable to ESS Section 7.5, page 12)
23. The text on page 23 (Section 2.10.4) indicates that "soil from the earthen-cover (igloos) will be staged for re-use during site restoration activities." This will only be done subsequent to the determination that the soil is not contaminated with any human-made constituents, and that the metals concentrations are consistent with the facility-wide background. (Also applicable to ESS Section 7.3, page 10; ESS Section 7.5, page 13; HASP Section 5.8.1, page 31)
24. Please revise the text on page 23 (Section 2.10.5) to indicate that there is only one (1) sump at Load Line 6. (Also applicable to HASP Section 5.9.1, page 31)
25. On page 24 (Section 2.10.5), please provide additional information as to how the lead liners (in the sumps) will be decontaminated.
26. Please comment on the potential for the lead in the lining of the sumps to migrate through cracks in the sumps during the TD. (WP Section 2.10.5, page 24)
27. Please comment on the potential for the release of asbestos fibers from the lead lined sumps during the TD. (WP Section 2.10.5, page 24)
28. Please confirm with the accepting disposal facility that the lead lining from the sumps can be disposed of along with other asbestos containing material (ACM). (WP Section 2.10.5, page 24)
29. In Section 2.10.7 (page 25), please provide additional information as to how the soil will be "desensitized." In addition, what is the cut-off concentration for lead in the soil before analyses for azides will be conducted? (Also applicable to ESS Section 7.8, pages 14 - 15; HASP Section 5.11.1, page 33)

42. On table 2 (page 12), please reference the fact that PCBs are also found in the various Load Line paints.
43. Please revise the text on page 17 to indicate that this project will likely be initiated in the cold weather months. (Also Section 13.18, page 78)
44. Please complete the last sentence found in Section 4.6.4.6 (page 20).
45. On page 29 (Section 5.6.1), please clarify the meaning of the acronym "PEB." (Also applicable to Table 5 on page 50)
46. In Section 5.6.2 (page 29), please add another bullet to the text indicating that there may be inhalation hazards.
47. Please revise the text in Section 6.8 (page 37) to indicate that RVAAP requires that a First Responder be a member of the team. (Also applicable to Section 8.5.1, page 47)
48. The text in Section 7.10 on page 45 indicates that no safety showers will be required, as personnel will not be potentially drenched with materials that pose a threat to the skin. Please clarify this statement in light of the proposal to spray fuel oil into the WS igloos and Load Lines on the day of TD.
49. Please be advised that it is likely that any responding ambulance would only be able to provide basic life support (BLS) and not advanced life support (ALS). There is the possibility that if ALS is required, that an intercept would need to be arranged. (HASP Section 8.5.1, page 48; HASP Section 8.5.2, page 48; HASP Section 21.8.4, page 67; HASP Section 12.9.1, page 68)
50. Please be advised that Robinson Memorial Hospital is a provisional Level III trauma center. If a higher level of support is needed, the injured party would need to be taken to a different trauma center in the nearby vicinity. (HASP Section 8.5.2, page 48)
51. Please clarify the first sentence in Section 11.1.2 on page 55.
52. In Table 6 (page 59), please clarify whether or not all emergency calls are to be routed through Post # 1.
53. What criteria will be utilized to determine if a fire is "large" or "small" and when firefighters will be called in to extinguish the blaze. (HASP Section 12.5, page 60)
54. If a contaminated worker needs to be taken to the hospital, notify the BLS, so that the squad and hospital can take the appropriate precautions. (HASP Section 12.8.3, page 66)
55. Throughout Appendix A, please modify the forms to read "Load Lines."



**MKM's Response To The Ohio EPA, 03 DEC 02 Comments  
LI 6, 9 & Wet Storage Area (WSA) Thermal Decontamination Work Plans  
Ravenna Army Ammunition Plant**

Description	Ohio EPA's Comment	MKM's Response To The Comment
<p align="center"><b>A COMMENT RESOLUTION MEETING ATTENDED BY REPRESENTATIVES FROM THE OEPA AND MKM ENGINEERS, INC. WAS HELD AT THE RVAAP ON 3 DEC 02 TO DISCUSS THE ABOVE REFERENCED WORK PLANS. THE FOLLOWING RESPONSE MATRIX SUMMARISES THE AGREED UPON RESOLUTION FOR EACH COMMENT AND WILL SERVE TO DOCUMENT RESULTANT CHANGES TO THE LL 6,9 AND WSA BURN PROGRAM. AS A RESULT, REVISION AND RESUBMITTAL OF THE WORK PLAN DOCUMENTS IS NOT REQUIRED.</b></p>		
<p align="center"><b>GENERAL</b></p>		
Item 1	The initiation of the work plan (and supporting documents) is dependant upon the issuance of a burn permit from the Akron Regional Air Quality Management District (ARAQMD). In addition, the proposed thermal destruction (TD) hinges on the acceptability of the environmental position paper which, as of this date, has not been received.	Agreed.
Item 2	During the presentation made by MKM, OSC, and Neal Environmental Services (NES) to various regulatory agencies on September 04, 2002, Mr. Chip Porter of the Portage County Health Department (PCHD) had several questions regarding the proposed activities relative to wind speed, wind direction, etc. Please ensure that Mr. Porter's concerns are addressed.	Agreed.
Item 3	Were the above-referenced work plans placed in the two information repositories for the Ravenna Army Ammunition Plant (RVAAP), such that the general public had/has the opportunity to provide comments on the proposed plans? (Also applicable to WP Section 2.4.3.1 on pages 14 - 15.)	The Final Work Plans will be placed in information repositories for the RVAAP.
Item 4	Please comment on the potential for dioxin production as a result of the incomplete combustion of PCBs.	USEPA is involved with this project and will make the call regarding this issue.
Item 5	Please submit a copy of the letter from the Department of Defense Explosives Safety Board (DDESB) approving the ESS.	Agreed, will provide OSC's approval to proceed.
<p align="center"><b>WORKPLAN (WP)</b></p>		
Item 1	Please revise the meaning of the acronym "IOCP" found on page v.	The acronym IOCP on page v should be defined as "Industrial Operations Command Pamphlet" not "Industrial Operations Support Command".
Item 2	The work plan indicates that the TD is planned for Wet Storage (WS) igloos 1, 1A, 2, and 2A. The WS area of concern also contains two other igloos identified as 3 and 3A. Please explain why these two igloos are not included in the proposed work. (WP	3 and 3A are in good shape and currently used for storage. These igloos have been cleaned to at least 3X for use unlike 1, 1A, 2, & 2A which still contain explosive contaminated storage bins and are considered 1X.



**MKM's Response To The Ohio EPA, 03 DEC 02 Comments  
LI 6, 9 & Wet Storage Area (WSA) Thermal Decontamination Work Plans  
Ravenna Army Ammunition Plant**

Description	Ohio EPA's Comment	MKM's Response To The Comment
	Section 1.1.2, page 1; WP Section 1.4.3, page 4; WP Section 2.2.1, page 6; WP Section 2.2.2, page 6; WP Section 2.10.1.2, page 19; ESS Section 1.3.1, page 2; ESS Section 7.1, page 6; ESS Section 7.3.1, page 11; HASP Section 3.2.3, page 10).	
Item 3	In Section 1.1.2 (page 1), if there is contamination beneath the WS igloos, it will be necessary to determine the nature and extent of the contamination in a subsequent phase of work.	Acknowledged.
Item 4	In Section 1.1.2 (page 1), please add Ohio EPA to the list of agencies to be contacted in the event that visible bulk explosives are encountered under concrete floor slabs at either the load lines or WS area. (Also applicable to WP Section 2.2.2, page 9; WP Section 2.10.6, page 24; ESS Section 1.2, page 1; ESS Section 7.2, page 7; ESS Section 7.3, page 11; ESS Section 7.7, page 14).	Acknowledged.
Item 5	As a point of information, the fact that the removal of building/igloo footers will not be conducted under this scope of work (SOW) indicates the need for future investigative and remedial work. (WP Section 1.1.2, page 1; ESS Section 1.2, page 1).	Acknowledged.
Item 6	In Section 1.1.4 (page 2), if there are any changes made to the WP that impact upon environmental issues, Ohio EPA also needs to be notified.	Acknowledged.
Item 7	In future submissions please ensure that Ravenna is referred to as being a city, not a town. (WP Section 1.2, page 2; HASP Section 3.1.1, page 9).	Agreed.
Item 8	Update Section 1.3 (page 2) to reflect the latest transfer of land between the Army and the National Guard Bureau (NGB). (Also applicable to ESS Section 2.0, page 3; HASP Section 3.1.2, page 9).	Acknowledged.
Item 9	Section 2.1.2 (page 5) indicates that RVAAP is not a known Chemical Warfare Materiel (CWM) site. Please revise the text to indicate that RVAAP is on the Non-Stockpile Chemical Materiel Project (NSCMP) list, due to the suspected Mustard Agent Burial Site. (Also applicable to ESS Section 12.3, page 19).	Acknowledged.



**MKM's Response To The Ohio EPA, 03 DEC 02 Comments**  
**L1 6, 9 & Wet Storage Area (WSA) Thermal Decontamination Work Plans**  
**Ravenna Army Ammunition Plant**

Description	Ohio EPA's Comment	MKM's Response To The Comment
Item 10	Please define what is meant by "slab removal restrictions." (WP Section 2.1.2, page 6).	If explosive contamination is known to be very high, there may be restrictions placed on the manner at which slabs (accumulation area) are removed/demolished.
Item 11	Please provide additional explanation as to the rationale behind potentially using TD on non-explosive buildings (NEB). The main point of TD was based on the fact that it would be utilized on buildings that could not safely be demolished using more conventional techniques. The Agency requests further discussion on this issue. (Also applicable to WP Table 1; ESS Section 7.1, page 6; ESS Section 7.7, page 14; HASP Section 5.2.1.1, page 25)	RVAAP archival data does not always accurately reflect the complete history of building usage at the load lines. Therefore, if a particular building cannot be positively identified as NEB it will be thermally treated. Buildings that can be positively identified as NEBs will be initially inspected, and once certified as free of potential explosive hazards, will either be thermally disposed of or demolished using standard, acceptable construction techniques, as determined by MKM and approved by the OSC.
Item 12	Table 1 indicates that the majority of buildings at Load Line 6 may have handled mercury fulminate. It is Ohio EPA's understanding that Load Line 6 could have been retro-fitted to handle mercury fulminate, i.e., there was a design contingency to handle this compound, but that, based upon process information and history, the main primary explosive at this Load Line was lead azide. Please confirm and adjust the table accordingly. In addition, is there any existing de-classified information regarding the testing conducted at this Load Line, such that a more accurate list of explosives compounds used at this AOC could be generated?	Historical information and process-related information show that both mercury fulminate and lead azide were used at the load line. Additionally, TNT, propellants and perchlorates may have also been used at the load line during various testing operations at LL 6.
Item 13	Please provide additional information in Section 2.2.2 (page 9) regarding the amount of water that will be utilized to flood any cracks in the concrete floors at the WS igloos and Load Lines, prior to the slabs being demolished/removed. If there is any residual contamination in the buildings, it may be mobilized and enter the groundwater. This potential issue would be handled under any subsequent Remedial Investigation (RI) by the installation of monitoring wells. (Also applicable to HASP Section 5.10.1 page 32)	Acknowledged. The amount of water added to cracks in concrete floors will only be enough to displace oxygen and eliminate the possibility for ignition.
Item 14	Please add Ohio EPA's spill number (1-800-282-9378) to the list of emergency response numbers in Section 2.4.3.1 on page 15. Additionally, in WP Sections 5.3.7 (page 39) and 5.4.1 (page 40),	Acknowledged.



**MKM's Response To The Ohio EPA, 03 DEC 02 Comments  
LI 6, 9 & Wet Storage Area (WSA) Thermal Decontamination Work Plans  
Ravenna Army Ammunition Plant**

Description	Ohio EPA's Comment	MKM's Response To The Comment
	the spill number must be called if there is a discharge into the Waters of the State. (Also applicable to HASP Section 12.11.2, page 69)	
Item 15	Section 2.4.3.3 on page 16 indicates that "No other permits have been identified to be required for the execution of work under this scope of work." This has yet to be determined, as the environmental position paper has not yet been received and reviewed by this Agency.	Acknowledged.
Item 16	Section 2.6 (page 16) should also indicate that the paint at the Load Lines has been demonstrated to contain PCBs and other metals in addition to lead.	Acknowledged.
Item 17	If the floor sweepings potentially contain paint chips, they must be containerized and characterized and disposed of in accordance with all applicable State and Federal rules, laws, and regulations. (WP Section 2.7 page 16)	Agreed. Disposal of floor sweeping will be performed in accordance with all applicable State and Federal rules, laws, and regulations.
Item 18	With respect to Table 3 (Waste Stream and Disposition) on page 17:	
a	Please provide a description of the "biopad." Decontamination water should be containerized, characterized and disposed of in accordance with all applicable State and Federal rules, laws, and regulations.	The biopad is located at LL4 and is set up for bio-remediation of explosives contaminated soil at the RVAAP. Decontamination water from this project will be disposed of off-site in accordance with all applicable State and Federal rules, laws, and regulations.
b	Sump water may potentially be applied to the ground surface, only if the water is determined to be in accordance with the details and conditions of Ohio EPA's e-mail, dated October 18, 2002. (Also applicable to WP Section 2.10.5, page 24; ESS Section 7.6, page 13)	Agreed.
c	With respect to the transport of the resulting concrete to the on-site Clean Hard Fill (CHF) areas, please contact Ohio EPA's Division of Solid Waste Management (DSIWM) and the PCHD, to ensure that this option is acceptable. (This comment is also applicable to WP Section 2.10.4, page 23; WP Section 2.10.5, page 24; WP Section 2.10.6, page 24; ESS Section 7.5, page 13; ESS Section 7.7, page 14; HASP Section 5.8.1, page 30)	Agreed.



**MKM's Response To The Ohio EPA, 03 DEC 02 Comments**  
**LI 6, 9 & Wet Storage Area (WSA) Thermal Decontamination Work Plans**  
**Ravenna Army Ammunition Plant**

Description	Ohio EPA's Comment	MKM's Response To The Comment
d	Please refer to Ohio EPA's e-mail, dated October 18, 2002, regarding the sampling suite for the sump water and revise accordingly.	Agreed.
e	Please add to the analytical suite the following constituents for the paint chips: full TCLP and PCBs.	Paint chips/floor sweepings will be analyzed for TCLP metals and PCBs, as agreed during comment resolution.
f	Further discussion is requested regarding the sampling frequency for the resulting ash. The sampling frequency, as specified, may not result in a representative sample. (This comment is also applicable to WP Section 2.10.3 on page 22; ESS Section 7.4, page 12; HASP Section 5.7.1, page 29)	Only "clean" untreated dunnage will be used during burn operations. Additionally, due to the relatively small amount of ash generated (approximately 8-10% of starting volume of dunnage), one composite sample of this waste stream is sufficient for waste characterization purposes.
g	Please ensure that the proposed analytical testing is acceptable to the disposal facility (ies) utilized.	Agreed.
Item 19	Please discuss in Section 2.10 (page 18) whether or not any noise monitoring at the perimeter of the installation will be conducted. (Also applicable to WP Section 5.6, page 41)	Noise monitoring will be conducted at the perimeter of the installation to document noise levels during burn operations.
Item 20	Please provide additional information regarding the desensitization of the WS igloos. When will the "desensitization" take place? Please explain why fuel will be utilized instead of the "kill solution" that the US Army Corps of Engineers (USACE) typically utilizes. (WP Section 2.10.1.2, page 19; ESS Section 7.3, page 10; HASP Section 5.5.1, page 28)	Desensitization will be performed close to the time at which actual burn operations are initiated. Both desensitizing options were evaluated and the remote ignition (det cord in ring main configuration) of fuel container was found to be safest, easiest and most effective for this particular situation.
Item 21	Section 2.10.1.3 (page 20) indicates that the interior of the Load Lines and the WS igloos will be sprayed with fuel oil on the day of the proposed burn. Please provide an explanation for this departure from the presentation given to the regulatory agencies on September 04, 2002. Are there any floor drains in the vicinity where the fuel is proposed to be sprayed? If so, what precautions will be taken? With respect to potential health and safety issues (for example explosive atmospheres), have they been determined to be moot based upon the fact that the roofing will have been removed?	The fuel is applied to dunnage in a manner so as not create runoff and form large pools. The fuel is necessary to augment the heat generated by dunnage and ensure success of the burn. Floor drains will be plugged prior to the application of fuel as an added precaution.
Item 22	On page 23 (Section 2.10.4), please provide additional information as to the "designated location" for debris removal. (Also applicable	This location will be placed strategic to the ongoing field operations and will be determined in the field.





**MKM's Response To The Ohio EPA, 03 DEC 02 Comments  
LI 6, 9 & Wet Storage Area (WSA) Thermal Decontamination Work Plans  
Ravenna Army Ammunition Plant**

Description	Ohio EPA's Comment	MKM's Response To The Comment
Item 23	to ESS Section 7.5, page 12) The text on page 23 (Section 2.10.4) indicates that "soil from the earthen-cover (igloos) will be staged for re-use during site restoration activities." This will only be done subsequent to the determination that the soil is not contaminated with any human-made constituents, and that the metals concentrations are consistent with the facility-wide background. (Also applicable to ESS Section 7.3, page 10; ESS Section 7.5, page 13; HASP Section 5.8.1, page 31)	The earthen cover will be paced to grade over the footprint of the igloo; future investigative work will evaluate both the surface and subsurface soils. Any excess soil will be stabilized on site.
Item 24	Please revise the text on page 23 (Section 2.10.5) to indicate that there is only one (1) sump at Load Line 6. (Also applicable to HASP Section 5.9.1, page 31)	Agreed. Only one sump at LL6.
Item 25	On page 24 (Section 2.10.5), please provide additional information as to how the lead liners (in the sumps) will be decontaminated.	If possible the lead liner will be deconned by removing the asbestos matting, certified as "asbestos free" and then recycled off-site. Otherwise, the lead liner will be disposed of off-site in accordance with Federal, State and Local rules, laws and regulations.
Item 26	Please comment on the potential for the lead in the lining of the sumps to migrate through cracks in the sumps during the TD. (WP Section 2.10.5, page 24)	Any lead that might migrate through cracks will be removed. MKM is looking at other options to avoid this such as using kill solutions in the sumps in place of burning.
Item 27	Please comment on the potential for the release of asbestos fibers from the lead lined sumps during the TD. (WP Section 2.10.5, page 24)	This issue will be addressed with Akron Air. However, since the mechanical separation of the lead and asbestos from the concrete sump is a potential explosive hazard, either a "kill" solution or TD will be used to render the sumps safe for handling, prior to demolition.
Item 28	Please confirm with the accepting disposal facility that the lead lining from the sumps can be disposed of along with other asbestos containing material (ACM). (WP Section 2.10.5, page 24)	Only the concrete (sump) would be disposed of as ACM. Lead will be handled as described in comment #26.
Item 29	In Section 2.10.7 (page 25), please provide additional information as to how the soil will be "desensitized." In addition, what is the cut-off concentration for lead in the soil before analyses for azides will be conducted? (Also applicable to ESS Section 7.8, pages 14 - 15; HASP Section 5.11.1, page 33)	For safety reasons, if the soil tests positive for lead azide it will be desensitized by localized burning or det cord flashing. Second sentence of comment withdrawn.
Item 30	Section 2.13 (pages 28 - 30) describes explosives demolition operations (if needed). If it is determined that unexploded ordnance	Agreed.



**MKM's Response To The Ohio EPA, 03 DEC 02 Comments  
LI 6, 9 & Wet Storage Area (WSA) Thermal Decontamination Work Plans  
Ravenna Army Ammunition Plant**

Description	Ohio EPA's Comment	MKM's Response To The Comment
	(UXO) needs to be demolished, please contact Ohio EPA, Division of Hazardous Waste Management (DHWM), for the appropriate permits.	
Item 31	In Section 2.13 (page 29), please define who the "appropriate parties" are in the event of an impending demolition shot.	The remaining UXO personnel that are not directly involved with initiating the demolition shot.
Item 32	In Section 2.18 (page 31), please add Ohio EPA to the distribution list for the site specific removal report (SSRR).	Agreed.
Item 33	In Section 5.3.6 (page 39), please provide specific examples of what constitutes "discarded material".	Discarded material that may be considered UXO.
Item 34	In Sections 5.5.1, 5.5.2, 5.5.3 and 5.5.4 (page 40), please specify how particulate, hydrocarbon, carbon monoxide, oxides of nitrogen and sulfur emissions, and odors will be controlled.	Particulates and odors will be controlled to the maximum extent possible by removing all known hazardous items such as asbestos/transite, mercury switches, lights and light ballasts and loose floor debris (paint chips etc.) prior to the burn operation. Hydrocarbon, carbon monoxide, oxides of nitrogen and sulfur emissions are the emissions associated heavy equipment used at the site. These emissions will be controlled through proper vehicle maintenance, use of mufflers etc in accordance with Federal State, and Local rules, laws and regulations. Completion of the TD at optimum climatic conditions with the support from the local Fire Chief will minimize emissions and impact to downwind areas.
Item 35	Provide a project schedule as referenced on page 43.	A schedule will be provided.
Item 36	In Appendix A, please re-label figure 4 to read, "Load Line 9 Site Map".	Acknowledged.
Item 37	In Appendix B, please provide Attachment F (drawing # 1500.101).	Acknowledged.
<b>EXPLOSIVE SAFETY SUBMISSION (ESS)</b>		
Item 38	In Section 3.3 (page 4), please consult with Ohio EPA regarding potential sampling locations at the WS igloos.	Agreed.
Item 39	In Section 4.1 (page 4), please confirm that no UXO items have been found at Load Lines 2 - 4. (Also applicable to Section 6.0 page 5)	Acknowledged.
Item 40	If the items detailed in Section 7.2 # 1 on page 7, i.e., mercury switches, PCB ballasts, etc., are not removed prior to the TD, they must be included in all loading calculations for air emissions.	Agreed.
Item 41	In Appendix A, please insert a map of the WS igloos.	Comment withdrawn.



**MKM's Response To The Ohio EPA, 03 DEC 02 Comments**  
**LI 6, 9 & Wet Storage Area (WSA) Thermal Decontamination Work Plans**  
**Ravenna Army Ammunition Plant**

Description	Ohio EPA's Comment	MKM's Response To The Comment
<b>HEALTH AND SAFETY PLAN (HASP)</b>		
Item 42	On table 2 (page 12), please reference the fact that PCBs are also found in the various Load Line paints.	Acknowledged.
Item 43	Please revise the text on page 17 to indicate that this project will likely be initiated in the cold weather months. (Also Section 13.18, page 78)	Acknowledged.
Item 44	Please complete the last sentence found in Section 4.6.4.6 (page 20).	Acknowledged.
Item 45	On page 29 (Section 5.6.1), please clarify the meaning of the acronym "PEB." (Also applicable to Table 5 on page 50)	PEB means Potentially Explosive Building. PEBs are not applicable to these load lines. This is a typo and should be disregarded.
Item 46	In Section 5.6.2 (page 29), please add another bullet to the text indicating that there may be inhalation hazards.	Acknowledged.
Item 47	Please revise the text in Section 6.8 (page 37) to indicate that RVAAP requires that a First Responder be a member of the team. (Also applicable to Section 8.5.1, page 47)	Acknowledged.
Item 48	The text in Section 7.10 on page 45 indicates that no safety showers will be required, as personnel will not be potentially drenched with materials that pose a threat to the skin. Please clarify this statement in light of the proposal to spray fuel oil into the WS igloos and Load Lines on the day of TD.	Acknowledged. Fuel "spraying" will be controlled and personnel will wear the necessary splash protection, (ie rain gear, rubber boots, face shields) to prevent being sprayed with the fuel.
Item 49	Please be advised that it is likely that any responding ambulance would only be able to provide basic life support (BLS) and not advanced life support (ALS). There is the possibility that if ALS is required, that an intercept would need to be arranged. (HASP Section 8.5.1, page 48; HASP Section 8.5.2, page 48; HASP Section 21.8.4, page 67; HASP Section 12.9.1, page 68)	Acknowledged. Upon determination of the need for an ambulance, the request will be made for ALS response.
Item 50	Please be advised that Robinson Memorial Hospital is a provisional Level III trauma center. If a higher level of support is needed, the injured party would need to be taken to a different trauma center in the nearby vicinity. (HASP Section 8.5.2, page 48)	Acknowledged.
Item 51	Please clarify the first sentence in Section 11.1.2 on page 55.	The first word in the sentence "Edit" is a typo and should be disregarded.
Item 52	In Table 6 (page 59), please clarify whether or not all emergency calls are to be routed through Post # 1.	All emergency calls to off-site responders are routed through Post 1.



**MKM's Response To The Ohio EPA, 03 DEC 02 Comments  
 LI 6, 9 & Wet Storage Area (WSA) Thermal Decontamination Work Plans  
 Ravenna Army Ammunition Plant**

Description	Ohio EPA's Comment	MKM's Response To The Comment
Item 53	What criteria will be utilized to determine if a fire is "large" or "small" and when firefighters will be called in to extinguish the blaze? (HASP Section 12.5, page 60)	If a fire cannot be extinguished by the on site fire extinguisher the fire department will be summoned.
Item 54	If a contaminated worker needs to be taken to the hospital, notify the BLS, so that the squad and hospital can take the appropriate precautions. (HASP Section 12.8.3, page 66)	Acknowledged.
Item 55	Throughout Appendix A, please modify the forms to read "Load Lines."	Acknowledged.
Item 56	In Appendix B, please provide an explanation for why the task hazard assessment forms are not signed.	Oversight. Acknowledged.
Item 57	Please confirm that the Standard Operating Procedures (SOPs), especially # 32 and # 39, were reviewed by OSC Safety.	Acknowledged.

**Richard Callahan**

---

**From:** Eileen Mohr [eileen.mohr@epa.state.oh.us] **Sent:** Wed 12/11/2002 12:50 PM  
**To:** Richard Callahan  
**Cc:** Bob Princic; Bonnie Buthker; Greg Orr; Jamal Singh; Mike Eberle; Todd Fisher; Brian Stockwell; Lynn Malcolm; Sean Vadas  
**Subject:** Re: TD RTC Matrix for your review.  
**Attachments:**

Rick

I have reviewed the RTC document on the three-volume workplan for the proposed thermal destruction activities. The responses are acceptable and in accordance with our comment resolution meeting of 12/03/02. Please ensure that copies of the RTC are attached to each volume that is submitted to the Newton Falls and Ravenna public repositories. I will email copies of the RTC document to folks in the Ohio EPA. Please make sure that all other appropriate parties (OSC, PCHD, USEPA, OHARNG, RVAAP, ARAQMD etc. get copies). Thanks.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us



***MKM Engineers, Inc.***  
*Geotechnical, Environmental and Remediation Services*

February 3, 2003

Mr. Lynn Malcolm  
Administrator  
Akron Regional Air Quality Management District  
146 S. High Street, Room 904  
Akron, OH 44308

RE: Notification of Open Burning under ARAQMD Permit No. 2078

Dear Mr. Malcolm:

On behalf of the Ravenna Army Ammunition Plant, MKM Engineers, is notifying the Akron Regional Air Quality Management District of its schedule to initiate the open burning of the Wet Storage Igloos (1, 1A, 2 and 2A) on Monday February 10, 2003, in accordance with Permit Number 2078. As discussed during permit review and issuance, MKM is requesting a variance from the start time of 10:00 am to 8:00 am in order to conduct the burn during the most optimum portion of the day with respect to weather conditions. In addition, this will provide the majority of the remaining daylight hours to ensure completion of all open burn activities prior to nightfall.

The required minimum separation distance as stipulated by explosive safety procedures requires that all nonessential personnel maintain a distance of 2500 feet from the open burn operations making direct viewing of the open burn operations unachievable. MKM will be able to provide a live video feed of the open burn operations of Load Line 6 and 9 in a secured building, which satisfies these requirements. However, due to the small size of the Wet Storage Area and absence of a suitable building, MKM will be unable to provide a viewing location for this initial open burn.

MKM, in conjunction with the RVAAP Facility Manager, is planning a Media Day on Saturday, February 8, 2002 at 10 am to present the specific details of the scheduled open burn to RAB Members, members of the media, representatives of the local communities, as well as state and local agencies. Following the briefing a tour of the sites schedule for open burning will be conducted. ARAQMD representatives are welcome to attend the Media Day this Saturday.

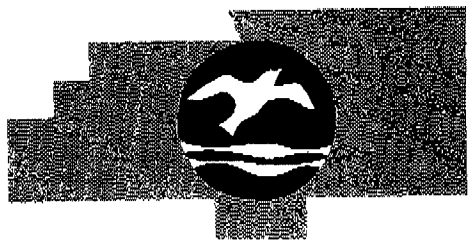
Should you have any concerns regarding the variance request for the 8:00 am start time please contact me by Friday, February 7, 2003. This will enable MKM's UXO Specialists to make any adjustments to the open burn schedule on the Monday the 10<sup>th</sup>, as necessary. Thank you for all of your assistance with this project.

Sincerely,

Richard Callahan  
Environmental Program Manager  
MKM Engineers, Inc.

Cc: Sean Vadas - ARAQMD  
Eileen Mohr -Ohio EPA-NEDO  
Kendal Moore -US EPA - Region V  
Ernie Neal - Neal Environmental Services, LLC  
Khodi Irani - MKM Engineers, Inc.

*Beinnis copy*



**AKRON REGIONAL  
AIR QUALITY MANAGEMENT DISTRICT**  
*Agent of the Ohio Environmental Protection Agency • Division of the Akron Health Department  
★ Serving Medina, Portage and Summit Counties ★*

TELEPHONE: (330) 375-2480  
FAX: (330) 375-2402

L. M. Malcolm, P.E.  
Administrator

**REVISED FEBRUARY 5, 2003**

RE: PERMISSION TO OPEN BURN  
ISSUANCE DATE: January 17, 2003  
PERMISSION NO: 2078

Mr. Richard Callahan  
Environmental Program Manager  
Ravenna Army Ammunition Plant  
8451 State Route 5, Building 1038  
Ravenna, OH 44266

Dear Mr. Callahan:

My staff have reviewed your application for permission to open burn dated December 12, 2002 (**February 3, 2003**).

In your application you requested permission to open burn (conduct thermal decomposition) of Load Line 6 & Load Line 9 structures and Wet Storage Igloos 1, 1A, 2, & 2A at the Ravenna Army Ammunition Plant, 8451 State Route 5 in Charlestown Township (Portage County)--see attached maps. The contractor will also place and burn wood dunnage (untreated wood pallets) in the structures to reach the necessary heat threshold. This address is in an unrestricted area. Therefore, your request for permission to open burn is made pursuant to Ohio Administrative Code section 3745-19-04 (C)(1).

I find that your request is allowed under the Ohio Administrative Code rules governing open burning. I hereby grant you permission to open burn at the site under the attached conditions. You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to ORC Section 3745.04.

The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with the Environmental Review Appeals Commission within thirty (30) days after notice of the Director's action.

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146 SOUTH HIGH STREET • AKRON, OHIO 44308**  
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OPEN BURNING PERMISSION #2078 (REVISED)


Page 2

January 17, 2003 (February 5, 2003)

Copies of the appeal must be served on the Director of the Ohio EPA and the Environmental Law Division of the office of the Attorney General within three (3) days of filing with the Environmental Review Appeals Commission. Any appeal should be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission  
236 E. Town Street  
Room 300  
Columbus, OH 43215

Sincerely,

  
\_\_\_\_\_, as agent for  
Christopher Jones  
Director, Ohio Environmental  
Protection Agency

LMM/lw  
Attachment  
faxc Ravenna Fire Department



## OPEN BURNING PERMISSION CONDITIONS

The burning shall take place:

on or during: February 1 to June 30, 2003.  
or  
 on any day having appropriate weather conditions between the date of issuance of this permission and:

between the hours of 8:00 a.m. and 4:00 p.m.

additional conditions:

SEE ATTACHED SPECIAL TERMS & CONDITIONS.

ALL ASBESTOS-CONTAINING MATERIALS MUST BE REMOVED PRIOR TO ANY THERMAL DECOMPOSITION ACTIVITIES.

ALSO, ALL FIRES MUST BE TOTALLY EXTINGUISHED BEFORE LEAVING THE SITE.

Burning shall not occur when an air alert, warning or emergency is in effect.

Violations of any of the conditions of this permission shall be grounds for revocation of this permission and refusal to grant future permission, as well as for the imposition of other sanctions provided by law.

This permission does not relieve you of the responsibility to comply with any other applicable statute or regulation of any other department of the State government, including the Department of Natural Resources. Also, this permission to open burn does not relieve you of the duty of complying with any applicable local ordinance or regulation. You should consult local law enforcement authorities to determine whether the burning will violate any of these laws or regulations.



***MKM Engineers, Inc.***  
*Geotechnical, Environmental and Remediation Services*

April 28, 2003

Mr. Lynn Malcolm  
Administrator  
Akron Regional Air Quality Management District  
146 S. High Street, Room 904  
Akron, OH 44308

RE: Notification of Open Burning under ARAQMD Permit No. 2078

Dear Mr. Malcolm:

On behalf of the Ravenna Army Ammunition Plant, MKM Engineers is notifying the Akron Regional Air Quality Management District of its schedule to initiate the open burning of Load Line 6 buildings on Monday, 5 May 03 and Load Line 9 buildings on Wednesday, 7 May 03, weather permitting. As with the Revised February 5, 2003 Permission to Open Burn for the Wet Storage Area, MKM is requesting a 8:00 am start time for the Load Lines to ensure open burn operations are conducted during the most optimum portion of the day with respect to weather conditions. In addition, this will provide the majority of the remaining daylight hours to ensure completion of all open burn activities prior to nightfall.

The required minimum separation distance as stipulated by explosive safety procedures requires that all nonessential personnel maintain a distance of 2500 feet from the open burn operations making direct viewing of the open burn operations unachievable. However, MKM will be providing a live video feed of the open burn operations in a secured building, which satisfies these requirements. This viewing will be open to the media, Restoration Advisory Board Members, ARAQMD representatives, and local and political representatives, but not the general public.

Should you have any concerns regarding the variance request for the 8:00 am start time please contact me by Tuesday, 29 April 2003. This will enable MKM's UXO Specialists to make any adjustments to the open burn schedule as necessary. Thank you for all of your assistance with this project.

Sincerely,

Richard Callahan  
Environmental Program Manager  
MKM Engineers, Inc.

Cc: Sean Vadas – ARAQMD  
Eileen Mohr -Ohio EPA-NEDO  
Kendal Moore -US EPA – Region V  
Ernie Neal - Neal Environmental Services, LLC  
Khodi Irani - MKM Engineers, Inc.

AKRON REGIONAL  
AIR QUALITY MANAGEMENT DISTRICT  
146 S. HIGH STREET, SUITE 904  
AKRON, OH 44308

TELEPHONE: 330/375-2480  
800/589-2480

FAX: 330/375-2402

F A X C O V E R S H E E T

SENT TO: Brian Stockwell, Project Manager

MKM Engineers, Inc.

FAX NUMBER: 330/358-2924

FROM: Lori

DATE: May 6, 2003

RE: Open Burning Permit #2078 (Revised) at the Ravenna  
Army Ammunition Plant

NUMBER OF PAGES INCLUDING COVER SHEET: 5

SPECIAL INSTRUCTIONS:

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## AKRON REGIONAL AIR QUALITY MANAGEMENT DISTRICT

Agent of the Ohio Environmental Protection Agency • Division of the Akron Health Department  
★ Serving Medina, Portage and Summit Counties ★

TELEPHONE: (330) 375-2480  
FAX: (330) 375-2402

L. M. Malcolm, P.E.  
Administrator

REVISED FEBRUARY 5, 2003

RE: PERMISSION TO OPEN BURN  
ISSUANCE DATE: January 17, 2003  
PERMISSION NO: 2078

Mr. Richard Callahan  
Environmental Program Manager  
Ravenna Army Ammunition Plant  
8451 State Route 5, Building 1038  
Ravenna, OH 44266

Dear Mr. Callahan:

My staff have reviewed your application for permission to open burn dated December 12, 2002 (**February 3, 2003**).

In your application you requested permission to open burn (conduct thermal decomposition) of Load Line 6 & Load Line 9 structures and Wet Storage Igloos 1, 1A, 2, & 2A at the Ravenna Army Ammunition Plant, 8451 State Route 5 in Charlestown Township (Portage County)--see attached maps. The contractor will also place and burn wood dunnage (untreated wood pallets) in the structures to reach the necessary heat threshold. This address is in an unrestricted area. Therefore, your request for permission to open burn is made pursuant to Ohio Administrative Code section 3745-19-04 (C)(1).

I find that your request is allowed under the Ohio Administrative Code rules governing open burning. I hereby grant you permission to open burn at the site under the attached conditions. You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to ORC Section 3745.04.

The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with the Environmental Review Appeals Commission within thirty (30) days after notice of the Director's action.

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OPEN BURNING PERMISSION #2078 (REVISED)  
Page 2  
January 17, 2003 (February 5, 2003)

Copies of the appeal must be served on the Director of the Ohio EPA and the Environmental Law Division of the office of the Attorney General within three (3) days of filing with the Environmental Review Appeals Commission. Any appeal should be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission  
236 E. Town Street  
Room 300  
Columbus, OH 43215

Sincerely,

 as agent for  
Christopher Jones  
Director, Ohio Environmental  
Protection Agency

LMM/lw  
Attachment  
faxc Ravenna Fire Department

## OPEN BURNING PERMISSION CONDITIONS

The burning shall take place:

on or during: February 1 to June 30, 2003.

or

on any day having appropriate weather conditions between the date of issuance of this permission and:

between the hours of 8:00 a.m. and 4:00 p.m.

additional conditions:

SEE ATTACHED SPECIAL TERMS & CONDITIONS.

ALL ASBESTOS-CONTAINING MATERIALS MUST BE REMOVED PRIOR TO ANY THERMAL DECOMPOSITION ACTIVITIES.

ALSO, ALL FIRES MUST BE TOTALLY EXTINGUISHED BEFORE LEAVING THE SITE.

Burning shall not occur when an air alert, warning or emergency is in effect.

Violations of any of the conditions of this permission shall be grounds for revocation of this permission and refusal to grant future permission, as well as for the imposition of other sanctions provided by law.

This permission does not relieve you of the responsibility to comply with any other applicable statute or regulation of any other department of the State government, including the Department of Natural Resources. Also, this permission to open burn does not relieve you of the duty of complying with any applicable local ordinance or regulation. You should consult local law enforcement authorities to determine whether the burning will violate any of these laws or regulations.

**SPECIAL TERMS AND CONDITIONS**  
**FOR RAVENNA ARMY AMMUNITION PLANT**  
**OPEN BURNING PERMIT**

1. This permit will be effective from February 1, 2003 through June 30, 2003. If the open burning portion of the project is not completed by that time, the Ravenna Army Ammunition Plant (RVAAP) may request an extension.
2. The Akron Regional Air Quality Management District (ARAQMD) shall be notified by the RVAAP at least 48 hours in advance of each burn, and advised of the date and time of the burn.
3. The purpose of this open burning project is to conduct thermal decomposition of any potentially explosive residue, in Load Line 6 & Load Line 9 structures and Wet Storage Igloos 1, 1A, 2, and 2A at the RVAAP, so that the structures may be demolished by conventional methods. **COMPLETE DEMOLITION OF THE BUILDINGS BY OPEN BURNING IS NOT PERMITTED.**
4. Open burning shall not occur on days with air pollution alerts, air stagnation advisories, or ozone action advisories. It shall be the responsibility of the RVAAP to determine the existence of any such alerts or advisories before the start of burning each day.
5. All open burning operations shall be conducted in compliance with the Environmental Position Paper on Thermal Decomposition submitted with the open burning application and hereby made a part of this permit.
6. All asbestos containing materials, either friable or non-friable, shall be removed from the structures prior to any open burning, except for three coolers located on the load lines which contain explosive contaminated, unidentified insulating material inside the walls and must undergo thermal decomposition prior to disassembly.
7. All lighting fixtures containing asbestos materials, lighting ballasts, mercury switches and gauges shall be removed from the structures prior to burning.
8. Loose paint shall be removed from the walls and floors before burning. The sweepings will be analyzed to determine the appropriate disposal method.
9. After open burning has been completed, the remaining ash and residue shall be collected, analyzed, and disposed of in accordance with all applicable regulations.



***MKM Engineers, Inc.***  
*Geotechnical, Environmental and Remediation Services*

May 5, 2003

Mr. Lynn Malcolm  
Administrator  
Akron Regional Air Quality Management District  
146 S. High Street, Room 904  
Akron, OH 44308

RE: Notification of Open Burning under ARAQMD Permit No. 2078

Dear Mr. Malcolm:

An application for permission to initiate open burn operations at Load Line 6 and Load Line 9 at the Ravenna Army Ammunition Plant was issued by MKM Engineers, Inc on 28 April 03, and was subsequently approved by ARAQMD. As detailed in the application, Load Line 9 burn activities were scheduled to take place Wednesday, 7 May 03. In order to capitalize on more favorable weather conditions, MKM is requesting to change the Load Line 9 burn date to Thursday, 8 May 03, with a 12:00 PM start time.

Should you have any concerns regarding this variance request please contact me as soon as possible at 330-358-2203. Thank you for all of your assistance with this project.

Sincerely,

A handwritten signature in black ink, appearing to read "B. Stockwell", is written over a light blue horizontal line.

Brian Stockwell  
Project Manager  
MKM Engineers, Inc.

Cc: Sean Vadas – ARAQMD  
Eileen Mohr -Ohio EPA-NEDO  
Kendal Moore -US EPA – Region V  
Ernie Neal - Neal Environmental Services, LLC  
Khodi Irani - MKM Engineers, Inc.