Ravenna Army Ammunition Plant
Restoration Advisory Board (RAB)
Meeting Minutes
January 19,2000

1. Call to Order and Reading of Minutes
The meeting was called to order by Mr. Mark Patterson (Co-Chairman), in the stead of Lt. Col. Tom Tadsen at the Township Building of Paris, Ohio at 5:00 pm. Secretary Denise Gilliam took attendance with 14 present, 3 excused and 5 absent (Mr. Kevin Cooper, Mr. Richard Kern, Mr. Walter Landor, Mr. William Roberts, and Mr. Richard Walton). Mr. Ken Howe sat in place of Mr. Mark Griffiths and Mr. J.J. Leet took over for Mr. Tom Lawson as the Freedom Township Representative. Ms. Eileen Mohr requested that corrections to the minutes be made. At the November 3, 1999 meeting the minutes reflect that "Ms. Mohr stated that testing the debris and using it as clean hard fill will help reserve the area's hazardous waste landfills for future use." This statement should be amended to read "…preserve the area's sanitary landfills…". "Ms. Mohr stressed that all removal and demolition of buildings is done in accordance with federal regulations." Should read, "…federal and state regulations." Instead of the word T-Clip on the second page of the minutes, paragraph 2, TCLP should be inserted, deleting "(used to check for DNT)". The statement that reads: "Ms. Mohr stated that the area for fill is being tested for explosives and hazardous waste." Should instead read: "…being tested for explosives and metals". Mr. Patterson motioned to accept the minutes as approved and corrected at 6:06 pm, the motion was seconded, and approved by consensus.

2. General Business
Mr. Patterson began the meeting by opening the floor to discussion about the TAPP funds that have been spent. The original grant was $25,000, out of that $18,205.18 has been spent (Creative Solutions). The remainder of those funds are still at the members disposal. Dr. Rachael Craig sent around a list of possible TAPP providers. Dr. Craig explained why she made her choices and explained that she had spoken to the possible providers on the phone and gave the RAB a brief history on each of them. She went on to point out that the possible providers on the back of the page she had not spoken with but the RAB could look into their qualifications as well. Mr. Patterson asked if the RAB wanted possible choices to come and meet with the RAB or would they prefer receiving professional statements. Ms. Nina Millers said that she would prefer them to come and speak to the RAB so that the RAB could determine whether or not they spoke in layman's terms. Mr. Patterson called the motion to invite potential providers, Ms. Miller made the motion, Mr. Caryl Griswold seconded the motion. The motion was passed by consensus.

3. Mr. Patterson stated that he wanted to inform the board what is being proposed this year and the status of the Installation Action Plan (IAP). Mr. Patterson stated that the IAP went well. It was three days long. Each area of concern was gone over site by site and step by step as to the cost to complete. Long term monitoring and remediation were the main focus. The original budget was adjusted from 79 million to 48 million due to findings made while working on the IAP. The final copy will be out the next month. Members of the RAB will receive a copy and a copy will be placed in each of the repositories. The Installation Action Plan will be revised every year. Mr. Patterson stressed that even through out the year it could be adjusted as the status of the RVAAP Restoration program changes. It is not a document set in stone, so it can be adjusted.

4. Mr. Patterson went on to tell the board that the arsenal was looking at a big increase in funding (5.2 million) this year. Due to the increase in funding there is an opportunity for

other contracting companies to provide services here, companies like MKM Engineers, Inc. Mr. Patterson stated that the featured presenter tonight would be MKM Engineers, Inc. An audience member voiced a concern for his drinking water which comes from a well located near the arsenal. He stated that his neighbors had asked him to come to the meeting as their representative. He expressed serious concerns that his well water as well as those of his neighbors may be contaminated due to past activities at the arsenal. Mr. Patterson asked the gentleman his name, to which he responded Mr. Thompson. Mr. Thompson stated that he and his neighbors would like money from the budget to run a water line from the City of Newton Falls to Holcomb. Mr. Patterson turned the floor over to Ms. Mohr, from the OhioEPA, stating that she had been doing some well sampling in the area. Ms. Mohr told Mr. Thompson that she had sampled 25 wells around the vicinity of the arsenal including Holcomb. These 25 were chosen based upon certain criteria: their proximity to the areas of concern, direction of water flow, how close the well was to the arsenal, and how the well was constructed. The testing looked for general water quality parameters (13 parameters), for examples: nitrates, sulfates, TAL metals (23 different metals), and explosive compounds. Of the 25 wells sampled none had any explosives in them. Water quality was found to be what was expected of this area of Portage County, (North Eastern Ohio). Usually in areas such as this, she explained, it was not uncommon to find high iron and maganese levels. Ms. Mohr stated to Mr. Thompson that the testing results were open to the public and invited him to come down to the OhioEPA to view the results. Mr. Patterson offered to meet with Mr. Thompson and the OhioEPA at RVAAP at a later date to discuss the residential well findings. At 6:23 pm. Mr. Patterson introduced MKM Engineers, Inc.

5. MKM Engineers, Inc.

Mr. Rick Callahan, Program Manager for MKM, began as the first presenter, introducing to the board Mr. Khodi Irani, President of MKM. MKM Engineers was established and began providing environmental investigations and remediation services in 1991. MKM has performed over 30 projects for the IOC to date, at other arsenals such as: Sunflower, Cornhusker, and Joliet. MKM brings an experienced team to the RVAAP project which began in 1998. MKM policy makes use of local businesses and suppliers. They have provided an onsite presence and have had the opportunity to initiate several innovative approaches. Their use of local businesses helps the community and establishes a rapport amongst the company, the RVAAP, and the local public. MKM Engineers, Inc. has been tasked with the Load Line (LL) #11 Remedial Investigation and Interim Removal Action, Relative Risk sampling of other load lines, T5301 Interim Removal Action, Open Detonation Area #1 Interim Removal Action and a Bioremediation Pilot study. Demolition Reclamation projects include the demolition of LL1 and LL12, innovative supporting technologies including shaped charge cutting operations, and a flashing furnace to treat explosive-contaminated metals. The objective of LL11 Remedial Investigation is to determine the nature and extent of contamination at the site. The project will include field screening (as this lowers cost), soil borings, installation of monitoring wells, sewer/sump content testing, and testing of surface water/sediments. The Interim Removal Action will cover the sumps, sewers, and ditches. Once the Remedial Investigation data is collected, a risk assessment will be performed to evaluate the need for remedial cleanups. MKM provided pictures of different building on the load line as well as sumps and ditches. The next task discussed was the relative risk sampling on the remaining six fuse and booster load lines. The objective is to evaluate the level of contamination at the other six fuse and booster load lines. Targeted sampling will be conducted based upon LL11 Remedial Investigation. The media to be sampled will include shallow soils, sewer/sump contents, surface water and sediments. Mr. Callahan next discussed the area of concern known as Bldg. T5301 that is scheduled for Interim Removal Action. The objective of the work is the remediation of the contaminated soils adjacent to the building. The site will undergo evaluation, demolition and excavation.

T5301 is located outside of the Winklepeck Burning Grounds. The soils will be remediated on-site using composting. Mr. Callahan showed the members a picture of T5301. A question from audience (Mr. Thompson): Where does the water below building T5301 flow from? Mr. Patterson stated that the water flowed from Sand Creek into Eagle Creek and then joins the Mahoning River near Leavittsburg. Mr. Callahan stated the pathway will be investigated.

6. Mr. Callahan discussed the Open Denotation Area #1 (OD1) which was used to treat ordnance from 1941 to 1948. It was later used as an aircraft test area in the early 1950s (NACA site). The primary detonation area is horseshoe-shaped. Ordnance debris is scattered on the surrounding ground surface. MKM showed a grid map of the horseshoe shaped area showing the grid lines where field tests will be conducted. The entire surface will be swept to a depth of 6 inches to 1 foot to remove debris. After the initial sweep of the area, excavation will be completed to a depth of 4 feet. The area is off limits at the time being, and the Ohio Army National Guard plans to use this area in the future, after remediation has been completed. Mr. Patterson stressed to the members that if anything was found deeper than four feet, the area would be restricted indefinitely or until cleanup could be done. An audience member asked what the major hazards were and what did MKM expect to find there? Mr. Callahan responded that metals and explosives were the hazards that he expected to encounter. Mr. Callahan then proceeded to show the audience where the debris was visible. MKM has the resources to excavate the area to a depth of four feet, screen it and move it to a conveyor. All of this is performed remotely with the aid of cameras. If any unidentified metallic object is spotted while the soil is being excavated and screened, UXO personnel will be sent in. The sampling of OD1 will include field screening, and soil sampling. The disposal of scrap and explosive materials consists of visual inspection and field screening, decontaminate with steam/pressure (wash or thermal), and the onsite detonation of explosives or items too sensitive to move. Safety is paramount. All site work will be done in compliance with the Department of Defense Explosive Safety Board (DDESB). Notification of Local 911, police, fire, and medical services will be performed. Emergency procedures will be posted at each remote excavation and screening site.
7. The Bioremediation Pilot Study's objective is to establish a remediation method for explosive-contaminated soils to reduce disposal costs. The actual remediation will be conducted inside building G-1A located at LL4. The pilot study includes a bench scale study to determine proper operating conditions followed by a large-scale contaminated soil study, with sampling. Maps and photos were shown. Ms. Courtney Willis asked if additional bacteria were added to the compost. Dr. Srini Neralla stated that additional bacteria were not necessary due to the nature of the soils in this area. Mr. Thompson asked where the water would leach to, if it did. Ms. Mohr stated that, when residential wells were sampled, the water quality was good. There are no current indications of an off-site groundwater problem due to arsenal activities. The objective of the demolition of LL1 and LL12 is to remove structures and piping from the facility. Field tasks include characterization of the different demolition materials; decontamination/demolition of the load line structures; sampling of the demolition debris, excavation of contaminated soils; and disposal based upon sample results. Innovative supporting technologies are being used to assist the LL1 and LL12 demolition operations. Mr. Callahan closed at 7:15 and introduced Mark Vess, MKM Engineer's UXO Program Manager who presented remote shaped charge cutting operations.

8. Mr. Vess has seven subordinate employees, with over 200 years UXO experience combined. State of the art shaped charges are used to dismantle hazardous production equipment. MKM's goal is to eliminate hazards to all personnel dismantling LL1, while providing a dramatic increase in safety over other field methods. Minimal explosives are used to accomplish the task. MKM has performed noise monitoring to minimize the

impact on the surrounding community and has not detected any hazard/environmental impact to the community. All federal and state requirements related to the operation are either being met or exceeded by MKM. MKM began on January 10, 2000 and hope to be completed by March 1, 2000. Mr. Vess stated that, weather permitting, MKM should be right on schedule. He showed pictures of the actual shaped charges. He further explained how MKM uses cameras to look inside process piping before dismantling it. MKM can be contacted through the Ravenna Army Ammunition Plant at 330-358-7311.

9. Mr. Milan Markov: Please explain how you can put a shaped charge on a pipe and yet it does not explode in the air? Mr. Vess replied, by using specifically designed shaped charges, all of the energy of the explosion is channeled into the pipes. A copper wrap holds the charge in place. Mr. Markov asked if the technique is classified/restricted. Mr. Vess stated that a lot of different agencies now use the technology and that it was indeed not restricted. Mr. Callahan at this point suggested that at the next RAB meeting, MKM will bring in a video of shaped charges in action. Mr. Markov agreed and said that he would like that. A "V" shaped copper wrap reflects the explosion inward to the pipe and not outward. Mr. Vess stated there were no fragments flying out. MKM went on to show pictures of the stages of a shaped charge detonation and it showed a pipe that been cut using a shaped charge. Members of the RAB as well as members of the audience expressed amazement at how smooth the cut was made in the pipe. Ms. Miller stated that she had been able to hear the charges going off from her house (on State Route 534). Her question was that if they were only using small amounts of explosives why could she hear them. Mr. Vess explained that what she was probably hearing was the detonator cord as it detonates the shaped charge. Mr. Callahan added that weather and surrounding concrete also affects noise; however, no noise resulting from detonations has exceeded 80 decibels at the RVAAP fence line. Mr. Vess closed his portion of the presentation and invited Mr. Hayes up to present the flashing furnace technology.

10. El Dorado Engineers
Ralph Hayes is from El Dorado Engineers, Inc. (EDE). He develops equipment and materials for munitions. Mr. Hayes gave background on his company. EDE has proposed to use flashing furnace technology to thermally treat potentially explosive-contaminated metal parts. Metal potentially contaminated with explosives is known as 3x metal. Explosive contaminated metals are controlled within DOD and cannot be freely sold or disposed of. Heating the metals above 1000 degrees F assures the metal is free of contamination and becomes 5x metal, which can then be sold as scrap to the general public. It is very difficult to flash by open burning, therefore the Army developed the flashing furnace. No hazardous waste incinerator permits are required with this program. Mr. Hayes's company also provides an aggressive explosive waste incinerator and contaminated waste processor for other installations. Mr. Hayes showed pictures of the flash burning oven and described the simple process. Basically, the contaminated metal rolls into the oven on a cart. The furnace temperature is brought up to 1000 degrees F. EDE has developed a simple transportable design targeted only to treat explosive-contaminated metal parts. After the metal has been flashed, it is no longer a hazard and can be sold. The Ravenna design will consist of a furnace that will be able to handle 10,000 lbs. of metals per load, fuel/oil fired dual burners with propane pilots, all of which will be totally contained on a 48-foot trailer. It will reach temperatures of 1400 to 1600 degrees. An unfired afterburner section helps to minimize emissions. The furnace will also have cooling air for rapid cool down. Mr. Hayes stated that the furnace does not require a RCRA or air permit. Ms. Wells: How long will it take to flash about 10,000 lbs.? Mr. Hayes answered about an hour. Mr. Hayes then proceeded to show a diagram/sketch of the proposed furnace. A transportable flashing furnace is an effective system utilizing proven technology to treat potentially explosive contaminated metal parts at Ravenna in a safe and efficient manner. Ms. Miller asked whether or not the

contaminates explode, due to the heat in the furnace. Mr. Hayes explained that the explosives are not contained so they should not cause an explosion or detonation. However, the operator of the furnace is positioned behind a barrier, for safety. Explosives found in trace quantities just burn, they don't explode. An audience member asked how long it takes for the oven to reach 1400 degrees and Mr. Hayes replied about 5 minutes. Another audience member asked if the temperature inside the furnace could be measured. Mr. Hayes replied that it was difficult to test the actual inside heat, but by placing thermocouples on the metal parts inside of the furnace you can get a pretty accurate reading. Mr. Jay Abercrombie asked if there is a recognized market for selling the flashed scrap metal? Mr. Hayes replied in the affirmative. EDE closed at 7:53 pm.

11. Additional Comments
Mr. Ken Howe made the comment that after sitting in with Ms. Mohr on the IAP, he felt that she was definitely in support of the community and has the best interest of the residents in the forefront. He added that Mr. Patterson from the IOC was always available to answer questions. He encouraged Mr. Thompson to call them and discuss his situation with them. Mr. Howe stated that he felt very comfortable with this program now that he was a little more aware of what is going on. Mr. Patterson stated that he wanted everyone to have as much information as he could provide regarding RVAAP, whether they were inside of the restoration program or not. He went on to say that at some time in the near future he hoped to be able to invite the RAB members back to the various sites so that by visiting, they could feel comfortable with what is going on there.

12. Scheduling of Next Meeting
Discussion on the date of the next meeting took place. It was decided that the next meeting would be held on March 15, 2000, and will again be hosted by Paris Township at 6:00 pm at the Paris Township Building.

13. Final Note
An audience member made the comment that the meeting was very beneficial and informative. He thanked the board.

14. There being no further business Mr. Patterson moved to adjourn at 7:58 pm, seconded by Ms. Miller, and carried.

Respectfully Submitted,

Denise L. Gilliam
Secretary, RAB