

**Ravenna Army Ammunition Plant  
Restoration Advisory Board (RAB)  
Meeting Minutes  
May 21, 2003**

**1. Call to Order and Reading of the Minutes**

The meeting was called to order by Lt. Col. Tom Tadsen at the Freedom Town Hall, Freedom, Ohio at 6:44 p.m. Secretary Denise Gilliam took attendance with 8 present, 6 excused and 7 absent (Dr. Barbara Andreas, Mr. Floyd Banks, Ms. Rebecca Carter, Mr. Kevin Cooper, Mr. Robert Daughtery, Mr. JJ Leet, Mr. Milan Markov, and the Charlestown Representative). Col. Tadsen presented the motion to suspend with the reading of the minutes; made by Ms. Nina Miller and seconded by Mr. Walter Landor. Let it be reflected that the minutes have been amended as follows; where it states in paragraph one that Mr. Landor was absent; please note that his absence was excused.

**2. Announcements**

Lt. Col. Tadsen informed the board that another member had passed away, Mr. Richard Kern. His input on the RAB will be missed. Lt. Col. Tadsen stated that Mr. Kern had been working with him and Mr. Tim Morgan on some projects at the arsenal. The RAB's sympathies and concern goes out to Mr. Kern's family and friends.

Mr. Patterson announced that Ms. Susan McClauslin from SpecPro had taken a new position in New Mexico and would be missed, but that Ms. Chantelle Carroll had taken over. Ms. Carroll greeted the board.

**3. Presentation on the Preliminary Results of the Load Line 2, 3, and 4 Remedial Investigations (RI) and the Final Results of the Load Line 1 RI, Dr. Barney Cornaby, Ms. Sharon Robers, and Ms. Martha Clough from Science Applications International Corporation**

Dr. Cornaby began the presentation by telling the RAB members that it was good to be back and that he was very excited to present the results to them. He stated that Ms. Clough would be presenting first. He told the RAB to be patient because there was a lot of information and facts and figures that were about to be presented. Ms. Clough began SAIC's presentation. She stated that the purpose of the presentation was to provide background information on Load Lines 1 through 4, an explanation of the objectives of the remedial investigations, and to present the results of the sampling and analysis. She said that Ms. Robers would be presenting to the RAB the results of the human health risk assessment at Load Line 1 and the planned approach for Load Lines 2, 3, and 4. Dr. Cornaby would then present the results of the ecological screening risk assessments at Load Lines 1 through 4 and then she would come back to tell the RAB the conclusions and to go over the lessons learned.

She showed the RAB a slide with a map of RVAAP with the Load Lines 1 through 4 highlighted in yellow. She then showed the operations and current conditions at each of the load lines. She stated that the pictures of Load Lines 2, 3, and 4 were taken this past winter as to explain the reason that the vegetation was so sparse-looking Load Line 1 was in operation from 1941 to 1971. It produced approximately 37 million munitions. She stated that it was the only load line with propellant loading capacity. Load Line 2 was in operation for the same period of time as well as Load Line 3. Load Line 2 produced 10 million munitions and Load Line 3 produced 6 million. Load Line 4, the least contaminated of the four lines, was in operation during World War II and between 1951 and 1957. It produced approximately 1.2 million munitions. There was no demilitarization on this line as opposed to the other three.

She gave a brief overview of the CERCLA process and stated that the Phase II Remedial Investigation is typically the final step in the site characterization process before the evaluation of remedial alternatives; this includes no further action. The process basically begins with a facility preliminary assessment, and then an action plan and facility-wide work plans are initiated. A Phase I RI Work Plan Addenda for priority sites is next, followed with a Phase I RI, after that is completed a Phase II RI is may be enacted. This can either lead to no further action or can lead

into a feasibility study, proposed plan, a record of decision, a remedial design/remedial action and an evaluation of the remediation effectiveness, and a five-year review.

Ms. Clough explained to the RAB the objectives of a Phase II Remedial Investigation:

- Identify data needs remaining to evaluate remedial alternatives
- Plan and execute sampling to fill data needs
- Evaluate the extent and magnitude of contamination (current conditions)
- Evaluate human health and ecological risks under conservative and most likely future land use scenarios for the Load Lines
- Provide recommendations and lessons learned that can be carried forward.

Ms. Clough stated that the Phase I RI only characterized surface soils and was quite a long process. For Load Lines 1-4, it is necessary to identify the lateral extent of contamination and characterize the subsurface soil, and surface water. Additional characterization of sediments in streams and ponds is also necessary as well as additional groundwater characterization. Selected buildings and structures, storm and sanitary sewers (where contaminants may accumulate) need to be sampled. Ground water sampling was performed in both 1999 and 2000 at Load Line 1. The sampling for Load Lines 2, 3, and 4 was performed in 2001.

She then talked about the nature and extent of contamination at the lines. She stated that they broke the load lines down into groups or aggregates. They were broken down by environmental media which consisted of:

- Surface soil
- Subsurface soil
- Surface water
- Sediments
- Groundwater
- Other media (buildings/structures/utility systems)

She noted that groundwater was looked at over the entire AOC. She then went on to say that other portions of the load lines were grouped together based upon similar functions and types/levels of contaminants. She then stated that the types of contaminants, the frequency of occurrence, and the concentrations relative to background in these areas were evaluated.

She presented the RAB with maps depicting the nature and extent of contamination of the surface soils at all of the four lines. Each map showed the different areas of the load lines and their individual functions and the degree of contamination. A color legend was included to show the levels of contamination with grey indicating non-detect levels and red being the highest levels with yellow and orange showing the mid range between these two extremes. Explosives, metals, semi-volatile organic chemicals (SVOCs) and PCBs were the contaminants that were depicted. She noted that areas such as the explosive handling areas and the preparation and receiving areas displayed the highest levels of contamination. She again stressed that Load Line 4 had the least contamination of all of the other Load Lines. The main contaminants at Load Line 4 are metals. The principal metals found in the surface soil at Load Lines 1-4 (based on frequency of detection and concentrations, relative to RVAAP background) are as follows:

- Antimony
- Arsenic
- Barium
- Cadmium
- Chromium
- Copper
- Lead
- Manganese
- Mercury
- Thallium
- Vanadium (only at Load Line 1) and
- Zinc

She went on to state that hexavalent chromium was rarely detected in the soil and when it was, the values were very low relative to laboratory reporting limits. Please note that hexavalent chromium is a known carcinogen. Ms. Clough added that metals that show up are due to the

processes that have occurred on the arsenal and are not naturally occurring. Ms. Sara Lock asked if these metals were by-products or were they directly from the processes themselves. Ms. Clough answered that they are a little of both. Dr. Cornaby added that Thallium and some of the others might be catalyst but most are directly associated with the process.

Ms. Clough stated that due to the fact that bedrock lies at very shallow depths in most of the areas of Load Lines 1, 2, and 3 there were not a lot of opportunities to collect subsurface samples in these areas. The contaminants, however, were observed in the surface soil and generally the extent of contamination decreases rapidly with depth. She stated that there was very limited contamination present in the subsurface soils at Load Line 4. There were not detectable explosives in the limited samples that were taken, PCBs were not detected either. A limited suite of metals were identified as site-related with concentrations typically 2 to 10 times the background levels.

Ms. Clough next looked at sediment and surface water at the different Load Lines. She showed a map depicting the distribution of explosives and metals at Load Line 1, including the different waterways, ponds, and channels. A map of Load Line 2 showed the North Ponds and Kelly's Pond and the extent of contamination at these two aquatic sites. The only aggregate at Load Line 3 was Cobbs Pond Tributary. Three aggregates exist at Load Line 4, the main stream and settling pond by Perimeter road and the exit drainage. Again she noted that Load Line 4 has the least amount of contamination and there were no detects in the sediment there.

Ms. Clough showed the RAB a slide depicting the nature and extent of contamination of the groundwater at Load Line 1. The map uses blue arrows to show the flow of the water. She noted that again the explosive handling area has the largest amount of contamination. The next slide concentrated on Load Line 2, where the groundwater flows in all different directions. She noted that monitoring well #59 shows the highest levels of concentrations and stated that it has been in place since 1996. At Load Line 3 there are 14 monitoring wells with only 4 showing explosive detects.

The following shows the nature and extent of contamination of metals, SVOCs, and PCBs in the groundwater at Load Lines 1, 2, and 3. Please note that statements about being above background do not include further reducing by toxicity evaluation:

#### **Load Line 1**

- ♣ Arsenic, manganese, cobalt, aluminum, and zinc above background
- ♣ Trace levels of one SVOC, pesticides, and 3 volatile organic compounds (VOCs)
- ♣ PCBs not detected

#### **Load Line 2**

- ♣ Antimony, arsenic, manganese, cobalt, and nickel above background
- ♣ SVOCs were not detected. Trace levels of one pesticide in two wells near Kelly's Pond.
- ♣ Four VOCs detected at low concentrations
- ♣ PCBs detected at trace levels in two wells near Kelly's Pond

#### **Load Line 3**

- ♣ Only cobalt and manganese above background
- ♣ One SVOC detected in one well. Trace levels of two pesticides.
- ♣ Seven VOCs detected at low concentrations
- ♣ PCBs not detected

Ms. Clough stated that the groundwater at Load Line 4 flows off of the AOC to the south towards the RVAAP boundary and does not contain substantial contamination. No explosives, pesticides, or PCBs were found and the only metals that slightly exceeded background were arsenic, barium, manganese, and nickel.

She next went on to discuss the nature and extent of contamination in the storm and sanitary sewers of Load Lines 1 to 4. She stated that video camera surveys do not indicate gross accumulation of explosives and that storm sewer pipelines exhibit cracks and seepage points where water may enter or exit the pipes. She showed the chemical analyses of samples taken at each of the load lines. Their findings are as follows:

	<b>Load Line 1</b>	<b>Load Line 2</b>	<b>Load Line 3</b>	<b>Load Line 4</b>
<b>Explosives</b>	5.8 mg/kg	25 mg/kg	68 mg/kg	None
<b>In water</b>	0.01 mg/L	< 1 mg/L	.0003 mg/L	.0003 mg/L
<b>Metals</b>	Elevated lead, cadmium and chromium	> 200 times background. Hexavalent chromium detected in one inlet (1.4 mg/kg)	Up to 15 times background	Up to 15 times background
<b>In water</b>	Some partitioning		Small Partitioning	Small Partitioning
<b>SVOCs</b>	Up to 25 mg/kg	2.2 mg/kg	None	None
<b>In water</b>	< mg/L in water	None	None	None
<b>PCBs</b>	44 mg/kg in sediment	31 mg/kg	None	None
<b>In water</b>		None	None	None

**All other samples in sediment**

At this point Ms. Clough asked the board if they had any questions for her nature and extent portion of the presentation. No one did. She stated that now Ms. Robers and Dr. Cornaby would continue on with the risk portion of the presentation.

Ms. Robers explained to the board members that exposure plus toxicity equals risk. The exposure assessment estimates potential site-related contaminant exposure (i.e. dose) to human receptors using assumptions regarding the concentration of the contaminants in the exposure media and how often and for how long is the exposure to these media (media being, soil, surface water, and sediment). She explained to the board that there are two types of toxicity: carcinogens in which the potential effect of exposure is an increased risk of cancer and non-carcinogens in which the potential effects range from minor irritations to more substantial effects. She explained how risk is characterized for both carcinogens and non-carcinogens.

For carcinogens risk is expressed as the probability that an individual will develop cancer over a lifetime as a result of exposure to the carcinogen. Cancer risk from exposure to contamination is expressed as incremental or the increased chance of cancer above the normal background rate of cancer. It is the Incremental Lifetime Cancer Risk (ILCR). In the United States the background risk of developing cancer is approximately 1 in 3 for women and 1 in 2 for men otherwise expressed as  $3 \times 10^{-1}$  to  $5 \times 10^{-1}$ . Calculated ILCRs are compared to a risk range of  $10^{-6}$  to  $10^{-4}$ , or the risk of 1 in 1 million to 1 in 10,000 exposed persons developing cancer. ILCRs below  $10^{-6}$  are considered negligible per EPA. ILCRs above  $10^{-4}$  are considered unacceptable per EPA. Within that range the level of risk that is considered to be acceptable at a specific site is a risk management decision and is decided on a case-specific basis. Non-science issues such as technical feasibility, economics, social, political, and legal factors are all considered in assigning an acceptable risk level.

Characterization of non-carcinogens looks at risks associated with toxic chemicals that are evaluated by comparing an estimated dose from site media to an acceptable dose (reference dose). The reference dose is the threshold level below which no toxic effects are expected to occur. Reference doses are identified by scientific committees supported by EPA by determining the dose below which no adverse effects are seen and incorporating a safety factor of 10 to 1,000. Non-cancer risk from exposure to contamination is expressed as a Hazard Quotient (HQ.) and is calculated as the ratio of the estimated dose over the reference dose (i.e.,  $HQ = \text{site-related dose}/\text{reference dose}$ ). HQ below 1 indicates that the estimated site-related dose is less than the reference dose and exposures are acceptable. An HQ above 1 indicates that the estimated site-related dose is greater than the reference dose and exposures are potentially unacceptable per the EPA.

Ms. Robers told the board that Load Line 1 RI was approached differently from the other three lines. The human health risk assessment approach for Load Line 1 consisted of exposures assessment, toxicity assessment, risk characterization, and remedial goal options (RGOs).

Exposures were evaluated at Load Line 1 for five potential receptors based on the most likely future use of this site, there were three National Guard receptors: Residents, Trainees, and Fire/Dust Suppression Workers as well as two recreational receptors; Hunters/Trappers and Fishers. Residents are considered to be permanent party individuals that are on the installation year round. Trainees are considered to be transient and yet still spend about 1 month per year total time on the installation over a course of 25 years. All of these receptors are assumed to be exposed to contaminated soil, surface water, and sediment at Load Line 1 via incidental ingestion, inhalation of vapors and dust, and dermal contact. A Hunter/Trapper is also exposed via ingestion of water fowl that feed on surface water, aquatic plants, sediment, and sediment-dwelling organisms from Load Line 1 water bodies. Ingestion of fish was not evaluated due to the fact that all fishing on the arsenal AOCs is catch and release.

The toxicity assessment of Load Line 1 centered on the detection of chemicals that were evaluated for both potential cancer and non-cancerous effects. She stated that arsenic and hexavalent chromium are known carcinogens and then stated that some possible explosives might be human carcinogens as well.

The purpose of the risk characterization at Load Line 1 was to identify the exposure units, media (e.g., soil, surface water etc.), and contaminants with potentially unacceptable risks to be evaluated in a feasibility study.

Ms. Robers presented the RAB with the results of the surface water and sediment for human health risk. Surface water and sediment samples were evaluated from three exposure units: outlet C and Charlie's Pond; Outlets D, E, F, and Criggy's Pond; outlets A, and B (sediment only). Arsenic was identified as the only chemical of concern (COC) in surface water at these exposure units. Eight COCs including metals (arsenic and antimony), PCBs, and several PAHs were identified for sediment at these exposure units. No explosives had risks above the threshold. It was determined that the highest risk is to the Hunter who eats the bag limit of water fowls every year for 30 years. She made a point of stressing to the RAB that if you hunted at the arsenal once or twice you were not in any jeopardy. She stated that major precautions were taken when the study was compiled.

Ms. Robers presented the RAB with the soil results from the human health risk. Surface soil samples were evaluated for 7 exposure units: 4 building groups, water tower, change houses, and the perimeter areas. COCs were identified at all exposure units except the Water Tower. Arsenic was the only COC identified at the change houses and the perimeter area. Ten COCs including metals (arsenic and manganese), explosives (TNT and RDX), PCBs, and several PAHs were identified for soil at the other four exposure units.

Ms. Robers stated that remedial goal options (RGOs) are developed for every chemical that exceeds the acceptable level of risk. RGOs are risk-based concentrations used to define the extent of contamination that must be remediated and they will help cost various alternatives. RGOs were developed for each chemical identified as a COC for Load Line 1 to support the remedial alternative selection process. They are calculated using the same equations and exposure assumptions used to calculate risk, with the goal of obtaining the concentration that will produce a specific risk or hazard level. RGOs were calculated for a risk range of  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$  and HQs of 0.1 and 1. These were selected because as of yet the target number for the arsenal is unknown. Please note that the Clean Ohio Fund written in January 2001 uses  $10^{-5}$  as the official target risk goal for RGO development.

The planned human health risk assessment approach for Load Lines 2, 3, and 4 is described in the following. Load Line 1 is expected to have the highest number of contaminants and highest concentrations. One would compare site-specific contaminant concentrations at Load Lines 2, 3, and 4 to RGOs calculated for Load Line 1. Contaminants detected above Load Line 1 RGOs may require consideration in the feasibility study. If new contaminants are identified at a load line (i.e., with no Load Line 1 RGO available for comparison), additional evaluation may be needed. Ms. Robers explained that Load Lines 2, 3, and 4 will be done differently than Load Line 1. She stated that Load Line 1 was believed to have the highest levels of contamination.

Therefore, the RGOs developed for that area will be compared to concentrations at Load Lines 2, 3, and 4. If the concentrations do not exceed the existing RGOs we can proceed. If, however, new contaminants are found we will have to figure out a new plan of action or devise new RGOs. At this time Ms. Robers introduced Dr. Cornaby.

Dr. Cornaby greeted the board and told them that he understood that they were throwing a lot of information at the board members, probably more than they could digest at this time. He stated that one of the most important things about all of the research that has been done is that it doesn't necessarily have to be repeated. Data and information from other sites could be extrapolated for use on new sites. Some of the main information that will be used over and over again comes from the work at Load Line 1, the Winklepeck Burning Grounds, and the RVAAP facility-wide work plans. The results from these efforts will be compared to Load Lines 2, 3, and 4 for similarities. This will lead to either two outcomes; 1) there will be no further action or 2) more work needs to be done, there need to be new HQs.

Dr. Cornaby gave the board examples of the input that had been gleaned from different RVAAP projects. From Load Line 1 we have the ecological risk from sediment/surface water. He noted that no contamination was found in any of the surface water tested. Waterways closer to the processing station had more sediment contamination, however. Ecological Risk from surface soil at Load Line 1 will also be vital. Dr. Cornaby explained that he studied the risk for the shrew. Shrews feed on earthworms in the soil. The shrews are then eaten by hawks. The knowledge gained from this study could be extended to other sites on the facility. Inputs from the Winklepeck Burning Grounds will also be useful, especially the plant protection levels established from the biological ground-truthing. Dr. Cornaby briefly described how plant information was gathered. Inputs from the RVAAP Facility-wide Work Plans will also provide valuable information that will cross over into the other sites. The Ecological Risk Assessment Work Plan will identify the ecological receptors (shrews, hawks, and water fowl) as well as procedures and data. The Surface Water Work Plan will also be utilized.

Dr. Cornaby showed the RAB members a picture of the settling pond at Load Line 4, he pointed out the algae in the water. He stated that the Load Lines are adjacent to many ponds. He noted that at Load Lines 2, 3, and 4 there are many valuable water resources. He showed another picture of a healthy terrestrial habitat. He stated that most systems can heal rapidly in a few months to years. He pointed out the Queen Anne's Lace that was growing at the site interspersed with patches of trees and forest. He stated that there were lots of ecological resources at this location as well as throughout the arsenal.

Dr. Cornaby explained to the board the contaminant of potential ecological concern (COPEC) determination method. He stated that it was a 10 question system that gave the team about 30 pages of numbers. The flow chart explaining the method in more detail is attached. (Slide 48) This method enables the numbers of detected chemicals, requiring further evaluation, to be decreased. To show this more clearly Dr. Cornaby gave the findings for the 3 Load Lines:

<b>Load Line 2</b>	
Surface Water	26 detected chemicals to 4 COPECs
Sediment	45 detected chemicals to 28 COPECs
Surface Soil	82 detected chemicals to 31 COPECs
<b>Load Line 3</b>	
Surface Water	19 detected chemicals to 3 COPECs
Sediment	44 detected chemicals to 29 COPECs
Surface Soil	83 detected chemicals to 29 COPECs
<b>Load Line 4</b>	
Surface Water	15 detected chemicals to 8 COPECs
Sediment	25 detected chemicals to 14 COPECs
Surface Soil	71 detected chemicals to 22 COPECs
<b>* COPECs = Chemicals of Potential Ecological Concern and consisted of a few metals, organics, and occasionally an explosive</b>	

All of the data here were obtained with the use of extrapolation without having to gather additional data.

Dr. Cornaby stated that the next steps in the process of cleaning up the arsenal would be the use of previously collected information to save resources. He stated that this has proved to be most effective and accelerates the decision-making process. He stated that many chemicals found are of no ecological consequence yet some require further ecological evaluation. Surface water and sediment in the permanent streams and ponds will be handled in the RVAAP Facility-wide Surface Water Work Plan and surface soil will be addressed in an area of concern-specific work. He then reintroduced Ms. Clough to present to the RAB SAIC's overall conclusions.

Ms. Clough stated that in conclusion, contaminants in the soil primarily occur near former sources (buildings) in the near surface soil, those contaminants being explosives, metals, SVOCs, and PCBs. Beyond the vicinity of former sources (perimeter areas), contaminants are very sporadic and limited in extent. Concentrations of contaminants in subsurface soil typically diminish quickly with depth and are more limited in extent. Ditches, streams, and ponds are the primary routes for contaminants to migrate from the source areas. Drainage conveyances, although containing detectable contaminants, do not show substantially elevated chemical concentrations in sediment or water. Contaminants in groundwater occur primarily near former sources. Data collected to date do not indicate that contaminant plumes are migrating off the load lines in shallow groundwater. She explained that video surveys and sampling show that storm and sanitary sewers do not contain substantial accumulated explosives, SVOCs, or PCBs. Some metals occur at high concentrations in certain locations (storm sewer inlets and at the Load Line 2 ejector station). The extent and magnitude of contamination in all media at Load Line 4 are substantially lower than at the other load lines. She stated that ordnance was not discovered during the Phase II RI field investigations and that a UXO technician was present at all times. She told the RAB that human health and ecological risk assessments for Load Line 1 indicate potential risks and/or chemical hazards above acceptable criteria. She stated that chemical concentrations in certain media and locations at Load Lines 2, 3, and 4 may exceed numerical clean up goals established at Load Line 1. She noted that chemicals unique to these three load lines (2, 3, and 4) may require further risk evaluation.

Ms. Clough stated that many lessons were learned. She stated that cost/effort savings were realized by conducting the Phase II RI field investigations at Load Lines 2, 3, and 4 simultaneously under one work plan and mobilization. The use of field analytical methods for explosives allow "pre-screening of samples for more effective use of laboratory funds and characterization of contamination." She told the RAB that the availability of a pool of undesignated contingency samples allowed flexibility to sample additional locations based on field observations and improve characterization effectiveness. The availability of on-site staging facilities improved project efficiency and quality of the end product. The presence of Ohio EPA and USACE technical staff, on-site during field operations, was beneficial because potential changes to the work plan due to field conditions could be quickly resolved and implemented.

Ms. Clough said that SAIC recommends that work should proceed to the next step in the RVAAP CERCLA process which is to evaluate remedial alternatives and technologies and implement, in accordance with agreed-upon remedial action, objectives and land uses. It will be necessary to evaluate the remedial alternatives with respect to the most likely future land uses that the Ohio Army National Guard has. She stated that the focus should be placed on source areas and surface soils and that the utilization of proven, cost-effective technologies for the contaminants present is a must.

SAIC closed their presentation at 8:07 p.m. and began taking questions from the audience. An audience member asked if it was true that no spent ammo had been found at the load lines. Ms. Clough replied in the affirmative. The audience member then asked, "but some ordnance has been found, correct?" Mr. Patterson interjected that lots of UXO has been found at the Open Burning Grounds, but explained that at Load Lines 1 through 4, an actual piece of ordnance has not been found. However, he went on to say, they have found close to 20 lbs of raw explosives there within the buildings. Ms. Sarah Lock asked why is arsenic listed as an elemental to ecological risk but the HQ is for humans. Ms. Robers answered that arsenic came up as a carcinogen to humans. Lt. Col. Tadsen stated that arsenic was found due to the production

process, but stated that in Portage and Trumbull Counties, as well as others, it is naturally occurring. He asked if this was taken into account. Ms. Robers answered that no, all of the data was clumped together. She stated that the background levels do add to the numbers but that it had not been subtracted. Dr. Cornaby stated that this also happens with other chemicals like copper as well as aluminum. He stated that high numbers are found, but the background is high as well. He stated that they cannot provide clean numbers. Ms. Eileen Mohr asked if they had a percentage of sewers that were scoped. Ms. Clough replied that there is a certain amount of footage, but could not be certain if it was 500 or 1500 feet. Dr. Cornaby asked if the scoping was pretty successful. Ms. Clough replied that she thought so. She stated that they received a good picture of an area that you wouldn't normally have been able to see. She stated that an UXO technician oversaw the project. Mr. Walter Landor stated that at Lake Erie there is a stipulation that you can only safely eat a certain number of Walleye per month that you catch. He asked if RVAAP had any similar safety quota. Dr. Cornaby replied that there is no criteria established at the arsenal due to the catch and release program. Mr. Landor questioned if the fish were any good to eat at the arsenal. Lt. Col. Tadsen replied that in the past people have eaten what they have caught. Ms. Mohr stated that at some point next month fish will be electro-shocked and examined. She stated that they will be looking for erosion of fins and gills and looking for tumors. They will be looking at fish size and species type but explained that no samples would be taken. Mr. Patterson added that they will be looking at contaminated areas and comparing them to non-contaminated areas. He stated that if fishing occurs on an AOC it is strictly catch and release. An audience member stated that he had heard that at Eagle Creek, Agent Orange had been pumped into the water. He stated that he had heard that it had turned the water an orange color. Lt. Col. Tadsen stated that a number of studies had been conducted historically. He stated that when the plant was functioning the water had always been found to be cleaner when it left the arsenal then when it entered. He stated that there is no evidence or documentation to support Agent Orange ever having been introduced to the water supply. The audience member countered that his grandmother stated that her hair had turned orange due to this contamination. Both Mr. Patterson and Lt. Col. Tadsen replied that this would have been due to the TNT in the water and the color actually would have been more pink-tinted. Mr. Patterson remarked that the audience member had a legitimate question and stated that the data so far says that currently there is little to no contamination in the water. He stated that this study will take it further by looking closely at the sources on post. He did confirm that in the past pink water (TNT contaminated) had been allowed to be discharged more freely than now. Ms. Mohr added that the study will also look at macro invertebrates and such through surface water and sediment sampling. Lt. Col. Tadsen stated that he wanted to clarify for the board the three different Ohio Army National Guard receptors: residents and trainees. He stated that residents were active duty guardsmen that were on the facility full time. He stated that they only spend their leave time (approximately 30 days) per year off site. He stated that they plow roads and work in the swamp, etc. He explained to the RAB that trainees are part-time guardsmen that work on the arsenal one weekend a month and two weeks annually. He stated that over the course of a year they are on site approximately 39 days. He stated that fire and dust suppression workers were actually residents. He stated that in an effort to control the dust generated by training exercises soil palliatives have been utilized. He explained that this process was more expensive than just spraying the roads and trails with water, but it was more effective. Dust suppressors have different contact with the contaminants on the arsenal than other residents. He explained that there is some degree of angst amongst the different agencies on the arsenal, due to the more intrusive training that the Army conducts. He stated that tanks are dug into the ground. He stated that the Army asks if the other areas are really needed by the guardsmen seeing as they already possess 19,568 acres. He explained that for exercise and combat missions it is necessary for foxholes to be dug and grenade turrets to be put into place. He explained that a good foxhole is approximately chest high, and then when you include the grenade sump it can be as deep as seven feet. He stated that the load lines, fuze and booster lines and primary artillery lines will be used predominately for tank maneuvers. He explained that due to all of this activity a lot of water has to be used to control the level of dust generated. It also has to be understood so that when clean up or remediation of a site occurs this need for different depths and land utilization will be taken into account. He stated that both he and Mr. Patterson work together to find a common solution to



their different missions. At this time Lt. Col. Tadsen thanked the presenters and ended the question and answer portion at 8:35.

**4. Scheduling of Next Meeting and General Notes**

Mr. Patterson stated that there are three open positions on the RAB. They will be advertised in the local papers. He stated that applications can be e-mailed or faxed as needed. Ms. Gilliam reminded the board members that applications were also kept on file at the local repositories.

Mr. Patterson stated that another tour was planned for this summer. He stated that it would include the Ramsdell Quarry, which was at one point a rock quarry, then a napalm burning site and is now a landfill, as well as the Melt Pour Lines. He stated that the tour would again be held on a Saturday and that the RAB members would be notified by mail. Lt. Col. Tadsen suggested that a tentative date for the tour be selected. Mr. Patterson agreed and the date was set for July 26, 2003 at 8:30 a.m. to 12:00 p.m.. Mr. Patterson reminded the RAB that they will again be meeting at building 1037 on the arsenal and that transportation would be provided to the different sites.

The next RAB meeting was scheduled for September 17, 2003. The tentative location will be the Windham Town Hall unless another township would like to host it. All will be notified by mail. Lt. Col. Tadsen adjourned the meeting at 8:41 p.m.

Respectfully Submitted,

Denise L. Gilliam  
RAB Secretary

DG/dg

Attach: 1