

RAVENNA ARMY AMMUNITION PLANT
ENVIRONMENTAL BRIEFING
FOR
RESTORATION ADVISORY BOARD INFORMATIONAL MEETING

19 SEPTEMBER 1996

I. Speaker Introduction

- Tim Morgan, RVAAP Natural Resources Manager
- Born and raised in Ravenna, OH
- Graduate of Kent State University and The University of Michigan
- Started at the RVAAP in 1988 working for the operating contractor as the land management specialist in the Facility Engineers Office. Worked along side of the environmental engineer. Duties included forest management, wildlife management, agriculture management, endangered species mgmt., wetland mgmt., cultural resources mgmt., pest control mgmt., land/facilities utilization, property and facility leasing, property excessing, preparation/review of environmental assessments, oversight of military training areas, and related land mgmt duties.

II. RVAAP History

The land was acquired by the War Dept. in 1939 and 1940. The original acreage was approx 25,000 acres. The current acreage is 21,419 acres. Some 250 families were displaced. Facilities were built in one year by 17,000 workers - 1,400 buildings (750 for explosives storage), 210 miles of road, 110 miles of railroad, 3 sewage plants, 4 water treatment plants, 6 steam plants, 12 ammunition production lines, 15 housing units, and supporting administration buildings.

Ravenna was active during WWII, the Korean War, and Vietnam with periods of inactivity between and after these conflicts. The RVAAP was a load assemble and pack facility with supporting ammunition and explosives storage capability. The facility loaded large caliber conventional projectiles and bombs. Ravenna did not manufacture or store nuclear, biological, or chemical weapons.

Ravenna also demilitarized various rounds, and did testing and development of conventional weapons systems such as the Dragon anti-tank warhead. Demilitarization is the process of taking apart obsolete rounds and salvaging reusable explosives and metal components. In some instances it involves burning and/or detonation of unsalvageable materials.

III. Current Mission

The current mission is the storage of explosives and environmental restoration with the responsibility for natural and cultural resources management. The RVAAP also supports part of the training missions of the Ohio Army National Guard (OHARNG) and the Air Force Reserves (AFRES) and the storage of strategic material by the Defense Logistics Agency (DLA).

The facility is considered a medium size installation as compared to other Army installations, but is very large in terms of contiguous acreage in NE Ohio. The large size was needed to support the explosives production and storage missions. There are safety zones (Quantity Distance Arcs) around the explosives storage magazines and human activity is limited and/or restricted in these zones. The QD zones are no longer needed around the production facilities but they are still needed around the storage areas.

The RVAAP supports a unique and rich diversity of natural resources due largely to these undisturbed QD zones.

IV. Contamination

The bulk of the contamination at Ravenna is the result of accepted explosives manufacturing and waste treatment processes. When this plant was in full operation, the regulations we operate under today were not in affect. Melt pour buildings were periodically hosed down with steam. The TNT contaminated water (pink water) was processed through sawdust filters, then it was pumped into receiving ditches, which flowed into man-made settling ponds, which out-flowed into receiving streams when the water level of the ponds rose above the spill way. There are currently about 50 ponds on this installation. Of these five of them are man-made settling ponds used for past explosives waste treatment. Contamination concerns are explosives and various heavy metals (lead, chromium, mercury, and arsenic). Associated with this treatment process was the burning of the contaminated sawdust at the burning grounds.

Other areas of concern (AOC) include open demolition and testing areas. The contaminants of concern are the by-products of detonation including heavy metals and unexploded ordnance. There were several landfills on the installation that were used prior to landfill regulations. These landfills received all types of wastes generated at the plant from household refuse to solvents, building debris (including transite), fluorescent light tubes, etc. Some of the landfills were old quarries that were also used as open burning sites prior to being used as landfills. There is also an area that was used as an airplane test crash site in the 1950's by the NACA. Contaminants of concern at this site are primarily petroleum products. The location of above ground waste oil tanks at vehicle maintenance areas, the pest control building, the PCB transformer storage building, strategic ore pile run off, and our sewage treatment plants are also areas of concern.

On the unusual side, there is a suspected mustard agent burial site. Previous investigations have found no mustard agent. This site has been identified based on hearsay from an old employee. Ravenna did not produce mustard agent, so the origin of this site is unknown.

Basically, any area that we have reason to believe could be contaminated is an area of concern. These AOCs are not all confirmed to be contaminated. Some of them are suspect due to past activities, but may not be contaminated at all. We will test all the sites, and expect some to need no clean up. Some of the identified AOCs have already been fully or partially closed. For example, the sewage plants have been closed and our regulated sanitary landfill has been closed. Closed AOCs remain listed even after they're closed.

So primarily, the AOCs are the ammunition production areas, open demolition, testing, and burning areas, and various unregulated landfills. The Army did not take in hazardous wastes from off post and indiscriminately bury them on site. The contamination at Ravenna is primarily from production processes and entered the environment via surface water or disposal/treatment on the soil surface. Even the landfills were primarily surface landfills with an earth covering. The only material that would have been brought on site, and not been part of our production mission, is the suspected mustard agent.

Past operations were much less environmentally friendly than current regulated operations. Open burning used to be done on the ground surface, landfills were not regulated, and pink water was discharged to settling ponds. Explosive operations are currently highly regulated. Burning can no longer be done on the ground and requires the use of burning trays, monitoring wells, and must go through an extensive permitting process. Pink water discharge is no longer permitted to surface streams. Pink water must be treated through a pink water treatment plant before discharge. The discharge must also be tested.

V. Environmental Monitoring To Date

A number of studies and investigations have been done to date at the RVAAP with the goal of identifying sites of potential contamination. Up until 1993,

when our sewage and water plants were operating, we did extensive testing of surface water and ground water wells. There has also been some limited testing of soils and sediments. Our current knowledge of contamination is based on these studies, but the information is not nearly detailed enough to enable us to develop clean up plans. The streams are considered to be largely free of pollutants and contain pollution intolerant species such as the mountain brook lamprey, redbelly dace, mottled sculpin, and redbelly dace. The soil and sediment tests indicated minor amounts of contamination in some ditches and pond sediments. Areas of known explosives contamination in soil, like around melt pour buildings, were not tested in these early studies.

We are currently monitoring ground water wells at our closed sanitary landfill (which is an old quarry that was also used as a burning site), the open burning grounds, the open demolition grounds, and the surface discharge from one pink water treatment plant. We also test the drainage water from the strategic ore piles on a monthly basis and three storm water discharge points on an annual basis.

There have been 38 AOCs identified to date. The Army is operating under a voluntary clean up program, with regulatory oversight by the U.S. and Ohio EPA, to thoroughly investigate and clean up these sites. To date, the remedial investigation documentation and field sampling have been done for 11 high priority sites. The Army and the EPA designated the 11 sites with the most potential for off site migration as high priority. The investigation involved intensive soil, sediment, and surface and ground water sampling to determine the nature of contamination. The results have not yet been received from the laboratory.

Preliminary results on two sites are known and are not surprising. One landfill that was tested was found to contain a lot of household refuse. Chemical analysis results for contaminants are not yet available. Also, the soils sampled under one of the melt pour buildings was found to contain 20% to 25% explosives.

VI. What's Next?

After all investigations are complete, remediation plans can be developed for those sites that need to be cleaned up. The long process of developing plans and programming funds will begin. Any eminent health or safety risks to the public will be addressed immediately.

The remaining 27 sites that have not yet been tested will be evaluated, remedial investigation plans developed, and funds requested to do the remedial investigations.

VII. Common Questions

A. Why Now?

With the end of the Cold War the Army began to evaluate their need for ammunition plants. It was decided that Ravenna was no longer needed as a production facility. So, in the 1992/93 time frame we lost our mobilization mission and basically began closing down the installation. We closed all buildings except for three administration buildings and the explosive storage igloos. We closed the water plant, the sewage plants, the steam plants, and other parts of the plant infrastructure. The Army's plans at the time were to close the production facilities but to retain the explosives storage mission. The closure of the production lines meant that they would never be reactivated, so the Army initiated a voluntary clean up of the facilities. The clean up is voluntary, but probably necessary prior to determining the future use of the area.

B. Why Does The Clean Up Take So Long?

The Army has said that the clean up of the RVAAP could take up to ten years to complete. If you use 1993 as the initial starting date, we are already three years into the investigation/clean up and we have so far only begun the remedial investigation of 11 sites. In all probability the final clean up of all the sites will take longer than ten years. The time period is not directly related to the amount of contamination. The clean up does not consist of going out and digging up contaminated soil. The clean up is a complicated regulatory process that consists of detailed planning, review, and work initiation. Those who will serve on the RAB will become very familiar with this process. For example, it took approximately two years to do all the preliminary planning to conduct this year's remedial investigation. The actual on the ground field work took only 20 days. The sites investigated are not cleaned up. All we've done is gathered data so we can know what needs to be cleaned up, if anything.

In addition, funding is not always readily available, which can cause delays. The Army manages a lot of facilities with known environmental problems that are worse than Ravenna. Funding is allocated over all Army facilities, so the immediate worse cases take priority. Funding is also sometimes diverted for other purposes such as troop support.