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DC City Council

Committee on the Judiciary
Committee on Public Works and the Environment
Committee on Human Services

Joint Public Oversight Roundtable

Environmental Health and Safety Issues in Spring Valley/ American University Park Arising from World War I Munitions Experiments

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Thank you, members of the council, for inviting us to participate in this Roundtable Discussion. The U.S. Army, the Corps of Engineers, and the Corps' Baltimore District are committed to identifying, investigating, and remediating contamination associated with the Formerly Used Defense Site known as American University Experiment Station (AUES) that could adversely impact residents' health and safety. This includes addressing both possible ordnance and explosives, and potential chemical contamination.

In this effort, we are working closely with the District of Columbia Health Department and Region III of the U.S. Environmental Protection Agency (EPA Region III), with whom we have established a solid working relationship. I would like to further assure you that the Army in cooperation with our partners has developed a comprehensive approach for addressing Army-caused contamination in the American University Experiment Station area. (We will refer to this area as "AUES" from here on.) Today, we will describe how we are investigating and remediating the AUES area, beginning with a brief history of what has led up to this plan. At this point I will turn it over to Major Brian Plaisted who has been the on-site operations officer for the last two years.

First, let me describe the Army's activities at AUES between 1917 and 1919. Starting in April 1917 the War Department established a chemical warfare research and testing facility at the American University campus. This testing also included field tests that were conducted on property leased from private residences to the north and west of AUES. Although some mortar firing took place at the site, none of the testing documents show that rounds were fired with chemical warfare agent in them. The tests were to evaluate the ballistic characteristics of the shells and thus they would be loaded with simulated compounds. The actual testing of chemical warfare agent took place at two trench systems, a static test fire area, several other test areas, and three shell pits located near the campus. At the end of the war, the AUES was shut down and the Army evacuated the area within a relatively short time after that. The Army had returned the site to the American University and the property owners by 1921.

I would like to briefly describe the process used to conduct the investigation. Because of the large size of the site (over 660 acres), we needed a logical strategy to identify where we should focus our efforts. Our strategy was to try to identify areas with the greatest potential for contamination, and investigate those areas first. We called these areas "points of interest". The rationale we used, and the one we continue to follow, was that if we found contamination at one of these points of interest, we would then expand our investigation.

In order to identify the points of interest, we conducted a review of the available historical documents. The documents included a large quantity of test reports and archival sources concerning American University Experiment Station. This review was collected into a report called *A Brief History of the American University Experiment Station and the U.S. Navy Bomb Disposal School, American University*.

Another major source of information used to identify points of interest was historical photographs and plans. Aerial photographs from 1918, 1927, and 1937 were analyzed by USEPA's Environmental Photographic Interpretation Center (EPIC). We also had a circa 1918 plan of the AUES campus, and a number of ground photographs of the area.

Based on this review, we identified over 50 points of interest where we would start our investigation. We tried to use the best information available to pinpoint the areas on which to focus our efforts, but as you might understand, this is an inexact science. The most important aerial photograph in terms of locating specific points of interest was probably the one from 1918, since it was taken while AUES was in operation. But the quality of this photograph made it very difficult to locate a particular point in the photo on the ground today. This is not to make excuses, but to try to convey the difficulty of the task we faced, and indeed still face.

In conducting the investigation, we used two primary techniques. We conducted geophysical surveys to identify possible locations for the burial of ordnance material and we conducted environmental sampling to identify possible chemical contamination.

The geophysical surveys were done at all points of interest considered to be potential ordnance burial locations, plus a selection of approximately 10% of all properties outside of the points of interest. These additional properties served as a check on the historical information that had been gathered. A total of 492 properties were surveyed. Most were surveyed with an electromagnetic device called an EM-31. This device is useful in identifying large metallic objects under the ground, such as ordnance burial pits. Some properties had a magnetometer survey due to the difficult terrain or other limiting conditions. A total of over 1900 anomalies were identified. (Anomalies are disturbances in the electromagnetic field that may be indicative of metal objects below the ground surface.) These were reviewed by an unexploded ordnance (UXO) expert against pre-determined study criteria to distinguish potential ordnance from cultural features such as utilities. The UXO expert made recommendations for removal, additional study, or removal from further consideration. 840 anomalies were identified for further investigation or removal. No burial pits were identified. One spent Livens smoke round was identified. Two other rounds were found on the surface and appeared to be amnesty rounds (i.e., items that appear to have been found elsewhere and left by unknown individuals). An additional 3" Stokes mortar round was discovered during the digging of a basement. This round was unfilled, unfired, and unarmed. Approximately 20 other pieces of ordnance scrap items were also found.

Environmental sampling was accomplished at 13 areas. The general process was to take samples from 13 randomly selected locations within each point of interest. The samples were analyzed by an independent laboratory for the contaminants most likely to be found at that point of interest based on the historical documentation. The EPA Region III took samples from these same locations and analyzed them for a full suite of volatile organic compounds (VOCs) semi-volatile organic compounds (semi-VOCs) and metals. A total of 260 samples were taken. Samples were taken as close as possible to the 1918 surface level. Identification of this level was based on a comparison between a 1918 topographic map of the area and a 1981 topographic map of this same area with further identification through field observations. No chemical agents, chemical warfare agent-unique breakdown products, explosives, or explosive breakdown products were found in any of the soil samples collected. The Army conducted a risk assessment for certain metals that exceeded the EPA's risk based screening criteria. This assessment found no elevated health risk requiring remedial action. These findings were documented in a

Remedial Investigation Report. After a public comment period on the Remedial Investigation, the Army issued a No Further Action Record of Decision (NOFA ROD) in June 1995.

Based on the information in the Remedial Investigation Report, we believed we had completed our task. In the Remedial Investigation Report the Army also gave the following assurances: "Consistent with its obligations under CERCLA [Comprehensive Environmental Response, Compensation, and Liability Act] and DERP [Defense Environmental Restoration Program], the Army remains responsible for any additional response actions necessary in relation to buried munitions and environmental contamination associated with prior DoD activities at the OSR FUDS [Operation Safe Removal Formerly Used Defense Sites]. Based on the results of the test and investigations performed to date, the Army concludes that all appropriate and necessary steps have been taken, at this time, to protect public health and safety and the environment in relation to OSR FUDS. If such additional munitions or environmental contamination are discovered at the OSR FUDS, the Army is committed by CERCLA and DERP to take such remedial actions as may be necessary to address such buried munitions and /or environmental contamination resulting from DoD activities."

In 1996, the DC Health Department sent the Baltimore District a letter raising a number of concerns with the previous work at the site. Throughout 1997 the Baltimore District evaluated these concerns, and in January 1998 published a *Remedial Investigation Evaluation Report*. In this review we did identify that we had made an error in the location of one point of interest, Point of Interest 24. It had been mislocated by approximately 150 feet. That may not sound like much in comparison to a 660 acre site, but if the contamination is highly localized, then that's certainly enough to make a difference. We did verify that all the other points of interest were properly located. We felt we needed to conduct additional investigation at the corrected location of this point of interest, and in February 1998 we conducted a geophysical survey of this new location on Glenbrook Road and found two large metallic areas below the ground surface, which were indicative of possible burial pits.

Throughout the remainder of 1998 we developed plans to investigate these two areas and coordinated with the many organizations involved, including the DC Government and a variety of supporting Department of Defense organizations. We mobilized to the site on February 15, 1999 and began the intrusive investigation on March 29, 1999. One year later, on March 29, 2000, we had completed the investigation of two large burial pits. Over 600 items were recovered, including 288 ordnance items. 14 of the items were determined to contain chemical warfare agent, predominantly mustard agent.

As part of this investigation, EPA Region III took samples on the Glenbrook Road property and 4 adjacent properties and analyzed them for a full suite of contaminants. One sample on the Glenbrook Road property was elevated for arsenic. (Please note that arsenic is naturally occurring element that is widely distributed in the environment. Because of this, some arsenic is expected to be found in virtually all soil. This level is sometimes referred to as "background," and that level varies from area to area. To ascertain the background level in this area, EPA Region III, in August 1999, took 30 samples from near Spring Valley, but outside the FUDS boundary. The results from these samples ranged from 3.3 to 18 parts per million.)

Baltimore District then took additional samples and found elevated levels throughout the garden area surrounding the pit excavation. Consistent with our overall approach, grid sampling was then done over the entire property. This was followed by an Engineering Evaluation/Cost Analysis (EE/CA) to determine if there was an elevated risk to health and the appropriate remedial action. After a public comment period, we determined the appropriate remedy to be a two-foot soil removal in those areas with arsenic values that were elevated in comparison to the background distribution of arsenic. After the two-foot removal, confirmation samples are taken and additional soil removed if necessary. Also as a result of the input received during the public comment period, two adjacent properties were included in the removal action. This removal began on December 4, 2000 and is nearing completion on two of the properties on Glenbrook Road.

In January 2000, in light of the contamination we had found on the Glenbrook Road properties, the rationale we had followed all along for investigating this site dictated that we needed to expand the area of investigation. We established Operable Unit 4 (OU-4) and laid out a plan to conduct arsenic sampling on 61 private residences and the southern portion of the American University campus. The area to be sampled was defined to ensure that we included all the area that may have possibly been referred to as "arsenic valley" by the soldiers at the facility as well as the research area of the American University Experiment Station. We coordinated this plan with our partners at DC Health and EPA Region III and then briefed it to the community. The plan included a six-part composite surface sample for each of four quadrants on every property. There was also one subsurface sample location chosen on each property with discrete samples taken every foot to a depth of 6-10 feet depending on the cut or fill since 1918 in that area. The American University property was divided into 28 lots, approximately ½ acre in size, with each lot receiving the same sampling process. For properties larger than two acres we conducted 12-part composite samples and two subsurface borings.

We began sampling in late August 2000 and completed the sampling on November 27 at the AU Child Development Center. Due to its sensitive nature, we expedited the results from the Child Development Center. Those composite results came back elevated at 31.3-parts per million arsenic on December 6, 2000 as compared to the background range of 3.3 to 18 parts per million. We promptly notified the University. We then conducted grid sampling at the CDC on January 4-5 and received those results back on January 17, 2001. We immediately notified the University and the DC Health Department of those results. On January 25th we met with DC Health, EPA Region III, and American University and agreed on a sampling process to determine if there are any other possible contaminants of concern. We have prepared this sampling plan and are awaiting feedback from the University prior to beginning sampling. The Agency for Toxic Substances and Disease Registry collected hair samples from the children on February 1-2, 2001. These samples are currently being analyzed.

On the residential properties, we were able to sample 42 of the 61 properties we had initially identified. Eleven property owners would not give us permission to do the sampling and we were unable to make contact with 8 other property owners. After obtaining the composite results for these 42 properties, we identified eight private residences where the sample results exceeded 13 parts per million. This value represents upper range of the background distribution of samples. In coordination with EPA Region III and DC Health we agreed on a sampling plan

to conduct 20-foot grid sampling on these eight properties plus one other nearby property. Six of the nine properties are on Rockwood Parkway with single properties on Indian Lane, Quebec Street, and Woodway Lane. On four properties we also took samples to determine if there are other possible contaminants of concern. This sampling began on February 1st and is expected to be complete later this week. We will then use this data to conduct a risk assessment and feasibility study to determine the appropriate response action.

We have also conducted 6-part composite sampling on 11 other properties as part of our effort to ensure that we have fully characterized the OU-4 sampling area. Five properties were added that were adjacent to properties that had elevated surface sample results. Of the other six properties, two were properties that we had been unable to contact previously, two were properties where the owners had only allowed subsurface sampling previously, and two were properties near OU-4 that had special circumstances warranting investigation.

The OU-4 sample results also showed six lots at AU with surface sample results above 13 PPM. At our January 25th partnering meeting, we agreed to conduct 20-foot grid sampling over this area. We will also do this sampling over a portion of the area that EPA Region III had sampled in 1999 that had some elevated results. Finally, we will conduct subsurface sampling at several locations on American University near Nebraska Avenue that had slightly elevated subsurface sample results as well as one area near the Glenbrook Road properties.

Concurrently with these efforts, EPIC has reviewed the archives and found several additional aerial photographs of the area, including one from 1922 and one from 1928. The team has given EPIC a list of priority areas for review. These areas (in priority) were the OU-4 area, the Sedgwick trench area, the 52nd Court trench area, the Static Test Fire area, and a review of the entire area using the new photographs. EPIC has completed this review for the OU-4 area and the Sedgwick Trench area and is now reviewing the 52nd Court trench area. The review in the OU-4 area guided our sampling effort there and also has contributed to our decision to conduct test pits at one of the Glenbrook Road properties to locate a possible ceramic/glassware burial pit. The review of the Sedgwick trench area has led the team to agree on a sampling process for the five properties directly over the trenches and two other properties nearby where ground scars appear on several photographs. We also identified one area for sampling and geophysical survey work. Finally, we agreed to review the geophysical survey data of these properties that was collected in 1993. We expect the sampling and review to be completed in April.

One final area to mention is the “small disposal area” located on American University. This was a surface disposal area containing laboratory glassware and metal items. The area was investigated from January 8-11, 2001 under evacuation conditions. No chemical warfare material was identified there, though elevated levels of lead and arsenic were detected. Confirmation samples at the base of the excavation still have elevated levels of lead and arsenic. This area of native soil will be further excavated to remove these contaminants. In addition, the sediment in the stream that begins in this area will be removed down to where the stream crosses Glenbrook Road. Samples taken by EPA Region III in December 1999 show no elevated levels of arsenic in the sediment downstream from this point.

In conclusion, this is an extremely complex project with several significant issues. There are no easy solutions. The science involved locating old burial locations and determining contents is difficult to understand and is not always able to provide clear cut, definitive answers. The historical documentation is extensive, however, it is insufficient to provide a complete picture of everything that occurred at the site. In coordination with our partners and the community we must make sound judgments to make best use of the resources that we use to identify, investigate, and remediate any contamination at the site. Most of our current work in Spring Valley is a result of revisiting the location of Point of Interest 24, and I think its safe to say that if we had looked in the correct location for Point of Interest 24 during our initial investigation from 1993 to 1995, we would have discovered at that time the elevated arsenic levels that we are now finding.

I also want to assure you that we have and will continue to be open and transparent with the community. We have conducted regular community meetings that are open to the public and continue hold these meetings. We also send out a periodic newsletter to the entire community with updates on project activities. We established and publicized a website with information on the project as well as a toll free phone information line. We have also held public availability sessions to address key topics. Finally, my staff has made themselves available to answer residents' questions and will continue to do that in the future.

Finally I wanted to reiterate that the Army is committed to identifying, investigating, and remediating contamination associated with the Formerly Used Defense Site known as American University Experiment Station (AUES) that could adversely impact residents' health and safety. We are committed to working with the community as has been demonstrated in our responsiveness to the concerns from the parents at the American University Child Development Center concerning our sampling efforts.

Website address: http://www.nab.usace.army.mil/projects/WashingtonDC/springvalley.htm