USACE SPRING VALLEY FUDS PROJECT **AGENDA**

Inter-Agency Partners Meeting

Tuesday, January 29th, 2013				**[**Upcoming Meetings: March 19th, May ?]**
TIME	**TOPIC**	**DISCUSSION LEADER**	**PREPARATION**	**OBJECTIVE**
9:15 - 9:30	Check-in / Review Ground Rules	S. Hirsh		Introductions of new attendees/ Personal check-in / Post Meeting Lunch plans/ Review Ground Rules
9:30 - 10:05	4825 Glenbrook Road	B. Barber/Parsons		Final Remedial Design and Remedial Action Work Plan / Schedule Update
10:05- 10:20	Site-wide RI/FS/ Evaluation Document	L. Reeser/ T. Bachovchin		Update
10:20 - 10:25	3720 Fordham Road ARB Memo	D. Noble		Partners sign the ARB memo
10:20 - 10:35	BREAK			[Give Post Meeting Lunch $ to Carrie]
10:35 - 10:45	Open Issues and New Data	S. Hirsh		
10:45 - 10:55	Document Tracking Matrix for MMRP/HTW	L. Reeser/ Parsons	Partners Review	Review pending documents
10:55 - 11:05	Partners' Parking Lot	S. Hirsh	Partners Review	
11:05 - 11:15	Agenda Building	S. Hirsh		** Discuss meetings every 2 months
11:15	Adjourn	S. Hirsh		

Spring Valley Partnering Meeting
January 29, 2013
Spring Valley Trailer Conference Room

Name	**Organization/Address**	**X**
Sherri Anderson-Hudgins	CEHNC	**X**
Thomas Bachovchin	ERT	**X**
Brenda Barber	CENAB	**X**
Todd Beckwith	CENAB	
Bethany Bridgham	American University	**X**
Jessica Bruland	ERT	**X**
Sean Buckley	Parsons	**X**
Paul Chrostowski	CPF Associates, AU Consultant	
Tom Colozza	CENAB	
Jennifer Conklin	DDOE	
Kathy Davies	US EPA Region 3	
Dr. Peter deFur	Environmental Stewardship Concepts/RAB TAPP Consultant	**X**
Diane Douglas	DDOE	
Bill Eaton	URS	
Brandon Fleming	USGS	
Alma Gates	RAB Member - Horace Mann Rep.	
Steve Hirsh	US EPA Region 3	**X**
Leigh Isaac	Environmental Stewardship Concepts	
David King	CENAB	
Carrie Johnston	RCAI - Community Outreach Team	**X**
Dan Noble	CENAB	**X**
John Owens	CENAB	
Randall Patrick	Parsons	**X**

Lan Reeser	CENAB	**X**
Mike Rehmert	CENAB	
Paul Rich	Parsons	
Allen Shapiro	USGS	
Don Silbacher	Parsons	
Jim Sweeney	DDOE	**X**
Andrea Takash	CENAB, Public Affairs	**X**
Fan Wang-Cahill	Parsons	
Ethan Weikel	CENAB	
Nan Wells	ANC3D Commissioner	**X**
Cheryl Webster	CENAB	
Maya Werner	ERT - Community Outreach Team	
Laura Williams	Environmental Stewardship Concepts	
Bruce Whisenant	CEHNC	
Rebecca Yahiel	ERT - Community Outreach Team	
Doug Yeskis	USGS	

Summary of January 29 Spring Valley Partnering Meeting

Consensus Decisions

- Partner concurrence was obtained for excavating a narrow curbside strip of soil in Area C (No Further Action area) to the property boundary during the initial low-probability excavation of Area B at the 4825 Glenbrook Road site.

January 29, 2013 Action Items

- Parsons will provide the Final 4825 Glenbrook Road Chemical Safety Submission (CSS) electronically to the Partners, as requested.
- USACE-Baltimore will provide the start date for 4825 Glenbrook Road high-probability excavations, once available, to DDOE in preparation for procuring funding and signatures for DC Police presence at the site.
- The Partners will schedule a site visit to view the constructed ECS at the 4825 Glenbrook Road site, depending on the site preparation schedule for high-probability excavations and Partner availability.
- The Partners will schedule a site visit to evaluate landscaping and hardscape features at the 3700 block of Fordham Road property, pending receipt of the soil sampling right-of-entry.

- USACE-Baltimore will consider conducting a federal archive search to confirm the historical purchase of Chilean nitrate-based fertilizer by the reform school that was previously situated in the Sibley Hospital area.

Tuesday, January 29, 2013

Check-in

The Partners conducted their normal check-in procedure.

A. 4825 Glenbrook Road Work Plan and Remedial Action Update

The goal of this segment of the meeting was to discuss the accelerated schedule guiding the decision-making process and the upcoming remedial action for the 4825 Glenbrook Road site.

USACE-Baltimore and Parsons provided an update on the final Site-Specific 4825 Glenbrook Road Draft Remedial Design and Remedial Action Work Plan.

Pre-decisional draft work plan updates were previously presented at various 2012 Partnering meetings.

House Demolition: House demolition was completed in late November 2012, followed by removal of associated debris from the site. Remaining structural elements include the basement walls and the basement slab, which will be removed during high-probability excavations.

Public Outreach: A media day was held in late November 2012. USACE Headquarters and media outlets produced several video clips, one of which was shown at the December 2012 Partnering meeting.

Site Preparations: Limited site preparations were conducted prior to securing the site for the winter holidays. These included guard station mobilization and electricity connections provided by an electrical contractor. AU granted right-of-entry for access to their power sources.

Remaining low-probability site preparations were completed in January 2013. Construction trailer mobilization on AU's campus was completed, along with low-voltage electricity connections similar to those completed for the guard station. The MiniCAMS monitoring equipment was established on site for low-probability excavations, and the analysis trailer for DAAMs monitoring equipment was established on the Federal Property. All hand-held air monitoring equipment detectors were procured and calibrated. Quantitative fit testing and mask inspections were completed for all field teams. The water meter was re-installed and raised access (not a water hydrant) will be established over the manhole. Guardrails were established around the basement foundation walls and the retaining wall footer to protect site workers (these sturdy guardrails are OSHA-approved and capable of withstanding at least 200 or 300 pounds of force).

Upcoming Activities: Initial low-probability efforts are tentatively scheduled to begin in early February 2013. The anticipated start time frame of January 2013 was delayed due to illness (flu season and strep throat) impacting the field crew and the supporting contractor.

Low-probability excavations are planned to begin along Glenbrook Road in the long strip of Area B. The remaining backyard test pits will be excavated next. The backyard utility trench will be excavated to reroute the sewer line, followed by water line relocation. Once these activities are completed, site preparations for high-probability efforts will begin, including installation of soldier piles to maintain slope and stability in areas where space is limited and thus the required slope cannot be obtained.

- The utility trench will be dug to the depth necessary for sewer line installation based on landscape sloping requirements. In lieu of excavating the entire utility trench as a test pit, four (4) additional backyard test pits (TPs 151 through 154) are proposed in the trench vicinity to fill in data gaps from previous investigation efforts.

- This modification will save significant time and effort. The long deep trench would have been excavated to saprolite, partially backfilled, and maintained as an open test pit until installation of the sewer line was completed. This process would have required approximately two weeks for completion (including additional site preparation, additional excavation effort, and additional coordination).

Low-Probability Perimeter Air Monitoring: Perimeter air monitoring equipment will be located at the perimeter of the Exclusion Zone (EZ) during low-probability excavations. DAAMs tubes will monitor for point-source detections of chemical agents: mustard (HD) and lewisite (L).

- The original low-probability EZ boundary matched the property boundary, for ease of defining this zone. This layout does not allow concurrent completion of low-probability excavations and high-probability mobilization efforts (such as installation of fencing), because the mobilization field crew cannot perform activities within the EZ.
- The revised low-probability EZ is defined as the minimum area required for safely using construction equipment, such as the swing radius of the crane boom, to minimize field crew injuries. Air monitoring will be performed at the perimeter of this proposed smaller EZ instead of at the property boundaries. This approach is more conservative because the perimeter air monitoring equipment will be more tightly spaced.

Additional point-source detectors will be located as close to the excavation as possible. Electrochemical detectors will monitor for arsine, hydrogen chloride (HCl), and hydrogen cyanide (HCN). A calibrated photoionization detector (PID) will monitor for volatile organic compounds (VOCs).

Document Schedule: The accelerated document review schedule is completed for the following work plan documents.

- The Demolition Plan was finalized in February 2012. This document was incorporated into the Site-Specific Work Plan to enable concurrent review of both documents.
- The Chemical Safety Submission (CSS) Annex for Remedial Action was finalized and submitted in August 2012. Final DDESB acceptance of the CSS was obtained in November 2012. Details of the MCE selection process were provided at the September 2012 and previous Partnering meetings, and details of the DDESB approval stipulations were provided at the December 2012 Partnering meeting.
- The Site-Specific Work Plan for Remedial Design and Remedial Action was finalized in January 2013.

Tentative Remedial Action Schedule: Three phases of remedial action are planned: demolition (completed), the remaining low-probability test pits in the back yard including the utility trench, and all planned high-probability and low-probability soil removal areas.

Preliminary site mobilization activities, such as public space and building permit applications, and house demolition are completed. Site preparations for low-probability excavations are also completed.

Initial low-probability efforts are tentatively anticipated to begin in February 2013 (including the front yard portion of Area B, backyard test pits and the utility trench, utility rerouting, and site preparations for high-probability efforts). High-probability soil removal will tentatively begin in March 2013, with completion anticipated in December 2013. The remaining low-probability soil removal actions (the remainder of excavation area A, along with excavation area B) will be conducted in December 2013, followed by site restoration in January 2014. The remediated property will be returned to AU as early as January 2014.

Discussion – Site Layout

Parsons confirmed that the backyard retaining wall faces AU's campus and runs parallel to AU's property boundary.

Parsons clarified that the truck featured in a site photograph is parked in the existing basement garage.

In response to USACE's inquiry, Parsons confirmed that the posts are bolted into the concrete wall. In some locations, the sod had to be chipped away to reach the foundation.

In response to EPA's inquiry, the Partners discussed whether previously-completed excavations in Area C (No Further Action) extended to the street curb or just short of the street curb. The high-probability ECS in Area C extended to the curb, and the adjacent soil, is very shallow with an approximate depth of 18 inches above saprolite. The narrow strip of soil adjacent to the curb may have been fully investigated via the previously-completed low-probability test pit in this location. Regardless of the status, this small volume of soil can be quickly and easily excavated as part of initial low-probability efforts. To ensure completion, the Partners agreed that the initial low-probability excavation of Area B should extend to the property boundary, thus including the narrow curbside strip of soil in Area C (No Further Action).

EPA inquired about the planned soil excavation depth in the utility trench. USACE clarified that excavation to saprolite is not required because the entire trench is situated beyond the high-probability and low-probability excavation areas. The southwestern end of this trench is situated approximately 10 feet behind the backyard retaining wall, which represents the low-probability excavation limit for Area A. Excavation to the depth required for sewer line re-installation is sufficient for the backyard trench, and the four additional test pits will be excavated to saprolite will ensure that this area is fully addressed by the test pit grid.

USACE clarified that the four additional backyard test pits are numbered 151 through 154.

The Partners briefly discussed the maximum test pit excavation depth as described in the work plan. Soil will be excavated to saprolite or to the maximum reach of the excavator (12 feet), whichever is encountered first. In response to EPA's inquiry, USACE confirmed that trench excavation was previously completed in the backyard behind the retaining wall. Test pits 1 through 23 were excavated during the 2011 time frame, and matched the current test pit dimensions (4 feet by 6 feet) and depth criteria (saprolite or maximum reach of the excavator).

USACE confirmed that the driveway will remain in place during initial low-probability efforts and high-probability soil removal, for the purpose of maintaining parking and access. Soil removal in the driveway will be completed during the remaining low-probability soil removal actions in winter 2013-2014.

Discussion – Air Monitoring Scope and Layout

[The following discussion was modified by additional Partner discussion immediately after the meeting. The updated decisions regarding the air monitoring scope and layout are summarized in the next section.]

The Partners discussed the scope and layout of planned perimeter air monitoring equipment for high-probability soil removal. Based on current plans, the site will be monitored using the typical ECBC layout, with a more tightly-defined exclusion zone (EZ) to increase the likelihood of detecting a chemical release, in lieu of using the property boundary as the EZ. The actual property boundaries are contained within the larger standard air monitoring distance due to the property's small size. All four (4) directions are planned for monitoring at the EZ boundary using DAAMs tubes for the purpose of confirming any chemical detections and for keeping a historical record of perimeter detections and non-detections. The point of excavation will be monitored using a near-real-time MiniCAMS which will be moved as frequently as needed so that it is always situated as close to the excavation as possible.

USACE confirmed that based on current plans, air monitoring will be conducted at all times between the 4825 Glenbrook Road point of excavation and the residential property directly across the street (4830 Glenbrook Road). The perimeter monitoring equipment at this location must be placed in the street and supported by temporary road access restrictions. Similarly, air monitoring will be conducted between the

4825 Glenbrook Road point of excavation and the remaining three adjacent properties (4835 Glenbrook Road, 4801 Glenbrook Road, and the southern portion of AU's campus).

In response to EPA's inquiry, USACE clarified that the perimeter DAAMs tubes would detect arsenic that resulted from a lewisite release at the point of excavation, thus providing backup confirmation of the release. The current low-probability protocol is to mitigate the off-gassing source by covering it as soon as it is detected. The contingency plan does not specify any further monitoring at the exclusion zone (EZ) boundary other than the planned DAAMs tubes that will be retrieved and brought to the Federal property for analysis.

EPA asked how the chemical release at the site can be confirmed once the off-gassing is mitigated. Analogous information is not available with respect to industrial chemicals. USACE replied that the electrochemical detectors will provide near-real-time monitoring data and are situated at the point of excavation. EPA emphasized the importance of confirming that a chemical release did not leave the 4825 Glenbrook Road site, and this cannot be accomplished without monitoring the EZ perimeter for the appropriate air parameters.

USACE confirmed that arsine monitoring was conducted at the point of excavation during the most recently completed low-probability soil removal at the 4825 Glenbrook Road site, and clarified that arsine perimeter monitoring was limited to the preceding high-probability excavation.

Nan Wells, ANC3D Commissioner, inquired about the potential impacts of a chemical release during initial low-probability efforts on the residential property directly across the street. USACE replied that it is difficult to predict the impact of a release during low-probability efforts; as such events are not anticipated for at these soil removal areas. The impact would depend on the wind direction at the time of release and associated statistical information.

In response to N. Wells' inquiry, USACE replied that a Shelter-in-Place (SIP) safety distance was not established for low-probability efforts because there is no maximum credible event that can be modeled. Protective air monitoring during low-probability efforts is not typically conducted at other project sites. EPA noted that chemical warfare agent (CWM) contamination is not typically encountered at other residential project sites. N. Wells expressed concern about the greater-than-zero probability that a release could occur and impact the few residential properties within the SIP zone. EPA and DDOE clarified that this zone touches a total of 8 residential properties and the southern portion of the AU campus.

EPA and DDOE expressed interest in the relative locations of the exclusion zone (EZ), the planned perimeter monitoring layout, and the Glenbrook Road curb. USACE explained that the air monitoring layout (including the perimeter and the point of excavation) will constantly shift as the soil removal progresses in each low-probability area. USACE will photograph the typical monitoring setup to provide a visual idea of this layout.

The Partners briefly discussed the available number of each monitor type. Multiple monitors are available for most types, with only one HCN monitor that was used exclusively at the previous engineering control structure (ECS) at the 4825 Glenbrook Road site. USACE confirmed that these monitors have already been acquired. USACE added that the arsine monitors can record and log their data, and Parsons will check whether HCl monitors have this capability.

EPA suggested adding additional perimeter monitoring for arsine and HCl (arsenic trichloride components) regardless of whether they have logging capabilities. Similar to the DAAMs tubes, these monitors will provide additional chemical detection data that can be checked immediately in the event of a chemical release, or verified later if the data are logged. Without this monitoring, it is impossible to determine after the fact whether these chemicals (arsine and HCl) reached the exclusion zone (EZ) perimeter, and this will not be expensive because HCl monitors are already available to the project team. DDOE agreed that the regulatory partners would like to be able to state with certainty that there was no danger to the public, and this reassurance cannot be provided without collecting the necessary perimeter data. EPA and USACE noted that the perimeter concentration could certainly be modeled by back-

calculating the downwind hazard based on the chemical concentration detected at the point of excavation, but directly measuring the perimeter concentration is preferable. USACE added that hazard modeling would be conducted in the event of a valid perimeter detection following a chemical release. EPA acknowledged this and commented that the ideal outcome in this scenario is to detect the chemical at the point of excavation but not at the perimeter.

The Partners briefly discussed the advantages and disadvantages of procuring additional air monitors beyond the number of monitors that are currently planned. This would increase the total daily monitoring effort. USACE noted that additional monitors will potentially delay investigation progress by increasing the probability of non-functioning monitors or false positive detections, and any false positives would require explanation. Arsine monitors occasionally spike for no apparent reason, and sources of false positives include car exhaust (which can result in an HCl detection because it is a common chemical). Rates of false positives were not available during the meeting. EPA will seek an opinion on the optimal air monitoring layout from their agency's removal action specialists.

EPA asked how a single detection at a calibrated and functioning monitor can be confirmed as a false positive instead of a mitigated true detection. USACE replied that immediate mitigation at the point of excavation will be followed by continued excavation monitoring underneath the plastic covering. If the perimeter detection decreases without further detection at the point of excavation, then it can be considered an aberrant spike and thus a false positive. Evidence such as debris or soil staining would likely be present. Dr. P. deFur noted that some chemicals do not discolor the soil, and USACE acknowledged this fact.

USACE noted that the low-probability efforts at the 4825 Glenbrook Road site are an unusual hybrid of low-probability soil removal and high-probability air monitoring. EPA commented that based on the close proximity to previous high-probability findings, these efforts should be described more accurately as medium-probability soil removal, but this flexible intermediate category was not accepted. P. deFur added that more than one disposal pit was investigated within one hundred feet of the low-probability soil removal areas.

P. deFur inquired about the past performance of HCl monitors during similar remedial actions, and EPA asked what types of HCl monitor readings are obtained in the absence of site activities. ERT explained that the average number of aberrant spikes during inactive site conditions establishes the background reading for the monitor. P. deFur commented that the HCl monitor will be useful if it has a good performance record, but not if false positives are common. USACE replied that to date, HCl monitors were used before in Spring Valley without many issues.

EPA suggested adding HCl perimeter monitoring between the excavation site and the surrounding public, particularly the adjacent Glenbrook Road residents. This type of monitoring uses a different mechanism, but is otherwise based on the same usage and rationale as the DAAMs tubes. USACE replied that if HCl monitoring is added to the layout, then it should be planned for all four directions to satisfy all adjacent property owners. USACE and Parsons mentioned an alternative option of using the weather station to set up HCl monitors and move them frequently according to the prevailing wind direction. N. Wells noted that as a Spring Valley resident, she is familiar with the constant shifts in local wind direction. The Partners agreed to further discuss this topic with the field personnel and among the Partners, and keep everyone informed electronically, with the goal of beginning initial low-probability efforts this week. [See the follow-up discussion below.]

Discussion – Follow-up Decisions Regarding Air Monitoring Scope and Layout

[Immediately following the meeting, the Partners briefly discussed and tentatively agreed on the scope and layout of planned perimeter air monitoring equipment, based on updated information about the number of available monitors. This information is summarized as follows.]

The Partners briefly discussed the planned use of almost all available air monitors, including a total of two (2) HCl monitors, with only a single backup arsine monitor. In the event that a non-arsine monitor

malfunctions, all soil removal efforts would be temporarily suspended for two weeks to obtain a replacement monitor. EPA suggested strategically reconfiguring the available monitors and informing the regulatory partners, instead of waiting to obtain a replacement monitor. USACE expressed their preference for establishing a limited complement of perimeter monitors, and adjusting their locations based on weather station data, so that the remaining monitors are available as backups. Despite potential hourly shifts in wind direction, workers at chemical cleanup sites regularly and quickly move the monitors to account for the current wind direction, and the on-site weather station (which was already procured for high-probability soil removal) can be operated remotely.

USACE mentioned that additional decision-making factors include the one-hour daily setup and calibration of all air monitoring equipment, and the significant amount of data that will be logged each day. USACE confirmed that data logging is performed by all except the HCN monitors. The perimeter DAAMs tubes will be analyzed at the end of each work day regardless of whether an event occurred at the site. EPA and Parsons added that the DAAMs data will provide backup confirmation if a chemical release was detected at the point of excavation. False positives can be identified when a perimeter detection was logged but no corresponding detection occurred at the point of excavation.

In response to Community Outreach's inquiry, USACE recommended that adjacent gardening and landscaping efforts at the adjacent Koreans' property should not be restricted during the days when low-probability soil removal is conducted closest to the property boundary. The exclusion zone (EZ) does not extend past the 4825 Glenbrook Road property boundary and will be monitored at the perimeter.

For consistency purposes, EPA recommended that perimeter monitoring include the parameters that will be monitored at the point of excavation. Otherwise, in the event of a chemical release, these detections will lack supporting perimeter data and conclusions cannot be made about public exposure beyond the exclusion zone (EZ). Although the air modeling would estimate no public exposure, a detection at the point of excavation would represent a single data point, and the Partners cannot state that a passerby was not exposed to the chemical release.

USACE expressed concern about introducing additional high-probability monitoring elements during low-probability efforts. This gives the public the impression that the project team does not believe their own statements about their confidence in public safety assessments, and it will be difficult to justify this contradiction to adjacent residents and to defend this decision to the RAB. The planned monitoring efforts have already exceeded normal low-probability protocols, where the hazard is covered immediately and experts are contacted for on-site assessment. USACE questioned whether these monitoring plans are overstepping boundaries, considering that many low-probability soil removals are conducted nationwide without supplemental high-probability air monitoring. Other USACE personnel stated that these additional safety measures are designed to address the fairly unique residential cleanup scenario at the 4825 Glenbrook Road site.

In response to P. deFur's inquiry, USACE replied that low-probability soil removals to address chemical contamination have been conducted in other residential areas, and acknowledged that they were not conducted in neighborhoods of this density with a large university located adjacent to the remedial action site. Single-point anomaly removals at the adjacent 4801 Glenbrook Road property were conducted under open-air conditions until the field team encountered findings of concern.

EPA noted their discomfort with describing the 4825 Glenbrook Road soil removals as low-probability, considering the very small distance margins between the planned low-probability efforts and the previously-investigated high-probability areas. USACE replied that these concerns should have been discussed and addressed during the remedial action planning process.

As tentatively agreed upon by the Partners, air monitoring will consist of a full complement at the point of excavation and a downwind complement to monitor for HCl, HCN, and arsine. The remaining monitors will be available on-site as backups in case of malfunctions or frequent false positives. Hourly weather modeling will provide the necessary downwind direction for adjusting the perimeter monitor locations as

necessary. In the event of a chemical release, the weather log will provide confirmation of the wind direction at the time of the release, thus addressing exposure questions that may be raised by adjacent residents. The resulting dataset would show that a release occurred at the point of excavation, traveled downwind, and was detected at the exclusion zone (EZ) perimeter.

Parsons will provide electronically to the Partners a summary of the revised planned perimeter air monitoring equipment layout, as discussed above. Partner concurrence is necessary before these details can be incorporated into the work plan, at which point the project team must adhere to these details.

Discussion – Document Schedule and Tentative Remedial Action Schedule

Parsons confirmed that hard copies of the final Site-Specific Work Plan for Remedial Design and Remedial Action were available for the Partners at the meeting.

Parsons will provide the final Chemical Safety Submission (CSS) electronically to the Partners, as requested by EPA. To date, finalized hard copies or electronic versions of the CSS were not provided.

EPA inquired about a photograph of a historical arsenic production building at the American University Experiment Station (AUES) that was discussed in recent e-mails. USACE replied that based on the plat map, this building was situated near the Media Center and the radio tower on AU's campus, and was not situated near the 4825 Glenbrook Road site.

In response to EPA's inquiry, Community Outreach clarified that USACE will procure protective notifications such as flashing lights and instantaneous alarm systems for nearby residents. USACE added that they have received a quote from the supplier, and these public protection components will be installed as part of site preparations for high-probability excavations.

USACE will provide the start date for high-probability excavations, once available, to DDOE in preparation for procuring funding and signatures for DC Police presence at the site. DDOE confirmed that this process has begun.

In response to P. deFur's inquiry, USACE replied that construction of the engineering control structure (ECS) tent is anticipated in March 2013, and acknowledged that snowy weather could potentially impact this schedule.

In response to P. deFur's inquiry, USACE replied that a media or other public event is not planned to view the high-probability ECS. Upon completion of ECS construction, the Partners will be invited to visit the site and view the ECS prior to pre-operational field team activities. The exact site visit date will depend on the ECS construction completion schedule and Partner schedule availability. EPA expressed interest in this opportunity.

USACE mentioned that the final right-of-entry was obtained from the Koreans for installation of fencing along the 4825/4801 Glenbrook Road property boundary, in preparation for high-probability excavations.

Next Steps

Partner concurrence was obtained for excavating the narrow curbside strip of soil in Area C (No Further Action) to the property boundary during the initial low-probability excavation of Area B at the 4825 Glenbrook Road site.

Parsons will provide the Final 4825 Glenbrook Road Chemical Safety Submission (CSS) electronically to the Partners, as requested.

USACE will provide the start date for 4825 Glenbrook Road high-probability excavations, once available, to DDOE in preparation for procuring funding and signatures for DC Police presence at the site.

The Partners will schedule a site visit to view the constructed ECS at the 4825 Glenbrook Road site, depending on the site preparation schedule for high-probability excavations as well as Partner availability.

D. Site-Wide Evaluation Document (Pre-2005 HHRA Review and Validated Supplemental Soil Sampling Results)

USACE-Baltimore and ERT provided an update on the Site-Wide Evaluation Document and follow-on soil sampling. Additional details of this topic will be shared at upcoming Partnering meetings, pending further internal discussion and development, and evaluation of recent supplemental soil sampling results.

Site-Wide Evaluation Document: The site-wide evaluation document, *Evaluation of Remaining Sampling Requirements*, was finalized in July 2012.

- Key issues in this document include **work plan details** for proposed follow-on sampling in areas known to require supplemental sampling, as described at previous Partnering meetings.
- Additional key issues in the evaluation document include **review of pre-2005 human health risk assessments (HHRAs)**, as described at previous Partnering meetings. The associated preliminary draft document is currently under further development by ERT concurrently with internal discussion and review by USACE. [This document was previously described as draft, but has been modified into a preliminary draft with back-and-forth comments and revisions.]

Supplemental Soil Sampling: Supplemental soil sampling is completed. Supplemental soil samples were collected for a total of 5 discrete AOIs. The objective of supplemental sampling is to ensure enough data exists to make human health and ecological risk determinations about these AOIs. Some sampling locations were targeted toward data gaps identified in previous HHRAs. Details of this sampling effort were provided at the April and September 2012 Partnering meetings.

Validated Results: All analytical results were received and have been discussed internally. Data validation is completed. No contaminants of significant concern were identified in the validated results. Slight metals exceedances of regional screening levels (RSLs) and background levels are not necessarily significant in a risk context and can be naturally-occurring. Organics such as semi-volatile organic compounds (SVOCs) were primarily non-detect.

Screening of Results: The resulting data will be screened and rolled into the review of pre-2005 HHRAs. The evaluation process was shown in a table and is outlined below. [At the December 2012 Partnering meeting, sampled areas and their associated sampling parameters were shown on a map combined with preliminary conclusions of the pre-2005 HHRAs review. This map provides a preliminary overview of potential exposure areas that may require further evaluation.]

- **Initial Screening (completed)** – Numerous parameter exceedances were identified during review of pre-2005 HHRA maximum detected parameter concentrations against the new current USEPA RSLs or background levels. These parameters are tentatively identified as potential new or 'provisional' chemicals of potential concern (COPCs). This suggested the need for a more detailed screening process (outlined below), and the review of pre-2005 HHRAs continues to be reworked and resubmitted as necessary.
    - **Example**: The maximum detection of cobalt in the 1995 OSR FUDS HHRA still exceeds the highest current screening criteria (the newest RSL for cobalt, for which an update is pending or has just occurred).
- **Step 1 (completed)** – A new exposure point concentration (a risk ratio) was calculated to determine whether each identified chemical drops out of the evaluation or remains a provisional COPC. This step relies on basic statistical procedures using ProUCL. A chemical drops out of the evaluation if the associated risk ratio is below 1; the chemical remains a provisional COPC if the associated risk ratio exceeds 1.
- **Step 2 (under review)** – Provisional COPCs (identified during step 1) were further screened using a two sample hypothesis test using EPA's ProUCL to determine whether the site is greater or less than background. This statistical analysis was completed for a large volume of sample data

from numerous investigation reports. The resulting data tables were modified by internal review and back-and-forth comments and revisions, and the third iteration of this data is currently under USACE review.

- **Step 3 (in progress)** – The current soil in each Area of Concern (AOC) is under review to determine whether the pre-2005 sampled soil containing the COPC(s) is still present, or whether the soil containing the COPC(s) has been removed and replaced since the pre-2005 time frame. If the soil has been removed, an iterative process will commence wherein the next highest remaining samples are screened and steps 1 & 2 are re-run, to determine whether an area still contains COPCs. **Step 3** is both important and challenging because the presence of clean backfill could dilute the potential risk presented at a given area. A Step 3 **sub-analysis** focuses on the influence and weighted percentages of clean backfill locations. Another Step 3 **sub-analysis** accounts for the effects of remaining COPCs on specific target organs. The risk ratio calculated in Step 1 conservatively estimates cumulative effects on overall human health by using an adjusted RSL (reduced by a factor of 10) for each COPC. If the target organs for each COPC are known, then the adjusted cumulative effects are no longer necessary, and in many cases the COPC drops out of the evaluation by using the larger unadjusted true RSL.
    - **Example:** After accounting for removed and replaced soil at a given area, aluminum and cobalt may be identified as the remaining COPCs. The risk ratio for aluminum can be calculated to account for known effects on the associated target organs, using the unadjusted RSL (77,000 ppm) instead of the adjusted RSL (7,300 ppm). If this results in a risk ratio below 1, then aluminum drops out of the evaluation and is no longer considered a COPC. Aluminum is a good example because it commonly naturally found in soil at innocuous concentrations. In contrast, another area may contain several COPCs that present potential risks, and a full quantitative RA may be appropriate for this area.
    - **Note**: AOCs under evaluation include POIs, which are geographically-based, and AOIs, which are not always geographically-based. Discrete geographic AOCs will be further defined once the validated supplemental soil sampling results are integrated into Step 3.
    - **Tentative Schedule:** Upon completion of Step 3, the draft final version of the pre-2005 HHRA review will be submitted to the Partners for review. This document will summarize the provisional COPCs remaining at each AOC and the next steps that are required to define discrete exposure areas (EUs) and determine the path forward. Internal discussion of these "next steps" identified the need to further integrate geographical areas into the larger picture, so that remaining COPCs in each area can be evaluated regardless of the time frame in which they were detected (e.g., pre-2005 or during the recent supplemental soil sampling effort).
- **Step 4** – The project team will evaluate whether additional supplemental soil samples will provide significantly better risk evaluation results. This is important because obtaining rights-of-entry for soil sampling at additional properties may be difficult.
- **Step 5** – After undergoing the process outlined above, if a sampled parameter (such as cobalt) is still identified as a COPC, a formal full quantitative HHRA will be performed to determine whether the area of concern presents health risks.
- **Step 6** – Any COPCs and areas that are identified as presenting human health risks will potentially be addressed in the FS process. The purpose of this step is to make formal recommendations for remediating the COPC contamination to protect human health.
    - **Example**: An area identified as presenting human health risks will be defined as an Exposure Unit (EU). Potential recommendations to be addressed in the formal CERCLA process include further soil sampling if warranted, followed by a standalone quantitative HHRA for that particular geographical area.

Tentative Schedule: Validated data were submitted to USACE in late December 2012 along with the conclusions of the first few data screening and evaluation steps. Additional Partner discussion and recommendations are pending, and concurrence will then be requested.

Discussion – Screening Methodology

ERT mentioned that the initial goal of the pre-2005 HHRA review document was to summarize the degree of protectiveness provided by the pre-2005 HHRAs. The revised goal is to identify the path forward for defining potential individual geographic areas that present straggler risks posed by individual chemicals.

ERT mentioned that defining EUs and evaluating associated risks is akin to constructing a unified field theory of Spring Valley contamination.

ERT clarified that the draft final version of the pre-2005 HHRA review will be distributed to the Partners for review as early as spring 2013.

Discussion – Uncertainties

The Partners briefly discussed the approach for addressing potential AUES-related contamination underneath the streets. Removal of arsenic-contaminated soil extended to the curb at some residential properties, including 4825 Glenbrook Road. The need for institutional controls (ICs) remains an open question, particularly with respect to future street and utility replacements or repairs. [Additional details of this topic, with emphasis on addressing potential AUES-related items underneath the streets, were discussed at the December 2012 Partnering meeting.]

EPA noted that the sidewall sampling results at the street curbs are excluded from the HHRA. ERT replied that they conducted an exercise to evaluate existing sidewall data where hot spots of contamination were observed leading to the street. The goal was to calculate the minimum unacceptable arsenic level underneath the street, considering no receptors and no exposure, which would present potential risks. USACE added that no sidewall samples exceeded the preliminary calculated value of around 150 or 200 ppm arsenic, but arguments could be made regarding the methodology for calculating this number.

USACE acknowledged that there are many unsampled areas underneath the streets. The HHRA would likely discuss the potential presence of some small contamination hot spots contained underneath the pavement. Any elevated arsenic concentrations extending from beneath the street to beyond the curb would have been detected and addressed during residential arsenic grid screening.

EPA asked whether many unsampled areas under hardscape, such as streets, sidewalks, and swimming pool areas, will be evaluated qualitatively in the site-wide HHRA. ERT confirmed this because there is no human contact with or exposure to those areas. Based on preliminary calculations and exposure pathways (pending review and formal briefing), unacceptable cancer and non-cancer health effects would be associated with arsenic concentrations greater than or roughly 100 ppm below the streets, for a future construction worker scenario where subsurface excavations exceed 3 months per year. Currently, sidewall soil sampling data do not indicate the presence of such high arsenic concentrations underneath the streets.

EPA and P. deFur noted that establishing institutional controls, such as hardscape features, would provide a basis for preventing access and eliminating potential exposure pathways. This is different from residential deed restrictions and residential scenarios where 43 ppm arsenic was left in place (without the need for additional ICs) for the purpose of preserving mature landscaping. Glenbrook Road is where workers would most likely come in contract with arsenic underneath the street. ERT commented that ICs are practical for hardscape locations where the presence of contamination is known. In the case of Glenbrook Road and other neighborhood roads, contamination cannot be confirmed based on soil contamination extending to the curb, and it is difficult to address the underlying soil in a practical way unless sampling is conducted under the streets.

USACE noted that the site-wide RI will acknowledge institutional controls and emphasize 5-year reviews for the foreseeable future.

N. Wells shared her concern regarding active soil disturbances by DC and private contractors who are unfamiliar with the Spring Valley project. Extensive excavations beneath streets in her area of the neighborhood are conducted by gas utility contractors who are ignorant of the potential presence of AUES-related MEC items and contamination, as well as the associated dangers. For example, the gas utility contractor initially refused to evaluate a suspicious metallic object, and were forced to investigate only when their utility efforts were temporarily suspended. The item itself turned out to be harmless. Additionally, the landscaper at her property knew nothing about the Spring Valley project efforts, even though her property had previously been cleared. There appears to be very little knowledge of subsurface dangers on the part of those actively digging soil in the Spring Valley neighborhood.

The Partners briefly discussed this concern. The gas utility contractor is associated with DC efforts, and the privately-owned PEPCO substation is probably more concerned with their own hazardous materials than AUES-related items. DC Water is aware of the Spring Valley project efforts and have discussed the risks associated with their own efforts. N. Wells expressed the opinion that DC ultimately holds responsibility for informing their contractors, and stated that she is concerned with the lack of process because there is no organized way to inform everyone who intends to dig soil in the neighborhood. EPA noted that it is easier to track this information and keep everyone informed on a military base.

N. Wells asked whether these DC and commercial excavation efforts in Spring Valley present a fortuitous opportunity for collecting and sharing samples with USACE and testing soil contamination. DDOE replied that once the Spring Valley project is completed and USACE leaves the site, future soil sampling underneath the streets would likely be conducted by DC.

Discussion – Tentative Schedule

EPA asked whether the next major steps in the tentative document schedule are to distribute the draft final version of the pre-2005 HHRA for Partner review (including regulatory agency toxicologists), followed by scheduling a toxicologist meeting to discuss the next steps. ERT confirmed this and elaborated on the current document status. USACE review of the interim data tables (from Step 2) is in progress. Additional results, including input from the excavation analysis and potentially the target organ and backfill sub-analyses, will be added to these tables prior to the next document version. USACE emphasized that this stage of the process is considered as a pre-formal phase of site-wide HHRA development.

EPA inquired about calculations accounting for metals that are naturally present in clean backfill. These types of toxicology questions need to be shared with EPA and passed along to their agency toxicologist. ERT replied that these weighted percentage calculations are challenging and will be discussed internally prior to requesting Partner input. Partner comments regarding weighted percentages for backfill have been previously addressed in discrete risk assessments for the AU Public Safety Building and the AU Lot 18. ERT confirmed that they will electronically send these types of questions to EPA, who will then pass along the inquiries to their toxicologist.

Discussion – Site-wide Groundwater RI/FS

EPA asked whether the groundwater RA and the site-wide HHRA will be integrated or standalone documents. USACE was uncertain whether the two RA efforts will be completed during the same general time frame.

In response to EPA's inquiry, USACE replied that a decision has not been made regarding whether site-wide groundwater will be established as a separate Operable Unit (OU) in the final site-wide Decision Document (DD). Proposed upcoming site-wide groundwater RI efforts may not be completed early enough for integration into the site-wide DD. EPA mentioned that the proposed upcoming efforts are relatively limited in scope, and the final site-wide DD can recommend additional well installations for follow-on groundwater monitoring purposes if warranted. USACE confirmed that further decisions on this topic are pending completion of upcoming groundwater study efforts and subsequent Partner discussion.

USACE and EPA briefly noted the importance of conducting at least one additional sampling round at recently-installed monitoring wells that were sampled only once to date. As recently requested by EPA's hydrogeologist, this data must be discussed by the Partners before establishing the RI completion time frame and initiating FS development.

E. Anomaly Review Board (ARB) Memorandum (3700 block of Fordham Road property)

The goal of this segment of the meeting was to briefly discuss the planned arsenic soil sampling and anomaly removals at a 3700 block of Fordham Road property.

USACE-Baltimore provided a brief update on the status of the Anomaly Review Board (ARB) memo for a 3700 block of Fordham Road residential property.

ARB Memo for 3700 block of Fordham Road

Partner signatures were obtained for the 3700 block of Fordham Road property ARB memo. Details of the memo's contents, including recommended revisions that were incorporated into the memo, were provided at the December 2012 Partnering meeting.

Discussion – Sampling Intervals

ERT and USACE provided clarification on the planned delineation soil sampling intervals at this property, as requested. All samples will be collected at discrete intervals below ground surface (bgs) for the purpose of delineating arsenic contamination in soil. Sufficient soil must be collected at each interval to fill three 4-ounce sample jars, followed by laboratory analysis.

The target depth for the floor sample in the grid center is 24 inches bgs, which matches the anticipated excavation depth. A contingency sample will be collected for the grid floor at 36 inches bgs.

Each sidewall will be sampled once to determine whether the grid requires lateral (horizontal) extension in any direction. Contingency sidewall samples will be collected at 30 inches bgs, in case the grid needs to be excavated to a depth of 3 feet.

USACE confirmed that a surface sample is defined as 0 to 6 inches bgs, excluding any vegetation that has been scraped away from the soil surface. USACE also confirmed that this reflects the delineation sampling scheme previously used by Sevenson through the entire soil excavation process.

In response to EPA's inquiry, ERT clarified that soil will be collected starting at the approximate target depth and extending deeper until sufficient soil is collected to fill the small sample jars. Using this methodology, it is possible that a very small amount of soil just above the target depth will be collected, but most of it will be at or below the target depth. ERT added that these delineation samples are different from another previously-used sampling scheme, which is designed to collect soil from a specific interval above and below the target depth (e.g., 6 inches above and 6 inches below the 1918 surface elevation.)

USACE noted that the contingency sampling depths will be clearly defined in the sampling work plan, and mentioned that these depths refer to the OU-5 management work plan.

Discussion – Tentative Schedule

The Partners briefly discussed the tentative schedule for soil sampling, soil removal, and anomaly removals. Soil sampling will be conducted at least two weeks after the sampling right-of-entry is obtained. ECBC will provide support for the sampling effort and requires a two-week notice for scheduling purposes.

EPA and DDOE plan to visit the property once the sampling ROE is obtained for the purpose of visualizing the landscaping and hardscape, which will make it easier to establish locations that can and cannot be dug in the work plan. USACE replied that they will try to schedule their visit for the same day.

The Partners briefly discussed the challenges of accessing the back yard with an excavator. A crane situated beyond the property boundary may not be feasible. The property is elevated with a hill to one side and many landscaped terraces in the backyard, and all neighboring properties are situated downhill.

Community Outreach mentioned that the homeowner has been very flexible about property access, as long as she is informed beforehand and the visitors are escorted by Community Outreach. A brief property visit to take photographs can be scheduled for after today's meeting or in the near future, depending on Partner schedules.

Discussion – Soil Removal

EPA asked whether a sufficient number of confirmation soil samples are planned to narrow the excavation scope from the standard 20-foot by 20-foot grids to smaller 10-foot by 10-foot grids, considering that disturbance to hardscape and landscape features must be minimized. USACE confirmed that tight spacing of samples is planned.

In response to EPA's inquiry, Community Outreach confirmed that the homeowner is aware and appreciates that the project team is doing their best to minimize damage to landscaping and hardscape, and that contaminated soil between 20 ppm and 43 ppm does not have to be excavated if it cannot be easily accessed.

Community Outreach mentioned that the property reflects the original ground surface elevation on one side of the house, with a hillside toward the backyard, and the backyard is terraced with elevated areas. Community Outreach agreed that all four arsenic grids could be excavated by hand using shovels. One of the grids contains pea gravel, pavers without cement, three small trees, and weeds extending to the chain link fence at the property boundary. Impacts to tall evergreen trees along the property boundary can be minimized, and the landscaping expert may recommend use of an air spade to achieve this goal.

EPA added that soil excavation in these small areas will be less challenging than the widespread anomaly removals. This is the only residential property where the arsenic grid size (100 square feet, with dimensions of 10 feet by 10 feet) is 25 percent of the normal size (400 square feet, with dimensions of 20 feet by 20 feet).

In response to an inquiry from N. Wells, EPA explained that the Partners are not expecting particular types of findings at this property. Arsenic soil removal in four small areas will be relatively easy to complete. Numerous geophysical anomalies along with one PPT in the backyard will be investigated, and this portion of the effort will be more complicated due to significant landscaping.

Next Steps

The Partners will schedule a site visit to evaluate landscaping and hardscape features at the 3700 block of Fordham Road property, pending receipt of the soil sampling right-of-entry.

F. Document Tracking Matrix for Hazardous Toxic Waste (HTW) and Military Munitions Response Program (MMRP)

The goal of this segment of the meeting was to review the comment due dates on HTW and MMRP draft reports and the status of the documents.

The Partners briefly reviewed the status of several documents.

Discussion – Site-Specific Documents for Completed Investigations at 4835 Glenbrook Road and the AU Public Safety Building

USACE noted that documents associated with 4835 Glenbrook Road and the AU Public Safety Building will be finalized soon, pending receipt of comment responses from Parsons. USACE added that AU's

comment responses for the Glenbrook Road document will be shared with EPA, as requested, to facilitate completion of EPA's review.

G. Open Issues and New Data

The goal of this segment of the meeting was to share issues not on the agenda for possible placement on a future agenda and to share new data that became available since the last Partnering meeting.

One open issue was brought forward for discussion.

(A groundwater conference call was held in mid-January 2013 to discuss proposed efforts and resolve several remaining concerns, in lieu of a formal groundwater meeting. Revised conclusions and recommendations were distributed to the Partners following incorporation of minor changes. A follow-up groundwater conference call is planned for January 31, 2013 (this Thursday) to finalize proposed efforts and to resolve any remaining concerns.)

Discussion – Perchlorate in Soil at AU's Campus

The Partners briefly discussed the possibility of conducting additional soil borings on the southern portion of AU's campus, for the purpose of further delineating perchlorate concentrations in soil. This request was alluded to by DDOE's hydrogeologist during the mid-January 2013 groundwater conference call. The following discussion was briefly held due to the possibility that it would be overshadowed by major groundwater study topics during the upcoming groundwater conference call.

The highest perchlorate concentration detected in soil between Kreeger and Hamilton Halls was 5.2 ppb. This value was J-flagged, indicating that the detected concentration was below the method's detection level and is thus only an estimate. The depth of this perchlorate detection was approximately 14 to 16 feet below ground surface (bgs).

DDOE briefly described their hydrogeologist's perspective. Regardless of the actual concentration, a perchlorate detection in soil suggests that higher concentrations are located nearby, and a tighter soil boring spacing would further delineate these perchlorate concentrations and help pinpoint the perchlorate source. P. deFur acknowledged that this assumption is consistent with statistical distributions of environmental data, where the detected value is typically not the highest value in the surrounding area, but it is possible that the highest perchlorate detection near Hamilton Hall is still very low (e.g., 6 ppb). DDOE mentioned that a low perchlorate concentration in soil does not necessarily indicate the presence of a nearby source.

USACE and P. deFur agreed that in order for a source near Hamilton Hall to be responsible for historically elevated perchlorate levels at PZ-4S/D, there would have to be a sufficiently high perchlorate concentration in overlying soil to migrate across this vertical and horizontal distance, via either down-gradient or cross-gradient groundwater flow. Perchlorate contamination flowing from the 5.2J ppb perchlorate soil boring vicinity to the PZ-4S/D vicinity is unlikely, based on recent groundwater sampling results situated between the two locations. These perchlorate concentrations were non-detect or insignificant.

The Partners noted that additional soil boring data would provide more insight on this question compared to additional groundwater data. Soil borings collected by hand are easier but would be limited to a depth of 4 feet or less. Deeper soil borings would require a drilling rig, similar to the equipment used to collect the recent southern AU campus borings at a depth of 14 to 16 feet bgs. Supplemental funding must be requested by mid-February 2013 in order to conduct this effort in FY2014; otherwise, any further soil boring sampling must be postponed until the following year.

USACE confirmed that the Hamilton Hall structure was built after the AUES time frame. Based on historical documentation including aerial photographs, this area contained numerous buildings (including laboratories), shacks, and debris areas associated with AUES activities. These features were distributed all

along the hilltop perimeter and all along the ridge crest, including between the present-day locations of Kreeger and Hamilton Halls.

USACE and P. deFur expressed the opinion that the historically elevated perchlorate detections in PZ-4S/D are more likely associated with a perchlorate source in front of or close to Kreeger Hall, and additional soil borings further upgradient near Hamilton Hall are not worth the effort. EPA added that they are not inclined to request additional soil samples in this area based on a single J-flagged 5.2 ppb perchlorate detection. DDOE will try to obtain feedback from their hydrogeologist prior to the upcoming groundwater conference call.

Discussion – Historical Usage of the Sibley Sump Area

USACE shared additional information on a potential source of perchlorate close to Sibley Hospital. (Details of isotopic perchlorate analysis and potential sources in the vicinity of the Sibley sump were discussed at the November 2012 Groundwater-Partnering Meeting.)

As shown in a 1918 aerial photograph, a federally-supported girl's reform school with agricultural land was historically situated on the present-day Sibley Hospital property. Based on a verbal description of this school's reform activities, they increased crop production output during WWI and would have had sufficient funding (possibly) to use fertilizer. Aerial photographs from subsequent decades provide evidence that the reform school's agricultural land was used to grow crops for roughly 20 to 50 years. All of the surrounding farmland appears to be pasture, and was potentially used for dairy farming or livestock.

USACE asked whether an archive search conducted by their agency into this federally-supported institution would be useful or simply interesting in the event that they can confirm the historical purchase of Chilean fertilizer for the reform school's agricultural efforts. Responses were provided later during the discussion.

EPA asked whether USACE is suggesting that the perchlorate source originated from cropland fertilization instead of AUES activities. USACE replied that this is certainly a possibility, as the cropland was used for multiple decades, during which fertilizer in the form of livestock manure or imported sources would have been used.

The Partners briefly discussed the reform school's operational time frame. The school was present as early as the 1880s or 1890s and as late as the 1950s, followed by the construction of Sibley Hospital in the late 1950s. The associated cropland was potentially used for up to five decades.

P. deFur asked whether perchlorate, as a minor constituent of Chilean nitrates, would have been a fertilizer contaminant with high enough concentrations to account for the present-day perchlorate plume. EPA replied that this is a good question, and USACE speculated that it may be possible if Chilean fertilizer was applied annually to the cropland over decades.

EPA and P. deFur mentioned that other possible perchlorate plume sources include boxes of road flares or hospital medicine usage, if the perchlorate ingredients originated from Chile. USACE noted that importation of Chilean nitrates decreased significantly prior to the 1950s, before the hospital was built, making it unlikely that hospital activities played a role in the perchlorate source.

In response to USACE's earlier inquiry, EPA and DDOE replied that an archive search, for the purpose of confirming Chilean fertilizer usage at the reform school, would provide useful backup data for claiming that the perchlorate plume originated from non-AUES agricultural activities. Although it may be difficult to locate a list of supplies in the archives, the reform school may have annually summarized their costs and income associated with their crops. USACE added that a federally-funded program such as the reform school would likely have recorded this level of detail, similar to the federal dam construction details that were recorded and archived. For conducting the archive search, USACE-Huntsville recommended an individual with an interest in this topic and first-name familiarity with Archive personnel.

In response to inquiries from N. Wells, the Partners clarified that there are many other potential fertilizer sources. The primary question is which potential source led to the perchlorate in the Sibley sump groundwater. Even if the Partners confirm that Chilean fertilizers were used at the reform school, this does not positively determine an agricultural source for the perchlorate plume, but this information would strengthen and validate this theory.

N. Wells inquired about the possible link between the AU campus perchlorate plume and the Sibley Hospital perchlorate plume. USACE explained that it appears that the two plumes are not connected, based on groundwater sampling data from approximately 30 monitoring wells between the two plumes, where no elevated perchlorate concentrations were detected that would have supported the idea of a single groundwater plume. EPA and P. deFur added that the Chilean origin for both plumes was determined based on a total of two groundwater samples that were isotopically analyzed for perchlorate. Isotopic analysis is a highly specific detailed method conducted at the University of Chicago to determine from where a chemical of interest originated.

In response to N. Wells' inquiry, EPA clarified that although many groundwater samples have been collected and evaluated across the Spring Valley FUDS, only two samples were collected for isotopic perchlorate analysis. Each sample requires pumping hundreds of gallons of water over the course of weeks, using automated equipment, to obtain the necessary data for isotopic analysis and the associated research effort.

N. Wells asked how the Partners can conclude that no Chilean perchlorate is present in groundwater between the two plumes. EPA and USACE emphasized that perchlorate is only present in a relatively small number of monitoring wells across the site, and perchlorate was not detected at many sampling locations between both plumes. Groundwater experts from EPA and DDOE recently agreed that installation of two more groundwater monitoring wells is necessary to further substantiate the theory that the two plumes are not connected.

N. Wells mentioned the possibility that the two plumes are connected even though perchlorate was not detected in these wells. EPA replied that it is difficult to prove a negative hypothesis. If perchlorate was detected in numerous locations between the two plumes, this would provide a stronger case for a single connected plume, because the groundwater flows downhill toward the Potomac River. Instead, there are very few locations where the Partners feel it is necessary to check whether the plume bypassed the existing wells.

N. Wells asked whether the groundwater circulation patterns in Spring Valley are truly well-known. EPA replied that although groundwater flows in complex pathways instead of in a straight line, the Partners do know that the groundwater flow starts in the AU campus area and flows generally toward the Potomac River. If perchlorate concentrations in Spring Valley groundwater were thousands of times higher, then EPA would suggest that additional study of this topic is necessary, but instead most of the perchlorate detections are not much higher than the 15 ppb interim health advisory level. USACE commented that at these levels of perchlorate, contamination could easily be introduced by sources such as a space shuttle launch, because rocket motors use perchlorate.

N. Wells asked for confirmation, due to the importance of this issue, that the Partners are fairly certain that the AU campus perchlorate plume is not reaching Sibley Hospital. EPA replied that even if it turns out the two plumes are connected, this would not change the Partners' current groundwater study plans. N. Wells noted that this discovery would indicate the presence of an active groundwater route that is carrying the contamination. EPA clarified that this hypothetical groundwater route would not necessarily be active, as the contamination may have been introduced and spread in the groundwater several years or several decades ago. N. Wells commented that she would assume the groundwater pathway would be actively carrying contamination. EPA replied that in general, perchlorate concentrations have decreased over time, and although many soil excavations were completed the Partners cannot state with certainty

that the excavation efforts contributed to the decline in perchlorate concentrations. Overall, future groundwater decisions will be made once the site-wide groundwater risk assessment is completed.

N. Wells thanked the Partners for the information.

Next Steps

USACE-Baltimore will consider conducting a federal archive search to confirm the historical purchase of Chilean nitrate-based fertilizer by the reform school that was previously situated in the Sibley Hospital area.

H. Partner's Parking Lot

The goal of this segment of the meeting was to review and update the Parking Lot list.

The "Partners Parking Lot" is an informal list designed to assist the Partners in tracking ideas, collaborations, research and tasks. The list is not a formal document specifying actions that must be taken.

The Parking Lot list will be reviewed at the March 2013 Partnering meeting.

I. Agenda Building

The next meeting is tentatively scheduled for Tuesday, March 19, 2013. The following meeting is tentatively scheduled for Tuesday, April 30.

J. Adjourn

The meeting was adjourned at approximately 1:15 PM.