SPRING VALLEY FORMERLY USED DEFENSE SITE PROJECT
RAB Meeting

May 13, 2014
7:00 – 8:30 p.m.

UNDERCROFT MEETING ROOM
ST. DAVID'S EPISCOPAL CHURCH
5150 MACOMB ST. NW, WASHINGTON, DC

Agenda

7:00 p.m. **I.** **Administrative Items**

Co-Chair Updates
- Introductions, Announcements

Task Group Updates

7:10 p.m. **II.** **USACE Program Updates**

Site-Wide Human Health Risk Assessment
- COPCs (Chemicals of Potential Concern)

Groundwater Study
- Sampling Results & Upcoming Effort
- MP-5 Location & Installation Progress

Glenbrook Road

8:00 p.m. **III.** **Community Items**

8:10 p.m. **IV.** **Open Discussion & Future RAB Agenda Development**

Upcoming Meeting Topics:
- (Suggestions?)
- Community Relations Plan Update
- 4825 Glenbrook Road Health Consultation Update (ATSDR)

*Next meeting: July

8:20 p.m. **V.** **Public Comments**

8:30 p.m. **VI.** **Adjourn**

Note: The RAB meets every odd month.

Spring Valley

Formerly Used Defense Site

Restoration Advisory Board Meeting

May 13, 2014

"The USACE Mission in Spring Valley is to identify, investigate and remove or remediate threats to human health, safety or to the environment resulting from past Department of Defense activities in the area."

US Army Corps of Engineers

BUILDING STRONG®

Agenda Review

- **Co-Chair Updates**
  - **Introductions, Announcements**
- **USACE Updates**
  - **Site-Wide Human Health Risk Assessment**
    - Chemicals of Potential Concern (COPCs)
  - **Groundwater**
    - Sampling Results & Upcoming Effort
    - MP-5 Well Location & Installation Progress
  - **Glenbrook Road**
- **Open Discussion & Agenda Development**
- **Community Items**
- **Public Comments**

Co-Chair Updates

Introductions

Co-Chair Updates

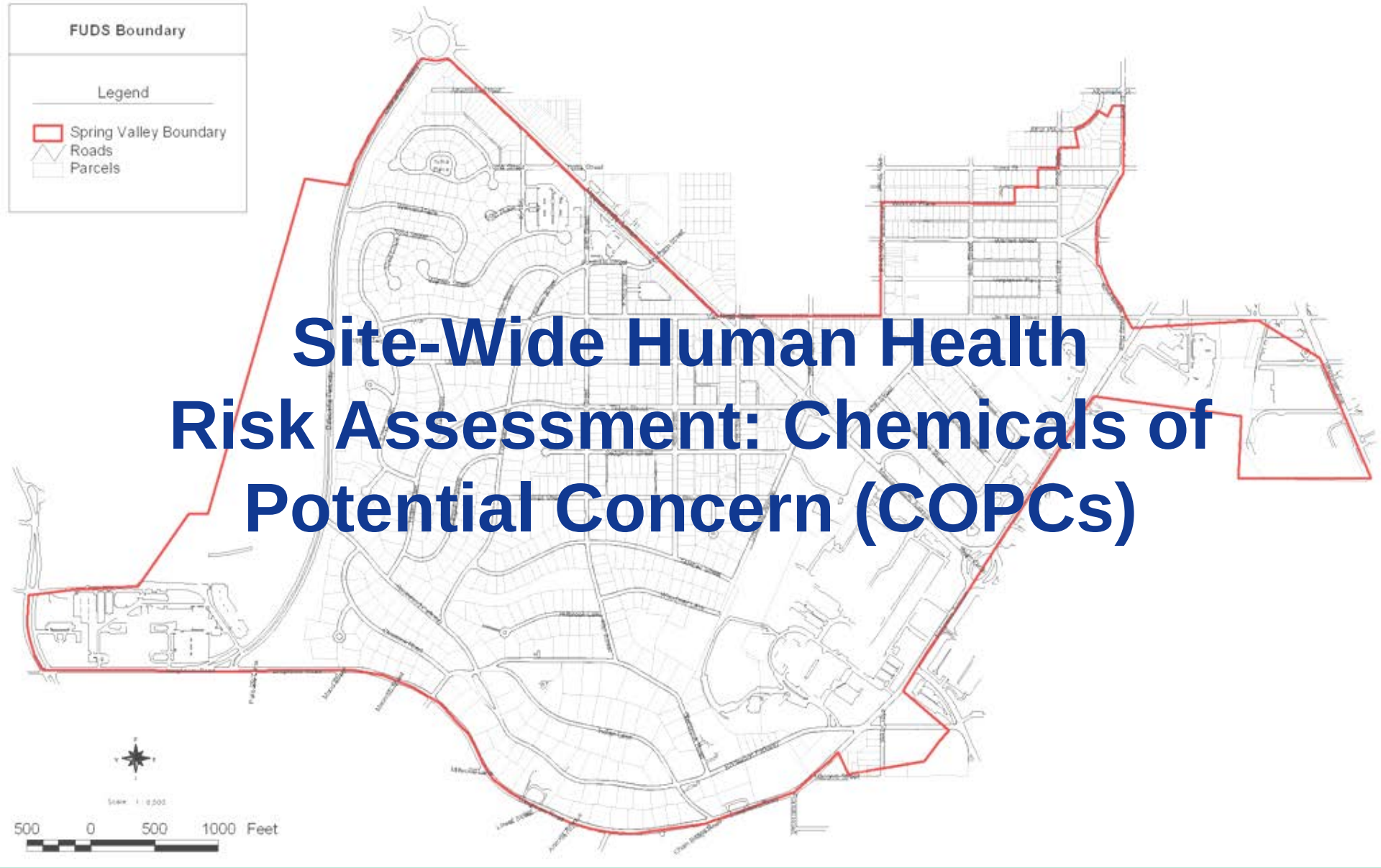
- **Announcements**
  - **Possible date change for July RAB meeting**
  - **Website Updates:**
    - **March & April Monthly Site-Wide Project Update**
    - **Weekly 4825 Glenbrook Rd Project Updates with photos**
    - **February Partnering meeting minutes**
    - **March RAB meeting materials**
    - **Final Addendum 1 to Final Pre-2005 Human Health Risk Assessment Review**
    - **Final Spring Valley FUDS Final Site-Wide Human Health Risk Assessment Work Plan**

Co-Chair Updates

- **Announcements (con't.)**
  - **Information Repository Additions:**
    - **Addendum 1 to Final Pre-2005 Human Health Risk Assessment Review**
    - **Final Spring Valley FUDS Final Site-Wide Human Health Risk Assessment Work Plan**

Task Group Updates

USACE Updates



Site-Wide Human Health Risk Assessment: Chemicals of Potential Concern (COPCs)

Spring Valley FUDS
Site-Wide Human Health Risk Assessment

Spring Valley FUDS
Site-Wide Human Health Risk Assessment

Chemicals of Potential Concern Potentially Posing Risk			
COPC	AOI 9 EU	Spaulding-Rankin EU	Southern AU EU
Antimony			Yes
Cobalt	Yes	Yes	Yes
Benzo(a)anthracene			Yes
Benzo(b)fluoranthene			Yes
Benzo(k)flouranthene			Yes
Indeno(1,2,3–cd) pyrene			Yes

- **The listed COPCs are the end result of the pre-2005 HHRA review and more recent sampling efforts. Based on these COPCs, it was concluded that full quantitative HHRAs are warranted at these three exposure units (EU).**
- **The actual HHRAs for these EUs will be presented in the Site-Wide Remedial Investigation (RI).**

Groundwater

Groundwater

FY 2014 Groundwater Monitoring Effort

- On March 19, USACE successfully completed its quarterly sampling at two locations: monitoring wells (MW-44, MW-45S&D. and PZ-4 S&D) on the AU campus, and at the Sibley Hospital sump.

- The preliminary sampling results from the December 2013 and March 2014 samplings are currently being reviewed by the Partners.

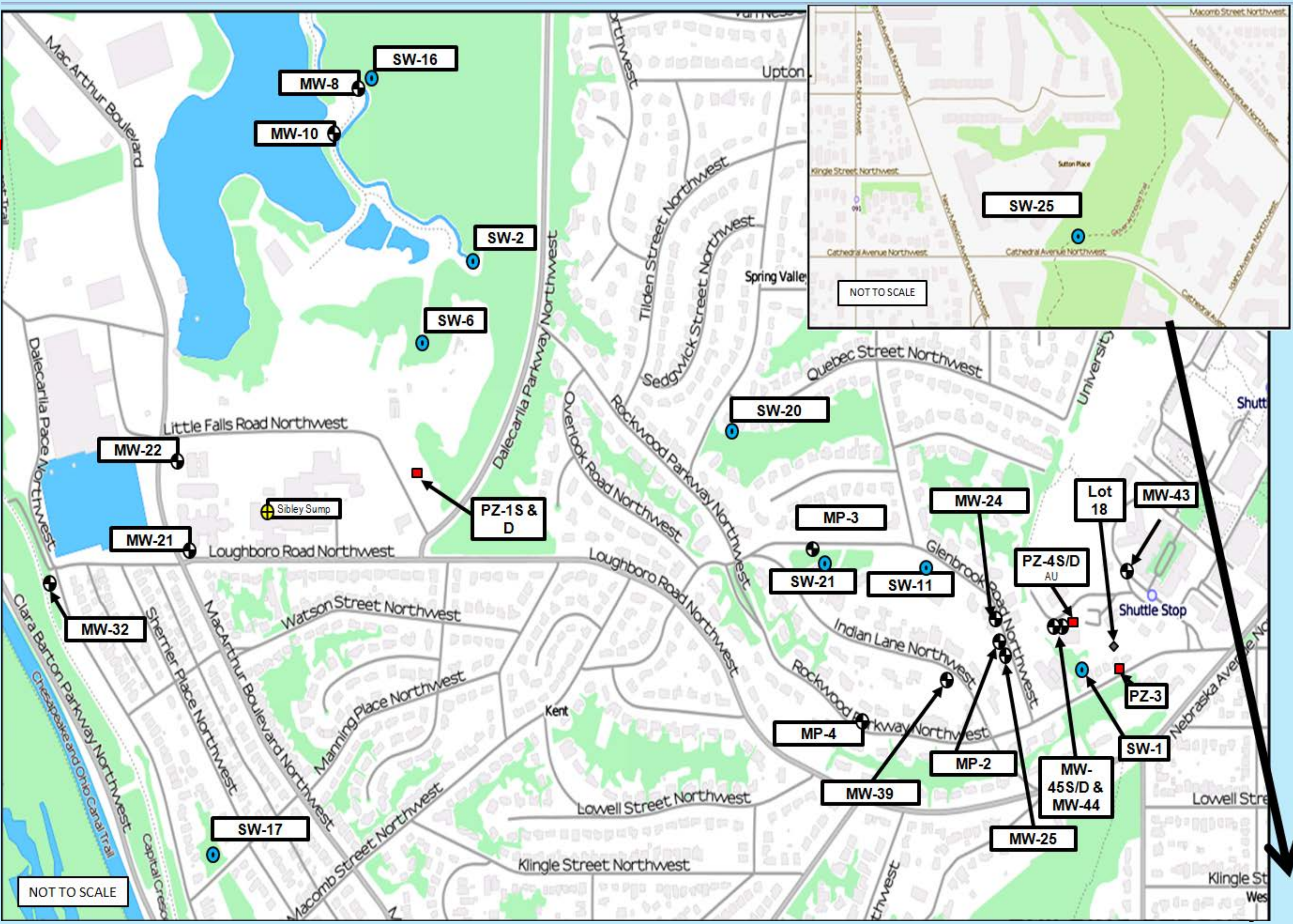
Groundwater

Groundwater Sampling Results

- **Summary of December 2013 Semi-Annual Groundwater Sampling Results** (from 20 existing monitoring wells, 10 surface water locations)
  - **MW-44, PZ-4D, Sibley Sump, and MW-22: Perchlorate concentrations are above drinking water advisory level of 15 parts per billion (ppb)**
  - **MP2: Arsenic concentrations are above drinking water standard of 10 ppb**

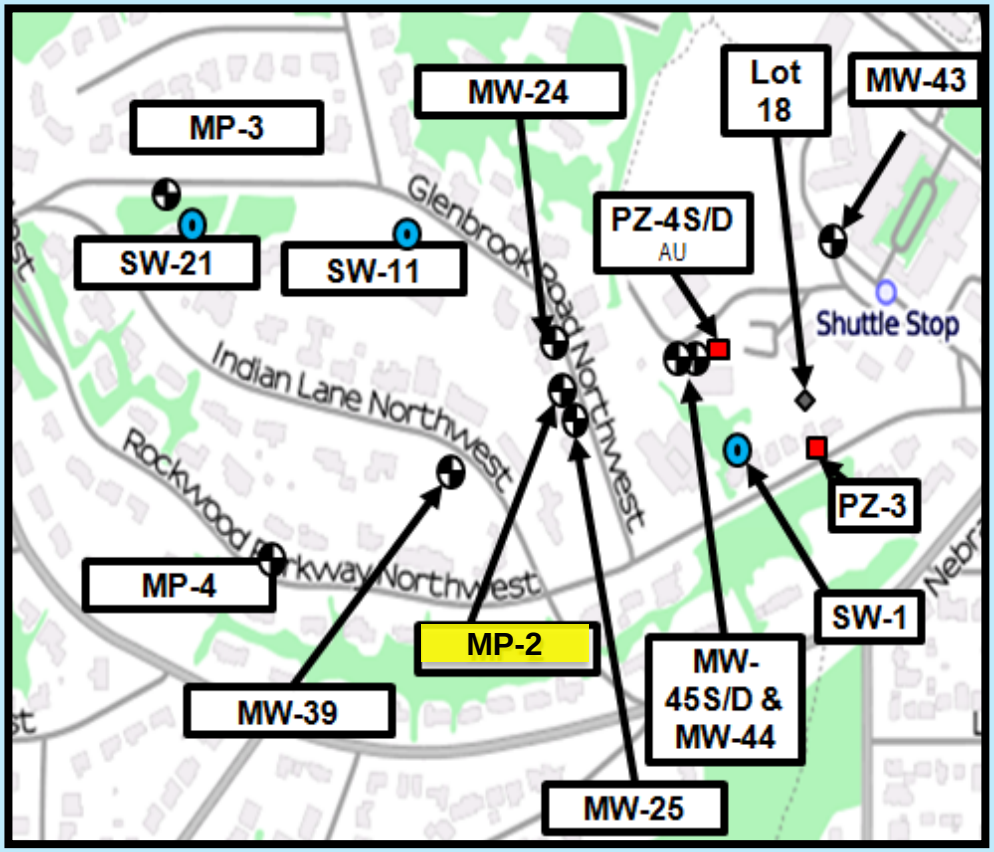
- **Summary of March 2014 Quarterly Groundwater Sampling Results*** (from monitoring wells in front of Kreeger Hall and at the Sibley Hospital sump)
  - **MW-44 and PZ-4D: Perchlorate concentrations are above drinking water advisory level of 15 parts per billion (ppb)**
  - **Arsenic concentrations were all below drinking water standard of 10 ppb**

*** The March 2014 data is still being validated.**



SW-16
MW-8
MW-10
SW-2
SW-6
MW-22
Sibley Sump
PZ-1S & D
MW-21
MW-32
SW-20
MP-3
SW-21
SW-11
MW-24
PZ-4S/D
AU
Lot 18
MW-43
Shuttle Stop
PZ-3
SW-1
MP-4
MW-39
MP-2
MW-45S/D & MW-44
MW-25
SW-17
SW-25
NOT TO SCALE
NOT TO SCALE
Mac Arthur Boulevard
Little Falls Road Northwest
Loughboro Road Northwest
Dalecarlia Parkway Northwest
Dalecarlia Pace Northwest
Clara Barton Parkway Northwest
Chesapeake and Ohio Canal Trail
Sherrier Place Northwest
MacArthur Boulevard Northwest
Watson Street Northwest
Manning Place Northwest
Macomb Street Northwest
Lowell Street Northwest
Klingle Street Northwest
Overlook Road Northwest
Rockwood Parkway Northwest
Tilden Street Northwest
Sedgwick Street Northwest
Quebec Street Northwest
Glenbrook Road Northwest
Indian Lane Northwest
Nebraska Avenue
Spring Valley
Upton
Kent
Cathedral Avenue Northwest
Klingle Street Northwest
Macomb Street Northwest
Sutton Place

4800 Block of Glenbrook Road
MP2



Perchlorate And Arsenic Sampling Results

4800 Block of Glenbrook Rd MP-2

MP2 – #1 Depth: 35-44 ft

Date	Arsenic	Perchlorate
12/11/13	6.6	3.08
04/30/13	7.6	5.82
07/20/12	8.4	6.3
05/03/12	7.4	4.5
03/30/12	7.5	5.8
3/30/2012 FD	7.6	7

MP2 –# 2 Depth: 49-54 ft

Date	Arsenic	Perchlorate
12/11/13	11	0.403
12/11/13 FD	7.1	NT
05/13/13	12.6	9.74
07/20/12	16	12
05/03/12	15	12
03/30/12	15	12

MP2 – #3 Depth: 56-71 ft

Date	Arsenic	Perchlorate
12/11/13	15.2	6.89
05/13/13	11	2.57
07/20/12	18	18
05/03/12	18	17
03/30/12	15	17

MP2 – #4 Depth: 73-77 ft

Date	Arsenic	Perchlorate
12/11/13	9.9	8.09
05/13/13	9.2	1.57 J
07/20/12	12	25
05/03/12	15	25
03/30/12	12	21

MP2 – #5 Depth: 96-102 ft

Date	Arsenic	Perchlorate
12/11/13	10.3	5.07
05/13/13	9.1	2.67
07/20/12	14	26
7/20/12 FD	15	24
05/03/12	15	26
03/30/12	13	24

MP2 – #6 Depth: 105-114 ft

Date	Arsenic	Perchlorate
12/11/13	10.2	2.43
05/13/13	11	9.05
07/20/12	16	25
05/03/12	17	25
5/3/2012 FD	17	26
03/30/12	15	27

MP2 – #7 Depth: 123-129 ft

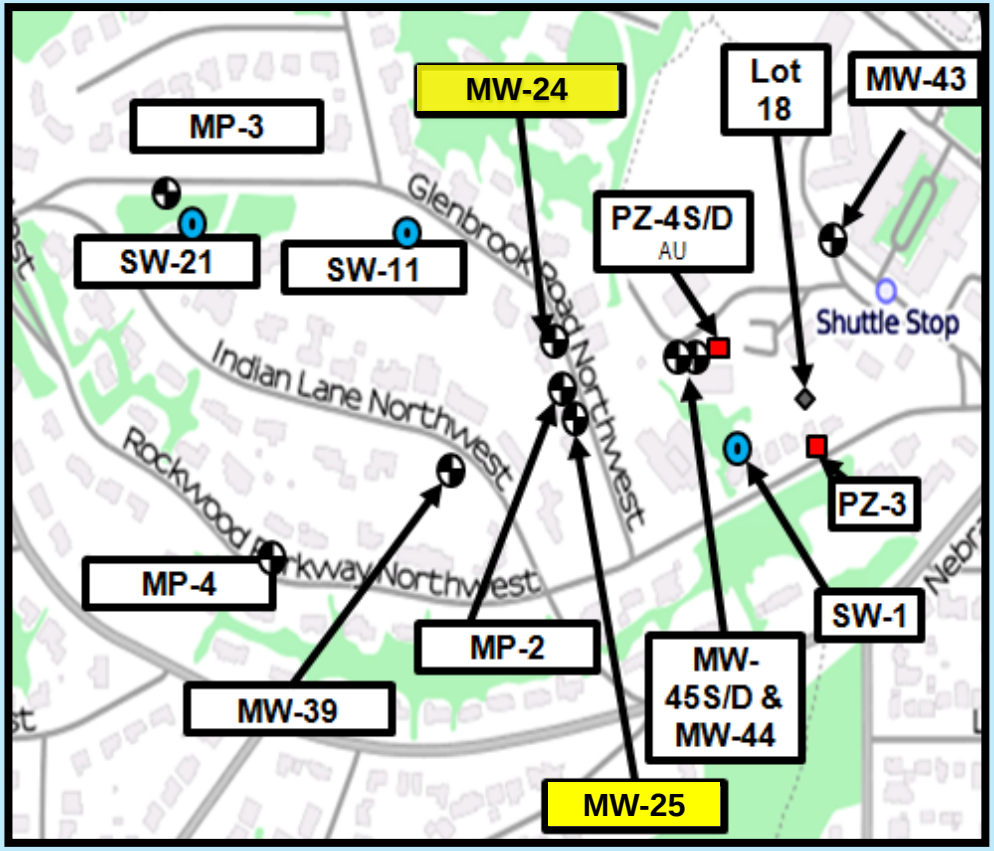
Date	Arsenic	Perchlorate
12/11/13	12	8.18
05/03/13	12	16.6
07/20/12	16	24
05/03/12	17	25
03/30/12	14	20

MP2 – #8 Depth: 145-160 ft

Date	Arsenic	Perchlorate
12/11/13	10.3	3.67
05/13/13	12.6	17.9
07/20/12	15	25
05/03/12	16	24
03/30/12	14	24

Arsenic MCL = 10 ppb
Perchlorate DWAL = 15 ppb
= exceeds MCL/DWAL

4800 Block of Glenbrook Road MW-24 and MW-25



Perchlorate And Arsenic Sampling Results

4800 Block of Glenbrook Rd

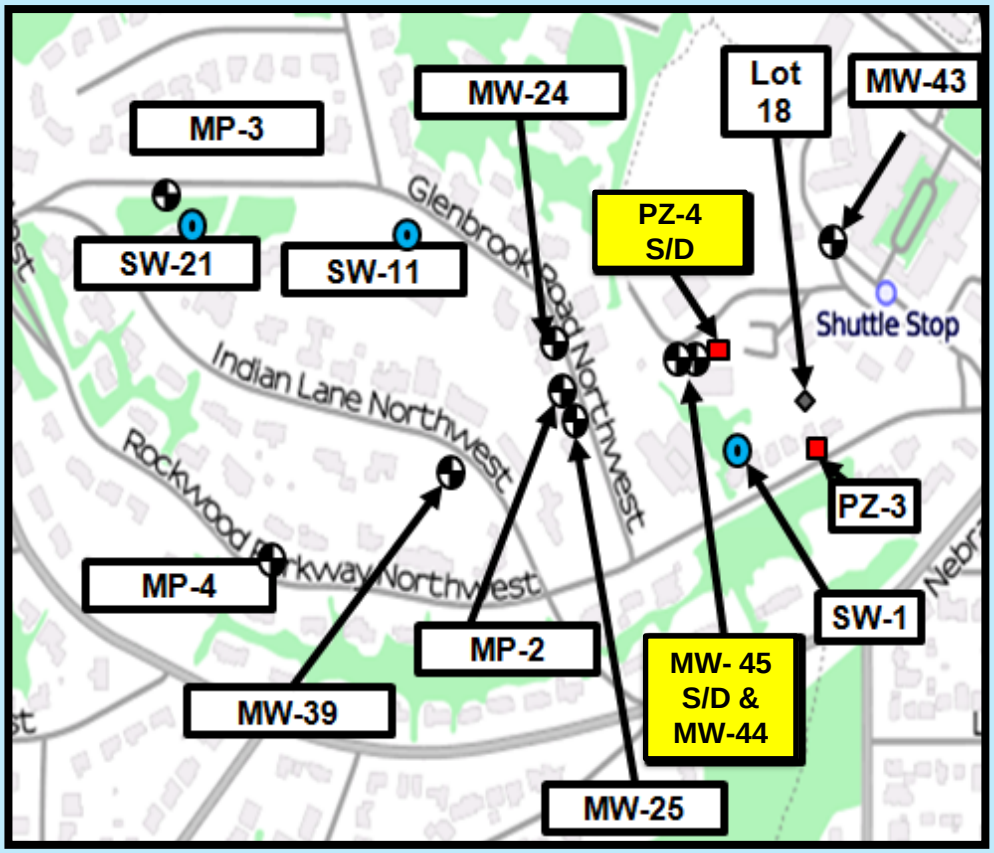
MW-24 and MW-25

MW- 24		
Date	Arsenic	Perchlorate
12/12/13	1.8	ND
12/12/13 FD	1.7	ND
04/30/13	16.8	ND
02/06/12	7.9	1.6 J
11/07/11	3.9	2.4
08/02/11	4.6	3
05/17/11	3.7	2.3
11/02/09	5 J	3.1
06/13/07	9.3 J	18.5
07/11/06	10.5	62.6
12/22/05	10.4	70

MW- 25		
Date	Arsenic	Perchlorate
12/11/13	6.7	4.04
04/30/13	4.5	3.12
02/06/12	2.2 J	ND
11/07/11	3	2.5
08/02/11	3	2.8
05/10/11	3.1	2.9
11/03/09	8.4 J	25
11/03/09 FD	8.2 J	23
06/13/07	8.1 J	74.1
07/11/06	9.5 J	124
12/22/05	5 J	60

Arsenic MCL = 10 ppb
Perchlorate DWAL = 15 ppb
= exceeds MCL/DWAL

American University



Perchlorate And Arsenic Sampling Results

American University

MW-44 Depth: 80-95 ft		
Date	Arsenic	Perchlorate
03/20/14	0.69 J	42.3
03/20/14 FD	0.78 J	40.5
12/12/13	0.75 J	40.2
12/12/13 FD	0.85 J	39.8
04/29/13	0.15 J	40.5
09/06/12	ND	35
9/6/12 FD	ND	36
03/29/12	ND	34
03/29/12 FD	ND	33

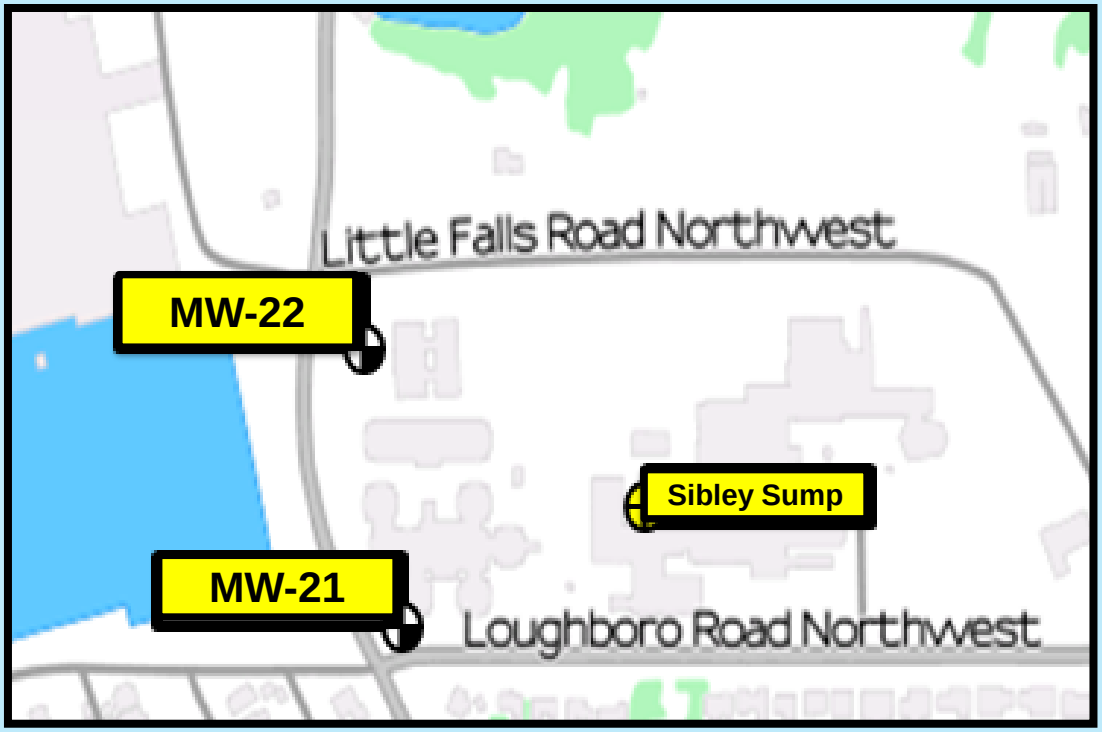
PZ-4S Depth: 27-47 ft		
Date	Arsenic	Perchlorate
03/20/14	2.8	10.9
12/13/13	3.6	6.75
07/24/13	1.4	ND
07/24/13 FD	1.5	ND
05/03/13	0.22 J	5.57
02/08/12	2.4 J	28
11/09/11	ND	25
08/04/11	ND	19
07/28/11	NT	18
05/16/11	2.6 J	30
11/10/09	NT	50
06/13/07	ND	146
07/07/06	ND	71.8

PZ-4D Depth: 52-62 ft		
Date	Arsenic	Perchlorate
03/20/14	3.9	44.5
12/13/13	1.8	39.8 D
07/24/13	1.5	5.59
05/03/13	NT	NT
04/09/12	NT	36
02/07/12	2.7 J	39
11/08/11	ND	45
08/05/11	ND	39
07/28/11	NT	9.8
05/16/11	2.6 J	39
11/11/09	NT	41
06/13/07	ND	41
07/07/06	0.6 J	34.7

MW-45S Depth: 119-124 ft		
Date	Arsenic	Perchlorate
03/20/14	1.2	5.86
12/13/13	1.5	1.28
05/03/13	0.53 J	31.1
05/03/13 FD	0.32 J	30.9
09/06/12	ND	6

MW-45D Depth: 147-152 ft		
Date	Arsenic	Perchlorate
03/20/14	1.3	ND
12/12/13	1.3	5.3
12/12/13 FD	1.4	5.26
05/03/13	ND	54.3
05/03/13 FD	0.16 J	52.9
09/06/12	ND	3.6

Sibley Hospital



Perchlorate And Arsenic Sampling Results

Sibley Hospital

Sibley Sump		
Date	Arsenic	Perchlorate
03/20/14	3.4	13
12/12/13	4.5	17.5
07/24/13	3.8	14.5
04/30/13	0.73 J	18.5
02/08/12	5	24
11/09/11	ND	21
08/03/11	ND	16
05/13/11	ND	16
10/30/09	NT	15
06/06/07	ND	25.2
07/12/06	ND	18.5
08/09/05	NT	24

MW-21		
Date	Arsenic	Perchlorate
12/16/13	0.24 J	3.76
05/01/13	ND	4.53
02/07/12	ND	5.2
11/08/11	ND	4.7
09/01/11	ND	12
05/13/11	ND	8.3
11/11/09	NT	19
06/14/07	ND	43.8
07/10/06	ND	34.8
07/10/06 FD	NT	38.2
12/20/05	NT	48

MW-22		
Date	Arsenic	Perchlorate
12/13/13	0.64 J	16.7
05/01/13	0.078 J	16.4
02/07/12	ND	13
11/08/11	ND	12
08/01/11	ND	13
05/11/11	ND	10
10/29/09	NT	13
06/11/07	ND	7.65
07/10/06	ND	5.48
08/10/05	ND	8.92

Groundwater

FY 2014 Groundwater Monitoring Effort

- On May 6th, MW-23 on 52nd Court was successfully decommissioned:

- In late May, USACE will be conducting inspections on some existing wells and noting any repairs needed.

- Preparations have been underway for the next semi-annual groundwater sampling activities. USACE will begin the spring sampling event in June, as part of the extended groundwater monitoring program at 20 existing monitoring wells and 10 surface water locations.

Groundwater

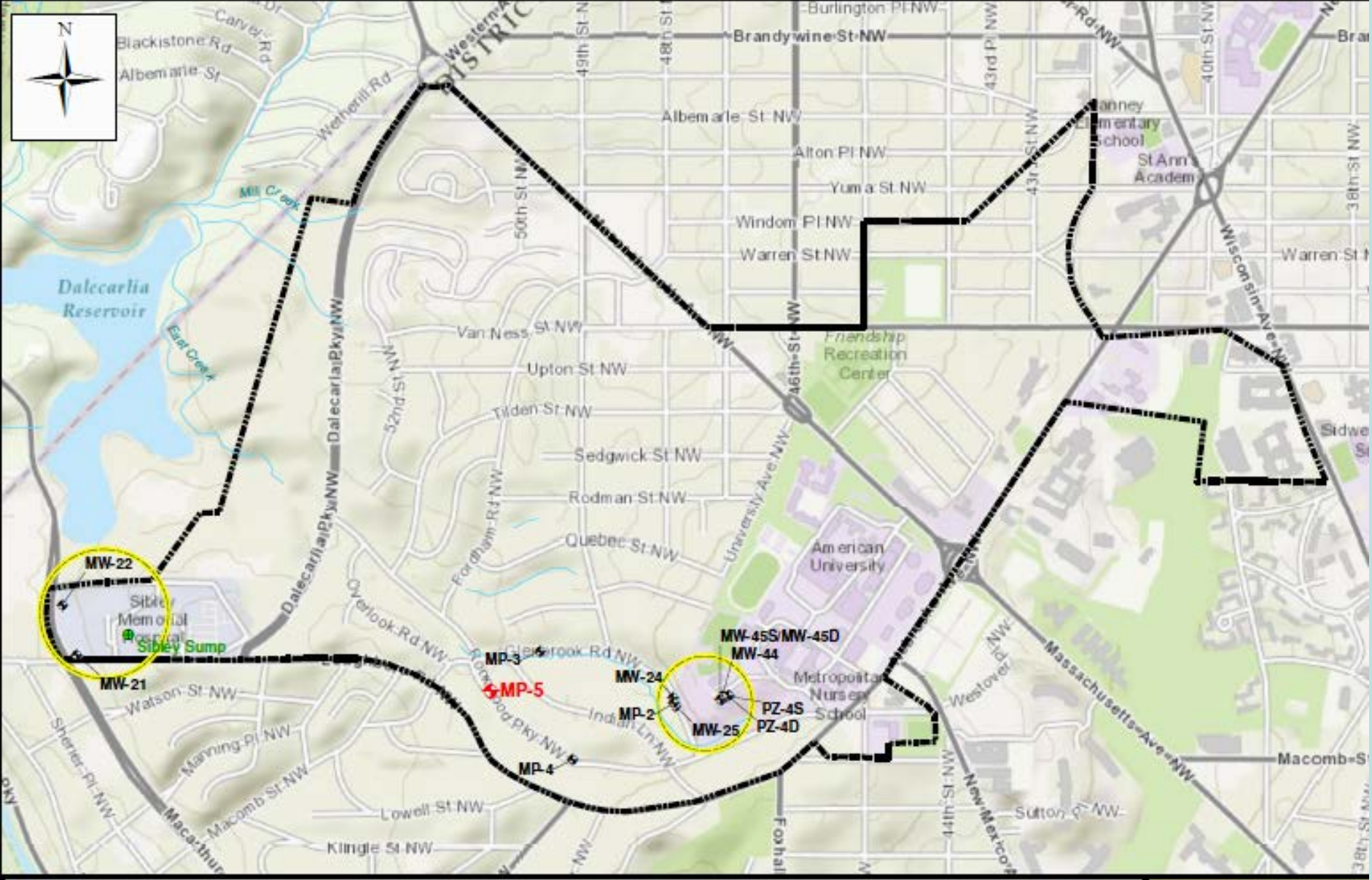
FY 2014 Groundwater Investigation Effort

- **Planning continues for the installation of two additional deep wells:**
  - **One well will be placed on Sibley Hospital property.**
  - **For the other well, USACE met with residents, ANC commissioners, RAB members and Congresswoman Eleanor Holmes Norton on April 29th to discuss locations for the proposed well in the vicinity of Rockwood Parkway.**

Groundwater

FY 2014 Groundwater Investigation Effort

- Topics of discussion during the April 29th meeting:
  - Spring Valley FUDS Groundwater Study Background
  - Purpose of Well
  - Well Location Evaluation
  - Property Restoration
  - Drilling and Restoration Schedule



URS

12420 Milestone Center Drive
Germantown, MD 20876
301-820-3000

Date: 4/24/2014
Author: AGR
Checked: BE
Senior: BE
G:\Projects\SpringValley\GISData\Projects\2014\SpringValley_8_5x11.mxd

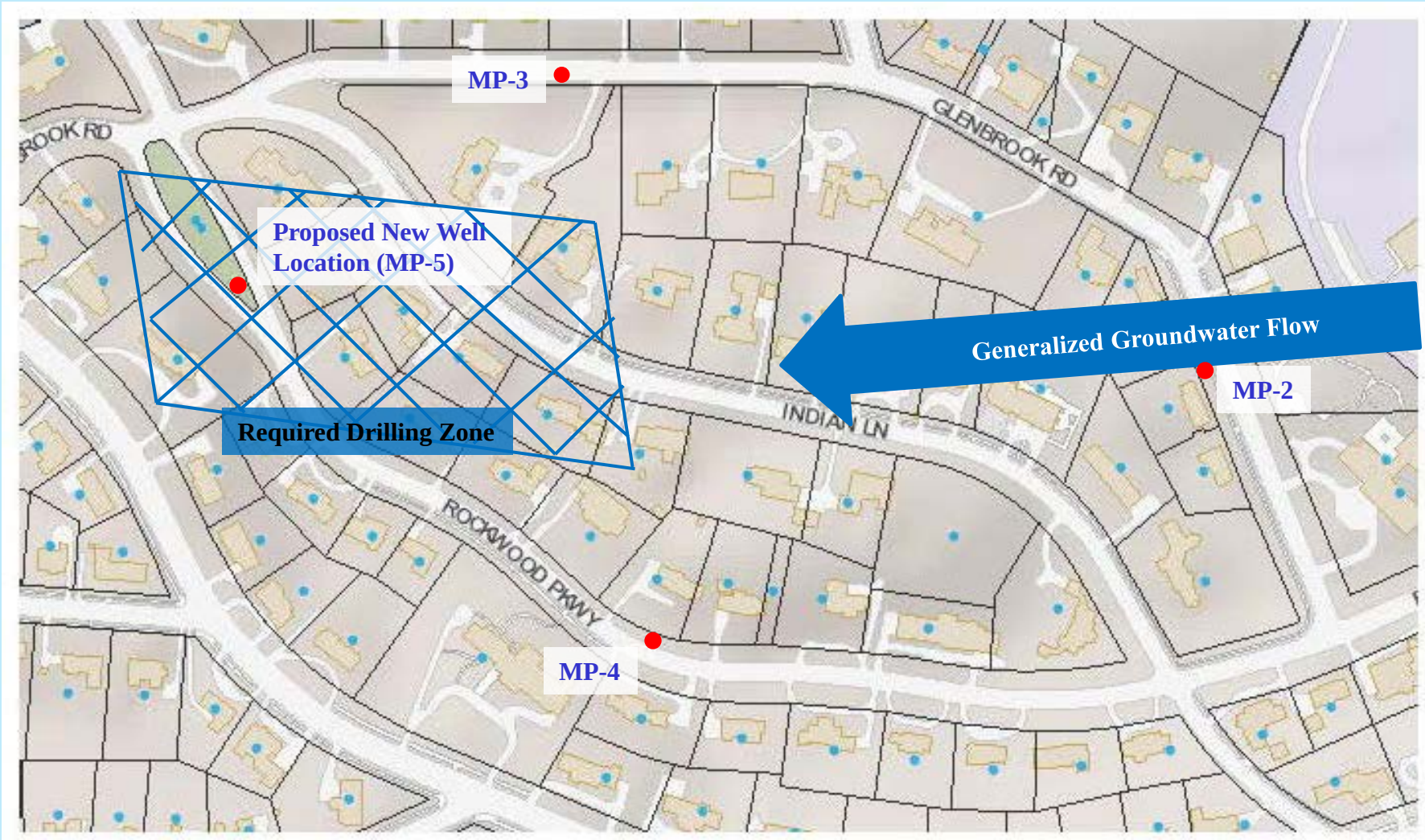
Legend

- Spring Valley FUDS Boundary
- Zone of Elevated Perchlorate
- Monitoring Wells
- Sibley Sump
- Planned New Multiport Well
- Stream or Creek

0 700 1,400 2,800 Foot

Basemap Source: ESRI World Topo Map.

Proposed New Well Location for MP-5



Groundwater

MP-5 Site

Four Alternatives

1. Island of public green space within Rockwood Parkway
2. Road
3. Public space in front of private properties
4. No well

Groundwater

Evaluation of Well Location

- **Public space preferred over private residence wherever possible to minimize disturbing private residents.**
- **Physical limitations for drilling include steep topography, trees, hardscape, underground utilities, overhead tree limbs or electrical lines.**
- **USACE evaluated additional alternative MP-5 locations in front of private residences. Examined all 16 properties in the required drilling zone and identified many factors inhibiting drilling options. Public space areas in front of three properties were identified as possible viable alternatives.**
  - **Approached the residents about potential of installation of MP-5 in front of their properties. None of the property owners were amenable and preferred the well be located in public space not adjacent to a private residence. Alternative 3 was eliminated.**
- **SVFUDS Partners determined Alternative 4 (No well) was not an acceptable option, since data is needed to complete the study.**

Rockwood Parkway Island

Groundwater

Alternative 1: Rockwood Parkway Island

- **Advantages:**
  - The island is easily accessible for the drill rig, clear of trees
  - Clear of visible utilities
  - Minimizes traffic hazards from lane closures
  - Minimizes public inconvenience of lane closures
  - Easy, safe access for workers for future sampling events
  - Grass area could be easily restored to similar condition

- **Disadvantages:**
  - During Community Outreach efforts, some local residents expressed concern about drilling the well on the Rockwood Island
  - Grass area could not be used for approximately one week during well installation

Groundwater

Alternative 2: Place Well in Road

- **Advantages:**
  - The road is easily accessible for the drill rig, clear of large trees
  - Road can be easily restored with asphalt patch
  - No disturbance to Rockwood Island greenspace

- **Disadvantages:**
  - Extensive presence of active and abandoned utilities
  - Increased traffic hazards during installation and sampling
  - Public inconvenience of road closure during installation and during future sampling events
  - Damage to well due to traffic and paving activities

Groundwater

April 29 Meeting Conclusion

Based on this meeting, USACE is looking for another area in public space on Rockwood Parkway or Indian Lane, other than the Rockwood Parkway Island.

4825 Glenbrook Road

4825 Glenbrook Road

High Probability Operations

- The crews continued hand excavating the area adjacent to the former front porch of the home.

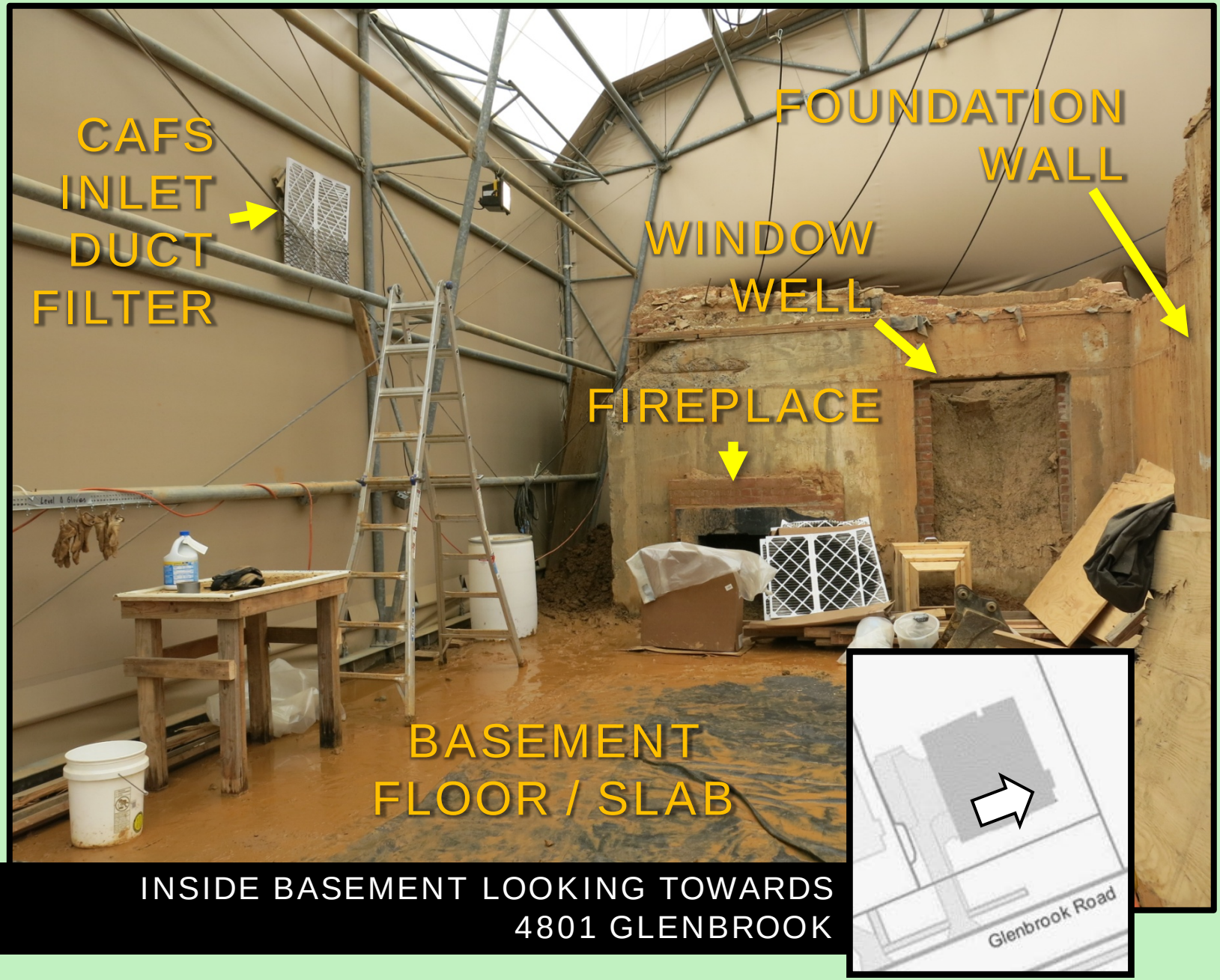
- We are encountering less debris and have reached competent saprolite in several areas of the debris field.

- This month we will continue excavations in the front yard.

- The crews are also installing the needed slope protection to continue digging and to begin to prepare for the next tent move.

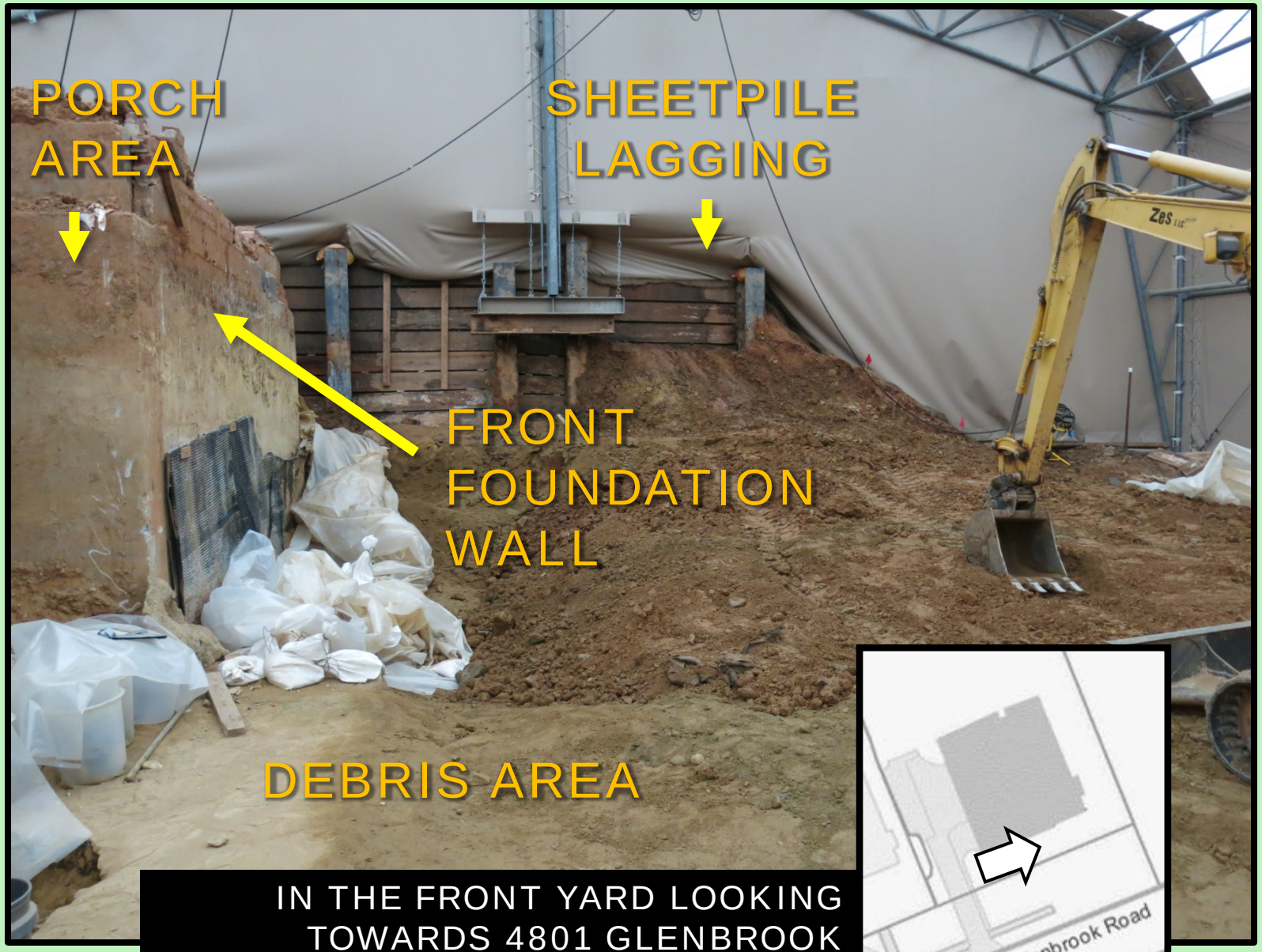
4825 Glenbrook Road

Video of High Probability Excavation



INSIDE BASEMENT LOOKING TOWARDS
4801 GLENBROOK

LOOKING TOWARDS THE FRONT OF THE FORMER HOUSE



IN THE FRONT YARD LOOKING TOWARDS 4801 GLENBROOK

High Probability Operations Progress

4825 Glenbrook Road

High Probability Operations - Findings to Date

- **The high probability excavation crews have safely recovered the following items: 39 intact containers, five 75mm munitions debris items, one Mk IV adapter/booster, one 75mm shrapnel round with no explosives, one 4.7" projectile with no explosives, and over 530 pounds of broken American University Experiment Station-related glassware. The items were packaged and safely transported to Federal Property.**

- **There have been low level readings for possible lewisite and mustard on the MINICAMS (near real time continuous air monitoring system) at the pre-filter (inlet to the Chemical Agent Filtration System, or CAFS). There continues to be no risk to the public due to these readings. All of our engineering controls are working as designed, with multiple layers of protection. We are continuing to monitor this situation.**

- **We also have had results for a small amount of mustard breakdown products and lewisite in the excavated soil. This soil will be sent to an incinerator for final disposal.**

4825 Glenbrook Road

MARB Report on 75mm Found January 13

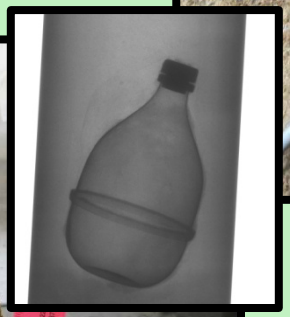
We received the final report from the Materiel Assessment Review Board (MARB) in reference to the 75mm shrapnel round found January 13.
A review of the x-rays determined the item contains a 100% solid fill, but there are no explosives.

Further analysis indicated that the item contains a possible magnesium arsenide fill, which is not chemical warfare materiel. However, it is considered a hazardous chemical and will be disposed of accordingly.

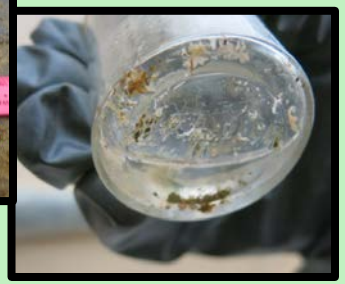
All of our engineering controls are designed to handle this type of chemical.

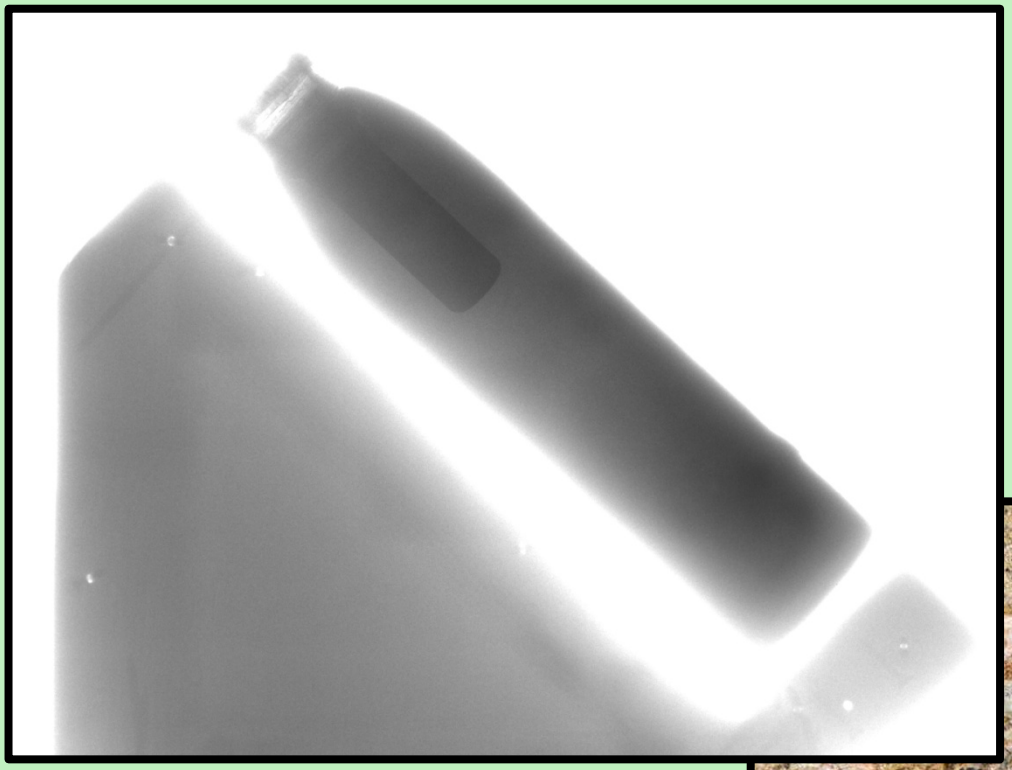
March 11th Finds

Intact Glass Containers



Copper Vessel





An empty 75mm munitions debris item found on March 12

Glass bottle found on March 19

Intact container found on March 27

An empty 4.7” projectile round and a large glass container were found on April 18

Examples of intact containers found February 25 through April 22

4825 Glenbrook Road

High Probability Operations

The crews loaded excavated soil, where they were encountering debris, into drums and collected composite samples.

Site crews continue to load soil and debris per the procedures. All items and soils are tested prior to disposal. To date, 45 roll-offs of soil, 360 drums of soil, and 10 roll-offs of rubble have been removed.

4825 Glenbrook Road
Schedule Update

✓ **December 2012 through May 2013**

Site Preparation/ Initial Low Probability Work

- **Test pits in backyard and re-locating utilities**
- **Install soldier piles to support embankments**

✓ **May 2013 through September 2013**

ECS Set Up, High Probability training, and Pre-Operational Exercises

→ **September 2013 through July 2015** (a 12-week extension)

High Probability Excavation

August 2015 through October 2015

Final Low Probability Excavation

October 2015 through November 2015

Site Restoration

Spring Valley FUDS
Restoration Advisory Board

Community Items

Spring Valley FUDS
Restoration Advisory Board

Reminder: Our next meeting will be July 15th

Upcoming Agenda Items

- Suggestions?

- Community Relations Plan Update
- 4825 Glenbrook Road Health Consultation Update (ATSDR) - TBD

Spring Valley FUDS
Restoration Advisory Board

- Public Comments

- Wrap-Up

U.S. Army Corps of Engineers

Spring Valley Joint Restoration Advisory Board Meeting

St. David's Episcopal Church

Minutes of the May 13, 2014 RAB Meeting

RESTORATION ADVISORY BOARD MEMBERS PRESENT AT THIS MEETING	
Dan Noble	Military Co-Chair/USACE, Spring Valley MMRP Manager
Greg Beumel	Community Co-Chair
Ralph Cantral	Community Member
Kathleen Connell	Community Member
Lee Monsein	Community Member
George Vassiliou	Community Member
John Wheeler	Community Member
Dr. Peter deFur	Environmental Stewardship Concepts/RAB TAPP Consultant
James Sweeney	Agency Representative – District Department of the Environment
Mary Bresnahan	Community Member
Mary Douglas	Community Member
William Krebs	Community Member
Tom Smith	Community Member
Mary Bresnahan	Community Member
Steve Hirsh	Agency Representative – US Environmental Protection Agency Region III
Linda Argo	At Large Representative – American University
RESTORATION ADVISORY BOARD MEMBERS NOT PRESENT AT THIS MEETING	
Malcolm Pritzker	Community Member
Paul Dueffert	Community Member
Lawrence Miller	Community Member
Alma Gates	At Large Representative – Horace Mann School
ATTENDING PROJECT PERSONNEL	
Todd Beckwith	USACE, Spring Valley Project Manager
Lan Reeser	USACE, Spring Valley Technical Manager

Andrea Takash	USACE, Corporate Communications
Rebecca Yahiel	ERT, Spring Valley Community Outreach Program
Lattie Smart	ERT, Spring Valley Community Outreach Program
HANDOUTS FROM THE MEETING	
I. Final Agenda for the May 13, 2014 RAB Meeting II. Army Corps of Engineers Presentation	

AGENDA

Starting Time: The May 13, 2014 RAB meeting began at 7:12 PM.

I. Administrative Items

A. Co-Chair Updates

Greg Beumel, Community Co-Chair, opened the meeting. He turned the meeting over to Dan Noble.

Dan Noble, Spring Valley Project Manager and Military Co-Chair, welcomed the group.

D. Noble reviewed the evening's agenda.

B. Introduce Guests

Officer McElwee of the District of Columbia Metropolitan Police Department (MPD) 2nd District briefly attended the meeting. He offered his card and gave details about the coming 2nd District annual PSA event.

D. Noble and the RAB members expressed appreciation for Officer McElwee's attendance at the meeting.

C. General Announcements

D. Noble shared with the RAB that Jessica Bruland was returning to graduate school and will no longer be taking the minutes for the RAB, which will now be taken by Lattie Smart.

D. Noble announced that they wanted to discuss changing the early July 8th RAB meeting date, at the end of tonight's meeting.

D. Noble announced that recent website updates include the February Partnering minutes and the materials for the March RAB meeting, with the minutes to soon follow. Additionally, recent website updates include the monthly site-wide project updates (for March and April 2014), along with the weekly remediation progress updates for the 4825 Glenbrook Road site, and associated photographs as appropriate. These weekly updates are posted on the Spring Valley project website every Friday afternoon. Also posted were the Final Addendum 1 to Final Pre-2005 Human Health Risk Assessment Review and the Final Spring Valley FUDS Final Site-Wide Human Health Risk Assessment Work Plan, and hardcopies were also placed at the Tenley-Friendship Library.

D. Task Group Updates

No task group updates were presented.

II. USACE Program Updates

D. Noble, Spring Valley Project Manager and Military Co-Chair, provided information on the Chemicals of Potential Concern (COPC) mentioned during the March RAB meeting presentation on the Site-Wide Human Health Risk Assessment.

Todd Beckwith, Spring Valley Project Manager, provided a status update on the groundwater investigation focused on upcoming planned deep monitoring well installations and sampling results.

D. Noble, Spring Valley Project Manager and Military Co-Chair, provided a brief status update on the current high-probability schedule and progress to date for 4825 Glenbrook Road.

A. Site-Wide Human Health Risk Assessment: Chemicals of Potential Concern (COPCs)

Areas Recommended for Human Health Risk Assessment: D. Noble referenced Tom Bachovchin's Human Health Risk Assessment presentation from the March 2014 RAB that mentions an upcoming full baseline risk assessment looking for outlier compounds in three Spring Valley areas. These three Exposure Unit (EU) areas are called Area of Interest 9 (AOI 9), The Spaulding-Rankin Area, and Southern AU.

Chemicals of Potential Concern Potentially Posing Risk: Six compounds are causing USACE to reexamine the three EUs. Cobalt was found at all three areas, while antimony and four polycyclic aromatic hydrocarbons (PAHs) were also present at Southern AU.

D. Noble explained that cobalt is now a COPC in these areas because EPA has lowered cobalt's toxicity threshold since the Spring Valley data was originally collected. Cobalt, and all other trace contaminants, will be given a second look with a new Risk Assessment of these three areas.

Question from M. Bresnahan, RAB Member – When did EPA lower the toxicity thresholds?

Steve Hirsh, U.S. Environmental Protection Agency Region III, explained that the EPA has values that tell how much of a particular compound a body can have before it starts to cause two kinds of problems: cancer risk and non-cancer risk. When new studies come out on how particular chemicals affect humans and other animals, the EPA reevaluates their toxicity numbers, or Risk Information System (IRIS) values. This is what happened in the case of cobalt and EPA requires those who look at new or old risk assessment to use the new IRIS values.

D. Noble added that USACE knew that the EPA was going to change exposure factor numbers used in Risk Assessment. Since the SV risk assessment is still in the draft stage, USACE will consider the impacts of these changes. These exposure factors take into account how much contaminant-containing soil an adult or child may ingest, or changes in the average adult's weight, etc.

Question from T. Smith, RAB Member – Does Southern AU include the Public Safety Building, behind the athletic fields, and behind Glenbrook Road?

D. Noble confirmed this, adding the area also includes Kreeger and Watkins Halls.

Question from Ginny Durrin, Community Member – Have you come across any records of whether they were testing anything that had cobalt in it, during the World War I aerial testing era?

D. Noble replied that he knew of no aerial testing, but that cobalt-containing chemicals were present at AUES. Cobalt can be generally found in many things.

Question from G. Durrin, Community Member – So cobalt could have been in some of the static test firing on both ends of the Sedgwick Trench area?

D. Noble did not know if cobalt was used in munitions. Cobalt was sometimes used as a steel alloy. He recalled studies that showed that such alloys tend not to be environmental problems. There were some

cobaltic oxides that were being tested at AUES as absorbents that were perhaps used in gas masks that would have been tested out on the ranges to see if it protected soldiers. D. Noble added that AUES had a lot of chemicals out there, and one could find generally any chemical or element on the list.

Question from Davis Kennedy, NW Current – What damage does cobalt do to people?

D. Noble and P. DeFur said they were not certain.

Question from Mary Bresnahan, RAB Member – Are there any other major chemicals present in Spring Valley that are in the process of being reevaluated by the EPA, like arsenic?

S. Hirsh explained that both arsenic and perchlorate are under review. The EPA may publish new, lower arsenic numbers, but these are unlikely to have any significant effect on the acceptable cleanup levels for Spring Valley. EPA will eventually publish a maximum contaminant level (MCL) for perchlorate. This would be a regulatory level that drinking water supplies will have to always comply with. This standard would not affect any decisions made about Spring Valley, since no one is drinking the groundwater here.

D. Noble added that PAH's can be found where something is partially burned, such as with charred or blackened food from a grill, and all over urban environments from the daily partial combustion of fuels. He noted that since the Army disposed of wooden structures at Southern AU by burning them, this possibly caused the higher-than-normal PAH soil levels there.

B. Groundwater Study

Sampling Results & Upcoming Effort:

Completed Quarterly Sampling: The quarterly sampling of the wells in front of Kreeger Hall on American University and the Sibley Hospital sump were concluded in March.

Semi-annual Sampling: The second semi-annual sampling event began and was completed in December 2013. A total of 18 shallow and deep wells and a total of 10 surface water locations were sampled. Analytical results were shared with the RAB. The third semi-annual sampling event is scheduled for June 2014, and will consist of the same set of selected existing groundwater monitoring wells and surface water monitoring locations described previously.

Perchlorate has been detected above the drinking water advisory level of 15 parts per billion (ppb) at MW-44 and PZ-4D at AU's campus, the Sibley Hospital sump, and MW-22.

MP-2, located across from 4825 Glenbrook Road, was the only location where arsenic was detected above the drinking water standard of 10 parts per billion (ppb).

The March quarterly sampling detected perchlorate concentrations above 15 ppb at MW-44 and PZ-4D on AU's campus.

Question from Kathleen Connell, RAB Member – What is the net result of these results being above advisory levels? What do you suggest?

T. Beckwith replied that the drinking water standards were used for comparison purposes, but no one is using Spring Valley groundwater as a drinking water source. Part of the program is protecting the beneficial use of the aquifer, so we evaluate potential risk if in the future someone wanted to use groundwater as a drinking water source.

Question from M. Bresnahan, RAB Member – Have the concentrations gone up since the last time these wells were sampled?

T. Beckwith answered no. Specific results will be reviewed later. The sampling locations USACE has been most interested in are around Sibley Hospital, the Sibley Sump, American University, and along Glenbrook Road. The latest results were consistent with what USACE has detected in the past.

Question from T. Smith, RAB Member – Is USACE able to develop a groundwater map of these wells?

S. Hirsh explained that USACE had made a contamination map. However, there are some areas which will be completed with data from the two new proposed wells.

Question from N. Wells, ANC3D Commissioner – Can you map the plumes of groundwater under the ground of the Spring Valley neighborhood?

T. Beckwith explained that USACE has mapped the areas of detected contamination in the vicinities of Sibley Hospital and AU. The question remains if the contamination is flowing where the new well, MP-5, is scheduled to be installed.

T. Beckwith explained that when MP-2 was first sampled in March 2012, most of the sample reports showed both arsenic and perchlorate concentrations were above the drinking water standard. The December 2013 sampling showed that perchlorate was below the drinking water standard in all of the sampling ports, but arsenic was above 10 ppb in six out of the eight sampling ports.

Question from T. Smith, RAB Member – What is responsible for the large variation in sample concentrations?

T. Beckwith explained that it is hard to say exactly what is happening. Perchlorate concentrations have decreased in a lot of the wells. The amount of water passing through there may be diluting and dispersing the contamination. It is expected for perchlorate to flush out quicker than something like arsenic, which absorbs to soil. Perchlorate is a very mobile chemical that does not readily absorb to soil

Question from Lee Monsein, RAB Member – What is the average groundwater level in other urban areas? What is the normal arsenic level in drinking water in most communities?

Dr. Peter DeFur, RAB TAPP Consultant, answered that arsenic is found in groundwater samples at very little parts per billion. However, in places where you have hard rock mining, such as the west, the Pacific, and in the northeast, you can get naturally occurring arsenic levels much higher than that. There are a couple of places around the world with really good epidemiological data about naturally occurring arsenic and information on what arsenic does to people. The data is not only about the health effects, the types of cancers, and the types of non-cancers, but also about the concentrations at which we have to worry about exposure. The reevaluations of the data cause the EPA to lower the drinking water standards. However, a few ppb of arsenic are not uncommon because arsenic is naturally occurring, particularly in deeper wells.

Question from L. Monsein, RAB Member – A couple of years ago, there was a big consumer report that talked about elevated levels of arsenic in apple juice. Do you remember what levels those were?

Dr. P. DeFur answered that he could not remember and added there were older uses of lead arsenic as an insecticide in orchards decades ago.

In response to M. Bresnahan, Dr. P. DeFur explained that perchlorate can occur naturally, but is very uncommon. There are not as many measurements in groundwater, particularly deeper groundwater. The places where perchlorate is naturally occurring in waters tend to be very different places than where you put a groundwater well. He does not know of any systematic investigations on naturally occurring concentrations of perchlorate in either the shallow or the deep wells.

J. Wheeler added that perchlorate is primarily of concern as a manmade chemical.

Dr. P. DeFur, RAB TAPP Consultant, confirmed perchlorate is a result of human activities, including flares, propellants, rockets, and fireworks. It is also clinically used to treat thyroid disorders, but that is one of the big problems with its health effects, in that it interferes with iodine uptake in the body.

MW-24 and MW-25 along Glenbrook Road: The wells MW-24 and MW-25 on Glenbrook Road have been sampled since 2005. When these wells were first sampled, perchlorate was detected at some of the highest concentration seen at MW-25 and then MW-24. Lower concentrations have been detected more

recently. These wells are down gradient from 4825 Glenbrook, the 4801 property, and AU Lot 18 where a lot of AUES-related material removals were done. It could be that those removals had some positive impact on the groundwater.

Perchlorate and Arsenic Sampling Results – American University: The wells PZ-4S&D, MW-44 and MW-45S&D in front of Kreeger Hall at AU all represent different depths.

PZ-4S is the shallowest well at 27 to 47 feet below ground surface of the well stream. The deepest interval is 147 to 150 feet below ground surface. PZ-4S historically had the highest detection of perchlorate in Spring Valley at 146 ppb. More recent detections of perchlorate have been significantly less than the first sampling events.

PZ-4D has been sampled since 2006. Results showed a couple anomalous detections that were below the 15 ppb standard. However, results have usually been between 35 and 45 ppb.

MW-44 was installed in March 2012. Its results range from 33 to 42 ppb. "FD" means a field duplicate with the date published twice. They are separate samples taken at the same exact time from the same location. A FD is a quality control sample that is collected every 20 samples.

These middle depths seem to have more consistent concentrations. When the deeper wells MW-45S&D were first sampled in September 2012, detections were at 4 and 6 ppb. In May 2013, MW-45S&D had some higher detections of 31 ppb and 54 ppb. When MW-45S&D was sampled again in December 2013 and March 2014, concentrations were similar to when they were first sampled. There is no good explanation for these differences. This could be some anomalous detection. It could possibly be due to human error, where the samples that were collected at MW-45S&D were mixed up with the samples from PZ-4S&D, which is located next to MW-45S&D. Monitoring will continue at these wells.

Question from T. Smith, RAB Member – What is the take away message from high numbers?

T. Beckwith explained that the investigation indicates the concentrations appear to be decreasing in the shallow groundwater. In deeper wells, like PZ-4D and MW-44, the concentrations have been stable. Once the data collection is complete, USACE will determine whether they need to address it and how, or if they need to continue to monitor.

Question from T. Smith, RAB Member – Is that about treating the groundwater, or is it about looking for the source of perchlorate?

T. Beckwith replied that USACE did an extensive source investigation and dug test pits throughout the area, but did not find the definitive source of the contamination. At this point, they are not looking for the source of perchlorate. Because USACE is not seeing anything in shallowest groundwater at PZ-4S, any contamination that would be in the soil is believed to have dispersed and gone away and there is no ongoing source in the soil. However, there is some residual contamination still here in these deeper parts where the groundwater does not flow so quickly through the weathered bedrock portion of the aquifer. It may take a little longer for this to flush out.

Question from Bobby Smith, Community Member – Where does the groundwater flush out? When it decreases, where does it go?

T. Beckwith replied that groundwater is moving down gradient towards the Potomac River. It is moving very slowly, in the estimated range of feet per year. During a rain event, rain water infiltrates the ground's surface and collects contamination as it moves towards the Potomac River.

Question from Dr. P. DeFur, RAB TAPP Consultant – Do you have a more accurate number on how quickly groundwater moves through that area?

T. Beckwith explained that this rate is different at different depths. Groundwater may move faster or slower at different parts of the aquifer.

Question from M. Bresnahan, RAB Member – Does this information indicate a source of the perchlorate on AU?

T. Beckwith responded that the shallow well data near Kreeger Hall had some higher levels of perchlorate at one point in time and probably had a soil source in that area. The soil source seems to be depleted, but there is still some contamination remaining in the groundwater. And at the deeper part of the aquifer, perchlorate is going to take a longer time to go away.

Comment from L. Monsein, RAB Member – So, just to recap, your data there suggests that at one time, there was a source probably located in the area of PZ-4D and MW-44. It is no longer there, but that is your best guess about where it came from based on extensive investigations.

T. Beckwith confirmed this, explaining that at these levels, USACE knows the perchlorate contamination is not naturally occurring in Washington D.C.

Question from G. Durrin, Community Member – What buildings, shacks or activities were going on up at AU in that general source area?

D. Noble explained that the area around Kreeger and Watkins Hall areas were the heart of the experiment station and contained all the shacks, labs and buildings that were involved in major chemical activities and experiments.

Question from G. Durrin, Community Member – So it would have been buried then, and how?

D. Noble explained that it could have been spilled and left on the ground surface, or could have gotten churned into the ground surface. There could have been small burials up there. USACE found major burial areas at Glenbrook Road and Lot 18, where AUES apparently took their trash. AUES could have had smaller trash areas around the site.

Comment from M. Bresnahan, RAB Member – Could the contamination have been churned up just with construction in this area?

D. Noble confirmed this, and pointing out that over the years, the elevations have changed significantly on campus. There has been soil transfer and shifting in the area.

Question from T. Smith, RAB Member – Are munitions buried down there somewhere and stuff is leaking out of it?

S. Hirsh explained that the AUES munitions did not use perchlorate, and that they did not use perchlorate propellant in World War I. If it was an active World War II facility, with munitions, it could be true. But at AUES, the Army would have been using perchlorate for something else, like smoke or on the rocket stand.

T. Beckwith explained that perchlorate was used in smoke mixtures and AUES was evaluating silver perchlorate as an ointment used to protect skin from agents.

Question from N. Wells, ANC3D Commissioner – The values in PZ-4D, and in MW-44 are stable, relatively speaking. Does that mean that you have not discovered the source of that, because that's a fairly high level?

T. Beckwith explained that these wells are right next to PZ-4S, which had contamination at one point that was a little bit higher than PZ-4D. Ground contamination could have migrated deeper into groundwater. The general source for any contamination seen in this area may be the same: some type of fill, or potential burial, or spill on the soil. It was some release that occurred in this general area in the past. The USACE has done an exhaustive search, but there is no clear soil source remaining in that area.

Sibley Hospital Area: MW-21 and MW-22 are along MacArthur Boulevard and the Sibley sump is in the bottom of the elevator shaft at Sibley Hospital. The Sibley sump has consistently detected perchlorate in

the range of 15 to 25 ppb; the most recent sample in March 2014 was 13 ppb. In December 2013 it was 18 ppb.

Higher levels of perchlorate were detected at MW-21 (between 38-48 ppb) when it was first sampled. Now, perchlorate detections are lower, between 4-5 ppb.

However, MW-22 has had opposite results. The sampling results in May and December 2013 were the first detections above 15 ppb. What could be happening is the higher levels of perchlorate seen at the Sibley Hospital sump is making its way down gradient towards MW-22. The groundwater is flowing towards the Potomac River.

Question from L. Monsein, RAB Member – The whole landscape slopes down that way. How deep are these wells, relative to the wells upstream?

T. Beckwith explained that there is a groundwater elevation difference of about 100 feet downstream geographically from AU down to the Sibley sump.

Dr. P. DeFur commented that the Sibley sump is not that far below ground surface as the wells.

Question from G. Vassiliou, RAB Member – What are the acceptable levels for arsenic?

T. Beckwith said that the drinking water standard for arsenic is 10 ppb and that arsenic has not been a contaminant of concern at Sibley.

Question From G. Vassiliou, RAB Member – Have you taken the data for arsenic and perchlorate and correlate the two substances in terms of concentration?

T. Beckwith answered that arsenic and perchlorate were both above drinking water standards only on Glenbrook Road, near where all the significant disposals occurred.

In response to G. Vassiliou, Dr. P. DeFur confirmed there was no statistical correlation found in the Landmark Study.

FY 2014 Groundwater Monitoring Effort:

52nd Court: USACE abandoned well MW-23 at 52nd Court. The two-man crew cut off the well below ground surface and filled the well with cement grout. This well was about 20 feet from the original munitions disposal pit that was found in 1993 at 52nd Court. USACE stopped monitoring MW-23 after it was sampled five times without significant detections. It was in a homeowner's backyard, who requested that USACE remove it.

May Well Inspections: USACE will be around the neighborhood, inspecting the wells for any damage that needs to be repaired.

FY 2014 Groundwater Investigation Effort: USACE is planning to install two additional new wells. One is a deeper well at Sibley Hospital, and is already approved.

The other well is still in the process of getting the approvals, and was the subject of the meeting on April 29th with some local residents, ANC Commissioners, and was attended by RAB members G. Beumel, P. Dueffert, and M. Bresnahan, and Congresswoman Holmes-Norton.

T. Beckwith said he would go through the slide presentation from the April 29th meeting so the RAB can see the process to evaluate the location of the wells. However, the overall conclusion was that there was enough concern about putting the well on the Rockwood Parkway island that USACE is looking at alternate locations in public space and the road.

Topics of discussion during the April 29th meeting: MP-3 and MP-4 are two deep wells between the two historically contaminated areas. They have not detected contaminants of concern at elevated levels. The reason for MP-5 is to determine if there's anything passing through between MP-3 and MP-4.

Proposed New Well Location for MP-5: The new well must be in the identified required drilling zone. This will ensure that the well meets the objective of having a well between MP-4 and MP-3 and downgradient of MP-2 near AU.

Four Well Location Alternatives:

1. On the Rockwood Parkway 'island.'
2. In the road.
3. In public space in front of a private property.
4. No well installation.

Comment from J. Wheeler, RAB Member – Could the well be installed on private property?

T. Beckwith acknowledged that would be a potential option. It has been done before. However USACE prefers to minimize disturbing private residents.

Additionally, there are physical limitations to finding a new location, including the logistics of placing the drill rig, the placement of underground utilities, and the presence of overhead electric lines or tree limbs.

Evaluation of Well Location: When considering placing the well on public space in front of a private residence, as in Alternative 3, USACE looked at all 16 properties in the area. Three properties were identified as potential locations where USACE felt they could safely place a drill rig. Those property owners were approached but were not interested in having a well in front of their house, ruling out alternative 3.

Alternative 4 was also ruled out because USACE and their Partners felt the data to be gained by the new well was needed to complete the SV groundwater study.

Alternative 1: Rockwood Parkway Island: The advantages and disadvantages of putting the well on the island:

Advantages

- It would be easily accessible for the drill rig.
- There are no physical utilities.
- They wouldn't have to shut down the road.
- Easy, safe access for workers for any future sampling.
- They could replace the grass with sod.

Disadvantages

- Community concern about the drill rig placement on the grassy landscaping.
- The drilling area of the park could not be used during the duration of the drilling operation.

Comment from B. Smith, Community Member – Eleanor Holmes Norton mentioned that this park seems to be a magnet for digging by the city and its constant disruption makes it very difficult to restore because there is no water source. On private property we have water sources, so of course one can bring their yards back to its lush, previous look. There is no water source on the island, and the reason it looks sparse is because about 3 years ago it was dug up and had huge vehicles on it. I don't understand why you could not close the road as you are digging this well and put your equipment there.

Comment From L. Monsein, RAB Member – Although I do not consider it a park, there is a strip of grass surrounding the half a mile reservoir between 44th and 45th Streets. We used that grass to walk our dogs and it is kind of a gathering place for everyone in the neighborhood. It is larger than the Rockwood Parkway island. About 10 years ago, USACE was going to remedy the high arsenic found in that area and was going to cut down 75-year-old oak trees. And that is how I got involved in the project. I was their worst enemy for the first 6 months to a year.

Instead of cutting down the trees, USACE used phytoremediation as a remedy for 4 years. We could not use the property because they had planted ferns throughout that area and people were skeptical we would ever get that property back. However, USACE took excellent care of it. They actually had a water truck that would come every day to water that area to make sure that the grass would take hold after they left. They left it absolutely perfect. I see no reason to feel differently about this island. If it is going to take irrigation, those trucks will be there every day delivering water. If that is what it takes, there will be tanker trucks to water the grass.

Comment from B. Smith, Community Member – The restoration information says only two weeks of watering.

Comment from L. Monsein, RAB Member – By the end of this, I am confident that it is not going to be a big deal. If anything, having the Army Corps take an interest in that little plot of land will be the best thing that happened to it.

Question from T. Smith, RAB Member – Often times we focus on whether a property can be restored on a short-term issue. But in the long-term, how do we ensure this is a case in which the community has taken upon itself to spend their own money to enhance and maintain this property over the years? How do we as a community ensure that residents like these folks are going to take it upon themselves in the future to continue to enhance and maintain properties that the city does not care about or does not want to commit any kind of revenue to? How do we continue when something comes up disturbing the pattern that people have had all their lives? After a while the community is going to say "forget it." We are not going to put ourselves out of our own money, time and the mental investment involved in it.

Question from L. Monsein, RAB Member –I do not understand how putting a well there has any effect on the island. If the community members have taken care of this land in the past, and are planning to use it exactly the same way in the future, then what difference does a well make?

Question from T. Smith, RAB Member – I think the difference is that the well does not have to be located on the island and that was the discussion that we had at the meeting. No site may have been the ideal solution but there were alternative locations. And so why not explore an alternative that is less disruptive to the immediate neighborhood then one that the residents view as being the most disruptive?

Question from Linda Argo, RAB Member – Isn't USACE looking for an alternative location?

T. Beckwith confirmed that USACE is looking for a suitable alternative location.

Question from G. Vassiliou, RAB Member –How long is the project slated to take? And second, would the new well be located at the end of the island, which is basically a piece of lawn? Or will USACE take the whole thing over?

T. Beckwith explained that at this point, USACE is not pursuing putting the well on the island and is instead pursuing a good location on a road in the required drilling zone.

Comment from N. Wells, ANC3D Commissioner –How long will USACE be testing this new well? How long will it stay in the ground and will it have to be reconditioned and what will happen when you take it out of the ground?

G. Beumel clarified that the presentation showed that, as of now, USACE will not put the well in the park. The point of the presentation was to illustrate to the RAB members who were not present at the April 29th meeting how USACE came to that conclusion.

S. Hirsh added they let Congresswoman Norton know they would be looking at alternative locations.

T. Beckwith said that the intent of this presentation was to show how USACE came to that decision after discussing the alternatives, to put in the well in public space on the road instead of the island. USACE has requested utility mark-outs at locations on Indian Lane and Rockwell Parkway. A new location should be proposed in the next week or so.

Question from L. Monsein, RAB Member – What are the ramifications of putting it in the road versus the island?

T. Beckwith answered that the main disadvantages of installing the well in the road was avoiding active and abandoned utilities, shutting down a portion of the road during the drilling and sampling events, increased traffic hazards from passing cars, and the public inconvenience of road closure.

Question from L. Monsein, RAB Member – How long does it take to install a well in a road versus putting it in the park?

T. Beckwith replied that there is no difference.

Question from L. Monsein, RAB Member – What is the cost differential?

T. Beckwith acknowledged it would be a little more costly to install the well in the road, which would include a traffic control plan for road closures during each sampling event.

Question from L. Monsein, RAB Member – How long will it take to complete a sampling event?

T. Beckwith explained that the crew will be sitting all-day at the deep wells because the multi-port wells typically have 8 different sampling ports.

Question from L. Monsein, RAB Member – Does the road also have to be closed down if you sample from the park?

T. Beckwith answered no.

Question from L. Monsein, RAB Member – Did USACE go house to house in that neighborhood and ask all the neighbors whether they wanted the road shut down every time you sample, versus putting it in the park? Or did USACE just ask the people who showed up at the meeting?

T. Beckwith answered that they did not do a survey.

Comment from L. Monsein, RAB Member – So you are just listening to the people who came to the meeting. Okay, I just wanted to put it in perspective

Question from Christine Dietrich, Community Member –I am a house owner for the property where deep water well MP-2 is located. They have been consistently finding arsenic and perchlorate. We did not think about rejecting a well in front of our property, which probably was a very stupid decision because it has an implication on our house value. What can you do about the perchlorate, which occurs in quite significant concentration in this neighborhood?

T. Beckwith explained that once USACE finishes the groundwater study, they will look at different alternatives for addressing contamination in the Feasibility Study.

The alternatives addressed in the Feasibility Study might be:

- Do nothing - just continue to monitor the groundwater.
- Put in groundwater extraction wells to pull out and treat the contaminated groundwater.

- Inject chemicals or nutrients into the ground for biological degradation.

Question From L. Monsein, RAB Member – (asking Dr. P. DeFur), has anyone tried to remedy ground water that is more than 50 feet deep of perchlorate or any contaminant? Was the first 50 feet not a problem?

Dr. P. DeFur explained that the 50 feet depth is not a particular problem when it comes to a lot of conventional contaminant because they either pump and treat, or they inject something in the ground water that will break down the contaminant. For example, a common method used is bacteria that will digest organic chemicals. Chemists are looking at what they can do about perchlorate without having to pump it out and treat it. Though pump and treat is an option for perchlorate because it can be removed. It is not that simple, but it can be. Fifty feet is nothing, they pump down a lot deeper than that, including groundwater 400 feet deep.

Question from L. Monsein, RAB Member – These techniques that you mentioned, are these used for perchlorate, or are they under development?

Dr. P. DeFur replied no. These techniques are all under development for perchlorate.

Comment from S. Hirsh, U.S. Environmental Protection Agency Region III – Perchlorate is actively treated at many sites, particularly in the West at levels a thousand times higher than this.

In response to Dr. P. DeFur, S. Hirsh explained that pump and treat is usually used, for example, at a rocket factory where there are massive quantities of contaminants. If you live on the West Coast, there are some sites where the groundwater concentrations are 1,000 times Spring Valley's. These sites are being actively treated with pump and treat systems. Most of the water in Southern California can be treated for perchlorate because Lake Mead is contaminated above 15 ppb. Pump and treat for perchlorate can be done, but it is expensive and probably not the right remedy for Spring Valley.

Comment from L. Monsein, RAB Member – I guess it requires a high enough contamination level to make certain remedies cost effective. But because the perchlorate and arsenic concentrations in Spring Valley are already low to start with, it is going to be even more expensive to bring it down further.

S. Hirsh explained that cost efficiency is one factor, but risk is the big factor. Response is a lot different when the water is being consumed versus when it is not being consumed. If nobody is drinking the water, you have the luxury of time. If somebody is drinking the water you have got to fix it right away.

Question from L. Monsein, RAB Member – The Spring Valley groundwater is not used as drinking water now and it is not expected to ever be?

Dr. P. DeFur confirmed this.

Comment from G. Durrin, Community Member – But even if you did remediate it, you still have that source.

Dr. P. DeFur explained that USACE has been looking around for a source for several years now, and found nothing.

S. Hirsh added that it is possible that a source was removed before they started sampling perchlorate. Perchlorate is an emerging contaminant. Nobody knew that perchlorate was an issue 15 years ago, so they were not looking for it.

Question from B. Smith, Community Member – The Army is responsible for remedying the groundwater, so that the homeowners like the homeowner here have a hope of recovering their value of their home?

T. Beckwith clarified that USACE will clean-up contamination left behind by the Army that causes unacceptable risk.

Comment from G. Durrin, Community Member – I don't find it acceptable that the water running though the neighborhood has perchlorate in it, even if you don't drink it. I think that we should work towards having no perchlorate.

D. Noble explained the Risk Assessment in the groundwater Remedial Investigation will look at surface water that has perchlorate running through the groundwater and ask what the receptors and risks are.

S. Hirsh added that until Congress changes the law, the EPA's opinion has been that if the water could have been used as a drinking water source before it was contaminated, it should be returned to that use. And that is the way we will look at this data.

Comment from G. Durrin, Community Member – But we might have standards that are higher.

Comment from S. Hirsh, U.S. Environmental Protection Agency Region III – Then you should make your comments whatever those are. We have a law that tells us how to do business and that is what we do. The law tells us that if it could have been a drinking water source before, that is the goal of restoring it to that level. There's no exclusion in Spring Valley's case.

Question from G. Durrin, Community Member – So what recourse do residents of Spring Valley have if they want to have higher standards than the EPA?

S. Hirsh asked if higher standards meant no perchlorate. He explained that the gold standard is "you can take this water out of the ground and drink it."

Comment from G. Durrin, Community Member – But you're saying if you didn't drink the water, you're not fixing it.

S. Hirsh clarified that he said because the community is not drinking the groundwater, it does not have to be remediated as quickly as if the community was drinking it. The groundwater may need to be remediated, but the process will take a longer period of time since nobody is drinking it.

Question from L. Monsein, RAB Member – I sense that you are being a little misleading, because the government would not allow any risk benefit analysis to what you are saying. Everything is a cost. When the cost benefit analysis says it will take a billion dollars to complete, Congress is going to say "no way. "

S. Hirsh explained that there are exceptions. Cost is a factor. If Congress tells EPA 'we do not want you to cleanup sites, then EPA will not clean up the site. However, they have not said that yet for Spring Valley.

T. Beckwith pointed out that alternatives are evaluated against CERCLA's 9 Criteria (set by the EPA), which includes cost evaluation.

Comment from G. Durrin, Community Member – But just to put it in sort of everyday human terms, let's say you had a child and you bought a property with one of the streams in Spring Valley running through your property, you would probably say, "Children don't play in the stream."

D. Noble replied that John Hopkins University evaluated in their latest health report that there is no risk to wading in the streams. He encouraged the report to be read by community members because the study looked at whether they were concerned about that type of exposure scenario. JHU did not have to follow the long, statutory process that USACE must follow. They jumped ahead and looked at some of these scenarios and gave their conclusions about them. He encouraged everyone to see what the report said about this issue.

C. 4825 Glenbrook Road High Probability Operations

Most of the needed soil removal was finished at the first tent location. Less debris is being encountered. Competent saprolite was reached over most of the excavation area. Digging is nearing completion in the front yard. Attention has turned to how to start taking down the foundation walls.

4825 Glenbrook Road High Probability Operations - Findings to Date: A summary of findings to-date for the high probability operation:

- 39 intact containers, mainly glass.
- Five 75mm munitions debris items.
- An Mk IV adapter/booster.
- One 75mm shrapnel round with no explosives.
- One 4.7" projectile with no explosives.
- To-date, over 530 lbs of broken AUES-related glassware.

The amount of glass debris recovered back in the 2007-2010 time-frame (about 510 lbs) was surpassed.

Over the last several months, the MINICAMS, which monitor the air inside the tent, have detected low levels of possible lewisite and mustard. It is understood and accepted that they are there, but they have to reach a certain level until they are confirmed with a different detection method. The secondary detection method is in place to ensure the primary detection instruments are accurate.

When the lewisite was detected with the MINCAMS, the lewisite was not confirmed by the secondary detection. At this time it is not thought that lewisite has been detected in the air at the site.

The configuration of some of the primary detection equipment was changed to test the peak of a lewisite standard against the peak produced by the suspected, earlier lewisite detection. The peaks were in different areas of the graph, which is additional confirmation that lewisite is not being seen in the air under the tent.

The question then is what was being seen in the air? A gas chromatography-mass spectrometry analysis was done on collected air samples. Results showed a very low level of dichloronaphthalene. Dichloronaphthalene makes up moth balls, but dichloronaphthalene would be naphthalene that has been chlorinated. The old historical list of chemical used at AUES was examined to see dichloronaphthalene was used at the experiment station.

According to the historical documentation, dichloronaphthalene was used in smoke research. At the time, the Army was not only interested in chemical agents, but in producing smokes as obscurants on the battlefield. This explains why dichloronaphthalene was detected in the air. However, a container of dichloronaphthalene has not yet been recovered. At this time, the assumption is that dichloronaphthalene is on some of the the glassware in the soil and it is volatile enough to be detected by the MINICAMS.

ECBC at Edgewood, who do the analysis and chemistry for the project, is tracking down a standard of dichloronaphthalene to definitely confirm that that was what was detected.

Since completing the area of heavy debris, the chemicals detections stopped.

The mustard detections have never been high enough to confirm its presence. However, on the primary system it is looks exactly like mustard. We have acknowledged that there is probably some low level of mustard in the air inside the tent sometimes during work that comes and goes. It was also detected while the crew was in the debris area, where there is also mustard in the soil. Some of this excavated glassware has been contaminated with mustard. Therefore it is no surprise to finding some low level of mustard in the air inside the tent where work is being done.

All the monitoring done at the mid-bed and filter, and at the exhaust of the filter, has remained clean. The filters are doing their job.

Soil results show there are small amounts of mustard, mustard breakdown products, and lewisite in the excavated soil. The soil that is contaminated with agent is segregated into drums and will safely be sent off-site for incineration.

4825 Glenbrook Road MARB Report on 75mm Found January 13: This munition used to be a shrapnel munition, but had been altered. It is not explosively configured. The Materials Estimate Review report found it contained a solid fill - a compound called magnesium arsenide. Magnesium arsenide is not considered a chemical warfare agent, but it is a hazardous chemical. The munition is in storage at Federal property and will be disposed of properly.

Question from L. Monsein, RAB Member – Why would magnesium arsenide be at the site?

D. Noble explained that metal arsenides (like magnesium arsenide) were one of the raw stocks used to generate gaseous arsine. AUES used arsine to fill munitions. AUES was looking for a way to use arsine on the battlefield without the very technically challenging high pressure and low temperature handling and packaging of the munitions with pure arsine.

Mixing water and metal arsenides together will generate arsine. AUES thought that if they put it in a munition so it could be expelled out onto the battlefield, then humidity or rainwater would spontaneously generate enough arsine to be hazardous. There are a lot of old reports from the experiment station where they put it in a lot of different munitions to try out that theory, but it did not work.

4825 Glenbrook Road High Probability Operations: Contaminated soil is packaged into drums. A sample is taken every three drums for a complete soil analysis. The results indicate how the soil should be disposed.

4825 Glenbrook Road Schedule Update: There will be another 12 week extension. High probability excavations could extend to July 2015. This tentative schedule is based on findings and progress made in the first tent. The hope is that as operations are moved to the second and third tent, the excavation can proceed more quickly and improve the outlook on the schedule. However, if excavation activities continue as they have for the last several months, this schedule extension is to be expected.

As a reminder, the crews have been working in a known debris area, which is about to be completed. The remaining area under the first tent is expected to just be soil and digging will be a little quicker.

Question from Mary Douglas, RAB Member – You have been working mainly from the midpoint of the house to the south toward the 4801 Glenbrook Road property?

D. Noble confirmed this.

Question from Mary Douglas, RAB Member – Does this schedule work the other way towards the north?

D. Noble answered no, that area was already excavated. There are still the window-wells on the south side of the house and then bringing down the foundation walls will take some time. At this point, USACE will remove the footers that are underneath the tent. The footers will be lifted up to see what is assumed to be competent saprolite, but it could be soil under the footers.

The concrete footers will be tested as they are being demolished. If the concrete is clean of chemicals, they will be quickly taken out in large pieces. If the concrete samples come back contaminated, the concrete will then have to be broken up into very small pieces and loaded into drums as contaminated soil and sent to the incinerator. The incinerator will only take concrete broken up into a certain size because it's set up for soil.

Question from Mary Douglas, RAB Member –As I recall, there was some controversy about the margin that you were going to be digging towards on the north end, if you have not found anything.

D. Noble explained that samples will be taken at the sidewalls on the property line. Any soil areas seen on the bottom of the excavation will be sampled to make sure it is clean. Some of the very top layers of the

weathered saprolite have been contaminated. We hope the contamination will stop very quickly where the saprolite is not as weathered, and does not have as many cracks. If it is very competent saprolite that looks like smooth rock, it will be clean. USACE must wait and see how deep they have to dig.

Question From L. Monsein, RAB Member – Why would the concrete be contaminated?

D. Noble responded that no, they are more concerned that contaminated soil sat up against the house for years. Contamination may have seeped in into a crack in the foundation wall. The black, sheet-like material on front of the foundation is both the vapor barrier and the drain barrier. Hopefully it protected the foundation wall and kept contamination from seeping through. But since USACE did not place that barrier, they cannot depend on it, so they will have to test the concrete.

Question from L. Monsein, RAB Member – Are there any updates from the consultant that was hired to look into the history of the property?

D. Noble replied no, the Potentially Responsible Parties investigation is still ongoing and the investigators are still working to gather information. However, it is never going to be a public report, because it is essentially a legal document and it will be held within the government.

Question from C. Dietrich, Community Member – We live in the house opposite to this project. We asked for relocation at the beginning of this project which was very kindly supported by the RAB. Now the last request was rejected. At a recent Congressional hearing, where the Army Corps was asked a question from Congress and Congresswoman Norton raised our case - that we have two little children, 3 and 7-years-old. The Corps has rejected our relocation request despite the support of the RAB. We rented an apartment at our own expense where we are keeping the children during the day while they are digging. Now the project is taking about 2 years now. We are paying a rent and a mortgage. So Congresswoman Norton raised this case at this hearing at Congress and she got a response from the Corps that it would look into our case again. We have never heard anything back. Could you please elaborate what the Corps is doing on this to give us a bit of insight and maybe it could also interest to the RAB who very kindly support our case for our relocation?

D. Noble affirmed that General Bostick promised the Congresswoman to look into the relocation issue again, and that his office is handling that. They asked USACE-Baltimore if there were any concerns about the safety protocols in place or a change in unacceptable risk to the residents. USACE-Baltimore's response was no. USACE felt they are finding what they were prepared to find with the site protocols and engineering controls in place. Beyond that, USACE-Baltimore is not aware of what General Bostick's office's schedule or intentions are.

Question from C. Dietrich, Community Member – In your risk scenarios, you are assuming that the maximum possible disaster is the release of one liter of lewisite. You informed us today you found now one intact, 1 liter bottle. Is there any container that you found that will go beyond one liter?

D. Noble confirmed that USACE has found pieces, including bottlenecks, of containers thought to be larger than a liter. But they have never found an intact container greater than a liter and the largest container found that still had liquid in it was 0.5 liter. The intact 1 liter container did not have liquid in it, but solid material.

Question from C. Dietrich, Community Member – And the fact that you did find pieces of containers that went significantly beyond the 1 liter capacity does not cause you to reflect on any of the variables that should go into your risk assessment?

D. Noble answered that no, they had this information when they started planning for this event. They had found larger pieces that probably came from larger containers in 2010, but have never found an intact container larger than 1 liter. Containers seen in the Sgt. Maurer photo have been larger than a liter, but an intact container that is larger than a liter has not been recovered. So the assumption at this time is that 1

liter of lewisite, and also 1 liter of arsenic trichloride, is still a safe, conservative quantity to use in a risk calculation.

Question from N. Wells, ANC3D Commissioner – I understand you are shutting down the dig when events are held at the President's home and when there are athletic events. Is that correct?

D. Noble replied they take pauses at times based on what is going on in the neighborhood nearby, including athletics, or events at 4835 and 4801. If there are a large number of people that might be coming into the downwind hazard areas, and they are not usual residents or visitors, but are those who are not trained in Shelter-in-Place (SIP), USACE does not perform intrusive work in that time, but still does other work at the site.

For an athletic event it could be could be hundreds of people at times, including other teams and spectators. So they will suspend intrusive work.

The project is usually down for an hour to an hour and half at midday for safety and monitoring checks. So if there is a midday event, the crew will pick work back up again when the event's over.

Question from T. Smith, RAB Member – Does that result in any kind of appreciable delay?

D. Noble answered no, because most of the events happen in the evening or on weekends when the crews are not working. It is estimated that in 95% of cases when intrusive work has been suspended, those suspensions started at 2:00 or 3:00 in the afternoon.

Question from G. Durrin, Community Member – Don’t you think this is a little prejudicial that you don’t support Christine and her family because they're there, but support these people visiting the AU President's house? Is their life or their health worth more than hers or her children?

D. Noble responded that it is simply the idea the visitors have not been trained to SIP. They acknowledge that during intrusive work, small numbers of people pass through the work site that have not been trained in SIP. But when USACE knows that there will be a lot of people coming within the SIP zone between 8:00 am and 4:00 pm, the crews pause intrusive operations and do something else productive during that time.

III. Community Items

No Community Items

IV. Open Discussion and Future RAB Agenda Development

D. Noble asked the RAB if they would you like the next RAB meeting to be July 8th or July 15th. Ralph Cantral, RAB Member, made a motion to accept this date change. Lee Monsein seconded this motion.

All RAB members voted in favor of the date change for the July meeting to July15th.

V. Public Comments

D. Noble asked if there were any topics the audience wishes to further discuss.

No additional public comments or questions were shared.

D. Noble thanked everyone for attending.

VI. Adjourn

The meeting was adjourned at 9:12 PM.