FINAL REPORT

SPRING VALLEY
FORMERLY USED DEFENSE SITE
SITEWIDE GROUNDWATER
WASHINGTON, D.C.
DERP FUDS PROJECT NO: C03DC091813

NO ACTION
RECORD OF DECISION

Prepared by:

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June 2025

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µg/L	micrograms per liter
AECOM	AECOM Technical Services, Inc.
amsl	above mean sea level
ATSDR	Agency for Toxic Substances and Disease Registry
AU	American University
AUES	American University Experiment Station
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COC	contaminant of concern
COPC	contaminant of potential concern
CWM	chemical warfare materiel
D.C.	District of Columbia
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DOEE	District Department of Energy and Environment
DWHA	Drinking Water Health Advisory
EPA	Environmental Protection Agency
EPC	exposure point concentration
EU	exposure unit
FUDS	Formerly Used Defense Sites
HHRA	human health risk assessment
HI	hazard index
IRIS	Integrated Risk Information System
kg	kilogram
L	liter
MC	munitions constituents
MCL	maximum contaminant level
mg	milligram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ND	non-detect
OU	Operable Unit
PP	Proposed Plan

PPRTVs	Provisional Peer-Reviewed Toxicity Values
PSB	Public Safety Building
RI	Remedial Investigation
ROD	Record of Decision
RSL	Regional Screening Level
SLERA	Screening Level Ecological Risk Assessment
SV	Spring Valley
SVFUDS	Spring Valley Formerly Used Defense Site
SVOC	semi-volatile organic compounds
UCL	upper confidence limit
U.S.	United States
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
VOC	volatile organic compound

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DECLARATION

SECTION ONE: DECLARATION

1.1 PROJECT NAME AND LOCATION

This Record of Decision (ROD) presents the decision of No Action required for Sitewide Groundwater at the Spring Valley Formerly Used Defense Site (SVFUDS), referred to hereafter as the "Site," in Washington District of Columbia (D.C.) pursuant to Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The United States (U.S.) Environmental Protection Agency (EPA) identification number for the Site is DCD983971136, Groundwater Operable Unit (OU) 02. The Formerly Used Defense Sites number for SVFUDS is C03DC0918. The Federal Facilities Identification Number for the Site is DC39799F833000. The Site is not on the National Priorities List. The No Action designation described in this ROD is applicable to the Sitewide Groundwater project only.

1.2 STATEMENT OF BASIS AND PURPOSE

This ROD is issued by the U.S. Army Corps of Engineers (USACE) Baltimore District. The Department of Defense (DoD) is the lead agency under the Defense Environmental Restoration Program for the Formerly Used Defense Sites (FUDS) Program, and USACE executes the FUDS Program on behalf of DoD. The No Action decision resulted from the investigation and assessment of the Site adhering to the CERCLA of 1980, as amended, 42 U.S. Code §9601 et. seq., the Superfund Amendments and Reauthorization Act of 1986, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 Code of Federal Regulations (CFR) Part 300, and the Defense Environmental Restoration Program (DERP) [10 U.S.C. § 2701 et seq.].

The No Action decision is supported by the following evidence gathered during the Remedial Investigation (RI) and additional work documented in an RI Addendum:

- Human Health Risk Assessment (HHRA) – The No Action decision is the appropriate decision for the SVFUDS groundwater project because the RI addendum did not identify unacceptable risks to human receptors to groundwater. Therefore, no CERCLA action is necessary to ensure protection of human health and the environment. USACE expects the No Action decision will satisfy the following statutory requirements of CERCLA §121(b):
    - Be protective of human health and the environment;
    - Comply with Applicable or Relevant and Appropriate Requirements; and
    - Be cost-effective.

  The other CERCLA requirements (e.g., treatment as a principal element) do not apply to a No Action decision because the RI Addendum and HHRA did not identify any

contaminants of concern (COCs) in the SVFUDS groundwater that would require a remedial action.

This decision is based on the Administrative Record file for this Site. The D.C. Department of Energy and Environment (DOEE) and Region 3 of the EPA concur with the No Action decision.

1.3 DESCRIPTION OF SELECT REMEDY

USACE has determined that no CERCLA action is necessary to protect human health or the environment.

1.4 STATUATORY DETERMINATIONS

Based on the results of the RI, no remedial action for groundwater is necessary to ensure the protection of human health and the environment at SVFUDS. The DoD expects the No Action decision will satisfy the statutory requirements of CERCLA §121(b): (1) be protective of human health and the environment; (2) comply with Applicable or Relevant and Appropriate Requirements; and (3) be cost-effective. The other requirements, (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable and (5) satisfy the preference for treatment as a principal element, do not apply to a No Action decision.

Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a five-year review will not be required for this remedial action.

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1.5 AUTHORIZATION SIGNATURE

This ROD presents the selected response action for Spring Valley FUDS Sitewide Groundwater project C03DC091813. The DoD is the lead agency under the DERP at the Spring Valley Formerly Used Defense Site, and USACE has developed this ROD for DoD consistent with CERCLA (as amended) and the NCP. This ROD will be incorporated into the larger Administrative Record File for Spring Valley, which is available for public view at:

USACE, Baltimore District
ATTN: Public Affairs
2 Hopkins Plaza
Baltimore, MD 21201

This ROD, presenting the selected remedy of No Action with a present worth cost of $0, is approved by the undersigned and pursuant to the delegated authority in the Assistant Secretary of the Army for Installations, Energy and Environment (ASA[(IE&E]) memorandum dated 25 May 2022 subject: Assignment of Mission Execution Functions Associated with DoD Lead Agent Responsibilities for the Formerly Used Defense Sites Program, and subsequent re-delegations.

APPROVED:

18-Jul-2025

Ravi I. Ajodah, SES
Regional Programs Director
North Atlantic Division

Date

DECLARATION

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Decision Summary

SECTION TWO: DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND BRIEF DESCRIPTION

The Spring Valley Formerly Used Defense Site (SVFUDS) property is located in Washington, D.C. SVFUDS was a World War I (WWI) experiment station that researched the testing, production, development, and effects of noxious gas, chemical warfare materiel (CWM), antidotes, and protective masks. Figure 1 illustrates the location of the SVFUDS within Washington, D.C. The Site consists of approximately 661 acres in the northwest section of Washington, D.C. and encompasses approximately 1,600 private properties, including several embassies and foreign properties, as well as American University (AU) and Wesley Seminary. Lead and support agencies and other governmental stakeholders include the DoD, U.S. Army, USACE Baltimore District, EPA Region 3 and DOEE. This project addresses Sitewide Groundwater at SVFUDS (FUDS NO: C03DC091813). As this ROD selects No Action as the remedy for Sitewide Groundwater, no sources for cleanup monies will be required.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

This section provides background information for the Site, including a description of Site activities and a general summary of the types of contamination found.

2.2.1 Site History

During WWI, the U.S. Government established the AU Experiment Station (AUES) to investigate the testing, production, and effects of noxious gases, antidotes, and protective masks. The AUES, located on the current grounds of AU, used additional property in the vicinity to conduct this research and develop CWM, including mustard and lewisite agents, as well as adamsite, irritants, and smokes. After the war, these activities were transferred to other locations and the AUES property was returned to the owners. Chemical releases to the environment and waste disposal associated with the historic AUES activities caused the former AUES and surrounding area to be designated a FUDS, eligible for environmental investigation and remediation.

More information on the Spring Valley project and history can be found at:
http://www.nab.usace.army.mil/Home/SpringValley/

2.2.2 Removal Actions

Soil and Source Removal Actions

Soil and debris removal activities were conducted at SVFUDS from 1999 through 2022. It is likely that these actions and others have reduced the amount of chemicals that may have contributed to past groundwater contamination.

The completed SVFUDS removal activities listed below include removal of soil, debris, and munitions in areas near the identified groundwater contamination.

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- Soil investigation and remediation activities included sampling 1,632 residential, Federal, D.C., and commercial properties for arsenic, and 178 were determined to require cleanup, primarily through excavation of arsenic-contaminated soil. These removal actions included removal of soil on the AU campus upgradient of the identified groundwater contamination, including soil removal at the Child Development Center and the AU Lots as part of a Time Critical Removal Action.
- USACE identified and removed munitions and debris from burial pits and several debris fields containing more than 1,000 ordnance items, including rounds filled with chemical agent. Two of the burial pits were located at 4801 Glenbrook Road and were investigated and cleaned up between March 1999 and March 2000. A third burial pit straddled the area between 4801 and 4825 Glenbrook Road N.W.
- From the Lot 18 Debris Area on AU and vicinity, several hundred pounds of AUES-related debris and over 20 pieces of munitions have been removed.
- The final Remedial Action for 4825 Glenbrook Road included removal of soil down to bedrock on most of the property. From 2013 through 2020, the USACE remediated, removed, or recovered: one munitions and explosive of concern (MEC) item, 14 CWM glass intact containers, 1,311 pounds of munition debris (MD), 1,061 pounds of scrap metal, 678 pounds of scrap glass, and 3,127 cubic yards of contaminated soil (USACE, 2021).
- The Final Site-Wide Decision Document included requirements to investigate and remove any potential Army-related contamination under the old Public Safety Building (PSB) if the building was demolished and the basement slab was removed (USACE, 2017). AU removed the PSB in August 2017, and USACE is currently removing soil and debris at the PSB (USACE, 2024).

Groundwater Investigations

The Sitewide Groundwater RI (USACE, 2016) assessed groundwater chemistry through the installation of a groundwater monitoring network at three Exposure Units (EUs). Figure 2 presents a map showing the monitoring wells and the EUs at the Site. The network was used to collect groundwater samples for chemical analysis. Groundwater samples were collected from 56 different groundwater monitoring locations. At some locations, multiple vertical intervals were sampled, for a total of 84 discrete monitored intervals, including a pre-existing sump and vault. Chemicals representing the following classes were analyzed: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, explosives, chemical agents and agent breakdown products, and other chemicals including perchlorate. As monitoring results became available and were evaluated, the Partners (i.e., USACE Baltimore District, DOEE, and EPA Region 3) narrowed the focus of the analytical program throughout the course of the investigation.

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After evaluating all the data collected during the sitewide Groundwater RI (USACE, 2016), the Partners determined that there were two COCs identified (arsenic and perchlorate) that could pose an unacceptable risk if groundwater were used as a drinking water source in the future within exposure unit 2 (EU2). Figure 3 presents the EU2 groundwater monitoring well network. The decision-making process is discussed further in Section 2.7.

The HHRA conducted as part of the sitewide Groundwater RI (USACE, 2016) indicated that exposure to groundwater at EU1 and EU3 posed no unacceptable risk for all human receptors and concluded that there was an unacceptable risk from perchlorate and arsenic in EU2 groundwater and that there was evidence that the concentrations of perchlorate and arsenic were stable or decreasing at several monitoring well locations within EU2.

Therefore, the USACE and the United States Geological Survey (USGS) conducted additional EU2 groundwater sampling and analysis of arsenic and perchlorate. The 2019 through 2021 groundwater monitoring well results at EU2 further supported the sitewide Groundwater RI (USACE, 2016) conclusions that arsenic and perchlorate groundwater concentrations were stable or decreasing. The additional data collection, evaluation, and risk evaluation for EU2 is documented in the Addendum to the Groundwater Remedial Investigation Report (USACE, 2023). The HHRA in this report determined that exposure to groundwater at EU2 posed no unacceptable risk for all human receptors. Refer to Section 2.7 Site Risks for a more detailed discussion.

More information on the Spring Valley project and history can be found at:
http://www.nab.usace.army.mil/Home/SpringValley/

2.3 COMMUNITY PARTICIPATION

The RI Addendum and Proposed Plan (PP) for the Spring Valley FUDS Sitewide Groundwater project in Washington, D.C. were made available to the public in August 2024. Both current and reasonably anticipated future land use scenarios were evaluated in the sitewide groundwater risk assessments. The sitewide groundwater RI, RI addendum, HHRAs, and other site investigation documents can be found in the Administrative Record file and the information repository maintained at the D.C. Public Library, Tenley-Friendship Library Branch. The notice of the availability of these two documents was published in the Washington Post in August 2024. A public comment period was held from August 7, 2024, to September 20, 2024. In addition, a public meeting was held on August 13, 2024, to present the Proposed Plan to a broader community audience than those that had already been involved at the Site. At this meeting, representatives from the USACE Baltimore District, EPA Region 3, and the DOEE, answered questions about the Site. **Attachment A** provides a transcript of the public meeting, and a record of the comments have been placed in the Administrative File. No written comments were received on the PP during the comment period. There were several questions posed during the meeting, but none changed the No Action decision for the Site.

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2.4 SCOPE AND ROLE OF EXPOSURE UNITS

As with many sites, the aerial extent of areas to be addressed at Spring Valley are complex. As a result, USACE has organized the sitewide groundwater project into three EUs (see Figure 2):

- Exposure Unit 1: Sibley Memorial Hospital
- Exposure Unit 2: American University
- Exposure Unit 3: FUDS Boundary (excluding EU1 and EU2)

2.4.1 Groundwater

The SVFUDS groundwater monitoring locations are organized into three EUs to support the HHRA in the sitewide Groundwater RI (USACE, 2016). Groundwater EU1 encompasses these monitoring locations proximate to Sibley Memorial Hospital: Sibley Sump, MW-21, MW-22, MW-46S, and MW-46D. Groundwater EU2 encompasses these monitoring locations proximate to AU's Kreeger Hall and the adjacent Glenbrook Road/Rockwood Parkway area: MP-2 (eight intervals), MW-24, MW-25, MW-44, MW-45S, MW45D, PZ-4S, and PZ-4D. Groundwater EU3 encompasses all other groundwater monitoring locations within the FUDS boundary not associated with groundwater EUs 1 and 2.

2.4.2 Surface water

Surface water exposure was evaluated in the sitewide Groundwater RI (USACE, 2016) report to determine if the Site's groundwater was discharging to surface water bodies located within the Site's boundary. Figure 3-2 from this report shows the Surface Water Monitoring Network. The SVFUDS surface water monitoring locations were organized into two surface water EUs (surface water EU1 and surface water EU2) to support the HHRA. Surface water EU1 encompassed the monitoring locations along East Creek where impacted groundwater seeps into the creek: Lot 18 Drain, SW-1, SW-11, and SW-21. Surface water EU2 encompassed all other surface water monitoring locations not associated with surface water EU1, excluding SW-3. SW-3 served as a background surface water sampling location where the Potomac River water first enters the Dalecarlia Reservoir. The findings of the sitewide Groundwater RI indicated that although there is evidence that the groundwater in EU2 seeps into East Creek (Surface Water EU1), there has been no evidence of contamination of East Creek with arsenic, which suggests that the natural attenuation processes provide protection to East Creek, relative to arsenic.

2.5 SITE CHARACTERISTICS

This section presents brief descriptions of the Site topography, surface water flow and geology for the Site as presented in the sitewide Groundwater RI (USACE, 2016).

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2.5.1 Topography

The highest elevations are about 400 feet above mean sea level (ft amsl) along Nebraska Avenue proximate to Ward Circle. From here, elevations decrease toward the west and northwest to about 150 ft amsl proximate to the Dalecarlia Reservoir and MacArthur Boulevard, located just west of the western SVFUDS boundary. Beyond Dalecarlia Reservoir and MacArthur Boulevard, the land elevation decreases rapidly toward the southwest to an elevation of about 30 ft amsl along the Potomac River.

The natural topography has been altered in some areas by soil grading activities associated with land development. Several streams and unnamed tributaries trend westward across the SVFUDS, along small valleys that influence SVFUDS topography.

2.5.2 Surface water

There are a few small streams and tributaries that cross the SVFUDS. In general, they flow toward the vicinity of the Dalecarlia Reservoir, which was a natural valley before construction of the reservoir. Today, all surface water that flows toward the reservoir is routed around the reservoir along manufactured drainage controls.

With the exception of East Creek, the small streams and tributaries are unnamed. East Creek originates at the former Lot 18 Debris area, several hundred feet west of the intersection of Rockwood Parkway and Nebraska Avenue. It flows northwestward along Rockwood Parkway and Glenbrook Road toward the vicinity of the Dalecarlia Reservoir, where it is routed around the reservoir. At several locations along the way, East Creek is routed through culverts below streets, such as: 1) the intersection area for Glenbrook Rd, Rockwood Parkway, Indian Lane, and Overlook Road; and 2) Dalecarlia Parkway.

The flow of a short unnamed intermittent tributary is westward through Spring Valley Park for a distance of about 500 feet between 49th Street, where it originates, and Fordham Road, where it is routed into a subsurface storm drain system.

Near the northern SVFUDS boundary, between Warren Place, and Yuma Street, the flow of an unnamed tributary is westward for a distance of about 1,200 feet from its point of origin (near the intersection of 50th Place, and 50th Street) to a conduit under Dalecarlia Parkway. Immediately west of the parkway the tributary surfaces from the conduit and then flows around the north end of Dalecarlia Reservoir.

In addition to these streams and tributaries, there are numerous unnamed groundwater seeps that produce minor surface water during wet weather conditions.

2.5.3 Geology

The two general types of geologic materials that occur within the SVFUDS are bedrock associated with the Piedmont Physiographic Province and limited areas of sedimentary deposits associated with the Coastal Plain Physiographic Province. Where natural weathering of the bedrock has occurred, it has been converted to a material called saprolite. Bedrock mapped

within the SVFUDS comprises metamorphic and intrusive igneous rock types (Fleming et al., 1994). The vast majority of the study area is underlain by Piedmont bedrock, with only a small, isolated remnant of Coastal Plain sedimentary deposits underlying Nebraska Avenue and portions of Loughboro Road, along the southeastern SVFUDS boundary. These coastal plain sedimentary deposits are composed of the Miocene-aged Coastal Plain Terrace Formation (Fleming et al., 1994). This formation is fluvial in origin and consists of highly weathered, crudely bedded gravel, sand, silt, and clay (Fleming et al., 1994).

2.6 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Spring Valley in Washington, D.C. has had a dynamic land use history, changing from farmland to a military base to a residential neighborhood over approximately the last 120 years. The following subsections provide information about current and future uses.

2.6.1 Land Uses

Today, the SVFUDS encompasses approximately 1,600 private homes, including several embassies and foreign properties, as well as the American University and Wesley Seminary.

The District of Columbia/Maryland line trends southwest to northeast and is located to the northwest of SVFUDS. Massachusetts Avenue, MacArthur Boulevard, Loughboro Road and Dalecarlia Parkway are the main thoroughfares carrying traffic through the area. The nearest Metro station is over a mile away, but Metrobus service connects SVFUDS to the rest of the Washington, D.C. region. Most residents travel by car. Land use of the Site is expected to remain unchanged for at least the next 50 years.

2.6.2 Groundwater and Surface Water Uses

No drinking water supply wells are currently present on the SVFUDS. The drinking water in Washington, D.C., and Arlington County, Virginia, which include the SVFUDS area, are obtained from surface water (the Potomac River) which is stored in the Dalecarlia Reservoir. The reservoir is located along the western extent of the SVFUDS. Groundwater usage from a SVFUDS water supply well is not anticipated in the future (50 years) and will likely never be considered as surface water is abundant in the area.

2.6.3 No Action Decision

The 2016 HHRA and 2023 HHRA Addendum risk results determined that no unacceptable risk was identified from exposure to the SVFUDS groundwater (USACE, 2016 and 2023). Actions to control exposure to chemicals in groundwater do not warrant consideration.

2.7 SITE RISKS

A comprehensive RI and HHRA were completed in 2016. The findings of the sitewide Groundwater RI and HHRA (USACE, 2016) identified acceptable risk to both current and future scenarios at EU1 and EU3, but identified unacceptable risks posed by the potential future use of groundwater as drinking water at EU2. The findings of the sitewide Groundwater RI and HHRA

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indicate that actions to control exposure to chemicals in groundwater and/or surface water at EU1 and EU3 do not warrant consideration. A Screening Level Ecological Risk Assessment (SLERA) was previously conducted that considered SVFUDS surface water chemistry (USACE, 2010). The SLERA concluded that ecological risks were negligible and that there was no need for additional ecological risk assessment or remediation on the basis of ecological risks (USACE, 2016).

The 2016 sitewide Groundwater RI Report for the SVFUDS concluded that there was an unacceptable risk from perchlorate and arsenic in EU2 groundwater and that there was evidence that the concentrations of perchlorate and arsenic were stable or decreasing at several monitoring well locations within EU2 (USACE, 2016).

Therefore, the USACE Baltimore District and USGS conducted additional EU2 groundwater sampling and analysis of arsenic and perchlorate during the following months: September 2019, June 2020, and March 2021. The 2023 RI Addendum uses the 2019 through 2021 groundwater results in the revised SVFUDS EU2 groundwater HHRA conducted in 2023 (USACE, 2023).

2.7.1 Groundwater Contaminants of Potential Concern for EU2

The 2023 HHRA addendum identified the following groundwater COPCs for EU2: arsenic, cobalt, manganese, and perchlorate.

Table 1: Summary Statistics for EU2 Groundwater COPCs

EU2 Groundwater COPC	Range of Detected Concentrations at EU2 (µg/L)	Frequency of Detection	Exposure Point Concentration (µg/L)	EPA 2023 Tap Water RSL (µg/L)	Drinking Water Criteria (µg/L)
Arsenic	0.1 - 8.6	6/8	5.83 (95UCL)	0.052	10 (MCL)
Cobalt	0.34 - 2.5	3/4	2.5 (Max)	0.6	No value
Manganese	6 - 946	5/5	946 (Max)	43	No value
Perchlorate	0.5 - 32.5	8/8	19.61 (95UCL)	1.4	15 (DWHA)

Notes:
COPC – chemical of potential concern; DWHA – drinking water health advisory; EPA – U.S. Environmental Protection Agency; Max – maximum detected concentration; MCL – maximum contaminant level; µg/L – microgram per liter; RSL – regional screening level; 95UCL – 95% upper confidence limit.

The EU2 groundwater COPCs were carried forward in the 2023 RI Addendum HHRA for further evaluation, because their maximum detected concentrations exceeded the EPA tap water regional screening levels (RSLs). Even though cobalt and manganese were eliminated from the SVFUDS monitoring program in 2011 because the Partners believed these metals were not related to any source area releases, they were detected above the EPA tap water RSLs and were carried forward into the 2016 and 2023 HHRAs to examine potential cumulative exposure.

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2.7.2 Exposure Assessment Summary

Two exposure scenario timeframes were evaluated in the HHRA: current/future and future. The current/future scenarios represent current Site conditions and the populations that are exposed to SVFUDS groundwater. The "future" portion of this timeframe assumes that the exposure or use of SVFUDS groundwater did not change in the future. Hereafter, the current/future scenario is referred to as the current scenario.

The future timeframe represented a change in the accessibility of groundwater at SVFUDS; these scenarios assume that a drinking water well is installed at the Site and future receptors are using the groundwater for potable purposes (e.g., drinking water, bathing, and cleaning).

Potential Human Receptors: The current adult and child resident currently lives on the Site. Both the current and future child and adult resident are potentially exposed to groundwater if it is used to water lawns or run sprinklers. Groundwater exposure pathways include incidental ingestion and dermal contact. The future adult and child resident are assumed to use the groundwater as a future source of tap water. Currently, the city supplies water to the residences at the SVFUDS. If future residents install a potable well on their property, the potable groundwater pathways would include ingestion of groundwater as a tap water source and dermal contact while showering or bathing.

The current AU student is assumed to be a young adult who lives on campus year-round while pursuing a bachelor's degree for four years. Currently, the city supplies drinking water to the university. Also, the AU student is not likely to be regularly watering lawns or gardens as part of his/her on-campus activities. The future AU student is a student assumed to use the groundwater as a future source of tap water. Similar to the future resident, the potable use of groundwater exposure pathways includes ingestion of groundwater as tap water and dermal contact while showering or bathing.

The current indoor office worker is assumed to spend 8 hours per day for 250 days per year working in a commercial or university building. No complete exposure pathways exist for the indoor office worker because no volatile COPCs were identified in the groundwater, and city-supplied water is used for tap water. The future indoor office worker is an office worker assumed to use groundwater as a future tap water source. Groundwater pathways include ingestion of groundwater as tap water and dermal contact while showering or bathing.

The current outdoor worker is assumed to be a landscaper who maintains the grounds around the university or commercial/industrial buildings. Groundwater exposure pathways include incidental ingestion and dermal exposure while watering the lawns. Future use of groundwater as a tap water source is addressed under the future indoor office worker scenario.

The current construction/utility worker is assumed to dig into the subsurface for land re-development construction projects or to access utility lines. This receptor is not likely to be exposed to SVFUDS groundwater because the groundwater is deeper than a typical construction-

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related excavation depth of 10 ft bgs. As such, this receptor is not addressed in the 2016 and 2023 HHRAs.

Exposure Point Concentrations (EPCs): EPA's ProUCL 5.2 statistical software program guidance recommends having a minimum of 8 to 10 data points to calculate representative 95 percent (%) UCLs of the mean concentration (EPA, 2022). Enough data points (8 or more) were available for arsenic and perchlorate to derive representative 95% UCLs for the EU2 groundwater. A higher level of uncertainty is associated with any 95% UCL that is derived using less than 8 sample points. Maximum detected concentrations were used as groundwater EPCs for cobalt and manganese in the 2016 and 2023 HHRAs because the number of data points were less than 8. The 2019 through 2021 groundwater data set for arsenic and perchlorate were used to derive 95% UCLs for the 2023 HHRA groundwater evaluation of EU2.

2.7.3 Toxicity Assessment Summary

The purpose of the toxicity or dose-response assessment is to identify the types of adverse health effects a chemical may potentially cause and to define the relationship between the dose of a chemical and the likelihood or magnitude of an adverse effect (response) (EPA, 1989). EPA (2003) provides guidance regarding a hierarchy of sources for human health dose-response values to be used in a risk assessment: Tier 1 – EPA's Integrated Risk Information System (IRIS); Tier 2 – Provisional Peer-Reviewed Toxicity Values (PPRTVs); and Tier 3 – Other sources of dose-response values such as California EPA's Office of Environmental Health and Hazard Assessment. The cancer and non-cancer toxicity values used for the EU2 groundwater risk calculations are presented in Table 2. Arsenic is the only COPC that EPA identifies as a human carcinogen. Cobalt may be carcinogenic via the inhalation route, but cobalt is not volatile and therefore not likely to impact a human receptor while watering lawns or showering using EU2 groundwater.

Dermal toxicity values are not available for the dermal route of exposure. However, the dermal exposure pathway was evaluated by adjusting oral slope factors and oral reference doses if the gastrointestinal absorption fraction for a chemical is less than 50% (EPA, 2004). For the EU2 groundwater COPCs, the gastrointestinal absorption fraction was greater than 50%. The oral slope factors and oral reference doses were not adjusted to evaluate the dermal exposure pathways (EPA, 2004).

2.7.4 Risk Characterization Summary

The remediation goal set forth in the NCP allows a cumulative cancer risk of 1×10^{4} (one in 10,000) to 1×10^{-6} (one in one million) as the acceptable cancer risk range. In effect, estimated risks that are less than 1×10^{-6} are considered negligible. Risks that are greater than 1×10^{-4} are considered sufficient justification for undertaking remedial action (i.e., unacceptable cancer risk). Risks in the intermediate range between these two values can be considered acceptable on a case-by-case basis. The HHRAs used 1×10^{-4} as the cancer risk threshold for unacceptable risk.

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Table 2: Cancer and Non-Cancer Toxicity Information for EU2 Groundwater COPCs

EU2 Groundwater COPC	Cancer Oral Slope Factor (mg/kg-day)$^{-1}$	Cancer Inhalation Unit Risk ($\mu g/m^3$)$^{-1}$	Weight of Evidence/ Cancer Guideline Description	Non-Cancer Oral Reference Dose (mg/kg-day)	Oral Target Organ	Non-Cancer Inhalation Reference Concentration (mg/m^3)	Inhalation Target Organ	Combined Uncertainty and Modifying Factors	
								Oral	Inhalation
Arsenic	1.5 (I)	0.0043 (I)	A (Human carcinogen)	0.0003 (I)	CV, DM	0.000015 (C)	CV, DM, DV, NV, RP, RS	3	--
Cobalt	--	0.009 (P)	Likely to be carcinogenic to humans by inhalation route	0.0003 (P)	EN	0.000006 (P)	RS	300	100
Manganese	--	--	D (Not classifiable as to human carcinogenicity)	0.024 (I)	NV	0.00005 (I)	NV	3	1000
Perchlorate	--	--	Not likely to be carcinogenic to humans	0.0007 (I)	EN	--	--	10	--

Notes:

C – California EPA; COPC – chemical of potential concern; CV – cardiovascular; DM – dermal; DV – developmental; EN – endocrine; I - IRIS; mg/kg-day – milligram per kilogram-day; $\mu g/m^3$ – micrograms per cubic meter; mg/m^3 – milligrams per cubic meter; NV – nervous system; P – PPRTV; RP – reproductive; RS - respiratory.

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For carcinogens, risks are generally expressed as the incremental probability of a receptor developing cancer over a lifetime as a result of exposure to a carcinogen. The excess lifetime cancer risk (ELCR) is derived from Equation 1:

Equation 1: ELCR = CDI × SF

Parameter	Parameter Definition	Units
ELCR	Excess Lifetime Cancer Risk	Unitless
CDI	Chronic Daily Intake averaged over 70 years	mg/kg-day
SF	Slope Factor	$(mg/kg\text{-}day)^{-1}$

These risks are probabilities that usually are expressed in scientific notation (e.g., 1×10^{-4} or 1E-04). An ELCR of 1E-06 indicates that a person experiencing the reasonable maximum exposure estimate has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This is referred to as an ELCR because it would be in addition to the risks of cancer that a person faces from other causes. The chance of a person developing cancer from all other causes has been estimated to be as high as one in three (American Cancer Society, 2025). EPA's generally acceptable cancer risk range for site-related exposure is 1×10^{-4} (1E-04) to 1×10^{-6} (1E-06). Table 3 presents the future lifetime resident cancer risk results for EU2 groundwater.

For non-cancer hazards, potential adverse health effects cannot be ruled out if the target hazard index (HI) is greater than 1. If the HI exceeds 1, a target organ analysis is conducted. Only chemicals that act upon the same target organ would be expected to be additive (i.e., chemicals acting together to be toxic to the same target organ) (EPA, 1991). The HHRAs used the non-cancer HI of 1 as a cumulative and target organ-specific threshold. Tables 4 and 5 present the non-cancer hazard results for the future adult and child resident for EU2 groundwater.

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., lifetime) with a reference dose (RfD) derived for a similar exposure period. An RfD represents a level that a person may be exposed to that is not expected to cause any deleterious effect. The ratio of exposure to toxicity is called a hazard quotient (HQ). An HQ less than 1 indicates that a person's dose of a single contaminant is less than the RfD, and that toxic noncarcinogenic effects from that contaminant are not likely. The HI is generated by adding the HQs for all the COPCs that affect the same target organ (e.g., endocrine system) or that act through the same mechanism of action within a medium or across all media to which a given individual may reasonably be exposed. An HI less than 1 indicates that based on the sum of all the HQs from different contaminants and exposure routes (e.g., ingestion, dermal contact, etc.), toxic noncarcinogenic effects are unlikely. An HI greater than 1 indicates that site-related exposures may present a risk to human health. The HQ is derived using Equation 2:

Equation 2: Non-cancer HQ = CDI/RfD

Parameter	Parameter Definition	Units
HQ	Hazard Quotient	Unitless
CDI	Chronic Daily Intake	mg/kg-day
RfD	Reference Dose	mg/kg-day

Decision Summary

Table 3: Risk Characterization Summary - Carcinogens for EU2 Groundwater COPCs, Lifetime Resident

Scenario Timeframe: Future

Receptor Population: Lifetime Resident

Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Ingestion	Inhalation (Shower/Bath)	Dermal	Exposure Route Total
EU2 Groundwater	EU2 Groundwater	Direct Contact - Potable Use	Arsenic	1E-04	N/A	7E-07	1E-04
		Direct Contact - Potable Use	Cobalt	--	N/A	--	--
		Direct Contact - Potable Use	Manganese	--	N/A	--	--
		Direct Contact - Potable Use	Perchlorate	--	N/A	--	--
					Groundwater Risk Total =		**1E-04**
					Total Risk =		**1E-04**

Key

-- : Toxicity criteria are not available to quantitatively address this route of exposure.
N/A: Route of exposure is not applicable for this medium since the chemicals of potential concern are not volatile.

Decision Summary

Table 4: Risk Characterization Summary – Non-Carcinogens for EU2 Groundwater COPCs, Adult Resident

Scenario Timeframe: Future

Receptor Population: Resident

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Primary Target Organ System	Ingestion	Inhalation (Shower/Bath)	Dermal	Exposure Route Total
EU2 Groundwater	EU2 Groundwater	Direct Contact - Potable Use	Arsenic	Cardiovascular, Dermal	0.58	N/A	0.0042	0.58
		Direct Contact - Potable Use	Cobalt	Endocrine	0.25	N/A	0.00072	0.25
		Direct Contact - Potable Use	Manganese	Nervous	1	N/A	0.21	1
		Direct Contact - Potable Use	Perchlorate	Endocrine	0.84	N/A	0.0061	0.85

Groundwater Hazard Index Total =	**3**
Receptor Hazard Index =	**3**
Cardiovascular System Hazard Index =	**0.58**
Dermal System Hazard Index =	**0.58**
Endocrine System Hazard Index =	**1**
Nervous System Hazard Index =	**1**

Key

N/A: Route of exposure is not applicable for this medium because the chemicals of potential concern are not volatile.

Decision Summary

Table 5: Risk Characterization Summary – Non-Carcinogens for EU2 Groundwater COPCs, Child Resident

Scenario Timeframe: Future

Receptor Population: Resident

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Primary Target Organ System	Ingestion	Inhalation (Shower/Bath)	Dermal	Exposure Route Total
EU2 Groundwater	EU2 Groundwater	Direct Contact - Potable Use	Arsenic	Cardiovascular, Dermal	0.97	N/A	0.0043	0.97
		Direct Contact - Potable Use	Cobalt	Endocrine	0.42	N/A	0.00074	0.42
		Direct Contact - Potable Use	Manganese	Nervous	2	N/A	0.22	2
		Direct Contact - Potable Use	Perchlorate	Endocrine	1.4	N/A	0.0062	1.4

Groundwater Hazard Index Total = 5

Receptor Hazard Index = 5

Cardiovascular System Hazard Index = 0.97

Dermal System Hazard Index = 0.97

Endocrine System Hazard Index = 2

Nervous System Hazard Index = 2

Key

N/A: Route of exposure is not applicable for this medium because the chemicals of potential concern are not volatile.

Decision Summary

2016 HHRA Results for EU1 and EU3: In the 2016 HHRA, the cumulative ELCRs and non-cancer HIs were below the cancer risk threshold (1E-04) and non-cancer HI threshold (1) for the surface water medium (USACE, 2016). This indicates no requirement to take any actions to influence chemical concentrations in surface water to be protective of the human health current/future and future scenarios. Surface water was eliminated as a medium of concern for EU1.

For EU1 groundwater, the current (watering) and future (potable use) scenario results were below the cancer risk threshold of 1×10^{-4} (1E-04) and no chemicals drive a non-cancer target organ-specific HI greater than the non-cancer threshold of 1. Actions to control exposure to chemicals in groundwater EU1 do not warrant consideration.

For EU3 groundwater, the current (watering) and future (potable use) scenario results were below the cancer risk threshold of 1×10^{-4} (1E-04). Following additional lines of evidence review, no COCs were identified for the non-cancer HI evaluation even though target organ-specific HIs were above 1 for cobalt (outlier concentration identified) and manganese (random low, naturally occurring concentrations). Actions to control exposure to chemicals in groundwater EU3 do not warrant consideration.

2016 and 2023 HHRA Results for EU2: The 2019 through 2021 groundwater monitoring well results at EU2 further supported the 2016 sitewide Groundwater RI and HHRA conclusions that arsenic and perchlorate groundwater concentrations were stable or decreasing. The 2023 HHRA addendum indicates the current SVFUDS chemical concentrations do not pose cancer risks or non-cancer HIs above 1E-06 or 1, respectively, to the current on-site resident, and outdoor worker (landscaper) where the EU2 groundwater is used for watering.

For the future scenarios (i.e., EU2 groundwater is used for potable purposes), the cumulative cancer risk estimates for the lifetime resident equals but does not exceed the cumulative cancer risk threshold. The cumulative cancer risk threshold of 1×10^{-4} (1E-04) represents the upper end of the EPA acceptable cancer risk range; adverse health effects are not likely for the lifetime future resident from drinking the SVFUDS groundwater. The cumulative cancer risk estimates for the future AU student and indoor office worker were 2×10^{-5} which is within the acceptable cancer risk range.

Cobalt and manganese contributed to non-cancer target organ specific HIs being above 1 for the endocrine and nervous systems. However, cobalt and manganese were eliminated from the SVFUDS groundwater monitoring program because pervasive levels of the metals were detected throughout the SVFUDS groundwater and are not likely to be attributed to a source area release.

Maximum detected concentrations were used as the groundwater EPCs for cobalt and manganese. The maximum detected concentration for cobalt is an estimated value (i.e., "J"-flag). The maximum detected concentration for manganese was identified as a potential outlier but was retained as the EPC due to the small size of the groundwater data set (less than 8 data points) and cobalt's chemical-specific HQs are below 1.

Perchlorate contributed to the non-cancer target organ-specific HI being above 1 for the endocrine system for the child resident. However, the 2016 sitewide Groundwater RI and HHRA describes how potential source material from the pits have been removed. Also, perchlorate exceedances of the DWHA of 15 µg/L are limited to collocated monitoring wells MW-44 and PZ-4D. The 2016 sitewide Groundwater RI findings indicate that a plume of perchlorate was not identified at EU2. Finally, the 2023 groundwater trend analysis conducted as part of the RI indicates that perchlorate either has no trend or decreasing trends in the EU2 groundwater monitoring wells.

The 2023 HHRA risk results and lines of evidence review support eliminating arsenic, cobalt, manganese, and perchlorate as groundwater COCs at EU2. Currently, the city supplies drinking water to the university. Actions to control exposure to chemicals in groundwater EU2 do not warrant consideration.

No COCs were identified in groundwater at SVFUDS that would cause adverse health effect to current and future receptors. Per the CERCLA process, no further assessment or response action is warranted for the SVFUDS groundwater.

2.8 DOCUMENTATION OF SIGNIFICANT CHANGES

The PP for the project was released for public comment on August 8, 2024. The PP described the No Action decision. No written comments were submitted during the public comment period, and the No Action decision has not changed. There were a few questions addressed during the public meeting which are documented in **Attachment A**. None of these comments affected the outcome of the recommended action.

Responsiveness Summary

SECTION THREE: RESPONSIVENESS SUMMARY

The USACE Baltimore District provided public notice and the opportunity to comment on the PP in accordance with requirements of CERCLA and the NCP. The NCP calls for a document that summarizes the proposed RA alternatives, including the agency-selected alternative, and provides for public participation and comments in reviewing the PP.

A Public Meeting Summary is included as Attachment A to this ROD. It summarizes the materials USACE presented to community members and other attendees at the public meeting, held on August 13, 2024.

The intent of the public meeting was to allow community attendees the opportunity to interact with the project delivery team and discuss the proposed No Action. A public comment period ran from August 7, 2024 (the date the notice was made available to the public) to September 20, 2024.

The public meeting was held at the American University School of International Service, Abramson Family Founders Room (SIS T7) and via Videoconference (Webex). The meeting addenda included introductions of the project team, a description of the process used to perform evaluations and cleanups, background information, a brief history of RI efforts, and to discuss the final PP for the SVFUDS.

It was stated that the RI is complete and that this is the proposed plan stage and that there will be no feasibility study (FS) for this project. The FS was eliminated because the RI and risk assessment findings indicated that there was no unacceptable risk at the Site. No remedial alternatives need to be evaluated in a FS. As explained during the meeting, the CERCLA process then moves to a no-action proposed plan which requires public and regulator feedback. The public and regulator feedback is documented in this responsiveness summary.

No questions were received from the online community, EPA Region 3, and DOEE. Questions were received during the meeting by one known and one unidentified person. One attendee asked for clarification of the military definitions of munitions which was addressed, and another regarding the acceptance of the no-action selection for the Site. All Partners answered “Yes” during the meeting, that the no-action option was acceptable.

At the end of the meeting, an unidentified person asked questions regarding the Dalecarlia Reservoir. The questions are summarized as follows: 1) Did you determine that there was no groundwater infiltration to the reservoir? 2) Did you sample the wells on the western side the reservoir, (e.g., EC-13? 3) Did you use any tracers in the groundwater testing? Todd Beckwith, the USACE representative, addressed the questions and stated that infiltration of groundwater to the reservoir had not been ruled out but that the results from groundwater samples surrounding the reservoir did not contain any significant detections. Beckwith further explained that the older wells on the western side of the reservoir (with a different numbering system from the RI wells) were determined to have not been impacted by Army activities based on their locations and

Responsiveness Summary

therefore were never considered for inclusion in the RI program. No tracer tests were used in the groundwater studies at SVFUDS.

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FIGURES

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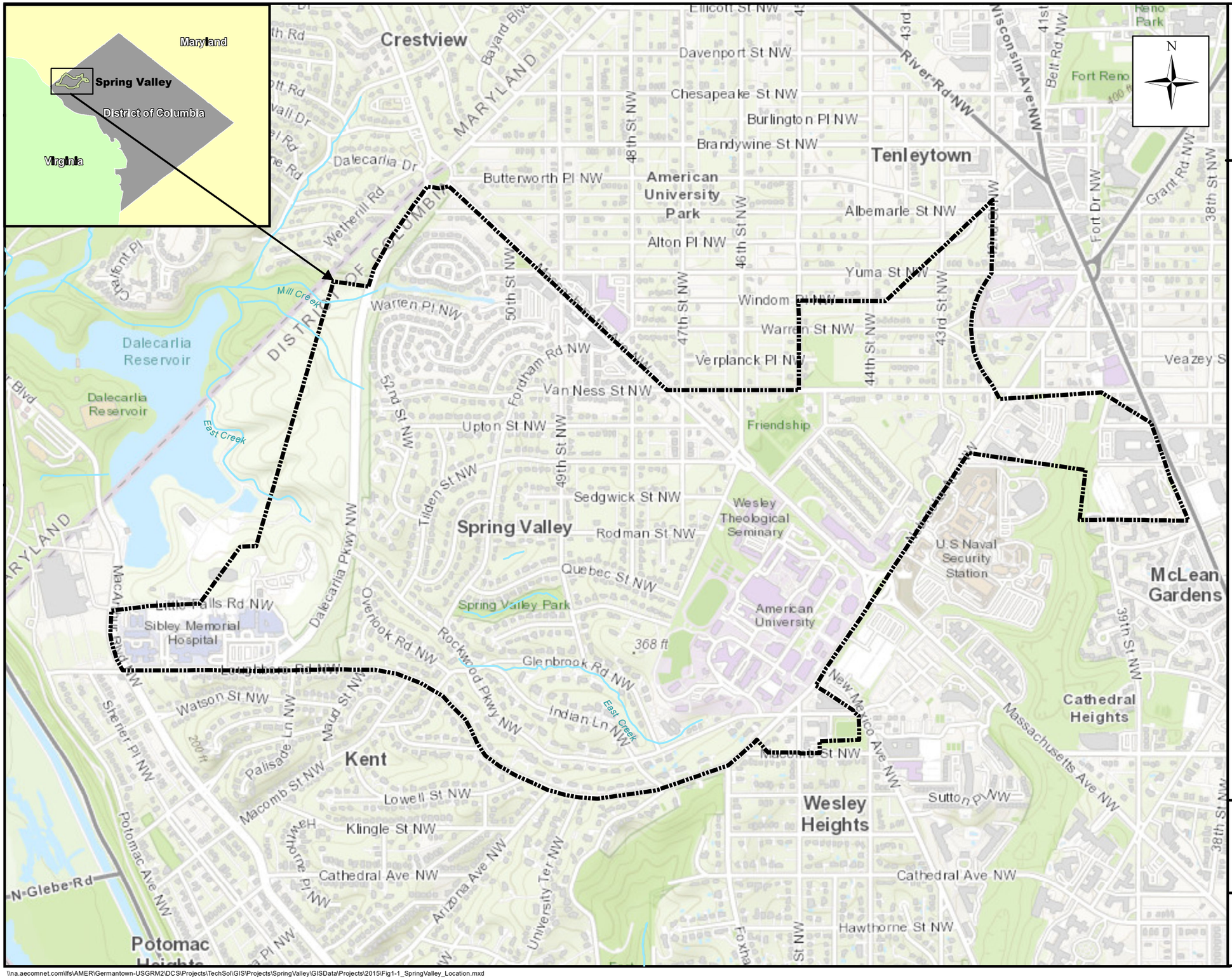

Figure 1
Spring Valley FUDS Location

Spring Valley FUDS
Washington, DC

Legend

- Spring Valley FUDS Boundary

Base Map

- Building/Structure
- Non-Residential Urban
- Parks and Recreation
- Water
- Stream or Creek
- Topographic Contour
- Road

0 600 1,200 2,400 Feet

Original Scale: 1:14,400
Date: 2/23/2015
Revised: 11/23/2021
GIS: AER
PM: BE

Map Source: World Topographic Map, ESRI ArcGIS Online and data partners, 2011.

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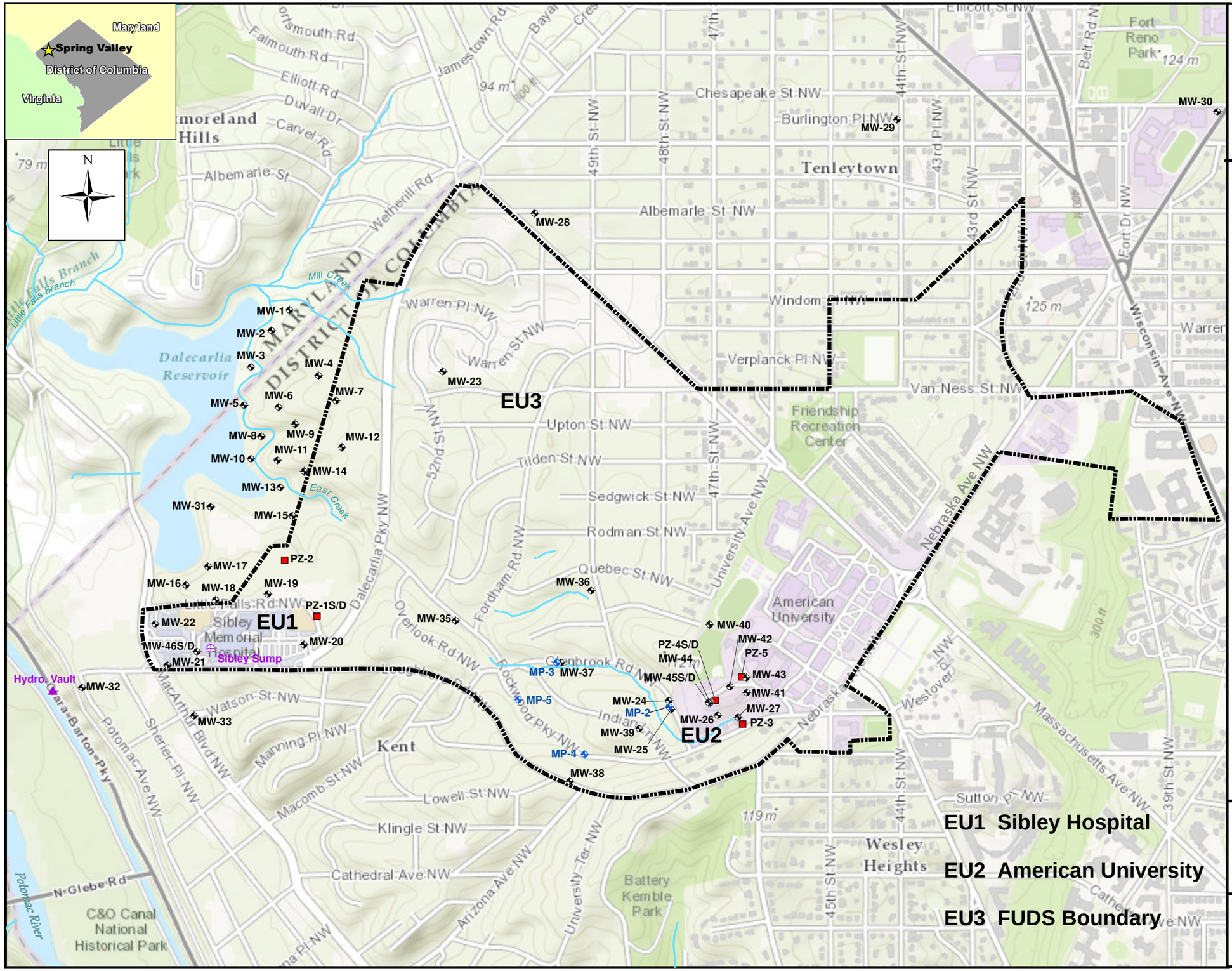

Figure 2
Groundwater Monitoring Network

Spring Valley FUDS
Washington, DC

Legend

- Spring Valley FUDS Boundary
- Piezometer
- Monitoring Well
- Multiport Well
- Sibley Sump
- Hydroelectric Unit Vault

S/D = monitoring well or piezometer with two screened intervals in the same borehole.

Base Map

- Building/Structure
- Non-Residential Urban
- Parks and Recreation
- Water
- Stream or Creek
- Topographic Contour
- Road

0 600 1,200 2,400 Feet

EU1 Sibley Hospital

EU2 American University

EU3 FUDS Boundary minus EU1 and EU2

Original Scale: 1:14,400
Date: 2/23/2015
Revised: 2/25/2015
GIS: AER
PM: BE
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Map Source: World Topographic Map, ESRI ArcGIS Online and data partners, 2011.

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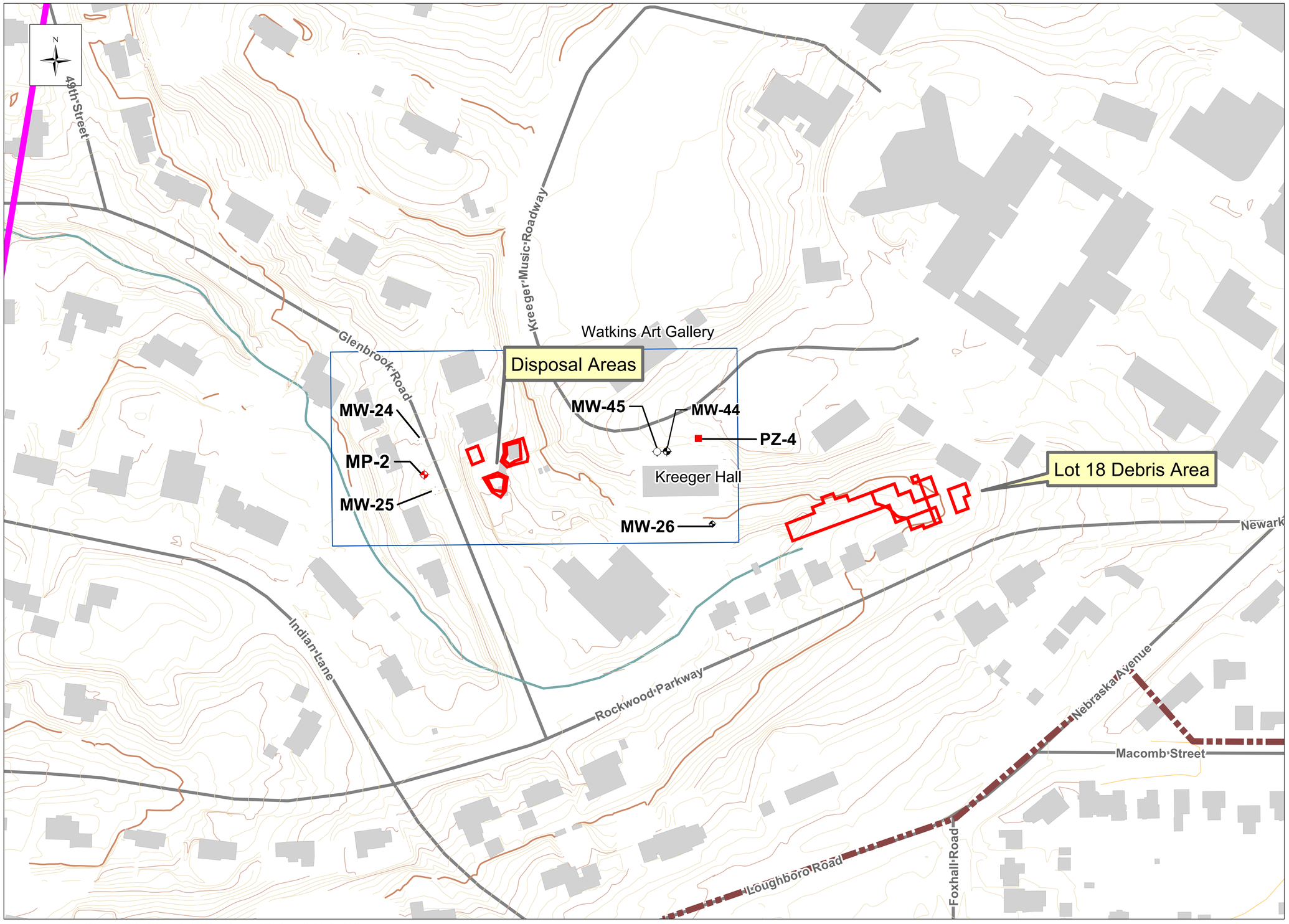

Figure 3
EU2 Groundwater Monitoring Network

Spring Valley FUDS
Washington, DC

Legend

- Exposure Unit 2
- **MW-16** Well ID
- USACE Monitoring Wells
- Multiport Well
  - MW: Monitoring Well
  - MP: Multiport Well
  - PZ: Piezometer
- Spring Valley Boundary
- Pit
- Trench
- Building
- Water
- Road

Topography (USACE)

- 50-Foot Contour
- 10-Foot Contour
- 2-Foot Contour

Topography (USGS)

- 50-Foot Contour
- 10-Foot Contour
- Fault (Fleming, et al. 1994)
- State Boundary

0 30 60 120 180 240 Feet

All concentrations in ug/L
FD = Field Duplicate
ND = Non Detection
NT = Not Tested
J = Estimated Concentration
(a) = Samples collected as grab samples (not low flow) during the Kreeger Hall area soil boring program.

MCL for Arsenic = 10 ug/L (ppb)
Interim Drinking Water Health Advisory (DWHA) for Perchlorate = 15 ug/L (ppb)

Detections above MCL or DWHA

Original Scale: 1:14,400
Date: 12/20/2021
Revised: 2/23/2022
GIS: AER
PM: BE

Map Source: Project base map, c.2004.

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ATTACHMENT A, TRANSCRIPT OF PUBLIC MEETING

U.S. ARMY CORPS OF ENGINEERS

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REMEDIAL INVESTIGATION OF SPRING VALLEY FUDS GROUNDWATER IN D.C.

+++++

TUESDAY

AUGUST 13, 2024

+++++

The meeting was convened at American University School of International Service Abramson Family Founders Room (SIS T7) and via Videoconference, at 7:00 p.m. EDT, Cynthia Mitchell facilitating.

PRESENT

CYNTHIA MITCHELL, USACE Baltimore District
TODD BECKWITH, USACE Baltimore District
DAN NOBLE, USACE Baltimore District
DAVID GRAY, USACE Baltimore District
JOE VITELLO, Environmental Protection Agency
KELSEY THARP, D.C. Department of Energy and Environment
KAYLIN LEWINE, AECOM

ALSO PRESENT

ALLEN HENGST
LAWRENCE MILLER
MARYA PICKERING

ADDITIONALLY

ONE UNKNOWN PERSON &

WEBEX PARTICIPANTS:

- Gretchen Welshofer, AECOM
-
-
-
-
-

Box added by AECOM

P-R-O-C-E-E-D-I-N-G-S

7:02 p.m.

MS. MITCHELL: Good evening, everyone, my name is Cynthia Mitchell, Public Affairs Specialist for the Baltimore District Corps of Engineers. Thank you for joining us tonight for the Spring Valley formerly used defense cite groundwater proposed plan community meeting. It's a mouthful here. Thank you for joining us both in person today, and then we do also extend a welcome to those who are joining us virtually.

For those that are not aware, we are at American University tonight, so we'd also like to extend our gratitude for having them host us this evening.

I ask anyone that's here in person to please silence your cell phones at this time, prior to getting started with the presentation. And then for those of you joining us virtually, please remain on mute throughout the presentation. There will be an opportunity after the fact for Q&As which you'll be welcome to pose.

You are also welcome to type any questions you may have into the chat function on the WebEx. And we will address those as well.

Today's presentation will be recorded, and we are recording now. The recording, along with the slide deck and any of the related documents, including the final proposed plan, are all available on the Spring Valley website.

For those who are present and wish to submit a comment, there is a court reporter in the back of the room who can assist after today's presentation.

I'll go ahead and get it turned over to our groundwater PM, Todd Beckwith, excuse me.

MR. BECKWITH: Thanks, Cynthia. All right, hello, everybody. Thanks for coming out on this beautiful summer evening to talk about the proposed plan for the Spring Valley FUDS site.

I'll go to the next slide. Cynthia, are you controlling the slides? Okay, all right.

Just a quick agenda review, we're going to go through introductions of our project team,

talk about the process we follow when we're doing our investigations and cleanup here at Spring Valley.

For anybody not familiar with the project, we're going to give a quick background on the Spring Valley FUDS project. Then we'll go into details on how we got to this point, a history of the Remedial Investigation Report that we completed in 2016, and then the 2023 follow-on Remedial Investigation Addendum.

Then we'll identify what our proposed plan is for the groundwater, talk about next steps, and how you can comment on the document, and then open it up for questions. But if anybody wants to ask a question along the way, please feel free to do so.

All right, next slide. All right, no, previous slide, there you go. Project team, we have with us here from the Baltimore District - Dan Noble who's the Spring Valley program manager doing great things out here for many years, and Cynthia Mitchell, who just did the introductions, and David

Gray, who's our technical support for this meeting here.

And then of course we have our regulatory partners that we work very closely with on this project. All of our decisions that we make on the Spring Valley Project are done in close coordination with our regulatory partners.

From the EPA, we've got Joe Vitello, and from the District Department of Energy and the Environment we've got Kelsey Tharp.

All right. And then of course we have our contractor who helps us write all of our documents and do work out in the field. AECOM is our contractor support on this, and we've got Kaylin Lewine from AECOM here with us. She's our risk assessor. And we also have Gretchen Welshofer, who's participating via WebEx in this meeting.

All right, why are we here? We're here to talk about the proposed plan for the Spring Valley FUDS groundwater, go through our rationale for what our proposed plan is at the site. And the purpose of the plan is that we want to get feedback and

input from the public on what we have identified as our preferred approach. And so that's what we're doing here tonight.

Next slide, please. Okay, this is our CERCLA Process slide, this is the slide that we follow when we're doing our investigations and remediation in the formerly used defense site program which Spring Valley is part of.

The law that we follow is a Comprehensive Environmental Response, Compensation, and Liability Act. So this outlines the process we follow. It starts with a preliminary assessment, the site inspection, and then goes into the remedial investigation.

We've completed all of those tasks. You know, we've just finished the remedial investigation, and now we are at the proposed plan stage. So we're not doing a feasibility study for this project. Because the conclusions from our remedial investigation was that there was no unacceptable risk at the site. Therefore there are

no alternatives for us to consider in a feasibility study.

So in that situation, you move from the remedial investigation into a no-action proposed plan. So that's what we've identified as our preferred approach for the project, and I'll go into more details on that.

And again, the proposed plan is the point in the process where we're looking for public feedback and input on what we're proposing to do at the site. So we will consider any comments that we receive from the public and address those comments in a responsiveness summary.

And if we think that our approaches still make sense, and we want to move forward with a no-action decision, then we'd move into the decision document phase and do a final record of decision that memorializes what that remedy is, no action.

And in that situation, of course, we wouldn't be doing the remedial design, or remedial action, or long term monitoring. But we have done that on other projects in Spring Valley.

Okay, next slide. All right, a quick background for anyone who's not familiar with the Spring Valley FUDS project, the reason we're out here, we the Corps of Engineers are out here doing investigations and cleanup, is because the site was used by the Army.

They established the American University Experiment Station in this area back during World War I. When they did testing of chemical agents, research and testing of chemical agents, equipment, and munitions.

So we, the Corps of Engineers, are out here doing investigations. We're responsible in the formerly used Defense Site program to investigate and remediate any threats to human health and the environment that were caused by past Department of Defense activities. So that's why we're out here doing investigations, we're seeing if the World War I activities have created any contamination issues.

And we started, we, the Corps of Engineers, started doing investigations back in 1993 and have done a number of different investigations

over the years. And here's just a summary of some of the major activities that we did.

We had our arsenic soil investigations and removals. So we did soil investigations on over 1,600 properties and some arsenic soil removals on over 170 properties around the neighborhood. We've done various munition investigations and recovered, you know, over 1,100 munition items.

We had major project on Glenbrook Road where we removed soil and debris down to bedrock, and then also had a major remedial action where we did soil and debris removal at Public Safety. And of course, what we're here to talk about tonight is our groundwater investigations.

There's munitions and explosives of concern. That would be a munition that you find that has a potential explosive hazard. Munition debris is an inert piece of metal that looks like a munition, but it doesn't have and explosives in it.

Clarification: the above statement was made in response to a question about describing the difference between Munitions and Explosives of Concern (MEC) and Munitions Debris (MD).

Box added by AECOM

Next slide. All right, so we started the remedial investigation for groundwater back in 2004, and this is just a summary of the main objectives we had for the groundwater RI.

We wanted to find out where was the groundwater occurring, you know, how deep was it, which direction was it flowing, how fast was it flowing, and what was the chemistry of the groundwater and surface water in the area.

And we wanted to determine did the Army's past activities out here impact the groundwater quality and, if it did, determine nature and extent of any detected contamination.

And then an important piece of any remedial investigation is the risk assessment. So we wanted to access whether there are any potential human health risks posed by the chemicals that we did detect in the groundwater and surface water. The risk assessment is what we base our decisions on, on whether or not additional actions, whether remedial actions, are required at the site.

Next slide. Okay, this figure is showing you what our groundwater monitoring looks like, our monitoring network looks like around Spring Valley.

I know this is difficult to see. It's a large area, but every one of those dots that are on that figure represent the monitoring well that we had installed and sampled.

We had put in 56 monitoring wells across the Spring Valley area and sampled 27 different surface water locations with the sampling being conducted from 2005 through 2021.

Sure, go ahead, Allen.

MR. HENGST: Could you explain where PZ2, PZ15, the ones around Sibley Hospital in red, where are those wells? PZ15 and PZ2.

MR. BECKWITH: Well you're right, they're by Sibley Hospital.

MR. HENGST: So that PZ15 looks like it's on the Army Corps property. And the PZ2 looks like it's in the woods.

MR. BECKWITH: Well the PZ15 looks like it's not on the Army Corps property, but PZ2 does

look like it's on the Army Corps property. So there are many of the wells that we installed --

MR. HENGST: I see them.

MR. BECKWITH: -- are on --

MR. HENGST: Those are the red ones.

MR. BECKWITH: Right.

MR. HENGST: So I'm guessing they're high.

MR. BECKWITH: Well --

MR. HENGST: In the red, no?

MR. BECKWITH: The red are piezometers--

MR. HENGST: Oh.

MR. BECKWITH: -- which are a little different than the monitoring wells, yes.

MR. HENGST: All right. Never mind.

MS. MITCHELL: Can you state what the question was, for those who are listening in?

MR. HENGST: I just wanted to know where the piezometers around Sibley Hospital were located.

MR. BECKWITH: All right, so when we started our groundwater study, one of the first things we did was we -- you can see we put a bunch

of wells by the Dalecarlia Reservoir that's DC's drinking water source. So we wanted to make sure that there was no impact to the Dalecarlia Reservoir. And the conclusion to that was no, there's no impact to the reservoir.

And then we had some other focus areas for investigation which included the Sibley Hospital that we just pointed out down in that area. And then up on American University, where we had some detections of arsenic and perchlorate above drinking water standards.

All right, next slide? And then for groundwater chemistry, all those samples we collected at the monitoring wells and surface water locations were sent off to laboratories. And they analyzed for over 250 different chemicals to determine were there any potential impacts from the Army's activities.

We took those laboratory results, compared them to drinking water standards, and regulatory screening criteria. If what we detected at the lab exceeded any of those screening criteria,

it was identified as a chemical of potential concern. And then those COPCs were then further evaluated in the human health risk assessment.

Next slide. All right, so purposes of doing the risk assessment, we broke the Spring Valley area into three separate exposure units, three different areas to be evaluated.

Exposure Unit 1 was the area around Sibley Hospital where we had some detections of perchlorate.

Exposure Unit 2 was the area around American University where we had some detections of arsenic and perchlorate.

And then Exposure Unit 3 was considered to be the rest of the Spring Valley area where we really didn't have any significant detections in the groundwater.

Next slide. This slide is explaining the process we went through to do our risk assessment and giving you some details on how we went about doing our risk assessment.

So a human health risk assessment is an estimate of a potential for health impact. We do our human health risk assessments following EPA's guidance. EPA has guidance they put out on how to conduct human health risk assessments. So we follow that very strictly.

And, you know, there's various conservative assumptions that are used in the risk assessment on how individuals at your site may be exposed to various contaminated media. For us it's, you know, groundwater and surface water for this project, and then for how long they may be exposed to that contaminated media.

And then the risk assessment also considers published toxicity data for the chemicals of concern that you've identified for your site.

So for the groundwater projects, the receptors we considered were the adult resident, a child resident, an American University student, or site workers. And then we also considered both a current and a potential future exposure scenario.

The current exposure scenario we considered, you know, groundwater isn't used as a drinking water source. We assumed under our current scenario that someone installed a well, pumped the groundwater out, and watered their lawns or their gardens with that groundwater. And exposure was occurring through that mechanism.

For the future exposure scenario, we assumed that groundwater was used as a drinking water source, in the event that in the future there's some need to use the groundwater as a drinking water source.

Next slide. All right, the conclusions from the 2016 RI report and the risk assessment that we did, for Exposure Units 1 and Exposure Units 3, there was no unacceptable risk identified for either the current or future exposure scenarios. So based on those findings, no action is required for Exposure Unit 1 and Exposure Unit 3.

For Exposure Unit 2, the RI determined no unacceptable risk under the current exposure scenario, the watering lawns and the, you know,

watering your garden scenario. But for Exposure Unit 2, if groundwater was used as a drinking water source, arsenic and perchlorate were chemicals of concern that posed an unacceptable risk.

Next slide, please. All right, this figure is showing you an up close area around American University that we've identified as Exposure Unit 2. That oval is the area we call Exposure Unit 2 where we had detections of perchlorate that were creating that unacceptable risk that I just talked about.

So Monitoring Well 24 and 25, and Multi-port Well Number 2, if you can see them on that figure, those are located on Glenbrook Road, essentially across the street from some disposal areas that we cleaned up.

And then PZ 4S, 4D, 44, and 45S and D are wells that were installed on American University in front of Kreeger Hall. Those wells had perchlorate concentrations in them above drinking water standards.

And then the wells down on Glenbrook Road had arsenic concentrations above drinking water standards.

Next slide. Okay, so we have the conclusions from the 2016 RI report that said unacceptable risk for arsenic and perchlorate. So we proceeded to do a feasibility study to look at different alternatives on how to address those risks.

And assuming that the groundwater is used as a drinking water source, we put out draft proposed plan for the project back in 2018 just through our regulatory partners, the EPA and the District.

Our initial plan, we had proposed doing land use controls with long term monitoring. That would have entailed just notifying property owners that they shouldn't use the groundwater as a drinking water source and that we would continue to just monitor the groundwater concentrations.

But the District and EPA disagreed with that proposed plan, you know, essentially based on

a policy disagreement over cleanup requirements for how we do cleanup at CERCLA sites.

So we wanted to try to resolve and find a path forward on how we're going to move forward on the groundwater project. We went into what we call a dispute resolution process, had several meetings to talk about how we should move forward. And the conclusion was we should go out there and sample the wells again.

Our thinking was there's -- we thought the concentrations were decreasing, there are a lot of removals that had occurred in the area. And so if we went out and did further sampling, it's very likely that the concentrations may have gotten down below to acceptable levels.

So the plan was we put a hold on the proposed plan, go out and do the additional sampling, and see where the concentrations were at now. So we did that in 2019, 2020, and 2021. We had sampling events that were done to evaluate were there any changes in the perchlorate and arsenic concentrations in EU2.

And then we -- the 2023 remedial investigation addendum report summarizes the results of that sampling activity and updates the risk assessment using that new data.

Next slide. Okay, this is just a brief summary of what the sampling results were from the 2019 to 2021 sampling efforts.

When we went back out there and sampled the wells again, for arsenic, at that point in 2019 or 2020, all of our sample results were then below the drinking water standard, what we call the maximum contaminate level of ten micrograms per liter.

So all the concentrations of arsenic had decreased and were now below the drinking water standards. And then for perchlorate, our concentrations also had decreased, but we still had some detections above the drinking water health advisory level of 15 micrograms per liter at MW44 and PZ4D, which are wells that are right next to one another in front of Kreeger Hall and just sampled at a couple of different depths.

We updated, we did a new trend analysis to see, you know, what did the trend analysis say. And concentrations were either stable or decreasing. That means for each individual well there was either no trend in the concentrations or the concentrations were decreasing.

Next slide. All right, so here's a summary of the updated risk assessment that we did in the 2023 remedial investigation addendum, based on the new data that we had collected.

So the risk assessment looks at both the cancer risks and non-cancer risks. For the cancer risk, the conclusion was there was no unacceptable cancer risk for either the current or future land use. For non-cancer hazards, for the current land use, the watering lawns and gardens, there is no unacceptable risk identified for the non-cancer risk.

But for the future land use scenario, if ground water was used as a drinking water source, there was a slight exceedance of the hazard index

threshold of one due to the presence of perchlorate, cobalt and manganese.

Next slide, so based on those results, we went back and, you know, we had some slight exceedances of the hazard index due to the perchlorate, cobalt, and manganese.

We went back and got with our regulatory partners, talked about what does this mean. Is there sufficient evidence to support a conclusion that there's, you know, unacceptable risk at the site?

And, you know, after we looked at the data, and looked at all the various lines of evidence, our conclusion was that the perchlorate, cobalt, and manganese should be eliminated as chemicals of concern for the site.

MR. HENGST: So the one location where you have perchlorate above the drinking water health advisory, is that in front of Kreeger?

MR. BECKWITH: Yes.

MR. HENGST: And that's PZ4 or MW whatever, 44?

MR. BECKWITH: Yes, 4D and MW44, yes. You know, one --

MR. HENGST: And what are those readings? What are the latest readings, 2021?

MR. BECKWITH: That was the last time we sampled them.

MR. HENGST: And what was the reading?

MR. BECKWITH: I don't remember the exact number, the maximum concentration was 32.

MR. HENGST: So 32.

MR. BECKWITH: Yes.

MR. HENGST: Still in 2021.

MR. BECKWITH: Right.

MR. HENGST: Okay, thank you.

MR. BECKWITH: So here is part of the rationale for why we thought these chemicals should be removed as chemicals of concern. For perchlorate one of the factors we considered, we were down to one location, the area in front of Kreeger Hall where we had detections above the drinking water health advisory level. You know, the location was

in an area where the ground water didn't really move very fast.

So there was a very small quantity of contamination here. So based on, you know, EPA's interpretation of how you determine whether there's a plume out there, essentially we didn't have a plume that existed there. Just having one monitoring point that has an exceedance doesn't constitute a plume that requires an action.

And then other factors we considered was there's a -- our trend analysis indicates that the perchlorate concentrations are continuing to decrease.

We did a number of different soil source removals at the site that should help to continue to improve the groundwater quality. And, you know, the hazard portion for perchlorate was only 1.4 which was only slightly above the hazard index threshold to begin with.

So based on those factors, we felt that perchlorate should be eliminated as a chemical of

concern, we being us, EPA, and the District Department of the Environment.

And then for manganese and cobalt, these are naturally occurring metals that are commonly found in the environment. And when we looked at the data we felt like there really wasn't evidence that these detections that we have for manganese and cobalt were site related. They're pervasive in the environment, and we didn't believe that these should be considered contaminants of concern for the site.

All right, next slide. So based on all those explanations that I just went through, you know, the 2023 RI Addendum identified no actionable risk from exposure to groundwater. So based on that, we are proposing our preferred approach is no action for the Spring Valley FUDS groundwater.

All right. Next slide. So what happens next, our public comment period, it started last week, and it runs through September 20th, 2024. We will consider any public comments that we receive on the identified preferred remedy. We'll provide a formal response to those comments in the response

to the summary that will go in the final record of decision.

And we're expecting, you know, if we think this, if this approach, if there's no public comments that changes our opinion on this preferred approach, we think we'll get a record of decision and final decision by September of next year.

And as always with all of our documents, we put them in our information repository at the Tenley-Friendship Library and also up online on our Spring Valley website with the Corps of Engineers.

Next slide.

MR. HENGST: So the partners are okay with the no action? All the partners?

MR. BECKWITH: Yes.

Additionally:

Both EPA and DOEE answered yes to this question during the meeting.

Box added by AECOM

Okay, next slide. All right, here's how to submit comments. We have the, again, we have a 45-day public comment period. We have a meeting recorder here. If you wanted to provide comments tonight, you can go back and tell him what your

comments are, or you can write down your comment and hand it to him.

Or if you wish to email or mail comments to us, there's a mailing address, and an email address here that you can send your comments to. And these are all up on -- all this information is also up on our website that you see here.

Okay. Questions?

Yes, ma'am?

MS. PICKERING: No question, just a thank you for a very informative briefing, and I've been coming to these over the years and I want to commend you on the volume of information that you all have on your website. I've had occasion to go in there off and on over the years, and there's a lot of good information there. So thank you for the thoroughness of your information and for the continuing community outreach.

MR. BECKWITH: Thank you very much.

Yes, sir?

UNKNOWN PERSON: I was a little late, so I may have missed this, but when I came in you were saying that you determined there was no issue to the reservoir and then moved on and focused on the Unit 2.

CORRECTION:

The unknown person was identified by the transcriptionist as Mr. Miller. However, it was later clarified that Mr. Miller did not ask any questions.

Box added by AECOM

MR. BECKWITH: Correct.

UNKNOWN PERSON: Did you determine that by virtue of the results that you got in the sample or do you -- did you gather information that indicated there was no groundwater infiltration of the reservoir?

MR. BECKWITH: Well, that was quite a while ago. We used the sampling results from all those wells that we put around the reservoir, of course, we considered, you know, yes there could be infiltration of groundwater into the reservoir. So we looked at the sampling results. We really didn't see, you know, any significant detections of anything, around the reservoir.

UNKNOWN PERSON: Okay. So it's not that you ruled out infiltration --

MR. BECKWITH: Correct.

UNKNOWN PERSON: -- it's that you ruled out -- that your current tests didn't show that.

MR. BECKWITH: Correct.

UNKNOWN PERSON: In your 2016 RI, you have a map -- it may not be the RI, it may be the groundwater report, you had a map of the groundwater monitoring network.

COURT REPORTER: Sorry, could you put the microphone a little closer?

UNKNOWN PERSON: And it showed several wells on the western side of the reservoir that had a different numbering system. EC-13 was one of them.

MR. BECKWITH: Okay, I --

UNKNOWN PERSON: I think they're older Corps of Engineers wells.

MR. BECKWITH: They very well might be, I don't recall, I don't think they're wells that we would have sampled as part of our project.

UNKNOWN PERSON: That's what I was wondering, because they were on the map in the groundwater report.

MR. BECKWITH: I'd have to go back and look at that again. But they're not wells that would have been impacted by what we were focused on, you know, what the Army or the American University Experiment Station was doing. So, you know, they're on the other side of the reservoir. There's no way they would have been impacted by the Army activity. So we really wouldn't have been interested in those too much.

UNKNOWN PERSON: I was kind of wondering why they were on your map.

MR. BECKWITH: Yes.

UNKNOWN PERSON: Did you use any tracers in the groundwater testing?

MR. BECKWITH: No, we did not.

Okay. Well thanks, everybody, for coming out here and spending some time with us. We appreciate everything.

(Applause.)

MR. BECKWITH: All right.

(Whereupon, the above-entitled matter went off the record at **7:35 p.m.)**