

# EnviroNews

Winter 2023



## Main Installation

The Army continues studies for possible human and ecological health risks and for possible vapor intrusion into buildings at the former Memphis Depot Main Installation.

### Sampling and Risk Assessment

Army completed the plan for soil, sediment, and surface water sampling in May 2022, and the samples were collected and analyzed in 2022. In February 2023, the Army provided a draft report describing sample collection, analyses, and risk assessment to the Tennessee Department of Environment and Conservation (TDEC) and the U.S. Environmental Protection Agency (EPA). The report indicated that no further action was necessary. TDEC approved the report, and EPA provided comments that are being discussed with Army. The comments, responses, and correspondence will be included in the final report.

### Vapor Intrusion Study

TDEC and EPA approved the Vapor Intrusion Sampling and Analysis Plan for the Main Installation in early 2023. Vapor intrusion may come from soil contamination from previous spills or releases, from contaminated groundwater, or from both sources in some areas. Samples are being collected in phases: shallow soil vapor screening, active vapor sampling at depths from 5 feet to about 70 feet below ground surface, and indoor air sampling in some buildings on the Main Installation.

In May and June 2023, Army collected shallow soil vapor screening samples across the Main Installation including areas above groundwater contamination. Additional shallow vapor screening samples were collected in August 2023 to complete screening for contaminant levels in shallow soil vapor.

The active sampling phase began in October 2023 with installation of vapor monitoring points. Army collected samples in November 2023 and will use the sample results to select buildings for indoor air samples.

The vapor intrusion study will show if contaminant vapors are entering buildings and if the vapors are at levels that impact human health. The study will continue through 2024 with the final report scheduled to be completed in early 2025.

Final sampling plans and reports documenting the sampling, results, and recommendations will be available in the online Information Repository at <https://ww3.sam.usace.army.mil/DDMT>. See the EPA "What is Vapor Intrusion" fact sheet for more information on how vapors can enter buildings at [www.epa.gov/vaporintrusion/what-vapor-intrusion](http://www.epa.gov/vaporintrusion/what-vapor-intrusion).



*Matt Barickman, HDR geologist, drilling a hole through the pavement to collect a soil vapor screening sample for the Main Installation vapor intrusion study.*

## Definitions

**Long Term Monitoring:** The collection of samples on an annual or semiannual basis from groundwater monitoring wells associated with an environmental cleanup site. Long term monitoring shows if contaminant levels are increasing or are decreasing. If contaminant levels are increasing, Army will consider changes to the cleanup action or a new cleanup action.

**Risk Assessment:** The process for evaluating the chance of harmful effects to human health or to ecological systems from exposure to an environmental stressor - any physical, chemical, or biological entity that can bring about a harmful effect in humans or ecosystems.

**Finding of Suitability to Transfer:** Documentation supporting a finding that property is compatible with the proposed land use and that the land use restrictions or remedies in place (if any) will protect human health and the environment.

**Vapors:** The gases that form when chemicals evaporate.

## Army Investigating Possible PFAS Contamination

In 2022, the EPA identified per- and polyfluoroalkyl substances (PFAS) as emerging contaminants of concern. The Army conducted a Preliminary Assessment for PFAS-containing materials at the former Memphis Depot to identify areas of potential interest based on use, storage, or disposal of potential PFAS-containing materials, including aqueous film-forming foam generally used to fight fires. See EPA's website for more information about PFAS at <https://www.epa.gov/pfas/pfas-explained>.

The Preliminary Assessment for the Main Installation and Dunn Field included review of available records, a site visit, and interviews for historical and current operations. Twenty-eight areas were identified and evaluated for use, storage, or disposal of PFAS-containing materials; six locations were selected for additional evaluation.

Army conducted a Site Investigation at the six areas with soil and groundwater samples collected at each area. Sediment

and surface water samples were collected where observed at the areas. The detected PFAS chemical levels were compared to conservative screening levels. Detected levels were above screening levels in one or more groundwater samples in all six areas and surface water samples in one area. Detected levels were not above screening levels in the soil and sediment samples. The site investigation report recommended further study at all six areas.

The Site Investigation and Preliminary Assessment reports are available in the online Information Repository. Institutional controls are in place to prevent the use of groundwater at the former Memphis Depot for drinking water. Memphis Light, Gas, and Water (MLGW) provides drinking water. If PFAS are present in groundwater and are later identified as contaminants of concern at the Main Installation and Dunn Field, the current groundwater remedies remain effective to prevent exposure to the contaminants.

## Main Installation Groundwater Update

In 2023, Army moved closer to revising the cleanup plan for groundwater at the Main Installation. The Army submitted the draft Main Installation Focused Feasibility Study Report to TDEC and EPA for review and comment in 2022. TDEC approved the report in January 2023. EPA provided comments that are being discussed with Army. The comments, responses, and correspondence will be included in the final report.

A Feasibility Study documents the analysis of potential treatment alternatives, also called cleanup methods, and explores the advantages and disadvantages of each cleanup method. The Focused Feasibility Study was prepared to review information gained from site investigations, groundwater monitoring, and cleanup actions since the enhanced bioremediation remedy was selected in the 2001 Main Installation Record of Decision.

Cleanup technologies proven to remove contamination from soil vapor and groundwater were evaluated using criteria in the National Contingency Plan and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The selected methods for the Main Installation are air sparging with soil vapor extraction (AS/SVE) for groundwater and soil vapor extraction for soil vapor. These methods have been successfully used at Dunn Field. After completing the Focused Feasibility Study report in 2024, Army will prepare a Revised Proposed Plan, conduct a public meeting, and respond to community comments. Advertisements for the public meeting and comment period will be published in the Commercial Appeal.

The Army plans to complete the Main Installation Record of Decision Amendment in 2025 including TDEC and EPA review and comments. In 2026, the Army will complete a groundwater cleanup action design plan and begin the additional Main Installation groundwater cleanup expected to continue into 2032. All final documents will be available to the community in the Information Repository. See the EPA "Fact Sheet: A Citizen's Guide to Soil Vapor Extraction and Air Sparging" for more information about this groundwater cleanup method at <https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=10002SZK.txt>.

## Off Depot Groundwater Cleanup System Shutdown

Groundwater samples collected since 2021 show that the conditions required to shut down the Off Depot groundwater cleanup system have been met. Army shut down the air sparge/soil vapor extraction system on July 31, 2023, after 12 years of operation.

The Dunn Field Record of Decision Amendment and the Off Depot Remedial Design set reduction of individual contaminant levels below 50 micrograms per liter as the cleanup objective for the Off Depot groundwater cleanup system. System operation was required to continue until groundwater contamination levels from the Dunn Field plume met the objective. Shut down required groundwater samples collected from wells around the cleanup system and to the east toward Dunn Field to have contaminant levels at or below 50 micrograms per liter for 12 months.

The Army will continue to collect groundwater samples as part of Dunn Field groundwater long term monitoring. The cleanup

system will be maintained for two years in case groundwater contaminant levels increase and Army determines the system must be used again.



**Groundwater contamination levels met the required cleanup goals, so the Army stopped operating the Off Depot groundwater cleanup system on July 31, 2023.**

## Five-Year Review

Army conducted the Fifth Five-Year Review from March to June 2022 with community notification for comments on former Memphis Depot cleanup actions appearing in the March 12, 2022, Commercial Appeal. Army evaluates the continued effectiveness of selected cleanup actions at the Main Installation and Dunn Field in five-year reviews because soil and groundwater contaminants remain above levels that allow for unrestricted use and unlimited exposure.

In September 2022, Army submitted the Fifth Five-Year Review Report to EPA and TDEC for review and comment. The report states cleanup actions at Dunn Field have met cleanup goals and the Off Depot Groundwater cleanup system can be shut down, and that groundwater monitoring continues. The report also states the groundwater cleanup action at the Main Installation has not met the cleanup goals and the Feasibility Study is in progress for selection of a new cleanup action.

No one is being exposed to groundwater contaminants since drinking water is provided by MLGW. Other exposure pathways are controlled through land use controls restricting the land use on most of the former Memphis Depot to industrial use only.

Additional cleanup on the Main Installation is needed to meet the cleanup objectives of Safe Drinking Water Act maximum contaminant levels. More information is needed to determine if vapor intrusion from remaining contamination in soil vapor and groundwater at the Main Installation and Dunn Field present an unacceptable risk to human health.

## Dunn Field West Investigation

The Army completed the Dunn Field West Post-ROD Supplemental Investigation report in 2023. The investigation was performed to identify the source of increased contaminant levels in groundwater, to evaluate the potential human health risk and to determine whether additional cleanup action is necessary.

The report noted the potential for unacceptable risk to future onsite workers and current and future offsite residents from contaminants in soil, groundwater, and soil vapor in the Dunn Field West area. Exposure pathways to these contaminants on Dunn Field are incomplete (no one is being exposed to the contaminants) because Dunn Field is not developed and drinking water is provided by MLGW. Exposure pathways for off-site residents are considered to be incomplete because soil contamination is limited to Dunn Field and drinking water is provided by MLGW. However, the vapor intrusion pathway for offsite residents is considered to be potentially complete due to contaminants in groundwater.

A 2009 vapor intrusion study conducted by Army in the Off Depot area found that the soil from ground surface to about 30 feet below ground surface provides a good barrier preventing the vapors from groundwater contaminants to move up through the soil into buildings. Additional study is planned to evaluate the potential risks to current off-site residents from soil vapor intrusion.

Army submitted the draft Dunn Field West Vapor Intrusion Sampling and Analysis Plan to EPA and TDEC for review and comment in August 2023 with sampling scheduled to begin

A new issue, which is not considered to affect protectiveness, is the potential presence of per- and polyfluoroalkyl substances – known as PFAS. The Army began a preliminary assessment and site investigation in 2022 (see PFAS article on Page 2).

TDEC approved the Five-Year Review report without comment. EPA provided comments regarding the Issues/Recommendations and Protectiveness Determinations in the report. The primary revision was a Protectiveness Deferred determination for Dunn Field due to the potential risk from soil vapor intrusion exposure for future onsite workers and offsite residents. The Army considers this issue to affect future protectiveness but not current protectiveness and plans further investigation of soil vapor intrusion at the Dunn Field West area.

Long-term protectiveness of the cleanup actions will be confirmed by continued groundwater sampling, monitoring of land use controls, and monitoring cleanup systems operations. Army added the final Fifth Five-Year Review report to the Administrative Record and published a notice that the report was available to the public in the June 14, 2023, Commercial Appeal.

Army and EPA will submit a final determination of protectiveness after completing the soil vapor intrusion investigation for Dunn Field and the residential area to the west. The Five-Year Review report is available to the community in the online Information Repository.

in 2024. Army is also reviewing the need for cleanup action of the identified soil and groundwater contamination on Dunn Field West.

Following completion of cleanup actions and the planned soil vapor sampling in the residential area west of Dunn Field, a revised Environmental Condition of Property report and a Finding of Suitability to Transfer Amendment will be prepared to document changes to the environmental condition of the property since the 2014 Environmental Condition of Property report.

After finalizing the property transfer documents, Army will conduct appropriate community involvement activities and the General Services Administration will administer a public sale of Dunn Field West. The Army will continue to perform necessary cleanup actions and long-term groundwater monitoring following the transfer.







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## DATED MATERIALS - PLEASE DELIVER THIS IMMEDIATELY

### Former Memphis Depot Information Repository

Information Repository documents are available online at <https://ww3.sam.usace.army.mil/DDMT/>

- 2022 Annual Long Term Monitoring, Revision 1
- 2023 Site Management Plan, Revision 1
- Dunn Field West Post-ROD Supplemental Investigation Report, Revision 1
- Vapor Intrusion Sampling and Analysis Plan, Main Installation, Revision 1
- Fifth Five Year Review, Defense Depot Memphis Tennessee, Revision 1
- Off Depot AS/SVE Year 11 Annual Report, Revision 1
- Preliminary Assessment of Per- and Polyfluoroalkyl Substances at Defense Depot Memphis Tennessee, Final
- Site Investigation Report for Per- and Polyfluoroalkyl Substances at Defense Depot Memphis Tennessee, Final

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