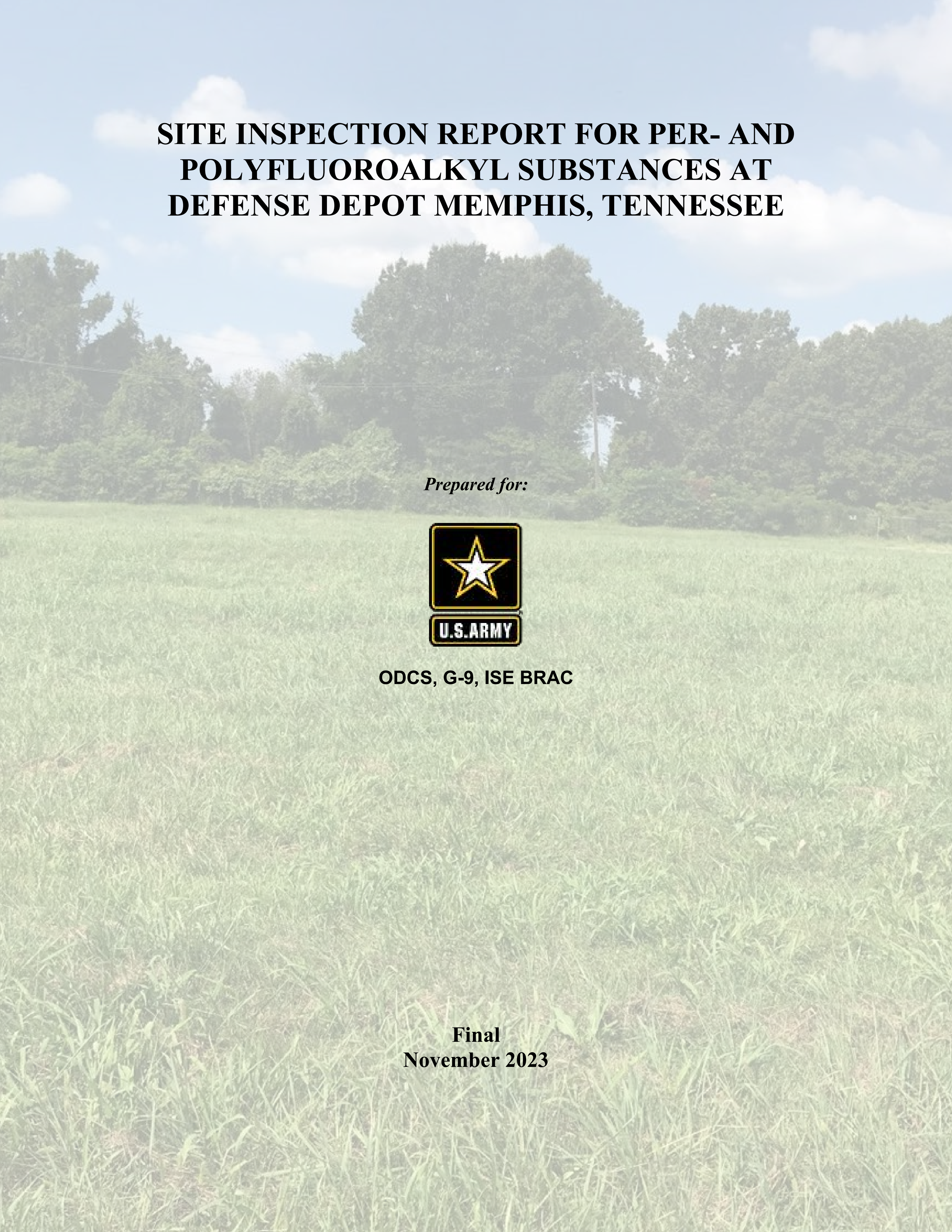

SITE INSPECTION REPORT FOR PER- AND POLYFLUOROALKYL SUBSTANCES AT DEFENSE DEPOT MEMPHIS, TENNESSEE

Prepared for:

U.S.ARMY

ODCS, G-9, ISE BRAC

Final
November 2023

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Contract Number W912DR-18-D-0003
Delivery Order Number W912DR21F0140

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Final
November 2023

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LIST OF ACRONYMS AND ABBREVIATIONS

%R	Percent Recovery
AFFF	Aqueous Film-Forming Foam
amsl	Above Mean Sea Level
AOC	Area of Concern
AOPI	Area of Potential Interest
Army	U.S. Army
bgs	Below Ground Surface
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CoC	Chain-of-Custody
CSM	Conceptual Site Model
CWA	Clean Water Act
CWM	Chemical Warfare Material
DDMT	Defense Depot Memphis, Tennessee
DERP	Defense Environmental Restoration Program
DoD	U.S. Department of Defense
DQO	Data Quality Objective
DUA	Data Usability Assessment
ECOS	Environmental Conservation Online System
EDC	Economic Development Conveyance
EDR	Environmental Data Resources
EE/CA	Environmental Evaluation/Cost Analysis
EIS	Extracted Internal Standard
FFA	Federal Facility Agreement
FOST	Findings of Suitability to Transfer
FS	Feasibility Study
FTA	Fire Training Areas
GIT	Geologist in Training
GPS	Global Positioning System
HDPE	High-Density Polyethylene
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid (GenX)
HQ	Hazard Quotient
HSWA	Hazardous and Solid Waste Amendment
HUD	U.S. Department of Housing and Urban Development
ID	Identifier
IDW	Investigation-Derived Waste
IPaC	Information for Planning and Consultation
IRA	Interim Remedial Action
IRACR	Interim Remedial Action Completion Reports
LC/MS/MS	Liquid Chromatography with Tandem Mass Spectrometry
LCS	Laboratory Control Sample
LOD	Limit of Detection
LTM	Long Term Monitoring
LUC	Land Use Control
MFD	Memphis Fire Department
MI	Main Installation
MLGW	Memphis Light, Gas and Water

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

MS	Matrix Spike
MSD	Matrix Spike Duplicate
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
OE	Ordnances and Explosives
OEW	Ordnance and Explosive Waste
OSD	Office of the Secretary of Defense
P.E.	Professional Engineer
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
PCP	Pentachlorophenol
PFAS	Per- and Polyfluoroalkyl Substances
PFBS	Perfluorobutane Sulfonate
PFHxS	Perfluorohexane Sulfonate
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PMP	Project Management Professional
ppb	Parts per Billion
PPE	Personal Protective Equipment
ppt	Parts per Trillion
PWS	Public Water Supply
QA	Quality Assurance
QC	Quality Control
QSM	Quality Systems Manual
RCRA	Resource Conservation and Recovery Act
REM	Registered Environmental Manager
RI	Remedial Investigation
ROD	Record of Decision
RPD	Relative Percent Difference
RSL	Regional Screening Level
SDG	Sample Delivery Group
SDWA	Safe Drinking Water Act
SI	Site Inspection
SL	Screening Level
SWMU	Solid Waste Management Unit
SOP	Standard Operating Procedure
T&E	Threatened and Endangered
TCLP	Toxicity Characteristic Leaching Procedure
TDEC	Tennessee Department of Environment and Conservation
TSCA	Toxic Substances Control Act
U.S.C.	United States Code
UFP-QAPP	Uniform Federal Policy Quality Assurance Project Plan
UPS	United Parcel Service
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

The U.S. Army (Army) is conducting Preliminary Assessments (PAs) and Site Inspections (SIs) to determine the use, storage, disposal, or release of per- and polyfluoroalkyl substances (PFAS) at multiple Base Realignment and Closure (BRAC) installations, nationwide. This report documents SI activities conducted for six areas of potential interest (AOPIs) at the former Defense Depot Memphis, Tennessee (DDMT) (herein referred to as DDMT). AOPIs were identified during the PA phase for investigation through multimedia sampling in an SI phase to determine whether a PFAS release occurred. Activities were completed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 United States Code [U.S.C.] §9601, et seq.); the Defense Environmental Restoration Program (DERP, 10 U.S.C. §2700, et seq.); the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 Code of Federal Regulations [CFR] Part 300); Army and U.S. Department of Defense (DoD) policy and guidance; and U.S. Environmental Protection Agency (USEPA) guidance.

The PA identified areas where PFAS-containing materials were used, stored, and/or disposed of, or areas where known or suspected releases to the environment occurred. Based on recommendations from the PA, soil, groundwater, sediment, and/or surface water samples were collected from the six AOPIs. The field investigation at DDMT was conducted in accordance with the Programmatic Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a). Samples collected during this SI were analyzed for PFAS using procedures compliant with the DoD Quality Systems Manual (QSM) Version 5.4, Table B-15 (DoD 2021) and the laboratory standard operating procedure (SOP).

To determine if future investigation was warranted at each AOPI, this SI followed established USEPA guidance and DoD policy and guidance for perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutane sulfonate (PFBS), perfluorononanoic acid (PFNA), perfluorohexane sulfonate (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA) (also known as GenX) (DoD 2022a). Samples collected during this SI were compared to risk screening levels (SLs) established as the residential scenario SLs calculated using the USEPA regional screening level (RSL) calculator for soil and the tap water criteria for groundwater and published in the 2022 Office of the Secretary of Defense (OSD) Memorandum (DoD 2022a). Since PFAS are a large grouping consisting of thousands of individual chemicals, PFOA, PFOS, PFBS, PFNA, PFHxS, and HFPO-DA altogether will be referred to in this report as "Target PFAS."

Conceptual site models (CSMs) were developed during the PA and then updated for each AOPI where Target PFAS were detected at concentrations greater than the limit of detection (LOD). The updated CSMs detail site geological conditions; determine primary and secondary release mechanisms; identify potential human receptors; and detail complete, potentially complete, and incomplete exposure pathways for current and reasonably anticipated future exposure scenarios. PFAS were detected and concentrations exceeded SLs in at least one medium at all six AOPIs. PFOS, PFOA, and PFHxS were detected in groundwater at concentrations that exceeded SLs and in soil at concentrations below the SLs. PFBS was detected in groundwater and soil at concentrations that did not exceed the SLs. PFNA and HFPO-DA were not detected at any AOPI. Figure ES-1 depicts the facility-wide map of AOPIs and PFAS groundwater and surface water results, including the distribution of SLs exceedances and proximity to facility boundaries.

Table ES-1 summarizes the AOPIs investigated during the SI and recommendations for further investigation.

Table ES-1. Summary of AOPIs and Recommendations for Further Investigation

AOPI Name	Exceedance of SLs		Recommendation
	Groundwater	Soil	
Building 529 (General Purpose Warehouse)	Yes	No	Further investigation recommended
Building 550 (1984 Plane Crash Site)	Yes	No	Further investigation recommended
Building 560 (General Purpose Warehouse)	Yes	No	Further investigation recommended
Buildings 865 and 873 (Open Shed Warehouse/Recoupment Facilities)	Yes	No	Further investigation recommended
Building 308/DRMO (Hazardous Waste Storage)	Yes	No	Further investigation recommended
Dunn Field Site 18	Yes	No	Further investigation recommended

1. INTRODUCTION

The U.S. Army (Army) is conducting Preliminary Assessments (PAs, 40 Code of Federal Regulations [CFR] §300.420(b)) and Site Inspections (SIs, 40 CFR §300.420(c)) to investigate the presence or release of per- and polyfluoroalkyl substances (PFAS), by investigating the use, storage, or disposal of PFAS at multiple Base Realignment and Closure (BRAC) installations, nationwide. This SI is focused on the former Defense Depot Memphis, Tennessee (DDMT) (herein referred to as DDMT) and was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 United States Code [U.S.C.] §9601 et seq.); the Defense Environmental Restoration Program (DERP, 10 U.S.C. §2701 et seq.); the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR Part 300); Army and U.S. Department of Defense (DoD) policy and guidance; and U.S. Environmental Protection Agency (USEPA) guidance. DDMT was officially named to the National Priorities List (NPL) on October 14, 1992, and the Army is responsible for compliance with CERCLA in accordance with Executive Order 12580, as amended.

Based on results of the DDMT PFAS PA (Leidos 2023b), six areas of potential interest (AOPIs) were identified for investigation through multimedia sampling in an SI to determine whether a PFAS release occurred. DDMT is located in Shelby County, Memphis, Tennessee, as shown in Figure 1-1. The entire DDMT is referred to as the “site,” “facility,” or “installation” throughout this document. Any references to “offsite” refers to areas that are outside the original boundary of DDMT.

1.1 SCOPE AND OBJECTIVES

The overall objective of the SI is to determine the presence or absence of PFAS at each AOPI. This SI Report uses the findings from the PA in conjunction with soil, groundwater, and sediment sampling data to determine whether PFAS have been released to the environment and whether a release has affected or may affect specific human health targets. Furthermore, this SI Report evaluates and summarizes the need for additional investigation (40 CFR §300.420(c)(1)).

The SI scope included preparation of project planning documents, field investigation, validation and management of analytical data, comparison of analytical data to the Office of the Secretary of Defense (OSD) screening levels (SLs) published in the 2022 OSD Memorandum (DoD 2022a), and documentation of the investigation results. This SI was conducted in accordance with the Programmatic Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a). The field activities followed site-specific sampling and health and safety protocols, as identified in the Programmatic Accident Prevention Plan (Leidos 2022b) and the DDMT Site Safety and Health Plan (Appendix A of the DDMT UFP-QAPP Addendum [Leidos 2023a]).

1.2 DDMT DESCRIPTION

DDMT is composed of approximately 632 acres divided into two sections. The first is the Main Installation (MI), which is approximately 567 acres and currently includes open storage areas, warehouses, and office buildings. The second is Dunn Field, located north of the MI. It is approximately 65 acres and is primarily undeveloped land. Dunn Avenue lies between Dunn Field and the MI.

After DDMT closed in 1997, all DDMT property was made available for transfer through six Findings of Suitability to Transfer (FOSTs). Property transfers were completed for all FOSTs in a series of parcels except for 34.3 acres of the western and northern areas of Dunn Field (U.S. Army 2020).

During the development of the PA, historical records, interviews, aerial photographic analysis, site reconnaissance, available documentation, and physical evidence were reviewed to determine where PFAS-containing materials may have previously been stored, used, or disposed of (40 CFR §300.420(b)). For

DDMT, the sites evaluated include fire stations, fire training areas (FTAs), landfills, plating operations, wastewater treatment plants (WWTPs), pesticide facilities, vehicle maintenance shops, paint shops, and photographic processing facilities. The DDMT PFAS PA recommended six AOPIs for further investigation in an SI due to known or potential historical PFAS-containing material use, storage, or disposal. The AOPIs, as well as the dates of operation and size of each area, are presented in Table 1-1 and illustrated in Figure 1-2.

Table 1-1. List of AOPIs at DDMT

AOPI Name	Dates of Operation	Size (acres)
Building 529 (General Purpose Warehouse)	1942-1997	4.88
Building 550 (1984 Plane Crash Site)	August 1984 plane crash	5.74
Building 560 (General Purpose Warehouse)	1990-1997	11.2
Buildings 865 and 873 (Open Shed Warehouse/Recoupment Facilities)	1942-1997	10.5
Building 308/DRMO (Hazardous Waste Storage)	1944-1997	1.74
Dunn Field Site 18	Suspected 1984	1.10

1.3 REPORT ORGANIZATION

The contents of the remaining sections of this SI Report are summarized below:

- ***Section 2. Environmental Setting***—This section discusses the environmental setting at DDMT. Demographics, land use, geology, hydrogeology, hydrology, soil, and climate are described.
- ***Section 3. Field Investigation Activities***—This section provides field procedures followed during the implementation of the SI.
- ***Section 4. Data Analysis and Quality Assurance Summary***—This section describes the laboratory chemical analysis program for the investigation. Sample handling procedures, laboratory equipment calibration, laboratory analytical methods, data reporting and validation, and sample data quality assurance (QA)/quality control (QC) are discussed.
- ***Section 5. Site Inspection Screening Levels***—This section presents the Target PFAS with SLs outlined in the 2022 OSD Memorandum (DoD 2022a) and the SLs to which SI results are compared.
- ***Section 6. Site Inspection Results***—This section presents the data gathered during the SI activities and updated conceptual site models (CSMs).
- ***Section 7. Conclusions and Recommendations***—This section summarizes the SI conclusions and presents recommendations for the DDMT AOPIs.
- ***Section 8. References***—This section lists the references that were used in the preparation of this report.
- ***Appendices***—Appendices A through H include data from field activities or related assessments:
  - Appendix A. Daily Field Summary Notes
  - Appendix B. Photograph Log
  - Appendix C. Field Activity Logs
  - Appendix D. Boring Logs
  - Appendix E. Sampling Forms
  - Appendix F. Investigation-Derived Waste (IDW) Documents
  - Appendix G. Data Usability Assessment (DUA)
  - Appendix H. Data Presentation Tables.

2. ENVIRONMENTAL SETTING

This section provides general information about DDMT, including the site location, operational history, current and projected land use, climate, topography, geology, hydrogeology, surface water hydrology, potable wells within a 5-mile radius of the installation, and applicable ecological receptors.

2.1 SITE LOCATION

DDMT is located at 2163 Airways Boulevard in the southeastern section of the city of Memphis, Shelby County, Tennessee. The facility is located approximately 5 miles east of the Mississippi River, 1 mile northwest of Memphis International Airport and northeast of the Interstate 240-Interstate 55 junction. The property consists of approximately 632 acres divided into two sections: the MI and Dunn Field (CH2M Hill 2002a). Figure 2-1 depicts the DDMT site features.

2.2 SITE OPERATIONAL HISTORY

DDMT was purchased by the Army in 1940 and was officially activated on January 26, 1942, as the Memphis General Depot and opened for use in 1944. Its initial mission was to provide stock control, storage, and maintenance services for the Army Engineer, Chemical, and Quartermaster Corps. DDMT received, warehoused, and distributed supplies common to all U.S. military services and some civil agencies located primarily in the southeastern United States, Puerto Rico, and Panama. Stocked items included food; clothing; electronic equipment; petroleum products; construction materials; and industrial, medical, and general supplies up until closure of DDMT in 1997 (CH2M Hill 2002b).

Disposal activities at Dunn Field began in July 1946 when railroad cars containing 29 mustard-filled German bomb casings were discovered leaking while en route to Pine Bluff, Arkansas. The 500- and 250-kg bombs were neutralized by draining the casings into a pit. All mustard-contaminated items were mixed in a slurry, and the remnants were burned and the pit covered by soil. In the early 1950s, damaged chemical agent identification sets were buried at Dunn Field (CH2M Hill 2002b).

Past activities that could have resulted in the presence of hazardous materials in environmental media at the MI include hazardous substance repackaging for storage or shipment, pesticide application, painting and sandblasting, vehicle maintenance and hazardous material handling/storage. Other historical activities in open and enclosed storage areas included storing transformers with polychlorinated biphenyls (PCBs), storing and using pesticides/herbicides, and treating wood products with pentachlorophenol (PCP). These industrial activities resulted in the presence of metals, pesticides, and other less frequently detected chemicals in surface soil, surface water, and sediment, and volatile organic compounds (VOCs) in groundwater (HDR 2018a).

In the 1940s and 1950s, a small arms pistol range was present at the current site of the golf course. Little information was available regarding this range. It was reportedly open to members of the military and civilians working at DDMT at the time.

In 1981, DDMT began the initial installation assessments to comply with programs such as the Clean Air Act (CAA), Clean Water Act (CWA), Safe Drinking Water Act (SDWA), Resource Conservation and Recovery Act (RCRA) and Toxic Substances Control Act (TSCA). On September 28, 1990, USEPA Region 4 and the Tennessee Department of Environment and Conservation (TDEC) issued DDMT a RCRA Part B permit for storage of hazardous waste. As part of the permit, the hazardous and waste amendment required DDMT to identify and began corrective action of solid waste management units (SWMUs) and areas of concern (AOCs). Initially, 49 SWMUs and 8 AOCs were identified.

In the early 1990s, USEPA prepared a hazard ranking system score for DDMT. On October 14, 1992, a score of 58.06 was assigned to DDMT, and it was placed on the NPL. USEPA, TDEC, and DDMT entered into a Federal Facility Agreement (FFA) agreement under CERCLA §120 in March 1995, and a Remedial Investigation/Feasibility Study (RI/FS) was initiated. In July 1995, DDMT was identified for closure under BRAC. Three Records of Decision (RODs) for DDMT were issued: Dunn Field groundwater Interim Remedial Action (IRA) in September 1996, the MI in September 2001, and Dunn Field in April 2004. TDEC terminated the RCRA Part B permit for storage of hazardous waste in October 1998 because the facility was never constructed; however, the corrective action portion of the permit for the Hazardous and Solid Waste Amendment (HSWA) remained. In March 2004, DDMT applied to renew the corrective action permit and in turn was rejected by TDEC in January 2005. As a result, the stipulation to perform corrective action under RCRA was void, and it was noted that performance of all corrective action would continue under CERCLA (HDR 2020b).

The USACE, St. Louis District conducted an SI and an archives search of the MI and Dunn Field in 1994 for potential ordnance and explosive waste (OEW) and chemical warfare material (CWM). A final report was issued in 1995 identifying burial sites on Dunn Field that may have contained destroyed or burned CWM. An investigation and environmental evaluation/cost analysis (EE/CA) of Dunn Field for CWM and ordnance and explosives (OE) was conducted in 1998 and 1999. CWM removal actions began in 2000 and were completed in 2001 (CH2M Hill 2002b). A Statement of Clearance was issued on August 25, 2003. Construction of the selected remedies from the previously issued RODs for the MI and Dunn Field were completed in December 2009, and the Preliminary Close-Out Report was approved in May 2010. Interim remedial action completion reports (IRACRs) have been approved for all remedial actions. Supplemental RI at the MI, remedial action, and long-term monitoring (LTM) are continuing. The final site-wide closure report is expected in 2028 (HDR 2020b).

Between 1944 and the site closure in 1997, DDMT was known by the following names: Memphis General Depot from January 1942 to July 1942, Memphis Quartermaster Depot from July 1942 to May 1943, Memphis Army Service Forces Depot from May 1943 to May 1946, Memphis General Depot from May 1946 to August 1962, and Defense Depot Memphis from August 1962 to 1997.

2.3 DEMOGRAPHICS, PROPERTY TRANSFER, AND LAND USE

DDMT is located in an area of mixed residential, commercial, and industrial use. The area surrounding DDMT contains small commercial and manufacturing uses to the north and east and single family homes to the south and west. Airways Boulevard, located on the east border of the MI, is the most heavily traveled thoroughfare in the vicinity and is developed with numerous small, commercial establishments (HDR 2018a). DDMT is currently zoned for light industrial use by the Memphis and Shelby County Office of Planning and Development (HDR 2012). The U.S. Census reported the population of Shelby County was 927,644; zip code 38114 encompasses DDMT with a reported population of 26,905 in 2019 (U.S. Census Bureau 2019).

In July 1995, DDMT was placed on the list of DoD facilities to be closed under BRAC. Storage and distribution activities ended in September 1997. After DDMT was closed in 1997, all DDMT property was made available for transfer through six FOSTs. Property transfers through deed or letter of assignment were completed for all FOSTs in a series of parcels, except for 34.3 acres of the western and northern areas of Dunn Field, as summarized in Table 2-1 (U.S. Army 2020).

Notices of land use restrictions were filed with Shelby County for the MI on January 26, 2005, and for Dunn Field on June 11, 2009. Except for the easternmost portions of both the MI and Dunn Field where land use is unrestricted, the majority of DDMT is used for commercial warehousing and light manufacturing (HDR 2020b). Similarly for groundwater, the easternmost areas of the MI and Dunn Field do not have a direct restrictive use of groundwater (HDR 2020a); however, Shelby County prohibits the placement of groundwater wells within one-half mile of the MI boundary or Dunn Field boundary where a chlorinated solvent contaminant plume exists (Shelby County 2019). Therefore, the entirety of DDMT falls within the land use control (LUC) that prevents production or consumptive use of groundwater or drilling of groundwater supply wells.

Table 2-1. Property Transfers by Parcel

Parcel Name	Parcel Acres	Transfer Date	Parcel Recipient	Conveyance Authority
HUD Parcel	6.5	September 26, 2001	Alpha Omega Veterans Services	PBC
MDRA #1	13.4	May 6, 2002	Depot Redevelopment Corporation	EDC
City of Memphis #1	4.7	November 30, 2002	Memphis Police Department	PBC
City of Memphis #2	1.6	September 2, 2005	State of Tennessee	PBC
Golf Course	46.7	October 19, 2005	City of Memphis	PBC
MDRA #2	302.5	April 4, 2006	Depot Redevelopment Corporation	EDC
Dunn Field – East	39.4	October 17, 2007	Private owner	PS
MDRA #3	193.0	March 30, 2011	Depot Redevelopment Corporation of Memphis & Shelby County	EDC
Dunn Field – West	34.3	TBD	TBD	PS

EDC = Environmental Development Conveyance
PBC = Public Benefit Conveyance
PS = Public Sale
TBD = To Be Determined

2.4 TOPOGRAPHY

DDMT is located within the Gulf Coastal Plain physiographic subdivision of the Coastal Plain province, which is characterized by rolling hills to steep topography. (HDR 2018b). Most of the MI is relatively level, with elevations ranging from 282 to 300 feet above mean sea level (amsl) on the MI (HDR 2012). The most significant elevation change occurs at the railroad switchyard located on the MI along the southern side of Dunn Avenue.

The topography of Dunn Field is generally level. Most topographic changes are the result of manmade berms and drainage ditches. The surface elevation of Dunn Field slopes to the north. The elevation ranges from approximately 310 feet amsl along the southern boundary to 275 feet amsl along the northern boundary. The topography of DDMT is shown in Figure 2-1.

2.5 GEOLOGY/HYDROGEOLOGY

The four primary geological units at DDMT are (from youngest to oldest) loess, fluvial deposits, Jackson Formation/Upper Claiborne Group (Jackson/Upper Claiborne), and Memphis Sand (HDR 2020b).

The most recent/nearest the surface is Quaternary-age loess consisting of brown to reddish-brown clayey silt or silty clay. The thickest loess deposits occur along the bluffs overlooking the Mississippi Alluvial Plain and thins considerably toward the east. Based on well logs from the installation of monitoring wells and soil borings, the loess layer is continuous across DDMT and averages 20 to 30 feet thick (CH2M Hill 2002b).

Beneath the loess are fluvial deposits from ancient streams and drainage systems. The fluvial deposits typically consist of sand and gravel with minor amounts of clay, iron oxide cemented sandstone, and conglomerate gravels and cobbles (CH2M Hill 2003). The uppermost aquifer is the unconfined Fluvial Aquifer. Saturated thickness and groundwater elevation of the Fluvial Aquifer are mainly controlled by the surface of the uppermost clay in the Upper Claiborne and the areas of downward leakage where the clay layer is thin or absent (HDR 2020b).

The Jackson/Upper Claiborne forms the upper confining unit for the Memphis Aquifer on a regional basis and separates the Fluvial Aquifer from the Memphis Aquifer at DDMT. The Upper Claiborne Group includes the Cockfield and Cook Formations; the individual layers of the Jackson/Upper Claiborne consist of clays, silts, and sands deposited in lenses or individual beds that are not laterally extensive. The Jackson Formation is reported to be absent in the area of DDMT. The Cockfield Formation consists of inter-fingering fine sand, silt, clay, and local lenses of lignite. The Cook Mountain Formation consists primarily of clay with varying amounts of fine sand and is reported to be the most persistent clay later in the Upper Confining Unit. The Intermediate Aquifer is locally developed in sand layers within the Upper Claiborne (HDR 2020b).

The Memphis Sand consists primarily of thick-bedded, white to brown or gray, very fine-grained to gravelly, partly argillaceous and micaceous sand. The Memphis Aquifer is a regional deep, confined aquifer and is the primary source of water for the city of Memphis. Memphis Light, Gas and Water (MLGW) extracts groundwater from several well fields in the Memphis Area. The Allen well field is closest to DDMT, and individual extraction wells in the well field are 1 to 2 miles west of DDMT (HDR 2020b).

At locations where clay layers in the Upper Claiborne Group are thin or absent, a window can develop with downward flow of groundwater to the Intermediate Aquifer and potentially the Memphis Aquifer. Within the northwestern MI, a window between the Fluvial Aquifer and Intermediate Aquifer has been identified. A separate area of downward leakage of groundwater (i.e., sink) has been identified in the south-central MI, providing evidence of hydraulic connection between the Fluvial and Intermediate Aquifers (HDR 2020b).

Based on the 2020 Annual LTM Report (HDR 2021), groundwater flow in the Fluvial Aquifer enters the MI from all sides and exits via vertical leakage through an erosional window located in the northwestern corner and by way of a sink in the south-central MI. The Fluvial Aquifer groundwater of Dunn Field flows west across the property toward a depression located offsite (i.e., off-post) approximately 1,200 feet to the west. Groundwater elevations of the MI Fluvial Aquifer are highest in the northeastern corner and lowest in the south-central sink. Groundwater elevations of the Fluvial Aquifer decrease to the west across Dunn Field with a maximum in the northeastern corner and lowest elevations upon exit along the western property line.

The groundwater flow in the Intermediate Aquifer underlying the MI generally flows to the northwest. Groundwater flow in the Memphis Aquifer is toward the southwest in the northwestern MI and toward the west in the central MI. Dunn Field groundwater flows generally from east to west; however, limited wells in the Memphis Sand exist in Dunn Field for proper delineation of the deep aquifer (HDR 2021).

DDMT is located in the north-central area of the Mississippi Embayment, which is a regionally broad, geologic trough that plunges to the south (Woodward-Clyde 1996). The stratigraphy at DDMT resulted from the deposition of several thousand feet of Cretaceous to Eocene sediment in the embayment post-deformation (USACE 1998). As a result, the depth to bedrock at DDMT is greater than any of the soil borings or monitoring wells currently installed. Several wells were installed deeper than 200 feet with no bedrock encountered (HDR 2020b).

2.6 SURFACE WATER HYDROLOGY

There are two surface water bodies at the MI: Lake Danielson (Fire Reservoir) and the unnamed golf course pond. Lake Danielson is a manmade lake, approximately 3.5 acres in area, with a maximum depth of 15 feet below ground surface (bgs). Lake Danielson receives runoff from approximately 65 acres within the central portions of the MI, including most of the warehouses (CH2M Hill 1998). Lake Danielson was constructed in the 1940s for stormwater control and as a reservoir for firefighting purposes. Dunn Field has no surface water bodies. No perennial streams, flood-prone areas, or wetlands are located within DDMT (NWI 2021). The lake and pond are fed by stormwater runoff and are too shallow to intercept the fluvial aquifer.

The MI consists of open storage areas, warehouses, former military housing, and outdoor recreational areas. Approximately 80 percent of the MI is impervious, covered by buildings and parking lots. The remainder of the MI property, predominantly in the northwestern portion of the property, is open storage areas that are not paved. At Dunn Field, nearly 90 percent of the property is grass, and the rest is covered with crushed rock and paved surfaces.

Surface drainage at DDMT primarily consists of overland flow to swales, ditches, concrete-lined channels, and a storm drainage system. Stormwater inlets are located around each building and along the streets. Concrete ditches and underground sewer connection pipes are fed by surface and curb inlets. Along the northern side of the MI and throughout Dunn Field, stormwater discharges into city-owned concrete ditches that convey the stormwater to a small unnamed creek that flows north to Cane Creek (a tributary of Nonconnah Creek). Outfalls on the southern, eastern, and western boundaries of the MI discharge into city ditches or small creeks that flow south into Nonconnah Creek. Nonconnah Creek flows to Lake McKellar, which eventually discharges to the Mississippi River (HDR 2012, Woodward-Clyde 1996).

2.7 WATER USAGE

The Environmental Data Resources (EDR) Reports (EDR 2021a and 2021b) identified 25 wells located offsite (i.e., off-post) and within 1 mile of DDMT; 13 belong to the State of Tennessee and the remaining 12 belong to the U.S. Geological Survey (USGS). The Tennessee Water Science Center uses the USGS wells. The State of Tennessee well uses are predominantly industrial (6), with municipal (4), test (1), and other (2) well uses making up the remainder. TDEC updated their water well database on October 26, 2021, and upon review of the database in April 2022, five of the State wells, making up the municipal and test wells, were no longer included in the catalog. The status of these wells as they exist near DDMT is unknown.

Review of the Public Water Supply (PWS) Sources Database in the EDR Report indicated no PWS sources within 1 mile of DDMT. Review of the TDEC Division of Water Resources Water Well Application conducted during the PA indicates that 21 water supply wells (12 residential, 6 commercial, and 3 agricultural) are within a 4-mile radius of DDMT. Additional wells are indicated in the database of unknown status, requiring further investigation. The depths of these wells range from 310 to 581 feet bgs, and water is withdrawn from the Memphis aquifer (TDEC 2021).

Drinking water at DDMT and for the Memphis area is supplied by MLGW and obtained from the Memphis Aquifer. MLGW operates numerous well fields in the metropolis, of which the Allen well field is the closest to and directly downgradient from DDMT (Jazaei et al. 2018). The primary well network of the Allen well field is approximately 1 to 2 miles west of DDMT (Figure 2-1); however, the closest active extraction well is located approximately 0.5 miles to the west of the southwestern MI boundary (MLGW 2019). The potential exists for the Intermediate Aquifer to act as a conduit for constituents of interest from the Fluvial Aquifer to the Memphis Aquifer and could subsequently migrate toward the Allen well field following groundwater flow (i.e., west/southwest). Therefore, an exposure route for offsite groundwater is potentially present. In 2015, 10 MLGW locations were sampled and analyzed for the 6 PFAS defined by the Third Unregulated Contaminant Monitoring Rule (USEPA 2017). The PFAS were not detected above the minimum reporting limit in the city of Memphis.

2.8 ECOLOGICAL PROFILE

DDMT is 632 acres of property in Memphis, Tennessee. The MI portion of DDMT is 87 percent developed with open storage areas, warehouses, office buildings, paved roads and parking areas, and gravel-covered storage/laydown areas. The undeveloped areas are regularly mowed (HDR 2020b). Dunn Field is approximately 65 acres of primarily undeveloped land located north of the MI. The land use is highly developed and industrial with little vegetation (DLA 2008).

A 1996 wetland survey indicated no federally jurisdictional wetlands are located on DDMT (USACE 1998). The surface water bodies on DDMT are limited to Lake Danielson (a man-made 2.62-acre freshwater pond) and a smaller golf course pond. Both of these ponds are in the southeastern corner of DDMT in the golf course (NWI 2023).

Vegetation at DDMT is limited to Bermuda grass (*Cynodon dactylon*), a few black oaks (*Quercus velutina*), and several species of non-native ornamental shrubs and trees. Landscaping programs have concentrated the decorative plantings around Lake Danielson and the golf course, as well as the former housing area (USACE 1998). Although Dunn Field is relatively undeveloped, past activities have removed most of the native vegetation from the area. Dominant vegetation on Dunn Field is similar to the species found on the undeveloped portion of the MI, including Bermuda grass (*C. dactylon*) and black oaks (*Q. velutina*) (USACE 1998).

The developed areas at DDMT provide little habitat value to most wildlife species; wildlife on the property is typically composed of common species that are adapted to residential or urban settings. Lake Danielson was periodically stocked with bluegill (*Lepomis* sp.) and bass (*Micropterus* sp.), and some catfish (*Ictalurus* sp.) are also present (USACE 1998). Wildlife species found on Dunn Field include eastern fox squirrel (*Sciurus niger*), red fox (*Vulpes vulpes*), northern bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), and box turtles (*Terrapene carolina*) (USACE 1998).

The U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS) Information for Planning and Consultation (IPaC) tool identified four federally listed as threatened and endangered (T&E) or proposed T&E species as potentially occurring (i.e., known or expected to be on or near) at DDMT (USFWS 2023). The federally listed T&E species included the endangered Indiana bat (*Myotis sodalis*), the threatened northern long-eared bat (*Myotis septentrionalis*), the proposed endangered tricolored bat (*Perimyotis subflavus*), and the proposed threatened alligator snapping turtle (*Macrochelys temminckii*). IPaC identified one candidate species, the monarch butterfly *(Danaus plexippus*), as potentially occurring at DDMT (USFWS 2023). The potential for these T&E and candidate species to occur does not mean the species are present at DDMT. For example, the preferred foraging territory of Indiana bats is semi-open to closed forested habitats with open understory, forest edges and riparian areas. This habitat is not present on DDMT, and the Indiana bat is not likely roosting at DDMT. No known or expected federally listed T&E species are occurring on DDMT (USACE 1998).

The IPaC tool identified four migratory birds of particular concern as potentially occurring on DDMT. These birds include the American kestrel (*Falco sparverius paulus*), chimney swift (*Chaetura pelagica*), red-headed woodpecker (*Melanerpes erythrocephalus*), and rusty blackbird (*Euphagus carolinus*) (USFWS 2023).

2.9 CLIMATE

The climate is humid subtropical. The average temperature is 61.0°F, which is higher than the Tennessee average temperature of 58.1°F and is much higher than the national average temperature of 54.5°F. The annual rainfall amounts is 51.5 inches, with 70.4 days of 0.1 inch or more of precipitation. Average annual wind speed for the area is 20.1 miles per hour (USA.com 2021).

3. FIELD INVESTIGATION ACTIVITIES

This section provides field procedures followed during the implementation of the SI (40 CFR §300.420(c)(4)(i)). The principal guidance documents used for the DDMT SI were consistent with the requirements presented in the *Army Guidance for Addressing Releases of PFAS* (U.S. Army 2018b).

3.1 SITE INSPECTION DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) were developed to define the problem at the AOPIs, identify the necessary decisions, specify decision-making rules and the level of confidence necessary to resolve the problem, identify the number of samples necessary to support the decision, and obtain agreement from the decision makers before the sampling program was initiated. The DDMT sample locations were determined based on current site conditions (i.e., groundwater flow direction), presence of site media (e.g., sediment and surface water may not be sampled at a given site), historical data (e.g., suspected location of PFAS release), and historical activities (e.g., remedial activities, disposal of potentially contaminated materials). The project stakeholders concurred that selected sampling schemes would be representative of site conditions prior to initiation of field investigation activities. The field investigation at DDMT was conducted in accordance with the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a). The field activities employed to execute the Programmatic UFP-QAPP and DDMT UFP-QAPP Addendum, including any variances or deviations, are described below.

3.2 SAMPLE DESIGN AND RATIONALE

Six AOPIs were investigated during the DDMT SI to determine the presence or absence of PFAS in the environment. Information inputs from the preliminary CSMs presented on Worksheet #10 of the DDMT UFP-QAPP Addendum (Leidos 2023a) are the basis for sample design at each AOPI. All samples were analyzed for the Target PFAS list of perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutane sulfonate (PFBS), perfluorononanoic acid (PFNA), perfluorohexane sulfonate (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA) (also known as GenX).

The general approach for the determination of the presence or absence of PFAS at an AOPI consisted of collection of three soil samples from three soil borings, collection of groundwater samples from existing monitoring wells, and collection of co-located surface water and sediment samples, if the media are present (Leidos 2023a). The general approach for determining the presence or absence of PFAS at DDMT consisted of sitewide groundwater sample collection from existing monitoring wells where proximal to AOPIs or the facility boundary. In addition, surface and shallow subsurface soil samples were collected from proposed soil boring locations.

Each location that was sampled, with a unique set of coordinates, was assigned a specific site location: DDMT-XXX-##.

Where:

- XXX = abbreviation for the AOPI being sampled
- ## = the sequential number of each sample location within the AOPI.

For existing monitoring wells, the sequential number of each sample location was replaced with the existing monitoring well identifier (ID).

Each sample that was collected received a unique sample number, related to the site ID above, in the format of DDXXX##-ZZzz.

Where:

- XXX = abbreviation for the AOPI being sampled

- ## = the sequential number of each sample location within the AOPI
- ZZ = sample media (i.e., MW = groundwater, SS = surface soil, SB = subsurface soil, SW = surface water, SD = sediment)
- zz = the sequence number for the sample at the location.

For existing monitoring wells, the unique sample number used DDXXX where XXX is the abbreviation for the AOPI that was sampled followed by the monitoring well ID.

Perimeter monitoring wells were abbreviated "PER" and are not associated with an AOPI.

QA/QC samples were denoted according to the sample type. Rinsate blanks, field duplicates, and matrix spike (MS) and matrix spike duplicate (MSD) samples were denoted by appending "RB," "FD," "MS," and "MSD," respectively, to the parent sample ID. Field blanks and potable/source water blanks were named using the format of DDMT-YY-##.

Where:

- YY = FB (field blank) or SRC (source blank)
- ## = sequential number of each type of blank sample collected.

3.3 FIELD INVESTIGATION ACTIVITIES

SI field activities were conducted from March 13 to March 23, 2023. The locations and methods of sample collection during the SI are described in the following sections. Sampling procedures adhered to the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a), relevant information summarized below.

Sampling activities at DDMT included collecting surface and subsurface soil samples from soil borings, groundwater samples from existing monitoring wells, and sediment and surface water samples where these media were present. Samples were analyzed for 26 PFAS by liquid chromatography with tandem mass spectrometry (LC/MS/MS) procedures compliant with DoD Quality Systems Manual (QSM) Version 5.4, Table B-15 (DoD 2021) to determine the presence or absence of Target PFAS. A total of 79 samples were collected among the 6 AOPIs, including 24 existing monitoring well groundwater samples, 14 surface soil samples, 36 subsurface soil samples, 4 surface water samples, and 1 sediment sample. In addition, 8 samples were collected from existing perimeter monitoring wells. A breakdown of samples collected at each AOPI is provided in Table 3-1. Prior to beginning sampling, site reconnaissance and utility clearance were performed. Sampling was completed at one AOPI before moving to the next AOPI when feasible. Any variances in sampling procedure, such as moving a location or sample point elimination, were discussed with the project team and communicated in daily field summary emails (Appendix A). Field procedures and any variances are discussed in the following sections. Photographs of SI field activities are provided in Appendix B.

Table 3-1. DDMT AOPI SI Sample Collection

AOPI Name	Soil Samples	Groundwater Samples	Perimeter Well Groundwater Samples	Sediment Samples	Surface Water Samples
Building 529	1 SS / 6 SB	4	0	0	0
Building 550 (1984 Plane Crash)	3 SS / 6 SB	2	0	0	0
Building 560	3 SS / 6 SB	5	4	1	2
Buildings 865 and 873	1 SS / 6 SB	7	2	0	0
Building 308/DRMO	3 SS / 6 SB	3	1	0	2
Dunn Field Site 18	3 SS / 6 SB	3	1	0	0
Total	**14 SS / 36 SB**	**24**	**8**	**1**	**4**

SS = Surface soil sample
SB = Subsurface soil sample

3.4 FIELD PROCEDURES

The following sections describe the field activities and procedures for utility clearance, bulk source water sampling, soil boring installation and abandonment, sampling for each medium, equipment calibration, and location survey. Specific details regarding each of these activities are documented on Task Team Activity Log Sheets that are provided in Appendix C.

Because many materials routinely used during environmental investigations can potentially contain PFAS, the field crew conducted SI activities in accordance with the PFAS sampling standard operating procedure (SOP) presented in Appendix A of the Programmatic UFP-QAPP (Leidos 2022a). Procedures include requirements for equipment, containers, handling, and sampling, including PFAS-specific requirements, to ensure that sample contamination does not occur during collection and transport.

3.4.1 Utility Clearance

Prior to initiating intrusive activities, the field manager coordinated underground utility clearances for the six AOPIs through Tennessee 811. As part of the utility clearance process, individual utility companies were consulted (as needed), and each area was visually inspected to verify that utilities had been marked. The field manager looked for signs of unidentified utilities (including overhead utilities) and completed a Subsurface Clearance Checklist prior to initiating intrusive operations. Prior to conducting powered drilling within 25 feet of known or suspected subsurface utilities, the boreholes were excavated using a low-impact technique (i.e., hand auger) to a minimum of 5 feet bgs.

3.4.2 Bulk Source Water Sampling

Prior to beginning work, two bulk source water samples (DDMT-SRC-01 and DDMT-SRC-02) were collected on December 6, 2022, for PFAS analysis to determine if the source water was PFAS-free (i.e., PFAS not detected at concentrations greater than the limit of detection [LOD]) and could be used for decontamination. Sample DDMT-SRC-01 was collected from a spigot inside Building 972 and DDMT-SRC-02 was collected from a spigot on the outside Building 260. Water sources were purged for a minimum of 1 minute prior to filling high-density polyethylene (HDPE) bottles. Water from the spigot outside Building 260 was determined to be PFAS-free and was used as the decontamination water source during field sampling. Water from the indoor spigot was not used as a water source during the SI.

3.4.3 Soil Boring Installation and Sampling

All soil samples were collected in accordance with the procedures outlined in the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a). QC samples, including, duplicates, rinsate blanks, and MS/MSDs, were also collected.

Soil samples were collected through DPT drilling with some surface samples being collected with a stainless steel hand auger. Each soil core was logged for lithology in accordance with U.S. Army Corps of Engineers guidance (ASTM International D2488 [2017]) and recorded on a soil boring log (provided in Appendix D). Soil sample intervals were homogenized in disposable HDPE bags prior to placing the soil into HDPE sample bottles. Sample bottles were labeled and sealed in zip-lock bags and placed on wet ice for cooling to ≤6°C. Additional details on protocols for obtaining soil samples are outlined on Worksheet #18 and the Leidos SOP "Soil Sampling" provided in the Programmatic UFP-QAPP (Leidos 2022a).

Surface soil samples from 0 to 1 foot bgs were collected from each of the AOPIs. At the Building 529 and Buildings 865 and 873 AOPIs, surface soil samples were not collected from two of the locations due to the presence of gravel, asphalt, or concrete. Surface soil sample depths did not exceed 1 foot bgs.

Two subsurface soil samples were collected from each soil boring advanced at each AOPI. During the advancement of the soil borings, soil cuttings were evaluated for recording lithology and documenting visual observations. Subsurface soil samples were collected as grab samples from 2-foot intervals, and the interval from which the sample was collected was recorded on the boring log. Samples for laboratory analysis were biased toward organic-rich zones, as PFAS may sorb to organics, but were generally collected from the midpoint of the boring and the bottom 2 feet of the boring.

Soil borings were abandoned following sample collection by backfilling the borehole with bentonite and hydrating with PFAS-free water. Surface restoration matched the surrounding surface (e.g., concrete, asphalt, grass).

3.4.4 Groundwater Sampling and Well Redevelopment

Groundwater samples were collected in accordance with the procedures outlined in the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a). QC samples, including equipment blanks, duplicates, and MS/MSDs, were also collected. All groundwater samples were collected from existing monitoring wells using stainless steel bladder pumps and the low-flow purge method.

Prior to sampling, all 32 monitoring wells were redeveloped by pumping out 3 well volumes of water to ensure any remaining contaminants from previous contractors would not cross-contaminate the samples. Static water level measurements were collected to the nearest 0.01 foot prior to sampling. Following completion of monitoring well purging and stabilization, samples were collected in laboratory-supplied HDPE plastic containers. All samples were collected and handled while wearing clean, non-powdered, disposable nitrile gloves. Sample bottles were labeled and sealed in zip-lock bags and placed on wet ice for cooling to ≤6°C. New, clean nitrile gloves were donned prior to each new sample collected. Sampling containers were labeled with the following information: site name, sample identification, date and time of sample collection, name of sampler, sample preservation, and type of analysis (i.e., PFAS).

3.4.5 Surface Water and Sediment Sampling

All surface water and sediment samples were collected in accordance with the procedures outlined in the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a). Surface water and sediment samples were not collected in AOPIs where the media were absent.

Surface water samples were collected directly from the selected locations using laboratory provided HDPE bottles. Sample containers were labeled, sealed in zip-lock bags, and placed on wet ice for cooling to ≤6°C. QC samples, including equipment blanks, duplicates, and MS/MSDs, were also collected.

Sediment samples were collected directly from the selected locations from 0 to 6 inches bgs using a stainless steel spoon. Each sediment sample was homogenized in a disposable HDPE bag prior to placing the sediment into laboratory-supplied HDPE sample bottles. Sample containers were labeled, sealed in zip-lock bags, and placed on wet ice for cooling to ≤6°C.

Observations made during surface water and sediment sampling were recorded on the sediment/surface water sampling forms provided in Appendix E.

3.4.6 Equipment Calibration

Water quality instruments (i.e., Horiba U-5000) used during groundwater sampling were calibrated daily per Worksheet #24 of the Programmatic UFP-QAPP (Leidos 2022a) against known standards in accordance with the manufacturer's instructions and documented on the calibration logs provided in Appendix E.

3.4.7 Location Survey

Environmental sample locations and notable site features were located and mapped using a portable Trimble global positioning system (GPS) unit capable of achieving ± 3 feet accurate results. GPS data were transferred for use in ArcGIS mapping applications during data evaluation and reporting.

3.4.8 *Deviations and Field Change Requests*

No instances of field modifications impacting project DQOs were encountered during the SI fieldwork. As a minor change, soil boring sample location DDMT-560-03 was relocated approximately 300 feet east of the originally proposed location due to the presence of utilities and other physical obstructions. The adjusted sample location is shown in the figures in Section 6.

3.5 DECONTAMINATION PROCEDURES

To ensure that chemical analysis results reflect the actual concentrations at sample locations, the non-dedicated, reusable equipment used in redevelopment and sampling activities was rigorously cleaned and decontaminated between sample locations in accordance with the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a). The non-disposable sampling equipment used to conduct sampling activities (e.g., hand augers, stainless steel pumps, water level meters) was decontaminated before sampling activities began, between locations, between sampling events, and after sampling activities were completed. Decontamination guidelines followed the direction provided in the March 2020 Interstate Technology & Regulatory Council fact sheet that discusses site characterization considerations (ITRC 2020) and PFAS decontamination procedures described by the Michigan Department of Environmental Quality (MDEQ 2018). Wastewater generated from decontamination activities was handled as IDW. Decontamination water was combined with well development and sampling purge water and managed as one medium.

The decontamination process included an initial scrub with a laboratory-grade, phosphate-free, biodegradable detergent (e.g., Liquinox®) and PFAS-free bulk source water to remove particulate matter and surface film. Equipment was scrubbed using polyethylene or polyvinyl chloride brushes. Following this scrub, the equipment was then rinsed twice in separate bins containing bulk source water and deionized water. Decontaminated sampling equipment was wrapped in thin sheets of HDPE to prevent subsequent contamination if being stored and not used immediately.

3.6 DISPOSITION OF FIELD INVESTIGATION-DERIVED WASTE

The IDW generated during the SI at DDMT included solids (soil and sediment), liquids (well purge water and decontamination rinse water), and contact waste (sample liners and HDPE bags). These materials were managed in accordance with the IDW Management Plan provided in Appendix B of the DDMT UFP-QAPP Addendum (Leidos 2023a).

All IDW generated at DDMT was placed in United Nations-approved, 55-gallon drums for storage, transport, and disposal. Permanent labels for the drums included a unique container number, a description of the contents (i.e., soil or wastewater), the fill date, the source location, the generator's name (i.e., DDMT), and a telephone number for the generator's point of contact (e.g., the Army BRAC Environmental Coordinator). Each bucket or carboy used to temporarily store liquid IDW before it was transferred to a 55-gallon drum was marked "Nonpotable Water" or "Decontamination Waste" to comply with requirements of the IDW Management Plan.

The contents of the IDW drums were sampled for characterization and profiling. A solid waste sample was composited by collecting aliquots from each sample point during drilling and placing them in an HDPE bag. The solids were combined into one HDPE bag, homogenized, and then placed into laboratory-supplied sample containers. For drums containing liquid IDW, a composite sample was collected using a peristaltic pump and new HDPE tubing and pumping directly into sample bottles. The waste hauler (US Ecology) was contacted prior to sampling to determine parameters required for disposal of waste potentially containing PFAS. The certified waste hauler provided guidance to analyze for suspected contaminants based on site history and previous investigations. The sample was analyzed for PFAS, toxicity characteristic leaching procedure (TCLP) volatile organic compounds, TCLP semivolatile organic compounds, TCLP metals, TCLP pesticides, TCLP herbicides, pH, and flashpoint.

No IDW from DDMT was characterized as hazardous. Containerized waste was disposed of in accordance with applicable state and Federal Resource Conservation and Recovery Act regulations. On June 20, 2023, a licensed and certified waste hauler (US Ecology) removed the drums containing IDW waste from DDMT for disposal at U.S. Ecology Sulligent, Inc., in Sulligent, Alabama. Soiled personal protective equipment (PPE) was bagged and disposed of as municipal waste. Copies of the waste manifest and certificate of disposal are included in Appendix F.

4. DATA ANALYSIS AND QUALITY ASSURANCE SUMMARY

This section summarizes the QA/QC program and laboratory chemical analysis program implemented as part of the DDMT SI field activities (40 CFR §300.420(c)(4)). Additional information on these procedures is presented in the DDMT UFP-QAPP Addendum (Leidos 2023a).

Pace Analytical Services, LLC, located in West Columbia, South Carolina, was the analytical laboratory under contract for the analysis of PFAS during the DDMT SI field activities. Sections 4.1 through 4.4 summarize sample handling procedures, laboratory analytical methods, data QA/QC, data reporting and validation, and sample QA/QC. A QA summary of the analytical data is presented in Section 4.5. Appendix G provides the DUA, which details the quality and usability of the SI analytical data and the process performed to evaluate the data for compliance with established QC criteria.

4.1 SAMPLE HANDLING PROCEDURES

A critical aspect of sample collection and analysis protocols is the maintenance of strict chain-of-custody (CoC) procedures, which include tracking and documentation during sample collection, shipment, and laboratory processing. The Sample Manager was responsible for sample custody until the samples were properly packaged, documented, and released to the commercial carrier. The laboratory was responsible for sample custody thereafter in accordance with approved procedures.

4.1.1 Chain-of-Custody Record

CoC forms were used to document the traceability and integrity of all samples from the point of collection to the laboratory by maintaining a record of sample collection, shipment, and receipt by the laboratory. A CoC form was filled out and was signed and dated by each sample custodian.

Shipping containers were sealed with custody tape. Sealed coolers were transported to the commercial carrier for overnight delivery to the laboratory. The air bill number, written on the CoC form, acted as the custody documentation while the sealed coolers were in the possession of the commercial carrier. The CoC form was placed in a resealable plastic bag and taped to the inside lid of the cooler.

When the possession of samples was transferred, the individual relinquishing the samples and the individual receiving the samples signed, dated, and noted the time of transferal on the CoC. This record represents the official documentation for all transferal of sample custody until the samples arrived at the laboratory.

4.1.2 Laboratory Sample Receipt

All samples received by the Laboratory Sample Custodian or designee were checked for proper preservation (e.g., pH, temperature of coolant blank above 2°C or below 6°C); integrity (e.g., leaking, broken bottles); and proper, complete, and accurate documentation and ID of the samples. The temperature of the coolant blank was noted. No insufficiencies and/or discrepancies were noted.

Samples received at the laboratory were logged into the laboratory computer database. Initial entries included field sample number, date of receipt, and analyses required. As samples were received, they were assigned a laboratory sample ID number. The sample custodian labeled each container with its sample ID number, and the samples then were transferred to their designated storage areas.

Samples received by the laboratory were considered to be physical evidence and were handled according to USEPA procedural safeguards. In addition, all data generated from the sample analyses, including all associated calibrations, method blanks, and other supporting QC analyses, were identified with the project name, project number, and sample delivery group (SDG) designation. All data were maintained under the proper custody. The laboratory provided complete security for samples, analyses, and data.

4.2 LABORATORY ANALYTICAL METHODS

The chemical analysis program for the DDMT SI conforms to the analytical requirements presented in the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a) for the chemical analysis of field investigation samples. All samples were analyzed for PFAS using LC/MS/MS procedures compliant with DoD QSM Version 5.4, Table B-15 (DoD 2021) and the laboratory SOP.

4.3 DATA QUALITY ASSURANCE/QUALITY CONTROL

This section presents the QA/QC procedures applied during sampling and laboratory analysis. This discussion includes laboratory QA/QC (Section 4.3.1) and field QA/QC (Section 4.3.2) procedures. Details on the results of the QC samples (field and laboratory) are presented in the DUA (Appendix G).

4.3.1 Laboratory Quality Assurance/Quality Control

Samples were analyzed for PFAS using LC/MS/MS in compliance with DoD QSM Version 5.4, Table B-15 (DoD 2021). QC checks included holding times, method blanks, calibration standards, extracted internal standards (EISs), laboratory control samples (LCSs), MS/MSDs, and detection limits. The acceptance criteria and laboratory SOP are provided in the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a).

Method Blanks—Method blanks were used to monitor the possibility of laboratory-induced contamination by running a volume of approved reagent water through the entire analytical scheme (i.e., extraction, concentration, analysis). Blank requirements are specified in the DoD QSM Version 5.4, Table B-15 (DoD 2021) and the laboratory SOP.

Matrix Spike/Matrix Spike Duplicates**—**Additional sample volume was collected from select field sample locations to evaluate accuracy and precision using MS/MSD analyses. MS/MSDs are aliquots of environmental samples to which known concentrations of certain target analytes have been added before sample preparation, cleanup, and determinative procedures have been implemented (SW846 Chapter One). Accuracy was expressed as the percent recovery (%R) of each added compound. Precision was expressed as the relative percent difference (RPD) between the MS and the MSD results. MS/MSD samples were collected and analyzed at a frequency of 1 for every 20 samples of similar matrix received at the laboratory.

Laboratory Control Samples—LCSs were analyzed to evaluate the accuracy of the analysis in the absence of sample matrix impacts. A known concentration of select compounds were added to the LCS. The spiked samples were analyzed in the same manner as the environmental samples. Accuracy was expressed as the %R of each added compound. An LCS was analyzed with each SDG.

4.3.2 Field Quality Assurance/Quality Control

Table 4-1 summarizes the frequency of field QC samples that were collected during the DDMT field investigation. The requirements for field QC were established on Worksheet #20 of the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a).

Table 4-1. Frequency of Field QC Samples for DDMT Field Investigation

QC Sample	Frequency
Field Blank	1 per water source used as final rinse of equipment
Source Water Blank	1 per bulk rinse water source
Equipment Rinsate Blank	1 for every 10 or fewer investigative samples
Field Duplicate	1 for every 10 or fewer investigative samples
MS/MSD	1 for every 20 or fewer investigative samples
Reagent Blank	1 per drinking water sampling event; none required for this event

4.4 DATA REPORTING AND VALIDATION

The Leidos QA Manager or designee initiated a validation of the analytical data packages. One hundred percent of the data were validated using objective criteria taken from the requirements of the Programmatic UFP-QAPP (Leidos 2022a) and DoD QSM Version 5.4 (DoD 2021) and qualified in accordance with DoD Data Validation Guidelines Module 3 (DoD 2020) and the revised table for sample qualification in the presence of blank contamination (DoD 2022b).

Reported laboratory data were reviewed in accordance with DoD QSM Stage 2B validation guidelines to ensure that the QC results fell within appropriate QC limits for holding times, blank contamination, EISs, calibrations, MS/MSDs, LCSs, and ion ratios. Any data validation qualifiers resulting from outlier QC results were applied and a data validation report, as previously described, was prepared. In addition, 10 percent of the data were validated in accordance with DoD QSM Stage 3 guidelines, and analytical results were checked and recalculated from raw data.

Equipment rinsate blanks and field blanks were associated with the corresponding environmental samples. These blanks were evaluated following the same criteria as method blanks, and the associated environmental samples were appropriately qualified as needed. After the data validation for the project was completed, a project DUA (Appendix G) was prepared.

4.5 QUALITY ASSURANCE SUMMARY

A comprehensive QA/QC program was implemented during the sampling event in January 2023 at DDMT. Samples and associated QC samples (e.g., field duplicates, equipment rinsate blanks, source water blanks, MSs, MSDs) were collected and analyzed for PFAS using methods specified in the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a). Consistent with the data quality requirements established in the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a) and DQOs, all sample data and associated QC data were evaluated during the review and validation process. Individual sample results were qualified, as necessary, to designate usability of the data toward meeting project objectives. Data qualifiers were applied based on deviations from the measurement performance criteria in the Programmatic UFP-QAPP (Leidos 2022a). Results of the validation are provided in the DUA (Appendix G). The analyses associated with each data quality indicator are summarized below, with details of the results of the QC checks provided in the DUA (Appendix G).

4.5.1 Precision

Precision was evaluated by the analysis of MS/MSDs and field duplicate samples and the RPD between the duplicate spike results.

4.5.2 Accuracy

Bias introduced due to blank contamination (in method, instrument, or field blanks) and any impact on accuracy were evaluated during validation. Analytical accuracy was measured through the use of LCSs, MS/MSDs, isotope dilution standards, initial and continuing calibration, and target compound quantitation requirements.

4.5.3 Sensitivity

Sensitivity requirements were evaluated against minimum required limits of quantitation and LODs in the Programmatic UFP-QAPP (Leidos 2022a).

4.5.4 Representativeness

Representativeness was satisfied by ensuring that the Programmatic UFP-QAPP (Leidos 2022a) and DDMT UFP-QAPP Addendum (Leidos 2023a) protocols were followed, appropriate sampling techniques were used, established analytical procedures were implemented, and analytical holding times of the samples were not exceeded.

4.5.5 Comparability

Comparability was achieved by using consistent, documented, and UFP-QAPP-approved methods and meeting project accuracy and precision objectives.

4.5.6 Completeness

Completeness measures the amount of valid data obtained from the sampling and analysis effort. For analytical data to be usable, each data point must be validated and meet criteria without significant non-conformance. The DQOs for the DDMT SI were set at 90 percent for field sampling and laboratory completeness. Field sampling completeness was 100 percent, as all soil and groundwater samples proposed were collected. Analytical completeness was 100 percent.

4.5.7 Data Usability Assessment

Data that have been qualified as estimated (J, J+, UJ) during validation indicate accuracy, precision, or sensitivity QC measurements may have exceeded criteria, but the results are considered valid. No data points were recommended for exclusion (X) during validation. All results are usable for evaluating project objectives.

5. SITE INSPECTION SCREENING LEVELS

Detected concentrations of Target PFAS in samples collected during this SI are compared to residential scenario SLs calculated using the USEPA regional screening level (RSL) calculator for soil and the tap water criteria for groundwater and a target hazard quotient (HQ) of 0.1, as published in the 2022 OSD Memorandum (DoD 2022a). This SI uses the SLs and a target HQ of 0.1 to evaluate Target PFAS concentrations. These SLs (Table 5-1) are used to evaluate the data and determine if further investigation is warranted at each AOPI.

Table 5-1. Screening Levels from the 2022 OSD Memorandum

Chemical	Residential Tap Water HQ = 0.1 (ng/L or ppt)	Residential Soil HQ = 0.1 (µg/kg or ppb)
HFPO-DA	6	23
PFBS	601	1,900
PFHxS	39	130
PFNA	6	19
PFOA	6	19
PFOS	4	13

Note: The residential tap water SLs are used to evaluate groundwater and surface water data. The residential soil SLs are used to evaluate soil and sediment data. The surface water and sediment data are qualitatively evaluated against the SLs. Laboratory results are reported to two significant figures.

6. SITE INSPECTION RESULTS

This section presents the background, summary of analytical results, and the CSM for each AOPI at DDMT where Target PFAS were detected. Sampled media and QA/QC samples were analyzed for the list of 26 PFAS specified in the Programmatic UFP-QAPP (Leidos 2022a). The sample results discussed below by AOPI focus on the six Target PFAS outlined in the 2022 OSD Memorandum (DoD 2022a): PFOS, PFOA, PFBS, PFNA, PFHxS, and HFPO-DA. Analytical data presentation tables for all PFAS analyzed using approved methods are provided in Appendix H.

6.1 CONCEPTUAL SITE MODELS

The preliminary CSMs developed for each AOPI during the PA were further refined for each AOPI where Target PFAS were detected at concentrations greater than the LOD in soil, groundwater, surface water, or sediment. Based on the SI sample results, CSMs presented for each AOPI represent the current understanding of site conditions with respect to known or suspected sources of PFAS-containing materials, potential transport mechanisms and migration pathways, and potentially exposed human receptors.

The CSMs evaluate ingestion, dermal contact, and inhalation exposure routes for human receptors. The exposure pathways are evaluated as complete, potentially complete, or incomplete in the CSMs presented in figures in each AOPI-specific CSM section. In the absence of toxicity information for the inhalation route, the inhalation exposure pathway of PFAS (via dust) is considered potentially complete for soil where Target PFAS are detected. The remaining exposure pathway designations are determined as follows:

- ***Complete*** – Human exposure pathways are considered complete where Target PFAS have been detected at concentrations exceeding SLs and no LUCs are in place restricting access or use of the media.
- ***Potentially Complete*** – Human exposure pathways are considered potentially complete if Target PFAS have been detected at concentrations less than the SLs for soil, groundwater, surface water, or sediment or if SLs have been exceeded along the migration pathway. For example, if Target PFAS are not detected in soil but are detected at concentrations exceeding SLs in groundwater, the exposure pathway for soil is considered potentially complete. In addition, a groundwater exposure pathway is considered potentially complete where Target PFAS have been detected and could migrate from the AOPI source area to offsite groundwater that is used for drinking water. Exposure pathways are also potentially complete for media where existing LUCs are in place for non-PFAS, because the LUCs are not Target PFAS specific.
- ***Incomplete*** – Human exposure pathways are considered incomplete for media where Target PFAS have not been detected at concentrations greater than the LODs.

Notices of land use restrictions were filed with Shelby County for the MI on January 26, 2005, and for Dunn Field on June 11, 2009. Army imposed LUCs, as a component of the CERCLA remedies, have been established for the MI and Dunn Field except for the easternmost portions of both, where land use is unrestricted. The LUCs for the MI and Dunn Field prevent residential use of most of the property with Dunn Field limited to light industrial land uses. The U.S. Department of Housing and Urban Development (HUD) parcel on the eastern side of the installation is available for unrestricted use. Four townhomes are currently on the property owned and operated by the Alpha Omega Veterans Services. There is a fence between the HUD parcel and the MI. In addition, to prevent exposure to contaminated groundwater, a LUC is in place to prohibit production or consumptive use of groundwater or drilling of groundwater supply wells throughout most of the property (HDR 2020b). The easternmost areas of the MI and Dunn Field do not have a direct restrictive use of groundwater (HDR 2020a); however, Shelby County prohibits the placement of groundwater wells within one-half mile of the MI boundary or Dunn Field plume boundary

(Shelby County 2019). Therefore, the entirety of DDMT falls within the LUC that prevents production or consumptive use of groundwater or drilling of groundwater supply wells.

6.2 BUILDING 529 (GENERAL PURPOSE WAREHOUSE) AOPI

The following subsections describe the background, sampling results, CSM, and recommendation for the Building 529 AOPI.

6.2.1 AOPI Background

Building 529 was constructed in 1942 and used as a general purpose warehouse. An inspection conducted in April 1996 indicated aqueous film-forming foam (AFFF) storage in the western end of the building (Woodward-Clyde 1996). Version 3 of the BRAC Cleanup Plan indicates several spills of firefighting foam occurred at Building 529 and required action from the Spill Response Team (Memphis Depot Caretaker Division 1998). The period during which AFFF was stored, used, and/or released at Building 529 is unknown. The Army no longer owns this AOPI, and the current use is light industrial.

6.2.2 SI Sampling and Results

Soil and groundwater samples were collected from the Building 529 AOPI at the following locations (Figure 6-1):

- Seven soil samples and one QC duplicate were collected from three soil borings (DDMT-529-01, DDMT-529-02, and DDMT-529-03) within the suspected release area. One surface soil and two subsurface soil samples were collected at DDMT-529-01. Surface soil could not be collected from borings DDMT-529-02 and DDMT-529-03 because they were located in paved areas; therefore, two subsurface soil samples were collected.
- Four groundwater samples and one QC duplicate were collected from four existing monitoring wells. Two monitoring wells (DDMT-529-MW-281 and DDMT-529-MW-287) were located within the suspected release area and two (DDMT-529-MW-288 and DDMT-529-MW-214B) were downgradient from the suspected release area.
    - Existing wells DDMT-529-MW-281, DDMT-529-MW-287, and DDMT-529-MW-288 were Fluvial Aquifer wells intended to evaluate PFAS concentrations in shallow groundwater.
    - Existing well DDMT-529-MW-214B was located immediately underlying the shallow aquifer in the Intermediate Aquifer.

The Target PFAS analytical results for soil and groundwater samples collected at the Building 529 AOPI are summarized below and presented in Table 6-1 and Figure 6-2. Sediment and surface water are not present at this AOPI.

6.2.2.1 Soil

PFOS was detected at concentrations less than the SL in surface soil and shallow subsurface soil (i.e., 6 to 8 feet bgs) samples collected at DDMT-529-01. Target PFAS were not detected at concentrations greater than the LOD in any other soil samples collected at the Building 529 AOPI.

6.2.2.2 Groundwater

PFOS, PFOA, and PFHxS were detected at concentrations greater than the SLs in groundwater samples collected at the AOPI. PFOS and PFOA were detected at concentrations greater than the SLs (4 and 6 ng/L, respectively) in all four monitoring wells: DDMT-529-MW-281 (150 and 6.3 ng/L), DDMT-529-MW-287 (16 and 15 ng/L), DDMT-529-MW-288 (41 and 6.8 ng/L), and DDMT-529-MW-214B (24 and 7.7 ng/L).

PFHxS was also detected at concentrations greater than the 39 ng/L SL in both Fluvial Aquifer monitoring wells located within the suspected release area: DDMT-529-MW-281 (44 ng/L) and DDMT-529-MW-287 (98 ng/L).

In addition, PFBS was detected at concentrations greater than the LOD in all four wells. PFNA and HFPO-DA were not detected at concentrations greater than the LOD in any groundwater samples at the Building 529 AOPI.

Detections of Target PFAS were consistent between the Fluvial and Intermediate Aquifers (PFOS, PFOA, PFHxS, and PFBS), with the highest concentrations being detected in the Fluvial Aquifer.

6.2.3 CSM

The Building 529 AOPI is approximately 4.88 acres. Building 529 is approximately 120,000 ft^2. Most of the AOPI is occupied by Building 529 with paved and grassy landscaped areas surrounding the structure. The building is bound by Heyde Avenue to the north and other warehouse buildings on all other sides, with smaller thoroughfares separating the structures. Surface water is not present at this AOPI; however, surface water drainage is directed to the east and north via the stormwater drainage network, which delivers runoff to the retention basin in the northeastern quadrant of the MI (HDR 2018b). The retention basin is evaluated as part of the Building 308/DRMO AOPI.

Shallow subsurface geology at Building 529 is composed of Quaternary loess consisting of brown to reddish-brown clayey silt or silty clay. Shallow groundwater at the AOPI is between 75 and 80 feet bgs and was not encountered during drilling activities. The depth to groundwater in the Intermediate Aquifer at the AOPI was approximately 89 feet bgs. Groundwater flow is toward the southwest.

The primary release mechanism is the potential release of PFAS-containing materials related to historical spills of firefighting foam, including AFFF, to surface soil. The secondary contaminant migration, fate, and transport considerations include downward contaminant migration from surface soil to subsurface soil and groundwater through leaching and percolation. Surface water is delivered to the stormwater drainage network and ultimately discharges to a retention basin in the northeastern quadrant of the MI, which is evaluated with the Building 308/DRMO AOPI.

Based on the land use restrictions preventing residential use of most of the property at DDMT, the human receptors considered in the CSM are onsite workers with the potential to work at the AOPI and offsite residents living in the vicinity of the DDMT property.

The onsite surface and subsurface soil pathways are potentially complete because Target PFAS were detected at concentrations less than the SLs in both surface soil and subsurface soil and greater than the SLs in groundwater.

Target PFAS were detected at concentrations greater than the SLs in groundwater; however, a non-PFAS groundwater use restriction is in place at DDMT preventing its use for drinking water. Therefore, the groundwater exposure pathway for onsite workers is potentially complete for the duration of the restriction. With exceedances of the SLs onsite and the presence of nearby extraction wells associated with the Allen well field, the groundwater pathway for offsite residents is potentially complete.

Figure 6-3 presents the CSM for the Building 529 AOPI.

6.2.4 Recommendation

Detected concentrations of Target PFAS in groundwater exceed the SLs; therefore, further investigation is recommended.

Table 6-1. Target PFAS Results and Screening for the Building 529 AOPI

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBS	PFHxS	PFNA	PFOA	PFOS
Soil				**Units**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
				Screening Levels	**23**	**1900**	**130**	**19**	**19**	**13**
DDMT-529-01	DD52901-SS01	SURF	0.00-0.50	03/15/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	**2**
	DD52901-SB02	BORE	6.00-8.00	03/15/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	**0.56 J**
	DD52901-SB03	BORE	13.00-15.00	03/15/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
DDMT-529-02	DD52902-SB02	BORE	6.00-8.00	03/16/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	DD52902-SB03	BORE	13.00-15.00	03/16/2023	2.3 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	DD52902-SB03FD	BORE	13.00-15.00 (D)	03/16/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
DDMT-529-03	DD52903-SB02	BORE	6.00-8.00	03/16/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
	DD52903-SB03	BORE	13.00-15.00	03/16/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Groundwater				**Units**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**
				Screening Levels	**6**	**601**	**39**	**6**	**6**	**4**
DDMT-529-MW-214B	DD529-MW214B	WELL	105.00-105.00	03/22/2023	3.6 U	**23**	**22**	1.8 U	**7.7**	**24**
DDMT-529-MW-281	DD529-MW281	WELL	85.00-85.00	03/21/2023	3.5 U	**25**	**44**	1.8 U	**6.3**	**150**
DDMT-529-MW-287	DD529-MW287	WELL	89.00-89.00	03/21/2023	3.9 U	**14**	**98**	2 U	**15**	**16**
	DD529-MW287FD	WELL	89.00-89.00	03/21/2023 (D)	3.9 U	**14**	**97**	2 U	**15**	**16**
DDMT-529-MW-288	DD529-MW288	WELL	95.00-95.00	03/21/2023	3.9 U	**19**	**24**	1.9 U	**6.8**	**41**

The SLs are the Residential Scenario SLs calculated using the USEPA RSL calculator provided in the July 2022 OSD Memorandum for Tap Water using an HQ = 0.1.
Bolded values denote detected concentrations.
Highlighted values indicate an exceedance of the SL.
(D) = Field duplicate sample.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

6.3 BUILDING 550 (1984 PLANE CRASH SITE) AOPI

The following subsections describe the background, sampling results, CSM, and recommendation for the Building 550 AOPI.

6.3.1 AOPI Background

Building 550 was constructed in 1942 and used as a general purpose warehouse. In 1984, a plane crashed into Building 550, and the Memphis Fire Department (MFD) reportedly provided emergency response. It is uncertain whether firefighting efforts used AFFF. Debris and residue from the crash and fire response were buried at Dunn Field (i.e., Site 18). The Army no longer owns this AOPI, and the current use is light industrial. The Dunn Field Site 18 AOPI is discussed later in this document.

6.3.2 SI Sampling and Results

Soil and groundwater samples were collected from the Building 550 AOPI at the following locations (Figure 6-4):

- Nine soil samples and one QC duplicate were collected from three soil borings within the suspected release area (DDMT-550-01, DDMT-550-02, and DDMT-550-03). One surface soil sample and two subsurface soil samples were collected from each boring.
- Two groundwater samples and one QC duplicate were collected from two existing monitoring wells within the suspected release area, one Fluvial Aquifer well (DDMT-550-MW-215B), and one Intermediate Aquifer well (DDMT-MW-215A).

The Target PFAS analytical results for soil and groundwater at the Building 550 AOPI are summarized below and presented in Table 6-2 and Figure 6-5.

6.3.2.1 Soil

PFOS was detected at concentrations less than the SL in surface and subsurface soil at all three boring locations (DDMT-550-01, DDMT-550-02, and DDMT-550-03). In addition, PFBS and PFHxS were detected at concentrations (estimated) less than the SLs in subsurface soil samples collected at DDMT-550-03. PFBS was also detected at concentrations (estimated) less than the SL in subsurface soil collected at DDMT-550-01.

PFOA, PFNA, and HFPO-DA were not detected at concentrations greater than the LOD in any soil samples collected at the Building 550 AOPI.

6.3.2.2 Groundwater

PFOS and PFOA were detected at concentrations greater than the SLs in groundwater collected from the Fluvial Aquifer well (DDMT-550-MW-215B). PFOS was detected at a concentration of 9.1 ng/L, which exceeds the 4 ng/L SL, and PFOA was detected at a concentration of 9.5 ng/L, which exceeds the 6 ng/L SL.

PFOS was detected at a concentration of 58 ng/L in groundwater collected from the Intermediate Aquifer well (DDMT-550-MW-215A), exceeding the 4 ng/L SL. PFOA was detected at concentrations less than the SL in DDMT-550-MW-215A. In addition, PFOS and PFOA were detected at concentrations greater than the SLs in Fluvial Aquifer well DDMT-559-215B (9.1 and 9.5 ng/L, respectively). PFBS and PFNA were detected at concentrations less than the SLs in both existing monitoring wells. PFNA and HFPO-DA were not detected at concentrations greater than the LOD in either monitoring well.

Detections of Target PFAS were consistent between the Fluvial and Intermediate Aquifers (PFOS, PFOA, PFHxS, and PFBS), with the highest concentrations detected in the Intermediate Aquifer.

6.3.3 CSM

The Building 550 AOPI is approximately 5.74 acres. Building 550 is approximately 120,000 ft^2. Most of the AOPI is occupied by Building 550, with paved and grassy landscaped areas surrounding the structure. The building is bound by the Memphis Depot Parkway to the south and other warehouse buildings on all other sides, with smaller thoroughfares separating the structures. Surface water is not present at this AOPI; however, surface water drainage is directed primarily to the southeast and ultimately discharges to Lake Danielson via the stormwater drainage network (HDR 2018b). Lake Danielson is evaluated as part of the Building 560 AOPI.

Shallow subsurface geology at Building 550 is composed of Quaternary loess consisting of brown to reddish-brown clayey silt or silty clay. Shallow groundwater at the AOPI is between 90 and 93 feet bgs and was not encountered during drilling activities. The depth to groundwater in the Intermediate Aquifer at the AOPI is approximately 94 feet bgs. Groundwater flow is toward the south/southwest.

There is no confirmed release of PFAS at this AOPI; however, MFD possessed AFFF at the time of the plane crash, and given the proximity to the airport, it is possible AFFF was used in the fire response. The primary release mechanism is the potential release of PFAS-containing materials related to fire response to surface soil. The secondary contaminant migration, fate, and transport considerations include downward contaminant migration from surface soil to subsurface soil and groundwater through leaching and percolation. Surface water is delivered to the stormwater drainage network, which primarily discharges to Lake Danielson and is evaluated with the Building 560 AOPI.

Based on the land use restrictions preventing residential use of most of the property at DDMT, the human receptors considered in the CSM are onsite workers with the potential to work at the AOPI and offsite residents living in the vicinity of the DDMT property.

The onsite soil exposure pathways are potentially complete because Target PFAS were detected at concentrations less than the SLs in soil and greater than the SLs in groundwater.

Target PFAS were detected at concentrations greater than the SLs in groundwater; however, a non-PFAS groundwater use restriction is in place at DDMT preventing its use for drinking water. Therefore, the groundwater exposure pathways for onsite workers are potentially complete for the duration of the restriction. Due to exceedances of the SLs onsite and the presence of nearby extraction wells associated with the Allen well field, the groundwater exposure pathways for offsite residents are potentially complete.

Figure 6-6 presents the CSM for the Building 550 AOPI.

6.3.4 Recommendation

Detected concentrations of Target PFAS in groundwater at the Building 550 AOPI exceed the SLs; therefore, further investigation is recommended.

Table 6-2. Target PFAS Results and Screening for the Building 550 AOPI

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBS	PFHxS	PFNA	PFOA	PFOS
Soil				**Units**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
				Screening Levels	**23**	**1900**	**130**	**19**	**19**	**13**
DDMT-550-01	DD55001-SS01	SURF	0.00-0.50	03/16/2023	2.1 U	0.5 U	0.5 U	0.5 U	0.5 U	**0.64 J**
	DD55001-SS01FD	SURF	0.00-0.50 (D)	03/16/2023	2.1 U	0.55 U	0.55 U	0.55 U	0.55 U	**0.42 J**
	DD55001-SB02	BORE	6.00-8.00	03/16/2023	2.3 U	**0.41 J**	0.6 U	0.6 U	0.6 U	0.6 U
	DD55001-SB03	BORE	13.00-15.00	03/16/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
DDMT-550-02	DD55002-SS01	SURF	0.00-0.50	03/16/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	**0.25 J**
	DD55002-SB02	BORE	6.00-8.00	03/16/2023	2.1 U	0.55 U	0.55 U	0.55 U	0.55 U	**0.47 J**
	DD55002-SB03	BORE	13.00-15.00	03/16/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
DDMT-550-03	DD55003-SS01	SURF	0.00-0.50	03/17/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	**1.5**
	DD55003-SB02	BORE	6.00-8.00	03/17/2023	2.3 U	**0.64 J**	**0.82 J**	0.55 U	0.55 U	0.55 U
	DD55003-SB03	BORE	13.00-15.00	03/17/2023	2.3 U	**0.25 J**	**0.48 J**	0.55 U	0.55 U	**1.4**
Groundwater				**Units**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**
				Screening Levels	**6**	**601**	**39**	**6**	**6**	**4**
DDMT-550-MW-215A	DD550-MW215A	WELL	135.00-135.00	03/22/2023	3.5 U	**19**	**29**	1.8 U	**5.1**	**58**
DDMT-550-MW-215B	DD550-MW215B	WELL	110.00-110.00	03/21/2023	3.6 U	**7.6**	**21**	1.8 U	**9.5**	**9.1**
	DDMT550-MW215BFD	WELL	110.00-110.00 (D)	3/21/2023	3.6 U	**8**	**21**	1.8 U	**8.9**	**9.5**

The SLs are the Residential Scenario SLs calculated using the USEPA RSL calculator provided in the July 2022 OSD Memorandum for Tap Water using an HQ = 0.1.
Bolded values denote detected concentrations.
Highlighted values indicate an exceedance of the SL.
(D) = Field duplicate sample.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

6.4 BUILDING 560 (GENERAL PURPOSE WAREHOUSE) AOPI

The following subsections describe the background, sampling results, CSM, and recommendation for the Building 560 AOPI.

6.4.1 AOPI Background

Building 560 was constructed in 1990 and is used as a general purpose warehouse. Spills (5 and 15 gallons) of AFFF were reported on October 17 and November 14, 1995, inside Building 560, near the western wall and cargo door 10 on the southern side of the building. The damaged containers were moved to the recoupment facility, and absorbent was applied to the spill (Woodward-Clyde 1996). The Army no longer owns this AOPI, and it serves as a United Parcel Service (UPS) facility.

6.4.2 SI Sampling and Results

Soil, groundwater, surface water, and sediment samples were collected from the Building 560 AOPI at the following locations (Figures 6-7a and 6-7b):

- Nine soil samples and one QC duplicate were collected from three soil borings within the suspected release area (DDMT-560-01, DDMT-560-02, and DDMT-560-03). One surface soil sample and two subsurface soil samples were collected from each boring.
- Five groundwater samples were collected from five existing monitoring wells. One monitoring well was located within the suspected release area (DDMT-560-MW-307). Two monitoring wells were located upgradient of the suspected release area (DDMT-560-MW-311 and DDMT-560-MW-284), and two monitoring wells (DDMT-560-MW-271 and DDMT-560-MW-302) were downgradient from the suspected release area.
    - o Existing wells DDMT-560-MW-284, DDMT-560-MW-307, and DDMT-560-MW-271 were Fluvial Aquifer wells intended to evaluate PFAS concentrations in shallow groundwater.
    - o Existing wells DDMT-560-MW-311 and DDMT-560-MW-302 were located immediately underlying the shallow aquifer in the Intermediate Aquifer.
- Two surface water and one sediment sample were collected from Lake Danielson. One collocated surface water/sediment sample was collected at the inlet of Lake Danielson, and one surface water sample was collected at the outlet. A sediment sample was not collected at the outlet of Lake Danielson because it was a concrete-lined channel.

The Target PFAS analytical results for soil and groundwater at the Building 560 AOPI are summarized below and presented in Table 6-3 and Figures 6-8a and 6-8b.

6.4.2.1 Soil

PFOS was detected in surface soil at concentrations (estimated) less than the SL at all three soil borings (DDMT-560-01, DDMT-560-02, and DDMT-560-03). In addition, PFOA was detected at concentrations (estimated) less than the SL at location DDMT-560-01.

PFBS, PFNA, PFHxS, and HFPO-DA were not detected at concentrations greater than the LODs in any soil samples collected at the Building 560 AOPI.

6.4.2.2 Groundwater

PFOS, PFOA, PFBS, and PFHxS were detected in groundwater samples collected at the Building 560 AOPI. PFOS concentrations exceeded the SL of 4 ng/L at three existing monitoring wells: DDMT-560-

MW-311 (130 ng/L), DDMT-560-MW-284 (31 ng/L), and DDMT-560-MW-302 (4.2 ng/L). The highest concentrations of PFOS were detected at the northern side of the building.

PFOA, PFBS, and PFHxS were detected at concentrations greater than the LODs in all five monitoring wells, with PFOA and PFHxS both exceeding the SLs in monitoring well DDMT-560-MW-311 (northern side). PFOA was detected at a concentration of 7.2 ng/L, which exceeds the 6 ng/L SL. PFHxS was detected at a concentration of 43 ng/L, exceeding the 39 ng/L SL.

PFNA and HFPO-DA were not detected at concentrations greater than the LODs in any groundwater samples collected at the Building 560 AOPI.

The detections of Target PFAS were consistent among the existing monitoring wells, with the highest concentrations being detected in the Intermediate Aquifer at the northern side of AOPI.

6.4.2.3 Surface Water

PFOS, PFOA, PFBS, and PFHxS were detected in surface water collected at the inlet of Lake Danielson (DDMT-560-04). PFOS was detected at a concentration 9.4 ng/L (estimated), which exceeds the 4 ng/L SL. All other detected concentrations of Target PFAS at the inlet were less than the SLs.

PFOS and PFBS were detected at concentrations less than the SLs in surface water collected at the outlet of Lake Danielson (DDMT-560-05).

PFNA and HFPO-DA were not detected at concentrations greater than the LODs in surface water collected at Lake Danielson.

6.4.2.4 Sediment

PFOS and PFBS were detected at concentrations (estimated) less than the SLs in the sediment sample collected at the inlet of Lake Danielson (DDMT-560-04). PFOA, PFNA, PFHxS, and HFPO-DA were not detected at concentrations greater than the LODs in sediment collected at Lake Danielson.

6.4.3 CSM

The Building 560 AOPI is approximately 11.2 acres and Building 560 is approximately 175,000 ft^2. Most of the AOPI is occupied by Building 560, with paved and grassy landscaped areas surrounding the structure. The building is bound by the Memphis Depot Parkway to the north, other general purpose warehouses to the east and south, and a grassy field to the west. Smaller thoroughfares separate the structures. All surface water from this AOPI is delivered to Lake Danielson via the stormwater drainage network (HDR 2018b). Lake Danielson is evaluated with this AOPI.

Shallow subsurface geology at Building 560 is composed of Quaternary loess consisting of brown to reddish-brown clayey silt or silty clay. Shallow groundwater at the AOPI is between 90 and 95 feet bgs and was not encountered during drilling activities. The depth to groundwater in the Intermediate Aquifer at the AOPI is between 85 and 95 feet bgs. Groundwater flow is to the south/southeast.

Building 560 reportedly stored AFFF, and records indicate two spills of AFFF in the building. The primary release mechanism is the potential release of PFAS-containing materials related to historical spills of AFFF to surface soil. The secondary contaminant migration, fate, and transport considerations include downward contaminant migration from surface soil to subsurface soil, groundwater through leaching, and percolation. Surface water is delivered to the stormwater drainage network and ultimately discharges to Lake Danielson, which is evaluated with this AOPI.

Based on the land use restrictions preventing residential use of most of the property at DDMT, the human receptors considered in the CSM are onsite workers with the potential to work at the AOPI, onsite recreators within DDMT, and offsite residents living in the vicinity of the DDMT property. In addition, because surface water from the drainage network is eventually discharged offsite to a local stream south of DDMT, the offsite recreator is a potential receptor; however, for the purposes of this SI, only the offsite resident is considered, as it is the most conservative receptor.

The onsite soil exposure pathways are potentially complete because Target PFAS were detected at concentrations less than the SLs in soil and greater than the SLs in groundwater.

Target PFAS were detected at concentrations greater than the SLs in groundwater; however, a non-PFAS groundwater use restriction is in place at DDMT preventing its use for drinking water. Therefore, the groundwater exposure pathways for onsite workers are potentially complete for the duration of the restriction. Due to exceedances of the SLs onsite and the presence of nearby extraction wells associated with the Allen well field, the groundwater exposure pathways for offsite residents are potentially complete.

The surface water and sediment exposure pathways for onsite workers and onsite recreators are complete because Target PFAS were detected at concentrations greater than the SLs in surface water and less than the SLs in sediment collected from Lake Danielson. In addition, since the surface water drainage network eventually discharges to a local stream south of DDMT, the surface water and sediment pathways are potentially complete for offsite residents.

Figure 6-9 presents the CSM for the Building 560 AOPI.

6.4.4 Recommendation

Detected concentrations of Target PFAS in groundwater and surface water exceed the SLs; therefore, further investigation is recommended.

Table 6-3. Target PFAS Results and Screening for the Building 560 AOPI

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBS	PFHxS	PFNA	PFOA	PFOS
Soil				**Units**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
				Screening Levels	**23**	**1900**	**130**	**19**	**19**	**13**
DDMT-560-01	DD56001-SS01	SURF	0.00-0.50	03/18/2023	1.9 U	0.48 U	0.48 U	0.48 U	**0.19 J**	0.48 U
	DD56001-SS01FD	SURF	0.00-0.50 (D)	03/18/2023	2.1 U	0.5 U	0.5 U	0.5 U	0.5 U	**0.22 J**
	DD56001-SB02	BORE	6.00-8.00	03/18/2023	2.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	DD56001-SB03	BORE	13.00-15.00	03/18/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
DDMT-560-02	DD56002-SS01	SURF	0.00-0.50	03/18/2023	1.9 U	0.47 U	0.47 U	0.47 U	0.47 U	**0.37 J**
	DD56002-SB02	BORE	6.00-8.00	03/18/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	DD56002-SB03	BORE	13.00-15.00	03/18/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
DDMT-560-03	DD56003-SS01	SURF	0.00-0.50	03/17/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	**0.35 J**
	DD56003-SB02	BORE	6.00-8.00	03/17/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
	DD56003-SB03	BORE	13.00-15.00	03/17/2023	2.3 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Groundwater				**Units**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**
				Screening Levels	**6**	**601**	**39**	**6**	**6**	**4**
DDMT-560-MW-271	DD560-MW271	WELL	140.00-140.00	03/22/2023	3.7 U	**1.7 J**	**8.5**	1.9 U	**2.3 J**	1.9 U
DDMT-560-MW-284	DD560-MW284	WELL	115.00-115.00	03/20/2023	4.4 U	**45**	**25**	2.2 U	**5.5**	**31**
DDMT-560-MW-302	DD560-MW302	WELL	165.00-165.00	03/22/2023	3.5 U	**30**	**16**	1.8 U	**4.5**	**4.2**
DDMT-560-MW-307	DD560-MW307	WELL	105.00-105.00	03/23/2023	3.4 U	**99**	**13**	1.7 U	**0.91 J**	1.7 U
DDMT-560-MW-311	DD560-MW311	WELL	178.00-178.00	03/22/2023	3.7 U	**28**	**43**	1.8 U	**7.2**	**130**
Surface Water				**Units**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**
				Screening Levels	**6**	**601**	**39**	**6**	**6**	**4**
DDMT-560-04	DD56004-SW01	SWTR	0.00-0.00	03/23/2023	3.7 U	**53**	**5.4**	1.9 U	**1.9 J**	**9.4 J+**
	DD56004-SW01FD	SWTR	0.00-0.00 (D)	3/23/2023	3.9 U	**54**	**4.9**	1.9 U	**1.6 J**	**8.9 J**
DDMT-560-05	DD56005-SW01	SWTR	0.00-0.00	03/23/2023	3.7 U	**9.1**	1.9 U	1.9 U	1.9 U	**2.1 J**
Sediment				**Units**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
				Screening Levels	**23**	**1900**	**130**	**19**	**19**	**13**
DDMT-560-04	DD56004-SD01	SEDI	0.00-0.00	03/23/2023	3.4 UJ	**0.43 J+**	0.85 UJ	0.85 U	0.85 UJ	**0.85 J**
	DD56004-SD01FD	SEDI	0.00-0.00 (D)	03/23/2023	2.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U

The SLs are the Residential Scenario SLs calculated using the USEPA RSL calculator provided in the July 2022 OSD Memorandum for Tap Water using an HQ = 0.1.
Bolded values denote detected concentrations.
Highlighted values indicate an exceedance of the SL.
(D) = Field duplicate sample.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The analyte was positively identified; the result is an estimated concentration and may be biased high.
U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte.

6.5 BUILDINGS 865 AND 873 (OPEN SHED WAREHOUSE/RECOUPMENT FACILTIES) AOPI

The following subsections describe the background, sampling results, CSM, and recommendation for the Buildings 865 and 873 AOPI.

6.5.1 AOPI Background

Building 873 was constructed in 1942 and was used as an open shed warehouse and DDMT's recoupment area. Foam liquid extinguishing chemicals and "AAAF" were listed in a 1994 hazardous materials inventory list for Building 873 (Pickering Firm 1994). Historically, multiple areas within and around the perimeter of the open shed warehouse were used as a recoupment facility for DDMT (Woodward-Clyde 1996). The Army no longer owns this AOPI, and it serves as a production and maintenance area for Barnhart Crane and Rigging.

DDMT's recoupment area shifted from Building 873 to Building 865 starting in 1986. The recoupment area was where response to spilled chemicals, disposal of residue, and the repackaging of damaged containers were conducted. Furthermore, given the documented spills of AFFF in Building 560 in 1995, Building 865 would have received the damaged containers in response. It is also possible that undocumented PFAS-containing spills and/or damaged containers were received by either recoupment facility while in operation.

6.5.2 SI Sampling and Results

Soil and groundwater samples were collected from the Buildings 865 and 873 AOPI at the following locations (Figure 6-10):

- Seven soil samples and one QC duplicate were collected from three soil borings within the suspected release area (DDMT-873-01, DDMT-873-02, and DDMT-873-03). Two subsurface soil samples were collected from each boring. In addition, one surface soil sample was collected from DDMT-873-01. Surface soil samples were not collected from the other two borings because they were located in gravel areas.

- Seven groundwater samples and one QC duplicate were collected from seven existing monitoring wells. Three monitoring wells (DDMT-560-MW-284, DDMT-560-MW-307, and DDMT-560-MW-311) were located within the suspected release area. Two monitoring wells (DDMT-560-MW-271 and DDMT-560-MW-302) were downgradient from the suspected release area.
  - Existing wells DDMT-873-MW-216, DDMT-873-MW-197B, DDMT-873-MW-204B, DDMT-873-MW-205B, and DDMT-873-MW-210B were Fluvial Aquifer wells intended to evaluate PFAS concentrations in shallow groundwater.
  - Existing wells DDMT-873-MW-205A and DDMT-873-MW-210A were located immediately underlying the shallow aquifer in the Intermediate Aquifer.

The Target PFAS analytical results for the groundwater sample collected at the Buildings 865 and 873 AOPI are summarized below and presented in Table 6-4 and Figure 6-11.

6.5.2.1 Soil

PFHxS was detected at concentrations (estimated) less than the SL at DDMT-873-02. PFOS, PFOA, PFBS, PFNA, and HFPO-DA were not detected at concentrations greater than the LODs in any soil samples collected at the Buildings 865 and 873 AOPI.

6.5.2.2 Groundwater

PFOA, PFBS, and PFHxS were detected in groundwater samples collected from each of the seven monitoring wells at the Buildings 865 and 873 AOPI. PFOA was detected at a concentration of 7.4 ng/L at Fluvial Aquifer well DDMT-873-MW-210B within the suspected release area, which exceeds the 6 ng/L SL. In addition, PFHxS was detected within the suspected release area at a concentration of 120 ng/L at DDMT-873-MW-210B and in Intermediate Aquifer well DDMT-873-MW-210A (60 ng/L), both of which exceed the 39 ng/L SL. All detected concentrations of PFBS at the AOPI were less than the SL.

PFOS was detected at concentrations (estimated) less than the SL at four Fluvial Aquifer wells (DDMT-873-MW-197B, DDMT-873-MW-204B, DDMT-873-MW-205B, and DDMT-873-MW-216) and one Intermediate Aquifer well (DDMT-873-MW-210A).

PFNA and HFPO-DA were not detected at concentrations greater than the LODs in groundwater samples collected at the Buildings 865 and 873 AOPI.

The detections of Target PFAS were generally consistent among the existing monitoring wells, with the highest concentrations being detected in the Fluvial Aquifer and at the northern side of AOPI.

6.5.3 CSM

The Buildings 865 and 873 AOPI is approximately 10.5 acres. Building 865 is approximately 4,200 ft^2. Former Building 873 was approximately 276,000 ft^2. Based on aerial photographs, Building 873 was deconstructed between 1997 and 2006. The area directly east of the southwestern corner of Building 873 underwent a soil removal action in 1985 where the top 6 inches to 1 foot of surface soil was removed as part of pre-RI activities (HDR 2020b, Woodward-Clyde 1996).

The AOPI is occupied by Building 865, a gravel pad (former site of Building 873), and multiple grassy areas. The area is bound by Barnhart Crane property to the north and west and numerous storage lots and buildings to the east. The AOPI is bound to the south by the DDMT installation boundary. The Memphis Depot Parkway dissects the AOPI between Building 865 and the former site of Building 873. Smaller thoroughfares surround the AOPI. Surface water is not present at this AOPI; however, surface water drainage is directed primarily to the west/northwest (HDR 2018b).

Shallow subsurface geology at the Buildings 865 and 873 (Open Shed Warehouse/Recoupment Facilities) AOPI is composed of Quaternary loess consisting of brown to reddish-brown clayey silt or silty clay. Shallow groundwater at the AOPI is between 75 and 85 feet bgs and was not encountered during drilling activities. The depth to groundwater in the Intermediate Aquifer at the AOPI is approximately 80 feet bgs. A geologic sink is present to the east, and site-specific groundwater flow is toward the northeast.

Buildings 865 and 873 were DDMT's hazardous substance recoupment areas where equipment and material used in response to the reported AFFF spills were likely handled. In addition, Building 873 had confirmed storage of foam fire extinguishing chemicals. The primary release mechanism is the potential release of PFAS-containing materials to surface soil. The secondary contaminant migration, fate, and transport considerations include downward contaminant migration from surface soil to subsurface soil and groundwater through leaching and percolation.

Based on the land use restrictions preventing residential use of most of the property at DDMT, the human receptors considered in the CSM are onsite workers with the potential to work at the AOPI and offsite residents living in the vicinity of the DDMT property.

The onsite soil exposure pathways are potentially complete because Target PFAS were detected at concentrations less than the SLs in soil and greater than the SLs in groundwater.

Target PFAS were detected at concentrations greater than the SLs in groundwater; however, a non-PFAS groundwater use restriction is in place at DDMT preventing its use for drinking water. Therefore, the groundwater exposure pathways for onsite workers are potentially complete for the duration of the restriction. Due to exceedances of the SLs onsite and the presence of nearby extraction wells associated with the Allen well field, the groundwater exposure pathways for offsite residents are potentially complete.

Figure 6-12 presents the CSM for the Buildings 865 and 873 AOPI.

6.5.4 Recommendation

Detected concentrations of Target PFAS in groundwater exceed the SLs; therefore, further investigation is recommended.

Table 6-4. Target PFAS Results and Screening for the Buildings 865 and 873 AOPI

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBS	PFHxS	PFNA	PFOA	PFOS
Soil				**Units**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
				Screening Levels	**23**	**1900**	**130**	**19**	**19**	**13**
DDMT-873-01	DD87301-SS01	SURF	0.00-1.00	03/18/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
	DD87301-SB02	BORE	6.00-8.00	03/18/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	DD87301-SB03	BORE	13.00-15.00	03/18/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
DDMT-873-02	DD87302-SB02	BORE	6.00-8.00	03/18/2023	2.4 U	0.6 U	**0.37 J**	0.6 U	0.6 U	0.6 U
	DD873-SB02FD	BORE	6.00-8.00 (D)	03/18/2023	2.3 U	0.55 U	**0.38 J**	0.55 U	0.55 U	0.55 U
	DD87302-SB03	BORE	13.00-15.00	03/18/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
DDMT-873-03	DD87303-SB02	BORE	6.00-8.00	03/18/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	DD87303-SB03	BORE	13.00-15.00	03/18/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Groundwater				**Units**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**
				Screening Levels	**6**	**601**	**39**	**6**	**6**	**4**
DDMT-873-MW-197B	DD873-MW197B	WELL	100.00-100.00	03/23/2023	3.7 U	**3.8**	**13**	1.8 U	**1.6 J**	**0.92 J**
DDMT-873-MW-204B	DD873-MW204B	WELL	100.00-100.00	03/23/2023	3.5 U	**1.4 J**	**14**	1.8 U	**3.1 J**	**3.1 J**
DDMT-873-MW-205A	DD873-MW205A	WELL	146.00-146.00	03/22/2023	3.8 U	**2 J**	**8.2**	1.9 U	**1.8 J**	1.9 U
	DD873-MW205AFD	WELL	146.00-146.00 (D)	3/22/2023	3.7 U	**2 J**	**7.7**	1.9 U	**1.8 J**	1.9 U
DDMT-873-MW-205B	DD873-MW205B	WELL	102.00-102.00	03/22/2023	3.6 U	**2.4 J**	**11**	1.8 U	**1.8 J**	**0.96 J**
DDMT-873-MW-210A	DD873-MW210A	WELL	185.00-185.00	03/23/2023	3.5 U	**27**	**60**	1.8 U	**3.1 J**	**2 J**
DDMT-873-MW-210B	DD873-MW210B	WELL	101.00-101.00	03/23/2023	3.7 U	**100**	**120**	1.9 U	**7.4**	1.9 U
DDMT-873-MW-216	DD873-MW216	WELL	105.00-105.00	03/23/2023	3.8 U	**1.8 J**	**15**	1.9 U	**2.9 J**	**1 J**

The SLs are the Residential Scenario SLs calculated using the USEPA RSL calculator provided in the July 2022 OSD Memorandum for Tap Water using an HQ = 0.1.
Bolded values denote detected concentrations.
Highlighted values indicate an exceedance of the SL.
(D) = Field duplicate sample.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

6.6 BUILDING 308/DRMO (HAZARDOUS WASTE STORAGE) AOPI

The following subsections describe the background, sampling results, CSM, and recommendation for the Building 308/DRMO AOPI.

6.6.1 AOPI Background

Building 308 was constructed in 1944 as part of the DRMO and was used for indoor storage of hazardous waste and material (Woodward-Clyde 1996). It is unknown when the DRMO concrete hardstand was constructed. The DRMO was intended for outdoor storage of flammable and non-flammable materials (Pickering Firm 1994). However, it is possible that hazardous materials were stored in the DRMO hardstand at times in DDMT's history. Foam liquid extinguishing chemicals were likely stored in both areas at any given time (Pickering Firm 1994). The Army no longer owns this AOPI, and it is now an open grassy area.

6.6.2 SI Sampling and Results

Soil, groundwater, and sediment samples were collected from the Building 308/DRMO AOPI at the following locations (Figure 6-13):

- Nine soil samples and one QC duplicate were collected from three soil borings (DDMT-308-01, DDMT-308-02, and DDMT-308-03) within the suspected release area. One surface soil and subsurface soil samples were collected from each boring.
- Three groundwater samples were collected from three existing monitoring wells. One monitoring well (DDMT-308-MW-103) was located within the suspected release area. Two monitoring wells (DDMT-308-MW-291 and DDMT-308-MW-264) were located downgradient from the suspected release area.
    - Existing wells DDMT-308-MW-103 and DDMT-308-MW-291 were Fluvial Aquifer wells intended to evaluate PFAS concentrations in shallow groundwater.
    - Existing well DDMT-308-MW-264 was located immediately underlying the shallow aquifer in the Intermediate Aquifer.
- Two surface water samples were collected from a concrete-lined retention basin downgradient from and east of the suspected release area at the Building 308/DRMO AOPI (DDMT-308-04 and DDMT-308-05).

The Target PFAS analytical results for soil, groundwater, and surface water collected at the Building 308/DRMO AOPI are summarized below and presented in Table 6-5 and Figure 6-14.

6.6.2.1 Soil

PFOS and PFHxS were detected at concentrations less than the SLs in soil samples collected from two borings (DDMT-308-02 and DDMT-308-03) at the Building 308/DRMO AOPI.

PFOA, PFBS, PFNA, and HFPO-DA were not detected at concentrations greater than the LODs in any of the soil samples collected at the Building 308/DRMO AOPI.

6.6.2.2 Groundwater

PFOS, PFOA, and PFHxS were detected at concentrations greater than the SLs in groundwater samples collected from the two Fluvial Aquifer wells (DDMT-308-MW-103 and DDMT-308-MW-291) at the Building 308/DRMO AOPI.

PFOS was detected within the suspected release area at a concentration of 4.5 ng/L (estimated) in DDMT-308-MW-103, which exceeds the 4.0 ng/L SL. In addition, PFOA, PFBS, and PFHxS were detected at concentrations less than the SLs at this location.

PFOS, PFOA, and PFHxS were detected at concentrations greater than the SLs in groundwater collected at downgradient well DDMT-308-MW-291. PFOS was detected at a concentration of 160 ng/L, which exceeds the 4 ng/L SL. PFOA was detected at a concentration of 6.6 ng/L, exceeding the 6 ng/L SL. PFHxS was detected at a concentration of 47 ng/L, which exceeds the 39 ng/L SL. In addition, PFBS was detected at concentrations less than the SL at DDMT-308-MW-291.

PFNA and HFPO-DA were not detected at concentrations greater than the LODs in groundwater samples collected at the Building 308/DRMO AOPI.

Target PFAS detections were consistent among the Fluvial Aquifer wells, with the highest concentrations being detected downgradient from the suspected release area. Target PFAS were not detected in the Intermediate Aquifer well.

6.6.2.3 Surface Water

PFOS, PFBS, and PFHxS were detected at concentrations less than the SLs in surface water collected downgradient from the suspected release area at locations DDMT-308-04 and DDMT-308-05.

PFOA, PFNA, and HFPO-DA were not detected at concentrations greater than the LODs in surface water collected at the Building 308/DRMO AOPI.

6.6.3 CSM

The Building 308/DRMO AOPI is approximately 1.74 acres. Building 308 was approximately 540 ft^2, and the DRMO concrete hardstand was located 100 feet to the west of the building, covering approximately 8,800 ft^2. Both structures were located in the northeastern portion of the MI. It is unknown when the structures were demolished. Currently, the former DRMO area is an open grass field, with a retention basin flanking the eastern boundary of the AOPI. The retention basin receives stormwater runoff from the northernmost area of the MI, including the open grass field to the north of the warehouse complex and the northernmost warehouses (HDR 2018b).

Shallow subsurface geology at the Building 308/DRMO AOPI is composed of Quaternary loess consisting of brown to reddish-brown clayey silt or silty clay. Shallow groundwater at the AOPI is between 55 and 65 feet bgs and was not encountered during drilling activities. The depth to groundwater in the Intermediate Aquifer at the AOPI is approximately 80 feet bgs. Site-specific groundwater flow is toward the southwest.

Firefighting foam chemicals were likely stored at Building 308 and the concrete hardstand, resulting in a potential for release during handling and/or disposal activities. The primary release mechanism is the potential release of PFAS-containing materials to surface soil. The secondary contaminant migration, fate, and transport considerations include downward contaminant migration from surface soil to subsurface soil and groundwater through leaching and percolation. Surface water is delivered to the retention basin directly to the northeast via overland flow and is evaluated with this AOPI.

Based on the land use restrictions preventing residential use of most of the property at DDMT, the human receptors considered in the CSM are onsite workers with the potential to work at the AOPI and offsite residents living in the vicinity of the DDMT property.

The onsite soil exposure pathways are potentially complete because Target PFAS were detected at concentrations less than the SLs in soil and greater than the SLs in groundwater.

Target PFAS were detected at concentrations greater than the SLs in groundwater; however, a non-PFAS groundwater use restriction is in place at DDMT preventing its use for drinking water. Therefore, the groundwater exposure pathways for onsite workers are potentially complete for the duration of the restriction. Due to exceedances of the SLs onsite and the presence of nearby extraction wells associated with the Allen well field, the groundwater exposure pathways for offsite residents are potentially complete.

The surface water and sediment exposure pathways for onsite workers are potentially complete because Target PFAS were detected at concentrations less than the SLs in surface water collected from the retention pond.

Figure 6-15 presents the CSM for the Building 308/DRMO AOPI.

6.6.4 Recommendation

Detected concentrations of Target PFAS in groundwater exceed the SLs; therefore, further investigation is recommended.

Table 6-5. Target PFAS Results and Screening for the Building 308/DRMO AOPI

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBS	PFHxS	PFNA	PFOA	PFOS
Soil				**Units**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
				Screening Levels	**23**	**1900**	**130**	**19**	**19**	**13**
DDMT-308-01	DD30801-SS01	SURF	0.00-0.50	03/15/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
	DD30801-SB02	BORE	6.00-8.00	03/15/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	DD30801-SB03	BORE	13.00-15.00	03/15/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
DDMT-308-02	DD30802-SS01	SURF	0.00-0.50	03/15/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	**4.5**
	DD30802-SB02	BORE	6.00-8.00	03/15/2023	2.5 U	0.65 U	**0.75 J**	0.65 U	0.65 U	**9.1**
	DD30802-SB03	BORE	13.00-15.00	03/15/2023	2.4 U	0.6 U	**0.33 J**	0.6 U	0.6 U	0.6 U
DDMT-308-03	DD30803-SS01	SURF	0.00-0.50	03/15/2023	2.3 U	0.6 U	0.6 U	0.6 U	0.6 U	**1 J**
	DD30803-SB02	BORE	6.00-8.00	03/15/2023	2.4 U	0.6 U	**0.5 J**	0.6 U	0.6 U	0.6 U
	DD308-SB02FD	BORE	6.00-8.00 (D)	03/15/2023	2.5 U	0.6 U	**0.37 J**	0.6 U	0.6 U	0.6 U
	DD30803-SB03	BORE	13.00-15.00	03/15/2023	2.1 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Groundwater				**Units**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**
				Screening Levels	**6**	**601**	**39**	**6**	**6**	**4**
DDMT-308-MW-103	DD308-MW103	WELL	80.00-80.00	03/20/2023	3.8 U	**2.9 J**	**4.2**	1.9 U	**4.2**	**4.5 J**
DDMT-308-MW-264	DD308-MW264	WELL	110.00-110.00	03/20/2023	3.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
DDMT-308-MW-291	DD308-MW291	WELL	79.00-79.00	03/20/2023	3.7 U	**34**	**47**	1.8 U	**6.6**	**160**
Surface Water				**Units**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**
				Screening Levels	**6**	**601**	**39**	**6**	**6**	**4**
DDMT-308-04	DD30804-SW01	SWTR	0.00-0.00	03/17/2023	3.9 U	**1.5 J**	**17**	2 U	2 U	**1.5 J**
DDMT-308-05	DD30805-SW01	SWTR	0.00-0.00	03/17/2023	3.5 U	**1.4 J**	**14**	1.8 U	1.8 U	**3.9**

The SLs are the Residential Scenario SLs calculated using the USEPA RSL calculator provided in the July 2022 OSD Memorandum for Tap Water using an HQ = 0.1.
Bolded values denote detected concentrations.
Highlighted values indicate an exceedance of the SL.
(D) = Field duplicate sample.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

6.7 DUNN FIELD SITE 18 AOPI

The following subsections describe the background, sampling results, CSM, and recommendation for the Dunn Field Site 18 AOPI.

6.7.1 AOPI Background

A DC-3 cargo plane crashed into Building 550 in August 1984. The remains resulting from the crash were buried at Site 18 at Dunn Field. The debris were buried to an unknown depth covering an area approximately 363 feet long and 45 feet wide, located approximately 240 feet from the western boundary and 600 feet from the northern boundary of Dunn Field (A.T. Kearney, Inc. 1990). It is unknown when the remains were relocated form the site of the crash to Site 18. Given the proximity to the Memphis International Airport (i.e., approximately 3 miles), AFFF possibly was used in response to the plane crash and resulting fire; therefore, PFAS contamination could be potentially affecting Dunn Field in and around the area of Site 18. The Army still owns this AOPI, but it will be transferred outside of Army's ownership in the future. This area is currently an undeveloped open field.

6.7.2 SI Sampling and Results

Soil and groundwater samples were collected from the Dunn Field Site 18 AOPI at the following locations (Figure 6-16):

- Nine soil samples were collected from three soil borings within the suspected release area (DDMT-S18-01, DDMT-S18-02, and DDMT-S18-03). One surface soil sample and two subsurface soil samples were collected from each boring.
- Three groundwater samples were collected from three existing Fluvial Aquifer monitoring wells downgradient from the suspected release area (DDMT-S18-MW-221, DDMT-S18-MW-222, and DDMT-S18-MW-134).

The Target PFAS analytical results for groundwater collected at the Dunn Field Site 18 AOPI are summarized below and presented in Table 6-6 and Figure 6-17.

6.7.2.1 Soil

PFOS was detected at concentrations less than the SL in surface soil samples collected at soil borings DDMT-S18-01 and DDMT-S18-03 (estimated). PFOA was detected at concentrations less than the SL in surface soil and subsurface soil collected at DDMT-S18-01 and subsurface soil collected at DDMT-S18-02.

PFBS, PFNA, PFHxS, and HFPO-DA were not detected at concentrations greater than the LODs in any soil samples collected at the Dunn Field Site 18 AOPI.

6.7.2.2 Groundwater

PFOS, PFOA, PFBS, and PFHxS were detected in groundwater collected from all three downgradient monitoring wells (DDMT-S18-MW-221, DDMT-S18-MW-222, and DDMT-S18-MW-134). Detected concentrations of PFOS exceeded the 4 ng/L SL at monitoring wells DDMT-S18-MW-221 (7.5 ng/L [estimated]) and DDMT-S18-MW-134 (4.4 ng/L [estimated]).

All other Target PFAS were detected at concentrations less than the SLs at the AOPI. PFNA and HFPO-DA were not detected in any groundwater samples collected at the Dunn Field Site 18 AOPI.

Detections of Target PFAS were consistent among the Fluvial Aquifer wells.

6.7.3 CSM

The Dunn Field Site 18 AOPI is approximately 1.10 acres. Site 18 is approximately 16,300 ft^2 and located in the northwestern quadrant of Dunn Field. Dunn Field is primarily undeveloped land. Surface water is not present at this AOPI; however, surface water drainage is directed primarily to the west (HDR 2018b).

Shallow subsurface geology at Site 18 is composed of Quaternary loess consisting of brown to reddish-brown clayey silt or silty clay. Shallow groundwater at the AOPI is between 65 and 70 feet bgs and was not encountered during drilling activities. The Intermediate Aquifer was not evaluated at this AOPI.

Debris from the Building 550 plane crash buried at Site 18 could be potentially contaminated with AFFF resulting from emergency response. The primary release mechanism is the potential release of PFAS-containing materials to soil. Although it is unknown how deep the plane crash debris is buried, the primary release is to subsurface soil. The secondary contaminant migration, fate, and transport considerations include downward contaminant migration from surface soil to subsurface soil, and groundwater through leaching and percolation.

Based on the land use restrictions preventing residential use of most of the property at DDMT, the human receptors considered in the CSM are onsite workers with the potential to work at the AOPI and offsite residents living in the vicinity of the DDMT property.

The onsite soil exposure pathways are potentially complete because Target PFAS were detected at concentrations less than the SLs in soil and greater than the SLs in groundwater.

Target PFAS were detected at concentrations greater than the SLs in groundwater; however, a non-PFAS groundwater use restriction is in place at DDMT preventing its use for drinking water. Therefore, the groundwater exposure pathways for onsite workers are potentially complete for the duration of the restriction. Due to exceedances of the SLs onsite and the presence of nearby extraction wells associated with the Allen well field, the groundwater exposure pathways for offsite residents are potentially complete.

Figure 6-18 presents the CSM for the Dunn Field Site 18 AOPI.

6.7.4 Recommendation

Detected concentrations of Target PFAS in groundwater exceed the SLs; therefore, further investigation is recommended.

Table 6-6. Target PFAS Results and Screening for the Dunn Field Site 18 AOPI

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBS	PFHxS	PFNA	PFOA	PFOS
Soil				**Units**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
				Screening Levels	**23**	**1900**	**130**	**19**	**19**	**13**
DDMT-S18-01	DDS1801-SS01	SURF	0.00-0.50	03/14/2023	2.3 U	0.55 U	0.55 U	0.55 U	**0.27 J**	**1.1**
	DDS1801-SB02	BORE	6.00-8.00	03/14/2023	2.4 U	0.6 U	0.6 U	0.6 U	**0.41 J**	0.6 U
	DDS1801-SB03	BORE	13.00-15.00	03/14/2023	2.2 U	0.55 U	0.55 U	0.55 U	**0.66 J**	0.55 U
DDMT-S18-02	DDS1802-SS01	SURF	0.00-0.50	03/14/2023	2.6 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
	DDS1802-SB02	BORE	6.00-8.00	03/14/2023	2.3 U	0.6 U	0.6 U	0.6 U	**0.29 J**	0.6 U
	DDS1802-SB03	BORE	13.00-15.00	03/14/2023	2.2 U	0.55 U	0.55 U	0.55 U	**0.29 J**	0.55 U
DDMT-S18-03	DDS1803-SS01	SURF	0.00-0.50	03/14/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	**0.35 J**
	DDS1803-SB02	BORE	6.00-8.00	03/14/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	DDS1803-SB03	BORE	13.00-15.00	03/14/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Groundwater				**Units**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**
				Screening Levels	**6**	**601**	**39**	**6**	**6**	**4**
DDMT-S18-MW-134	DDS18-MW134	WELL	80.00-80.00	03/19/2023	4.1 U	**6.2**	**9.8**	2.1 U	**2.8 J**	**4.4 J**
DDMT-S18-MW-221	DDS18-MW221	WELL	75.00-75.00	03/19/2023	4.2 U	**3.6 J**	**11**	2.1 U	**4.3**	**7.5 J**
DDMT-S18-MW-222	DDS18-MW222	WELL	75.00-75.00	03/19/2023	3.5 U	**3.7**	**5.1**	1.8 U	**1.6 J**	**1.8 J**
	DDS18-MW222FD	WELL	75.00-75.00 (D)	3/19/2023	4.1 U	**3.4 J**	**5.3**	2.1 U	**1.5 J**	**1.6 J**

The SLs are the Residential Scenario SLs calculated using the USEPA RSL calculator provided in the July 2022 OSD Memorandum for Tap Water using an HQ = 0.1.
Bolded values denote detected concentrations.
Highlighted values indicate an exceedance of the SL.
(D) = Field duplicate sample.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

6.8 SUPPLEMENTARY ASSESSMENT OF FACILITY-WIDE AND BOUNDARY MIGRATION POTENTIAL

The following subsections describe the rationale and results of facility-wide and facility boundary samples collected at DDMT and provide recommendations based on results.

6.8.1 Background and Purpose

One of the goals of this SI was to determine if a potential exists for onsite migration of PFAS from offsite (i.e., off-post) sources. To accomplish this goal, groundwater samples were collected from existing Fluvial Aquifer monitoring wells at or near the DDMT boundary.

6.8.2 Supplementary Sampling and Results

Figure 6-19 presents the locations of all perimeter groundwater samples collected during this SI at DDMT. In addition to the AOPI-specific locations described previously, the rationale for supplementary sampling locations is as follows:

- Eight perimeter wells at or near the DDMT boundary were sampled to further evaluate facility boundary conditions and potential for onsite migration of PFAS from offsite (i.e., off-post) sources:
    - DDMT-PER-MW-24, DDMT-PER-MW-93, DDMT-PER-MW-270, and DDMT-PER-MW-52 were sampled to evaluate Target PFAS concentrations in shallow groundwater entering the DDMT MI operational boundary from the south.
    - DDMT-PER-MW-219 and DDMT-PER-MW-102B were sampled to evaluate Target PFAS concentrations in shallow groundwater entering the DDMT MI operational boundary from the west and upgradient of the suspected release areas of onsite AOPIs.
    - DDMT-PER-MW-263 was sampled to evaluate Target PFAS concentrations in shallow groundwater entering the DDMT MI operational boundary from the north and upgradient of the suspected release areas of onsite AOPIs.
    - DDMT-PER-MW-28 was sampled to evaluate Target PFAS concentrations in shallow groundwater entering the DDMT Dunn Field operational boundary from the northeast and upgradient of the suspected release areas of onsite AOPIs.

The Target PFAS analytical results for the supplementary groundwater samples are summarized below and presented with all the SI groundwater sample results in Table 6-7 and Figure 6-20.

6.8.2.1 Groundwater

Groundwater samples were collected from eight wells along the northern, northeastern, southern, and western DDMT facility boundaries. All eight wells contained detections of Target PFAS. While Target PFAS SLs were not exceeded at every perimeter well, each general area of the facility boundary exhibited exceedances of SLs (e.g., southern boundary). PFNA and HFPO-DA were not detected at concentrations greater than the LODs in groundwater.

The analytical results for Target PFAS exceeding SLs along the northern, northeastern, southern, and western facility boundary are as follows:

- The concentration of PFOS exceeded the SL of 4 ng/L in northern boundary well DDMT-PER-MW-263, northeastern boundary well DDMT-PER-MW-28, and southern boundary wells DDMT-PER-MW-270 and DDMT-PER-MW-52, ranging from 4.1 ng/L (DDMT-PER-MW-52) to 33 ng/L (DDMT-PER-MW-263).
- The concentration of PFOA exceeded the SL of 6 ng/L in well DDMT-PER-MW-219 on the western boundary (12 ng/L) and DDMT-PER-MW-270 (9.1 ng/L) on the southern boundary.

6.8.3 CSM

A geologic window is located in the northwestern corner of the MI due to the absence of a confining clay layer, which permits downward leakage of groundwater. A geologic sink is present in the south-central portion of the site, which permits vertical migration of groundwater. As a result, groundwater in the Fluvial Aquifer enters the site from all sides and flows through the window and sink. In addition, chlorinated solvent contaminant plumes from the northeast and southwest are likely influenced by the window and migrate onto the site (Shelby County 2009).

Drinking water at DDMT and for the Memphis area is supplied by MLGW and obtained from the Memphis Aquifer. MLGW operates numerous well fields in the metropolis, of which the Allen well field is the closest to and directly downgradient from DDMT (Jazaei et al. 2018). The primary well network of the Allen well field is approximately 1 to 2 miles west of DDMT; however, the closest active extraction well is located approximately 0.5 miles to the west of the southwestern MI boundary (MLGW 2019). The potential exists for the Intermediate Aquifer to act as a conduit for groundwater from the Fluvial Aquifer to the Memphis Aquifer and could subsequently migrate toward the Allen well field following groundwater flow (i.e., west/southwest; see Section 2.5).

6.8.4 Recommendation

Detected concentrations of Target PFAS in groundwater at the DDMT facility boundary exceed the SLs. Further investigation, by the proper authority, into the potential onsite migration of PFAS from offsite (i.e., off-post) sources is recommended.

Table 6-7. Target PFAS Results and Screening for Perimeter Monitoring Wells

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBS	PFHxS	PFNA	PFOA	PFOS
Groundwater				**Units**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**	**ng/L**
				Screening Levels	**6**	**601**	**39**	**6**	**6**	**4**
DDMT-PER-MW-102B	DDPER-MW102B	WELL	130.00-130.00	03/22/2023	4.1 U	2 U	**3.6 J**	2 U	**1.1 J**	2 U
DDMT-PER-MW-219	DDPER-MW219	WELL	105.00-105.00	03/22/2023	3.7 U	**3.5 J**	**13**	1.9 U	**12**	**1.2 J**
DDMT-PER-MW-24	DDPER-MW24	WELL	105.00-105.00	03/22/2023	3.4 U	**3.7**	**15**	1.7 U	**2.2 J**	1.7 U
DDMT-PER-MW-263	DDPER-MW263	WELL	74.00-74.00	03/22/2023	3.7 U	**4.5**	**9.5**	1.9 U	**4.8**	**33**
DDMT-PER-MW-270	DDPER-MW270	WELL	82.00-82.00	03/21/2023	3.7 U	**3 J**	**34**	1.9 U	**9.1**	**9.9 J**
DDMT-PER-MW-28	DDPER-MW28	WELL	60.00-60.00	03/20/2023	3.7 U	**2.4 J**	**6**	1.9 U	**5.8**	**7.8 J**
DDMT-PER-MW-52	DDPER-MW52	WELL	99.00-99.00	03/22/2023	3.7 U	**6.5**	**34**	1.9 U	**5.2**	**4.1**
DDMT-PER-MW-93	DDPER-MW93	WELL	100.00-100.00	03/22/2023	3.9 U	**14**	**9**	2 U	**5.4**	2 U

The SLs are the Residential Scenario SLs calculated using the USEPA RSL calculator provided in the July 2022 OSD Memorandum for Tap Water using an HQ = 0.1.
Bolded values denote detected concentrations.
Highlighted values indicate an exceedance of the SL.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

7. CONCLUSIONS AND RECOMMENDATIONS

An SI is conducted when the PA determines an AOPI exists based on probable use, storage, and/or disposal of PFAS-containing materials. The SI includes multi-media sampling at AOPIs to determine whether a release has occurred. The SI may conclude further investigation is warranted, a removal action is required to address immediate threats, or no further action is required (40 CFR §300.420(5)). The SI Report used the findings from the PA in conjunction with soil, groundwater, surface water, and sediment sampling data for each AOPI to determine whether Target PFAS have been released to the environment and whether a release has affected or may affect specific human health targets.

Before the SI sampling, a preliminary CSM was developed in the PA for each AOPI based on an evaluation of existing records, personnel interviews, and site reconnaissance. The preliminary CSMs identified potential human receptors and exposure pathways for groundwater and surface water that is known to be used, or could realistically be used in the future, as a source of drinking water and identified potential soil and sediment exposure pathways. All AOPIs were sampled during the SI at DDMT to further evaluate PFAS-related releases and identify the presence or absence of Target PFAS.

Target PFAS were detected in samples collected from all 24 groundwater wells, including detections at all 6 AOPIs. PFOS and/or PFOA concentrations exceeded the SLs at 16 monitoring wells, with at least 1 exceedance at each AOPI. Target PFAS were detected at concentrations greater than the LODs in 10 surface soil samples, 8 subsurface soil samples, all 4 surface water samples, and the sediment sample collected at the AOPIs. PFNA and HFPO-DA were not detected at concentrations greater than the LODs in any samples.

The CSMs were updated for each AOPI where Target PFAS were detected at concentrations greater than the SLs. The updated CSMs detail site geological conditions; determine primary and secondary release mechanisms; identify potential human receptors; and detail complete, potentially complete, and incomplete exposure pathways for current and reasonably anticipated future exposure scenarios. The soil exposure pathway for onsite workers is potentially complete at all six AOPIs where Target PFAS were detected at concentrations less than the SLs in soil and exceeded the SLs in groundwater, as the SL exceedances in groundwater could indicate a source in soil that has not been identified.

The onsite groundwater exposure pathway is potentially complete at all six AOPIs where Target PFAS were detected at concentrations greater than the SLs. All AOPIs are within areas where there is currently a non-PFAS groundwater use restriction; therefore, the exposure pathway will remain potentially complete for the duration of the restriction. The groundwater exposure pathway for offsite residents is potentially complete for all AOPIs, since Target PFAS were detected in groundwater and a potential exists for migration to offsite groundwater wells in the vicinity of DDMT, even though county restrictions are in place to prevent such use of off-post groundwater.

The exposure pathway for onsite surface water and sediment is complete at the Building 560 AOPI where Target PFAS were detected at concentrations greater than the SLs in surface water. The exposure pathway for surface water and sediment is potentially complete at the Building 308/DRMO AOPI where Target PFAS were detected at concentrations less than the SLs in surface water. Surface water and sediment were not present at any other AOPIs.

SI sampling results were compared to the OSD risk-based SLs presented in Section 5 to determine if further investigation is warranted at each AOPI as follows:

- If the maximum detected concentration for a given analyte in soil or groundwater exceeds the SL, it is concluded that further investigation is warranted.
- If the maximum detected concentration is less than the SL, it is concluded that further investigation is not warranted.

Table 7-1 summarizes the conclusions and recommendations for each AOPI.

All six AOPIs are recommended for further investigation or evaluation:

- Building 529 (General Purpose Warehouse)
- Building 550 (1984 Plane Crash Site)
- Building 560 (General Purpose Warehouse)
- Buildings 865 and 873 (Open Shed Warehouse/Recoupment Facilities)
- Building 308/DRMO (Hazardous Waste Storage)
- Dunn Field Site 18.

Uncertainty remains regarding the potential source(s) of PFAS contamination at DDMT. Analytical data from soil samples collected at DDMT did not identify PFAS source areas at the AOPIs, as no Target PFAS concentrations exceeded the soil SLs. However, Target PFAS concentrations exceeded the groundwater SLs at each of the six AOPIs. Further investigation into PFAS source areas may merit a more comprehensive approach to site soil and groundwater. The physical proximity of the MI AOPIs, generally inward/central direction of groundwater flow due to the geologic window and sink, and connectivity between the Fluvial and Intermediate Aquifers further contribute to uncertainty regarding the source(s) of PFAS in groundwater. Furthermore, additional consideration of the potential impacts of onsite migration from offsite (i.e., off-post) sources may be warranted.

Table 7-1. Summary of PFAS Detected and Recommendations

AOPI	Detection of HFPO-DA, PFBS, PFHxS, PFNA, PFOS, and/or PFOA				Recommendation and Rationale
	Groundwater	Soil	Surface Water	Sediment	
Building 529 (General Purpose Warehouse)	Exceeds SL	Detected	–	–	SLs exceeded in groundwater; further investigation recommended
Building 550 (1984 Plane Crash Site)	Exceeds SL	Detected	–	–	SLs exceeded in groundwater; further investigation recommended
Building 560 (General Purpose Warehouse)	Exceeds SL	Detected	Exceeds SL	Detected	SLs exceeded in groundwater and surface water; further investigation recommended
Buildings 865 and 873 (Open Shed Warehouse/ Recoupment Facilities)	Exceeds SL	Detected	–	–	SLs exceeded in groundwater; further investigation recommended
Building 308/DRMO (Hazardous Waste Storage)	Exceeds SL	Detected	ND	–	SLs exceeded in groundwater; further investigation recommended
Dunn Field Site 18	Exceeds SL	Detected	Detected	–	SLs exceeded in groundwater; further investigation recommended

– Not Collected
ND = Not Detected

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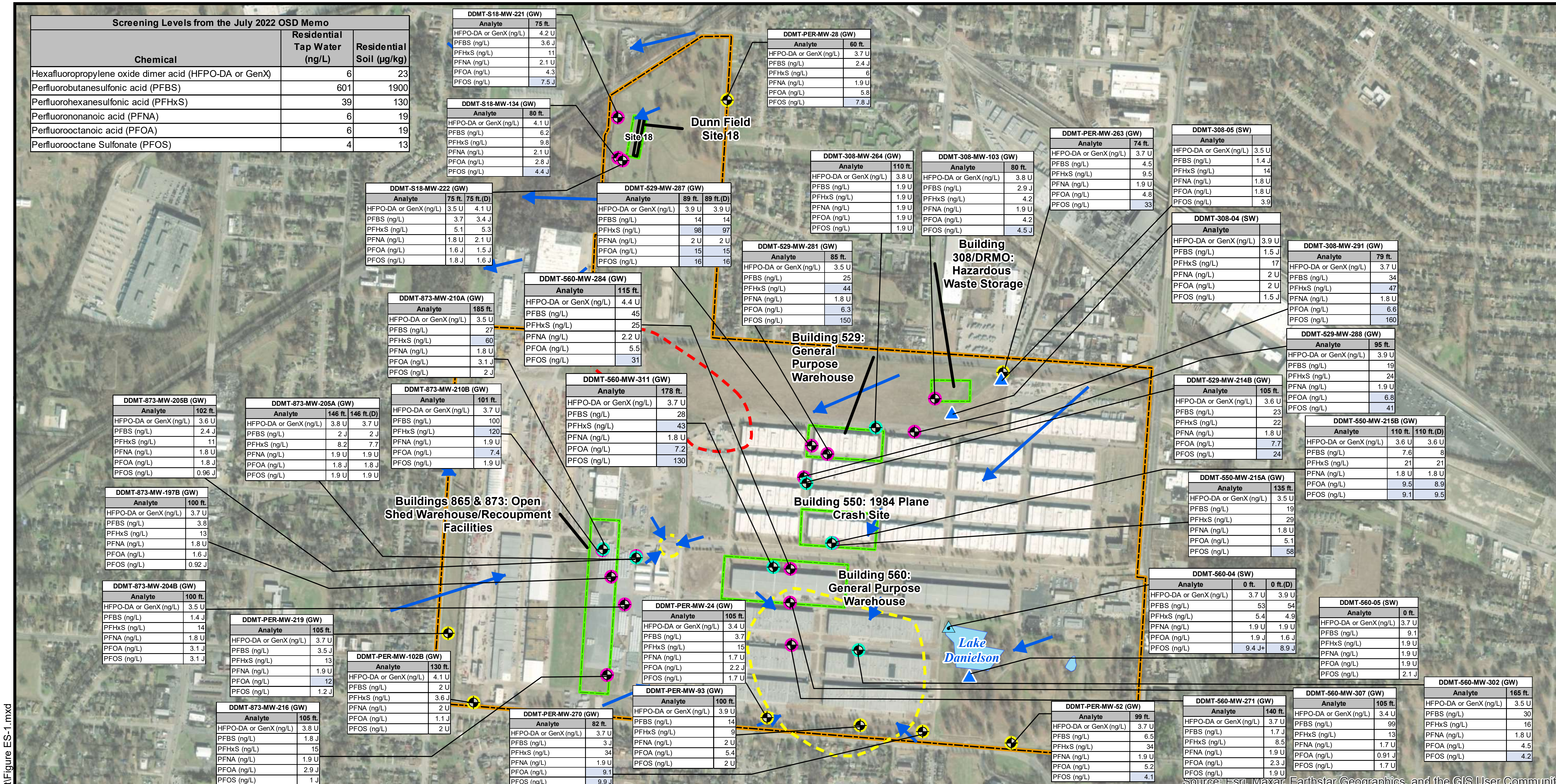
FIGURES



Legend

- Areas of Potential Interest (AOPI)
- Installation Boundary
- Surface Water
- Groundwater Flow (Fluvial Aquifer)
- Erosional Window
- Geologic Sink
- Surface Water/Sediment Sample (1)
- Surface Water Sample (3)
- Existing Perimeter Well Sample (8)
- Existing Fluvial Aquifer Well Sample (17)
- Existing Intermediate Aquifer Well Sample (7)

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using EPA RSL Calculator provided in the July 2022 OSD Memorandum for Tap Water and Soil usingan HQ = .1. Highlighted values indicate an exceedance of the Screening Level

0 1,000 2,000
SCALE: 1 ' = 1,000 "

TN STATE PLANE (NAD83)
N

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SUMMARY OF TARGET PFAS IN GROUNDWATER AND SURFACE WATER DEFENSE DEPOT MEMPHIS, TN

FIGURE ES-1 | DATE: 11/1/2023

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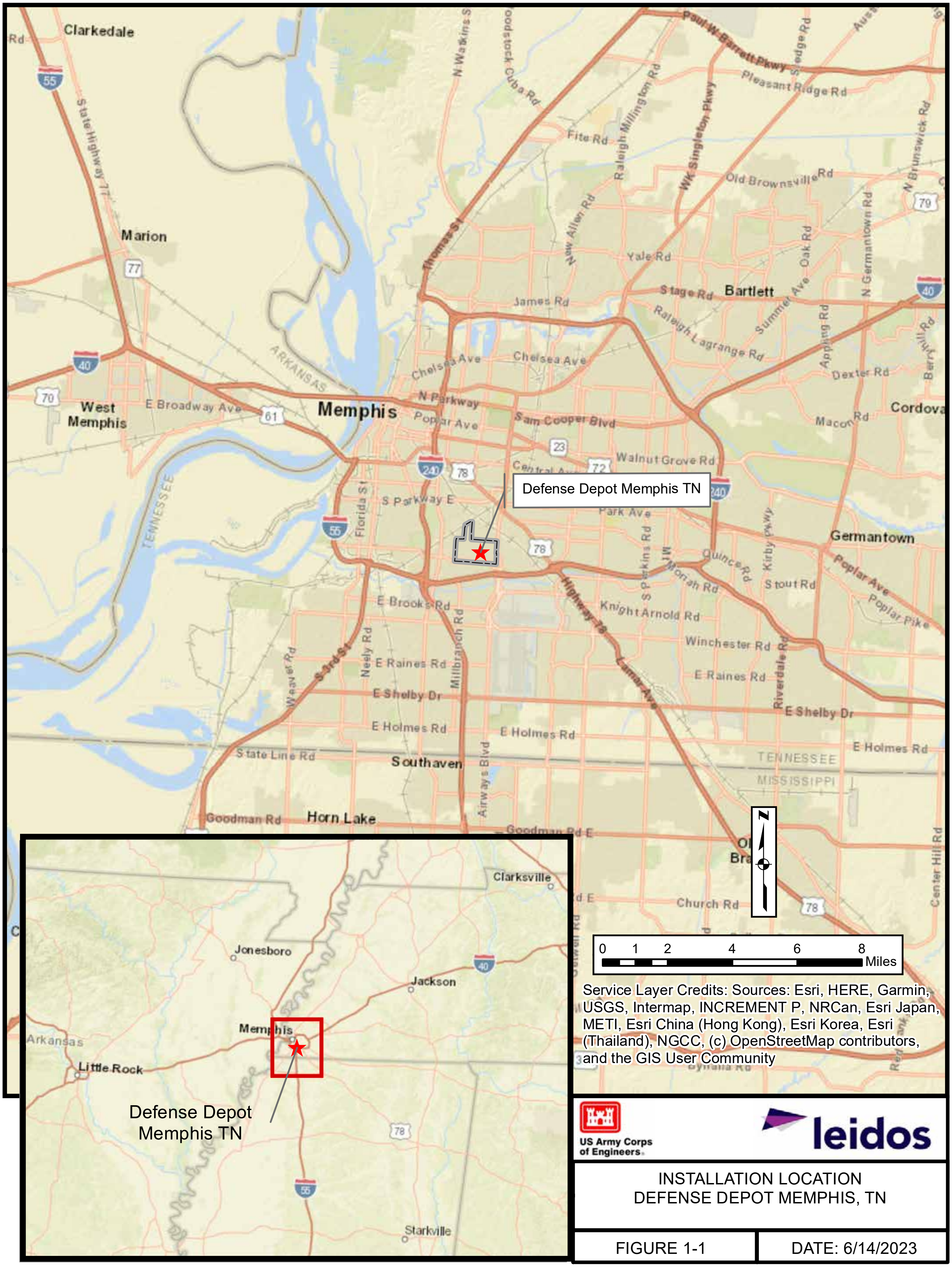
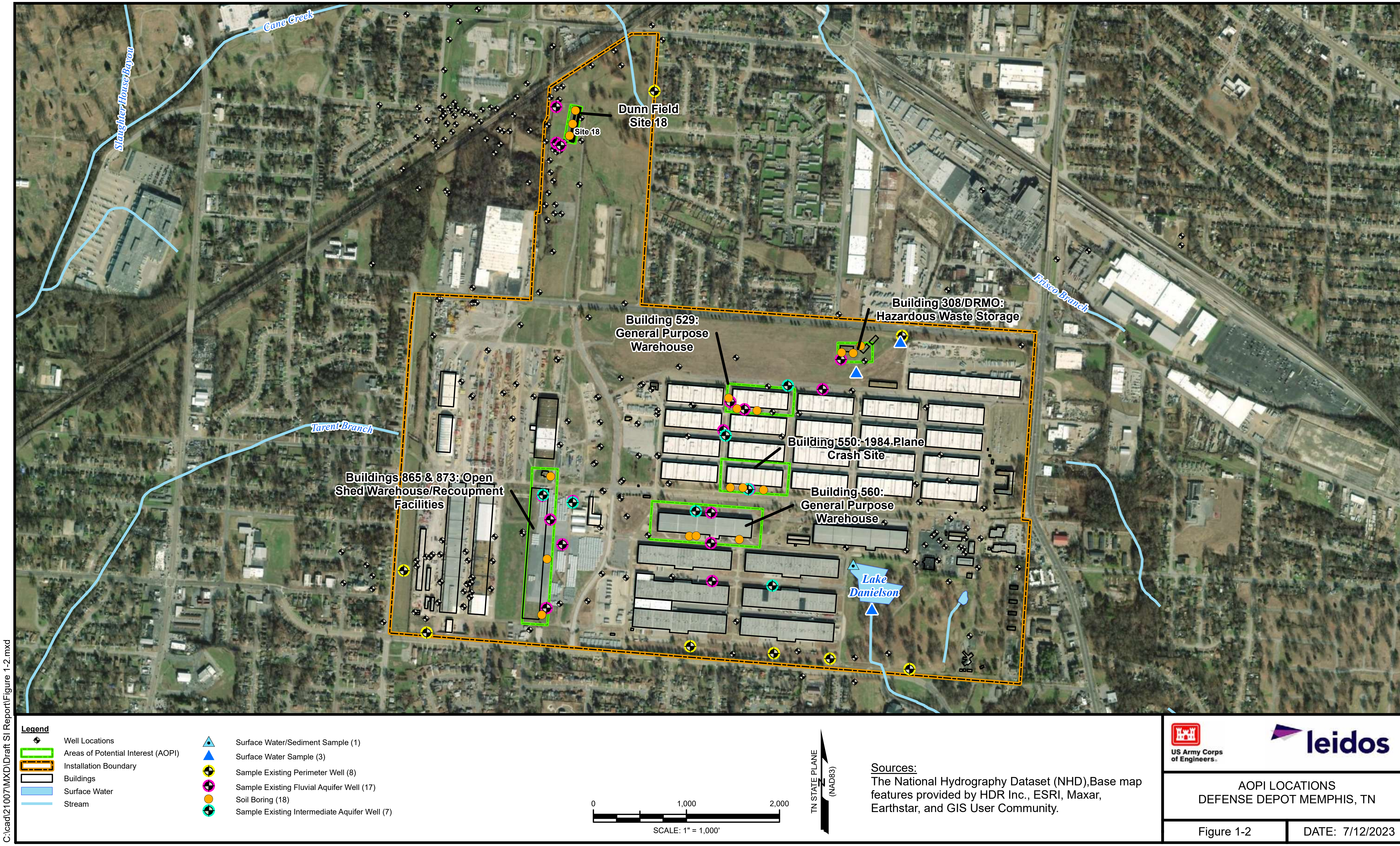


INSTALLATION LOCATION
DEFENSE DEPOT MEMPHIS, TN

FIGURE 1-1 | DATE: 6/14/2023


Cane Creek
Slaughter House Bayou
Dunn Field Site 18
Site 18
Frisco Branch
Building 308/DRMO: Hazardous Waste Storage
Building 529: General Purpose Warehouse
Tarent Branch
Building 550: 1984 Plane Crash Site
Buildings 865 & 873: Open Shed Warehouse/Recoupment Facilities
Building 560: General Purpose Warehouse
Lake Danielson
Legend
Well Locations
Areas of Potential Interest (AOPI)
Installation Boundary
Buildings
Surface Water
Stream
Surface Water/Sediment Sample (1)
Surface Water Sample (3)
Sample Existing Perimeter Well (8)
Sample Existing Fluvial Aquifer Well (17)
Soil Boring (18)
Sample Existing Intermediate Aquifer Well (7)
0
1,000
2,000
SCALE: 1" = 1,000'
TN STATE PLANE
N
(NAD83)
Sources:
The National Hydrography Dataset (NHD),Base map features provided by HDR Inc., ESRI, Maxar, Earthstar, and GIS User Community.
US Army Corps of Engineers
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AOPI LOCATIONS
DEFENSE DEPOT MEMPHIS, TN
Figure 1-2
DATE: 7/12/2023
C:\cad\21007\MXD\Draft SI Report\Figure 1-2.mxd

Legend

- Allen Well Field Extraction Well (Memphis Aquifer)
- Roads
- Railroads
- Buildings
- Installation Boundary
- Surface Water
- Stream

Elevation

- 230 - 250
- 251 - 265
- 266 - 280
- 281 - 295
- 296 - 320

Sources:
TN Department of Transportation,The National Hydrography Dataset (NHD),State of Tennessee LiDAR Initiative, Base map features provided by HDR Inc. ESRI, Maxar, Earthstar Geographics, and the GIS User Community

0 1,000 2,000

SCALE: 1 " = 1,500 '

TN STATE PLANE (NAD83)

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SITE FEATURES
DEFENSE DEPOT MEMPHIS, TN

FIGURE 2-1

DATE: 6/14/2023

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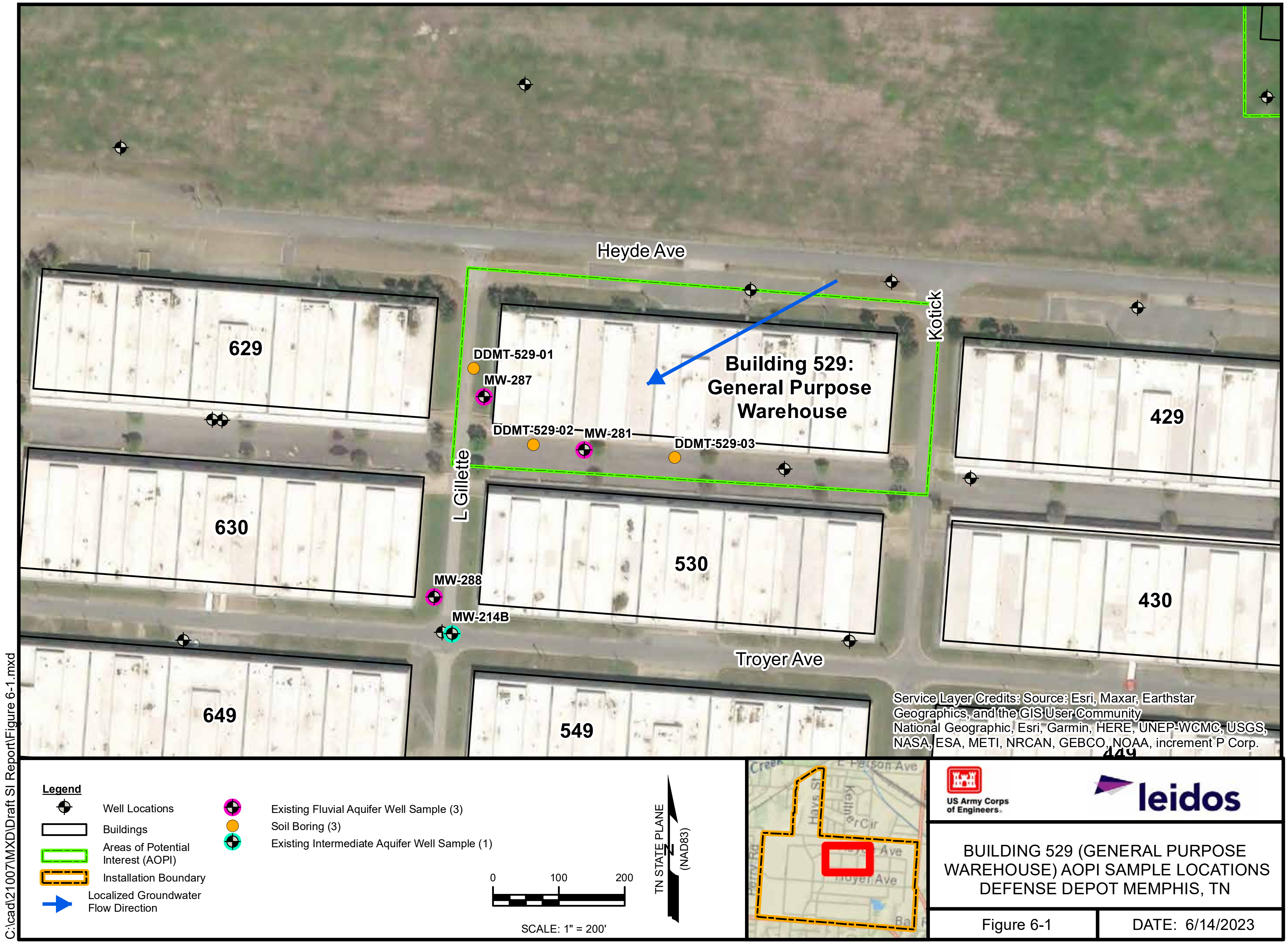
Heyde Ave
Kotick
Building 529: General Purpose Warehouse
629
429
630
530
430
649
549
449
L Gillette
Troyer Ave
DDMT-529-01
MW-287
DDMT-529-02
MW-281
DDMT-529-03
MW-288
MW-214B
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
Legend
Well Locations
Buildings
Areas of Potential Interest (AOPI)
Installation Boundary
Localized Groundwater Flow Direction
Existing Fluvial Aquifer Well Sample (3)
Soil Boring (3)
Existing Intermediate Aquifer Well Sample (1)
0
100
200
SCALE: 1" = 200'
TN STATE PLANE (NAD83)
N
US Army Corps of Engineers
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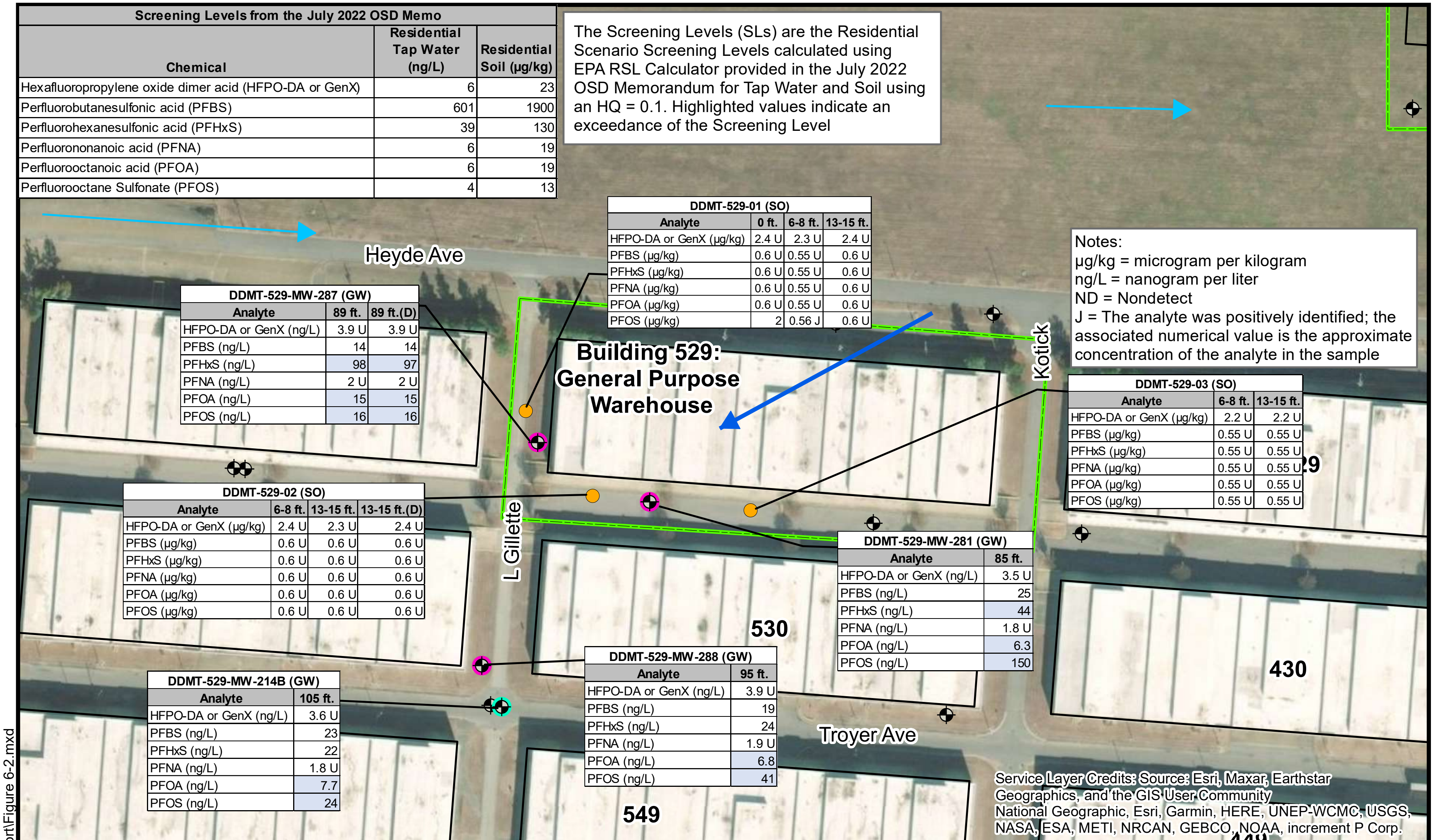
BUILDING 529 (GENERAL PURPOSE WAREHOUSE) AOPI SAMPLE LOCATIONS
DEFENSE DEPOT MEMPHIS, TN
Figure 6-1
DATE: 6/14/2023
C:\cad\21007\MXD\Draft SI Report\Figure 6-1.mxd

Screening Levels from the July 2022 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanesulfonic acid (PFBS)	601	1900
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	6	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using EPA RSL Calculator provided in the July 2022 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level



DDMT-529-01 (SO)			
Analyte	0 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.4 U	2.3 U	2.4 U
PFBS (µg/kg)	0.6 U	0.55 U	0.6 U
PFHxS (µg/kg)	0.6 U	0.55 U	0.6 U
PFNA (µg/kg)	0.6 U	0.55 U	0.6 U
PFOA (µg/kg)	0.6 U	0.55 U	0.6 U
PFOS (µg/kg)	2	0.56 J	0.6 U

DDMT-529-MW-287 (GW)		
Analyte	89 ft.	89 ft.(D)
HFPO-DA or GenX (ng/L)	3.9 U	3.9 U
PFBS (ng/L)	14	14
PFHxS (ng/L)	98	97
PFNA (ng/L)	2 U	2 U
PFOA (ng/L)	15	15
PFOS (ng/L)	16	16

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

DDMT-529-03 (SO)		
Analyte	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.2 U	2.2 U
PFBS (µg/kg)	0.55 U	0.55 U
PFHxS (µg/kg)	0.55 U	0.55 U
PFNA (µg/kg)	0.55 U	0.55 U
PFOA (µg/kg)	0.55 U	0.55 U
PFOS (µg/kg)	0.55 U	0.55 U

DDMT-529-02 (SO)			
Analyte	6-8 ft.	13-15 ft.	13-15 ft.(D)
HFPO-DA or GenX (µg/kg)	2.4 U	2.3 U	2.4 U
PFBS (µg/kg)	0.6 U	0.6 U	0.6 U
PFHxS (µg/kg)	0.6 U	0.6 U	0.6 U
PFNA (µg/kg)	0.6 U	0.6 U	0.6 U
PFOA (µg/kg)	0.6 U	0.6 U	0.6 U
PFOS (µg/kg)	0.6 U	0.6 U	0.6 U

DDMT-529-MW-281 (GW)	
Analyte	85 ft.
HFPO-DA or GenX (ng/L)	3.5 U
PFBS (ng/L)	25
PFHxS (ng/L)	44
PFNA (ng/L)	1.8 U
PFOA (ng/L)	6.3
PFOS (ng/L)	150

DDMT-529-MW-288 (GW)	
Analyte	95 ft.
HFPO-DA or GenX (ng/L)	3.9 U
PFBS (ng/L)	19
PFHxS (ng/L)	24
PFNA (ng/L)	1.9 U
PFOA (ng/L)	6.8
PFOS (ng/L)	41

DDMT-529-MW-214B (GW)	
Analyte	105 ft.
HFPO-DA or GenX (ng/L)	3.6 U
PFBS (ng/L)	23
PFHxS (ng/L)	22
PFNA (ng/L)	1.8 U
PFOA (ng/L)	7.7
PFOS (ng/L)	24

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Legend

- Well Locations
- Buildings
- Areas of Potential Interest (AOPI)
- Installation Boundary
- Localized Groundwater Flow Direction
- Localized Surface Water Flow Direction
- Existing Fluvial Aquifer Well Sample (3)
- Soil Boring (3)
- Existing Intermediate Aquifer Well Sample (1)

0 100 200

SCALE: 1" = 200'

TN STATE PLANE (NAD83)

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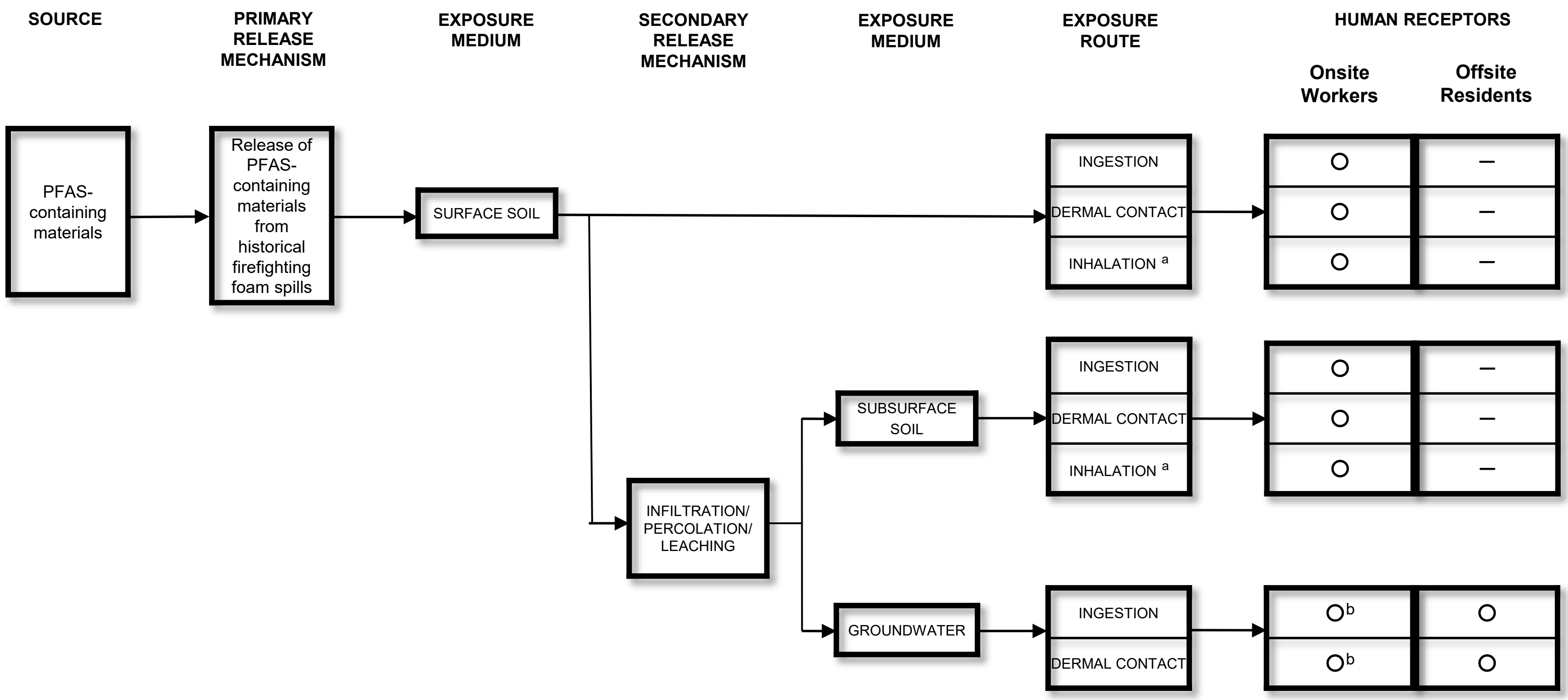
BUILDING 529 (GENERAL PURPOSE WAREHOUSE) AOPI SAMPLE RESULTS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-2	DATE: 6/28/2023



● Complete exposure pathway

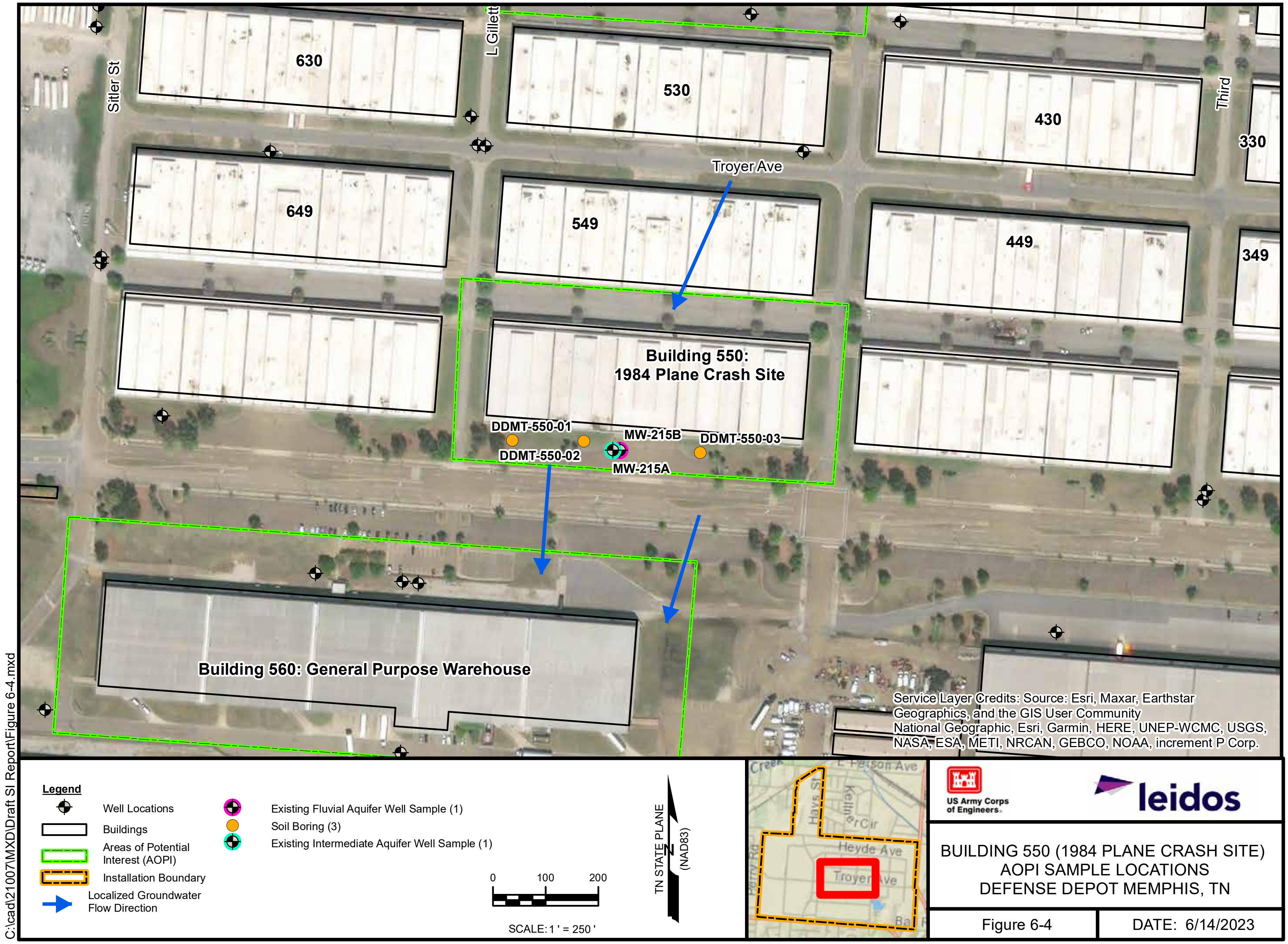
○ Potentially complete exposure pathway

— Incomplete exposure pathway

[a] Inhalation of PFAS is considered potentially complete because no toxicity information is available for the inhalation route.

[b] Land use controls, including restrictions on groundwater use, are in place at this AOPI; however, since the restrictions are unrelated to PFAS, the pathway is potentially complete.

Figure 6-3. Human Health CSM for Building 529 (General Purpose Warehouse) AOPI


630
530
430
330
649
549
449
349
Sitler St
L Gillett
Third
Troyer Ave
Building 550:
1984 Plane Crash Site
DDMT-550-01
DDMT-550-02
DDMT-550-03
MW-215B
MW-215A
Building 560: General Purpose Warehouse
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
Legend
Well Locations
Buildings
Areas of Potential Interest (AOPI)
Installation Boundary
Localized Groundwater Flow Direction
Existing Fluvial Aquifer Well Sample (1)
Soil Boring (3)
Existing Intermediate Aquifer Well Sample (1)
0 100 200
SCALE: 1 ' = 250 '
TN STATE PLANE
N
(NAD83)
E Person Ave
Hays St
Kellner Cir
Heyde Ave
Troyer Ave
Perry Rd
US Army Corps of Engineers
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BUILDING 550 (1984 PLANE CRASH SITE)
AOPI SAMPLE LOCATIONS
DEFENSE DEPOT MEMPHIS, TN
Figure 6-4
DATE: 6/14/2023
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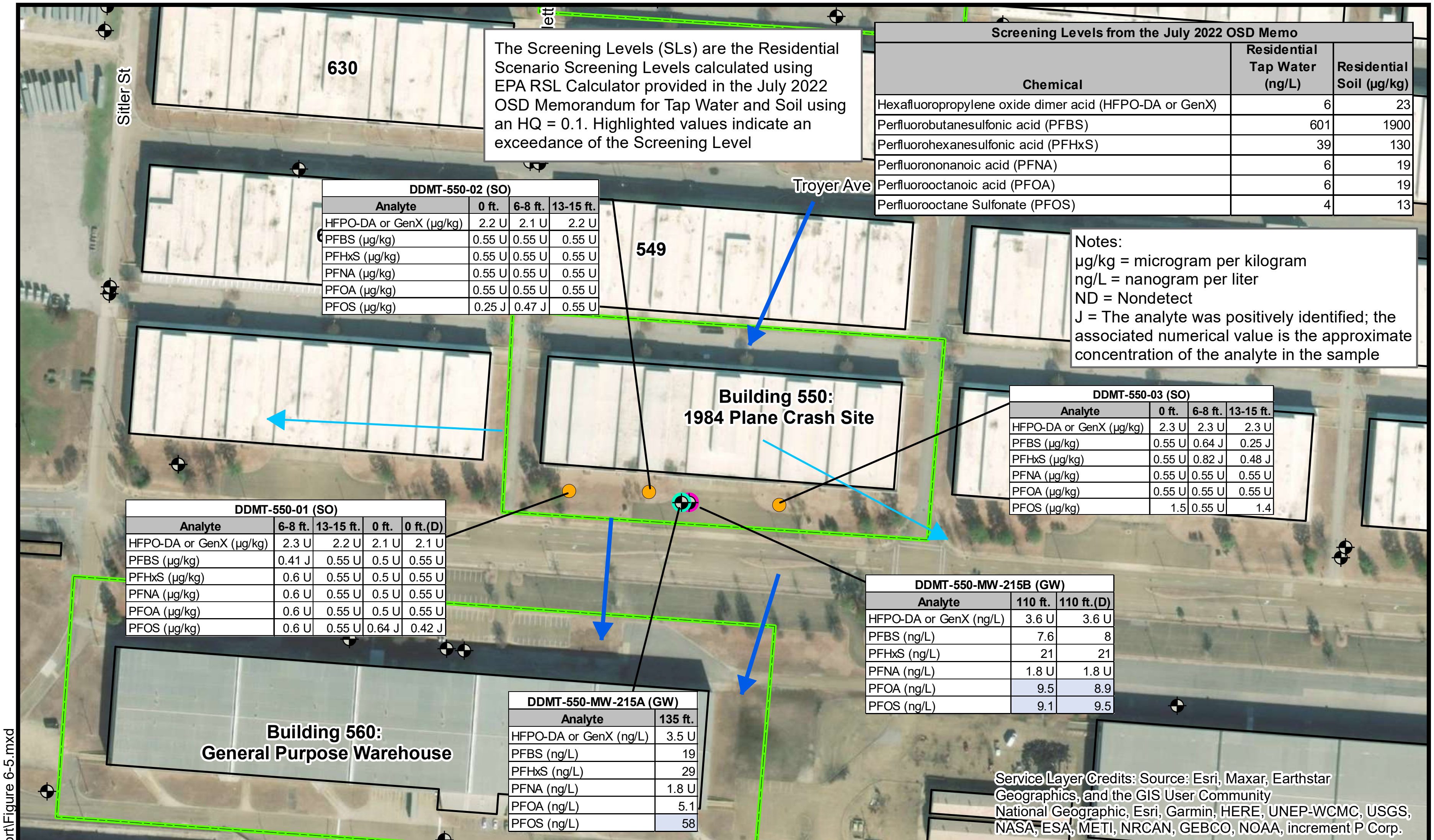

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using EPA RSL Calculator provided in the July 2022 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level

Screening Levels from the July 2022 OSD Memo

Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanesulfonic acid (PFBS)	601	1900
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	6	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

DDMT-550-02 (SO)

Analyte	0 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.2 U	2.1 U	2.2 U
PFBS (µg/kg)	0.55 U	0.55 U	0.55 U
PFHxS (µg/kg)	0.55 U	0.55 U	0.55 U
PFNA (µg/kg)	0.55 U	0.55 U	0.55 U
PFOA (µg/kg)	0.55 U	0.55 U	0.55 U
PFOS (µg/kg)	0.25 J	0.47 J	0.55 U

DDMT-550-03 (SO)

Analyte	0 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.3 U	2.3 U	2.3 U
PFBS (µg/kg)	0.55 U	0.64 J	0.25 J
PFHxS (µg/kg)	0.55 U	0.82 J	0.48 J
PFNA (µg/kg)	0.55 U	0.55 U	0.55 U
PFOA (µg/kg)	0.55 U	0.55 U	0.55 U
PFOS (µg/kg)	1.5	0.55 U	1.4

DDMT-550-01 (SO)

Analyte	6-8 ft.	13-15 ft.	0 ft.	0 ft.(D)
HFPO-DA or GenX (µg/kg)	2.3 U	2.2 U	2.1 U	2.1 U
PFBS (µg/kg)	0.41 J	0.55 U	0.5 U	0.55 U
PFHxS (µg/kg)	0.6 U	0.55 U	0.5 U	0.55 U
PFNA (µg/kg)	0.6 U	0.55 U	0.5 U	0.55 U
PFOA (µg/kg)	0.6 U	0.55 U	0.5 U	0.55 U
PFOS (µg/kg)	0.6 U	0.55 U	0.64 J	0.42 J

DDMT-550-MW-215B (GW)

Analyte	110 ft.	110 ft.(D)
HFPO-DA or GenX (ng/L)	3.6 U	3.6 U
PFBS (ng/L)	7.6	8
PFHxS (ng/L)	21	21
PFNA (ng/L)	1.8 U	1.8 U
PFOA (ng/L)	9.5	8.9
PFOS (ng/L)	9.1	9.5

DDMT-550-MW-215A (GW)

Analyte	135 ft.
HFPO-DA or GenX (ng/L)	3.5 U
PFBS (ng/L)	19
PFHxS (ng/L)	29
PFNA (ng/L)	1.8 U
PFOA (ng/L)	5.1
PFOS (ng/L)	58

Legend

- Well Locations
- Buildings
- Areas of Potential Interest (AOPI)
- Installation Boundary
- Localized Groundwater Flow Direction
- Existing Fluvial Aquifer Well Sample (1)
- Soil Boring (3)
- Existing Intermediate Aquifer Well Sample (1)

0 100 200

SCALE: 1 ' = 250 '

N TN STATE PLANE (NAD83)

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BUILDING 550 (1984 PLANE CRASH SITE)
AOPI SAMPLE RESULTS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-5 | DATE: 6/28/2023

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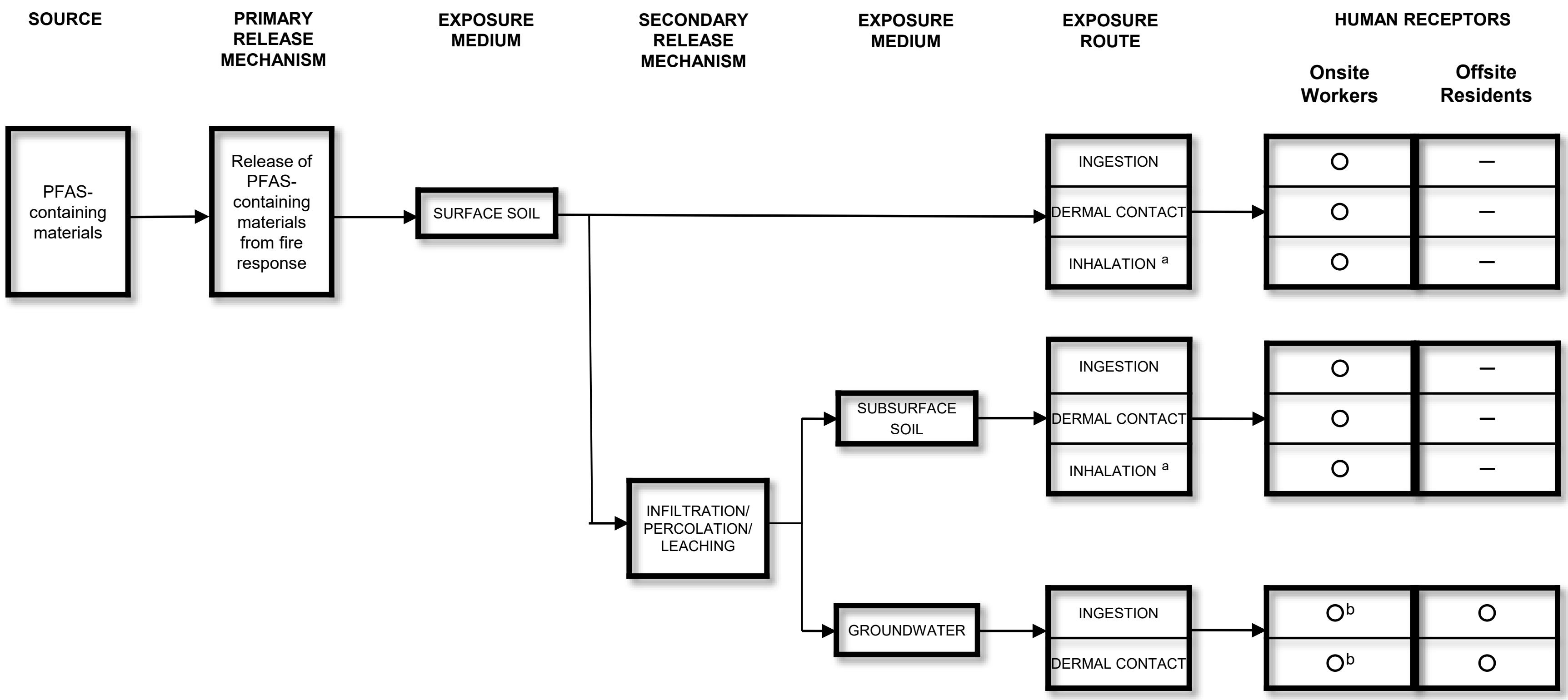


● Complete exposure pathway

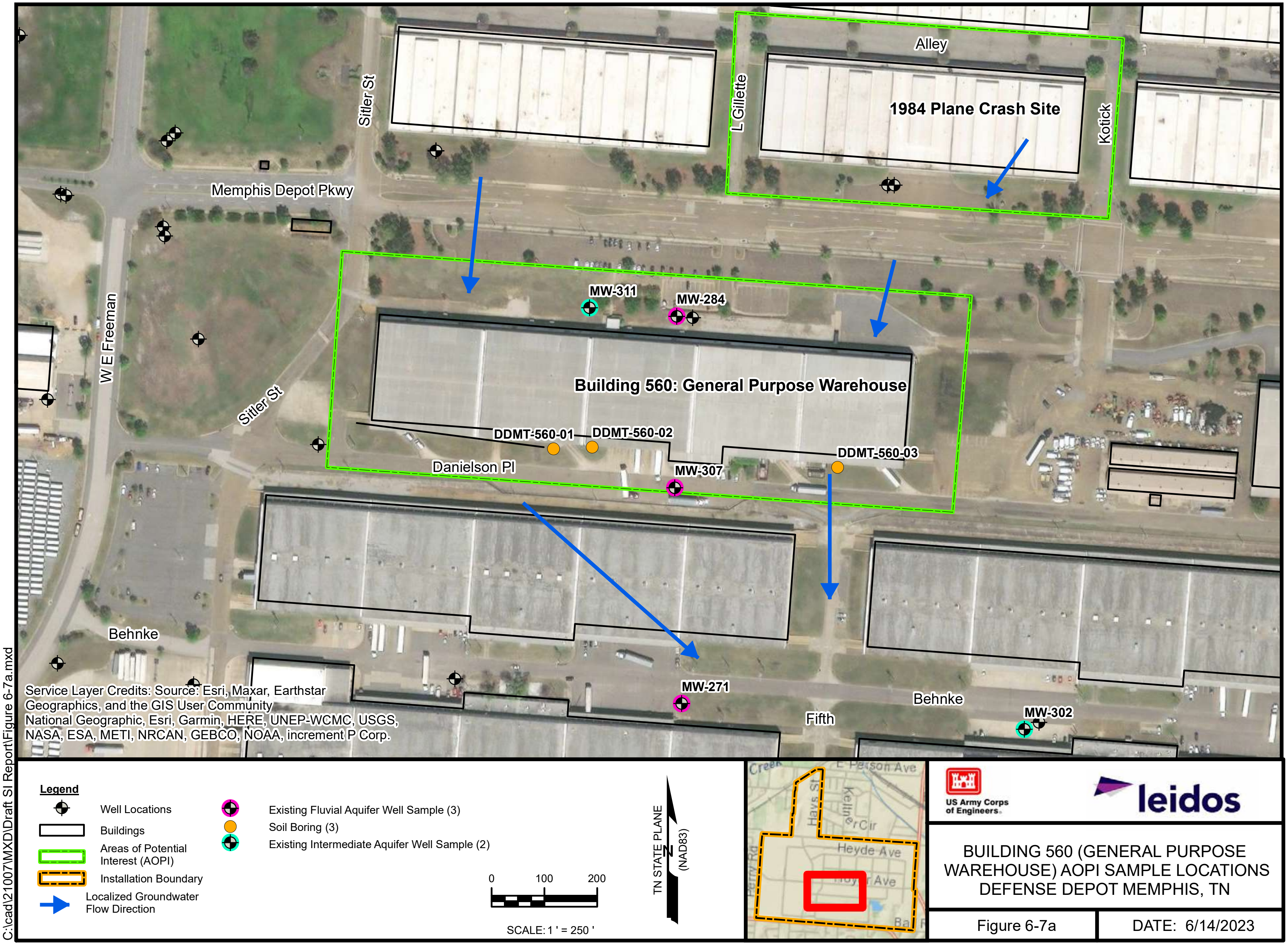
○ Potentially complete exposure pathway

— Incomplete exposure pathway

[a] Inhalation of PFAS is considered potentially complete because no toxicity information is available for the inhalation route.

[b] Land use controls, including restrictions on groundwater use, are in place at this AOPI; however, since the restrictions are unrelated to PFAS, the pathway is potentially complete.

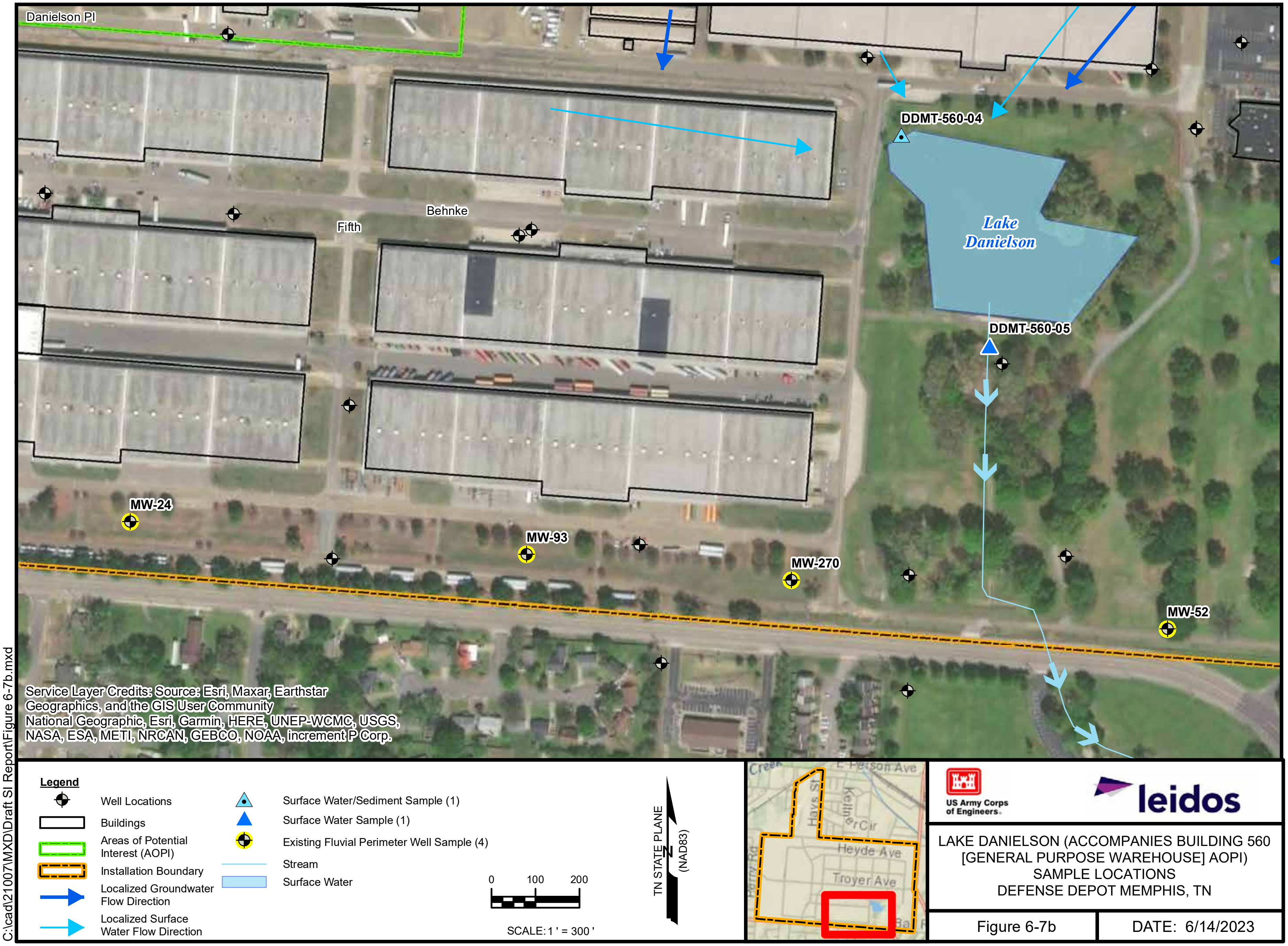
Figure 6-6. Human Health CSM for Building 550 (1984 Plane Crash Site) AOPI



BUILDING 560 (GENERAL PURPOSE WAREHOUSE) AOPI SAMPLE LOCATIONS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-7a

DATE: 6/14/2023



LAKE DANIELSON (ACCOMPANIES BUILDING 560 [GENERAL PURPOSE WAREHOUSE] AOPI)
SAMPLE LOCATIONS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-7b

DATE: 6/14/2023

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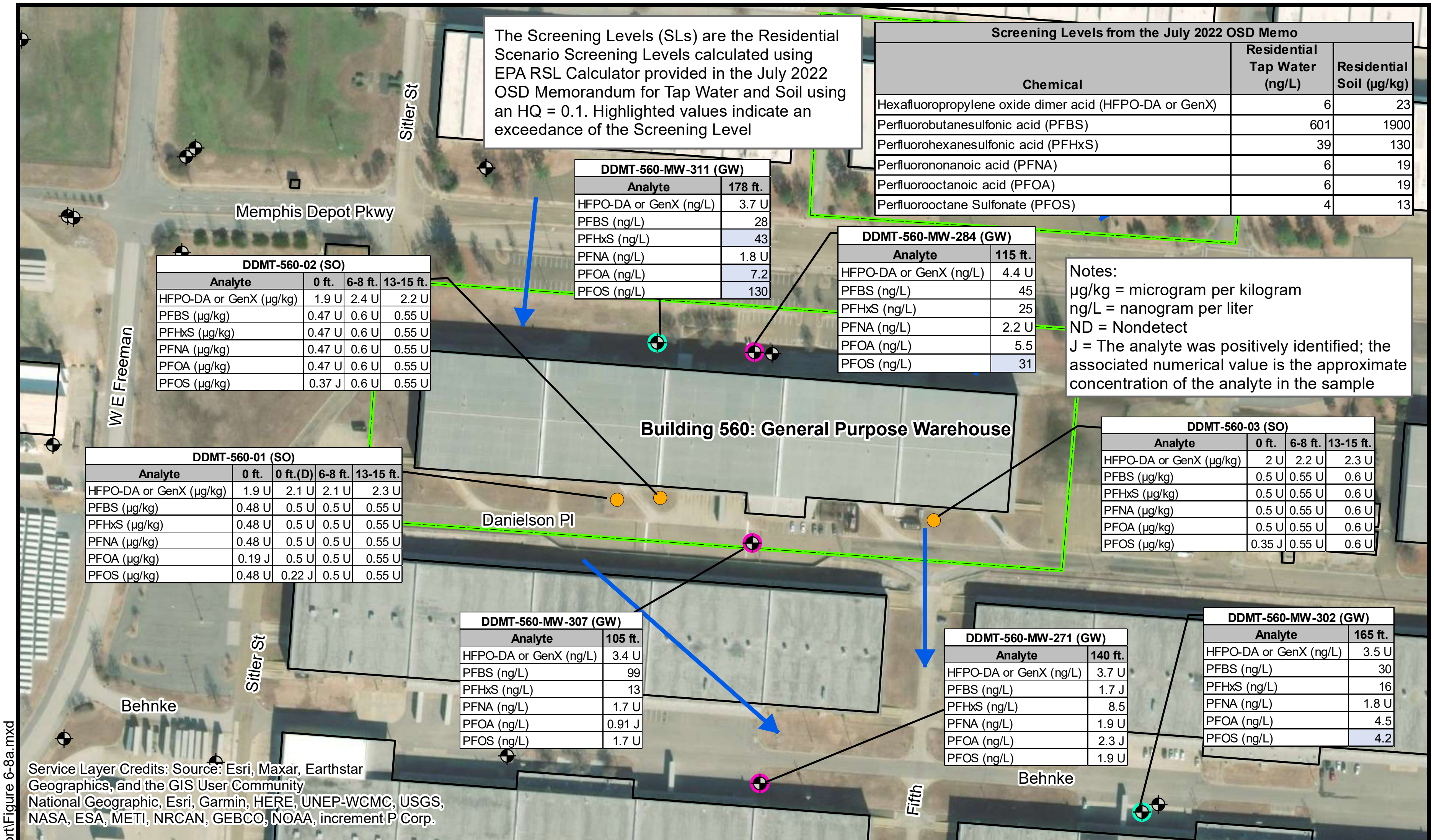


The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using EPA RSL Calculator provided in the July 2022 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level

Screening Levels from the July 2022 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanesulfonic acid (PFBS)	601	1900
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	6	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

DDMT-560-MW-311 (GW)	
Analyte	178 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	28
PFHxS (ng/L)	43
PFNA (ng/L)	1.8 U
PFOA (ng/L)	7.2
PFOS (ng/L)	130

DDMT-560-MW-284 (GW)	
Analyte	115 ft.
HFPO-DA or GenX (ng/L)	4.4 U
PFBS (ng/L)	45
PFHxS (ng/L)	25
PFNA (ng/L)	2.2 U
PFOA (ng/L)	5.5
PFOS (ng/L)	31

DDMT-560-02 (SO)			
Analyte	0 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	1.9 U	2.4 U	2.2 U
PFBS (µg/kg)	0.47 U	0.6 U	0.55 U
PFHxS (µg/kg)	0.47 U	0.6 U	0.55 U
PFNA (µg/kg)	0.47 U	0.6 U	0.55 U
PFOA (µg/kg)	0.47 U	0.6 U	0.55 U
PFOS (µg/kg)	0.37 J	0.6 U	0.55 U

DDMT-560-01 (SO)				
Analyte	0 ft.	0 ft.(D)	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	1.9 U	2.1 U	2.1 U	2.3 U
PFBS (µg/kg)	0.48 U	0.5 U	0.5 U	0.55 U
PFHxS (µg/kg)	0.48 U	0.5 U	0.5 U	0.55 U
PFNA (µg/kg)	0.48 U	0.5 U	0.5 U	0.55 U
PFOA (µg/kg)	0.19 J	0.5 U	0.5 U	0.55 U
PFOS (µg/kg)	0.48 U	0.22 J	0.5 U	0.55 U

DDMT-560-03 (SO)			
Analyte	0 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2 U	2.2 U	2.3 U
PFBS (µg/kg)	0.5 U	0.55 U	0.6 U
PFHxS (µg/kg)	0.5 U	0.55 U	0.6 U
PFNA (µg/kg)	0.5 U	0.55 U	0.6 U
PFOA (µg/kg)	0.5 U	0.55 U	0.6 U
PFOS (µg/kg)	0.35 J	0.55 U	0.6 U

DDMT-560-MW-307 (GW)	
Analyte	105 ft.
HFPO-DA or GenX (ng/L)	3.4 U
PFBS (ng/L)	99
PFHxS (ng/L)	13
PFNA (ng/L)	1.7 U
PFOA (ng/L)	0.91 J
PFOS (ng/L)	1.7 U

DDMT-560-MW-271 (GW)	
Analyte	140 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	1.7 J
PFHxS (ng/L)	8.5
PFNA (ng/L)	1.9 U
PFOA (ng/L)	2.3 J
PFOS (ng/L)	1.9 U

DDMT-560-MW-302 (GW)	
Analyte	165 ft.
HFPO-DA or GenX (ng/L)	3.5 U
PFBS (ng/L)	30
PFHxS (ng/L)	16
PFNA (ng/L)	1.8 U
PFOA (ng/L)	4.5
PFOS (ng/L)	4.2

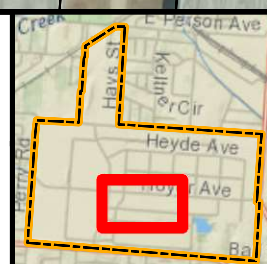
Legend

- Well Locations
- Buildings
- Areas of Potential Interest (AOPI)
- Installation Boundary
- Localized Groundwater Flow Direction
- Existing Fluvial Aquifer Well Sample (3)
- Soil Boring (3)
- Existing Intermediate Aquifer Well Sample (2)

0 100 200

SCALE: 1 ' = 250 '

TN STATE PLANE (NAD83) N



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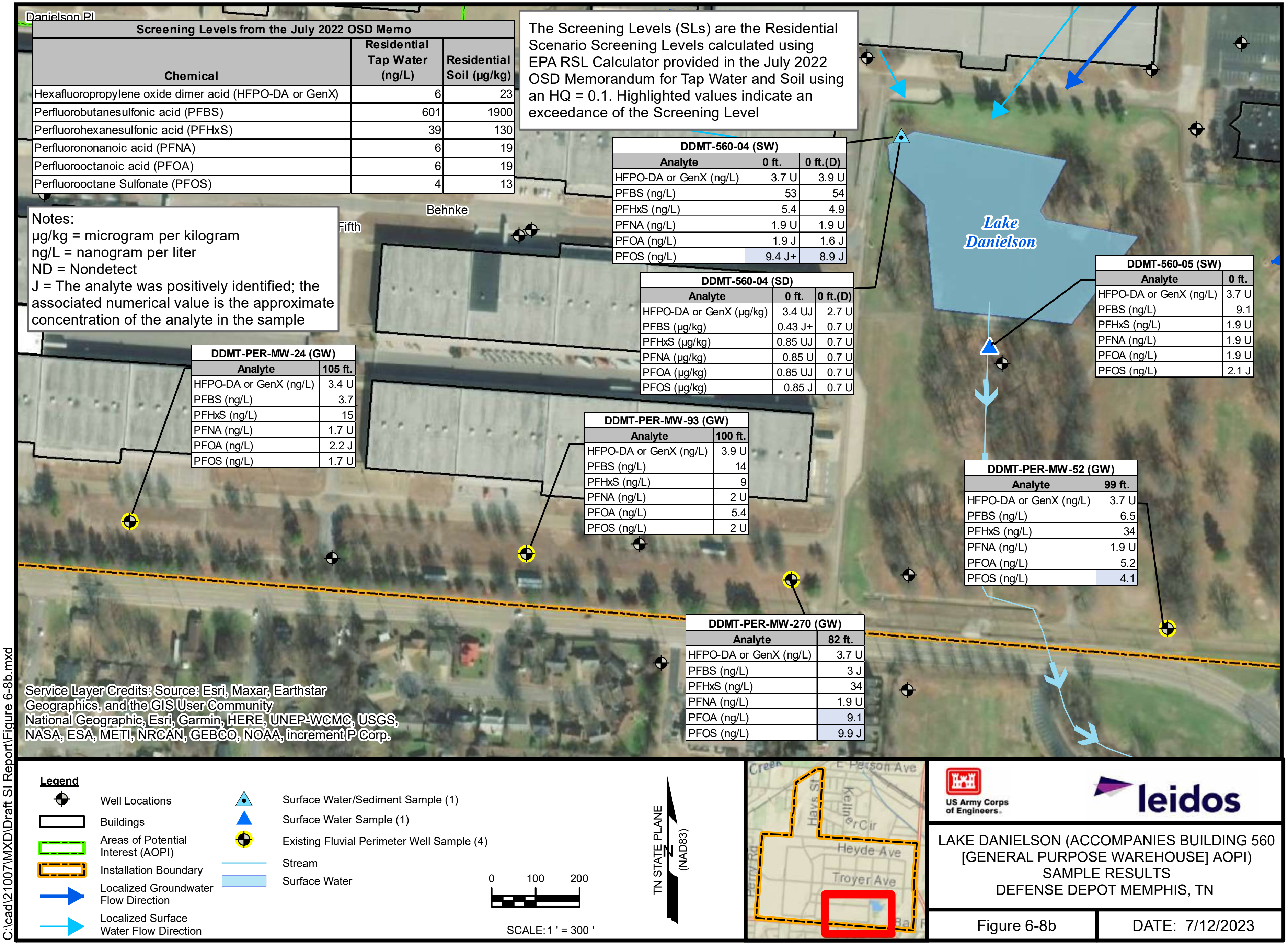
BUILDING 560 (GENERAL PURPOSE WAREHOUSE) AOPI SAMPLE RESULTS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-8a | DATE: 6/28/2023



Screening Levels from the July 2022 OSD Memo

Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanesulfonic acid (PFBS)	601	1900
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	6	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using EPA RSL Calculator provided in the July 2022 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

DDMT-560-04 (SW)

Analyte	0 ft.	0 ft.(D)
HFPO-DA or GenX (ng/L)	3.7 U	3.9 U
PFBS (ng/L)	53	54
PFHxS (ng/L)	5.4	4.9
PFNA (ng/L)	1.9 U	1.9 U
PFOA (ng/L)	1.9 J	1.6 J
PFOS (ng/L)	9.4 J+	8.9 J

DDMT-560-04 (SD)

Analyte	0 ft.	0 ft.(D)
HFPO-DA or GenX (µg/kg)	3.4 UJ	2.7 U
PFBS (µg/kg)	0.43 J+	0.7 U
PFHxS (µg/kg)	0.85 UJ	0.7 U
PFNA (µg/kg)	0.85 U	0.7 U
PFOA (µg/kg)	0.85 UJ	0.7 U
PFOS (µg/kg)	0.85 J	0.7 U

DDMT-560-05 (SW)

Analyte	0 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	9.1
PFHxS (ng/L)	1.9 U
PFNA (ng/L)	1.9 U
PFOA (ng/L)	1.9 U
PFOS (ng/L)	2.1 J

DDMT-PER-MW-24 (GW)

Analyte	105 ft.
HFPO-DA or GenX (ng/L)	3.4 U
PFBS (ng/L)	3.7
PFHxS (ng/L)	15
PFNA (ng/L)	1.7 U
PFOA (ng/L)	2.2 J
PFOS (ng/L)	1.7 U

DDMT-PER-MW-93 (GW)

Analyte	100 ft.
HFPO-DA or GenX (ng/L)	3.9 U
PFBS (ng/L)	14
PFHxS (ng/L)	9
PFNA (ng/L)	2 U
PFOA (ng/L)	5.4
PFOS (ng/L)	2 U

DDMT-PER-MW-52 (GW)

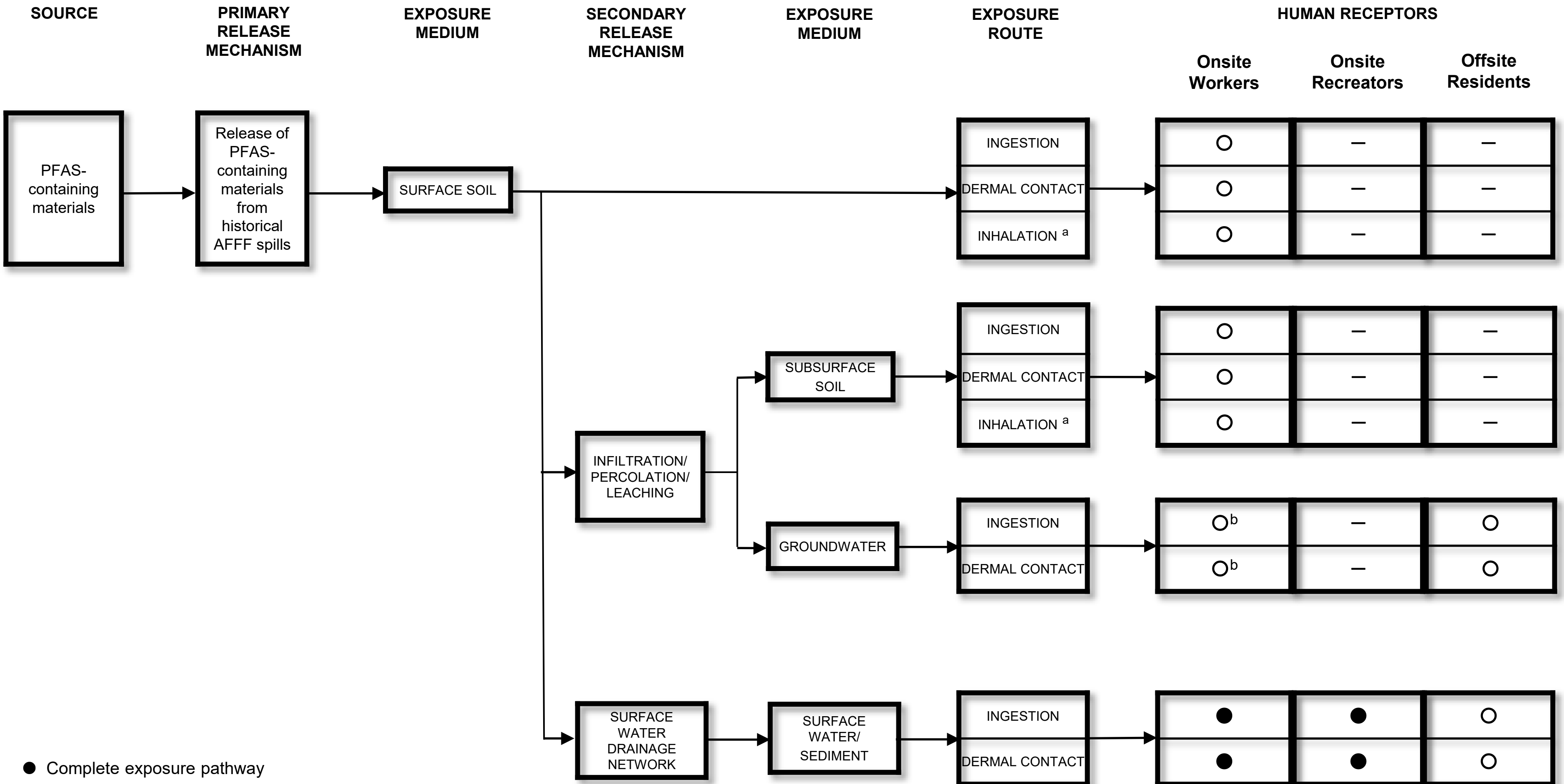
Analyte	99 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	6.5
PFHxS (ng/L)	34
PFNA (ng/L)	1.9 U
PFOA (ng/L)	5.2
PFOS (ng/L)	4.1

DDMT-PER-MW-270 (GW)

Analyte	82 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	3 J
PFHxS (ng/L)	34
PFNA (ng/L)	1.9 U
PFOA (ng/L)	9.1
PFOS (ng/L)	9.9 J

LAKE DANIELSON (ACCOMPANIES BUILDING 560 [GENERAL PURPOSE WAREHOUSE] AOPI) SAMPLE RESULTS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-8b | DATE: 7/12/2023



● Complete exposure pathway

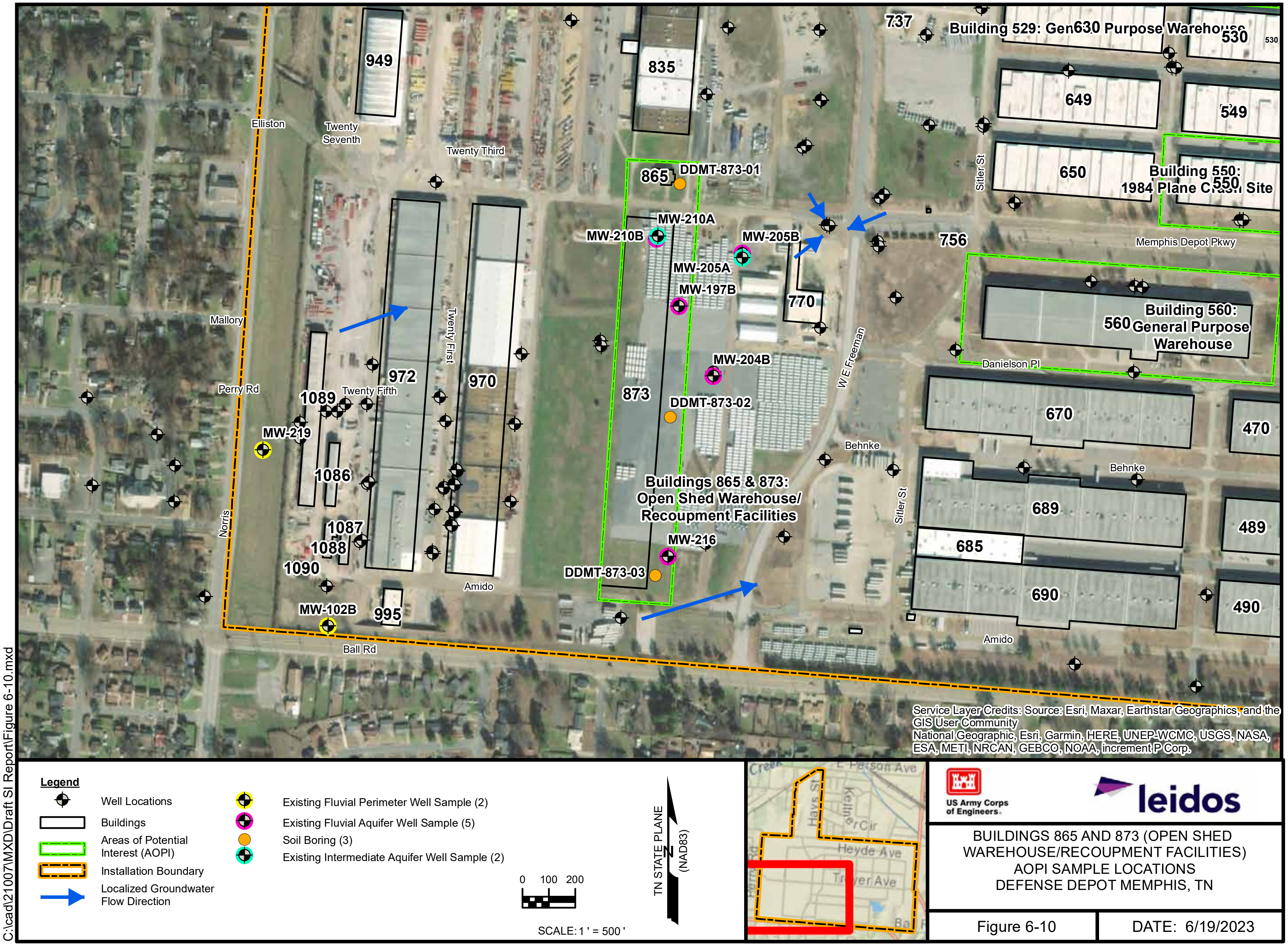
○ Potentially complete exposure pathway

— Incomplete exposure pathway

[a] Inhalation of PFAS is considered potentially complete because no toxicity information is available for the inhalation route.

[b] Land use controls, including restrictions on groundwater use, are in place at this AOPI; however, since the restrictions are unrelated to PFAS, the pathway is potentially complete.

Figure 6-9. Human Health CSM for Building 560 (General Purpose Warehouse) AOPI



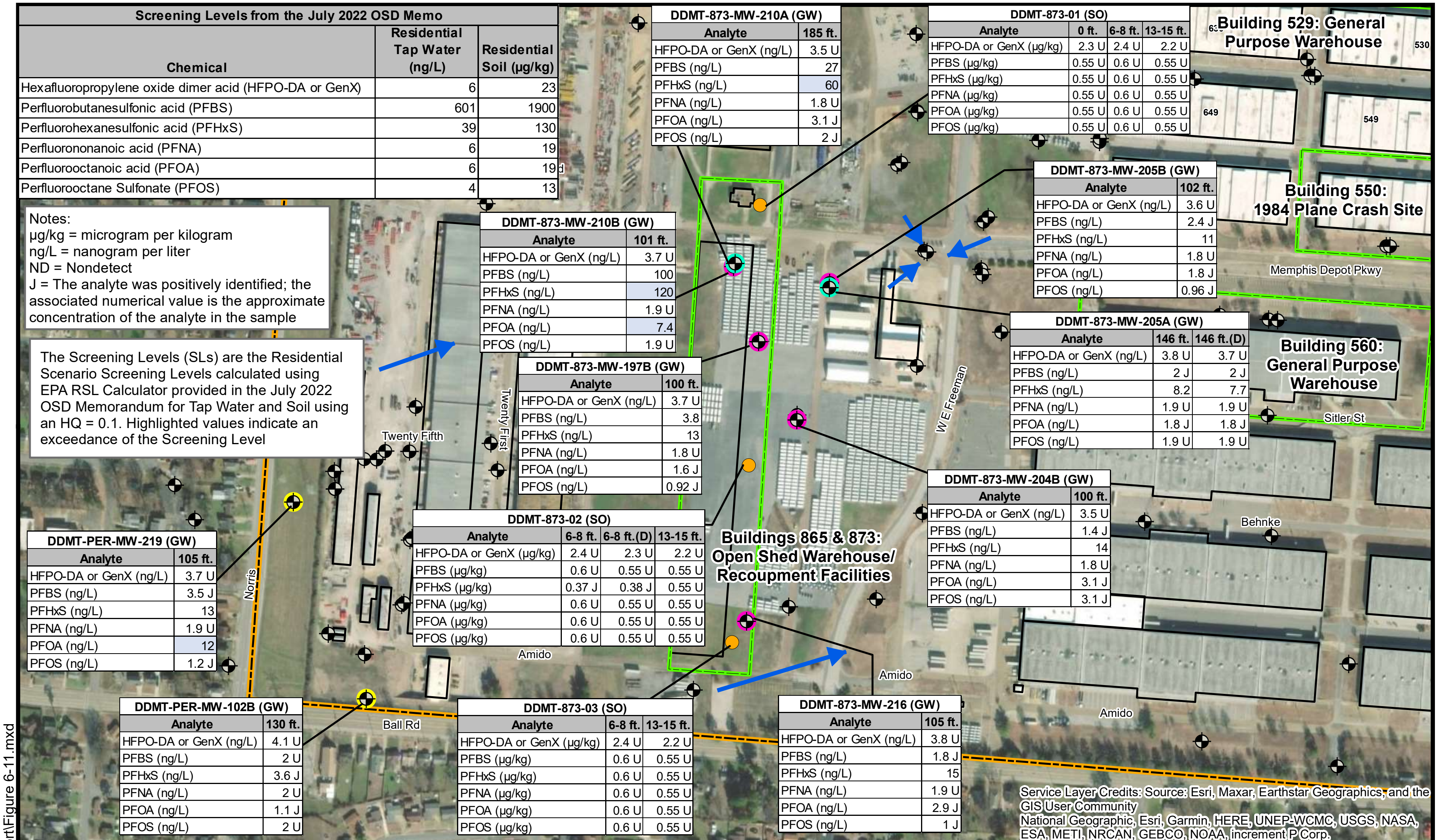
BUILDINGS 865 AND 873 (OPEN SHED WAREHOUSE/RECOUPMENT FACILITIES) AOPI SAMPLE LOCATIONS DEFENSE DEPOT MEMPHIS, TN

Figure 6-10 DATE: 6/19/2023

Screening Levels from the July 2022 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanesulfonic acid (PFBS)	601	1900
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	6	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using EPA RSL Calculator provided in the July 2022 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level



DDMT-873-MW-210A (GW)	
Analyte	185 ft.
HFPO-DA or GenX (ng/L)	3.5 U
PFBS (ng/L)	27
PFHxS (ng/L)	**60**
PFNA (ng/L)	1.8 U
PFOA (ng/L)	3.1 J
PFOS (ng/L)	2 J

DDMT-873-01 (SO)			
Analyte	0 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.3 U	2.4 U	2.2 U
PFBS (µg/kg)	0.55 U	0.6 U	0.55 U
PFHxS (µg/kg)	0.55 U	0.6 U	0.55 U
PFNA (µg/kg)	0.55 U	0.6 U	0.55 U
PFOA (µg/kg)	0.55 U	0.6 U	0.55 U
PFOS (µg/kg)	0.55 U	0.6 U	0.55 U

DDMT-873-MW-210B (GW)	
Analyte	101 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	100
PFHxS (ng/L)	**120**
PFNA (ng/L)	1.9 U
PFOA (ng/L)	**7.4**
PFOS (ng/L)	1.9 U

DDMT-873-MW-205B (GW)	
Analyte	102 ft.
HFPO-DA or GenX (ng/L)	3.6 U
PFBS (ng/L)	2.4 J
PFHxS (ng/L)	11
PFNA (ng/L)	1.8 U
PFOA (ng/L)	1.8 J
PFOS (ng/L)	0.96 J

DDMT-873-MW-205A (GW)		
Analyte	146 ft.	146 ft.(D)
HFPO-DA or GenX (ng/L)	3.8 U	3.7 U
PFBS (ng/L)	2 J	2 J
PFHxS (ng/L)	8.2	7.7
PFNA (ng/L)	1.9 U	1.9 U
PFOA (ng/L)	1.8 J	1.8 J
PFOS (ng/L)	1.9 U	1.9 U

DDMT-873-MW-197B (GW)	
Analyte	100 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	3.8
PFHxS (ng/L)	13
PFNA (ng/L)	1.8 U
PFOA (ng/L)	1.6 J
PFOS (ng/L)	0.92 J

DDMT-873-MW-204B (GW)	
Analyte	100 ft.
HFPO-DA or GenX (ng/L)	3.5 U
PFBS (ng/L)	1.4 J
PFHxS (ng/L)	14
PFNA (ng/L)	1.8 U
PFOA (ng/L)	3.1 J
PFOS (ng/L)	3.1 J

DDMT-PER-MW-219 (GW)	
Analyte	105 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	3.5 J
PFHxS (ng/L)	13
PFNA (ng/L)	1.9 U
PFOA (ng/L)	**12**
PFOS (ng/L)	1.2 J

DDMT-873-02 (SO)			
Analyte	6-8 ft.	6-8 ft.(D)	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.4 U	2.3 U	2.2 U
PFBS (µg/kg)	0.6 U	0.55 U	0.55 U
PFHxS (µg/kg)	0.37 J	0.38 J	0.55 U
PFNA (µg/kg)	0.6 U	0.55 U	0.55 U
PFOA (µg/kg)	0.6 U	0.55 U	0.55 U
PFOS (µg/kg)	0.6 U	0.55 U	0.55 U

DDMT-PER-MW-102B (GW)	
Analyte	130 ft.
HFPO-DA or GenX (ng/L)	4.1 U
PFBS (ng/L)	2 U
PFHxS (ng/L)	3.6 J
PFNA (ng/L)	2 U
PFOA (ng/L)	1.1 J
PFOS (ng/L)	2 U

DDMT-873-03 (SO)		
Analyte	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.4 U	2.2 U
PFBS (µg/kg)	0.6 U	0.55 U
PFHxS (µg/kg)	0.6 U	0.55 U
PFNA (µg/kg)	0.6 U	0.55 U
PFOA (µg/kg)	0.6 U	0.55 U
PFOS (µg/kg)	0.6 U	0.55 U

DDMT-873-MW-216 (GW)	
Analyte	105 ft.
HFPO-DA or GenX (ng/L)	3.8 U
PFBS (ng/L)	1.8 J
PFHxS (ng/L)	15
PFNA (ng/L)	1.9 U
PFOA (ng/L)	2.9 J
PFOS (ng/L)	1 J

Legend

- Well Locations
- Buildings
- Areas of Potential Interest (AOPI)
- Installation Boundary
- Localized Groundwater Flow Direction
- Existing Fluvial Perimeter Well Sample (2)
- Existing Fluvial Aquifer Well Sample (5)
- Soil Boring (3)
- Existing Intermediate Aquifer Well Sample (2)

0 100 200

SCALE: 1 ' = 500 '

TN STATE PLANE (NAD83)

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BUILDINGS 865 AND 873 (OPEN SHED WAREHOUSE/RECOUPMENT FACILITIES)
AOPI SAMPLE RESULTS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-11

DATE: 6/29/2023

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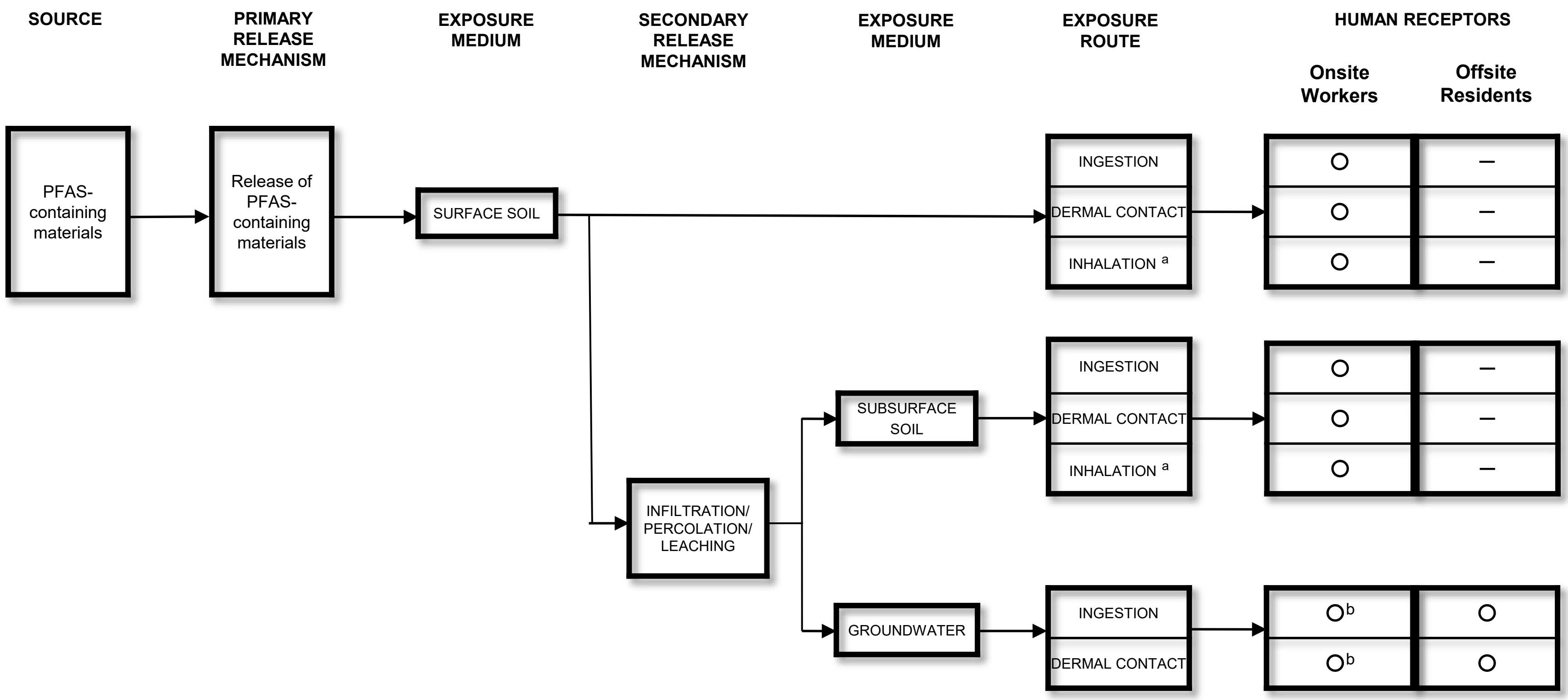


● Complete exposure pathway

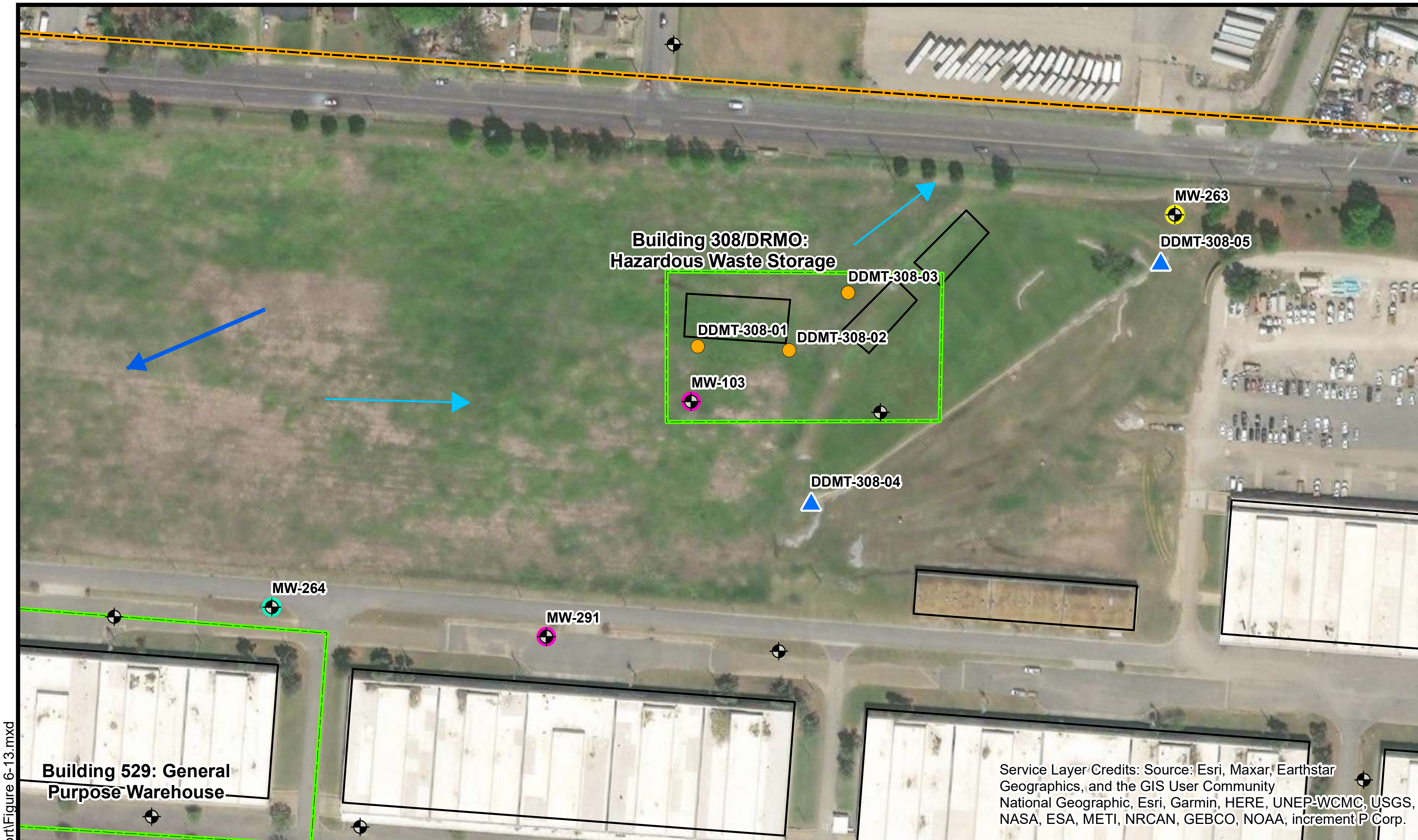
○ Potentially complete exposure pathway

— Incomplete exposure pathway

[a] Inhalation of PFAS is considered potentially complete because no toxicity information is available for the inhalation route.

[b] Land use controls, including restrictions on groundwater use, are in place at this AOPI; however, since the restrictions are unrelated to PFAS, the pathway is potentially complete.

Figure 6-12. Human Health CSM for Buildings 865 and 873 (Open Shed Warehouse/Recoupment Facilities) AOPI



Legend

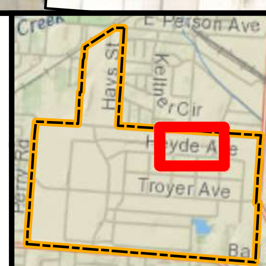
- Well Locations
- Buildings
- Areas of Potential Interest (AOPI)
- Installation Boundary
- Localized Groundwater Flow Direction
- Localized Surface Water Flow Direction
- Surface Water Sample (2)
- Existing Fluvial Perimeter Well Sample (1)
- Existing Fluvial Aquifer Well Sample (2)
- Soil Boring (3)
- Existing Intermediate Aquifer Well Sample (1)

0 100 200

SCALE: 1 ' = 200 '

TN STATE PLANE (NAD83)

N



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BUILDING 308/DRMO
(HAZARDOUS WASTE STORAGE)
AOPI SAMPLE LOCATIONS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-13 | DATE: 6/14/2023

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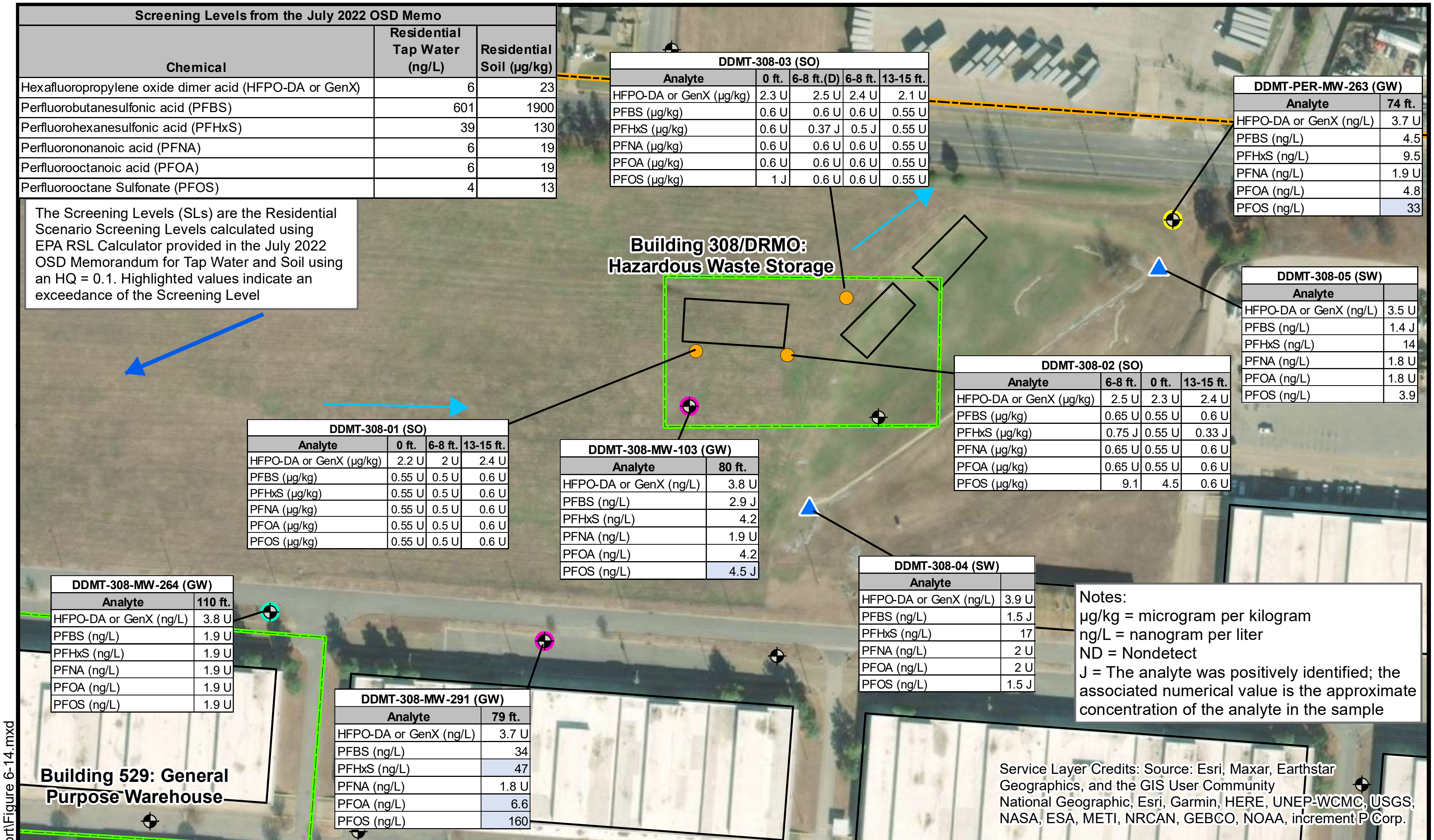
Screening Levels from the July 2022 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanesulfonic acid (PFBS)	601	1900
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	6	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using EPA RSL Calculator provided in the July 2022 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level



DDMT-308-03 (SO)				
Analyte	0 ft.	6-8 ft.(D)	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.3 U	2.5 U	2.4 U	2.1 U
PFBS (µg/kg)	0.6 U	0.6 U	0.6 U	0.55 U
PFHxS (µg/kg)	0.6 U	0.37 J	0.5 J	0.55 U
PFNA (µg/kg)	0.6 U	0.6 U	0.6 U	0.55 U
PFOA (µg/kg)	0.6 U	0.6 U	0.6 U	0.55 U
PFOS (µg/kg)	1 J	0.6 U	0.6 U	0.55 U

DDMT-PER-MW-263 (GW)	
Analyte	74 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	4.5
PFHxS (ng/L)	9.5
PFNA (ng/L)	1.9 U
PFOA (ng/L)	4.8
PFOS (ng/L)	33

DDMT-308-05 (SW)	
Analyte	
HFPO-DA or GenX (ng/L)	3.5 U
PFBS (ng/L)	1.4 J
PFHxS (ng/L)	14
PFNA (ng/L)	1.8 U
PFOA (ng/L)	1.8 U
PFOS (ng/L)	3.9

DDMT-308-02 (SO)			
Analyte	6-8 ft.	0 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.5 U	2.3 U	2.4 U
PFBS (µg/kg)	0.65 U	0.55 U	0.6 U
PFHxS (µg/kg)	0.75 J	0.55 U	0.33 J
PFNA (µg/kg)	0.65 U	0.55 U	0.6 U
PFOA (µg/kg)	0.65 U	0.55 U	0.6 U
PFOS (µg/kg)	9.1	4.5	0.6 U

DDMT-308-01 (SO)			
Analyte	0 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.2 U	2 U	2.4 U
PFBS (µg/kg)	0.55 U	0.5 U	0.6 U
PFHxS (µg/kg)	0.55 U	0.5 U	0.6 U
PFNA (µg/kg)	0.55 U	0.5 U	0.6 U
PFOA (µg/kg)	0.55 U	0.5 U	0.6 U
PFOS (µg/kg)	0.55 U	0.5 U	0.6 U

DDMT-308-MW-103 (GW)	
Analyte	80 ft.
HFPO-DA or GenX (ng/L)	3.8 U
PFBS (ng/L)	2.9 J
PFHxS (ng/L)	4.2
PFNA (ng/L)	1.9 U
PFOA (ng/L)	4.2
PFOS (ng/L)	4.5 J

DDMT-308-04 (SW)	
Analyte	
HFPO-DA or GenX (ng/L)	3.9 U
PFBS (ng/L)	1.5 J
PFHxS (ng/L)	17
PFNA (ng/L)	2 U
PFOA (ng/L)	2 U
PFOS (ng/L)	1.5 J

DDMT-308-MW-264 (GW)	
Analyte	110 ft.
HFPO-DA or GenX (ng/L)	3.8 U
PFBS (ng/L)	1.9 U
PFHxS (ng/L)	1.9 U
PFNA (ng/L)	1.9 U
PFOA (ng/L)	1.9 U
PFOS (ng/L)	1.9 U

DDMT-308-MW-291 (GW)	
Analyte	79 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	34
PFHxS (ng/L)	47
PFNA (ng/L)	1.8 U
PFOA (ng/L)	6.6
PFOS (ng/L)	160

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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Legend

- Well Locations
- Buildings
- Areas of Potential Interest (AOPI)
- Installation Boundary
- Localized Groundwater Flow Direction
- Localized Surface Water Flow Direction
- Surface Water Sample (2)
- Existing Fluvial Perimeter Well Sample (1)
- Existing Fluvial Aquifer Well Sample (2)
- Soil Boring (3)
- Existing Intermediate Aquifer Well Sample (1)

0 100 200

SCALE: 1 ' = 200 '

TN STATE PLANE (NAD83)

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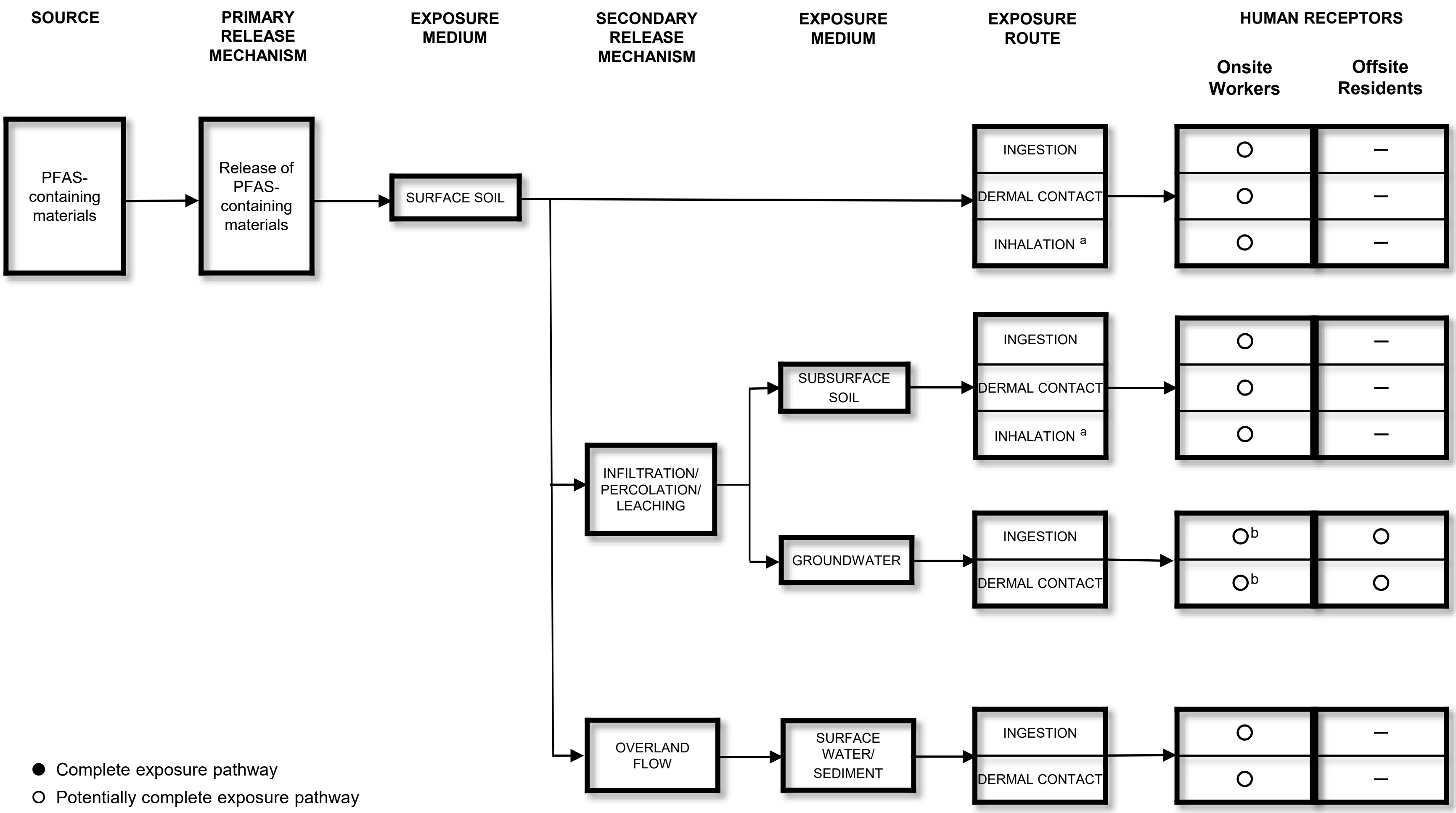
BUILDING 308/DRMO
(HAZARDOUS WASTE STORAGE)
AOPI SAMPLE RESULTS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-14

DATE: 6/29/2023



● Complete exposure pathway

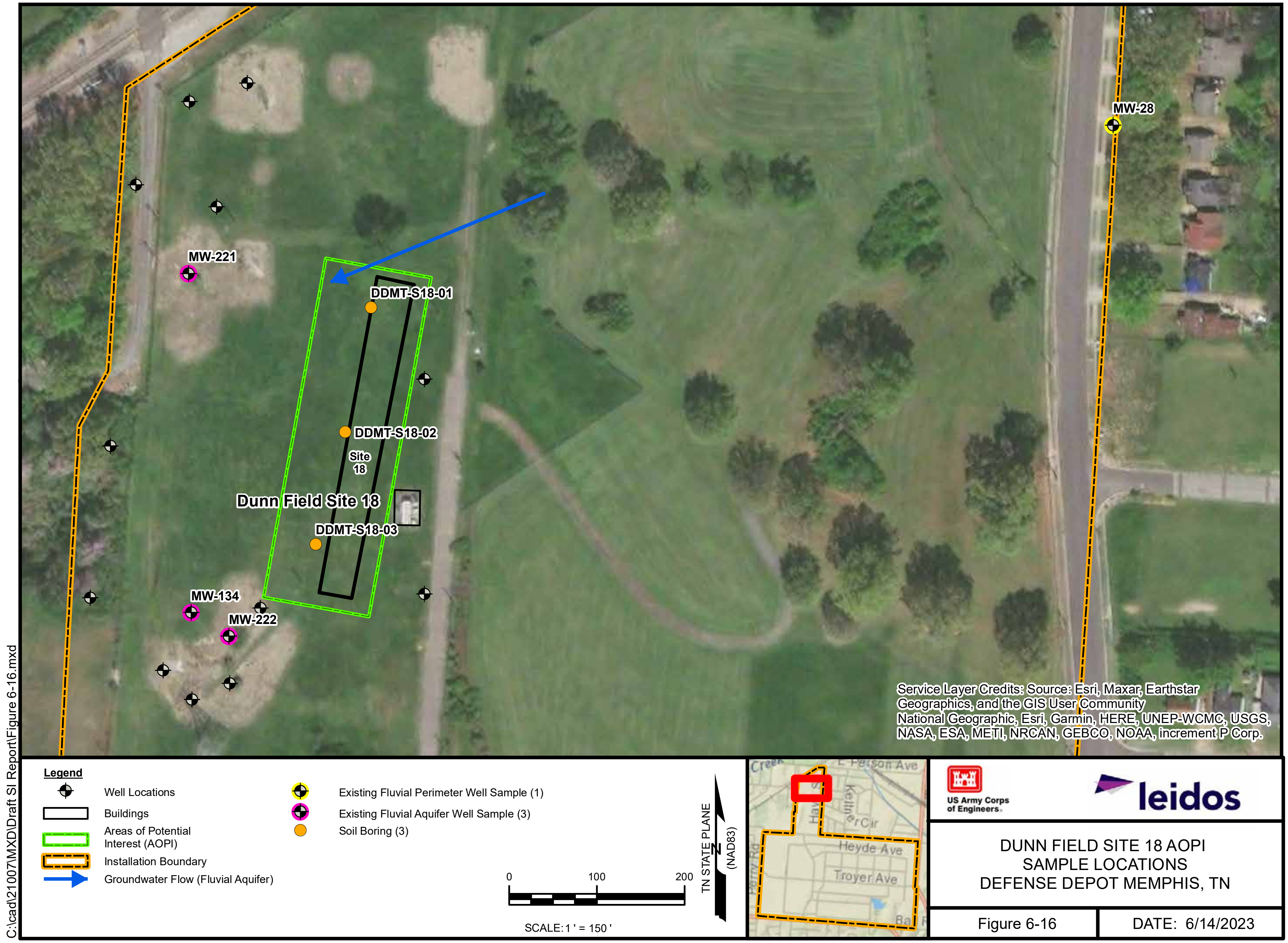
○ Potentially complete exposure pathway

— Incomplete exposure pathway

[a] Inhalation of PFAS is considered potentially complete because no toxicity information is available for the inhalation route.

[b] Land use controls, including restrictions on groundwater use, are in place at this AOPI; however, since the restrictions are unrelated to PFAS, the pathway is potentially complete.

Figure 6-15. Human Health CSM for Building 308/DRMO (Hazardous Waste Storage) AOPI



MW-28
MW-221
DDMT-S18-01
DDMT-S18-02
Site 18
Dunn Field Site 18
DDMT-S18-03
MW-134
MW-222
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
Legend
Well Locations
Buildings
Areas of Potential Interest (AOPI)
Installation Boundary
Groundwater Flow (Fluvial Aquifer)
Existing Fluvial Perimeter Well Sample (1)
Existing Fluvial Aquifer Well Sample (3)
Soil Boring (3)
0
100
200
SCALE: 1 ' = 150 '
TN STATE PLANE
N
(NAD83)
E Person Ave
Kellner Cir
Heyde Ave
Troyer Ave
US Army Corps of Engineers
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DUNN FIELD SITE 18 AOPI
SAMPLE LOCATIONS
DEFENSE DEPOT MEMPHIS, TN
Figure 6-16
DATE: 6/14/2023
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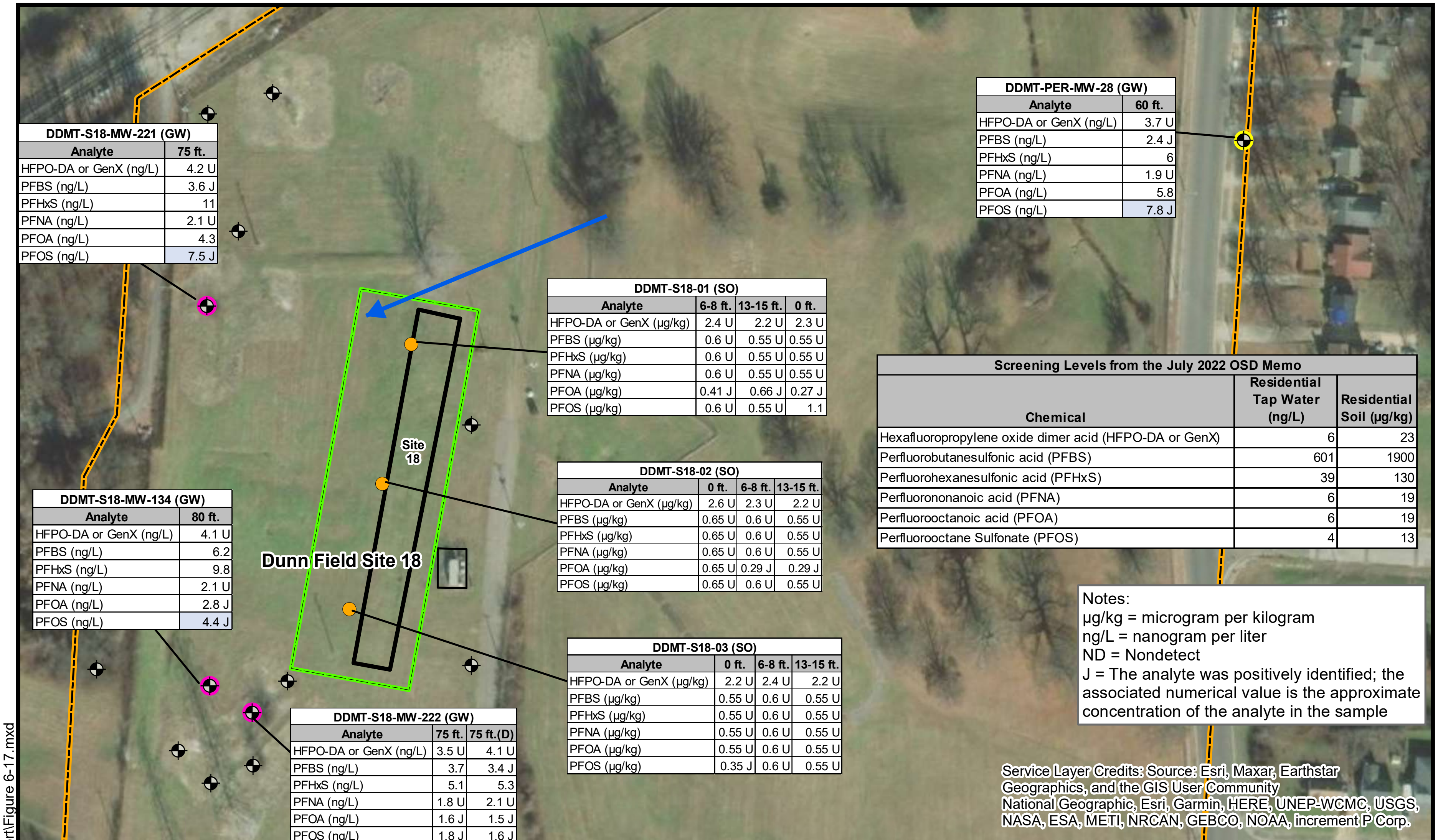


DDMT-S18-MW-221 (GW)	
Analyte	75 ft.
HFPO-DA or GenX (ng/L)	4.2 U
PFBS (ng/L)	3.6 J
PFHxS (ng/L)	11
PFNA (ng/L)	2.1 U
PFOA (ng/L)	4.3
PFOS (ng/L)	7.5 J

DDMT-PER-MW-28 (GW)	
Analyte	60 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	2.4 J
PFHxS (ng/L)	6
PFNA (ng/L)	1.9 U
PFOA (ng/L)	5.8
PFOS (ng/L)	7.8 J

DDMT-S18-01 (SO)			
Analyte	6-8 ft.	13-15 ft.	0 ft.
HFPO-DA or GenX (µg/kg)	2.4 U	2.2 U	2.3 U
PFBS (µg/kg)	0.6 U	0.55 U	0.55 U
PFHxS (µg/kg)	0.6 U	0.55 U	0.55 U
PFNA (µg/kg)	0.6 U	0.55 U	0.55 U
PFOA (µg/kg)	0.41 J	0.66 J	0.27 J
PFOS (µg/kg)	0.6 U	0.55 U	1.1

Screening Levels from the July 2022 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanesulfonic acid (PFBS)	601	1900
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	6	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

DDMT-S18-02 (SO)			
Analyte	0 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.6 U	2.3 U	2.2 U
PFBS (µg/kg)	0.65 U	0.6 U	0.55 U
PFHxS (µg/kg)	0.65 U	0.6 U	0.55 U
PFNA (µg/kg)	0.65 U	0.6 U	0.55 U
PFOA (µg/kg)	0.65 U	0.29 J	0.29 J
PFOS (µg/kg)	0.65 U	0.6 U	0.55 U

DDMT-S18-MW-134 (GW)	
Analyte	80 ft.
HFPO-DA or GenX (ng/L)	4.1 U
PFBS (ng/L)	6.2
PFHxS (ng/L)	9.8
PFNA (ng/L)	2.1 U
PFOA (ng/L)	2.8 J
PFOS (ng/L)	4.4 J

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

DDMT-S18-03 (SO)			
Analyte	0 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.2 U	2.4 U	2.2 U
PFBS (µg/kg)	0.55 U	0.6 U	0.55 U
PFHxS (µg/kg)	0.55 U	0.6 U	0.55 U
PFNA (µg/kg)	0.55 U	0.6 U	0.55 U
PFOA (µg/kg)	0.55 U	0.6 U	0.55 U
PFOS (µg/kg)	0.35 J	0.6 U	0.55 U

DDMT-S18-MW-222 (GW)		
Analyte	75 ft.	75 ft.(D)
HFPO-DA or GenX (ng/L)	3.5 U	4.1 U
PFBS (ng/L)	3.7	3.4 J
PFHxS (ng/L)	5.1	5.3
PFNA (ng/L)	1.8 U	2.1 U
PFOA (ng/L)	1.6 J	1.5 J
PFOS (ng/L)	1.8 J	1.6 J

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

C:\cad\21007\MXD\Draft SI Report\Figure 6-17.mxd

Legend

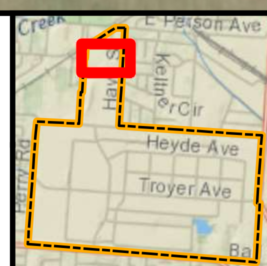
- Well Locations
- Buildings
- Areas of Potential Interest (AOPI)
- Installation Boundary
- Groundwater Flow (Fluvial Aquifer)
- Existing Fluvial Perimeter Well Sample (1)
- Existing Fluvial Aquifer Well Sample (3)
- Soil Boring (3)

0 100 200

SCALE: 1 ' = 150 '

TN STATE PLANE (NAD83)

N



US Army Corps of Engineers

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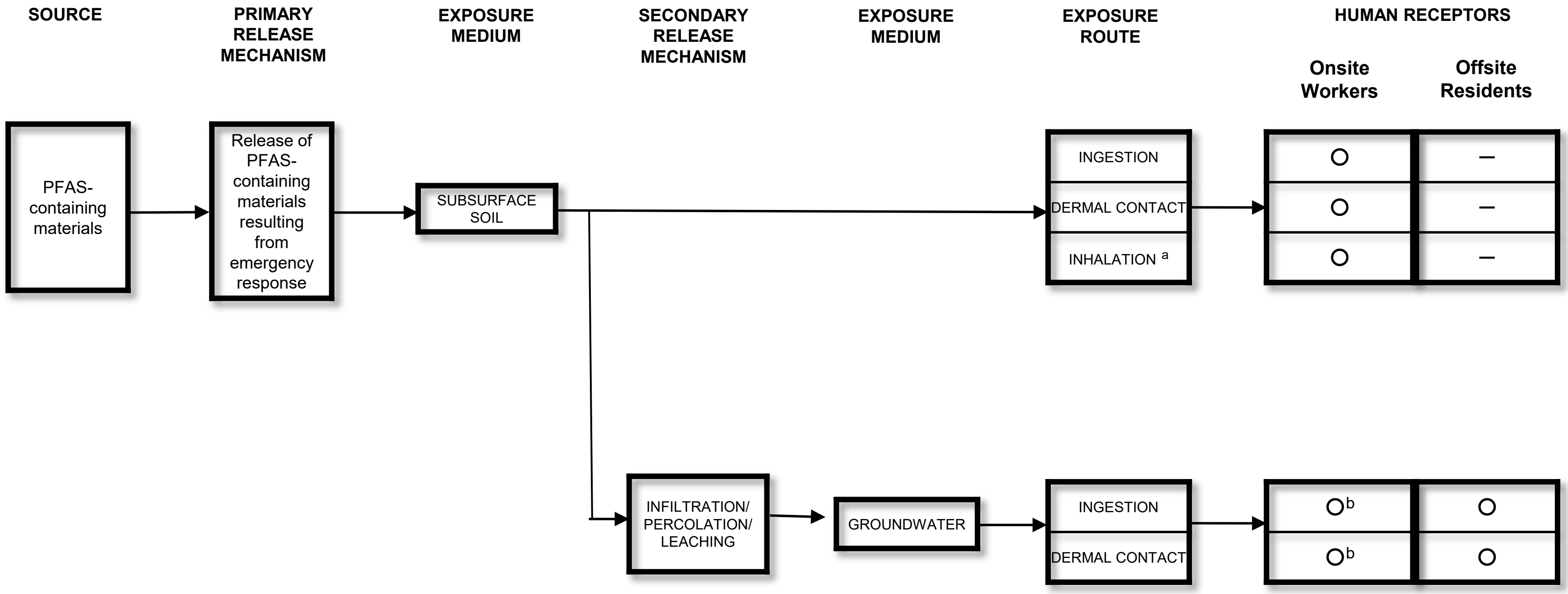
DUNN FIELD SITE 18 AOPI
SAMPLE RESULTS
DEFENSE DEPOT MEMPHIS, TN

Figure 6-17 DATE: 6/29/2023



● Complete exposure pathway

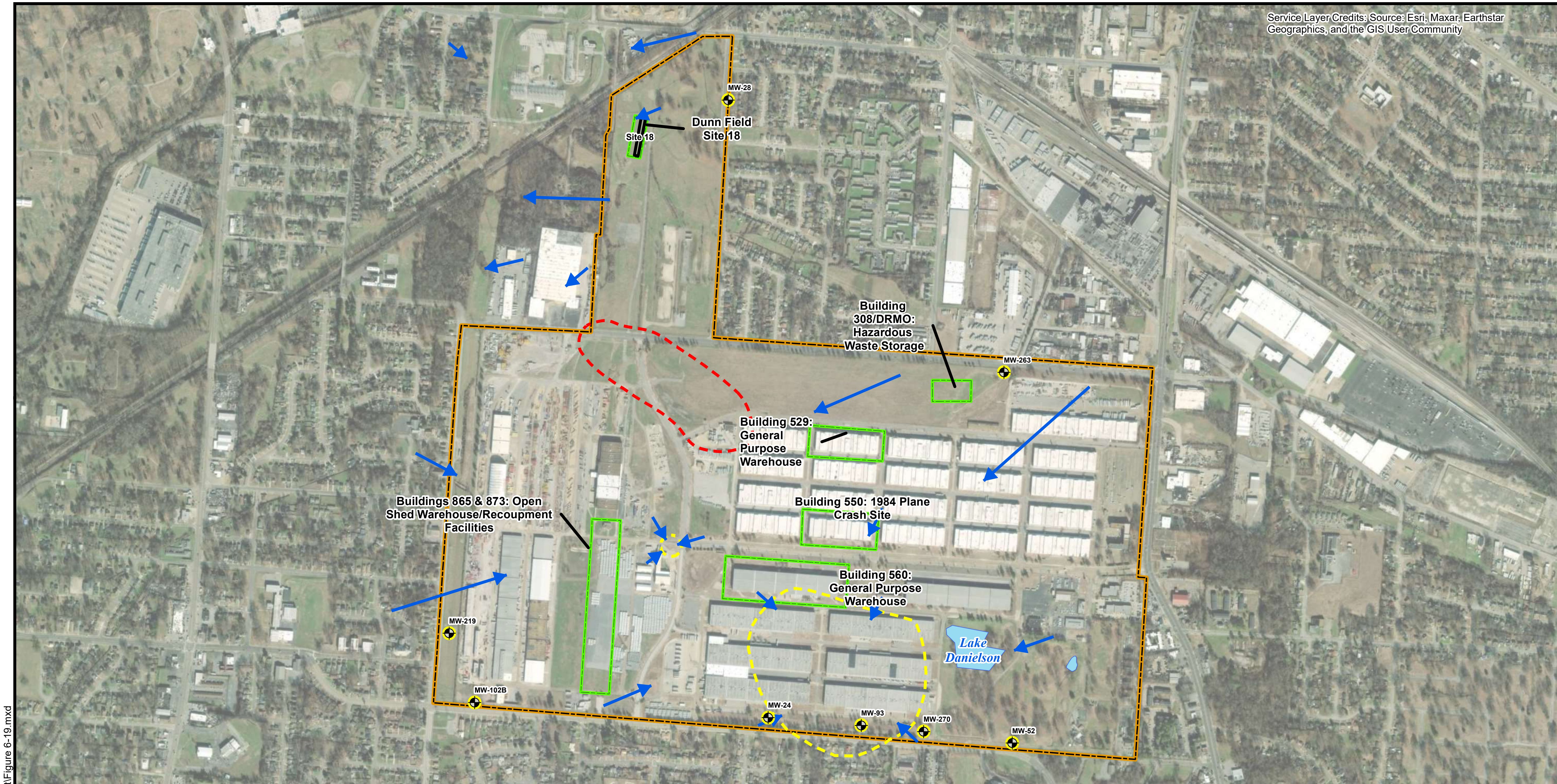
○ Potentially complete exposure pathway

— Incomplete exposure pathway

[a] Inhalation of PFAS is considered potentially complete because no toxicity information is available for the inhalation route.

[b] Land use controls, including restrictions on groundwater use, are in place at this AOPI; however, since the restrictions are unrelated to PFAS, the pathway is potentially complete.

Figure 6-18. Human Health CSM for Dunn Field Site 18 AOPI



Legend
- Existing Perimeter Well Sample (8)
- Areas of Potential Interest (AOPI)
- Installation Boundary
- Surface Water
- Groundwater Flow (Fluvial Aquifer)
- Erosional Window
- Geologic Sink

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using EPA RSL Calculator provided in the July 2022 OSD Memorandum for Tap Water and Soil usingan HQ = .1. Highlighted values indicate an exceedance of the Screening Level

0 1,000 2,000
SCALE: 1 ' = 1,000 "

TN STATE PLANE N (NAD83)

US Army Corps of Engineers

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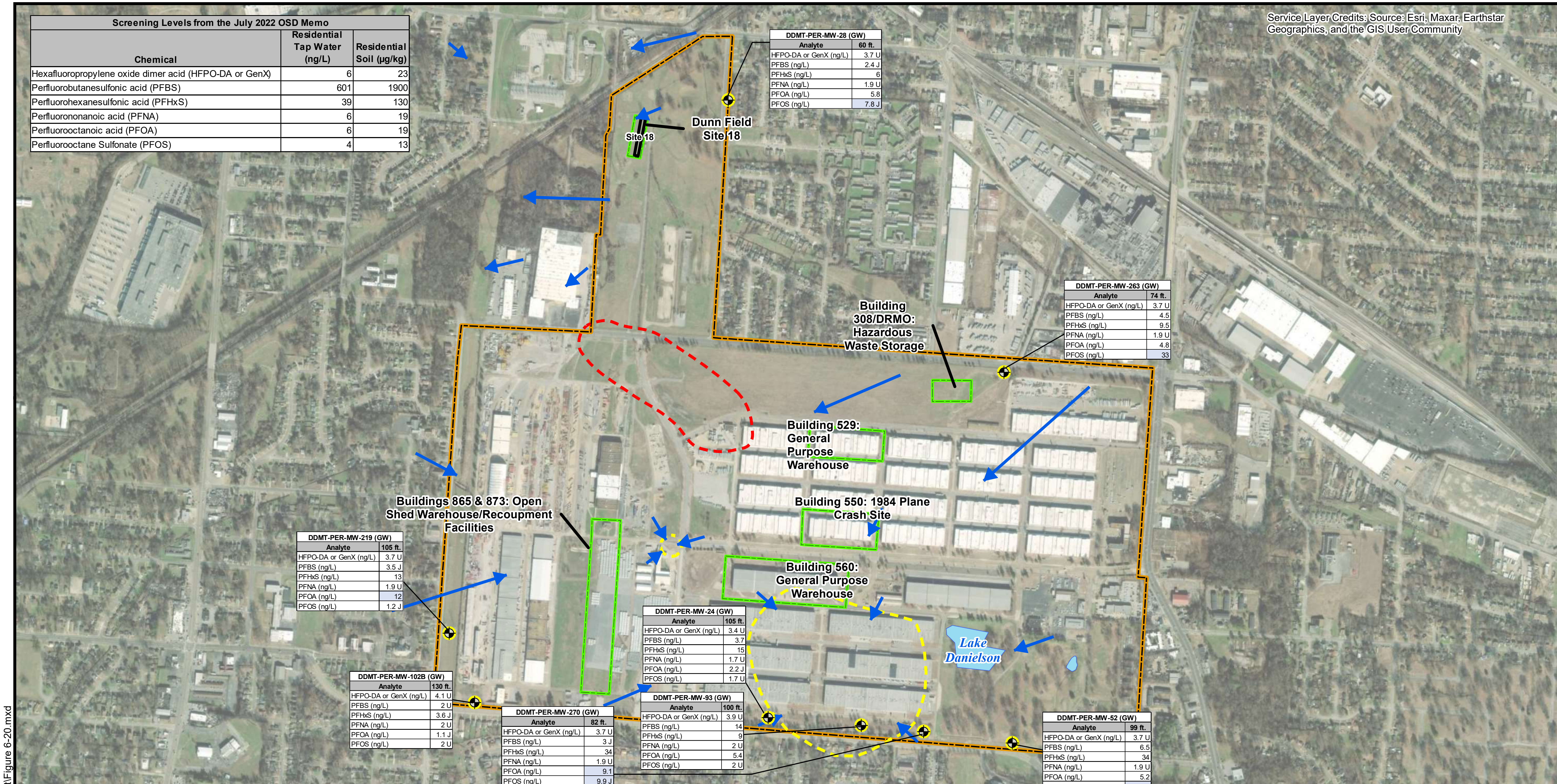
PERIMETER WELL SAMPLE LOCATIONS
DEFENSE DEPOT MEMPHIS, TN

FIGURE 6-19 | DATE: 11/1/2023

C:\cad\21007\MXD\Draft SI Report\Figure 6-19.mxd



Screening Levels from the July 2022 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanesulfonic acid (PFBS)	601	1900
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	6	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

DDMT-PER-MW-28 (GW)	
Analyte	60 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	2.4 J
PFHxS (ng/L)	6
PFNA (ng/L)	1.9 U
PFOA (ng/L)	5.8
PFOS (ng/L)	7.8 J

DDMT-PER-MW-263 (GW)	
Analyte	74 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	4.5
PFHxS (ng/L)	9.5
PFNA (ng/L)	1.9 U
PFOA (ng/L)	4.8
PFOS (ng/L)	33

DDMT-PER-MW-219 (GW)	
Analyte	105 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	3.5 J
PFHxS (ng/L)	13
PFNA (ng/L)	1.9 U
PFOA (ng/L)	12
PFOS (ng/L)	1.2 J

DDMT-PER-MW-24 (GW)	
Analyte	105 ft.
HFPO-DA or GenX (ng/L)	3.4 U
PFBS (ng/L)	3.7
PFHxS (ng/L)	15
PFNA (ng/L)	1.7 U
PFOA (ng/L)	2.2 J
PFOS (ng/L)	1.7 U

DDMT-PER-MW-102B (GW)	
Analyte	130 ft.
HFPO-DA or GenX (ng/L)	4.1 U
PFBS (ng/L)	2 U
PFHxS (ng/L)	3.6 J
PFNA (ng/L)	2 U
PFOA (ng/L)	1.1 J
PFOS (ng/L)	2 U

DDMT-PER-MW-270 (GW)	
Analyte	82 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	3 J
PFHxS (ng/L)	34
PFNA (ng/L)	1.9 U
PFOA (ng/L)	9.1
PFOS (ng/L)	9.9 J

DDMT-PER-MW-93 (GW)	
Analyte	100 ft.
HFPO-DA or GenX (ng/L)	3.9 U
PFBS (ng/L)	14
PFHxS (ng/L)	9
PFNA (ng/L)	2 U
PFOA (ng/L)	5.4
PFOS (ng/L)	2 U

DDMT-PER-MW-52 (GW)	
Analyte	99 ft.
HFPO-DA or GenX (ng/L)	3.7 U
PFBS (ng/L)	6.5
PFHxS (ng/L)	34
PFNA (ng/L)	1.9 U
PFOA (ng/L)	5.2
PFOS (ng/L)	4.1

Legend

- Existing Perimeter Well Sample (8)
- Areas of Potential Interest (AOPI)
- Installation Boundary
- Surface Water
- Groundwater Flow (Fluvial Aquifer)
- Erosional Window
- Geologic Sink

Notes:
µg/kg = microgram per kilogram
ng/L = nanogram per liter
ND = Nondetect
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using EPA RSL Calculator provided in the July 2022 OSD Memorandum for Tap Water and Soil usingan HQ = .1. Highlighted values indicate an exceedance of the Screening Level

0 1,000 2,000
SCALE: 1 ' = 1,000 "

TN STATE PLANE (NAD83)
N

US Army Corps of Engineers

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PERIMETER WELL SAMPLE RESULTS
DEFENSE DEPOT MEMPHIS, TN

FIGURE 6-20 | DATE: 11/1/2023

C:\cad\21007\MXD\Draft SI Report\Figure 6-20.mxd

APPENDIX A

DAILY FIELD SUMMARY NOTES

Stenson, Samantha [US-US]

From: Peterson, Vasu K. [US-US]
Sent: Tuesday, March 14, 2023 2:05 PM
To: Phillips, Peter M CIV USARMY CENAB (USA); Millar, William W Sr CTR USARMY HQDA DCS G-9 (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Opdyke, Clifford A CIV USARMY CENAB (USA)
Cc: Stenson, Samantha [US-US]; Weiss, Eddie R. [US-US]; Carter, Hudson L. [US-US]; Sherman, Megan [US-US]
Subject: DDMT SI Field Summary, 03/13/2023, W912DR-18-D-0003/W912DR21F0140

Site Inspection (SI) field work is being conducted at the Defense Depot Memphis Tennessee (DDMT) this week. The purpose of this field work is to complete an SI for PFAS in soil, sediment, surface water, and groundwater to determine the presence or absence of PFAS at six AOPIs at the former Army Depot. Activities are scheduled to occur from 13 March through 22 March 2023. The data collected from this sampling event will be included in the Draft SI Report.

Leidos Field Staff:

- Eddie Weiss – Field Manager/Geologist
- Hudson Carter – Environmental Specialist
- Megan Sherman – SSHO

Subcontractor On-site: M&W Drilling (team of 4)

Weather: 37 – 49 F, sunny, 5-10 mph S

Completed Activities:

- Leidos and M&W mobilize to the site
- Setup decontamination pad and laydown area by Building 265
- Setup drum staging area at Dunn Field

Deviations/Issues/Comments/Notes:

- During utility clearance activities, conducted 3/7-3/8/2023, a combination of utilities (water, electric, and comms), utility easement, warehouse loading docks, and overhead structures were encountered which required the relocation of sample DDMT-560-03 approximately 300 feet east of the proposed location.

Plan for work to be conducted on 03/14/2023:

- Begin drilling at Dunn Field
- Begin developing the existing monitoring wells.

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Stenson, Samantha [US-US]

From:	Peterson, Vasu K. [US-US]
Sent:	Wednesday, March 15, 2023 4:55 PM
To:	Phillips, Peter M CIV USARMY CENAB (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Millar, William W Sr CTR USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Opdyke, Clifford A CIV USARMY CENAB (USA)
Cc:	Weiss, Eddie R. [US-US]; Stenson, Samantha [US-US]; Carter, Hudson L. [US-US]; Sherman, Megan [US-US]
Subject:	DDMT SI Field Summary, 03/14/2023, W912DR-18-D-0003/W912DR21F0140

Summary of Site Inspection (SI) field work conducted at Defense Depot Memphis, Tennessee on March 14, 2023.

Leidos Field Staff:

- Eddie Weiss – Field Manager/Geologist
- Hudson Carter – Field Specialist
- Megan Sherman – SSHO

Subcontractor On-site: M&W Drilling: (3)

Weather: 29 – 49°F, sunny, 5-10 mph S

Completed Activities:

- Conducted development of the following existing monitoring wells (i.e., 3 well volumes removed):
  - Dunn Field Site 18 (MW-221, MW-222, MW-134, and MW-28 [Perimeter])
  - Building 560: General Purpose Warehouse (MW-307, MW-284)
  - Building 550: 1984 Plane Crash Site (MW-215A)41696598
- Completed all soil sampling activities at Dunn Field Site 18 AOPI:
  - S18-01: SS01, SB02, SB03
  - S18-02: SS01, SB02, SB03
  - S18-03: SS01, SB02, SB03
- Initiated low-impact utility clearance at Building 308/DRMO AOPI in preparation for drilling activities on 3/15.

Deviations/Issues/Comments/Notes:

- Surface soil from DDMT-S18-01 (SS01) was collected from a 0-6" interval from an offset location (approximately 1 foot) due to recovery issues from the 0 to 5-foot interval of the initial borehole.
- The drill rig was found to have a cracked plate on one of its wheels. M&W Drilling plugged the plate and do not anticipate any subsequent lost time; however, some time was utilized today to diagnose the issue.

Plan for work to be conducted on 03/15/2023:

- Complete all soil sampling activities at Building 308/DRMO AOPI.
- Mobilize to the next AOPI to begin soil sampling activities.
- Continue developing the existing monitoring wells.

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Stenson, Samantha [US-US]

From: Stenson, Samantha [US-US]
Sent: Thursday, March 16, 2023 8:43 AM
To: Phillips, Peter M CIV USARMY CENAB (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Millar, William W Sr CTR USARMY HQDA DCS G-9 (USA); Opdyke, Clifford A CIV USARMY CENAB (USA)
Cc: Peterson, Vasu K. [US-US]; Weiss, Eddie R. [US-US]; Carter, Hudson L. [US-US]; Sherman, Megan [US-US]
Subject: DDMT SI Field Summary, 03/15/2023, W912DR-18-D-0003/W912DR21F0140

Follow Up Flag: Follow up
Flag Status: Completed

Summary of Site Inspection (SI) field work conducted at Defense Depot Memphis, Tennessee on March 15, 2023.

Leidos Field Staff:

- Eddie Weiss – Field Manager/Geologist
- Hudson Carter – Field Specialist
- Megan Sherman – SSHO

Subcontractor On-site: M&W Drilling: (3)

Weather: 30 – 50°F, sunny, 5-10 mph S

Completed Activities:

- Conducted development of the following existing monitoring wells (i.e., 3 well volumes removed):
  - Building 560: General Purpose Warehouse (MW-302)
- Completed all soil sampling activities at Building 308/DRMO Hazardous Waste Storage AOPI:
  - 308-01: SS01, SB02, SB03
  - 308-02: SS01, SB02, SB03
  - 308-03: SS01, SB02, SB03
- Completed a portion of the soil sampling activities at Building 529 General Purpose Warehouse
  - 529-01: SS01, SB02, SB03
- Conducted sample management and shipped all samples collected 3/14-3/15 to laboratory (Pace Analytical) for next-day delivery.

Deviations/Issues/Comments/Notes:

- Surface soil from DDMT-308-02 (SS01) was collected from a 0-6" interval from an offset location (approximately 1 foot) due to recovery issues from the 0 to 5-foot interval of the initial borehole.
- Due to difficulties concerning decontamination procedures, the existing monitoring wells developed on 3/14 will be redeveloped to ensure unimpacted sample media prior to sample collection.

Plan for work to be conducted on 03/16/2023:

- Complete all soil sampling activities at Building 529 General Purpose Warehouse.
- Mobilize to the next AOPI to begin soil sampling activities.
- Continue developing the existing monitoring wells.

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Stenson, Samantha [US-US]

From: Stenson, Samantha [US-US]
Sent: Friday, March 17, 2023 12:23 PM
To: Phillips, Peter M CIV USARMY CENAB (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Opdyke, Clifford A CIV USARMY CENAB (USA); Millar, William W Sr CTR USARMY HQDA DCS G-9 (USA)
Cc: Peterson, Vasu K. [US-US]; Weiss, Eddie R. [US-US]; Carter, Hudson L. [US-US]; Sherman, Megan [US-US]
Subject: DDMT SI Field Summary, 03/16/2023, W912DR-18-D-0003/W912DR21F0140

Follow Up Flag: Follow up
Flag Status: Completed

Summary of Site Inspection (SI) field work conducted at Defense Depot Memphis, Tennessee on March 16, 2023.

Leidos Field Staff:
- Eddie Weiss – Field Manager/Geologist
- Hudson Carter – Field Specialist
- Megan Sherman – SSHO
- Vasu Peterson – Project Manager
- Samantha Stenson – Deputy Project Manager

Subcontractor On-site: M&W Drilling: (3)

Weather: 45 – 65°F, overcast, 10-20 mph S

Completed Activities:
- Conducted development of the following existing monitoring wells (i.e., 3 well volumes removed):
  - Dunn Field Site 18: MW-134
- Completed the rest of the soil sampling activities at Building 529 (General Purpose Warehouse)
  - 529-02: SB02, SB03
  - 529-03: SB02, SB03
- Completed a portion of the soil sampling activities at Building 550 (1984 Plane Crash Site)
  - 550-01: SS01, SB02, SB03
  - 550-02: SS01, SB02, SB03

Deviations/Issues/Comments/Notes:
- The motor of the pump being used for well development failed. Pump parts and a spare pump were ordered to be delivered tomorrow.
- Surface soil from DDMT-550-01 (SS01) was collected from a 0-6” interval from an offset location (approximately 1 foot) due to recovery issues from the 0 to 5-foot interval of the initial borehole.

Plan for work to be conducted on 03/17/2023:
- Complete all soil sampling activities at Building 550 (1984 Plane Crash Site).
- Mobilize to the next AOPI to begin soil sampling activities.
- Continue developing the existing monitoring wells.

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Stenson, Samantha [US-US]

From: Stenson, Samantha [US-US]
Sent: Saturday, March 18, 2023 12:48 PM
To: Phillips, Peter M CIV USARMY CENAB (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Opdyke, Clifford A CIV USARMY CENAB (USA); Millar, William W Sr CTR USARMY HQDA DCS G-9 (USA)
Cc: Peterson, Vasu K. [US-US]; Weiss, Eddie R. [US-US]; Carter, Hudson L. [US-US]; Sherman, Megan [US-US]
Subject: DDMT SI Field Summary, 03/17/2023, W912DR-18-D-0003/W912DR21F0140

Follow Up Flag: Follow up
Flag Status: Completed

Summary of Site Inspection (SI) field work conducted at Defense Depot Memphis, Tennessee on March 17, 2023.

Leidos Field Staff:
- Eddie Weiss – Field Manager/Geologist
- Hudson Carter – Field Specialist
- Megan Sherman – SSHO

Subcontractor On-site: M&W Drilling: (3)

Weather: 38 – 59°F, overcast then sunny, 10-20 mph NW

Completed Activities:
- Conducted development of the following existing monitoring wells (i.e., 3 well volumes removed):
  - Building 560 (General Purpose Warehouse): MW-271, MW-307
  - Building 550 (1984 Plane Crash Site): MW-215B
- Completed soil sampling activities at Building 550 (1984 Plane Crash Site)
  - 550-03: SS01, SB02, SB03
- Started soil sampling activities at Building 560 (General Purpose Warehouse)
  - 560-03: SS01, SB02, SB03
- Completed surface water sampling at Building 308/DRMO Hazardous Waste Storage
  - 308-04
  - 308-05

Deviations/Issues/Comments/Notes:
- Existing monitoring well MW-307 pumped dry during well development activities. Well development team will revisit tomorrow to complete development following overnight recharge.
- Prior to drilling DDMT-560-03 (shifted approximately 300 feet east of originally proposed location during utility clearances), Leidos contacted Memphis Light, Gas, Water (MLGW) to request a reassessment of public utilities surrounding new sample location. Leidos met with MLGW same day (i.e., 3/17) to discuss location shift and request a new evaluation of the sample locations around Building 560. MLGW agreed, cleared DDMT-560-03, and will evaluate the remaining two boreholes around Building 560 on 3/18.

Plan for work to be conducted on 03/18/2023:
- Complete all soil sampling activities at Building 560 General Purpose Warehouse.
- Mobilize to the next AOPI to begin soil sampling activities.
- Continue developing the existing monitoring wells.

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Stenson, Samantha [US-US]

From: Stenson, Samantha [US-US]
Sent: Monday, March 20, 2023 8:39 AM
To: Phillips, Peter M CIV USARMY CENAB (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Opdyke, Clifford A CIV USARMY CENAB (USA); Millar, William W Sr CTR USARMY HQDA DCS G-9 (USA)
Cc: Peterson, Vasu K. [US-US]; Weiss, Eddie R. [US-US]; Carter, Hudson L. [US-US]; Sherman, Megan [US-US]
Subject: DDMT SI Field Summary, 03/18/2023 and 03/19/2023, W912DR-18-D-0003/W912DR21F0140

Follow Up Flag: Follow up
Flag Status: Completed

Summary of Site Inspection (SI) field work conducted at Defense Depot Memphis, Tennessee on 3/18/23 and 3/19/23.

Leidos Field Staff:
- Eddie Weiss – Field Manager/Geologist
- Hudson Carter – Field Specialist
- Megan Sherman – SSHO

Subcontractor On-site:
- 3/18/23
  - M&W Drilling (3)
- 3/19/23
  - M&W Drilling (1): Well development activities only

Weather:
- 3/18/23: 32 – 49°F, partly cloudy then sunny, 10-20 mph NW
- 3/19/23: 24 – 41°F, sunny, 5-10 mph NW

Completed Activities:
- Conducted development of the following existing monitoring wells (i.e., 3 well volumes removed):
  - Perimeter wells: MW-270, MW-93, MW-24, MW-28, MW-52
  - Building 560 (General Purpose Warehouse): MW-307, MW-284, MW-311
  - Building 529 (General Purpose Warehouse): MW-214B
  - Buildings 873 and 865 (Open Shed Warehouse/Recoupment Facilities): MW-216, MW-204B, MW-197B, MW-210B, MW-210A, MW-205B, MW-205A
  - Building 308/DRMO: MW-291
- Completed the rest of the soil sampling activities at Building 560 (General Purpose Warehouse)
  - 560-01: SS01, SB02, SB03
  - 560-02: SS01, SB02, SB03
- Completed all of the soil sampling activities at Buildings 865 & 873 (Open Shed Warehouse/Recoupment Facilities)
  - 873-01: SS01, SB02, SB03
  - 873-02: SB02, SB03
  - 873-03: SS01, SB02, SB03
- Completed groundwater sampling activities at the following monitoring wells:
  - Dunn Field Site 18: MW-134, MW-221, MW-222

Deviations/Issues/Comments/Notes:

- Field team encountered technical difficulties with sampling equipment resulting in a slight delay (i.e., several hours) in the start of groundwater sampling activities on 3/19/23.
- Construction information for existing monitoring wells 210B and 210A (i.e., total well depths) are inverted in the UFP-QAPP Addendum. The field forms reflect the correct well information.

Plan for work to be conducted on 03/19/2023:
- Continue developing the existing monitoring wells.
- Continue groundwater sampling from existing monitoring wells.

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Stenson, Samantha [US-US]

From: Stenson, Samantha [US-US]
Sent: Tuesday, March 21, 2023 8:45 AM
To: Phillips, Peter M CIV USARMY CENAB (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Opdyke, Clifford A CIV USARMY CENAB (USA); Millar, William W Sr CTR USARMY HQDA DCS G-9 (USA)
Cc: Peterson, Vasu K. [US-US]; Weiss, Eddie R. [US-US]; Carter, Hudson L. [US-US]; Sherman, Megan [US-US]
Subject: DDMT SI Field Summary, 03/20/2023, W912DR-18-D-0003/W912DR21F0140

Summary of Site Inspection (SI) field work conducted at Defense Depot Memphis, Tennessee on March 20, 2023.

Leidos Field Staff:
- Eddie Weiss – Field Manager/Geologist
- Hudson Carter – Field Specialist
- Megan Sherman – SSHO

Subcontractor On-site: M&W Drilling: (1)

Weather: 25 – 54°F, sunny, 5-10 mph SE

Completed Activities:
- Conducted development of the following existing monitoring wells (i.e., 3 well volumes removed):
  - Perimeter wells: MW-263, MW-102B, MW-219
  - Building 308/DRMO: MW-103, MW-264
  - Building 529 (General Purpose Warehouse): MW-287, MW-281, MW-288
  - Building 550 (1984 Plane Crash Site): MW-215A
- Completed groundwater sampling activities at the following monitoring wells:
  - Building 308/DRMO: MW-103, MW-264, MW-291
  - Building 560 (General Purpose Warehouse): MW-284
  - Perimeter wells: MW-28

Deviations/Issues/Comments/Notes:
- Well development activities were completed and all M&W personnel demobilized.
- Megan Sherman will demobilize 3/21/23. SSHO will be replaced by Mitchell DeBortoli to arrive onsite tomorrow.

Plan for work to be conducted on 03/21/2023:
- Continue groundwater sampling from existing monitoring wells.

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Stenson, Samantha [US-US]

From: Stenson, Samantha [US-US]
Sent: Wednesday, March 22, 2023 9:05 AM
To: Phillips, Peter M CIV USARMY CENAB (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Opdyke, Clifford A CIV USARMY CENAB (USA); 'william.w.millar.ctr@army.mil'
Cc: Peterson, Vasu K. [US-US]; Weiss, Eddie R. [US-US]; Carter, Hudson L. [US-US]; DeBortoli, Mitchell E. [US-US]
Subject: DDMT SI Field Summary, 03/21/2023, W912DR-18-D-0003/W912DR21F0140

Summary of Site Inspection (SI) field work conducted at Defense Depot Memphis, Tennessee on March 21, 2023.

Leidos Field Staff:

- Eddie Weiss – Field Manager/SSHO
- Hudson Carter – Field Specialist
- Mitchell DeBortoli – SSHO

Weather: 42 – 54°F, rainy, 5-10 mph SE

Completed Activities:

- Completed groundwater sampling activities at the following monitoring wells:
    - Building 529 (General Purpose Warehouse): MW-287, MW-281, MW-288
    - Building 550 (1984 Plane Crash Site): MW-215B
    - Perimeter well: MW-270

Deviations/Issues/Comments/Notes:

- Mitchell Debortoli mobilized to the site today.
- For clarification – 1) MW-221 was successfully developed on 3/14/23 and did not require redevelopment, and 2) MW-222 was successfully redeveloped on 3/16/23.
- The field team experienced technical difficulties when attempting to purge and sample MW-215A. After a significant amount of trouble shooting, faulty tubing is thought to be the culprit. The team will attempt sampling again tomorrow and does not anticipate any further issues.

Plan for work to be conducted on 03/22/2023:

- Continue groundwater sampling from existing monitoring wells.

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Stenson, Samantha [US-US]

From: Stenson, Samantha [US-US]
Sent: Thursday, March 23, 2023 8:09 AM
To: Phillips, Peter M CIV USARMY CENAB (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Opdyke, Clifford A CIV USARMY CENAB (USA); Millar, William W Sr CTR USARMY HQDA DCS G-9 (USA)
Cc: Peterson, Vasu K. [US-US]; Weiss, Eddie R. [US-US]; Carter, Hudson L. [US-US]; DeBortoli, Mitchell E. [US-US]
Subject: DDMT SI Field Summary, 03/22/2023, W912DR-18-D-0003/W912DR21F0140

Summary of Site Inspection (SI) field work conducted at Defense Depot Memphis, Tennessee on March 22, 2023.

Leidos Field Staff:
- Eddie Weiss – Field Manager/SSHO
- Hudson Carter – Field Specialist
- Mitchell DeBortoli – Field Specialist

Weather: 51 – 73°F, rainy then overcast, 10-15 mph S

Completed Activities:
- Completed groundwater sampling activities at the following monitoring wells:
    - Perimeter Wells: MW-93, MW-24, MW-219, MW-52, MW-102B, MW-263
    - Building 550 (1984 Plane Crash Site): MW-215A
    - Building 560 (General Purpose Warehouse): MW-311, MW-302, MW-271
    - Buildings 873 and 865 (Open Shed Warehouse/Recoupment Facilities): MW-205A, MW-205B
    - Building 529 (General Purpose Warehouse): MW-214B

Deviations/Issues/Comments/Notes:
- None to report.

Plan for work to be conducted on 03/23/2023:
- Complete groundwater sampling from existing monitoring wells, surface water and sediment sampling from Lake Danielson, and collect IDW samples.
- Demobilize from the site.

Samantha Stenson, P.G.
Leidos
Project Geologist
mobile: 410.901.7991
samantha.stenson@leidos.com

Stenson, Samantha [US-US]

From: Stenson, Samantha [US-US]
Sent: Friday, March 24, 2023 10:41 AM
To: Phillips, Peter M CIV USARMY CENAB (USA); Mauer, Erin C CIV USARMY HQDA DCS G-9 (USA); Jay Foster (james.c.foster10.civ@army.mil); Opdyke, Clifford A CIV USARMY CENAB (USA); Millar, William W Sr CTR USARMY HQDA DCS G-9 (USA)
Cc: Peterson, Vasu K. [US-US]; Weiss, Eddie R. [US-US]; Carter, Hudson L. [US-US]; DeBortoli, Mitchell E. [US-US]
Subject: DDMT SI Field Summary, 03/23/2023, W912DR-18-D-0003/W912DR21F0140

Summary of Site Inspection (SI) field work conducted at Defense Depot Memphis, Tennessee on March 23, 2023.

Leidos Field Staff:
- Eddie Weiss – Field Manager
- Hudson Carter – Field Specialist
- Mitchell DeBortoli – SSHO

Weather: 56 – 79°F, sunny, 10-15 mph S

Completed Activities:
- Completed groundwater sampling activities at the following existing monitoring wells:
  - Building 560 (General Purpose Warehouse): MW-307
  - Buildings 873 and 865 (Open Shed Warehouse/Recoupment Facilities): MW-210A, MW-210B, MW-197B, MW-216, MW-204B
- Collected soil and water IDW samples.
- Demobilized from the site.

Deviations/Issues/Comments/Notes:
- None to report.

Samantha Stenson, P.G.
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APPENDIX B

PHOTOGRAPH LOG

Photograph B-1. Drill Rig Set Up at DDMT-529-01

Photograph B-2. Hand Augering at DDMT-529-01

Photograph B-3. Example of Completed Borehole Clearance via Hand Augering at DDMT-529-01

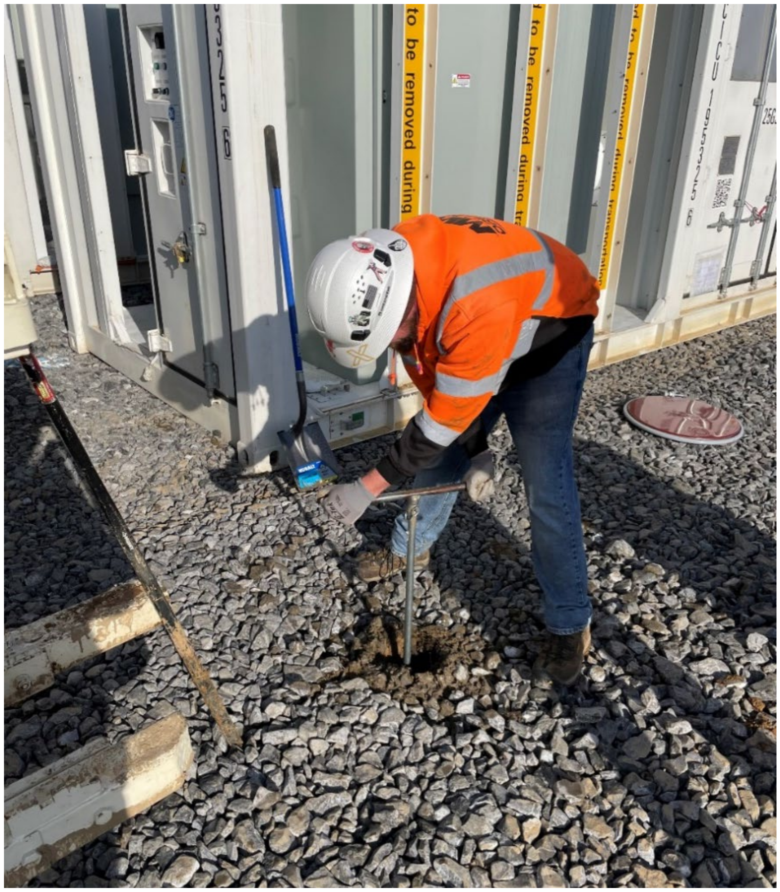
Photograph B-4. DPT Drilling at DDMT-550-01

Photograph B-5. DPT Drilling at DDMT-550-01

Photograph B-6. Location of Surface Water/Sediment Sample at DDMT-560-04

Photograph B-7. Redevelopment of MW-311 at Building 560 (General Purpose Warehouse) AOPI

Photograph B-8. Drill Rig Set Up at DDMT-873-03



Photograph B-9. Hand Augering at DDMT-873-02

Photograph B-10. Drill Rig at DDMT-308-03

Photograph B-11. Hand Augering at DDMT-308-02

Photograph B-12. Hand Augering at DDMT-S18-02

Photograph B-13. Groundwater Sampling at MW-134 at Dunn Field Site 18 AOPI

APPENDIX C

FIELD ACTIVITY LOGS

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/13/23 Page 1 of 1

Task Team Members:

Edward Weiss

Hudson Carter

MO 03/27/23

Narrative (include time and location):

1200- Meet Jason Bauerman (M&W Drilling) on-site.

1215- Ryan Post & Nick Benedetto ~~for~~ [cw 3/27/23] from M&W arrive on-site. Small chat and safety brief in our laydown area.

1230- E. Weiss takes M&W on a drive through the site.

1300- Back at laydown area waiting for Hudson Carter (Leidos). Megan Sherman (Leidos SSHO) is still driving to the site.

1335- H. Carter on-site. All personnel up to Dunn Field to drop off drums.

1405- Discussion and planning for tomorrow. 0700 expected start. Drillers off-site. E. Weiss and H. Carter back to laydown area.

1430- E. Weiss and H. Carter off-site.

Daily Weather Condition: A.M. N/A

P.M. 46°F, mostly sunny, 10 mph S

Recorded By: [signature] (Signature) QC Checked by: Megan Sherman (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/14/2023 Page 1 of 3

Task Team Members:

Edward Weiss	Ryan Post (M&W)
Megan Sherman	Nick Benedetto (M&W)
Hudson Carter (well development)	Jason Bawerman (M&W)

Narrative (include time and location):

0645 - E. Weiss on-site. M&W personnel (J. Browerman, R. Post, N. Benedetto) on-site.
0700 - H. Carter on-site.
0705 - M. Sherman on-site. Hold daily safety tailgate.
0715 - Head to Dunn Field to prep for drilling. Hudson and Jason split off to do well development. Hudson will keep on activity log. E. Weiss & M. Sherman set up at DDMT-S18-01.
0845 - M&W Begin hand clearing DDMT-S18-01. Hand clear in a triangle around the boring location (3 spots)
0938 - Complete hand auger. No issues. Begin to drill
0953 - Collected DDS1801-SB02. ~~That~~ EW 3/14/23 The drillers are moving adjacent to the borehole to collect 0-5 ft with recovery. 0-5 ft initially did not have any recovery
1007 - Collected DDS1801-SB03.
1020 - The second attempt at recovering 0-5 ft bgs only yielded the bottom 2.5 feet. We will collect DDS1801-SS01 from there and also DDS1801-SS01 directly from the ground with a deconned stainless steel spoon. We will confer with PM later to see which we should send to the lab. Drilling complete.
1025: Rig maintenance. Track/wheel leaking fluid. None is on the ground.

Daily Weather Condition: A.M. 31°F, Sunny, 0-5 mph S

P.M. ——— MO 03/24/23

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): ø3/14/23 Page 2 of 3

Task Team Members:

Edward Weiss	Ryan Post (M&W)
Megan Sherman	Nick Benedetto (M&W)
Hudson Carter (Well development)	Jason Bowerman (M&W)

Narrative (include time and location):

1ø46- Drill rig seems to be working. Driller says the rig is not 100% but we can still move forward. If problem worsens, we will re-asses. Begin to move rig to DDMT-S18-ø2.
11øø- Collected DDS18ø1-SSø1 with stainless steel spoon. Will discuss with PM which DDS18ø1-SSø1 to send to Pace. Begin hand augering ~~DDS18ø1-ø2~~ EW 3/14/23 DDMT-S18-ø2
114ø- Finish hand augering DDS18ø1-ø2. Begin lunch break.
1218- Back from lunch. (Drillers return).
1222- Drilling begins at DDMT-S18-02.
1232- Collected DDS18ø2-SSø1
1237: Collected DDS18ø2-SBø2
124ø: Collected DDS18ø2-SBø3.
1243: Drilling complete at DDMT-S18-ø2
1255: Begin hand augering at DDMT-S18-ø3. Moving rig to same location. Bentonite hole plug used to backfill borings 2 bags used so far.
1339: Begin drilling at DDMT-S18-ø3
1349: Collected sample DDS18ø3-SSø1
1355: Collected sample DDS18ø3-SBø2
1356: Drilling complete at DDMT-S18-ø3
1400: Collected sample DDS18ø3-SBø3
1410: DDMT-S18 boreholes plugged. Moving decon pad to drum storage area, filling up water tank, decon equipment.

Daily Weather Condition: A.M. On page 1

P.M. ——— MO ø3/27/23

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/14/23 Page 3 of 3

Task Team Members:

Edward Weiss
Megan Sherman
Hudson Carter (well development)

MD Ø3/27/23

Narrative (include time and location):

1455: Water tank full. FB collected from same water. Sample ID is DDMT-Ø31423-FBØ1.
1530: Drill rods deconned and EB taken. Sample ID is DDMT-EB-Ø1. Associated with Site 18/Dunn Field
1600: Trailer and rig moved to Building 3Ø8 AOPI. Starting with DDMT-3Ø8-Ø3.
1627: E Weiss drives to Dunn Field to get empty drum
M&W begin hand augering DDMT-3Ø8-Ø3
1645: E. Weiss back with drum
1709: Hand augering complete at DDMT-3Ø8-Ø3. Begin equipment breakdown & end of day activities. Drillers truck stuck in grass - had to tow to pull them out.
1735: Drillers offsite
1745: All Leidos personnel off-site.

EW

Daily Weather Condition: A.M. On page 1

P.M. 49°F, Sunny, 6-10 mph S

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): ø3/14/23

Task Team Members:

Hudson Carter (Leidos)

Jason Bowerman (MAW Drilling)

MD ø3/27/23

Narrative (include time and location):

ø63ø: Mobilize to site

ø7øø: Arrive at laydown area to meet field team

ø7ø5: Safety tailgate meeting

ø72ø: Mobilize to staging area - set up drums, set equipment

ø735: Locate, unlock & identify MW-221 (Dunn Field)

ø8øø: Review SOP questions with Field Manager Edith W. & SSHO Myhan S.

ø81ø: Set up on MW-221

ø83ø: Begin pumping MW-221

ø855: MW-221 pumping complete - 3 well volumes removed (~12 gallons)

ø9øø: Remove tubing and pump from MW-221 +

ø91ø: Update FM + SSHO on progress

ø925: Identify + locate MW-222 (Dunn Field)

ø935: Begin pumping on MW-222

ø945: Confirm water level and resume pumping

1øøø: MW-222 complete - ~12 gallons removed

1øø5: Remove pump + dispose of tubing

1ø15: Relocate to set up on MW-134 (Dunn Field)

1ø2ø: Water break

1ø35: Open MW-134 + check water level (~66 ft bgs)

1ø45: Begin pumping MW-134

111ø: MW-134 complete - ~12 gallons removed (3 well volumes = 11.66)

1115: Regroup with FM + drillers - discuss plan

1145: Break for lunch

Cont. →

Daily Weather Condition: A.M. 34°, clear, cold

P.M. ——— MD ø3/27/23

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/14/23 Page 2 of 3

Task Team Members:

Hudson Carter

Jason Bowerman (M&W Drilling)

MD 03/27/23

Narrative (include time and location):

1215: Return to Dunn Field staging area - meet with M&W

1235: Locate & identify MW-28

1240: Set up on MW-28

1250: Start pumping on MW-28

1320: Finish pumping on MW-28 & record volume removed (~10 gallons) 3 well volumes

1325: Remove pump & tubing from MW-28 - dispose of tubing in contractor's bag

1335: Return to MI and find & identify MW-307 at Bldg 560 AOPI

1345: Set up on MW-307

13:55: Begin pumping on MW-307

1430: Finish pumping on MW-307 - approximately 10 gallons removed (9.65 = 3 well volume)

1435: Remove pump & tubing from MW-307 - dispose of tubing in a bag for holding

1445: Break for water & mobilize to MW-284 area

1500: Locate MW-284 at Bldg 560 AOPI. Set up.

1515: Begin pumping on MW-284

1545: Complete pumping on MW-284 - approximately 14 gallons removed (12.83 = 3 well volumes) (HC 3/14/23)

1550: Remove pump and tubing from well - dispose of tubing in contractor's bag

1600: Move to AOPI 550 and locate MW-215A

1610: Set up on MW-215A and begin pumping

1645: Complete pumping on MW-215A - 13 gallons removed (11.31 = 3 well volumes). Remove pump & tubing from well - dispose of tubing in contractors bag

1700: Mobilize to Dunn Field for waste staging.

1710: Begin transferring development water to Drum (55 gal steel open top) * DDMT-GW-01

Daily Weather Condition: A.M. MD 03/27/23

P.M. 47°, sunny & clear

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/14/23 Page 3 of 3

Task Team Members:
Hudson Carter
Jason Bowerman (MW Drilling)

MD 03/23/23

Narrative (include time and location):
1710: Began placing used tubing into 55gallon drum #DDMT-TU-01
1725: Applied labels to drums
1735: Demobilized from Dunn Field, closed and secured gate
1745: Meeting with FM.
End of Day.

Daily Weather Condition: A.M. MD 03/23/23
P.M. 50 sunny clear

Recorded By: (Signature) QC Checked by: (Signature)

07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/15/23 Page 1 of 4

Task Team Members:

Edward Weiss	John Carter
Megan Sherman	Ryan Post, Jason Bowerman, Nick Benedetto (M&W)
Hudson Carter	—— MD Ø3/27/23

Narrative (include time and location):

ØØ45: E. Weiss on-site. M&W on-site.
Ø7ØØ: Megan Sherman & John Carter on-site
Ø7Ø5: H&S daily tailgate
Ø72Ø: John Carter to ride with M. Sherman to start the day. Drill crew, E. Weiss, M. Sherman, & J. Carter ~~at~~ EW 3/15/23 go to B3Ø8 AOPI. H. Carter & J. Bowerman go to develop wells.
Ø73Ø: On-site at ~~B3Ø8~~ AOPI. Hand auger was completed yesterday. Will begin drilling at DDMT-~~S~~ EW 3/15/23 3Ø8-Ø3 shortly.
Ø74Ø: Begin drilling at DDMT-3Ø8-Ø3.
Ø75Ø: DD3Ø8Ø3-SSØ1 collected
Ø8ØØ: DD3Ø8Ø3-SBØ2 collected. DD3Ø8SBØ2-FD collected.
Ø8Ø5: DD3Ø8Ø3-SBØ3 collected.
Ø81Ø: Drilling complete at DDMT-3Ø8-Ø3.
Ø82Ø: Rig moved to DDMT-3Ø8-Ø2.
Ø825: Begin hand augering at DDMT-3Ø8-Ø2.
Ø913: Complete hand augering and begin drilling at DDMT-3Ø8-Ø2. Hand augering completed to 5 ft bgs in a triangle surrounding the borehole. Borehole drilled at the GPS location provided - no change.
Ø93Ø: DD3Ø8Ø2-SBØ2 collected from 6-8 ft bgs
~~Ø947: DD3Ø8Ø2-SBØ3 collected from 13-15 ft bgs~~ EW 3/15/23
Ø945: DD3Ø8Ø2-SSØ1 collected from a hand auger. 0-5' recovery was insufficient. After conversation with Deputy PM, we

Daily Weather Condition: A.M. 3Ø°F, clear, 5 mph east

P.M. —— MD Ø3/27/23

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/15/23 Page 2 of 4

Task Team Members:

Edward Weiss	John Carter
Megan Sherman	Ryan Post, Nick Benedetto, Jason Bowman (M&W)
Hudson Carter	MD Ø3/27/23

Narrative (include time and location):

decided that in the scenario of poor recovery, a hand auger will be used to collect the sample. Completed drilling

Ø947: DD3Ø8Ø2-SBØ3 collected from 13-15' bgs.

Ø95Ø: Drillers go to grab more bentonite

1Ø1Ø: M. Sherman drives J. Carter to H. Carter during well development. Note that my NIST thermometer hasn't been delivered. I will be getting a thermometer today to serve as a replacement until one arrives

1Ø2Ø: Drillers back with more bentonite. They are placing bentonite in the borehole and hydrating with our source water.

1Ø3Ø: Rig and equipment moved to DDMT-3Ø8-Ø1. Hand augering begins.

113Ø: Hand augering complete at DDMT-3Ø8-Ø1. Completed 3 holes to 5 ft bgs in a triangle around the borehole. The borehole location is consistent with the provided GPS coordinates. M&W does minor rig maintenance.

1139: Minor rig maintenance complete. Begin lunch break

1218: Lunch break ends.

1222: Drilling begins at DDMT-3Ø8-Ø1.

1236: Sample DD3Ø8Ø1-SSØ1 collected from 0-6" bgs.

1244: Sample DD3Ø8Ø1-SBØ2 collected from 6-8' bgs

1246: Drilling complete at DDMT-3Ø8-Ø1. Borehole is 15 ft. Place and hydrate bentonite in the borehole

Daily Weather Condition: A.M. First page

P.M. MD Ø3/27/23

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/15/23 Page 3 of 4

Task Team Members:

Edward Weiss | John Carter
Megan Sherman | Ryan Post, Nick Benedetto, Jason
Hudson Carter | Braverman

Narrative (include time and location):

1251: Samples DD3Ø8Ø1-SBØ3, DD3Ø8Ø1-SBØ3MS, DD3Ø8Ø1-SBØ3MSD collected from 13-15' bgs.

13ØØ: Drillers go to Dunn Field to decon the equipment

134Ø: After equipment decon, an equipment blank was collected from the drill tooling. Sample ID is DDMT-EB-ØZ. Associated with B3Ø8 AOPI.

14ØØ: Equipment breakdown at B3Ø8 AOPI. Taking equipment out to move to next AOPI.

1425: Rig loaded on to trailer. Will be taken to B529 AOPI. Dealing with rig wheel maintenance.

1448: Arrive at DDMT-529-Ø1. Begin to set up equipment.

15ØØ: E. Weiss and drillers to Dunn Field to pick up a drum and drop off drum from B3Ø8 AOPI. Drum for B3Ø8 AOPI is ~66% full.

153Ø: Back to building 529 AOPI. Setting up to hand auger and drill at DDMT-529-Ø1.

1542: Begin hand augering at DDMT-529-Ø1.

EW 3/15/23 ~~1450~~ 1650: Finish hand augering at DDMT-529-Ø1. Hand augered 3 holes to 5 ft bgs in a triangle around the provided location for DDMT-529-Ø1. Begin Drilling.

1659: Collected sample DD529Ø1-SSØ1 from Ø-6".

17Ø1: Completed drilling at DDMT-529-Ø1. Borehole to 15 ft bgs

Daily Weather Condition: A.M. First page

P.M. 52°F, Sunny, 5-1Ø mph ~~N~~ S PW 3/15/23

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/15/23 Page 4 of 4

Task Team Members:

Edward Weiss | John Carter

Megan Sherman | Ryan Post, Nick Benedetto, Jason

Hudson Carter | Bowerman (M&W)

Narrative (include time and location):

1703: Sample DD52901-SB02 from 6-8' bgs.

1707: Sample DD52901-SB03 from 13-15' bgs.

1720: Pack equipment and head to Dunn Field for drum & equipment drop off.

1732: M&W drillers go to plug DDMT-529-01 and then head offsite. Leidos personnel QC samples and chain. Print chain with field printer.

1825: E. Weiss to ship samples with Fedex. All personnel offsite.

Daily Weather Condition: A.M. First page

P.M. 57°F, Sunny, 5-10 mph S

Recorded By: (Signature) QC Checked by: (Signature)

07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/13/23 Page 1 of 3

Task Team Members:

Hudson Carter

Jason Bowerman (MW Drilling)

John Carter (Leidos)

MD 03/27/23

Narrative (include time and location):

0630: Mobilize to site

0655: Arrive at site meeting area - Eddie W. & MW Drilling onsite

0700: Meghan S. & John C. arrive on site

0705: Tailgate safety meeting & work plan for the day

0720: Unload equipment from Meghan's car

0725: Mobilize to first MW of the day: MW311 at AOPI 560

0735: Locate and set up on MW311, set up safety cones near pedestrian walkway. Check water level.

0745: Install pump & tubing into MW311

0755: Begin redeveloping MW311

0810: Pump no longer producing water - inserted additional ~10' bgs. No change. Remove pump from MW311. Recheck/verify water level - well has water at expected depth. Dry test pump - not running. Check Troubleshooting Guide: 1. Check output voltage - good. 2. Check breaker button on controller. Breaker button was tripped. Reset & dry test pump. Functions correctly.

0825: Reinsert pump & tubing into MW311.

0835: Begin pumping again. ~5 gallons removed so far.

0945: Verify transfer tank water level - 50 gallons removed

0950: Complete development of MW-311. Remove pump & tubing. Place used tubing in contractor's bag.

1000: Clean up MW-311 lid & done. Return tools & supplies to MW's truck.

1005: Move to & locate AOPI 560 MW-271

1015: Set up on MW-271

1020: John Carter arrived in area

1035: Begin pumping/development of MW-271 - plan to remove approx. 30 gallons

1120: Complete development of MW-271

Daily Weather Condition: A.M. 32° sunny, clear Wind 5mph W

P.M. N/A

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/15/23 Page 2 of 3

Task Team Members:

Hudson Carter

Jason I

John Carter

MD 03/24/23

Narrative (include time and location):

1130: Break for lunch

1215: Mobilize to MW-302. Located in parking lot of loading bay. Mild traffic.

1230: Set up on MW-302. Took time to adjust straps an transfer tank due to higher water volume.

1245: Discuss work plan procedures with J. Carter.

1300: Go to Dom Field to collect additional tubing, check IDW labeling, and perform equipment decon. Briefly discuss work plan with FM. Return to MI.

1430: Return to MW-302. Discuss plan with M&W.

HLC 3/15/23

1445 [illegible]: Begin redevelopment of MW-302. 3 well volumes = 41.47 gallons

1545: Complete redevelopment of MW-302. Remove equipment & tubing.

1600: Decon equipment.

1615: Return to MW-222. Set up.

1630: Begin redevelopment of MW-222 AOPI 518.

HLC 3/15/23

Daily Weather Condition: A.M. See page 1

P.M. 55° sunny clear Wind slight

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/15/23 Page 3 of 3

Task Team Members:

Hudson Carter

John Carter

Jason Baverman (M&W Drilling)

MD 03/27/23

Narrative (include time and location):

1700: Complete redevelopment of MW-222. 10 gallons removed. Return to IDW staging area.

1710: Begin transferring redevelopment water from transfer tank to 55gal drums.
Used Drum #

Transferred HDPE used tubing from contractor bags to Drum #'s

1745: Put equipment away. M&W Jason B. off site.

1800: End of work.

Daily Weather Condition: A.M. See page 1

P.M. 57° sunny clear

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/16/23 Page 1 of 4

Task Team Members:

Edward Weiss	Ryan Post, Nick Benedetto, Jason
Megan Sherman	Bowerman (M&W)
Hudson Carter	~~———~~ MD Ø3/27/23

Narrative (include time and location):

Ø645: E. Weiss, H. Carter, M&W personnel on-site at 2241 Truitt street for morning meeting.

Ø7ØØ: M. Sherman on-site. Daily safety tailgate meeting to discuss today's activities (concrete coring, drilling, well development)

Ø715: Hudson and J. Bowerman split off for well development. E. Weiss, M. Sherman, R. Post, & N. Benedetto go to DDMT-529-Ø2 to set up rig for drilling.

Ø737: At B529 AOPI. Stopped at Dunn Field to pick up a drum that will be used for collecting drill cuttings.

Ø748: Begin concrete coring at DDMT-529-Ø2 with a star bit attached to the rig.

Ø8ØØ: Concrete coring complete. ~6 inches of concrete. Per procedures, we are hand augering to 5-ft bgs prior to using the rig. Hand augering begins.

Ø824: R. Post says there is more rock they can't hand auger through. He will use the star bit to break it down to make it easier for removal with hand auger.

Ø837: Quickly got through rock/asphalt material, at 5-ft bgs. Begin drilling at 5-ft bgs with DPT rig.

Ø844: Collected sample DD529Ø2-SBØ2 from 6-8 ft bgs. Drilling complete at DDMT-529-Ø2.

Ø856: Collected samples DD529Ø2-SBØ3 and DD529Ø2-SBØ3FD from 13-15 ft bgs.

Daily Weather Condition: A.M. 45°F, cloudy, 1Ø mph S

P.M. on page 3

Recorded By: [signature] (Signature) QC Checked by: Megan Sherman (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/16/23 Page 2 of 4

Task Team Members:

Edward Weiss	Ryan Post, Nick Benedetto,
Megan Sherman	Jason Bowerman,
Hudson Carter	MD Ø3/27/23

Narrative (include time and location):

ØØØ5: Visu Peterson and Sam Stenson from Leidos on-site. Moving the rig to DDMT-529-Ø~~4~~3 EW 3/16/23

Ø915: N.Benedetto to go grab MBW's drum dolly.

Ø935: N. Benedetto back with drum dolly. V. Peterson & S. Stenson off of B529 AOPI. M. Sherman goes to oversee H. Carter.

Ø940: Begin concrete coring at DDMT-529-Ø~~4~~3, EW 3/16/23 Using star drill bit.

Ø947: Using hand auger from post-asphalt to 5-ft bgs - following EHS procedures.

1ØØ5: Complete drilling at DDMT-529-Ø3.

1Ø1Ø: Collected sample DD52903-SBØ2 from 6-8' ~~x~~ EW 3/16/23 bgs

1Ø16: Collected sample DD529Ø3-SBØ3 from 13-15' bgs.

1Ø23: Drillers to Dunn Field to grab trailer. Will also fill up water tank with PFAS-Free water from our water source.

1Ø27: MSherman back to DDMT-529-Ø3.

1Ø3Ø: M. Sherman to Dunn Field to oversee drillers

1138: Drillers back to DDMT-529-Ø3 with trailer, full water tank, empty drum.

1143: Equipment blank collected from drill tooling. Sample ID is DDMT-EB-Ø3. Packing equipment to move to next AOPI - B55Ø.

1155: At B55Ø unloading equipment.

1215: Rig set up at DDMT-55Ø-Ø1.

Daily Weather Condition: A.M. On first page

P.M. On page 3

Recorded By: [signature] (Signature) QC Checked by: Megan Sherman (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/16/23 Page 3 of 4

Task Team Members:

Edward Weiss | Ryan Post, Nick Benedetto,

Megan Sherman | Jason Bowman

Hudson Carter | MD 03/24/23

Narrative (include time and location):

EW 3/16/23

1220: Breaking for lunch. ~~Drillers are going offsite to pick up asphalt~~ V. Peterson & S. Stenson offsite. Drillers to drop trailer at Dunn Field then break for lunch.

1300: Leidos personnel grab groundwater sampling set up to possibly test/sample MW-215A.

1330: M&W back on-site Begin hand augering DDMT-550-01.

1438: Begin Drilling at DDMT-550-01. Hand augering was completed in a triangle around the borehole location with the provided coordinates. Each hand auger hole was terminated at 5-ft bgs.

1446: Poor recovery (nearly empty) of 0-5 ft at DDMT-550-01

1456: Collect sample DD55001-SB02 from 6-8' bgs.

1505: Collect sample DD55001-SB03 from 13-15' bgs. Complete drilling at DDMT-550-01

1507: Due to poor recovery from 0-5 ft bgs, a decomned hand auger was used to collect the 0-6" sample. Samples collected are: DD55001-SS01 & DD55001-SS01FD.

1520: Rig and equipment moved to DDMT-550-02. Hand augering begins.

1609: Hand augering complete at DDMT-550-02. Three holes to 5-ft in a triangle surrounding the given coordinates for DDMT-550-02.

1611: Begin drilling at DDMT-550-02.

1620: Drilling complete at DDMT-550-02. 15 ft bgs.

Daily Weather Condition: A.M. on page 1

P.M. 66°F, cloudy, 10-20 mph S

Recorded By: [signature] (Signature) QC Checked by: Megan Sherman (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/16/23

Task Team Members:

Edward Weiss — Ryan Post, Nick Benedetto,
Megan Sherman — Jason Braverman
Hudson Carter — MD 03/27/23

Narrative (include time and location):

1622: Sample collected, DD55002-SS01, 0-6" bgs
1632: Collected DD55002-SB02, DD55002-SB02MS, DD55002-SB02MSD, all from 6-8' bgs.
1642: Collected DD55002-SB03 from 13-15' bgs
1650: ~~Moved~~ EW 3/16/23 Headed to Dunn Field to finish the day. Discussed plans moving forward.
1710: Drillers off-site.
1723: All Leidos personnel offsite.

EW

Daily Weather Condition: A.M. On page 1

P.M. On page 3

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TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/16/23 Page 1 of 2

Task Team Members:

Hudson Carter	Vaso Peterson
Jason Bowerman (M&W Drilling)	Sam Stearn
Megan Sherman	~~——~~ MD 03/27/23

Narrative (include time and location):

0615: Mobilize to site.
0645: H. Carter, E. Weiss, M&W Drilling on site.
0655: M. Sherman on site. Begin safety meeting - type of discussion: traffic hazards
0715: Collect PFAS free water and mobilize to Dunn Field decon pad.
0730: Perform equipment decon in decon pad. Leave additional buckets of PFAS free water in decon pad for quicker decontamination moving forward.
0745: Set up on MW-134 at S18 AOPI. Check DTW = 69.05.
MW-134 located as flush mount in grassy field. Held closed by 1 9/16 bolt.
0800: Begin redevelopment of MW-134. Due to low volume needed to remove (3well volumes = 11.66g), and the large graduations on our transfer tank (25 gal increments) we utilize a 5 gallon bucket for better accuracy. The bucket is transferred into poly transfer tank in 3 gallon increments. This also helps to account for the truck carrying the transfer tank being on level ground or not.
0825 Completed redevelopment of MW-134. 12 gallons removed.
0835: Move M&W low boy trailer away from IDW staging area to make room.
0845: Decon equipment
0900: Set up on MW-21SB
0905: Open lid to MW-21SB (held closed by 1x 3/4 bolt) and notice standing water above well edge. Will ask FM/PM for step forward
0910: Pull forward to MW-21SA. (Lid held closed by 2x 9/16 bolts). Depth to water 93.3.
0925: Begin development of MW-21SA. 3 well volumes = 11.31 gallons. Bucket will be utilized.
0950: After approx. 10.5 gallons removed - pump stopped functioning
0955: Megan Sherman arrived on site. Cont. -

Daily Weather Condition: A.M. 48° mostly cloudy Wind N @ 10mph

P.M. see page 2

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TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/16/23 Page 2 of 2

Task Team Members:

Hudson Carter — Van Peterson
Jason Boverman (MeW) — Sam Stevens
Megan Sherman — MD 03/22/23

Narrative (include time and location):

1000: Van P. and Sam S. arrive at MW-21SA. Discussed project plan, site, etc.
1030: Van P. and Sam S. left MW-21SA.
1035: Retested pump - still not functioning. Removed pump from well - coiled tubing into new contractors bag to reuse. Followed pump troubleshooting guide - determined that motor assembly was bad/burnt up.
1130: Notify FM, PM & Deputy PM of pump issues. Discussed plan of action.
MeW requested (2) replacement pump motors be sent overnight. Confirmed shipment.
Leidos ordered backup rental pump. Confirmed shipment.
1145: Break for lunch.
1215: MeW to Dunn Field stage IDW (tubing), decontaminate equipment.
12:45: Dispose of general garbage. Grab equipment and join soil drilling team.

HLC

Daily Weather Condition: A.M. See page 1

P.M. 66° cloudy, wind 15mph N

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/17/23 Page 1 of 4

Task Team Members:

Edward Weiss | Ryan Post, N. Benedetto,
Megan Sherman | Jason Bauerman (M&W)
Hudson Carter | MO Ø3/27/23

Narrative (include time and location):

Ø645: E. Weiss on-site
Ø654: H. Carter on-site
Ø7ØØ: M. Sherman on-site. Received a text from Drillers, they are checking out of hotel due to security/safety issues and will be a few minutes late getting to site.
Ø715: While waiting for Drillers, Leidos team goes to collect surface water samples from B3Ø8 AOPI.
Ø724: Collect sample DD3ØBØ5-SWØ1 from provided location DDMT-3Ø8-Ø5. Water quality parameters are noted on the sampling form
Ø735: Collect sample DD3Ø8Ø4-SWØ1 from provided location DDMT-3Ø8-Ø4. Water quality parameters are noted on the sampling form
Ø745: Ryan Post, Nick Benedetto on-site. H&S tailgate held. M&W to grab equipment from Dunn Field and surface complete the asphalt areas that were drilled yesterday.
Ø83Ø: H. Carter to check 873 AOPI for monitoring wells to ensure that any new equipment from the property owner is not covering ~~the~~ EW 3/17/23 any wells. M&W setting up on DDMT-55Ø-Ø3. Beginning to hand auger around the boreholes provided location.
Ø935: Drillers take quick break to warm-up.
Ø95Ø: Rig back on, prepping to ~~drill~~ EW 3/17/23 drill at DDMT-55Ø-Ø3.

Daily Weather Condition: A.M. 44°F, Cloudy, 1Ø-15 mph NW

P.M. On page 3

Recorded By: [signature] (Signature) QC Checked by: Megan Sherman (Signature) 3-18-23

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/17/23 Page 2 of 4

Task Team Members:

Edward Weiss | Ryan Rost
Megan Sherman | Nick Benedetto
Hudson Carter | Jason Bowerman

Narrative (include time and location):

3 boreholes were augered to 5-ft bgs, per EHS procedures, surrounding the provided coordinates of DDMT 550-03.

0955: Drilling begins at DDMT-550-03

1010: Sample collected from 0-6". ID is DD55003-SS01.

1012: Drilling complete at DDMT-550-03. Borehole terminated at 15 ft bgs.

1015: Collected sample DD55003-SB02 from 6-8' bgs.

1025: H. Carter back on-site. Reports that wells in 873 AOPI are accessible. Sample DD55003-SB03 collected from 13-15' bgs. Drillers go to decon equipment and grab trailer.

1030: J. Bowerman on-site. M. Sherman has spoken with Leidos EHS professional Tom Schnitzius for ~35 minutes today discussing possible questions/concerns.

1213: Drillers return with trailer and decontaminated equipment. The decon pad was filled with rainwater and required pumping.

1217: An equipment blank was taken from drill tooling used at DDMT-550 AOPI. Sample ID is DD550-SB03-EB.

1220: Rig loaded on to the truck to move to next AOPI. All boreholes are backfilled with bentonite hole plug.

1230: Drillers agree to getting grass seed and/or straw to ~~se~~ EW 3/17/23 restore the grassy areas.

1240: At Building 560 AOPI.

Daily Weather Condition: A.M. on page 1

P.M. on page 3

Recorded By: [signature] (Signature) QC Checked by: Megan Sherman (Signature) 3-18-23

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/17/23 Page 3 of 4

Task Team Members:

Edward Weiss	Ryan Post
Megan Sherman	Nick Benedetto
Hudson Carter	Jason Bowerman

Narrative (include time and location):

1300: After walking the area, begin hand augering at DDMT-560-03,
1310: Break for lunch. We noticed that since the location (DDMT-560-03) was moved, the only utility markings in the area were Leidos'. We contacted MLGW to come out and do a utility locate.
1420: MLGW is marking utilities at DDMT-560-03. Hudson is still working but ~~tot~~ GW 3/17/23 we have paused drilling until locates are complete at this location.
1444: MLGW offsite. After discussion with ~~him, he~~ GW 3/17/23 MLGW, they will come out tomorrow to double check other borings. E. Weiss did not feel confident about MLGW properly clearing on-time based on conversations with the company and personnel. M. Sherman holds a safety talk to discuss possible hazards related to our site.
1507: Back to hand augering.
1545: Hand augering complete. 3 holes were bored to 5 ft bgs surrounding the provided coordinates for DDMT-560-03.
1547: Begin drilling at DDMT-560-03.
1550: After pulling 0-5 ft we noticed wood in the HDPE sleeve. We adjusted our boring location ~6 inches South and re-engaged drilling.
1601: Sample DD560003-SS01 collected from 0-6" bgs
1603: Drilling complete at DDMT-560-03.
1609: Sample DD560003-SB02 collected from 6-8' bgs

Daily Weather Condition: A.M. On page 1

P.M. 51°F, Sunny, 10-15 mph NNW

Recorded By: [signature] (Signature) QC Checked by: Megan Sherman 3-18-23 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/17/23 Page 4 of 4

Task Team Members:

Edward Weiss	Ryan Post
Megan Sherman	Nick Benedetto
Hudson Carter	Jason Bowerman

Narrative (include time and location):

1615: Sample DD560003-SB03 collected from 13-15' bgs. Backfill hole with bentonite and hydrate with PFAS-free water.

1630: Drillers offsite to pick up grass and straw for grass restoration. E. Weiss & M. Sherman to Dunn Field.

1645: At Dunn Field, QCing samples, inspecting drums, prepping samples for shipment.

~~1730~~ 1745: Samples packed, H. Carter taking samples to Fedex for shipment. All Leidos personnel offsite.

EW 3/17/23

EW

Daily Weather Condition: A.M. on page 1

P.M. On page 3

Recorded By: [signature] (Signature) QC Checked by: Megan Sherman (Signature) 3-18-23

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/17/23 Page 1 of 3

Task Team Members:

Hudson Carter — McW Drilling

Eddie Weiss

Megan Sherman — MO 03/27/23

Narrative (include time and location):

0655: Onsite

0655 - 0830: See FM TTAL.

0830: Mobilize to 873 to investigate MW accessibility

Located MW-205A + 205B - at edge of gravel parking lot behind Bldg 770.

Surrounded by bollards - fully accessible.

Located MW-210A + 210B - in a "clearing" among generator staging area

Can be accessed via gravel road surrounding generators - may need to dry out.

MW-210B was submerged in a puddle.

Located MW-204B - middle of GE transformer lay down yard - there are more units in lot than shown on AOPI Map. Inaccessible by truck (blocked by 1 unit) but accessible via foot.

Located MW-216 - middle of field on S side of 873 - safer to access during weekend.

0915: Notified FM of findings. Left site to purchase thermometer.

1030: Back on site. Safety meeting with Jason Bowerman (McW). Discuss plan with FM.

1100: Setup on MW-215B at AOPI SSO. 3 well volumes = 13.39 gallons. Due to angle of transfer tank, bucket will be utilized. Had to bail out well top before opening

1120: Begin redevelopment of MW-215B. DTW = 93.3.

1146: Redevelopment complete. 14 gallons removed.

1155: Break for lunch

1225: Dunn Field to decon equipment + set up bucket decon method.

1302: Get source water for bucket decon method.

1310: Locate MW-270 (PER) near SW corner of warehouse complex on hillside field.

1325: McW truck becomes stuck in mud. 4WD is unsuccessful in getting truck out.

Hudson C. goes to get assistance from rest of McW crew.

Daily Weather Condition: A.M. 41° cloudy Wind 15mph SE

P.M. on page 3

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/17/23 Page 2 of 3

Task Team Members:

Hudson Carter | M & W Drilling (3)

Eddie Weiss |

Megan Sherman | MD 03/27/23

Narrative (include time and location):

1327: Meet up with FM & SSHO & M&W - request assistance from M&W drill crew. They are going to drop their trailer at Dunn Field and then will assist.

Tell FM that several PER wells are inaccessible via truck - need battery for access by foot - we have one in hotel - will bring tomorrow.

Discuss utility locate w/ FM - decide to scout AOPIs for locator.

Walk 2 additional bore holes with SSHO.

1355: Drive to 865/873 AOPI, check location of bore holes. No sign of locator. Take photos. Return to FM & SSHO. Discuss plan.

1435: Return to M&W (Jason Bowerman)

1445: Set up on MW-271. 3 well volumes = 29.43 gallons. HLC 3/17 AOPI 560.

1452: Check DTW. 84.7 ft bgs.

1458: Begin redevelopment of MW-271.

1532: Complete redevelopment of MW-271. 30 gallons removed. 13/16 nut holding on lid. Decon equipment.

1535: Move to & set up on MW-307. 3 well volumes = 8.66 gallons. 13/16" nut holding on lid.

1540: Check DTW = 92.8 ft bgs.

1548: Begin redevelopment of MW-307.

1608: MW-307 stopped producing - 3 gallons removed. Waiting 10-15 min for recharge.

1620: Restart pump.

1622: Well is dry. Remove pump. Check water level - no water. HLC 3/17

1628: Remove pump & tubing from well. Save tubing in contradomain bag - will return to well within 24 hrs.

1635: Disassemble well pump to clean sand/grit/plastic from housing. Test pump in decon water. Functioning as intended.

Daily Weather Condition: A.M. See Page 1

P.M. 53°

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/17/23 Page 3 of 3

Task Team Members:

Hudson Carter	M+W Drilling
Megan Sherman	
Eddie Weiss	MO 03/27/23

Narrative (include time and location):

1645: Head to Drum Field to pump transfer tank into drums & dispose of tubing IDW.

1655: Arrive at Drum Field - check drum labels, apply labels onto new drums, numbered drums using paint pen, performed IDW Accountability Log

1725: Completed transfer tank pump down.

1740: Jason Bowerman offsite.

Daily Weather Condition: A.M. See Page 1

P.M. 50°, sunny, clear W 11 mph SE

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/18/23 Page 1 of 4

Task Team Members:

Edward Weiss	Ryan Post
Megan Sherman	Nick Beradetto
Hudson Carter	Jason Bauerman

Narrative (include time and location):

0645: E. Weiss on-site. Begins pin flagging locations in 873 AOPI. One of the locations in 873 AOPI (DDMT-873-02) is covered by barnhart crane equipment.

0700: H&S tailgate with M&W.

0720: M&W moving equipment to 873-03.

0738: Arrive at DDMT-873-03.

0750 (EW 3/18/23): Begin hand augering at DDMT-873-03. No utilities are in the area. We are hand augering from 0-5 ft bgs in the provided location. We are not doing a triangle around the location.

0755: MLGW on-site to double check B560 AOPI locations for utilities.

0803: Hand auger complete to 5-ft bgs at DDMT-873-03

0806: Drilling with rig begins.

0815: Drilling completed at DDMT-873-03. Terminated at 15 ft bgs

0818: Collected sample DD87303-SB02 from 6-8' bgs

0825: Collected sample DD87303-SB03, DD87303-SB03MS, & DD87303-SB03MSD from 13-15' bgs.

0830: Move equipment to DDMT-873-02 area. Our location is inaccessible due to equipment placement by the property renter. We are able to shift the location 11'9" directly east to have space to drill within the utility cleared area.

0855: Begin to move cobbles/gravel and hand auger. We are

Daily Weather Condition: A.M. 33°F, partly cloudy, 0-5 mph West

P.M. On page 3

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/18/23 Page 2 of 4

Task Team Members:

Edward Weiss	Ryan Post
Megan Sherman	Nick Benedetto
Hudson Carter	Jason Bowerman

Narrative (include time and location):

hand augering from Ø-5 ft bgs in the location.

Ø9Ø9: Begin drilling at DDMT-873-Ø2 with rig.

Ø917: Drilling completed at DDMT-873-ØZ. Terminated at 15 ft bgs.

Ø919: Collected sample DD873Ø2-SBØ2 and DD873-SBØ2FD.

Ø925: Collected sample DD873Ø2-SBØ3 from 13-15' bgs. Previous sample collected from 6-8' bgs.

Ø927: Moving rig to trailer.

Ø939: Packing equipment.

Ø95Ø: Dropping equipment off at DDMT-56Ø-Ø1. Once equipment is dropped off, head to Dunn Field to decon drill rods.

112Ø: Back ~~after~~ EW 3/18/23 to B56Ø after dropping off drums, deconning rods, and staging equipment.

1128: Begin hand augering at DDMT-56Ø-Ø1.

115Ø: Completed hand augering of three boreholes around the provided location for DDMT-56Ø-Ø1. Begin drilling with the rig

12Ø2: Recovery issues with DDMT-56Ø-Ø1. Shifting borehole ~6 inches west and attempting to drill again.

121Ø: Collected samples DD56ØØØ1-SSØ1 and DD56Ø-SSØ1FD from Ø-6" bgs.

1215: Drilling complete at DDMT-56Ø-Ø1. Boring terminated at 15 ft bgs, backfilled with bentonite. Sample DD56ØØ01-SBØ2 collected from 6-8' bgs.

Daily Weather Condition: A.M. On page 1.

P.M. on page 3

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/18/23 Page 3 of 4

Task Team Members:

Edward Weiss	Ryan Post
Megan Sherman	Nick Benedetto
Hudson Carter	Jason Bauerman

Narrative (include time and location):

1220: Sample DD56001-SB03 collected from 13-15' bgs.

1230: Drillers to grab trailer, more HDPE sheets, and then break for lunch.

1315: Back on-site after lunch. Begin to set up on DDMT-560-02.

1321: Begin hand augering DDMT-560-02.

1352: Completed hand agering at DDMT-560-02. Three boreholes augered to 5-ft bgs around the provided location for DDMT-560-02. Begin drilling with rig.

1401: Complete drilling at DDMT-560-02. Borehole terminated at 15 ft bgs.

1405: Sample DD56002-SS01 taken from 0-6" bgs.

1410: Sample DD56002-SB02 collected from 6-8' ft bgs.

1415: Sample DD56002-SB03 collected from 13-15' bgs. Load equipment and move to DDMT-873-01.

1430: At DDMT-873-01. Will bore 5-ft bgs in the provided location. Begin hand agering

1500: Complete hand agering at DDMT-873-01. The first 6" of material is fill. Collect DD87301-SS01 from 0-1 ft

1503: Begin drilling at provided location for DDMT-873-01. Hand auger completed from 0-5 ft bgs.

1510: Collect DD87301-SB02 from 6-8' bgs. Complete drilling. Borehole end at 15 ft bgs.

1515: Collect DD87301-SB03 from 13-15' bgs

Daily Weather Condition: A.M. On page 1

P.M. 49°F, Sunny, 10-20 mph NW

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/18/23

Page 4 of 4

Task Team Members:

Edward Weiss	Ryan Post
Megan Sherman	Nick Benedetto
Hudson ~~B~~ EW 3/18/23 Carter	Jason Bowerman

Narrative (include time and location):

1520: Pack up equipment. Head to Dunn Field to decon and conduct end of drilling activities.

1640: M. Sherman and drillers go to finish restoration of grass ~~at areas for~~ EW 3/18/23 at B550 & B560.

1716: M. Sherman and drillers complete restoration.

1745: J. Bowerman offsite.

1800: H. Carter & M. Sherman offsite.

1815: Drillers finish packing gear, head offsite. E. Weiss offsite.

Daily Weather Condition: A.M. on page 1

P.M. on page 3

Recorded By: [signature] (Signature)

QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/13/23 Page 1 of 3

Task Team Members:

Hudson Carter

Jason Bowerman (MEW)

MD Ø3/28/23 MD Ø3/27/23

Narrative (include time and location):

Ø655: Arrive at Dunn Field - tailgate safety meeting + discussion of team activities

Ø715: Move to MW-27Ø. Due to location of well (grassy hill) and wet conditions, we will be using a seperate battery and walking to well instead of truck. Perimeter well. PER

Ø725: Decontaminate equipment. Check DTW = 70.55 fbgs 3 well volumes = 5.79 gallons

Ø73Ø: Begin redevelopment of MW-27Ø. 15/16" bolt holds on lid. High flow rate (~2gal/min)

Ø744: Complete redevelopment of MW-27Ø. 9 gallons removed.

Ø75Ø: Decontaminate equipment.

Ø758: Move to MW-93 (PER). Located on a grassy slope similar to MW-27Ø. Inaccessible by truck, so battery was hand carried to well.

Ø812: Verify DTW. 84.Ø5. Begin redevelopment of MW-93. 3 well volumes = 11.26 gall
Due to low volume needed + accessibility issues, bucket water transfer method was used.

Ø842: Complete redevelopment of MW-93. 12 gallons removed. 3x 9/16 bolts hold on lid.

Ø854: Move up to MW-24. Decontaminate equipment. Locate MW-24 in grass - no concrete pad. Lid has no bolts holding it closed (manhole style). Small snake was found in well top. I believe it was a garter snake. It was safely relocated to a different area away from work.

Ø91Ø: Check DTW = 88.55 fbgs. Begin redevelopment of MW-24 (PER). 3 well volumes = 11.84 gal

Ø941: Complete redevelopment of MW-24 (PER). 12 gallons removed via bucket.

Ø945: Decon equipment.

Ø955: Return to MW-3Ø7 to complete redevelopment. Check DTW = 92.35 fbgs.

1ØØ8: Begin redevelopment of MW-3Ø7. 3 well volumes = 3.66 gall. AquaT 56Ø.

1Ø21: Complete redevelopment of MW-3Ø7. 6 gallons removed.

1Ø35: Decontaminate equipment.

1Ø42: Move to MW-28 (PER). Verify DTW: 51.6 fbgs. 2x 11/16" bolts hold on lid.

Daily Weather Condition: A.M. 36° partly cloudy, wind 3mph ESE

P.M. See page 2

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/18/23 Page 2 of 3

Task Team Members:

Hudson Carter

Jason Duverman (M&W Drilling)

MD 03/27/23 MD 03/27/23

Narrative (include time and location):

1053: Begin redevelopment of MW-28 (PER). 3 well volumes = 9.35 gallons.
1103: Complete redevelopment of MW-28. ~10 gallons removed.
1112: Decontaminate equipment.
1119: M&W break for lunch. H. Carter drives off site to pick up secondary pump & additional nitrile gloves.
1202: H. Carter back on site. Give nitrile gloves to M. Sherman.
1215: Move to MW-52 (PER). Located in grass on edge of small road in the "public" area. Need to leave MI in order to get there.
1225: Verify DTW = 66.53 ftbgs. 3 well volumes = 18.4 gallons.
1232: Begin redevelopment of MW-52.
1256: Complete redevelopment of MW-52. 20 gallons removed. Decontaminate equipment.
1305: Move to MW-284 (AOPI 560). Located in gravel area in front of warehouse for UPS healthcare. Check DTW = 93.12 ftbgs. 15/16" bolt holds on lid.
1312: Begin redevelopment of MW-284. 3 well volumes = 12.83 gallons.
1349: Complete redevelopment of MW-284. 14 gallons removed. Bucket method utilized. Decon equipment.
1359: Move to MW-311. Check DTW = 93.1 ftbgs. 15/16" bolt holding lid down. Located in gravel area directly in front of UPS Healthcare warehouse. 100 yds from MW-284.
1415: Begin redevelopment of MW-311. 3 well volumes = 44.13 gallons. AOPI 560
1540: Complete redevelopment of MW-311. 46 gallons removed. Decon equipment
1555: Move to MW-214B (AOPI 529). Check DTW = 88.4 ftbgs. 1x 9/16" bolt holding on lid. Located in middle of intersection of 549/649/530/630.
1607: Begin redevelopment of MW-214B. 3 well volumes = 13.75 gallons.
1604: Complete development of MW-214B. 15 gallons removed.

Daily Weather Condition: A.M. 39° clear, sunny. Wind 7mph ESE

P.M. 46° clear, sunny. Wind 5mph SE

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): Ø3/18/23 Page 3 of 3

Task Team Members:

Hudson Carter

Jason Bowerman (MCW)

MO Ø3/27/23

MO Ø3/27/23

Narrative (include time and location):

1Ø5Ø: Move to Dunn Field for IDW drumming. Transfer approximately 125 gallons of water to the drums. Place tubing and sleeves in drum. Label drums.

1715: IDW Container Accountability Log

Daily Weather Condition: A.M. See Page

P.M. 45° mostly/partly cloudy, Wind 13 mph SE

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at ~~Facility Name~~ DDMT EW 3/~~20~~19/23

Date: (mm/dd/yy): 03/19/23 Page 1 of 2

Task Team Members:

Edward Weiss	Jason Bowerman
Megan Sherman	
Hudson Carter	MO 03/27/23

Narrative (include time and location):

0655: All personnel on-site.
0700: Conduct H8S tailgate
0710 Load Vehicle for Monitoring Well sampling. J. Bowerman and H. Carter go to 873/865 to continue MW ~~sam~~ MS 3-19-23 development
0730 M. Sherman and E. Weiss head to 873/865 to meet up with H. Carter to replace a part on pump for MW sampling
0800 M. Sherman and E. Weiss at MW-307. Set up and begin purging well.
1005 E. Weiss and M. Sherman have been trouble-shooting well sampling set-up since 0800. Compressor appears to be running, and no visible damage to bladder pump, but no water is making its way up the tubing through water qality meter.
1040 M. Sherman drives to bldg 365 to pickup CO2 and regulator and use restroom @ 1110
1055 M. Sherman returns. She and E. Weiss pack up and drive to Dunn Field / Site 18 to try a shallower MW. No purging or sampling were completed successfully @ MW-307.
1120 Arrive at MW-222. Decon Water level meter and pump in PFAS-Free water ? Alconox, rinse w/ PFAS-Free water.
1145 Begin dropping pump down MW-222 and setting up compressor.
1205 Water is still not being pumped up to water quality meter. Trouble shooting.
1225 H. Carter shows up to see if he can help

Daily Weather Condition: A.M. 25°F, clear, 5-10mph N

P.M. 35°F, mostly clear, 5-10mph SE

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/19/23 Page 2 of 2

Task Team Members:

Edward Weiss | Jason Bauerman
Megan Sherman
Hudson Carter

MD 03/27/23

Narrative (include time and location):

1300 After changing out adapter with original (same part that was changed out @ 0730 entry), pump/compressor is now working. First reading of water parameters collected @ 1306

1357: Final water quality parameter collected from MW-222.

1400: Collected DDS18-MW222 and DDS18-MW222-FD.

1435: Completed breakdown of equipment and pump decon. Moving to MW-134

1503: E. Weiss complete setup at MW-134. M. Sherman away to re-fill spray bottle with PFAS-free water.

1508: Begin purge of MW-134

1516: M. Sherman returns

1540 Final Water quality parameter collected from MW-134.

1545 Collected DDS18-MW-134.

1611 Finished w/ breaking down equipment and deconning pump and water level indicator. Move to MW-221.

1649 Done setting up @ MW-221. Begin purging well.

1705 Water stopped pumping. Replace compressor and controller. Resume purging.

1720 Collect final water parameter readings.

1725 Collect DDS18-MW-221.

1740 Break down equipment. Drive to Bldg 365 to unload vehicles

1800: All personnel offsite.

Daily Weather Condition: A.M. See page 1

P.M. See page 1

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/19/23 Page 1 of 3

Task Team Members:

Hudson Carter

Jason Bowerman (MCW)

MD 03/24/23 MD 03/24/23

Narrative (include time and location):

0645: Onsite.

0700: Tailgate safety meeting. Discuss day's plan. Fill decon buckets with fresh source water.

0715: Move to MW-216 (AOPI 873). It is located in a grass field on the southern end of the 873 AOPI, marked by a bollard. Flushmount with no bolts securing lid.

0725: Check DTW = 84.1 fbgs. Begin redevelopment of MW-216. 3 well volumes = 15.47 gallons.

0752: Complete redevelopment of MW-216. 17 gallons removed. Good flow rate (~2 gal/min). Used bucket method.

0755: Warming break.

Noted that MW-219 (PER) & MW-102B (PER) must be accessed through Barnhart's property - closed on weekends.

0800: Removed pump & tubing from well. Decontaminated equipment.

0815: Moved to MW-204B (873). Surrounded by solar inverter units - only accessible by foot. Carried spare car battery & equipment to well. 15/16" bolt holding on lid.

0830: Begin redevelopment of MW-204B. 3 well volumes = 14.56 gallons. ~~Hc~~ HC 3/19/23

0915: Complete redevelopment of MW-204B. 15 gallons removed. Decontaminate equipment.

0928: Move to MW-197B. On edge of clear path through electric unit staging area. Marked by bollards.

0935: Check DTW = 79.25 fbgs. Begin development of MW-197B (873). 3 well volumes = 14.62 gallons.

1010: Complete redevelopment of MW-197B. 15 gallons removed. Decontaminate equipment. Walk to inspect access for MWs-210A & B.

1025: Move to MW-210B. Check DTW = 77.5 fbgs. Located in gravel/rubble area surrounded by units.

1035: Warming break.

1045: Begin redevelopment of MW-210B. 3 well volumes = 56.25 gallons.

1125: After approximately 15 gallons removed, no water flow. Removed pump and checked DTW = 77.5 fbgs. Followed pump troubleshooting procedures: determined pump was clogged with PVC cuttings. Cleared PVC from pump and resumed pumping.

Daily Weather Condition: A.M. 26° clear, cold. Wind 7 mph S

P.M. See page 2

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): ø3/19/23 Page 2 of 3

Task Team Members:

Hudson Carter

Jason Bowerman (MCW)

— MD ø3/27/23 MD ø3/27/23

Narrative (include time and location):

While checking DTW of MW-21øB, total well depth was determined to be approximately 112 ftbgs. This differs from the 192 fbgs listed in Table 18-2, Page 63, of the Site-Specific QAPP.

12ø7: Complete redevelopment of MW-21øB. 6ø gallons removed. Decon equipment.

1215: McW break for lunch. Head to Dunn Field to meet up with team. Assist briefly with well sampling.

13øø: McW back on site.

1315: Move to MW-21øA. Check DTW = 82.8 ftbgs.

133ø: Begin redevelopment of MW-21øA. 3 well volumes = 14.31 gallons

14ø2: Complete redevelopment of MW-21øA. 15 gallons removed. Decon equipment.

141ø: Move to MW-2ø5B. Located in gravel area just off of sewer access road. Adjacent to Bldg 77ø. 15/16" nut holding on lid. DTW = 8ø.33 fbgs.

142ø: Begin redevelopment of MW-2ø5B. 3 well volumes = 15.83 gallons. AOPI 373

Note: After rechecking the total depths of MW-21øB (112 fbgs) and MW-21øA (192 fbgs), I confirm the discrepancy listed on Table 18-2. 21øB + 21øA have their total depths switched. This makes sense because 21øB is listed as fluvial, and 192 fbgs would be deeper than all other fluvial wells. 21øA is clearly labeled on the lid as MW-21øA.

1447: Complete redevelopment of MW-2ø5B. 16 gallons removed. Decon equipment.

1453: Move to MW-205A (directly adjacent). DTW = 8ø.ø3 ftbgs. AOPI 873

15ø2: Begin redevelopment of MW-2ø5A. 3 well volumes = 37.26 gallons.

155ø: Complete redevelopment of MW-2ø5A. 6ø gallons removed. Decon equipment

1558: Move to MW-291 (AOPI 3ø8). DTW = 7ø.2 fbgs. Located in street in front of 929.

~~16ø8: Complete~~, 16ø3: Begin redevelopment of MW-291. 3 well volumes = 6.76 gallons.

1624: Complete redevelopment of MW-291. 7 gallons removed.

Daily Weather Condition: A.M. See Page 1

P.M. 40 sunny. Wind 8 mph SE

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): ~~03/19/23~~ Page 3 of 3

Task Team Members:

Hudson Carter

Jason Bowerman (MW)

MO 03/27/23

MO 03/27/23

Narrative (include time and location):

1635: Drive to Dun Field to transfer water to IDW drums. 1 drum of tubing + 3 drums of water were filled.

1725: IDW Container Accountability Log was updated.

Daily Weather Condition: A.M. see Page 1

P.M. 41° windy. Wind 6mph SE

Recorded By: (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): Ø3/2Ø/23 Page 1 of 3

Task Team Members:

Edward Weiss	Jason Bauerman
Hudson Carter	
Megan Sherman	MD Ø3/24/23

Narrative (include time and location):

Ø7ØØ: All personnel on-site. H&S tailgate held

Ø715: Load GW sample equipment into truck. H. Carter and J. Bauerman to continue well development.

Ø745: Arrive at MW-28.

Ø757: Equipment calibration complete.

Ø826 Finished setting up equipment and well for purging. Begin purging.

Ø8ØØ Equipment decon complete. Collect equipment blank (DDS18-MW-221-EB)

Ø9Ø5 Purging complete. Collect water samples + MS/MSD (DDPER-MW-28)

Ø91Ø Break down site & Equipment

Ø928 Drive to Bldg 365 for more PFAS-free water, and to use restrooms, and decon pump.

Ø946 Done @ Bldg 365. E. Weiss ~~drives to Dunn Field to drop off trash~~ and MS 3-2Ø-23 M. Sherman drives to MW-3Ø7 to begin setting up. MS 3-2Ø-23

~~Ø855~~ Ø955 MS 3-2Ø-23 MW-3Ø7 has a lot of truck traffic this morning. Move to MW-284.

~~Ø9ØØ~~ 1ØØØ MS 3-2Ø-23 At MW-284. Begin setting up

1Ø25 Begin purging MW-284.

1112 Collect last Water Quality Parameter Reading

1116 Collect Watersample (DD56Ø-MW-284)

Daily Weather Condition: A.M. 26°F, Sunny, Some light wind

P.M. See page 2

Recorded By: Megan Sherman 3-2Ø-23 (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/20/23 Page 2 of 3

Task Team Members:

E. Weiss	Jason Bowerman M&W
H. Carter	
M. Sherman	MD 03/21/23

Narrative (include time and location):

1125 Begin breaking down equipment @ MW-284.

1152 Finish breaking down @MW-284. Check MW-307 for truck traffic.

1205 MW-307 still too busy to sample. Take lunch. E. Weiss Talks w/ Samantha Stenson on the phone.

1220 E. Weiss & H. Carter begin setting up @ MW-291

1235 M. Sherman joins E. Weiss & H. Carter

1245 Begin purging MW-291

1320 Collect water sample from MW-291. (DD308-MW-291)

1335 Begin breaking down equipment, decon pump and water level meter.

1345 M. Sherman goes to Bldg 365 to use restroom. H. Carter Drives to Holiday Inn to pick up tubing that arrived. Then will split off and continue developing the last 3 wells.

1400 M. Sherman returns. M. Sherman & E. Weiss set up MW-264

1415 Turn on pumps and begin purging MW-264.

1420 Suspect air hose may have come loose from pump. Pull up pump & check/secure air hose

1425 Continue purging

1448 Still no water coming up from MW-264. Disconnect Compressor—We will attempt to ~~try~~ MS 3-20-23 use CO2 compressed gas.

1454 Begin trying to purge again, with CO2 this time.

Daily Weather Condition: A.M. On page 1

P.M. 47°F, Sunny, light wind

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/26/23 Page 3 of 3

Task Team Members:

E. Weiss | Jason Bowerman (M&W)

M. Sherman

H. Carter

MD 03/27/23

Narrative (include time and location):

1510 Well MW-264 begins purging for us.

1538 Take last Water quality parameter reading

1545 Collect water sample (DD308-MW-264)

1600 Breakdown equipment at MW-264. Decon pump & water level

1617 Move to MW-103

1622 Set up equipment @ MW-103

1639 Begin Purging.

1710 Collect last water qality parameter reading

1720 Collect water sample (DD308-MW-103)

1733 E. Weiss Breaks down site. M. Sherman QC's samples tat will be shipped tonight

1750 Packup truck and samples.

1800: E. Weiss unload equipment at Building 265. M. Sherman to Fedex.

1830: E. Weiss offsite.

Daily Weather Condition: A.M. See page 1

P.M. See page 2

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at ~~Facility Name~~ DDMT

Date: (mm/dd/yy): Ø3/2Ø/23

Task Team Members:

Hudson Carter

Jason Bowerman (Moly)

~~—~~ MD Ø3/27/23

~~—~~ MD Ø3/22/23

Narrative (include time and location):

Ø645: Onsite.

Ø7ØØ: Safety meeting. Fill decon buckets with fresh PFAS-free source water.

Ø72Ø: Move to MW-263 (PER). Located at the northern edge of installation boundary in a grass field near the spillway. 1x 15/16" bolt holds on lid. Marked by 1 bollard.

Ø725: Check DTW = 53.2 ftbgs. Begin redevelopment of MW-263. 3 well volumes = 12.78 gallons. AOPI 3Ø8.

Ø755: Complete redevelopment of MW-263. 14 gallons removed. Decon equipment.

Ø8Ø2: Move to MW-1Ø3 (AOPI 3Ø8 / DRMO). Located in the middle of a large field. Marked by a single green fence post.

Ø812: Check DTW: 66.72 ftbgs. Begin redevelopment of MW-1Ø3. 3 well volumes = 11.46 gallons. Due to location, buckets of development water must be carried ~1ØØ yards to transfer tank.

Ø9Ø3: Complete development of MW-1Ø3. 12 gallons removed. Decon equipment. H. Carter to Bldg 265 to charge battery.

Ø925: Move to MW-264. Located in grass median of road. DTW = 8Ø.4 ftbgs. 15/16" bolt for lid.

Ø937: Begin redevelopment of MW-264. 3 well volumes = 17.Ø1 gallons. A bottle is being used as a well cap.

1ØØ5: Complete redevelopment of MW-264. 18 gallons removed. Decon equipment.

1Ø21: Move to MW-287 (AOPI 529). Located in grass next to Bldg 529. DTW = 77.9 ftbgs.

1Ø3Ø: Begin redevelopment of MW-287. 3 well volumes = 8.Ø3. 15/16" bolt holding lid closed.

1Ø49: Complete redevelopment of MW-287. 9 gallons removed. Decontaminate equipment.

1Ø58: Move to MW-281 (AOPI 529). Located under tree in front of Bldg 529. Bolt on lid does not spin. Lid can be opened by prying with screwdriver. DTW = 76.45 ftbgs.

11Ø9: Begin redevelopment of MW-281. 3 well volumes = 7.56 gallons.

1126: Complete redevelopment of MW-281. 9 gallons removed. Decon equipment.

1135: Mobile break for lunch. We are out of HDPE tubing - waiting on shipment to arrive

Daily Weather Condition: A.M. 26° clear Wind 6mph NW

P.M. on page 2

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at ~~Facility Name~~ DDMT

Date: (mm/dd/yy): 03/20/23 Page 2 of 2

Task Team Members:

Hudson Carter

Jason Bowerman (MoW)

MO 03/27/23 MO 03/27/23

Narrative (include time and location):

1145: Meet up with M. Sherman and E. Weiss. See E. Weiss TTALs.

1230: MoW to Dun Field to prep trailer/equipment for demobilization.

1345: Notification that extra HDPE tubing was delivered. H. Carter to E. Weiss hotel to pick up.

1420: H. Carter back on site.

1425: Move to MW-102B (PER). Located near Barnhart property on a hill. 3x 9/16" bolts hold on lid.

1435: DTW = 45.55 ftbgs. Begin redevelopment of MW-102B. 3 well volumes = 21.87 gallons. PER

1512: Complete redevelopment of MW-102B ~25 gallons removed. Decontaminate equipment.

Note: MW-219 is located outside of the Barnhart Crane area. Will redevelop last on the way to Dun Field.

1525: Move to MW-288 (AOPI 529). Located in street between Bldg 630 and 530.

DTW: 83.45 ftbgs. Begin redevelopment of MW-288. 3 well volumes: 8.81 gallons.

1603: Complete redevelopment of MW-288. 9 gallons removed. Decon equipment.

1611: Return to MW-215A to complete redevelopment. DTW = 93.6 ftbgs. Located in Bldg 550 parking lot.

1628: Redevelopment of MW-215A complete. An additional 3 gallons removed. Decon equipment.

1638: Move to MW-219. Located in the grass field beneath power lines along Perry Road.

DTW - 78.5 ftbgs. Begin redevelopment of MW-219. 3 well volumes = 16.9 gallons.

1710: Completed redevelopment of MW-219. 18 gallons removed.

1722: Move to Dun Field to transfer water to IDW drums. ~150 gallons to transfer.

Label drums.

Daily Weather Condition: A.M. 45° sunny Wind 8mph NE

P.M. 53° sunny Wind 8mph NE

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): Ø3/21/23 Page 1 of 2

Task Team Members:

Edward Weiss

Hudson Carter

3/21/23

Narrative (include time and location):

Ø7ØØ: M. Sherman off-site. E. Weiss & H. Carter on-site.
Ø71Ø: Conduct H2S tailgate. H. Carter decons the pump and collects sample DD3Ø8-MW1Ø3EB @ Ø73Ø. E. Weiss calibrates groundwater sampling equipment.
Ø745: Equipment loaded, crew head to MW-287 to set up for sampling.
Ø8ØØ: Begin set up at MW-287.
Ø82Ø: Equipment set up. Start purging.
Ø925: Collect DD529-MW287 and DD529-MW287FD.
Ø93Ø: Pack gear, decon pump and move to well MW-281.
Ø945: Set up at MW-281.
1ØØØ: Begin purging at MW-281.
1Ø4Ø: Collect sample DD529-MW281. Begin equipment breakdown and pump decon.
11ØØ: Begin the set up at MW-288.
1115: Begin purging at MW-288
124Ø: Collect sample DD529-MW288. Begin equipment breakdown and pump decon.
13ØØ: Arrive at MW-215B.
~~12~~ 132Ø: Begin purge at MW-215B. EW 3/21/23
134Ø: Mitchell DeBartoli on-site. E. Weiss & M. DeBartoli meet at Building 265 to discuss plan.
1415: H. Carter has issues producing at MW-215B and there

Daily Weather Condition: A.M. Drizzle, 42°F, 5-1Ø mph SSE

P.M. on page 2

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/21/23 Page 2 of 2

Task Team Members:

Edward Weiss

Hudson Carter

Mitchell DeBortoli

EW 3/21/23

Narrative (include time and location):

is a period of heavier rain. Pauses purge. M. DeBortoli goes back to Argas to get a hose that will fit our equipment.

1440: H. Carter identifies the issue as a compressor issue. E. Weiss brings a different compressor and the well begins to produce.

1500: M. DeBortoli back on-site with proper equipment for air tanks.

1510: Collect sample DD550-MW215B, ~~DD550~~ DDMI550-MW215B FD. EW 3/21/23 Begin equipment breakdown and pump decon.

1540: M. DeBortoli at MW-270. Equipment blank collected from MW-215B. Sample collected, ID is ~~DDMI550-MW215~~ EW 3/21/23 DD550-MW215EB. Will hold. May not send because it is extra.

1550: Begin set up at MW-215A. Testing our compressor to see what depth it can pump from.

1640: After general troubleshooting, E. Weiss gets CO_2.

1715: Possible hole in tubing, will not be able to sample MW-215A today. Begin equipment breakdown.

1745: At B265 to unload gear.

1800: Finish unloading, all personnel offsite.

EW 3/21/23

Daily Weather Condition: A.M. on page 1

P.M. Rain, 49° F, 5-10 mph SE

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at DDMT

Date: (mm/dd/yy): 03/21/23 Page 1 of ~~1~~ MD 1 MD 03/21/23

Task Team Members:

Mitchell DeBardas

MD 03/21/23 MD 03/21/23

Narrative (include time and location):

1540 Mitchell sets up @ MW-270, Eddie leaves to go meet Hudson. Mitchell will try to sample @ least 1 well

1546 Mitchell goes to Eddie to get correct socket wrench size

1630 Mitchell begins purge @ PERMW270

1648 Mitchell begins to sample @ MW270

1714 Finish decon & packing @ MW270, head to Eddie & Hudson to drop samples & see what Eddie wants to do

1745 Arrive back @ storage to unload equipment

1800 Finish unpacking, will go to office Mon then done for day

MD 03/21/23

Daily Weather Condition: A.M. NA

P.M. 49°F feels like 45° 69% humidity, Wind 9mph NW UV Index 2 Drizzle

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): Ø3/22/23 263 Page 1 of 2

~~58~~ 214
~~93~~ 1Ø22
~~24~~

Task Team Members:

Mitchell DeBartoli

MD Ø3/22/23 MD Ø3/22/23

Narrative (include time and location):

Ø7ØØ Arrive @ site & begin to calibrate/load equipment. Eddie goes over plan for day. Carter goes to take soil IDW (confirm on Eddie's activity log) around Ø725

Ø74Ø Mitchell leaves storage for MW-24/93

Ø755 Arrived @ MW-93, begin setup

Ø823 Begin purge @ MW-93

Ø847 Finish purge @ MW-93, will sample then decon & pack equipment Sample ID DDPBR-MW93

Ø913 Move to MW-24, ~~Sample~~ MD Ø3/22/23

Ø925 Took a minute to find MW-24, this well does not require a socket wrench & is entirely unsecured. Will get WL & tag bottom to make sure it is the correct well then begin setup

Ø953 Begin purge @ MW-24

1Ø3Ø Sample @ MW-24, turbidity stabilized @ 18. Will decon & breakdown then go meet Eddie & Hudson. Going to drop off samples & see if one of the crew can show me where IDW & source water is DDPBR-MW24

1Ø55 Leave to find Eddie & Hudson

1Ø57 Call Eddie to find their location

1111 Goes to storage to get rid of IDW, then fill up source water. Will do offsite well after that's completed

112Ø Head to MW-219

1126 Man was trying to access 2241, Mitchell informed him the building didn't have any known tenants,

1149 Arrive @ MW-219 after getting directions to go downtown, will get WL & begin setup

1208 After setting up & cutting away vegetation, begin purge @ MW219

124Ø Sample @ MW219 DDPBR-MW219

Daily Weather Condition: A.M. 51°F feels like 53° 89% Humidity UV Index Ø Wind 11mph N

P.M. 65°F feels like 66° UV Index 5 79% Humidity Wind 14mph N

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/22/23 ~~263~~ ~~102B~~ Page 2 of 2

Task Team Members:

Mitchell DeBoAdri

MD 03/22/23

MD 03/22/23

Narrative (include time and location):

1305 Complete sampling & decon & packing @ MW219. Head to MW-52

~~1340~~ After talking to RevPerkins @ VVA, Mitchell tries to find MW-52 for 20 minutes, calls Eddie & Hudson, will begin sampling after setup

1402 Setup & begin purge

1444 Finish purge & sample, pack equipment & decon ~~DD~~DPBR-MW52

1505 Head to hardware store to get mason line to secure pump

1519 leave hardware store w/gloves & line

1535 Drop gloves & line off w/Hudson & Eddie. They are beginning their 6th well

1550 Arrive @ MW-102B, will setup & begin purge

1610 Begin purge @ MW-102B

1633 Sample @ DDPBR-MW102B, will pack & decon then see if Eddie & Hudson were still @ their 6th well. After that will go to MW-263

1713 Arrive @ MW-263. Hudson showed Mitchell where well was & gave Mitchell the starting log sheets

~~1733~~ 1738 Begin purge @ MW-263

1620 DO may be erroneous

1838 Sample ~~DD~~DPBR-MW263, will decon pack then head to storage

1858 Head to storage

1908 Finish up packing, give Eddie rest of samples. Make plan for tm then done for day

MD 03/22/23

Daily Weather Condition: A.M. SEE 1ST PAGE

P.M. SEE 1ST PAGE

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/22/23 Page 1 of 3

Task Team Members:

Edward Weiss

Hudson Carter

Mitchell DeBartoli

EW 3/22/23

Narrative (include time and location):

0700: All personnel on-site. Hold daily safety tailgate meeting.
0715: Begin to calibrate equipment and load equipment into cars.
0720: H. Carter goes to Dunn Field to dump purge water and do a drum count.
0740: M. DeBartoli goes off on his own to sample monitoring wells. He will be completing an activity log. E. Weiss stays at B265 to go over paperwork.
0812: E. Weiss arrive at MW-215A. Begin set up.
0835: H. Carter at MW-215A. Begin purge. Using CO_2
0940: After resolving some controller issues, successfully purge and collect sample. ID is DD550-MW215A. Breakdown and pack equipment.
0955: Arrive at MW-311. Decon pump and begin set up.
1000: MW-311 is completely flooded over, ~1 inch over the concrete pad. Begin to drain the water by collecting it into a purge bucket.
1104: Got enough water out from MW-311 where we can purge while having someone constantly bail water from around the well. Begin purging using CO_2
1141: Purge complete at MW-311
1145: Collected sample DD560-MW311. Begin to break down equipment and decon.
1210: Move to MW-302.

Daily Weather Condition: A.M. Rain, 53°F, 10-15 mph S.

P.M. on page 2

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/22/23

Task Team Members:

Edward Weiss

Hudson Carter

Mitchell DeBortoli

Narrative (include time and location):

1215: At MW-302. Begin setting up. Using CO_2

1247: Complete purging at MW-302.

1250: Collect sample DD560-MW302. Begin equipment breakdown and decon.

1310: Collect EB DD560-MW302EB. Move to MW-271.

1320: Arrive at MW-271. Concrete pad is flooded but no water is inside of the well or casing.

1335: Begin purging at MW-271. Using CO_2

1400: Complete purging at MW-271.

1405: Collect sample DD560-MW271. Begin equipment breakdown and decon

1420: Complete breakdown and decon. H. Carter goes to restroom.

1430: H. Carter back. Arrive at MW-205A. Begin set up.

1452: Begin purging at MW-205A.

1513: End purging at MW-205A. EW 3/22/23

1513: Collect DD873-MW205A and DD873-MW205AFD. Begin equipment breakdown and pump decon. Move all equipment to MW-205B, right next to us.

1545: Begin purging at MW-205B. M. DeBortoli drops off more gloves and string.

1608: Complete purging at MW-205B.

1610: Collect sample DD873-MW205B, ~~and~~ DD873-MW205BMS, EW 3/22/23

Daily Weather Condition: A.M. On page 1

P.M. 63°F, overcast, 10-15 mph S

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/22/23 Page 3 of 3

Task Team Members:

Edward Weiss

Hudson Carter

Mitchell DeBartoli

EW

Narrative (include time and location):

and DD873-MW205B MSD. Begin to pack equipment.
1630: H. Carter's car battery is dead.
1637: H. Carter's car battery jumped by E. Weiss
1640: Stop by building 265 to take out some equipment and grab sediment bottles. Head to Lake Danielson.
1656: Gate to Lake Danielson is closed and locked. We will come back tomorrow. Head on-site to see if MW-307 is open.
1705: MW-307 still has truck traffic. Deciding if we will try to wait it out or go to a different well.
1721: Move to MW-214B, begin set up.
1740: Begin purging at MW-214B, using CO_2
1802: End purging at MW-214B.
1805: Collect DD529-MW214B. Begin packing equipment.
1813: Head back to Building 265 to unload equipment.
1900: Complete equipment unload, H. Carter offsite.
1910: M. DeBartoli at B265, unloads equipment, gives me his samples. All personnel offsite.

EW 3/22/23

Daily Weather Condition: A.M. See page 1

P.M. See page 2

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/23/23 — ~~197B~~ ~~[illegible]~~ ~~2190~~ 204B — Page 1 of 2

Task Team Members:

Mitchell DeBartolo

MD 03/23/23 — MD 03/23/23

Narrative (include time and location):

0645 Arrive on-site, calibrate & pack equipment. Talk w/Eddie about which wells will be completed

0725 Leave storage

0745 Arrive @ MW-197B, took a minute to find

0753 Begin setup @ MW-197B

0830 Begin purge @ MW-197B. Initially set car up @ 197A, 197B was submerged in water and had to be scooped dry.

0855 Sample DD873-MW197B, will decon, pack then move to 2100. Eddie stopped by to talk @ 6 DO sensor on my Horiba. If it continues to ~~act~~ MD 03/23/23 drop to 0 @ next 2/3 well It will be ignored

0922 Go to MW210B

0930 Arrive @ MW210B & begin scooping water out of well. Hudson & Eddie finishing up

1007 Begin to drop pump

1050 Sample @ MW-210B. Will pack decon & move to 204B. DD873-210B

1113 Move to MW-204B

1131 Transformers were moved over well making it difficult to find. Will need to go to 2241 to get spare car battery

1137 Hudson @ 2241, head back to 204B to begin setup

1143 Begin setup for 204B

1203 Start purge

1221 Sample @ MW-204B DD873-204B

1247 Finish packing & decon, head back to 2241. Will talk w/Eddie about last well & other remaining tasks

1255 Arrive @ 2241

Daily Weather Condition: A.M. 65° feels like 65° Mostly cloudy 88% humidity UV Index 0 Wind 13mph N

P.M. 73° feels like 73° Wind 15mph NE 76% humidity UV Index 3 Cloudy

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/23/23 Page 2 of 2

Task Team Members:

Mitchell DeBaldi

MD 03/23/23

Narrative (include time and location):

1305 Leave 2241 w/new tubing to go sample 216. Drop off off car ladder

1319 Arrive @ MW-216 to setup & begin sampling

1340 Begin purge @ MW-216. Wind has picked up significantly

1420 Samp ~~[illegible]~~ 873-MW216. Will pack then go to Dunn Field to meet Eddie & Hudson. Will dump IDW & put tubing in drums

1440 Head to Hudson & Eddie

1445 Arrive @ Dunn Field. Eddie & Hudson are here

1446 Collect IDW water sample & close tubing drum

1521 Leave for 2241

1527 Arrive @ 2241, unload car & begin boxing equipment

1554 Mitchell leaves to return cannisters to AirCoas

1608 Mitchell arrive @ AirCoas & drops off cannisters

1615 Mitchell returns to 2241 w/invoice

1621 Arrive @ 2241 Hudson is gone

1717 Finish 2241, go to ~~Airport~~ MD 03/23/23 FedEx to ship samples. Will ship equipment then go to to hotel & pack. Will try to get to Nashville.

MD 03/23/23

Daily Weather Condition: A.M. SEE 1st PAGE

P.M. SEE 1st PAGE

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/23/23 Page 1 of 3

Task Team Members:

Edward Weiss

Hudson Carter

Mitchell DeBortoli

EW

Narrative (include time and location):

0645: All personnel on-site. Begin calibrating and loading trucks.

0720: M. DeBortoli off on his own to sample monitoring wells.

0725: E. Weiss & H. Carter head to MW-307 to sample.

0745: Start purge on MW-307. Talked with an employee of the nearby building to let him know we'd be here for a little.

0805: End purge at MW-307.

0808: Collect sample PD560-MW307. Note that there are 3 semi-trucks running nearby. Pack equipment and head to 265 to decon.

0815: At 265 to decon pump.

0831: Head to Lake Danielson to collect SW/Sed samples associated with 560 AOPI

0839: Gate is locked. The website for the golf course in this area says it will open at 0900. We will go sample another well then try again.

0855: Arrive at MW-210A. Begin set up.

0911: Begin purge at MW-210A.

0932: Complete purge at MW-210A. M. DeBortoli setting up next to us on MW-210B.

Daily Weather Condition: A.M. 65°F, partly cloudy, 10-15 mph SW

P.M. See page 2

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/23/23 Page 2 of 3

Task Team Members:

Edward Weiss

Hudson Carter

Mitchell DeBortoli

Narrative (include time and location):

0935: Collect sample DD873-MW210A. Begin equipment breakdown.

1000: Head to Lake Danielson.

1018: Arrive at Lake Danielson after checking in at the front desk. Prep for SW/Sed sampling.

1100: Collect sample DD56005-SW01. Access is no issue for this location.

1110: Collect sample DD56004-SW01. Location is accessible.

EW 3/23/23 ~~1115: Collect~~ Collect duplicate and MS/MSD at this location.

1115: Collect sample DD56004-SD01, duplicate, and MS/MSD. Location is accessible.

1120: At vehicle, label bottles and finish paperwork. H. Carter goes to help M. DeBortoli. E. Weiss goes to B265 to organize bottles and paperwork.

1145: E. Weiss at B765.

1300: E. Weiss homogenizes soil for IDW. Will collect Soil IDW Sample.

1400: E. Weiss and H. Carter organize equipment. Pack IDW and head to Dunn Field to get IDW water sample.

1423: At Dunn Field consolidating IDW

1516: Collect water IDW samples from drums.

1521: All drums sealed and labeled at Dunn Field. Details

Daily Weather Condition: A.M. See page 1

P.M. 76°F, Sunny, 10-15 mph SW

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: BRAC PFAS PA/SI at Facility Name

Date: (mm/dd/yy): 03/23/23 Page 3 of 3

Task Team Members:

Edward Weiss
Hudson Carter
Mitchell DeBartoli

MD 03/27/23

Narrative (include time and location):

regarding drum contents are located on the IDW accountability forms. Head to Building 265

1536: At Building 265 to QC samples, pack equipment.

1545: M. DeBartoli to Airgas to return CO_2.

1620: H. Carter offsite.

1635: M. DeBartoli back on-site. QC's chain and begins packing boxes in his car. E. Weiss packing coolers.

1717: Finish packing coolers and loading equipment. HDR's office (Building 265) secure and all samples loaded.

1720: E. Weiss & M. DeBartoli to Fedex.

1800: Coolers dropped off.

Daily Weather Condition: A.M. See page 1

P.M. See page 2

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

APPENDIX D

BORING LOGS

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-529-Ø1
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 1 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. LOCATION: Memphis, TN	
5. NAME OF DRILLER: Ryan Post	6. MAKE/MODEL OF DRILL: Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: 1 inch HDPE sleeve	8. BOREHOLE LOCATION: B529 AOPI	
	9. DRILL DATE/TIME: 3/15/23 STARTED: 165Ø COMPLETED: 17Ø1	
	10. DEPTH GROUNDWATER ENCOUNTERED	
11. OVERBURDEN THICKNESS	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION	
13. DEPTH DRILLED INTO BEDROCK	14. CHEMICAL SAMPLES VIA T-PFAS-W36459 (PFASs in Solids)	
15. TOTAL DEPTH OF BOREHOLE: 15 ft bgs		

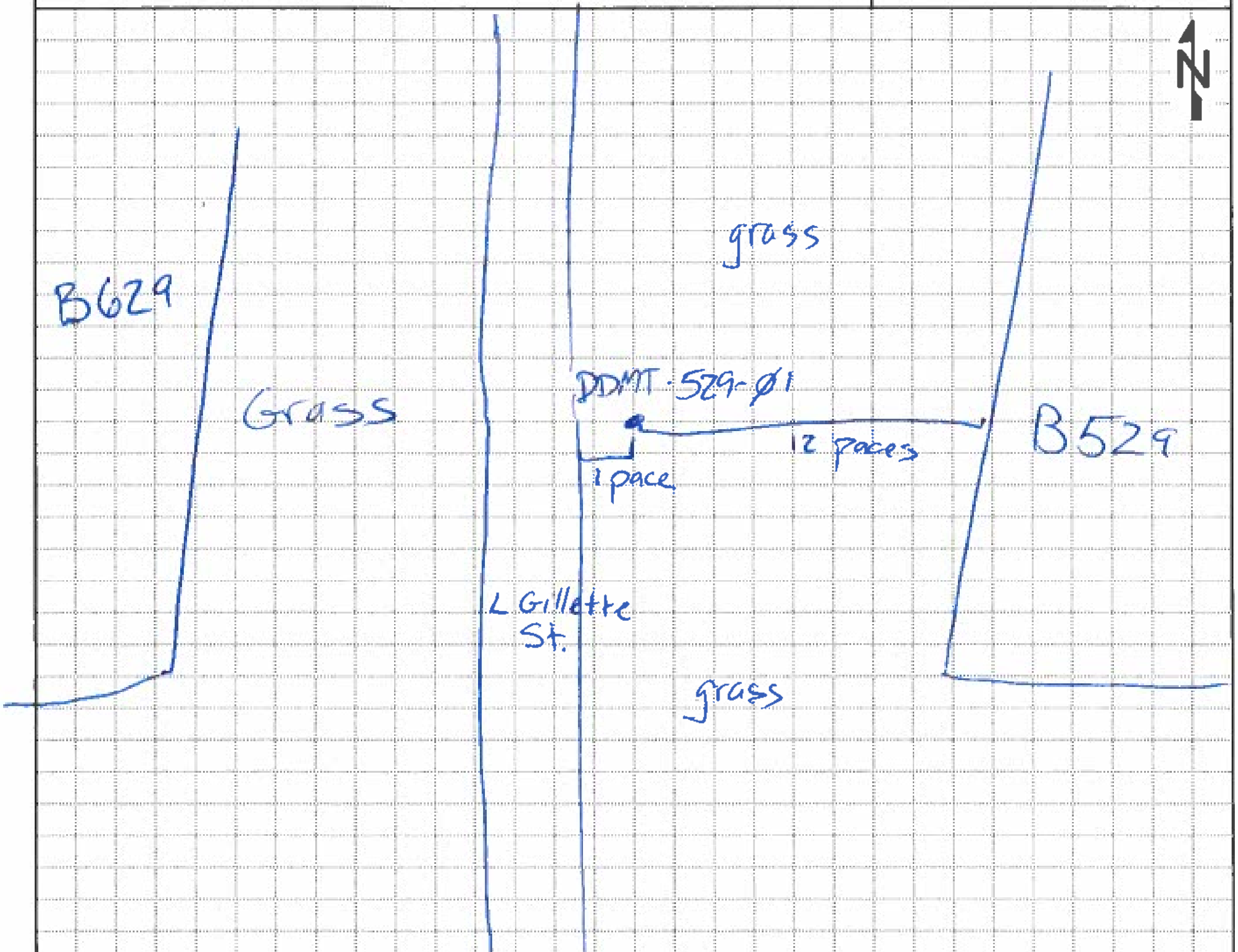
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
3/15/23	3/16/23	DDMT-529-Ø1

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-529-Ø1
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 2 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE: ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
		CL	Stiff brown, 1Ø YR 4/3, clay with rounded: angular coarse gravels, Ø-1 ft		Ø.Ø ppm	Sample @ 1659 DD52901-SSØ1
	1	CL	Very soft dark yellowish brown 1Ø YR 4/4 clay with some (1Ø%) vf silts.	4Ø%	Ø.Ø ppm	
	2					
	3					
	4				Ø.Ø ppm	
	5					
	6				Ø.Ø ppm	Sample @ 1703 DD52901-SBØ2
	7		medium stiff ~7 ft bgs	95%	Ø.Ø ppm	
	8					
	9				Ø.Ø ppm	
	10					

GEOLOGIST SIGNATURE/DATE: 3/15/23	QA/QC SIGNATURE/DATE: 3/16/23	BOREHOLE NUMBER: DDMT-529-Ø1

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-529-Ø1
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					Ø.0ppm	
	11					
	12		Stiff @ 12 ft bgs	1ØØ%	Ø.0ppm	
	13					Sample @1707 DD529Ø1-SBØ3
	14				0.Øppm	
	15		1-15 ft End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/15/23	[signature] 3/16/23	DDMT-529-Ø1

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-308-01
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 1 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. LOCATION Memphis, TN	
5. NAME OF DRILLER Ryan Post	6. MAKE/MODEL OF DRILL Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 1 ⅞ in HDPE Sleeves ew 3/15/23	8. BOREHOLE LOCATION B308 AOPI	
	9. DRILL DATE/TIME 3/15/23 STARTED: 1227 COMPLETED: 1246	
	10. DEPTH GROUNDWATER ENCOUNTERED	
11. OVERBURDEN THICKNESS	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION	
13. DEPTH DRILLED INTO BEDROCK	14. CHEMICAL SAMPLES VIA T-PFAS-WI36459 (PFASs in Solids)	
15. TOTAL DEPTH OF BOREHOLE 15 ft bgs		

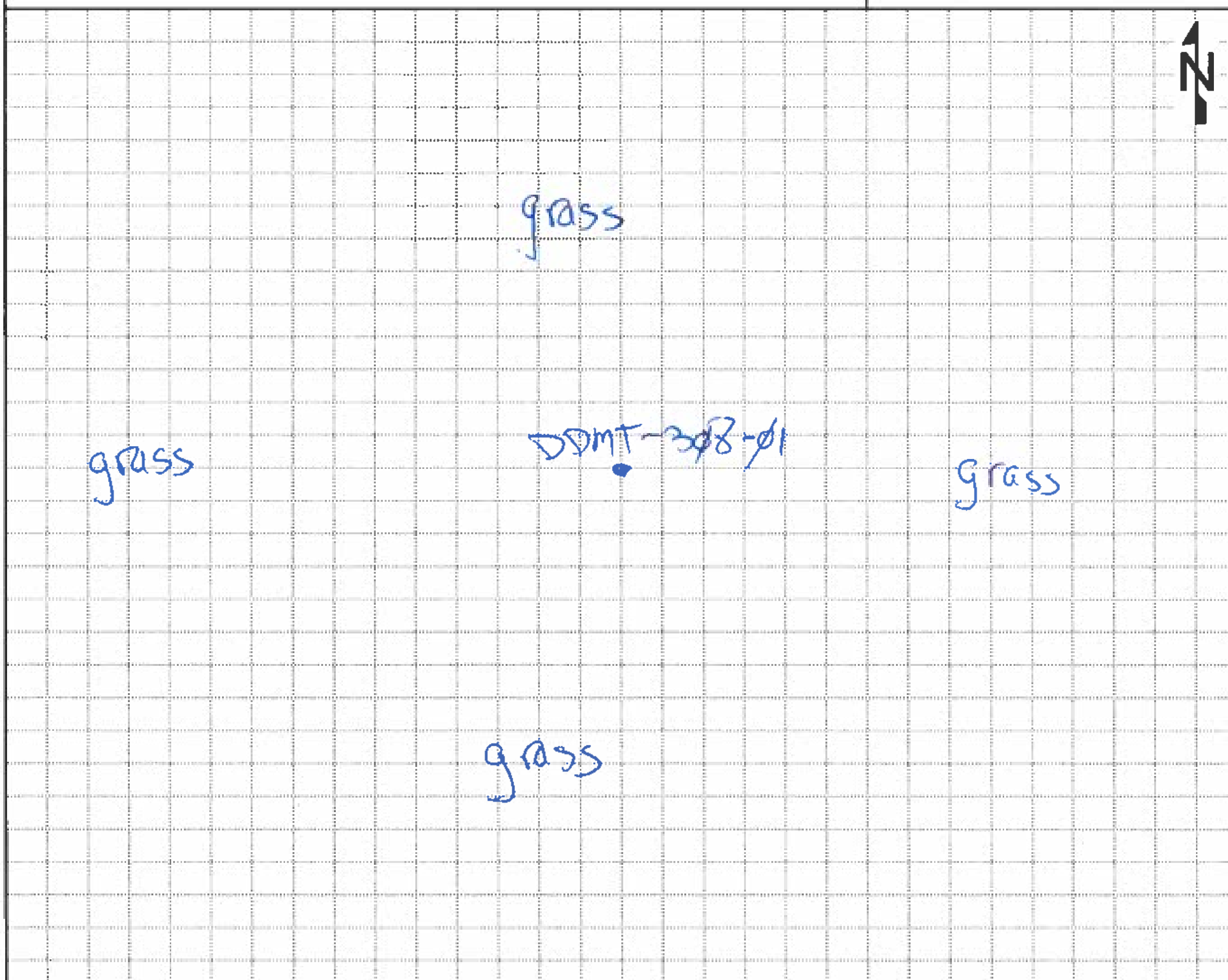
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/15/23	[signature] 3/16/23	DDMT-308-01

HTRW DRILLING LOG

DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-308-01	
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 2 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE: ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	0–1	ML	Clayey silt, very fine grained stiff. Yellowish brown 10 YR 5/4		0.0ppm	Sample DD30801-SS01 taken @ 1236
	2			50%	0.0ppm	
	3				0.0ppm	
	4		6 inches of soft clay ~4 ft			
	5				0.0ppm	
	6				0.0ppm	Sample DD30801-SB02 taken @ 1244
	7			95%	0.0ppm	
	8				0.0ppm	
	9		0-9 ft			
	10	CL	Soft gray clay, 2.5 Y 5/1		0.0ppm	

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/15/23	[signature] 3/16/23	DDMT-308-01

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-3Ø8-Ø1
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES

5. NOTES

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					Ø.Ø ppm	
	11		Color change to grayish brown 2.5Y 5/2			
	12			1ØØ%		
	13		9-13 ft		Ø.Ø ppm	
		ML	Silty clay, yellowish brown 10YR 4/4. Decrease in fines from the previous clayey silt interval.			Sample 3/15/23 EW DD3Ø5Ø1-QSBØ3 DD3Ø5Ø1-SBØ3MS DD3Ø5Ø1-SBØ3MSD taken @ 1251
	14				Ø.Ø ppm	
	15		13-15 ft		Ø.Ø ppm	
			End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
3/15/23	3/16/23	DDMT-3Ø8-Ø1

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-308-02
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 1 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. LOCATION: Memphis, TN	
5. NAME OF DRILLER: Ryan Post	6. MAKE/MODEL OF DRILL: GeoProbe 6600DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: 18-in HDPE sleeve EW 3/15/23	8. BOREHOLE LOCATION: B308 AOPI	
	9. DRILL DATE/TIME: 3/15/23 STARTED: 0923 COMPLETED: 0943	
	10. DEPTH GROUNDWATER ENCOUNTERED	
11. OVERBURDEN THICKNESS	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION	
13. DEPTH DRILLED INTO BEDROCK	14. CHEMICAL SAMPLES VIA T-PFAS-WI36459 (PFASs in Solids)	
15. TOTAL DEPTH OF BOREHOLE: 15 ft bgs		

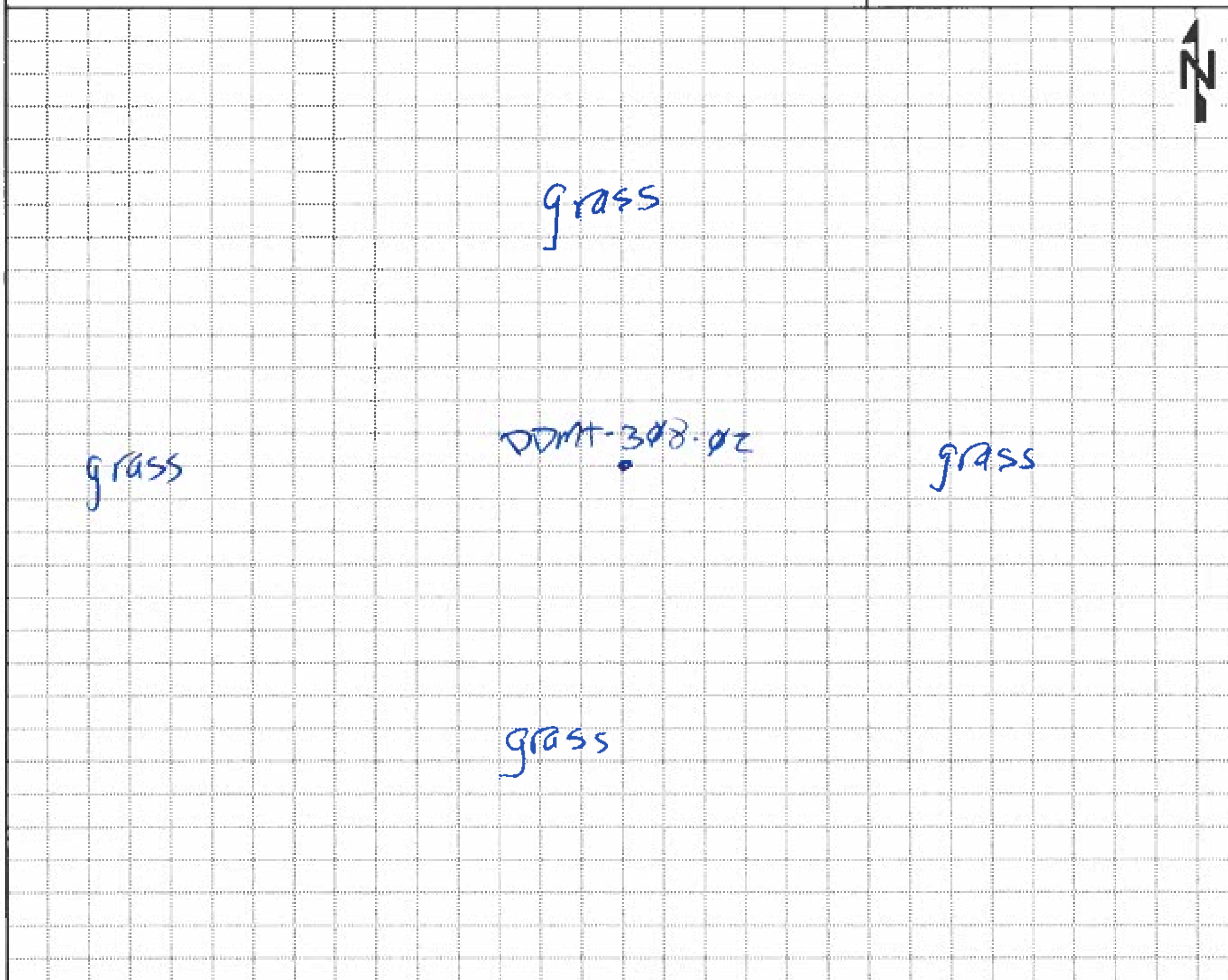
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT | BENTONITE | TEMPORARY WELL POINT | MONITORING WELL

17. NOTES: BKG: ≤ Background | BGS: Below Ground Surface | PPM: Parts per Million

▽ : First Water Encountered | ▼ : Static Water Level | NA: Not Applicable

LOCATION SKETCH/COMMENTS | **SCALE:** None



GEOLOGIST SIGNATURE/DATE: [signature] 3/15/23	QA/QC SIGNATURE/DATE: [signature] 3/16/23	BOREHOLE NUMBER: DDMT-308-02

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-308-02
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	

5. NOTES

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	0–1	ML	Clayey silt, brown 10YR 4/3, medium stiff		0.0ppm	Not enough recovered to sample. Hand auger used to collect sample DD30802-SS01 @0945
	2			5%		
	3					
	4					
	5					
	6		0-6 ft			
	6–7	CL	Very soft clay. Gray 2.5Y 5/1.	60%		Sample DD30802-SB02 collected @ 0936
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE 3/15/23	QA/QC SIGNATURE/DATE 3/16/23	BOREHOLE NUMBER DDMT-308-02

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-308-02
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR MEW Drilling	SHEET 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES
5. NOTES	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	11					
	12			80%		
	13		medium stiff ~13 ft bgs			Sample DD30802-SB03 collected @ 0947
	14		6-14 ft			
		ML	Clayey silt, dark yellowish brown with gray mottling 10YR 4/4. Stiff 14-15 ft			
	15		End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/15/23	[signature] 3/16/23	DDMT-308-02

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-308-03
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 1 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. LOCATION: B308 AOPI - Memphis TN	
5. NAME OF DRILLER: Ryan Post	6. MAKE/MODEL OF DRILL: Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: ~~4~~ 8 in HDPE sleeves ew 3/15/23	8. BOREHOLE LOCATION: B308 AOPI	
	9. DRILL DATE/TIME: 3/15/23 STARTED: 0740 COMPLETED: 0810	
	10. DEPTH GROUNDWATER ENCOUNTERED	
11. OVERBURDEN THICKNESS	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION	
13. DEPTH DRILLED INTO BEDROCK	14. CHEMICAL SAMPLES VIA T-PFAS-W138459 (PFASs in Solids)	
15. TOTAL DEPTH OF BOREHOLE: 15 ft bgs		

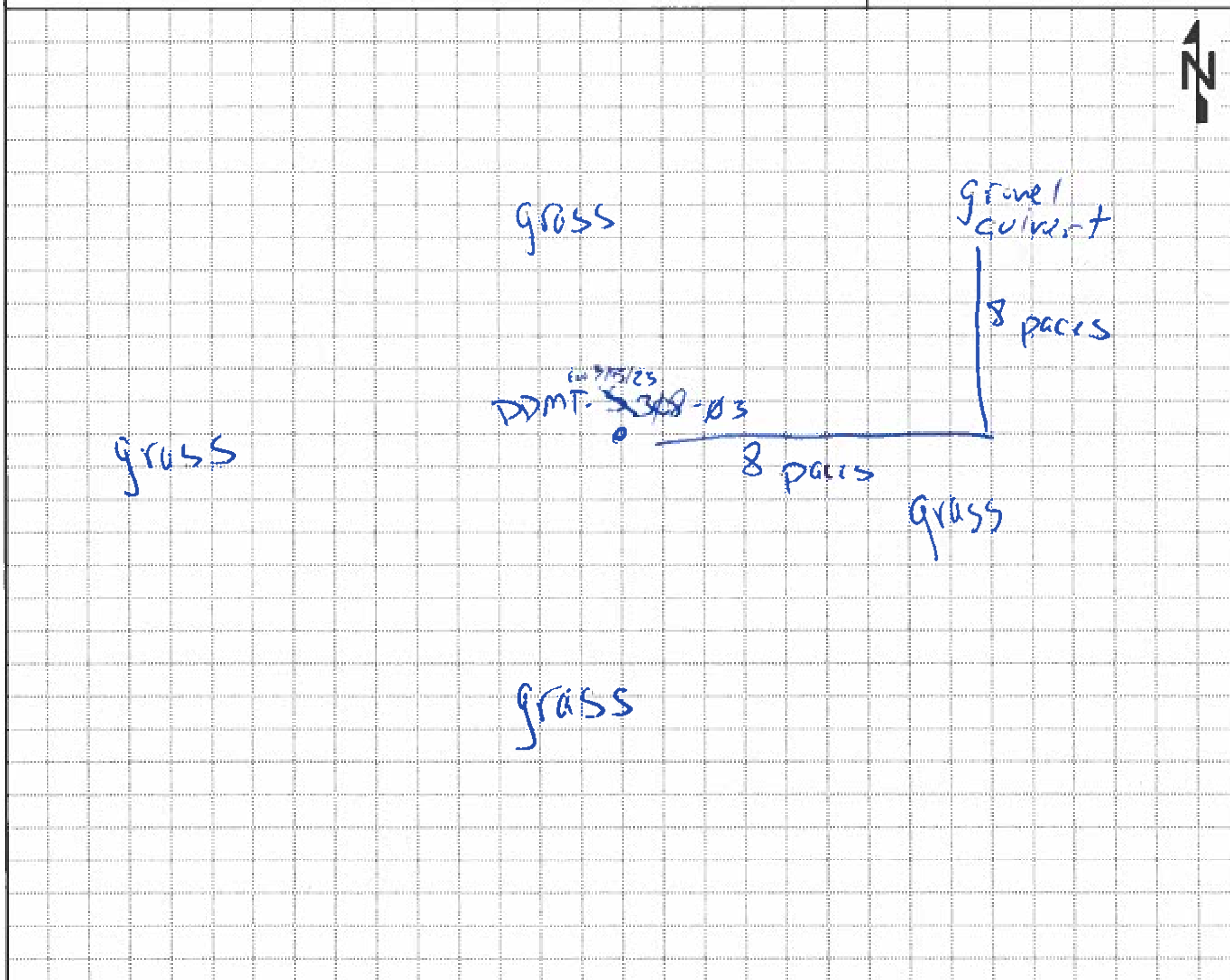
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT — BENTONITE — TEMPORARY WELL POINT — MONITORING WELL

17. NOTES: BKG: ≤ Background; BGS: Below Ground Surface; PPM: Parts per Million

▽ : First Water Encountered; ▼ : Static Water Level; NA: Not Applicable

LOCATION SKETCH/COMMENTS — **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
3/15/23	3/16/23	DDMT-308-03

HTRW DRILLING LOG

DISTRICT	BOREHOLE NUMBER
USACE- Baltimore	DDMT-308-03

1. COMPANY NAME	2. DRILLING SUBCONTRACTOR	SHEET 2 OF 3
Leidos	M&W Drilling	

3. PROJECT BRAC PFAS PA/SI at DDMT

4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES

5. NOTES

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
			Silty clay, Dark yellwish brown 10YR 4/6, very stiff, <5% small angular gravels. Pale gray mottling ~4 ft bgs.			DD30803-SS01 collected @ 0750
	1				0.0ppm	
	2	ML		~75%		
	3				0.0ppm	
	4					
	5		stiff @ 5ft bgs		0.0ppm	
	6		0-6 ft	~75%		
		CL	Very soft clay, gray 2.5Y 5/1.			DD30803-SB02 & DD30803-SB02-FD collected at 0800
	7				0.0ppm	
	8				0.0ppm	
	9					
	10				0.0ppm	

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/15/23	[signature] 3/16/23	DDMT-308-03

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-308-03
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES
5. NOTES		Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	11		Increase in gravel content. Clay with ~25% small semi-angular gravels	95%	0.0 ppm	
	12					
	13		Clay becomes stiff ~13 ft. Gravel ~10%.		0.0 ppm	
	14		Brown mottling ~14.5 ft bgs			DD30803-SB03 collected at 0805
	15		6-15 ft End of boring		0.0 ppm	
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/15/23	[signature] 3/16/23	DDMT-308-03

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-873-ØZ
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 1 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. LOCATION: Memphis, TN	
5. NAME OF DRILLER: Ryan Post	6. MAKE/MODEL OF DRILL: Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: 1 inch HDPE sleeve	8. BOREHOLE LOCATION: B873/865 AOPI	
	9. DRILL DATE/TIME STARTED: 3/18/23 Ø855	COMPLETED: Ø917
	10. DEPTH GROUNDWATER ENCOUNTERED: N/A	
11. OVERBURDEN THICKNESS: N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION: N/A	
13. DEPTH DRILLED INTO BEDROCK: N/A	14. CHEMICAL SAMPLES VIA T-PFAS-W136459 (PFASs in Solids): 2 samples, 1 Duplicate	
15. TOTAL DEPTH OF BOREHOLE: 15 ft bgs		

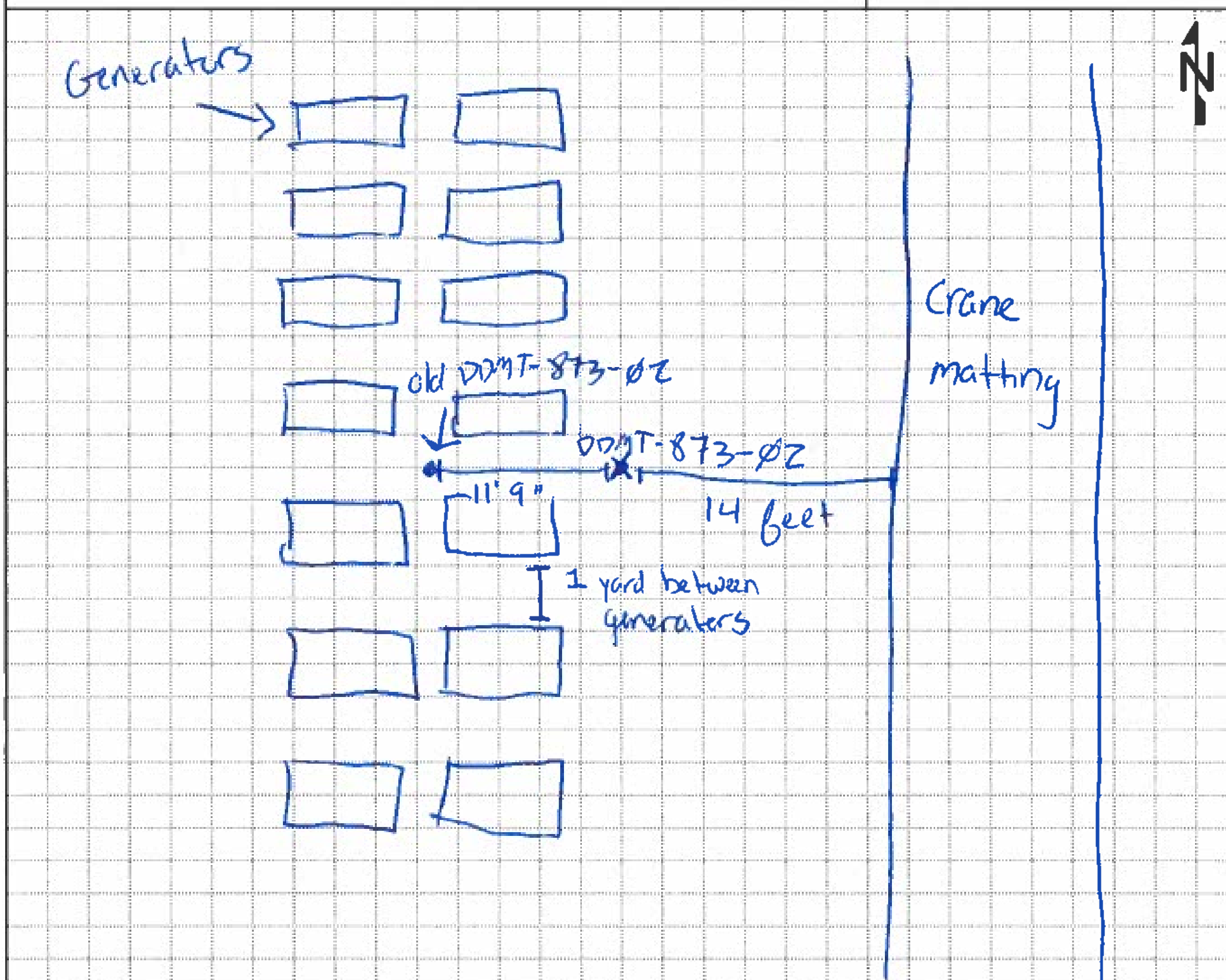
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES: BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS old location was inaccessible **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Shumer 3-18-23	DDMT-873-ØZ

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-873-02
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES

5. NOTES N/A — Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	0–1	ML	Silty clay, cohesive, yellowish brown 10YR 5/4, Hand augered material	Hand auger	0.0ppm	
	2				0.0ppm	
	3				0.0ppm	
	4				0.0ppm	
	5	CL	Stiff, dark gray 10YR 4/1, silty clay	75%	0.0ppm	Sample collected @0919 DD87302-SB02 & DD87302-SB02 FD EW 3/18/23
	7				0.0ppm	
	9		5-9 ft		0.0ppm	
	9–10		EW 3/18/23 Dark yellowish brown silty clay, medium stiff		0.0ppm	

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Sherman 3-18-23	DDMT-873-02

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-873-02
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 3 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE: ☑ VERTICAL ☐ INCLINED DEGREES	

5. NOTES: N/A

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	11					
	12			100%		
	13					Sample taken at 0925 DD87302-SB03
	14		soft at ~14.5 ft			
	15		9-15 ft			
			End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Shumu 3-18-23	DDMT-873-02

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-873-03
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 1 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. LOCATION: Memphis, TN	
5. NAME OF DRILLER: Ryan Post	6. MAKE/MODEL OF DRILL: Geoprobe 6610DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: 1 inch HDPE sleeve	8. BOREHOLE LOCATION: 873/865 AOPI	
	9. DRILL DATE/TIME: 3/18/23 STARTED: 0750 COMPLETED: 0815	
	10. DEPTH GROUNDWATER ENCOUNTERED: N/A	
11. OVERBURDEN THICKNESS: N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION: N/A	
13. DEPTH DRILLED INTO BEDROCK: N/A	14. CHEMICAL SAMPLES VIA T-PFAS-~~W1368-E8~~ [illegible] (PFASs in Solids): 2 samples, 1 MS, 1 MSD	
15. TOTAL DEPTH OF BOREHOLE: 15 ft bgs		

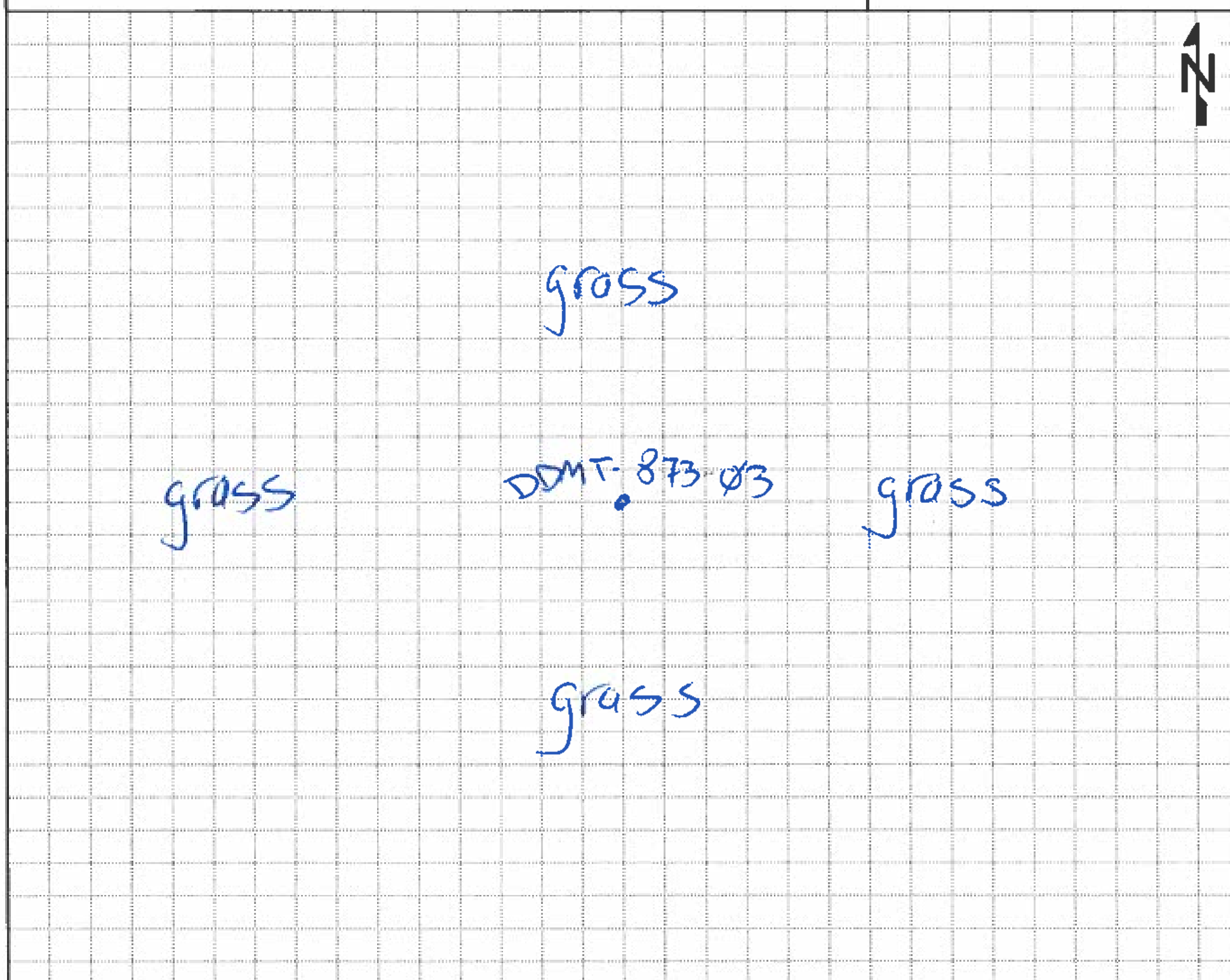
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES: BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE: [signature] 3/18/23	QA/QC SIGNATURE/DATE: Megan Shymanski 3-18-23	BOREHOLE NUMBER: DDMT-873-03

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-873-03
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES
5. NOTES N/A		Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	0–1		Dark yellowish brown, 10 YR 4/4, silty clay.			
	1		Material was hand augered from 0-5ft.	Hand auger	0.0 ppm	
	2					
	3	CL				
	4				0.0 ppm	
	5		- - - - - - - - - -	- - -	0.0 ppm	
	6		Very soft brown 10 YR 4/3 clay.			Sample taken at 0818 DD87303->B02
	7	CL		100%	0.0 ppm	
	8				0.0 ppm	
	9				0.0 ppm	
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Shumme 3-18-23	DDMT-~~5~~873-03 EW 3/18/23

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-873-03
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	11					
	12			90%		
	13					Sample taken at 0825
	14		Stiff ~14 ft bgs			DD87303-SB03 DD873~~03~~-SB03MS DD873~~03~~-SB03MSD EW 3/18/23
	15		5-15 ft End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Shumic 3-18-23	DDMT-873-03

EW 3/18/23

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-560-01
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 1 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. LOCATION Memphis, TN	
5. NAME OF DRILLER Ryan Post	6. MAKE/MODEL OF DRILL Geoprobe 1066 DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 1 inch HDPE sleeve	8. BOREHOLE LOCATION B 560	
	9. DRILL DATE/TIME 3/18/23 STARTED 1150 COMPLETED 1215	
	10. DEPTH GROUNDWATER ENCOUNTERED N/A	
11. OVERBURDEN THICKNESS N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION N/A	
13. DEPTH DRILLED INTO BEDROCK N/A	14. CHEMICAL SAMPLES VIA T-PFAS-W138459 (PFASs in Solids) 3 samples, 1 Duplicate	
15. TOTAL DEPTH OF BOREHOLE 15 ft bgs		

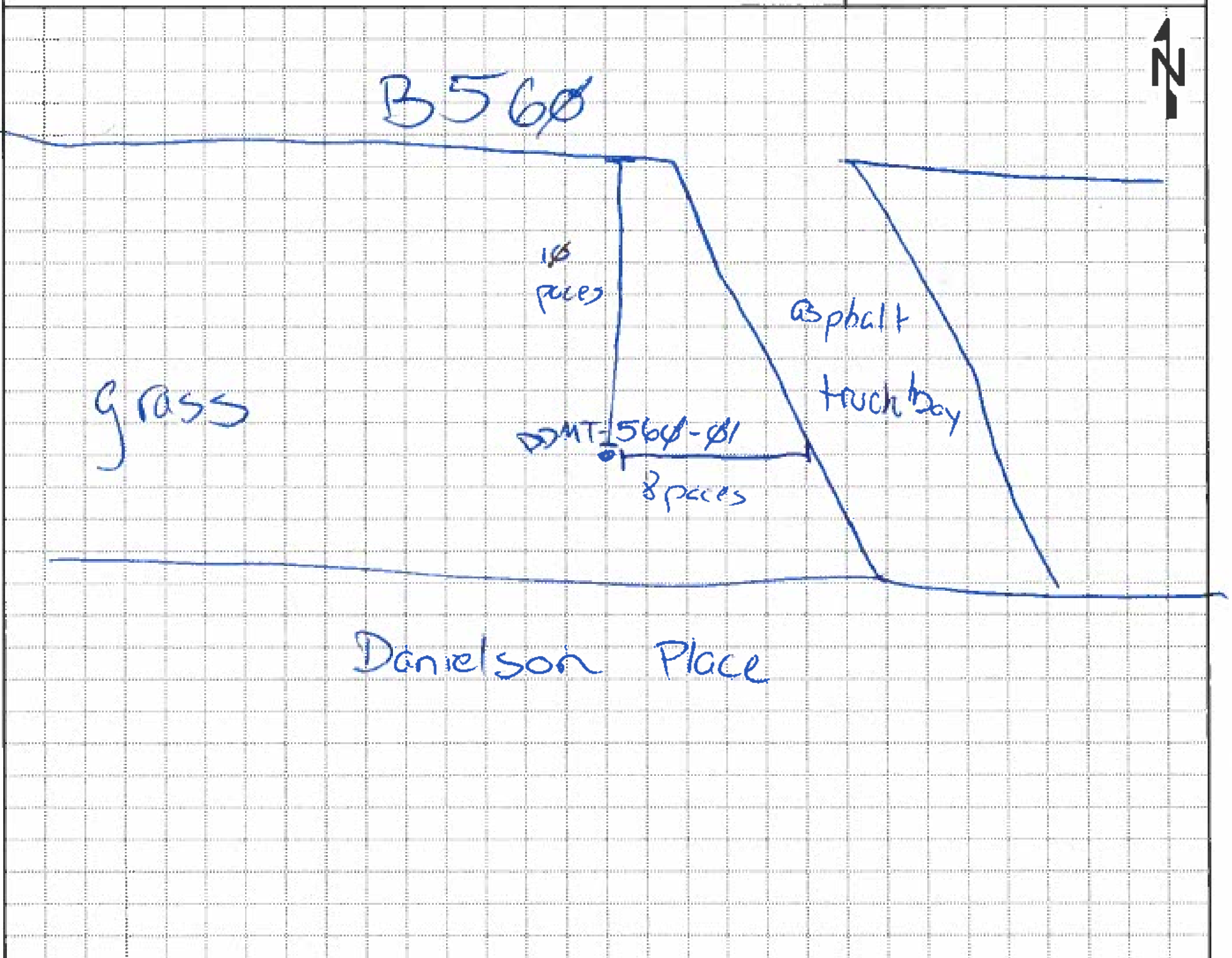
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Shurma 3-18-23	DDMT-560-01

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-560-01
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
		CL	Brown 10 YR 4/4 Silty clay. Stiff. 0-1 ft			Sample collected at 1210.
	1		Brown 10 YR 4/4 clayey sand. Medium to fine grained sand.		0.0ppm	DD56001-SS01 & DD560-SS01FD
	2	SC		65%	0.0ppm	
	3		1-3 ft Light gray poorly sorted medium grained sand. Loose. Subangular grains.		0 0ppm	
	4					
	5	SP		----	0.0ppm	
	6		Color change @ 6ft to gray 10 YR 5/1			Sample collected @1215
	7			50%	0.0ppm	DD56001-SB02
			3-7.5 ft Soft silty clay. Yellowish brown 10YR 5/8.			
	8				0.0ppm	
	9	CL			0.0ppn	
	10					

GEOLOGIST SIGNATURE/DATE [signature] 3/18/23	QA/QC SIGNATURE/DATE Megan Shimer 3-18-23	BOREHOLE NUMBER DDMT-560-01

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-560-01
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					0.0ppm	
	11					
	12			90%	0.0ppm	
	13		7.5 - 13 ft Stiff clay. Gray and brown. Slight black mottling 10YR6/1 gray, 10YR 5/4 brown Cohesive.		0.0ppm	Sample collected @ 1220 DD56001-0303
	14	CL			0.0ppm	
	15		13-15 ft End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Shumer 3-18-23	DDMT-560-01

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-550-03
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 1 OF 3

3. PROJECT BRAC PFAS PA/SI at DDMT	4. LOCATION Memphis, TN
5. NAME OF DRILLER Ryan Post	6. MAKE/MODEL OF DRILL Geoprobe 1066DT
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 1 inch HDPE sleeve	8. BOREHOLE LOCATION B550
	9. DRILL DATE/TIME STARTED: 3/17/23 0955 COMPLETED: 1012
	10. DEPTH GROUNDWATER ENCOUNTERED N/E
11. OVERBURDEN THICKNESS N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION N/A
13. DEPTH DRILLED INTO BEDROCK N/A	14. CHEMICAL SAMPLES VIA T-PFAS-W136459 (PFASs in Solids)
15. TOTAL DEPTH OF BOREHOLE 15 ft	3 Samples

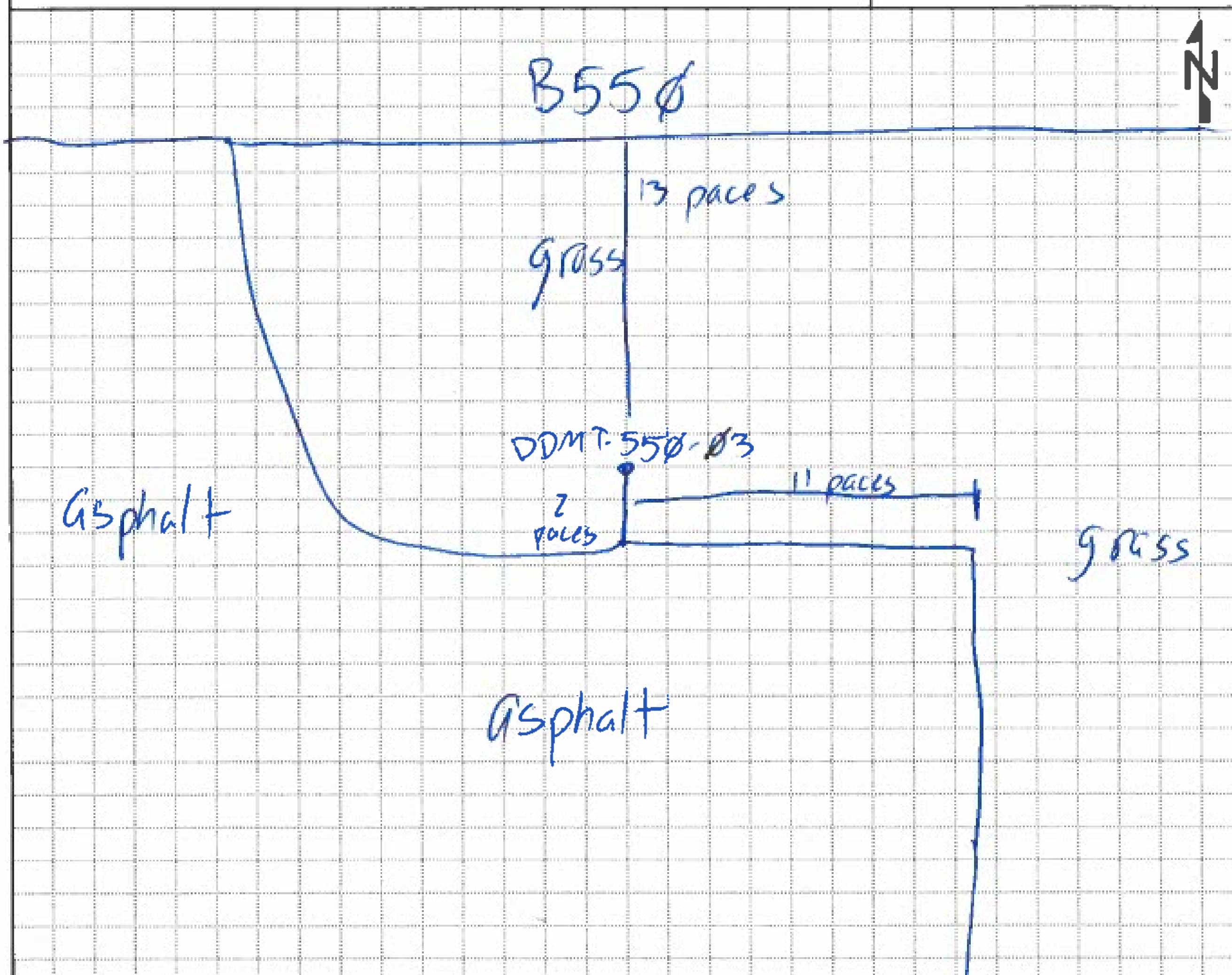
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/17/23	Megan Shyme	DDMT-550-03

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-55Ø-Ø3
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
		ML	cw 3/17/23 Dark yellowish brown ~~silty~~ clayey silt 10YR 4/4		Ø.Ø ppm	Sample taken @ 1Ø1Ø DD55Ø03-SSØ1
	1		0-1 ft			
	2	ML	Gray 1ØYR 5/1 sandy silt. very fine grained, rounded	60%	Ø.Ø ppm	
	3				Ø.Ø ppm	
	4		1-4 ft			
	5		Dark Gray 1Ø YR 4/1, soft silty clay.			Sample taken @ 1Ø15 DD55Ø03-SBØ2
	6	CL		90%	Ø.Ø ppm	
	7		4-7 ft			
	8		medium stiff yellowish brown 1Ø YR 5/4 clay		Ø.Ø ppm	
	9	CL				
	10				Ø.Ø ppm	

GEOLOGIST SIGNATURE/DATE [signature] 3/17/23	QA/QC SIGNATURE/DATE Megan Shumer	BOREHOLE NUMBER DDMT-55Ø-Ø3

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-55Ø-Ø3
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES
5. NOTES None		Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					Ø.Ø ppm	
	11					
					Ø.Ø ppm	
	12			1ØØ%		
	13				Ø.Ø ppm	Sample taken @ 1Ø25 DD55Ø-Ø3-SBØ3
	14					
	15		7-15 ft End of boring		Ø.Ø ppm	
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/17/23	Megan Shumes	DDMT-55Ø-Ø3

HTRW DRILLING LOG

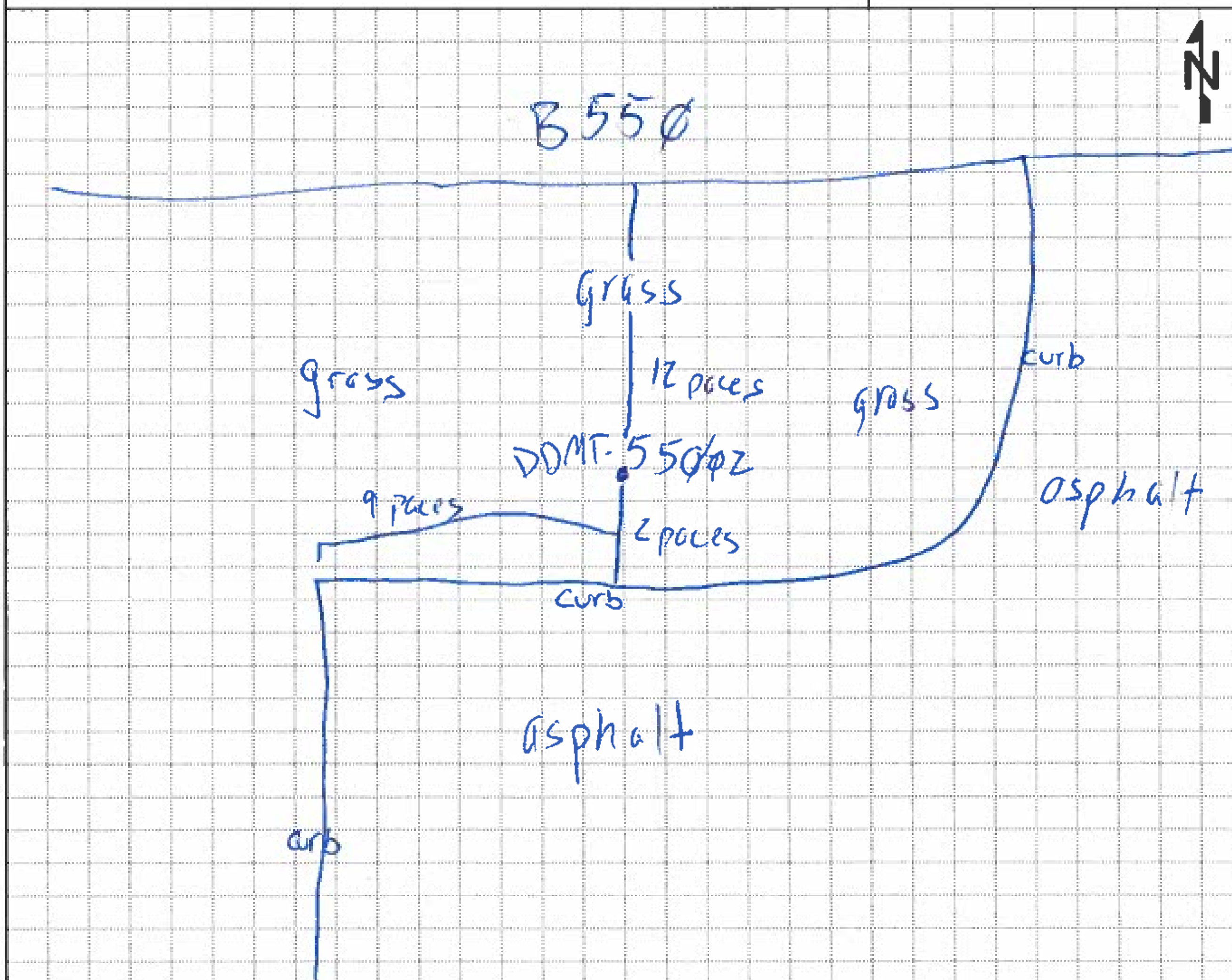
HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-55Ø-ØZ
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 1 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. LOCATION: Memphis, TN	
5. NAME OF DRILLER: Ryan Post	6. MAKE/MODEL OF DRILL: Geoprobe 1066 DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: 1 inch HDPE sleeve	8. BOREHOLE LOCATION: B55Ø AOPI	
	9. DRILL DATE/TIME: 3/16/23	STARTED: 1611 / COMPLETED: 162Ø
	10. DEPTH GROUNDWATER ENCOUNTERED: N/A	
11. OVERBURDEN THICKNESS: N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION: N/A	
13. DEPTH DRILLED INTO BEDROCK: N/A	14. CHEMICAL SAMPLES VIA T-PFAS-W138459 (PFASs in Solids): 3 samples, 1 MS, 1 MSD	
15. TOTAL DEPTH OF BOREHOLE: 15 ft bgs		

16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT | BENTONITE | TEMPORARY WELL POINT | MONITORING WELL

17. NOTES: BKG: ≤ Background | BGS: Below Ground Surface | PPM: Parts per Million | ▽ : First Water Encountered | ▼ : Static Water Level | NA: Not Applicable

LOCATION SKETCH/COMMENTS | **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
3/16/23 [signature]	[signature]	DDMT-55Ø-ØXZ

EW 3/16/23

HTRW DRILLING LOG

DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-55Ø-Ø2	
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 2 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE: ☑ VERTICAL ☐ INCLINED	DEGREES
5. NOTES: None	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
			Stiff clay with coarse gravels, yellowish brown 10YR 5/4 Ø-1 ft		Ø.Ø ppm	Sample collected @1622 DD55ØØ2-SSØ1
	1	CL	Very soft brown, 10YR 4/3, clay. Cohesive.		Ø.Øppm	
	2			70%	Ø.Øppm	
	3					
	4				Ø.Øppm	
	5				Ø.Øppm	
	6				Ø.Øppm	Sample collected @ 1632, DD55ØØ2-SBØ2 DD55ØØ2-SBØ2MS DD55ØØ2-SBØ2MSD
	7		medium stiff @ 7 ft bgs	100%	Ø.Øppm	
	8				Ø.Øppm	
	9					
	10					

GEOLOGIST SIGNATURE/DATE: [signature] 3/16/23

QA/QC SIGNATURE/DATE: Megan Shumm

BOREHOLE NUMBER: DDMT-55Ø-Ø2

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-55Ø-Ø2
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES

5. NOTES: None

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					Ø.Ø ppm	
	11					
	12				Ø.Ø ppm	
			1-12.5 ft Clayey silt, stiff, vf grained, yellowish brown 10YR 5/6	100%		
	13				Ø.Ø ppm	Sample collected @ 1642 DD55Ø02-SB05
	14					
			12.5-15 ft End of boring		Ø.Ø ppm	
	15					
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/16/23	Megan Shermer	DDMT-55Ø-Ø2

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-55Ø-Ø1
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 1 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. LOCATION Memphis TN	
5. NAME OF DRILLER Ryan Post	6. MAKE/MODEL OF DRILL Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT ~~X~~ 1 inch HDPE sleeves (AW 3/16/23)	8. BOREHOLE LOCATION B55Ø AOPI	
	9. DRILL DATE/TIME 3/16/23 STARTED: 1438 COMPLETED: 15Ø5	
	10. DEPTH GROUNDWATER ENCOUNTERED N/A	
11. OVERBURDEN THICKNESS N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION N/A	
13. DEPTH DRILLED INTO BEDROCK N/A	14. CHEMICAL SAMPLES VIA T-PFAS-W138459 (PFASs in Solids) 3 samples, 1 Duplicate	
15. TOTAL DEPTH OF BOREHOLE 15 ft bgs		

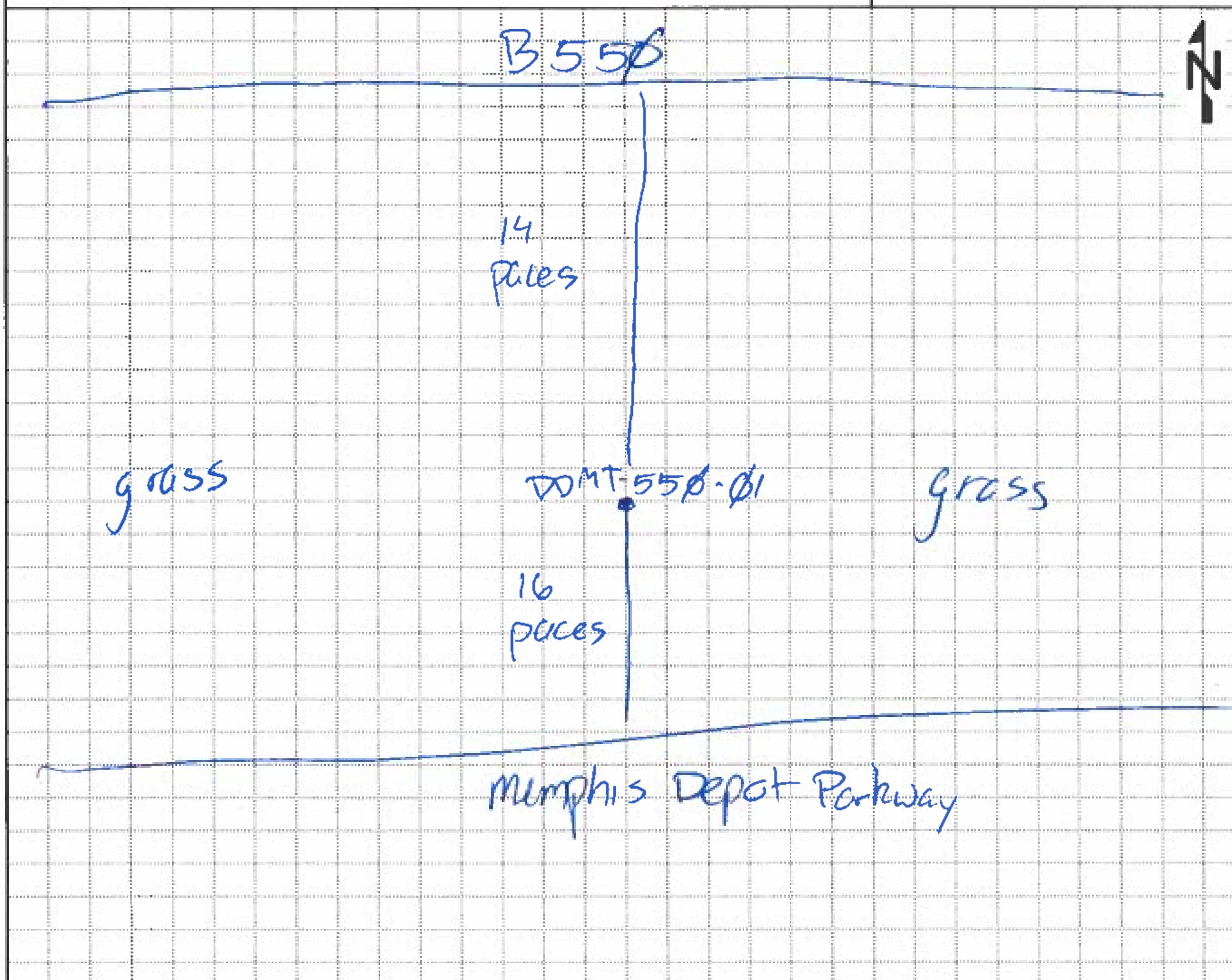
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS SCALE: None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
(signature)	Megan Shimmer	DDMT-55Ø-Ø1

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-55Ø-Ø1
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
			Not enough recovery to classify.			Sample collected from hand auger.
	1					
	2			~1%		Sample collected @ 15Ø7 DD55ØØ1-SSØ1 & DD55ØØ1-SSØ1FD
	3					
	4					
	5		Soft, yellowish brown 1Ø YR 5/4, silty clay.			
	6	CL		1ØØ%	Ø.Ø ppm	Sample collected @ 1456. DD55ØØ1-SBØ2
	7				Ø.Ø ppm	
	8					
	9				Ø.Ø ppm	
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/16/23	Megan Sherman	DDMT-55Ø-Ø1

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-550-01
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	11		stiff @ 11 ft bgs.		0.0ppm	
	12			100%		
	13				0.0ppm	Sample collected @ 1505 DD55001-SB03
	14		Increase in rounded small gravels to ~5% @ 13.5 ft bgs.			
	15		End of boring		0.0ppm	
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/16/23	Megan Shumie	DDMT-550-01

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-529-02
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 1 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. LOCATION: Memphis, TN	
5. NAME OF DRILLER: Ryan Post	6. MAKE/MODEL OF DRILL: Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: 1 inch HDPE sleeve	8. BOREHOLE LOCATION: B529 AOPI	
	9. DRILL DATE/TIME: 3/16/23 — STARTED: 0748	COMPLETED: 0843
	10. DEPTH GROUNDWATER ENCOUNTERED: N/A	
11. OVERBURDEN THICKNESS: N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION: N/A	
13. DEPTH DRILLED INTO BEDROCK: N/A	14. CHEMICAL SAMPLES VIA T-PFAS-WI36459 (PFASs in Solids): 2[illegible] Samples, 1 Duplicate EH 3/17/23	
15. TOTAL DEPTH OF BOREHOLE: 15 ft bgs		

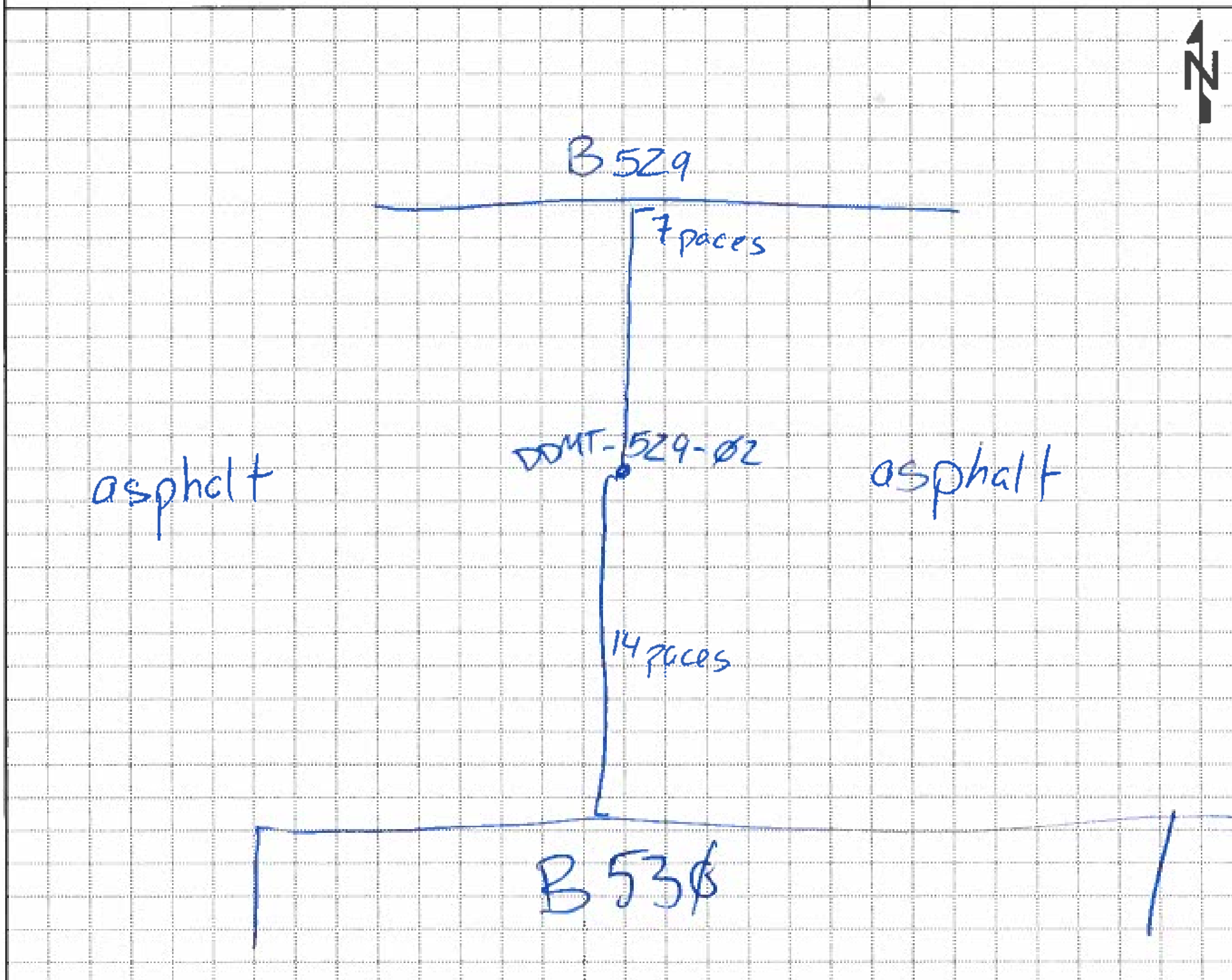
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT — BENTONITE — TEMPORARY WELL POINT — MONITORING WELL

17. NOTES: BKG: ≤ Background — BGS: Below Ground Surface — PPM: Parts per Million

▽ : First Water Encountered — ▼ : Static Water Level — NA: Not Applicable

LOCATION SKETCH/COMMENTS — **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[illegible] 3/16/23	[illegible]	DDMT-529-02

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-529-02
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 2 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE: ☑ VERTICAL ☐ INCLINED	DEGREES
5. NOTES: N/A		Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
			Asphalt ~0-6"			Hand auger from 0-5 ft bgs per EHS procedures.
	1		Silty sand with angular gravels, very fine grained sand. This material is from hand augering.			
	2			Hand Auger		
	3				0.0 ppm	
	4					
	5		Silty clay, soft, Brown 10YR 4/3.		0.0 ppm	
	6	CL				Sample collected DD52902-SB02 @ 0844
	7		Very soft ~7 ft bgs	100%	0.0 ppm	
	8				0.0 ppm	
	9					
	10				0.0 ppm	

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/16/23	Megan Shumm	DDMT-529-02

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-529-02
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES

5. NOTES N/A

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					0.0ppm	
	11		medium stiff ~11 ft bgs			
				100%	0.0ppm	
	12		increase in small gravels to ~5-10%			
	13				0.0ppm	Sample collected @0856. DD52902-SB03 and DD52902-SB03FD
	14					
					0.0ppm	
	15		End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE [signature] 3/16/23	QA/QC SIGNATURE/DATE Megan Shramm	BOREHOLE NUMBER DDMT-529-02

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT- 529-ØX3 EW 3/16/23
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 1 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. LOCATION Memphis, TN	
5. NAME OF DRILLER Ryan Post	6. MAKE/MODEL OF DRILL Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 1 inch HDPE sleeve	8. BOREHOLE LOCATION B529 AOPI	
	9. DRILL DATE/TIME STARTED: 3/16/23 0940 COMPLETED: 1005	
	10. DEPTH GROUNDWATER ENCOUNTERED N/A	
11. OVERBURDEN THICKNESS N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION N/A	
13. DEPTH DRILLED INTO BEDROCK N/A	14. CHEMICAL SAMPLES VIA T-PFAS-W136459 (PFASs in Solids) 2 samples	
15. TOTAL DEPTH OF BOREHOLE 15 ft bgs		

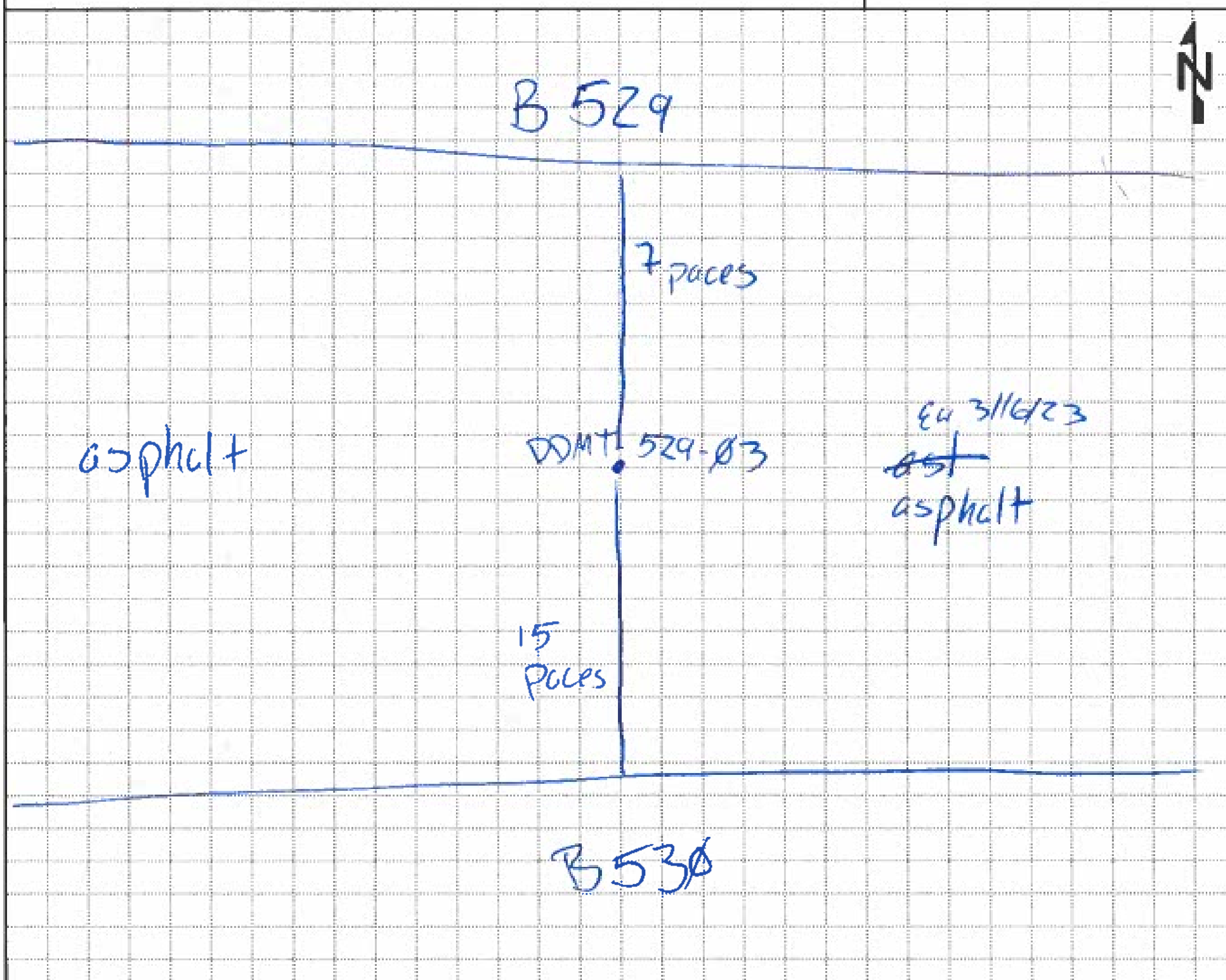
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/16/23	Megan Shimm	DDMT-529-ØX3

EW 3/16/23

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-529-Ø~~1~~3 EW 3/16/23
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
			Asphalt Ø-1 ft			Hand auger from post-asphalt to 5 ft bgs.
	1					
	2			Hand Auger		
	3					
	4					
	5		Silty clay, soft, brown 1ØYR 4/~~4~~ EW 3/16/23 3. Cohesive	1ØØ%	Ø.Øppm	
	6					Sample taken @ 1Ø1Ø. DD529Ø~~1~~3-SBØ2 EW 3/16/23
	7				Ø.Ø ppm	
	8				Ø.Ø ppm	
	9		Increase in gravel to ~5%. Rounded small gravels.			
	10				Ø.Øppm	

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/16/23	Megan Sherman	DDMT-529-Ø~~1~~3 3/16/23

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER EW 3/16/23 DDMT-529-013
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					0.0 ppm	
	11					
	12		very soft ~12 ft	100%	0.0 ppm	
	13					Sample taken @ 1016. DD529013SB03 EW 3/16/23
	14				0.0 ppm	
	15		End of boring		0.0 ppm	
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/16/23	Megan Shumm	DDMT-529-013

EW 3/16/23

HTRW DRILLING LOG

	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-560-02
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 1 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. LOCATION: Memphis, TN	
5. NAME OF DRILLER: Ryan Post	6. MAKE/MODEL OF DRILL: Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: 1 inch HDPE sleeve	8. BOREHOLE LOCATION: B560	
	9. DRILL DATE/TIME: 3/18/23 STARTED: 1352	COMPLETED: 1401
	10. DEPTH GROUNDWATER ENCOUNTERED: N/A	
11. OVERBURDEN THICKNESS: N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION: N/A	
13. DEPTH DRILLED INTO BEDROCK: N/A	14. CHEMICAL SAMPLES VIA T-PFAS-WI38459 (PFASs in Solids): 3 samples	
15. TOTAL DEPTH OF BOREHOLE: 15 ft bgs		

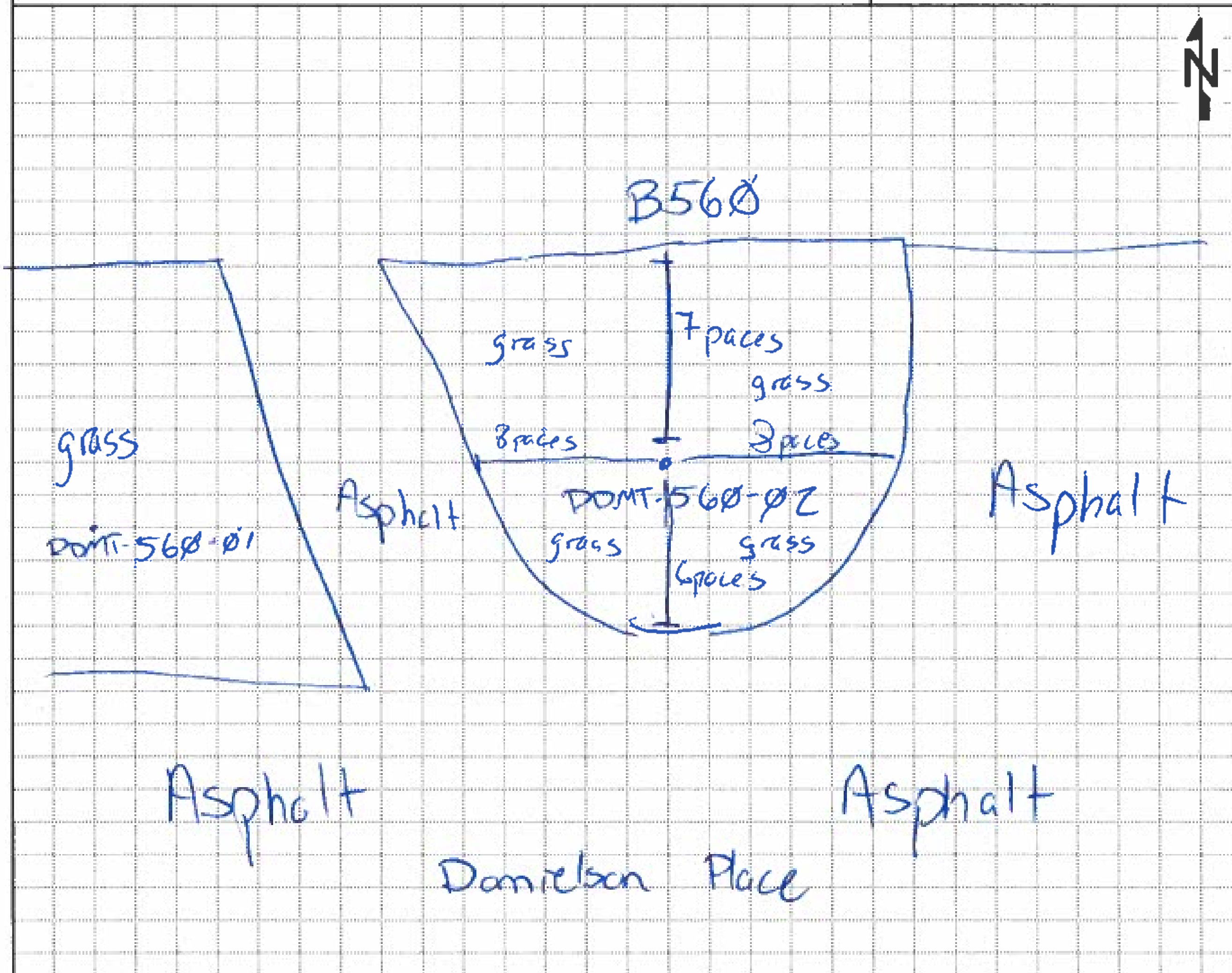
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES: BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Sherman 3-20-23	DDMT-560-02

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-560-02
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 2 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE: ☑ VERTICAL ☐ INCLINED	DEGREES

5. NOTES: N/A

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
		ML	Very stiff silty clay, Brown 7.5 YR 4/4 Trace small gravel.		0.0 ppm	
	1					
	2			75%	0.0 ppm	
	3				0.0 ppm	
	4		soft ~4.5 ft			
	5			-----	0.0 ppm	
	6		Increase in gravels to 5-10% ~5.5 ft		0.0 ppm	
	7		0-7 ft			
			medium stiff dark gray clay. 10 YR 4/1	80%		
	8	CL			0.0 ppm	
	9					
	10				0.0 ppm	

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Shumm 3-20-23	DDMT-560-02

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-560-02
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	

5. NOTES N/A

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	11				0.0 ppm	
	12					
	13		7-13 ft	90%	0.0 ppm	
	14	CL	Silty clay. Very dark gray 10 YR 3/1.			
	15		13-15 ft		0.0 ppm	
			End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/18/23	Megan Sherman 3-20-23	DDMT-560-02

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-560-03
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 1 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. LOCATION: Memphis, TN	
5. NAME OF DRILLER: Ryan Post	6. MAKE/MODEL OF DRILL: Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: 1 inch HDPE sleeve	8. BOREHOLE LOCATION: B560	
	9. DRILL DATE/TIME: 3/17/23 STARTED: 1547 COMPLETED: 1603	
	10. DEPTH GROUNDWATER ENCOUNTERED: N/A	
11. OVERBURDEN THICKNESS: N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION: N/A	
13. DEPTH DRILLED INTO BEDROCK: N/A	14. CHEMICAL SAMPLES VIA T-PFAS-W136459 (PFASs in Solids): 3 samples	
15. TOTAL DEPTH OF BOREHOLE: 15 ft bgs		

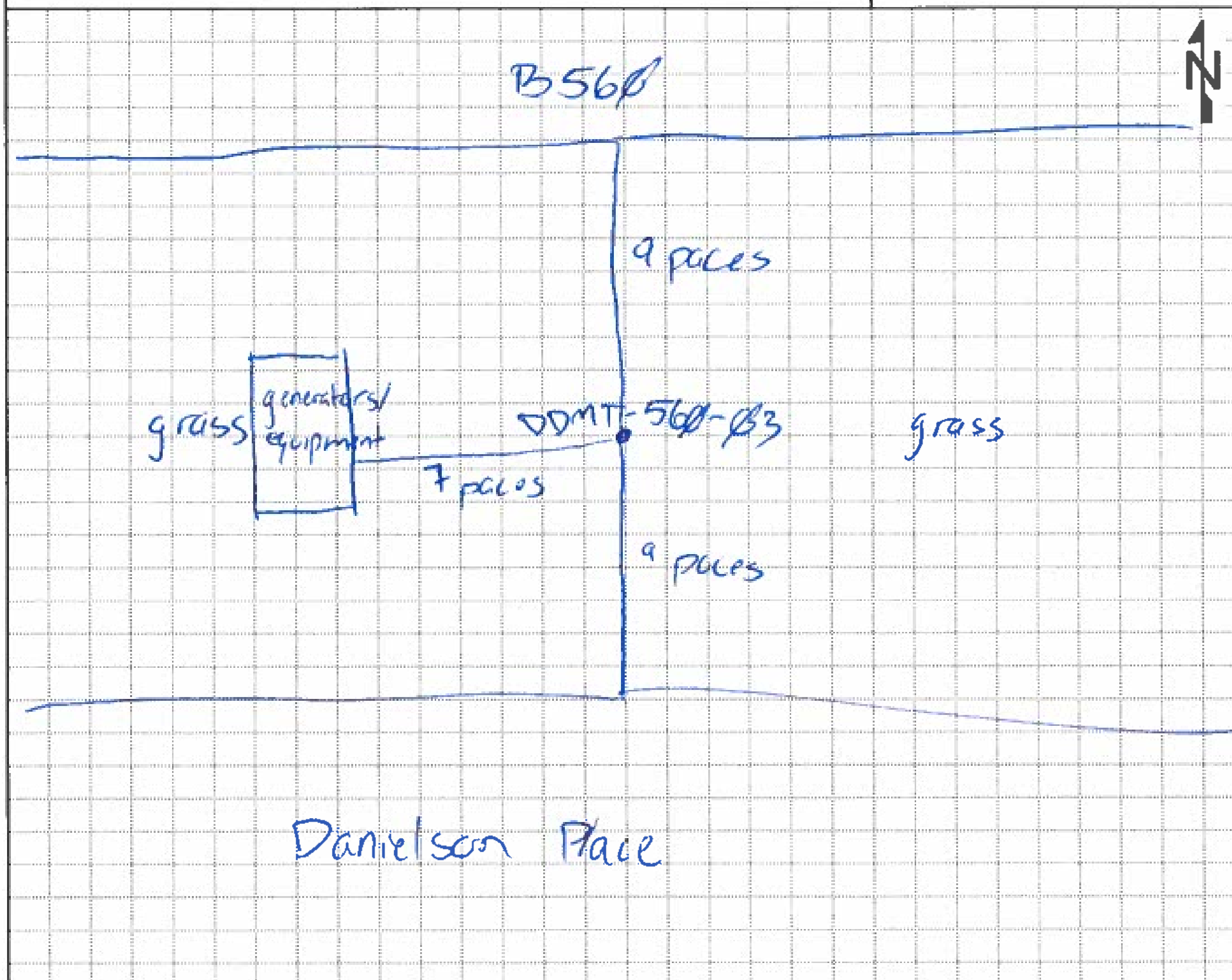
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES: BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/17/23	Megan Shuman 3-20-23	DDMT-560-03

HTRW DRILLING LOG

DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-56Ø-Ø3	
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 2 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE: ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES: N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	0–2	SC	Sandy clay, medium grained angular sand with trace gravel, Dark yellowish brown 10YR 3/6	60%	Ø.Ø%; Ø.Ø %	Sample collected @ 16Ø1 DD56ØØ3-SSØ1
	2–4		Ø-4 ft		Ø.Øppm; Ø.Øppm	
	4–4.5	SP	Poorly sorted medium grained sand 4-4.5 ft			
	4.5–10	CL	Stiff clay, Dark yellowish brown 10YR 4/4 Soft ~7ft bgs	100%	Ø.Øppm; Ø.Øppm; Ø.Øppm; Ø.Øppm	Sample collected at 16Ø9 DD56ØØ3-SBØ2

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/17/23	Megan Sharma 3-2Ø-23	DDMT-56Ø-Ø3

HTRW DRILLING LOG

DISTRICT	BOREHOLE NUMBER
USACE- Baltimore	DDMT-560-03

1. COMPANY NAME	2. DRILLING SUBCONTRACTOR	SHEET
Leidos	M&W Drilling	SHEET ~~2~~ 3 OF 3 (Ed 3/14/23)

3. PROJECT BRAC PFAS PA/SI at DDMT

4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES

5. NOTES N/A

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					0.0 ppm	
	11					
	12			100%	0.0 ppm	
	13				0.0 ppm	Sample collected @ 1615 DD56003-SB03
	14					
	15		4.5-15 ft End of boring		0.0 ppm	
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/17/23	Megan Shumer 3-20-23	DDMT-560-03

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-S18-01
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 1 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. LOCATION Memphis, TN	
5. NAME OF DRILLER Ryan Post	6. MAKE/MODEL OF DRILL Geoprobe 6610DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 1.8 in tooling, HDPE sleeves FV 3/15/23	8. BOREHOLE LOCATION Dunn Field 9. DRILL DATE/TIME STARTED: 3/14/23 0938 COMPLETED: 1020 10. DEPTH GROUNDWATER ENCOUNTERED N/A	
11. OVERBURDEN THICKNESS	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION	
13. DEPTH DRILLED INTO BEDROCK NA	14. CHEMICAL SAMPLES VIA T-PFAS-WI36459 (PFASs in Solids)	
15. TOTAL DEPTH OF BOREHOLE 15 ft		

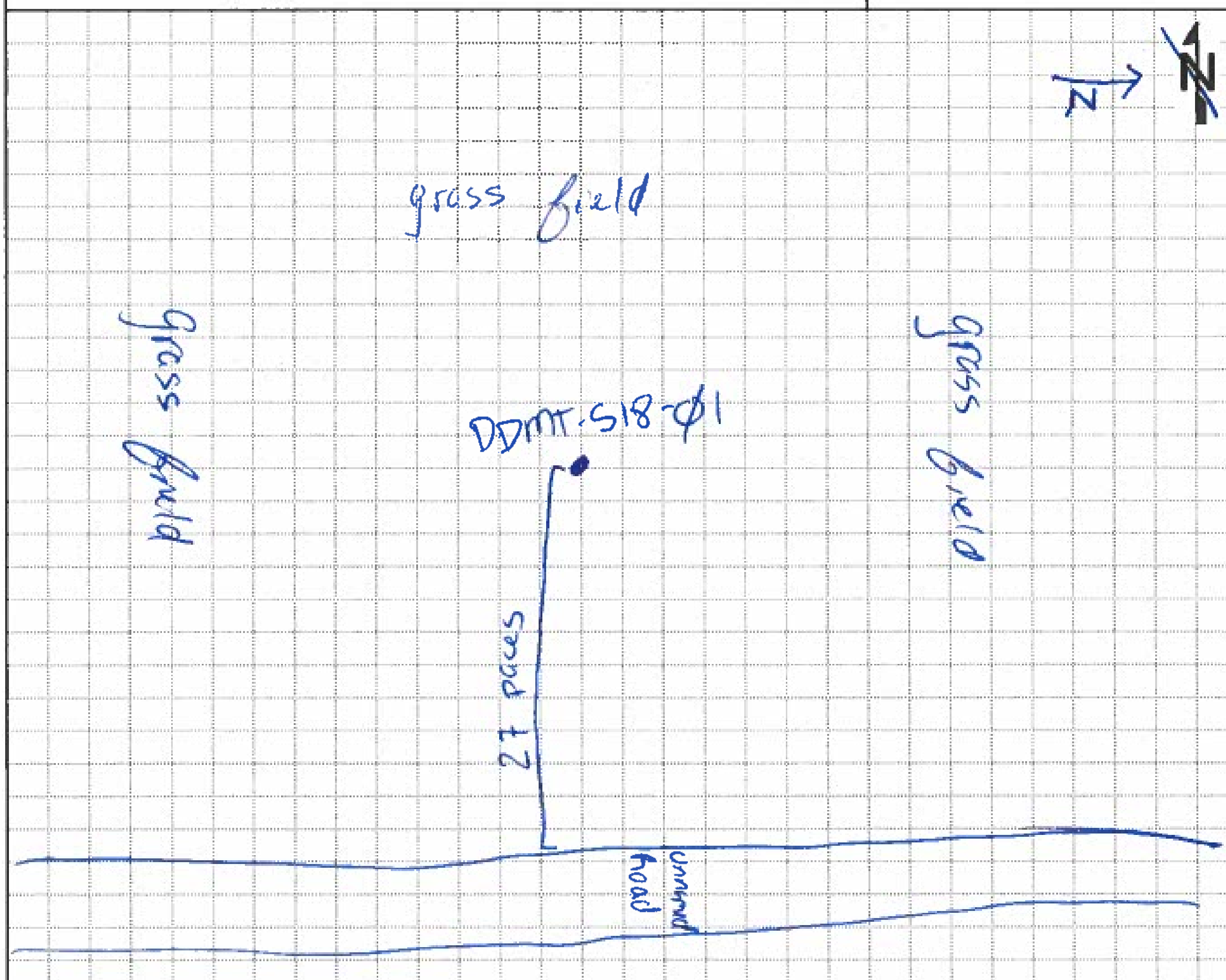
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE [signature] 3/14/23	QA/QC SIGNATURE/DATE [signature] 3/14/23	BOREHOLE NUMBER DDMT-S18-01

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT- S18-Ø1
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES

5. NOTES — Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	0–5 (1, 2, 3, 4, 5)	ML		No recovery Ø-5. Could be cave in from hand augering	0.0 ppm	Attempt 2 of 0-5, moved adjacent to initial point and still only recovered from 3.5-5 ft bgs. Sample DDS18Ø1-SSØ1 detailed in activity log.
	5–10 (6, 7, 8, 9, 10)		Clayey silt, 1ØYR 3/4, fine interspersed gravels, very stiff. Dark yellowish brown. Gravels are angular.	From 5-1Ø only recovered bottom 2.5 ft. Øppm → Øppm →		Sample ID: DDS18Ø1-SBØ2

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/14/23	[signature] 3/14/23	DDMT-S18-Ø1

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-S18-01
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	

5. NOTES Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
			3.5 - 11ft	From 10-15,		
	11	SC	Sandy clay, soft, vf sand 2.5Y 4/1 11-11.5 ft	full recovery	0ppm	
	12		Medium stiff clayey silt, 2.5Y 4/1. Dark gray			
	13	ML	~13 ft clay becomes soft.		0ppm	
	14					Sample ID: PDS1801-SB-03
	15		11.5 - 15ft		0ppm	
			End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/14/23	[signature] 3/14/23	DDMT-S18-01

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-S18-02
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 1 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. LOCATION Memphis, TN	
5. NAME OF DRILLER Ryan Post	6. MAKE/MODEL OF DRILL Geoprobe 6610 DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 18-in HDPE sleeves @ 3/15/23	8. BOREHOLE LOCATION Dunn Field	
	9. DRILL DATE/TIME STARTED 3/14/23 1222	COMPLETED 1243
	10. DEPTH GROUNDWATER ENCOUNTERED	
11. OVERBURDEN THICKNESS	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION	
13. DEPTH DRILLED INTO BEDROCK	14. CHEMICAL SAMPLES VIA T-PFAS-WI36459 (PFASs in Solids)	
15. TOTAL DEPTH OF BOREHOLE 15 ft bgs		

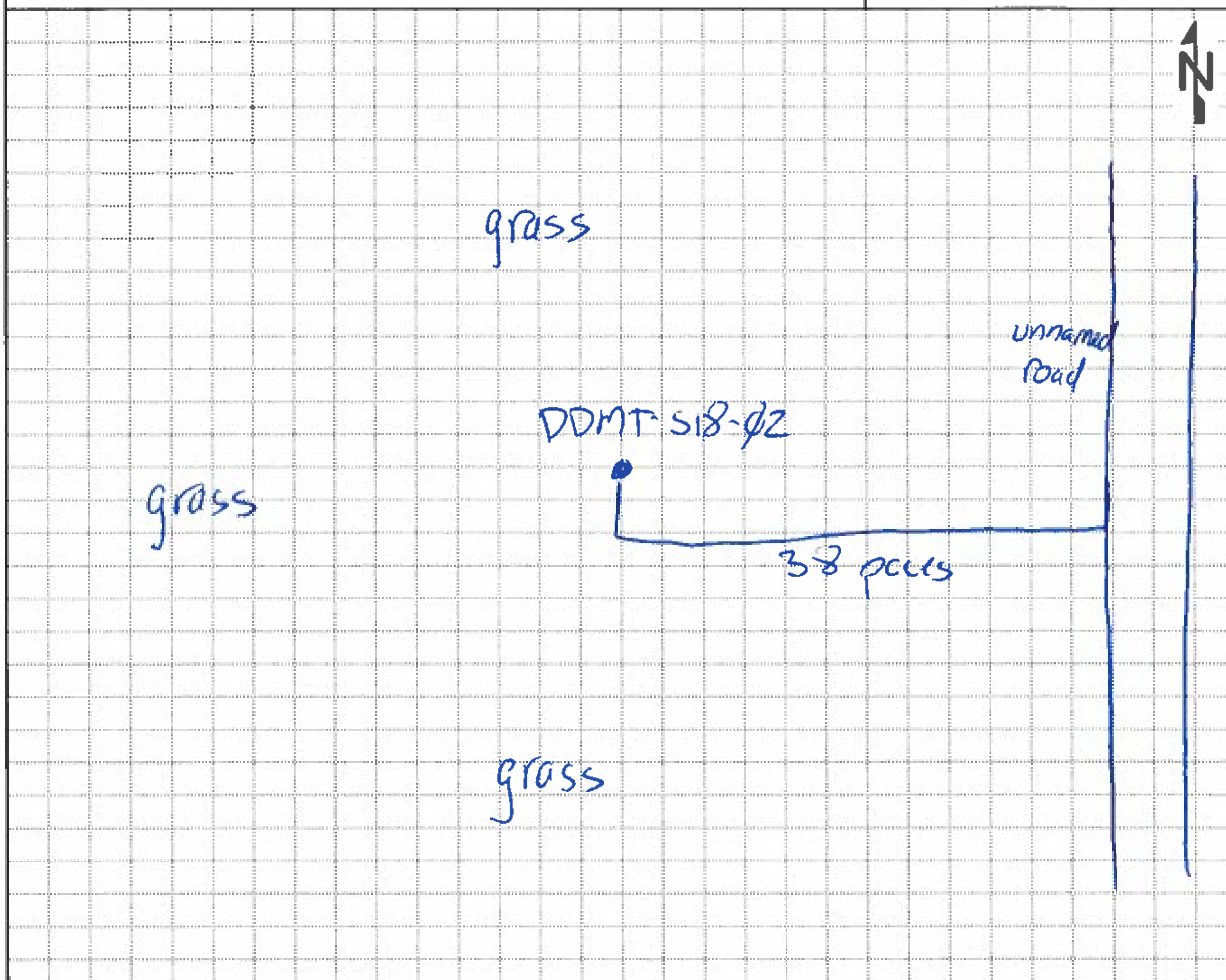
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE 3/14/23	QA/QC SIGNATURE/DATE 3/14/23	BOREHOLE NUMBER DDMT-S18-02

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-S18-Ø2
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
			Clayey silt, 10YR 3/6 dk yellowish brown, soft		Ø.Ø ppm	
	1	ML				DDS18Ø2-SSØ1 taken @1232
	2			1ØØ%	Ø.Ø ppm	
	3					
	4		medium stiff ~4 ft bgs		Ø.Ø ppm	
	5					
	6				Ø.Ø ppm	
	7		very soft ~7 ft bgs trace small angular gravel	1ØØ%	Ø.Ø ppm	DDS18Ø2-SBØ2 taken at 1237
	8					
	9				Ø.Ø ppm	
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/14/23	[signature] 3/14/23	DDMT-S18-Ø2

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-S18-Ø2
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED	DEGREES

5. NOTES

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					Ø.Øppm	
	11					
					Ø.Øppm	
	12					
			medium stiff @ 12.5 bgs			
	13			100%		
					Ø.Øppm	
	14					
						DDS18Ø2-SBØ3 taken @ 12-14'
	15				Ø.Øppm	
			End of boring			
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/14/23	[signature] 3/14/23	DDMT-S18-Ø2

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-S18-03
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 1 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. LOCATION Memphis, TN	
5. NAME OF DRILLER Ryan Post	6. MAKE/MODEL OF DRILL Geoprobe 6610DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT ~~1~~ 2-in diameter HDPE sleeve EW 3/15/23	8. BOREHOLE LOCATION Dunn Field	
	9. DRILL DATE/TIME 3/14/23 STARTED: 1339 COMPLETED: 1356	
	10. DEPTH GROUNDWATER ENCOUNTERED	
11. OVERBURDEN THICKNESS	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION	
13. DEPTH DRILLED INTO BEDROCK	14. CHEMICAL SAMPLES VIA T-PFAS-WI36459 (PFASs in Solids)	
15. TOTAL DEPTH OF BOREHOLE 15 ft bgs		

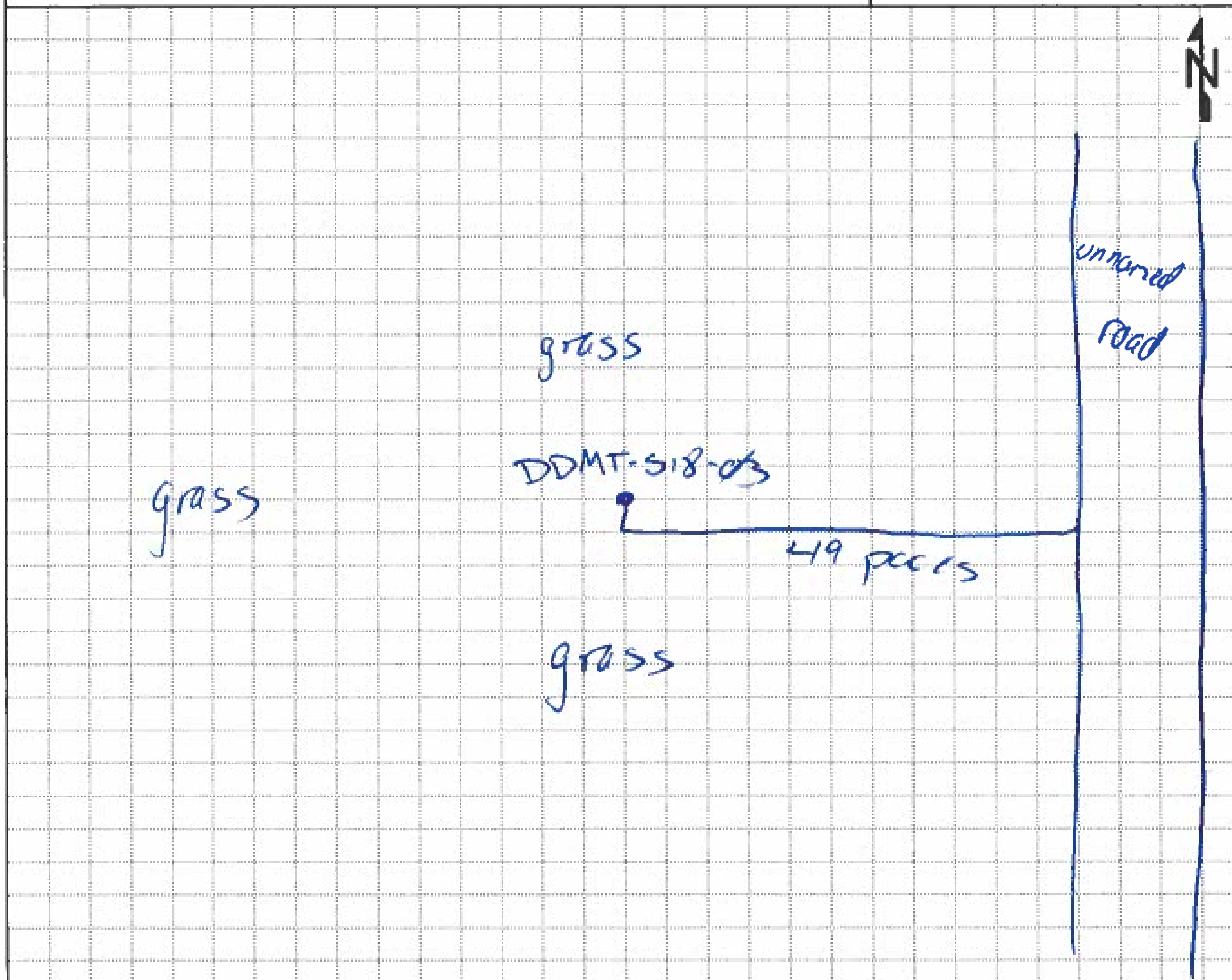
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽: First Water Encountered ▼: Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/14/23	[signature] 3/14/23	DDMT-S18-03

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: USACE- Baltimore	BOREHOLE NUMBER: DDMT-S18-03
1. COMPANY NAME: Leidos	2. DRILLING SUBCONTRACTOR: M&W Drilling	SHEET 2 OF 3
3. PROJECT: BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE: ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
	0		Soft clayey silt, dark yellowish brown 10YR 4/6 Pale brown mottling throughout - 10YR 6/3		0.0 ppm	DDS18-03-SS01 collected @ 1349
	1	ML		100%	0.0 ppm	
	2					
	3				0.0 ppm	
	4		medium stiff ~4.5 ft.		0.0 ppm	
	5				0.0 ppm	
	6		soft ~6 ft bgs		0.0 ppm	DDS18-03-SB02 collected @ 1355
	7			100%	0.0 ppm	
	8					
	9				0.0 ppm	
	10				0.0 ppm	

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
[signature] 3/14/23	[signature] 3/14/23	DDMT-S18-03

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-S18-Ø3
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					Ø.Ø ppm	
	11					
	12		medium stiff ~12 ft bgs	1ØØ%	Ø.Ø ppm	
	13					~~Sap~~ ew 3/14/23 Sample DDS18-Ø3-S(Ø)3 collected @ 14ØØ
					Ø.Ø ppm	
	14					
	15		Ø-15 ft End of boring	. . .	Ø.Ø ppm	
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE [signature] 3/14/23	QA/QC SIGNATURE/DATE [signature] 3/14/23	BOREHOLE NUMBER DDMT-S18-Ø3

leidos

Sediment / Surface Water Sampling Form		SHEET	1	OF	1
BRAC PFAS PA/SI at Facility Name: DDMT	1. Sample Team: H. Carter, M. Sherman, E. Weiss				
AOPI: 308 / Former DRMO					

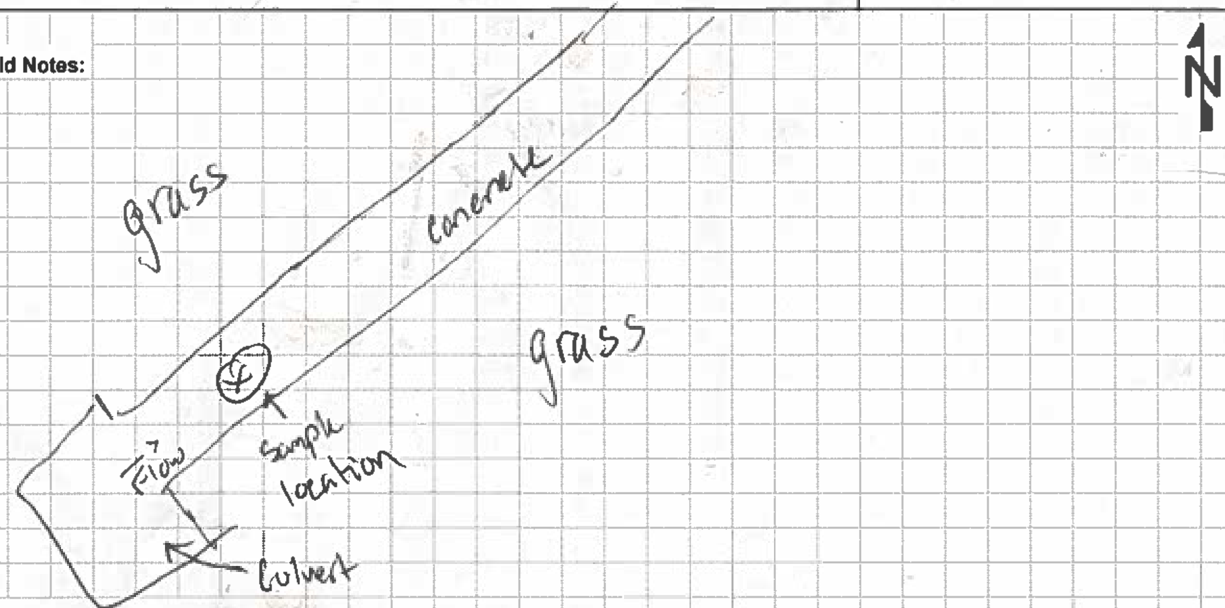
2. Location ID: DDMT-308-04	Northing: 299934.483282 / Easting: 773824.397773
3. Sample ID: DD30804-SW01	4. Date and Time: 3/17/23 0735
5. Dupe ID (if needed): N/A	6. Equipment Risate ID (if needed): N/A
7. Sediment Sample Equipment Used: N/A	8. MS/MSD: N/A
9. Weather Conditions: 40°F, cloudy, 10-15 mph NW rained last night	10. Activities in the Area: Trucks driving nearby, grass field, flowing water,

Field Observations (wet/dry sediment, depth of water, field conditions, water description, etc.) slightly turbid

MO 03/27/23

LOCATION SKETCH/COMMENTS **SCALE:** Not to scale

Field Notes:



Surface Water Quality Parameters:

Temp (°C): 10.75 DO(mg/L): 10.53 Eh (mV): 266 pH (SU): 10.75 spc (ms/cm): 0.153 NTU: 24.4

Sediment Description: N/A

MO 03/27/23

Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary?

MO 03/27/23

COC NO: DDMT-04 Laboratory: Pace

Recorded By: [signature] (Signature and Date) 3/23/23 QC Checked By: [signature] 03/27/23 (Signature and Date)

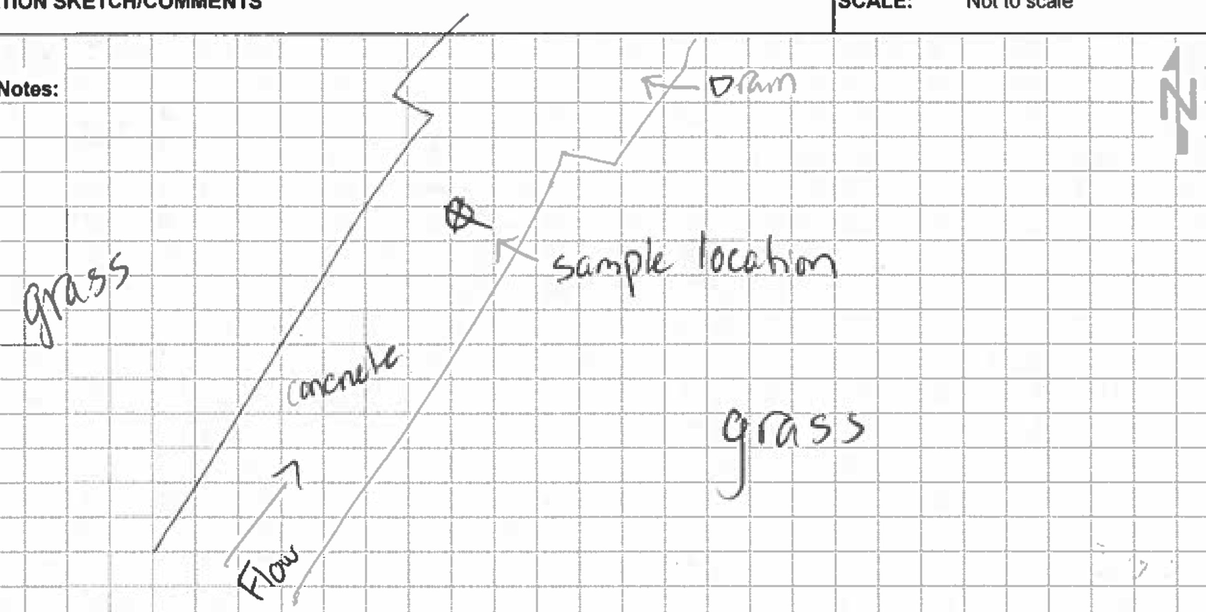
leidos	**Sediment / Surface Water Sampling Form**		SHEET	1	OF	1
	BRAC PFAS PA/SI at Facility Name: DDMT	1. Sample Team: H.Carter, M.Sherman, E.Weiss				
	AOPI: 308/ Former DRMO					

2. Location ID: DDMT-308-05	Northing: 300261.306198	Easting: 774299.65819
3. Sample ID: DD30805-SW01	4. Date and Time: 3/17/23 0724	
5. Dupe ID (if needed): N/A	6. Equipment Risate ID (if needed) N/A	
7. Sediment Sample Equipment Used: N/A		8. MS/MSD: N/A
9. Weather Conditions: 40°F, cloudy, 10-15 mph NW, rained last night	10. Activities in the Area: Tracks driving nearby, grass field	

Field Observations (wet/dry sediment, depth of water, field conditions, water description, etc.) The outfall is slightly backed up causing ~1.5 ft of standing water. Slightly turbid water

LOCATION SKETCH/COMMENTS **SCALE:** Not to scale

Field Notes:



Surface Water Quality Parameters: EW 3/17/23

Temp (°C): 9.45 DO(mg/L): ~~10.53~~ 10.98 Eh (mV): 235 pH (SU): 6.01 spc (ms/cm): 0.094 NTU: 21.8

Sediment Description: N/A

MO 03/22/23

Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary?

MO 03/22/23

COC NO: DDMT-04 Laboratory: Pace

Recorded By: [signature] 3/23/23 (Signature and Date) QC Checked By: [signature] 03/22/23 (Signature and Date)

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-873-01
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 1 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. LOCATION Memphis, TN	
5. NAME OF DRILLER Ryan Post	6. MAKE/MODEL OF DRILL Geoprobe 1066DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 1 inch HDPE sleeve	8. BOREHOLE LOCATION 873/865 AOPI	
	9. DRILL DATE/TIME STARTED: 3/18/23 1503	COMPLETED: 1510
	10. DEPTH GROUNDWATER ENCOUNTERED N/A	
11. OVERBURDEN THICKNESS N/A	12. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION N/A	
13. DEPTH DRILLED INTO BEDROCK N/A	14. CHEMICAL SAMPLES VIA T-PFAS-WI38459 (PFASs in Solids) 3 samples	
15. TOTAL DEPTH OF BOREHOLE 15 ft bgs		

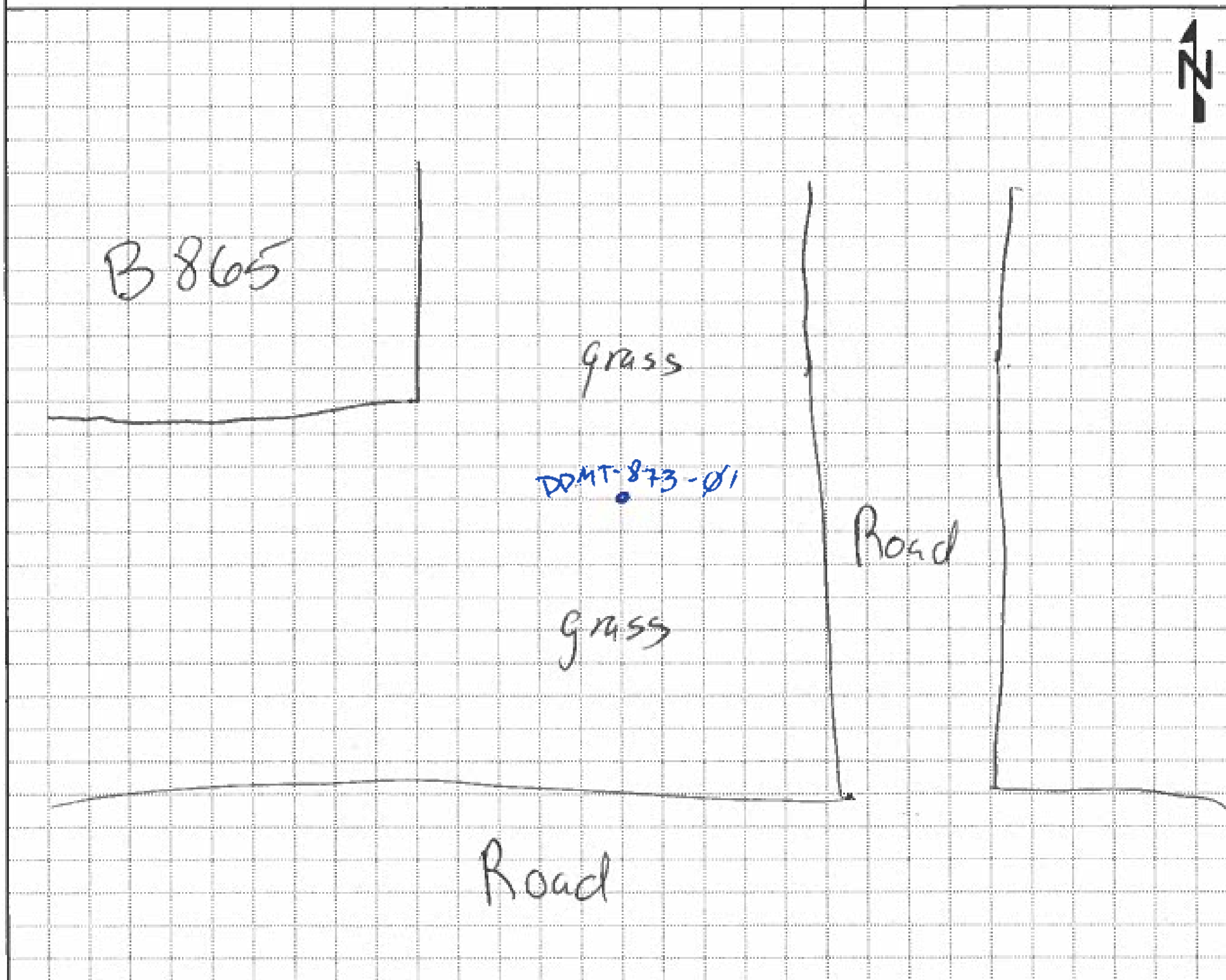
16. DISPOSITION OF BOREHOLE

BACKFILL TYPE: GROUT BENTONITE TEMPORARY WELL POINT MONITORING WELL

17. NOTES BKG: ≤ Background BGS: Below Ground Surface PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS **SCALE:** None



GEOLOGIST SIGNATURE/DATE 3/18/23	QA/QC SIGNATURE/DATE 03/22/23	BOREHOLE NUMBER DDMT-873-01

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-873-01
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET 2 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A	Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
			gravel fill			Sample collected @1500 from 0-1ft DD87301-SS01
	1		Silty clay. medium stiff. Brown 10YR 4/3 Hand augered material	Hand auger		
	2				0.0 ppm	
	3	ML				
	4					
	5				0.0 ppm	
	6		Increase in gravel to ~5%. Very stiff		0.0 ppm	Sample collected @ 1510 DD87301-SB02
	7			90%		
	8				0.0 ppm	
	9		0.5-9 ft		0.0 ppm	
	10	CL	Brittle clay. ~~Gray~~ 3/18/23 Dark gray 10YR 4/1 Stiff			

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
3/18/23	03/26/23	DDMT-873-01

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT USACE- Baltimore	BOREHOLE NUMBER DDMT-~~5~~ 873-Ø1
1. COMPANY NAME Leidos	2. DRILLING SUBCONTRACTOR M&W Drilling	SHEET ~~2~~ 3 OF 3
3. PROJECT BRAC PFAS PA/SI at DDMT	4. DIRECTION OF BOREHOLE ☑ VERTICAL ☐ INCLINED DEGREES	
5. NOTES N/A		Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	RECOVERY (ft)	MONITORING (PPM)	REMARKS (Sample IDs/Depths/Etc.)
					Ø.Øppm	
	11					
	12		Clay becomes medium stiff	1ØØ%	ØØppm	
	13				Ø.Øppm	Sample collected at 1515. DD87301-SBØ3
	14					
	15		9-15 ft End of boring		Ø.Øppm	
	6					
	7					
	8					
	9					
	10					

GEOLOGIST SIGNATURE/DATE	QA/QC SIGNATURE/DATE	BOREHOLE NUMBER
3/18/23	3/22/23	DDMT-873-Ø1

APPENDIX E

SAMPLING FORMS

,557 ,ɸɸ457

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-24 Date (mm/dd/yy): ɸ3/22/23 Page 1 of 2

Purge Start Time: ɸ953 End Time: 1ɸ3ɸ

Personnel: Mitchell DeZwAvi

Water Quality Meter: Horiba U-5ɸɸɸ Serial #: NN7VVH8ɸ Calibrated: ɸ3/22/23

Water Level Meter: Heron Dipper-T Serial #: 1FF2ɸ221ɸ6FR Calibrated: NA

Purge Method:
- ☐ Disposable Bailer
- ☒ Bladder Pump
- ☐ Other (specify) Peristaltic Pump

Depth To Water: 88.47 ft. from measuring point

Pump Placement 1ɸ5ft Total Depth Of Well: 112.3 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~_____~~ mL MD ɸ3/22/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
ɸ3/22/23	1ɸɸɸ	240 mL/min	17.6ɸ	7.82	28ɸ	5.76	ɸ.2ɸ6	35.2	1st WATER	88.47	
↓	1ɸɸ3	24ɸ mL/min	18.ɸɸ	6.23	274	5.74	ɸ.217	43.2	1.4L	88.47	
	1ɸɸ6	24ɸ mL/min	18.18	6.25	233	5.73	ɸ.225	29.2	2.1L	88.47	
	1ɸɸ9	24ɸ mL/min	18.17	6.15	221	5.73	ɸ.228	29.3	2.8L	88.47	
	1ɸ12	24ɸ mL/min	18.ɸ7	5.57	219	~~5.57~~ 5.74 MD ɸ3/22/23	ɸ.227	3ɸ.2	3.5L	88.47	
	1ɸ15	24ɸ mL/min	17.97	5.51	219	5.73	ɸ.231	29.9	4.2L	88.47	
	1ɸ18	24ɸ mL/min	18.ɸ2	5.45	22ɸ	5.75	ɸ.233	25.1	4.9L	88.47	MD ɸ3/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DDPER-MW24 Sample Date/ Time: ɸ3/22/23 1ɸ3ɸ Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Well was difficult to find and needed weeds scooped out MD ɸ3/22/23

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD ɸ3/22/23

Recorded By: [signature] ɸ3/22/23 (Signature and Date)

QA Checked By: [signature] 3/24/23 (Signature and Date)

CPM4 R11.5 D3.5

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leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-21 Date (mm/dd/yy): 03/22/23 Page 2 of 2

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/22/23	1021	240 mL/min	18.07	5.40	221	5.76	0.237	18.4	5.6L	88.47	
	1024	240 mL/min	18.04	5.48	220	5.76	0.239	17.6	6.3L	88.47	
	1027	240 mL/min	18.07	5.30	216	5.76	0.241	12.7	2.0L	88.47	
											MD 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Recorded By: [signature] 03/22/23
(Signature and Date)

QA Checked By: [signature] 3/22/23
(Signature and Date)

leidos **BRAC PFAS PA/SI at DDMT Low Flow GWS Form**

Well ID Number: MW-28 Date (mm/dd/yy): 03/20/23

Purge Start Time: 0835 End Time: 0903

Personnel E. Weiss, M. Sherman

Water Quality Meter: Horiba U-5000 Serial #: U169897X Calibrated: 3-20-23

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3-8-23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 52.35 ft. from measuring point

Total Depth Of Well: 69.30 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ________mL

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
	0835		13.08	2.88	285	5.94	0.336	53.8		52.35	
	0840	1.5L	15.39	2.49	286	5.76	0.267	57.0		~~57.0~~ MS 3-20-23 52.35	
	0845		15.81	2.76	283	5.78	0.254	58.9		52.35	
	0850		16.0	2.89	283	5.79	0.249	45.6	MS 3-20-23	~~45.6~~ 52.36	
	0855		16.31	~~2.248~~ 2.94 MS 3-20-23	281	5.79	0.248	41.1		52.36	
	0900		16.41	3.02	282	5.80	0.247	40.0	6 L	52.36	
	~~0905~~										MS 3-20-23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DDPER-MW-28 Sample Date/ Time: 3-20-23 / 0905 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 29°F, sunny, light wind Flow Rate: 300 mL/min

Collected MS/MSD

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 3/27/23

Recorded By: Mayan Sherman 3-20-23 (Signature and Date)

QA Checked By: [signature] 3/20/23 (Signature and Date)

leidos	BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW52 Date (mm/dd/yy): 03/22/23 Page 1 of ~~1~~ 2

Purge Start Time: 1402 End Time: 1444

Personnel: Mitchell DeBotta

Purge Method:

Water Quality Meter: Horiba U-5000 Serial #: NN7VVH80 Calibrated: 03/22/23

☐ Disposable Bailer ☒ Bladder Pump

Water Level Meter: Heron Dipper-T Serial #: IFF2022106FR Calibrated: NA

☐ Other (specify) Peristaltic Pump

Depth To Water: 66.02 ft. from measuring point

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation
1/4" OD= 9.46 3/8" OD= 21.576

Pump Placement 99 ft

Total Depth Of Well: 104 ft. from measuring point

Well Diameter: 2 inches

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ____ mL MD 03/22/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/22/23	1411	80 mL/min	20.07	3.43	228	5.82	0.634	16.6	1.37 water	~~64.10~~	66.10
↓	1414	100 mL/min	19.80	1.08	214	5.80	0.650	9.69	0.5 L	~~64.05~~	66.05
	1417	100 mL/min	20.90	0.96	206	5.80	0.655	9.93	0.8 L	~~64.05~~	↓
	1420	100 mL/min	20.06	0.67	198	5.79	0.663	11.7	1.1 L	~~64.05~~	
	1423	100 mL/min	20.00	0.74	196	5.78	0.669	10.45	1.4 L	~~64.05~~	
	1426	100 mL/min	20.06	1.68	197	5.82	0.683	10.40	1.7 L	~~64.05~~	
↓	1429	100 mL/min	20.13	1.97	199	5.83	0.690	10.02	2 L	~~64.05~~	MO 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

MD 03/22/23

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DDPFR-MW52 Sample Date/ Time: 03/22/23 1444 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Well was very difficult to find due to recently mowed grass
MD 03/22/23

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/22/23

Recorded By: [signature] 03/22/23 (Signature and Date)

QA Checked By: [signature] 3/22/23 (Signature and Date)

CPM1 R50 0810

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leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-52 Date (mm/dd/yy): 03/22/23 Page 2 of 2

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/22/23	1432	100 mL/min	20.11	2.36	203	5.84	0.697	12.9	2.3L	66.05	
↓	1435	100 mL/min	20.23	2.47	205	5.84	0.698	9.85	2.6L	66.05	
	1438	100 mL/min	20.18	2.51	208	5.84	0.704	10.00	2.9L	66.05	
	1441	100 mL/min	20.17	2.48	209	5.84	0.700	9.73	3.2L	66.05	
											MD 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Recorded By: [signature] 03/22/23 (Signature and Date)

QA Checked By: [signature] 3/22/23 (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-93 Date (mm/dd/yy): 03/22/23 Page 1 of 1

Purge Start Time: 0823 End Time: 0847

Personnel: Mitchell DeRosa

Purge Method:

Water Quality Meter: Horiba Serial #: NN7UUH80 Calibrated: 03/22/23

☐ Disposable Bailer ☒ Bladder Pump

Water Level Meter: Heron Dipper-T Serial #: 1FE2022166FR Calibrated: NA

☐ Other (specify) Peristaltic Pump

Pump placement 100 ft

Depth To Water: 83.76 ft. from measuring point

Total Depth Of Well: 107 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation:
(purged prior to stabilization commencing)

Tubing Volume Factor Calculation
1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = — mL MD 03/22/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
0834	03/22/23	200 mL/min	17.28	8.59	298	5.73	0.184	8.83	1st WQ param	83.76	
03/22/23	0833	200 mL/min	17.60	7.19	292	5.68	0.175	8.70	0.4L	83.76	
	0836	200 mL/min	17.75	7.10	290	5.64	0.168	9.99	0.6L	83.76	
	0839	200 mL/min	17.77	6.73	289	5.64	0.166	5.47	0.8L	83.76	
	0842	200 mL/min	17.78	6.82	288	5.64	0.164	5.90	1L	83.76	
	0845	200 mL/min	17.78	6.60	288	5.64	0.163	4.51	1.2L	83.76	
											MD 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DDPER-MW93 Sample Date/ Time: 03/22/23 0847 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Soft ground MD 03/22/23

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/22/23

Recorded By: [signature] 03/22/23 (Signature and Date) QA Checked By: [signature] 3/22/23 (Signature and Date)

CPM4 R7.5 D7.5 60 psi

.0105 .407 100 105 105 99

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-102B Date (mm/dd/yy): 03/22/23 Page 1 of 1

Purge Start Time: 1610 End Time: 1633

Personnel: Mitchell DeRosta

Water Quality Meter: Horiba U-5000 Serial #: NN7VVH80 Calibrated: 03/22/23

Water Level Meter: Heron Dipper-T Serial #: IFF2022106FR Calibrated: NA

Purge Method:
- Disposable Bailer
- [X] Bladder Pump
- Other (specify) Peristaltic Pump

Pump Placement 130

Depth To Water: 95.41 ft. from measuring point

Total Depth Of Well: 140.5 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ____ mL MO 03/22/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/22/23	1619	200 mL/min	19.45	8.04	231	6.05	0.316	18.3	1 WATER	95.41	
	1622	100 mL/min	19.15	5.17	232	5.95	0.336	7.68	0.42	95.41	
	1625	100 mL/min	18.92	4.47	231	5.90	0.346	5.15	0.72	95.4	
	1628	100 mL/min	18.82	4.[illegible]	232	5.82	0.354	7.26	1L	95.41	
	1631	100 mL/min	18.79	4.09	233	5.87	0.349	9.29	1.32	95.41	
											MD 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: [X] Bladder Pump Disposable Bailer Other (specify) peristaltic pump

Sample ID: DDPER-MW102B Sample Date/ Time: 03/22/23 1633 Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: MD 03/22/23

Sampling Procedure Followed: [X] Yes No If no, why was deviation necessary: MD 03/23/23

Recorded By: [signature] (Signature and Date)

QA Checked By: [signature] 3/24/23 (Signature and Date)

CPMR R13 D13

leidos

BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-1Ø3 Date (mm/dd/yy): Ø3/2Ø/23

Purge Start Time: 1645 End Time: 1713

Personnel E. Weiss, M. Sherman

Water Quality Meter: Horiba U-5ØØØ Serial #: U69897X Calibrated: 3-2Ø-23

Water Level Meter: Heron Dipper-T Serial #: U112744X Calibrated: 3-8-23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 67.8Ø ft. from measuring point

Total Depth Of Well: 9Ø.ØØ ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ______ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3-2Ø-23	1645	625mL	17.78	2.Ø6	146	6.Ø5	Ø.7Ø9	37.8		67.8Ø	
	165Ø		17.82	Ø.71	152	5.97	Ø.734	32.2		67.8Ø	
	1655		17.83	Ø.43	154	5.96	Ø.738	26.7		67.78	
	17ØØ		17.77	Ø.32	155	5.94	Ø.736	24.5		67.79	
	17Ø5		17.65	Ø.29	158	5.94	Ø.734	23.4		67.77	
	171Ø		17.61	2.56*	16Ø	5.94	Ø.732	21.2	3.125L	67.79	
	1715										MD Ø3/27/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD3Ø8-MW-1Ø3 Sample Date/ Time: Ø3/2Ø/23 / 172Ø Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 53°F, Mostly cloudy, Some wind Flow Rate: 125mL/min

*FM believes this to be an outlier/oddity with Horiba. Will sample.

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD Ø3/27/23

Recorded By: Megan Sherman 3-2Ø-23 (Signature and Date)

QA Checked By: [signature] 3/24/23 (Signature and Date)

leidos **BRAC PFAS PA/SI at DDMT Low Flow GWS Form**

Well ID Number: MW-134 Date (mm/dd/yy): 03/19/23

Personnel E. Weiss, M. Sherman Purge Start Time: 1508 End Time: 1540

Water Quality Meter: Horiba U-5000 Serial #: U69897X Calibrated:

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 69.02 ft. from measuring point

Total Depth Of Well: 90.00 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ______mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3/19/23	1513		13.51	4.68	151	6.07	0.181	3.28		68.95	
	1518	500mL	14.21	2.08	115	6.02	0.199	1.38		68.95	
	1523		14.75	1.62	112	5.98	0.206	0.42		68.95	
	1528		15.16	1.49	117	5.94	0.210	0.38		MS 3-19-23 ~~0~~ 68.95	
	1533		15.43	1.45	119	5.97	0.208	0.08		68.95	
	1538		15.84	1.52	120	5.97	0.207	0.06	2.0L	68.95	
	~~1543~~										MO 03/27/23
	EW 3/19/23		±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DDS18-MW-134 Sample Date/ Time: 3/19/23 1545 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 41°F, Sunny

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MO 03/27/23

Recorded By: Megan Sherman 3-19-23 (Signature and Date)

QA Checked By: [signature] 3/19/23 (Signature and Date)

.00849

leidos BRAC PFAS PA/SI at Facility Name Low Flow GWS Form

Well ID Number: MW-197B
Date (mm/dd/yy): 03/23/23
Page 1 of 1

Personnel: Mitchell DeRonski
Purge Start Time: 0830 End Time: 0855

Water Quality Meter: Horiba U-5000 Serial #: NN7VVH80 Calibrated: 03/23/23
Water Level Meter: Heron Dipper-T Serial #: ISF 2022106FR Calibrated: NA

Purge Method:
- [ ] Disposable Bailer
- [x] Bladder Pump
- [ ] Other (specify) Peristaltic Pump

Pump Placement 100ft

Depth To Water: 78.90 ft. from measuring point
Total Depth Of Well: 108.8 ft. from measuring point
Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)
[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = —— mL MD 03/23/23

Tubing Volume Factor Calculation
1/4" OD= 9.46 3/8" OD= 21.576

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/23/23	0834	200 mL/min	18.40	5.00	288	5.99	0.321	5.68	1 water	78.90	
↓	0837	200 mL/min	18.47	2.50	278	6.11	0.296	7.56	1.2L	78.90	
	0840	200 mL/min	18.44	2.30	274	6.07	0.285	9.56	1.8L	78.90	
	0843	200 mL/min	18.53	2.15	271	6.09	0.285	10.02	2.4L	78.90	
	0846	200 mL/min	18.65	1.85	269	6.07	0.283	10.28	3.2L	78.90	
	0849	200 mL/min	18.69	1.78	266	6.07	0.279	8.57	3.8L	78.90	DO is erroneous MD
	0852	200 mL/min	18.79	1.79	263	6.07	0.278	7.35	4.4L	78.90	03/23/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: [x] Bladder Pump [ ] Disposable Bailer [ ] Other (specify) peristaltic pump

Sample ID: DD873-MW197B
Sample Date/ Time: 03/23/23 0855
Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Well was covered in mud/water MD 03/23/23

Sampling Procedure Followed: [ ] Yes [x] No MD 03/23/23 If no, why was deviation necessary: DO sensor on Horiba is inaccurate. Will wait for it to drop, but highly unlikely that every well drops to 0 on DO

Recorded By: [signature] 03/23/23 (Signature and Date)
QA Checked By: [signature] 3/23/23 (Signature and Date)

CPM4 R10 DB

600cc

leidos **BRAC PFAS PA/SI at DDMT Low Flow GWS Form**

Well ID Number: MW-204B   Date (mm/dd/yy): 03/23/23

Purge Start Time: 1204   End Time: 1221

Personnel: Mitchell DeBortoli / Hudson Carter

Water Quality Meter: Horiba U-5000   Serial #: NN7VVH80   Calibrated: 03/20/23

Water Level Meter: Heron Dipper-T   Serial #: 1FF2022106FR   Calibrated: NA

Purge Method:
- Disposable Bailer
- [X] Bladder Pump
- Other (specify) Peristaltic Pump

Pump Placement 100

Depth To Water: 80.10 ft. from measuring point

Total Depth Of Well: 109.9 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation:
(purged prior to stabilization commencing)

Tubing Volume Factor Calculation
1/4" OD= 9.46   3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ——— mL MD 03/23/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/23/23	1210	100 mL/min	21.41	6.04	220	6.64	0.240	10.35	1st water	80.13	
	1212	100 mL/min	21.15	5.28	216	6.81	0.238	9.88	0.62	80.12	
	1215	100 mL/min	21.05	5.53	213	6.87	0.236	7.04	0.92	80.12	MD 03/23/23
	1218	100 mL/min	20.75	5.48	210	6.88	0.236	8.60	1.22	80.12	Temp impacted by ambient
	1221	100 mL/min	20.63	5.45	210	6.86	0.236	8.42	1.52	80.12	
											MD 03/23/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: [X] Bladder Pump   Disposable Bailer   Other (specify) peristaltic pump

Sample ID: DD873-MW204B   Sample Date/ Time: 03/23/23 1222   Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: MD 03/23/23

Sampling Procedure Followed: [X] Yes   No   If no, why was deviation necessary: MD 03/23/23

Recorded By: [signature] 03/23/23 (Signature and Date)   QA Checked By: [signature] 3/27/23 (Signature and Date)

CPM4 RL005
60psi

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-2Ø5A Date (mm/dd/yy): Ø3/22/23

Personnel: E. Weiss, H. Carter Purge Start Time: 1452 End Time: 151Ø

Water Quality Meter: Horiba Serial #: U69897X Calibrated: 3/22/23

Water Level Meter: Heron Dipper T Serial #: V112744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 8Ø.17 ft. from measuring point

Total Depth Of Well: 156.3 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~—~~ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
Ø3/22	1457	Ø	2Ø.24	11.15	28Ø	6.36	Ø.25Ø	4.28	Ø	80.21	
	15ØØ	.6L	19.66	9.11	276	6.24	Ø.3Ø8	1.92	.6L	80.2Ø	
	15Ø3	.6L	19.57	8.67	27Ø	6.18	Ø.318	1.63	1.2L	80.15	
	15Ø6	.6L	19.42	8.3Ø	265	6.16	Ø.321	1.29	1.8L	80.15	
	15Ø9	.6L	19.31	7.87	264	6.24	Ø.322	1.31	2.4L	80.13	
							HC				MD Ø3/24/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD873-MW2Ø5A Sample Date/ Time: 3/22/23 1513 Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 2ØØ mL/min Dup taken

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD Ø3/22/23

Recorded By: [signature] 3/22/23 (Signature and Date)

QA Checked By: [signature] 3/22/23 (Signature and Date)

leidos BRAC PFAS PA/SI at Facility Name Low Flow GWS Form

Well ID Number: MW-205B Date (mm/dd/yy): 03/22/23 Page 1 of 1

Personnel E.Weiss, H.Carter Purge Start Time: 1546 End Time: 1608

Water Quality Meter: Horiba Serial #: U69897X Calibrated: 3/22/23

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3/8/23

Purge Method:
- ☐ Disposable Bailer
- ☒ Bladder Pump
- ☐ Other (specify) Peristaltic Pump

Depth To Water: 79.79 ft. from measuring point

Total Depth Of Well: 112.3 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~NA~~ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume (L) Removed	Water Level (ft btoc)	Comments
03/22	1552	0	19.55	3.97	265	6.19	0.304	4.50	79.79	0	
	1555	.3L	19.34	1.64	269	6.12	0.306	5.13	79.79	.3L	
	1558	.3L	19.11	1.44	262	6.23	0.306	8.29		.6L	
	1601	.3L	19.17	1.37	259	6.20	0.306	8.81		.9L	
	1604	.3L	19.23	1.33	253	6.21	0.306	8.31		1.2L	
	1607	.3L	19.20	1.34	255	6.21	0.306	7.68		1.5L	MD 03/27/23
						1/2					
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DO873-MW205B Sample Date/ Time: 3/22/23 1610 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: ms/msD taken

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/27/23

Recorded By: [signature] 3/22/23 (Signature and Date) QA Checked By: [signature] 3/22/23 (Signature and Date)

leidos **BRAC PFAS PA/SI at Facility Name Low Flow GWS Form**

Well ID Number: MW-210A Date (mm/dd/yy): 03/23/23

Purge Start Time: 0911 End Time: 0932

Personnel E. Weiss H. Carter

Water Quality Meter: Horiba Serial #: U69897X Calibrated: 3/23/23

Water Level Meter: Heron DipperT Serial #: U112744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☑ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 82.25 ft. from measuring point

Total Depth Of Well: 192 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~[illegible]~~ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3/23/23	0915	0	18.64	8.96	290	6.58	0.230	6.84	0	82.21	
	0918	.2L	18.15	5.42	291	6.19	0.244	8.31		82.20	
	0921		18.01	5.10	289	6.11	0.253	11.60		82.20	
	0924		17.92	5.13	282	5.95	0.250	18.90		82.20	
	0927		17.86	5.10	279	6.13	0.249	18.97		82.20	
	0930		17.81	5.09	279	6.13	0.248	18.02		82.20	MD 03/24/23
									EW	3/23/23	
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☑ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD873-MW210A Sample Date/ Time: 3/23/23 0935 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

EW 3/23/23

Field Observations/Site Conditions During Purging: Pump at 185 ft.

MD 03/24/23

Sampling Procedure Followed: ☑ Yes ☐ No If no, why was deviation necessary:

Recorded By: [signature] 3/23/23 (Signature and Date) QA Checked By: [signature] 03/24/23 (Signature and Date)

leidos — **BRAC PFAS PA/SI at DDMT Low Flow GWS Form**

Well ID Number: MW-210B

Date (mm/dd/yy): 03/23/23

Personnel: Mitchell DeBoldi

Purge Start Time: 1022 End Time: 1050

Water Quality Meter: Horiba U-5000 Serial #: NN7VUH8P Calibrated: 03/23/23

Water Level Meter: Heron Dipper-T Serial #: 1SF2022106FR Calibrated: NA

Purge Method:
- ☐ Disposable Bailer
- ☒ Bladder Pump
- ☐ Other (specify) Peristaltic Pump

Depth To Water: 21.48 ft. from measuring point

Pump Placement ~~100~~ MD 03/23/23 101

Total Depth Of Well: 109.9 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation:
(purged prior to stabilization commencing)

Tubing Volume Factor Calculation
1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~mL~~ MD 03/23/23

Date	Time	Volume Removed	Temp (°C) ✓	Dissolved Oxygen (mg/L) ✓	Eh (mV) ✓	pH (Std.Units) ✓	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/23/23	~~0926~~ 1026	100 mL/min	20.18	2.84	242	6.42	0.242	10.64	1st water	22.10	
↓	~~0929~~ 1029	100 mL/min	20.50	6.19	248	6.27	0.224	9.80	0.6L	22.10	MD 03/23/23
	1032	100 mL/min	20.44	5.69	249	6.08	0.219	11.5	0.9L	22.10	DO is erroneous
	1035	100 mL/min	20.14	5.30	247	5.98	0.217	13.5	1.2L	22.10	MD 03/23/23
	1038	100 mL/min	20.16	5.15	212	5.95	0.215	12.4	1.5L	22.10	Temp changing w/ ambient + sun
	1041	100 mL/min	20.17	4.95	244	5.92	0.212	14.1	1.8L	22.10	
↓	1044	100 mL/min	20.16	4.72	241	5.91	0.211	14.5	2.1L	22.10	MD 03/23/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD0323-MW210B

Sample Date/ Time: 03/23/23 1050

Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Well covered in water, had to continuously scoop out water MD 03/23/23

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/23/23

Recorded By: [signature] 03/23/23
(Signature and Date)

QA Checked By: [signature] 3/23/23
(Signature and Date)

CPMH R10 D5

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-210B Date (mm/dd/yy): 03/23/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/23/23	1046	100 mL/min	20.18	4.09	236	5.89	0.210	14.0	2.42	77.10	
											MD 03/23/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Recorded By: [signature] 03/23/23
(Signature and Date)

QA Checked By: [signature] 3/23/23
(Signature and Date)

leidos BRAC PFAS PA/SI at Facility Name Low Flow GWS Form

Well ID Number: MW-214B Date (mm/dd/yy): 03/22/23

Personnel E. Weiss, H. Carter Purge Start Time: 1740 End Time: 1802

Water Quality Meter: Horiba Serial #: U69897X Calibrated: 3/22/23

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 89.20 ft. from measuring point

Total Depth Of Well: 116.6 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~[illegible]~~ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3/22/23	1748	0	21.93	6.73	282	5.94	0.281	2.66	0	89.97	
	1751	.3	20.84	8.06	275	5.74	0.284	1.16	.9L	89.97	
	1754	.3	20.51	7.74	272	5.73	0.284	1.23	1.8L	89.98	
	1757	.3	20.20	7.71	264	5.74	0.284	1.05	2.7L	89.97	
	1800	.3	20.19	7.63	271	5.75	0.285	1.01	3.6L	89.97	
					EW						MD 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD529-MW214B Sample Date/ Time: 3/22/23 1805 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: EW

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/27/23

Recorded By: [signature] 3/22/23 (Signature and Date) QA Checked By: [signature] (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-215A

Date (mm/dd/yy): Ø3/22/23

Page 1 of 1

Purge Start Time: Ø835 End Time: Ø938

Personnel E. Weiss, H. Carter

Purge Method:

Water Quality Meter: Horiba Serial #: U69897X Calibrated: 3/22/23

☐ Disposable Bailer ☒ Bladder Pump

Water Level Meter: Heron Dipper T Serial #: W12744X Calibrated: 3/8/23

☐ Other (specify) Peristaltic Pump

Depth To Water: 93.2 ft. from measuring point

Total Depth Of Well: ______ ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = EW mL

Tubing Volume Factor Calculation
1/4" OD= 9.46 3/8" OD= 21.576

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3/22/23	Ø925	Ø	14.89	6.Ø9	259	5.76	Ø.29Ø	8.33	~~93.2~~	~~?~~ EW 3/22/23	
3/22/23	Ø928	.3L	15.75	5.72	258	5.76	Ø.3Ø4	6.5Ø	.3L	93.2Ø	
	Ø931	.3L	16.61	5.9Ø	256	5.85	Ø.31Ø	~~5.46~~ EW 3/22/23	.6L	93.20	
	Ø934	.3L	16.54	5.88	257	5.85	Ø.31Ø	6.53	.9L	93.2Ø	
	Ø937	.3L	16.42	5.86	258	5.85	Ø.3Ø9	5.99	1.2L	93.2Ø	
						HC					MO 03/24/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD55Ø-MW215A

Sample Date/ Time: 3/22/23 Ø94Ø

Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Used CO_2. Had to change controller settings to get pumping.

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MO 03/24/23

Recorded By: [signature] 3/22/23 (Signature and Date)

QA Checked By: [signature] (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-21SB   Date (mm/dd/yy): 03/21/23   Page 1 of 1

Purge Start Time: 1320 End Time: 1510

Personnel: E Weiss H Carter

Water Quality Meter: Horiba U-5000   Serial #: UC9897X   Calibrated: 3/21/23

Water Level Meter: Heron Dipper-T   Serial #: U112744X   Calibrated: 03/08/23

Purge Method: ☐ Disposable Bailer ☑ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 93.22 ft. from measuring point

Total Depth Of Well: 120.40 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = NA mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/21	~~1448~~ 1448	0	14.83	8.21	265	6.08	0.241	33.6	0	93.25	
	1453	.6L	17.80	5.57	261	5.95	0.275	18.2	.6L	93.24	
	1458	.6L	18.24	4.96	261	5.98	0.279	15.7	1.2L	93.25	
	1503	.6L	18.36	4.83	260	5.97	0.279	13.0	1.8L	93.25	
	1508	.6L	18.50	4.79	261	5.97	0.279	11.58	2.4L	93.24	
	~~1513~~										MD 03/27/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD550-MW21SB   Sample Date/ Time: 03/21/23 1510   Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Possible compressor issue. That is the cause of delay.

Sampling Procedure Followed: ☒ Yes ☐ No   If no, why was deviation necessary: NA   MD 03/24/23

Recorded By: [signature] (Signature and Date)   QA Checked By: [signature] (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-216 Date (mm/dd/yy): 03/23/23 Page 1 of 1

Purge Start Time: 1340 End Time: 1420

Personnel: Mitchell DeBiasi

Purge Method:

Water Quality Meter: Horiba U-5000 Serial #: NN7VVH80 Calibrated: 03/23/23

☐ Disposable Bailer ☒ Bladder Pump

Water Level Meter: Heron Dipper -T Serial #: IFF2022106FR Calibrated: NA

☐ Other (specify) Peristaltic Pump

Pump Placement 108

Depth To Water: 83.42 ft. from measuring point

Total Depth Of Well: 110 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = — mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/23/23	1346	200 mL/min	21.87	7.27	223	6.28	0.235	67.7	1 ST WATER	83.42	
03/23/23	1349	200 mL/min	21.43	5.76	234	6.05	0.263	109.6	1.22	83.42	Turbidity is relatively clear, does not look 100+
↓	1352	200 mL/min	21.02	5.09	237	6.00	0.268	105.1	1.82	83.42	
	1355	200 mL/min	20.73	4.74	238	5.98	0.271	78	2.42	83.42	DO is erroneous, temp is impacted by ambient
	1358	200 mL/min	20.53	4.55	239	5.98	0.273	55.3	3.22	83.42	
	1401	200 mL/min	20.57	4.65	239	5.95	0.271	41.9	3.82	83.42	
	1404	200 mL/min	20.75	4.68	239	5.94	0.273	35.4	4.42	83.42	MD 03/23/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD873-MW216 Sample Date/ Time: 03/23/23 1420 Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: MD 03/23/23

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/23/23

Recorded By: [signature] 03/23/23 (Signature and Date) QA Checked By: [signature] 3/27/23 (Signature and Date)

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leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-216 Date (mm/dd/yy): 03/23/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/23/23	1407	200 mL/min	20.76	4.66	239	5.93	0.273	27.3	5.02	83.42	
	1410	200 mL/min	20.74	4.58	239	5.92	0.273	22.5	5.62	83.42	
	1413	200 mL/min	20.74	4.57	239	5.91	0.273	22.0	6.22	83.42	
	1417	200 mL/min	20.77	4.58	240	5.91	0.273	21.7	6.82	83.42	
										MD 03/23/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Recorded By: [signature] 03/23/23 (Signature and Date)

QA Checked By: [signature] 3/27/23 (Signature and Date)

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leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-219 Date (mm/dd/yy): 03/22/23 Page 1 of 2

Purge Start Time: 1208 End Time: 1240

Personnel Mitchell DeBardeleben

Water Quality Meter: Horiba U-5000 Serial #: NN7UVH80 Calibrated: 03/22/23

Water Level Meter: Heron Dipper-T Serial #: 1CF2022106FR Calibrated: NA

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 28.78 ft. from measuring point

Pump Placement 103

Total Depth Of Well: 113 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = —— mL MD 03/22/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/22/23	1215	160 mL/min	18.50	6.06	257	6.02	0.183	21.4	1st water	28.80	
	1218	100 mL/min	18.47	3.84	251	6.01	0.255	10.49	0.8 L	28.80	
	1221	100 mL/min	18.51	1.71	237	6.02	0.289	5.69	1.1 L	28.80	
	1224	100 mL/min	18.55	1.23	231	6.02	0.296	5.15	1.4 L	28.80	
	1227	100 mL/min	18.56	0.84	225	6.02	0.302	3.30	1.7 L	28.80	
	1230	100 mL/min	18.59	0.64	219	6.02	0.307	2.90	2.0 L	28.80	
	1233	100 mL/min	18.60	0.60	214	6.01	0.307	2.83	2.3 L	28.80	MD 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

.00921

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DDPER-MW219 Sample Date/ Time: 1240 03/22/23 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Cut away a lot of vegetation surrounding well. Ground is very soft

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/22/23

Recorded By: [signature] 03/22/23 (Signature and Date)

QA Checked By: [signature] 3/22/23 (Signature and Date)

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leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-219 Date (mm/dd/yy): 03/22/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/22/23	1236	100 mL/min	18.64	0.60	210	6.01	0.308	3.89	2.6L	78.80	
	1239	100 mL/min	18.65	0.58	209	6.01	0.309	3.92	2.9L	78.80	
											MO 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Recorded By: [signature] 03/22/23 (Signature and Date)

QA Checked By: [signature] 3/22/23 (Signature and Date)

leidos **BRAC PFAS PA/SI at DDMT Low Flow GWS Form**

Well ID Number: MW-221 Date (mm/dd/yy): 03/19/23 Page 1 of 1

Purge Start Time: 1649 End Time: 1723

Personnel E. Weiss, M. Shuman

Purge Method:

Water Quality Meter: Horiba U-5000 Serial #: U69897X Calibrated:

☐ Disposable Bailer ☒ Bladder Pump

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3-8-23

☐ Other (specify) Peristaltic Pump

Depth To Water: 70.09 ft. from measuring point

Total Depth Of Well: 88.1 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ______mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
	1650		14.97	~~208~~ 4.95	~~4.95~~ 208	5.97	0.275	1.65		69.95	
	1655	1.25L	15.14	~~212~~ 2.93	212	5.90	0.272	0.97		~~8.97~~ 69.96	
	1700		15.14	3.46	214	5.88	0.271	0.95		69.96	
	1705		14.75	2.70	222	5.84	0.259	1.12		70.06	Problem w/compressor/controller — replacing
	1710		15.17	3.10	220	5.89	0.273	0.68		70.08	
	1715		15.67	3.02	224	5.90	0.276	1.01		70.09	
	1720		15.72	3.16	227	5.93	0.277	0.56	6.25L	70.16	MD 03/27/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DDS18-MW-~~13~~ 221 MS 3-19-23 Sample Date/ Time: 3/19/23 1725 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 40°F Sunny

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/27/23

Recorded By: Megan Shuman 3-19-23 (Signature and Date) QA Checked By: [signature] 3/19/23 (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

EW 3/19/23

Well ID Number: MW-222 Date (mm/dd/yy): 03/19/23

Purge Start Time: 1304 End Time: 1357

Personnel M.Sherman, E.Weiss

Water Quality Meter: Horiba U-5000 Serial #: U69897X Calibrated: 03/19/23

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3-8-23

Purge Method: Disposable Bailer ☒ Bladder Pump Other (specify) Peristaltic Pump

Depth To Water: 71.85 ft. from measuring point

Total Depth Of Well: 89.2 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

[Tubing Intake Depth (ft btoc) 74.5 - Depth to Water (ft btoc)] x Tubing Factor x 2 = 50.1 mL

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3-19-23	1306	0	11.70	3.63	2.18	6.16	0.245	13.5 ntu	0	72.02	
" "	1311	.45L	14.19	0.88	1.72	6.25	0.217	8.44	.45L	72.00	
" "	1316	.45L	14.30	0.77	158	6.22	0.216	8.31	.9L	72.00	EW
" "	1321	.45L	14.74	0.78	149	6.21	0.214	7.22	1.35L	72.00	
" "	1326	.45L	15.21	1.01	126	~~8~~ 6.31	0.212	6.06	1.8L	72.00	
" "	1331	.45L	15.32	1.13	126	6.22 EW 3/19/23	0.210	5.31	2.25L	72.00	
" "	1336	.45L	15.56	1.27	125	6.24	0.208	4.65	2.7L	72.01	
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump Disposable Bailer Other (specify) peristaltic pump

Sample ID: ODS18-MW-222 Sample Date/ Time: 3/19/23 1400 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: see page 2

Sampling Procedure Followed: ☒ Yes No If no, why was deviation necessary: MD 03/23/23

Recorded By: [signature] 3/19/23 (Signature and Date) QA Checked By: [signature] (Signature and Date)

leidos **BRAC PFAS PA/SI at DDMT Low Flow GWS Form**

Well ID Number: MW-222 Date (mm/dd/yy): 03/19/23 Page ~~1~~ 2 of ~~1~~ 2 EW 3/19/23

Purge Start Time: 1304 End Time: 1357

Personnel M. Sherman, E. Weiss

Water Quality Meter: on page 1 Serial #: on page 1 Calibrated:

Water Level Meter: " " Serial #: " " Calibrated:

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: page 1 ft. from measuring point

Total Depth Of Well: page 1 ft. from measuring point

Well Diameter: page 1 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ______ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3/19/23	1341	.45L	15.61	1.89	128	6.23	0.203	4.46	3.15L	72.00	
"	1346	.45L	15.70	2.41	133	6.22	0.202	4.08	3.6L	72.01	
"	1351	.45L	15.77	2.32	136	6.19	0.200	4.09	4.05L	72.00	
"	1356	.45L	15.73	2.42	138	6.21	0.200	3.72	4.50L	72.00	
							EW				MD 03/24/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DDS18-MW-222 Sample Date/ Time: 3/19/23 1400 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Sunny, 41°F. Dup taken, DDS18-MW-222FD

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/27/23

Recorded By: [signature] 3/19/23 (Signature and Date) QA Checked By: [signature] (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-263 Date (mm/dd/yy): 03/22/23 Page 1 of 2

Purge Start Time: 1738 End Time: 1838

Personnel Mitchell DeBoAdi

Water Quality Meter: Horiba U-5000 Serial #: NN7VUH80 Calibrated: 03/22/23

Water Level Meter: Heron Dipper-T Serial #: IFE2022106FR Calibrated: NA

Purge Method:
- Disposable Bailer
- [X] Bladder Pump
- Other (specify) Peristaltic Pump

Depth To Water: 53.75 ft. from measuring point

Total Depth Of Well: 79.3 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation
1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~—~~ mL MO 03/22/23

Pump Placement 74

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/22/23	1740	300 mL/min	19.68	6.72	243	6.33	0.570	4.42	1.55 WATER	53.75	
↓	1743	300 mL/min	19.65	6.34	248	6.36	0.592	4.16	1.86	53.75	
	1746	300 mL/min	19.53	5.35 MO 03/22/23 ~~5.42~~	256	6.22	0.605	2.61	2.76	53.75	
	1749	300 mL/min	19.54	4.47	259	6.16	0.617	4.44	3.66	53.75	
	1752	300 mL/min	19.55	3.22	261	5.96	0.636	5.46	4.56	53.75	
	1755	300 mL/min	19.43	1.61	261	5.79	0.660	11.5	5.46	53.75	
	1758	300 mL/min	19.42	1.13	259	5.74	0.669	24.8	6.36	53.75	MO 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: [X] Bladder Pump Disposable Bailer Other (specify) peristaltic pump

Sample ID: DD PFR - MW263 Sample Date/ Time: 03/22/23 1838 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Well is difficult to access by car, DO sensor on Horiba may be out of whack. DO dropped steadily the entire time. Similar happening @ other wells today too

Sampling Procedure Followed: [X] Yes No If no, why was deviation necessary: MO 03/22/23

Recorded By: [signature] 03/22/23 (Signature and Date)

QA Checked By: [signature] 3/24/23 (Signature and Date)

CPM2 R2P D10

[illegible]

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-263 Date (mm/dd/yy): 03/22/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/22/23	1801	300 mL/min	19.46	0.75	257	5.70	0.678	34.8	7.2L	53.75	Turbidity rising, adjust PSI
	1804	300 mL/min	19.42	0.72	256	5.67	0.683	28.3	8.1L	53.75	
	1807	300 mL/min	19.49	0.44	253	5.68	0.686	49.4	9L	53.75	
	1809	300 mL/min	19.51	0.40	251	5.66	0.693	38.3	9.9L	53.75	
	1812	300 mL/min	19.52	0.30	249	5.64	0.696	33	10.8L	53.75	
	1815	300 mL/min	19.53	0.29	248	5.66	0.695	34	11.7L	53.75	
	1818	300 mL/min	19.53	0.24	247	5.66	0.696	30.5	12.6L	53.75	
	1821	300 mL/min	19.51	0.22	247	5.64	0.698	27.2	13.5L	53.75	
	1824	300 mL/min	19.52	0.20	246	5.64	0.698	21.3	14.5L	53.75	
	1827	300 mL/min	19.50	0.19	245	5.63	0.700	16.4	15.4L	53.75	DO may be erroneous
	1830	300 mL/min	19.50	0.19	245	5.63	0.700	MO 03/22/23 ~~19.0~~ 14.6	16.3L	53.75	
	1833	300 mL/min	19.51	0.19	244	5.64	0.697	14.7	17.2L	53.75	
	1836	300 mL/min	19.53	0.19	245	5.63	0.699	14.6	18.1L	53.75	
										MO	03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Recorded By: [signature] 03/22/23
(Signature and Date)

QA Checked By: [signature] 3/22/23
(Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-264　Date (mm/dd/yy): 03/20/23　

Purge Start Time: 1513　End Time: 1540

Personnel E. Weiss, M. Shurman

Water Quality Meter: Horiba U-5000　Serial #: U69897X　Calibrated: 3-20-23

Water Level Meter: Heron Dipper-T　Serial #: U112744X　Calibrated: 3-8-23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 80.55 ft. from measuring point

Total Depth Of Well: 115 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46　3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ________mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3-20-23	~~1504~~ 1513 MS 3-20-23	~~100 mL~~ 500	~~20.60~~ 19.18 MS 3-20-23	2.66	-11	~~5.40~~ 6.61 MS 3-20-23	0.320	8.94		80.57	
	1518		19.01	1.66	-16	6.59	0.310	6.84		80.60	
	1523		18.83	2.89	-16	6.54	0.304	6.53		80.60	
	1528		18.76	2.69	-14	6.51	0.300	4.89		80.61	
	1533		18.77	2.65	-14	6.51	0.298	4.98		80.62	
	1538		18.68	2.43	-13	6.49	0.296	3.76	2.5L	80.61	
	1543										MD 03/20/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD308-MW-264　Sample Date/ Time: 03/20/23/1545　Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 50°F, Sunny, some wind　Flow Rate 100 mL/min

MD 03/20/23

Sampling Procedure Followed: ☒ Yes ☐ No　If no, why was deviation necessary: ________

Recorded By: Megan Shurman 3-20-23 (Signature and Date)

QA Checked By: [signature] 3/20/23 (Signature and Date)

60648

leidos — BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-270 Date (mm/dd/yy): 03/21/23 Page 1 of 1

Purge Start Time: 1630 End Time: 1647

Personnel: Mitchell DeBartoli

Water Quality Meter: Horiba Serial #: NATUVH80 Calibrated: 03/21/23

Water Level Meter: Heron Dipper T Serial #: 11FF2242106FR Calibrated:

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 70.25 ft. from measuring point

Total Depth Of Well: 88.6 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ____ mL MD 03/21/23

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/21/23	1636	100	15.51	7.47	273	5.97	0.230	3.08	1st WATER	70.25	
	1639	100	15.91	6.83	277	5.85	0.216	1.98	0.66	70.25	
	1642	100	15.97	6.62	277	5.84	0.214	0.82	0.96	70.25	
	1645	100	16.00	6.72	277	5.83	0.212	4.03	1.26	70.25	
											MD 03/21/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DDPFB-MW270 Sample Date/ Time: 03/21/23 1647 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Wet

MD 03/21/23

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary:

Recorded By: [signature] 03/21/23 (Signature and Date)

QA Checked By: [signature] (Signature and Date)

leidos **BRAC PFAS PA/SI at DDMT Low Flow GWS Form**

Well ID Number: MW-271 Date (mm/dd/yy): 03/22/23 Page 1 of 1

Personnel E. Weiss, H Carter Purge Start Time: 1335 End Time: 1400

Water Quality Meter: Horiba Serial #: ~~456000~~ U69897X HC Calibrated: 3/22/23

Water Level Meter: Heron Dipper-T Serial #: U112744X Calibrated: 3/6/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 84.60 ft. from measuring point

Total Depth Of Well: 144.9 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~HC~~ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/22	1343	0	19.54	9.24	280	6.16	0.297	8.65	0	84.60	
	1346	.75L	19.37	8.76	286	5.92	0.305	2.76	.75L	84.59	
	1349		19.16	8.56	280	5.94	0.307	3.38	1.5L	84.57	
	1352		19.17	8.29	281	5.96	0.307	3.58	2.25L	84.57	
	1355		19.15	8.23	283	5.98	0.307	2.74	3.0L	84.57	
	1358		19.21	8.21	280	5.95	0.306	3.62	3.75L	84.56	
								HC			MD 03/27/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD560-MW271 Sample Date/ Time: 03/22/23 1405 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 250 mL/min

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/27/23

Recorded By: [signature] 3/22/23 (Signature and Date) QA Checked By: [signature] 3/27/23 (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW- 281 Date (mm/dd/yy): 03/21/23 Page 1 of 1

Personnel E.Weiss, H. Carter Purge Start Time: 1000 End Time: 1035

Water Quality Meter: Horiba U-5000 Serial #: 469897X Calibrated: 3/21/23

Water Level Meter: Heron Dipper T Serial #: U1127744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 78.10 ft. from measuring point

Total Depth Of Well: 91.90 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~NA~~ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/21	1010	0	13.87	4.14	269	5.81	0.526	31.0	0	78.10	
	1015	500mL	14.36	2.22	266	5.77	0.535	20.7	500mL		
	1020	~~1000mL~~	15.36	1.65	265	5.76	0.538	11.0	1000mL		
	1025	~~1.5L~~	15.35	1.67	263	5.73	0.539	9.9	1.5L		
	1030	~~2.0L~~	15.60	1.52	263	5.76	0.535	10.96	2.0L		
	1035	~~2.5L~~	15.61	1.47	263	5.72	0.536	6.74	2.5L		
											MD 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD ~~MW281~~ 529-MW281 (3/21/23) Sample Date/ Time: 3/21/23 1040 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 100 mL/min flow.

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/22/23

Recorded By: [signature] (Signature and Date) QA Checked By: [signature] (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-284 Date (mm/dd/yy): 03/20/23 Page 1 of 1

Purge Start Time: 1047 End Time: 1113

Personnel E. Weiss, M. Sherman

Water Quality Meter: Horiba U-5000 Serial #: U69897X Calibrated: 3-20-23

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3-8-23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 93.21 ft. from measuring point

Total Depth Of Well: 119 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation:
(purged prior to stabilization commencing)

Tubing Volume Factor Calculation
1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ________mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3-20-23	1047		15.44	7.26	256	5.99	0.304	77.9		93.20	
	1052	500 mL	16.20	6.13	253	5.88	0.306	30.7		93.20	
	1057		17.37	5.86	249	5.85	0.305	13.4		93.20	
	1102		17.59	6.06	247	5.87	0.305	9.18		93.19	check flow rate: ~60 mL/min turn up pressure to increase flow
	1107		17.95	5.94	244	5.85	0.305	4.99		93.19	After pressure adjustments, flow rate is ~100 mL/min
	1112		18.29	5.96	244	5.83	0.304	2.98	2 L	93.20	
	~~1117~~										MD 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: ~~DD560-~~ MW-284 MS 3-20-23 DD560- Sample Date/ Time: 3-20-23 / 1116 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 41° F, Sunny, light wind Flow Rate: 100 mL/min

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/20/23

Recorded By: Megan Sherman 3-20-23 (Signature and Date) QA Checked By: [signature] 3/20/23 (Signature and Date)

leidos

BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-287 Date (mm/dd/yy): Ø3/21/23 Page 1 of ~~1~~ 2

Purge Start Time: Ø82Ø End Time: Ø92Ø

Personnel E. Weiss, H. Carter

Water Quality Meter: Horiba U-5ØØd Serial #: U698972 Calibrated: 3/21/23

Water Level Meter: Heron Dipper-T Serial #: 4222744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 79.42 ft. from measuring point

Total Depth Of Well: 94 ft. from measuring point

Well Diameter: 2" inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ________mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
Ø3/21	Ø825	Ø	12.96	3.93	269	5.83	Ø.653	18.5	Ø	79.41	
	Ø840	500mL	12.87	3.16	252	5.87	Ø.661	19.1	500mL	79.40	
	41		15.30	1.58	239	5.81	Ø.708	58.4	1 L		
	50		15.67	1.29	240	5.82	Ø.722	58.7	1.5L		
	55		15.92	1.17	240	5.81	Ø.739	51.Ø	2.ØL		
	Ø900		15.98	1.33	239	5.82	Ø.709	31.Ø	2.5L		
	Ø905		15.98	1.45	240	5.86	Ø.692	21.2	3.ØL		MO Ø3/21/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD529-MW286 Sample Date/ Time: Ø3/21/23/ Ø929 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: See page 2 for all info MO Ø3/21/23

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary:

Recorded By: [signature] (Signature and Date) QA Checked By: [signature] (Signature and Date)

leidos **BRAC PFAS PA/SI at DDMT Low Flow GWS Form**

Well ID Number: MW-287 Date (mm/dd/yy): 03/21/23 Page 2 of 2

Purge Start Time: 0820 End Time: 0920

Personnel E. Weiss, H. Carter

Purge Method:

Water Quality Meter: Horiba U-5000 Serial #: U 69897X Calibrated:

☐ Disposable Bailer ☒ Bladder Pump

Water Level Meter: Heron Dipper-T Serial #: U 222744X Calibrated: 3/8/23

☐ Other (specify) Peristaltic Pump

Depth To Water: 79.42 ft. from measuring point

Total Depth Of Well: 94 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ____ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/21	0910	500mL	15.96	1.49	240	5.84	0.684	15.6	3.5L	79.40	
	0915		15.96	1.52	241	5.84	0.683	13.7	4.0L		
	0920		15.96	1.53	242	5.85	0.682	11.5	4.5L		
											MO 03/22/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD529-MW287 Sample Date/ Time: 3/21/23 0925 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: Duplicate taken

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MO 03/22/23

Recorded By: [signature] (Signature and Date) QA Checked By: [signature] (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-288　　Date (mm/dd/yy): 03/21/23　　Page 1 of ~~1~~ 2

Purge Start Time: 1115　　End Time: 1230

Personnel E. Weiss, H. Carter

Water Quality Meter: Horiba　　Serial #: U69897X　　Calibrated: 3/21/23

Water Level Meter: Heron　　Serial #: U112744X　　Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 83.95 ft. from measuring point

Total Depth Of Well: 100 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46　3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ____ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/21	1141	0	11.76	5.24	274	6.04	0.340	11.19	0	83.90	
	1146	.3L	11.95	4.90	270	5.90	0.338	8.46	.3L	83.90	
	1151		12.03	~~5.07~~ 4.03	260	5.87	0.337	7.78	.6L	83.91	
	1156		12.48	5.11	244	5.92	0.338	7.65	.9L	83.91	
	1201		13.01	5.49	235	5.91	0.339	6.82	1.2L	83.91	
	1206		13.41	5.80	231	5.92	0.340	5.05	1.5L		
	1211		13.84	5.99	232	5.91	0.339	~~4.~~ 3.91	1.8L		MD 03/27/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD529-MW288　　Sample Date/ Time: 3/21/23 1240

Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: See page 2 for all info

Sampling Procedure Followed: ☒ Yes ☐ No　　If no, why was deviation necessary: MD 03/27/23

Recorded By: [signature] (Signature and Date)

QA Checked By: [signature] (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-288

Date (mm/dd/yy): 03/21/23

Page 2 of 2 HC 3/21/23

Purge Start Time: 1115 End Time: 1230

Personnel: E. Weiss, H. Carr

Water Quality Meter: Horiba U-5000 Serial #: U69897X Calibrated: 3/21/23

Water Level Meter: Heron Dipper-T Serial #: U112744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 83.95 ft. from measuring point

Total Depth Of Well: 104 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ____ mL HC

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
03/21	1217	.3L	14.01	6.11	233	5.97	0.339	3.96	2.1L	83.91	
↓	1222		14.08	6.17	234	5.93	0.339	3.02	2.4L		
	1227		14.09	6.17	235	5.92	0.334	2.30	2.7L		
											MD 03/27/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD529-MW288 Sample Date/ Time: 1240 3/21/23 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: N/A

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD 03/27/23

Recorded By: (Signature and Date) QA Checked By: 3/23/23 (Signature and Date)

leidos BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-291 Date (mm/dd/yy): Ø3/2Ø/23 Page 1 of 1

Purge Start Time: 1253 End Time: 1319

Personnel M.Shurman, E.Weiss, H.Carter

Water Quality Meter: Horiba U-5ØØØ Serial #: ~~U69897X~~ MS 3-2Ø-23 ~~U697~~ MS 3-2Ø-23 U69897X Calibrated: 3-2Ø-23

Water Level Meter: Heron Dipper-T Serial #: U112744X Calibrated: 3-8-23

Purge Method:
- [ ] Disposable Bailer
- [X] Bladder Pump
- [ ] Other (specify) Peristaltic Pump

Depth To Water: 71.54 ft. from measuring point

Total Depth Of Well: 84 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation:
(purged prior to stabilization commencing)

Tubing Volume Factor Calculation
1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ________mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3-2Ø-23	1253	Ø	17.88	4.11	~~2~~ 24Ø MS 3-2Ø-23	5.96	Ø.5ØØ	18.8		71.54	
	1258	8ØØmL	18.27	2.63	~~233~~ 234 MS 3-2Ø-23	5.86	Ø.51Ø	55.4		71.52	
	13Ø3		18.81	2.6Ø	231	5.86	Ø.5Ø8	19.1		71.51	
	13Ø8		18.78	2.86	232	5.89	Ø.5Ø3	15.9		71.52	
	1313		18.8Ø	2.91	235	5.86	Ø.5Ø4	12.6		71.51	
MS 3-2Ø-23	~~13Ø~~ 1318		18.81	2.92	234	5.88	Ø.5Ø5	11.5	3.2L	71.51	
	1323										MD Ø3/27/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: [X] Bladder Pump [ ] Disposable Bailer [ ] Other (specify) peristaltic pump

Sample ID: DD3Ø8-MW-291 Sample Date/ Time: 3/2Ø/23 132Ø Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 16Ø mL/min 46°F, Sunny, Some wind

Sampling Procedure Followed: [X] Yes [ ] No If no, why was deviation necessary: MD Ø3/27/23

Recorded By: Megan Shurman 3-2Ø-23 (Signature and Date) QA Checked By: [signature] 3/2Ø/23 (Signature and Date)

leidos

BRAC PFAS PA/SI at DDMT Low Flow GWS Form

Well ID Number: MW-3Ø2 Date (mm/dd/yy): Ø3/22/23

Personnel E. Weiss, H. Carter Purge Start Time: 1227 End Time: 1247

Water Quality Meter: Horiba Serial #: U69897X Calibrated: 3/22/23

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 84.73 ft. from measuring point

Total Depth Of Well: 17Ø ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = ~~2~~ mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
3/22/23	1231	Ø	18.45	6.33	274	6.15	Ø.272	4.79	Ø	84.65	
	1234	~~.175L~~ .525L	19.ØØ	6.Ø5	275	6.Ø9	Ø.263	9.57	.525L	84.65	
	1237		19.1Ø	5.95	269	6.Ø9	Ø.259	14.5	1.05L	84.65	
	124Ø		19.24	5.48	26Ø	6.Ø6	Ø.254	22.8	1.575L	84.65	
	1243		19.35	5.41	265	6.Ø5	Ø.26Ø	26.Ø	2.1L	84.67	
	1246		19.39	5.39	258	6.ØØ	Ø.758	22.4	2.725L	84.67	
											MD Ø3/27/23
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD56Ø-MW3Ø2 Sample Date/ Time: 3/22/23 125Ø Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 175ml/min

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MD Ø3/27/23

Recorded By: [signature] 3/22/23 (Signature and Date) QA Checked By: [signature] (Signature and Date)

leidos BRAC PFAS PA/SI at Facility Name Low Flow GWS Form

Well ID Number: MW-3Ø7

Date (mm/dd/yy): Ø3/23/23

Purge Start Time: Ø745 End Time: ~~Ø8Ø~~ Ø8Ø5 EW 3/23/23

Personnel: E. Weiss, H. Carter

Water Quality Meter: Horiba Serial #: U69897X Calibrated: 3/23/23

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☒ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 92.16 ft. from measuring point

Total Depth Of Well: 11Ø.Ø ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation:
(purged prior to stabilization commencing)

Tubing Volume Factor Calculation
1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = EW mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
Ø3/23	Ø752	Ø	19.7Ø	6.86	219	5.75	Ø146	2.61	Ø	92.19	
	Ø755	.9L	19.74	6.46	238	5.66	Ø.131	1Ø.5	.9L	92.17	
	Ø758	.9L	19.74	6.Ø9	238	5.56	Ø.128	9.6	1.8L	92.17	
	Ø8Ø1	.9L	19.76	6.11	239	5.66	Ø.128	9.8Ø	2.7L	92.16	
	Ø804	.9L	19.77	6.Ø6	24Ø	5.64	Ø.127	8.73	3.6L	92.17	
				EW							
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD56Ø - ~~30~~ MW307 EW 3/23/23 Sample Date/ Time: Ø3/23/23 Ø8Ø8

Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: 3 Semi-trucks running nearby during sampling.

Sampling Procedure Followed: ☑ Yes ☐ No If no, why was deviation necessary: MD Ø3/23/23

Recorded By: [signature] 3/23/23 (Signature and Date)

QA Checked By: [signature] 3/23/23 (Signature and Date)

leidos **BRAC PFAS PA/SI at DDMT Low Flow GWS Form**

Well ID Number: MW-311 Date (mm/dd/yy): 03/22/23 Page 1 of 1

Personnel E.Weiss, H.Carter Purge Start Time: 1104 End Time: 1141

Water Quality Meter: Horiba Serial #: U69897X Calibrated: 3/22/23

Water Level Meter: Heron Dipper T Serial #: U112744X Calibrated: 3/8/23

Purge Method: ☐ Disposable Bailer ☑ Bladder Pump ☐ Other (specify) Peristaltic Pump

Depth To Water: 93.55 ft. from measuring point

Total Depth Of Well: 183.3 ft. from measuring point

Well Diameter: 2 inches

Stagnant Water Purge Calculation: (purged prior to stabilization commencing)

Tubing Volume Factor Calculation: 1/4" OD= 9.46 3/8" OD= 21.576

[Tubing Intake Depth (ft btoc) - Depth to Water (ft btoc)] x Tubing Factor x 2 = EW mL

Date	Time	Volume Removed	Temp (°C)	Dissolved Oxygen (mg/L)	Eh (mV)	pH (Std.Units)	Specific Conductivity (mS/cm)	Turbidity	Total Volume Removed	Water Level (ft btoc)	Comments
	1128	Ø	15.29	5.42	281	5.91	Ø.28Ø	5.42	Ø	93.41	
	1131	.3L	15.61	5.Ø8	288	5.84	Ø.291	3.97	.3L	93.44	
	1134	.3L	15.84	4.82	277	5.81	Ø.3Ø2	4.55	.6L	93.45	EW
	1137	.3L	16.Ø4	4.8Ø	275	5.74	Ø.3Ø3	2.56	.9L	93.44	
	114Ø	3XL EW 3/22/23	16.25	4.77	272	5.74	Ø.3Ø3	2.21	1.2L (1.8L) EW 3/22/23	93.42	
						EW					
			±1.0°C	±10%	±10 mV	±0.1 SU	3%	10% or < 10			

Sample Method: ☒ Bladder Pump ☐ Disposable Bailer ☐ Other (specify) peristaltic pump

Sample ID: DD560-MW311 Sample Date/ Time: 3/22/23 1145 Analyses PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Field Observations/Site Conditions During Purging: The concrete pad & well are submerged. We are pumping water out to be sure no water gets into the well.

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary: MO Ø3/22/23

Recorded By: [signature] (Signature and Date) QA Checked By: [signature] Ø3/28/23 (Signature and Date)

leidos

Sediment / Surface Water Sampling Form

SHEET 1 OF 1

BRAC PFAS PA/SI at Facility Name: DDMT	1. Sample Team: E. Weiss, H. Carter
AOPI: 560 Gen. Purpose Warehouse	
2. Location ID: DDMT-560-04	Northing: 297874.589829 / Easting: 773793.841202
3. Sample ID: DD56004-SW01, DD56004-SD01	4. Date and Time: 3/23/23 SW: 1110 SD: 1115
5. Dupe ID (if needed): DD56004-SW01FD, DD56004-SD01FD	6. Equipment Risate ID (if needed): N/A
7. Sediment Sample Equipment Used: S.S. Spoon & HDPE Bag	8. MS/MSD: ✓ Yes
9. Weather Conditions: Sunny, 71°F, 10-15mph SW	10. Activities in the Area: Frisbee Golf course

Field Observations (wet/dry sediment, depth of water, field conditions, water description, etc.) wet sediment, water flowing ~5 in. deep.

LOCATION SKETCH/COMMENTS **SCALE:** Not to scale

Field Notes:

Surface Water Quality Parameters:

Temp (°C): 17.30 DO(mg/L): 6.04 Eh (mV): 126 pH (SU): 8.02 spc (ms/cm): 0.121 NTU: 2.48

Sediment Description: Sandy, pebbly, roots.

03/24/23

Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary?

COC NO: ~~DDMT-68~~ EW 3/23/23 Laboratory: Pace

Recorded By: [signature] 3/23/23 (Signature and Date) QC Checked By: [signature] 03/24/23 (Signature and Date)

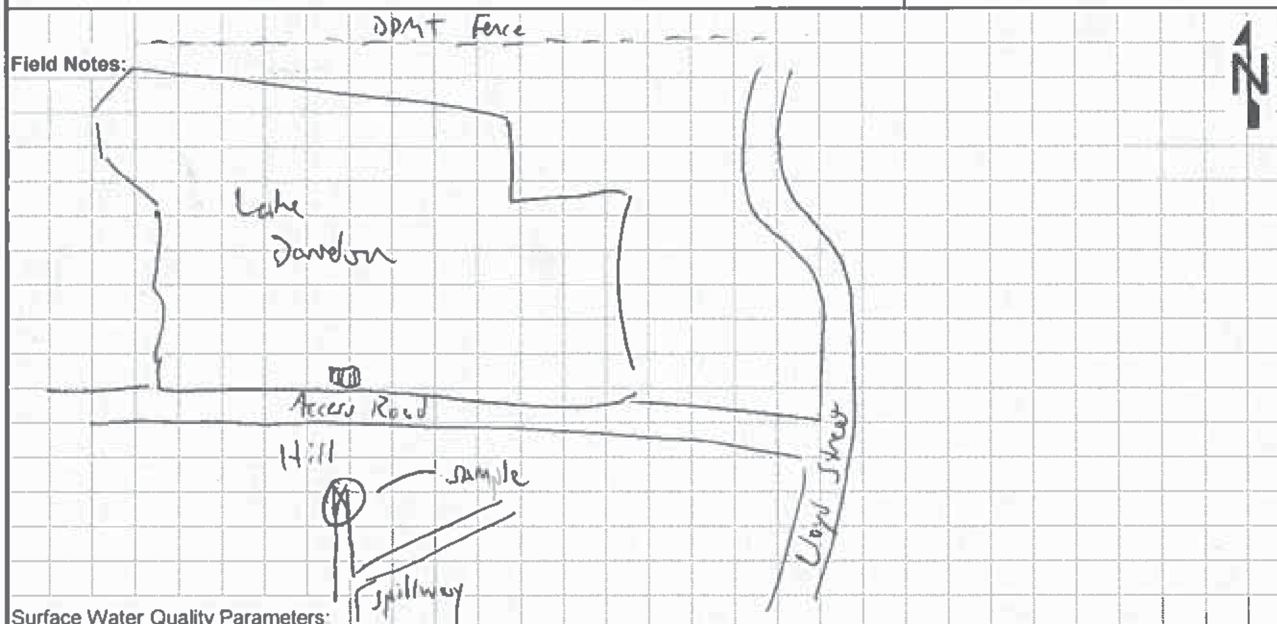
leidos	Sediment / Surface Water Sampling Form		SHEET	1	OF	1
	BRAC PFAS PA/SI at Facility Name: DDMT	1. Sample Team: E. Weiss, H. Carter				
	AOPI: 560 General Purpose W.H.					

2. Location ID: DDMT-560-05	Northing: 297395.211628	Easting: 773994.117987
3. Sample ID: DD56005-SW01	4. Date and Time: 3/23/23 1100	
5. Dupe ID (if needed): N/A	6. Equipment Rinsate ID (if needed) EW 3/23/23	
7. Sediment Sample Equipment Used: ~~S.S. Spoon & HDPE bag~~ EW 3/23/23		8. MS/MSD:
9. Weather Conditions:	10. Activities in the Area: Frisbee Golf course	

Field Observations (wet/dry sediment, depth of water, field conditions, water description, etc.) Shallow ~2 in. water

LOCATION SKETCH/COMMENTS | **SCALE:** Not to scale

Field Notes:



Surface Water Quality Parameters:

Temp (°C):	DO(mg/L):	Eh (mV):	pH (SU):	spc (ms/cm):	NTU:
16.54	7.93	58	9.32	0.029	3.23

Sediment Description: NA

Analyses: PFAS by EPA 537 mod (DoD QSM 5.3 compliant)

Sampling Procedure Followed: ☒ Yes ☐ No If no, why was deviation necessary?

EW 3/23/23

COC NO: DDMT-68 Laboratory: Pace

Recorded By: [signature] 3/23/23 (Signature and Date) QC Checked By: [signature] 3/23/23 (Signature and Date)

EW 3/23/23

APPENDIX F

INVESTIGATION-DERIVED WASTE DOCUMENTS

Waste Manifest

0011735

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: TN4 210 020 570
2. Page 1 of: 1
3. Emergency Response Phone: (800) 899-4672
4. Waste Tracking Number: 0011735

5. Generator's Name and Mailing Address: DDMT
2241 TRUITT STREET
MEMPHIS, TN 38114
Generator's Site Address (if different than mailing address)
Generator's Phone: (703) 545-2504

6. Transporter 1 Company Name: NRC Gulf Environmental Services, Inc. — U.S. EPA ID Number: TNR 000 046 433
7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: US ECOLOGY SULLIGENT, INC.
51328 HIGHWAY 17
SULLIGENT, AL 35586
Facility's Phone: (205) 698-7511
U.S. EPA ID Number: ALD 983 177 015

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non Hazardous Liquid Waste, Not Dot Not RCRA Regulated	~~18~~ 17	DM	7650	P
2. NON HAZARDOUS SOLID WASTE, NOT DOT NOT RCRA REGULATED	~~6~~ 7	DM	2700	P
3. NON HAZARDOUS SOLID WASTE, NOT DOT NOT RCRA REGULATED	~~9~~ 7	DM	450	P
4.				

13. Special Handling Instructions and Additional Information
1. A231665SUL / Liquid IDW 2. E230661SUL / Soil IDW 3. E231668SUL / IDW Solid Contact Waste [W:65.12.114500]

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Erin Mauer — Signature: Erin Mauer — Month Day Year: 6 20 23

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Dolan Hatley — Signature: [signature] — Month Day Year: 6 20 23
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☒ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Changed quanity amounts per Timothy Rinkie @ Leidos
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Mickie Wagner — Signature: [signature] — Month Day Year: 6 20 23

169-BLC-O 5 11977 (Rev. 8/09) DESIGNATED FACILITY TO GENERATOR

17385213

Certificates of Disposal

Certificate of Disposal

This certificate is to verify that the wastes specified on the following manifest numbers have been properly managed in accordance with all local, state and federal regulations.

Facility: US Ecology Sulligent, Inc. (ALD983177015)
51328 Highway 17
Sulligent, AL 35586

Case Number:
Control Number:
Call Number:

Manifest: 0011735

Customer: LEIDOS INC

Generator: DDMT
Mailing Address: 2241 TRUITT STREET
MEMPHIS, TN 38114

EPA ID: TN4 210 020 570
Site Address: 2241 TRUITT STREET
MEMPHIS, TN 38114

Inbound Container	Manifest Page	Manifest Line	Inbound Weight	Receipt Date	Inbound Approval	Destination	Treatment	Mgmt Code	Outbound Manifest	Outbound Page	Outbound Line	Ship/ Disposal Date
80861-1-1	1	1	58.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-2	1	1	484.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-3	1	1	471.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-4	1	1	471.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-5	1	1	484.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-6	1	1	432.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-7	1	1	468.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-8	1	1	468.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-9	1	1	432.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-10	1	1	477.00	06/20/23	A231665SUL	- IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023

Certificate of Disposal

This certificate is to verify that the wastes specified on the following manifest numbers have been properly managed in accordance with all local, state and federal regulations.

Facility: US Ecology Sulligent, Inc. (ALD983177015)
51328 Highway 17
Sulligent, AL 35586

Case Number:
Control Number:
Call Number:

Manifest: 0011735

Customer: LEIDOS INC

Generator: DDMT
Mailing Address: 2241 TRUITT STREET
MEMPHIS, TN 38114

EPA ID: TN4 210 020 570
Site Address: 2241 TRUITT STREET
MEMPHIS, TN 38114

Inbound Container	Manifest Page	Manifest Line	Inbound Weight	Receipt Date	Inbound Approval	Destination	Treatment	Mgmt Code	Outbound Manifest	Outbound Page	Outbound Line	Ship/ Disposal Date
80861-1-11	1	1	487.00	06/20/23	A231665SUL -	IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-12	1	1	484.00	06/20/23	A231665SUL -	IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-13	1	1	471.00	06/20/23	A231665SUL -	IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-14	1	1	471.00	06/20/23	A231665SUL -	IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-15	1	1	435.00	06/20/23	A231665SUL -	IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-16	1	1	432.00	06/20/23	A231665SUL -	IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-17	1	1	471.00	06/20/23	A231665SUL -	IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-1-18	1	1	468.00	06/20/23	A231665SUL -	IDW Liquid Facility - CWMEMELLE	NLiq-Tranship-TSD	H141	025373589JJK	1	4	9/6/2023
80861-2-1	1	2	381.00	06/20/23	E230961SUL -	IDW Soil Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-2-2	1	2	140.00	06/20/23	E230961SUL -	IDW Soil Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023

US ecology

Certificate of Disposal

This certificate is to verify that the wastes specified on the following manifest numbers have been properly managed in accordance with all local, state and federal regulations.

Facility: US Ecology Sulligent, Inc. (ALD983177015)
51328 Highway 17
Sulligent, AL 35586

Case Number:
Control Number:
Call Number:

Manifest: 0011735

Customer: LEIDOS INC

Generator: DDMT
Mailing Address: 2241 TRUITT STREET
MEMPHIS, TN 38114

EPA ID: TN4 210 020 570
Site Address: 2241 TRUITT STREET
MEMPHIS, TN 38114

Inbound Container	Manifest Page	Manifest Line	Inbound Weight	Receipt Date	Inbound Approval	Destination	Treatment	Mgmt Code	Outbound Manifest	Page	Line	Ship/ Disposal Date
80861-2-3	1	2	140.00	06/20/23	E230961SUL -	IDW Soil Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-2-4	1	2	321.00	06/20/23	E230961SUL -	IDW Soil Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-2-5	1	2	140.00	06/20/23	E230961SUL -	IDW Soil Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-2-6	1	2	142.00	06/20/23	E230961SUL -	IDW Soil Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-2-7	1	2	321.00	06/20/23	E230961SUL -	IDW Soil Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-3-1	1	3	170.00	06/20/23	E231666SUL -	IDW Solid Contact Waste Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-3-2	1	3	118.00	06/20/23	E231666SUL -	IDW Solid Contact Waste Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-3-3	1	3	116.00	06/20/23	E231666SUL -	IDW Solid Contact Waste Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-3-4	1	3	274.00	06/20/23	E231666SUL -	IDW Solid Contact Waste Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-3-5	1	3	169.00	06/20/23	E231666SUL -	IDW Solid Contact Waste Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023

Certificate of Disposal

This certificate is to verify that the wastes specified on the following manifest numbers have been properly managed in accordance with all local, state and federal regulations.

Facility: US Ecology Sulligent, Inc. (ALD983177015)
51328 Highway 17
Sulligent, AL 35586

Case Number:
Control Number:
Call Number:

Manifest: 0011735

Customer: LEIDOS INC

Generator: DDMT
Mailing Address: 2241-TRUITT STREET
MEMPHIS, TN 38114

EPA ID: TN4 210 020 570
Site Address: 2241-TRUITT STREET
MEMPHIS, TN 38114

Inbound Container	Manifest Page	Manifest Line	Inbound Weight	Receipt Date	Inbound Approval	Destination	Treatment	Mgmt Code	Outbound Manifest	Page	Line	Ship/ Disposal Date
80861-3-6	1	3	116.00	06/20/23	E231666SUL -	IDW Solid Contact Waste Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023
80861-3-7	1	3	116.00	06/20/23	E231666SUL -	IDW Solid Contact Waste Facility - CWMEMELLE	NSol-Tranship-TSD	H141	025373589JJK	2	5	9/6/2023

I certify that the above information is true and correct to the best of my knowledge.

Authorized Signature: Kari Prisock

APPENDIX G

DATA USABILITY ASSESSMENT

DATA USABILITY ASSESSMENT FOR THE PER- AND POLYFLUOROALKYL SUBSTANCES SITE INSPECTION AT DEFENSE DEPOT MEMPHIS, TENNESSEE

Contract Number W912DR-18-D-0003
Delivery Order Number W912DR21F0140

Prepared for:

ODCS, G-9, ISE BRAC

Final
November 2023

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LIST OF ACRONYMS AND ABBREVIATIONS

CCV	Continuing Calibration Verification
DDMT	Defense Depot Memphis, Tennessee
DoD	U.S. Department of Defense
DQO	Data Quality Objective
EIS	Extracted Internal Standard
EtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
FTS	Fluorotelomer Sulfonic Acid
HDPE	High-Density Polyethylene
ICV	Initial Calibration Verification
LCL	Lower Control Limit
LCS	Laboratory Control Sample
LOD	Limit of Detection
LOQ	Limit of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
PFBA	Perfluoro-n-butanoic Acid
QA	Quality Assurance
QC	Quality Control
QSM	Quality Systems Manual
RPD	Relative Percent Difference
SI	Site Inspection
UCL	Upper Control Limit
UFP-QAPP	Uniform Federal Policy-Quality Assurance Project Plan

G.1 INTRODUCTION

A comprehensive quality assurance/quality control (QA/QC) program was implemented during the Site Inspection (SI) at Defense Depot Memphis, Tennessee (DDMT). Field samples and associated QC samples (e.g., field duplicates, equipment rinsate blanks, source water blanks, matrix spikes [MSs], and matrix spike duplicates [MSDs]) were collected and analyzed for per- and polyfluoroalkyl substances (PFAS) using methods specified in the *Programmatic Uniform Federal Policy-Quality Assurance Project Plan, Per- and Polyfluoroalkyl Substances Site Inspections at Multiple Base Realignment and Closure Installations, Nationwide* (Leidos 2022), herein referred to as the Programmatic Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP), and the *Per- and Polyfluoroalkyl Substances Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum at Defense Depot Memphis, Tennessee* (Leidos 2023), herein referred to as the DDMT UFP-QAPP Addendum.

Samples included 87 primary samples (groundwater, surface water, soils, and sediment), 11 field duplicates, 11 equipment rinsate blanks, 1 field blank, and 7 MS/MSDs. These samples were collected in laboratory-supplied high-density polyethylene (HDPE) bottles in March 2023 and shipped to Pace Analytical Services, LLC in West Columbia, South Carolina. The data evaluation process subjected 100 percent of the sample data to a systematic and rigorous technical review by examining all analytical QC results as documented by the laboratory, following appropriate guidelines for Stage 2B data verification/validation; 10 percent of the data were subjected to Stage 4 validation. All stages of data validation were performed in accordance with the U.S. Department of Defense (DoD) Validation Guidelines Module 3 (DoD 2020) and the Revised Table for Sample Qualification in the Presence of Blank Contamination (DoD 2022). Data evaluation compared the contents of the data packages and QC results to requirements contained in the requested analytical method and against precision and accuracy limits established in DoD's Quality Systems Manual (QSM) Version 5.4 (DoD 2021) as well as other QC criteria presented in the Programmatic UFP-QAPP (Leidos 2022) and DDMT UFP-QAPP Addendum (Leidos 2023).

The systematic review of the sample data set for compliance with the established QC criteria was based on the following categories:

- Laboratory case narrative
- Sample condition upon receipt
- Holding times
- Blanks (field, method, and instrument)
- MS/MSDs
- Laboratory control samples (LCSs)
- Isotope dilution standard recoveries
- Transition ion ratios
- Calibrations (mass tuning, initial and continuing calibrations, instrument sensitivity checks)
- Sample reanalysis and dilutions.

Consistent with the data quality requirements established in the Programmatic UFP-QAPP (Leidos 2022) and DDMT UFP-QAPP Addendum (Leidos 2023), as well as the data quality objectives (DQOs), all sample data and associated QC data were evaluated during the review and validation process. The following samples were collected during the DDMT SI sampling event in March 2023:

- Fifty soil samples
- Five soil field duplicates
- Three soil MS/MSDs
- One sediment sample
- One sediment field duplicate

- One sediment MS/MSD
- Four surface water samples
- One surface water field duplicate
- One surface water MS/MSD
- Thirty-two groundwater samples
- Four groundwater field duplicates
- Two groundwater MS/MSDs
- Eleven rinsate blanks (five associated with soil and six associated with groundwater sampling)
- One field blank
- Two investigation-derived waste samples (not validated).

Individual sample results were qualified, as necessary, to designate usability of the data toward meeting project objectives. Data qualifiers were applied based on deviations from the measurement performance criteria identified on Worksheet #12 and requirements specified on Worksheets #15, #19 and #30, #24, and #28 of the Programmatic UFP-QAPP (Leidos 2022). The final data qualifiers are defined as follows:

- U: The analyte was analyzed for, was not detected, and was reported not detected above the associated concentration value, which is the limit of detection (LOD), as reported on the laboratory report, or a value revised during validation. The LOD has been adjusted for any dilution or concentration of the sample.

- J: The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. These results are considered usable but estimated values with an unknown bias.

- J+: The analyte was positively identified; the result is an estimated concentration and may be biased high.

- J-: The analyte was positively identified; the result is an estimated concentration and may be biased low.

- UJ: The analyte was not detected above the associated concentration value, which is the LOD, as reported on the laboratory report, or a value revised during validation. However, the concentration value is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. These results are considered usable but estimated values.

- X: The sample results, including non-detects, were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project QC criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended. No DDMT data were X qualified.

- R: After consultation with the Project Decision Team, the analyte result was rejected due to serious deficiencies in the ability to analyze the sample and/or meet QC criteria. The presence or absence of the analyte cannot be verified. No DDMT data were rejected.

The following sections summarize the results of the QA program and QC samples analyzed during the DDMT SI sampling and analysis event. SI field sample data qualified during the data validation process are presented in Table G-1, as discussed below.

G.1.1 PRECISION

Precision was evaluated by the analysis of MS/MSDs and field duplicate samples and the relative percent difference (RPD) between the duplicate spike results. MS/MSD RPDs met measurement performance criteria.

Six field duplicate pairs were collected from various soil and sediment locations (DDMT-529-02-SB03, DDMT-550-01-SS01, DDMT-560-01-SS01, DDMT-560-04-SD01, DDMT-873-02-SB02, DDMT-308-03-SB02); all results in both the parent and field duplicate samples met criteria (RPD less than or equal to 50 percent for results greater than the limit of quantitation (LOQ) for both the parent and field duplicate and for results detected at concentrations less than the LOQ, a difference between analytical results less than the LOQ).

Five field duplicates were collected from various groundwater and surface water locations (DDMT-529-MW287, DDMT-550-MW215B, DDMT-560-04-SW01, DDMT-873-MW205A, DDMT-S18-MW222). All values in both the parent and field duplicate samples met criteria (RPD less than or equal to 30 percent for results greater than the LOQ for both the parent and field duplicate and for results detected at concentrations less than the LOQ, a difference between analytical results less than the LOQ).

G.1.2 ACCURACY/BIAS CONTAMINATION

Bias introduced due to blank contamination (in method, instrument, or field blanks) and any impact on accuracy were evaluated during validation. Method and instrument blanks were analyzed with each batch of 20 or fewer samples in accordance with UFP-QAPP requirements and met criteria (all target analytes were non-detect). Verified PFAS-free (i.e., PFAS not detected above the LOD) deionized water was brought onsite in an HDPE drum for implementation of the SI and was sampled and analyzed prior to the start of field activities; all results were non-detect. Field QC included 11 equipment rinsate blanks and 1 field blank collected to gauge the impacts from field activities. All rinsate blanks and the field blank reported all analytes as non-detect, except for one trace detection of perfluoro-n-butanoic acid (PFBA) in sample DD529-SB03-EB collected on March 16, 2023. All associated sample results were non-detect; therefore, no sample results were qualified based on blank contamination.

G.1.3 OVERALL ACCURACY/BIAS

Analytical accuracy was measured through the analysis of LCSs, MS/MSDs, isotope dilution standards, initial and continuing calibration, and target compound quantitation requirements.

LCS recoveries were compared to QSM control limits during validation. Detected analytes in associated samples are qualified estimated (J+) if LCS recoveries were above the applicable recovery QC limit (non-detects would not be qualified). Non-detected sample results are qualified as recommended for exclusion (X), and detected analytes are qualified estimated (J-) if the associated LCS recoveries were below the LCS recovery control limit. One LCS recovery was above the QC limit for N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA), resulting in qualification of associated results as estimated (UJ). Results for eight samples were qualified as estimated (UJ) and are summarized in Table G-1 with reason code P01. All remaining LCS recoveries met criteria.

MS/MSD analyses were analyzed to assess data accuracy. Detected analytes in the parent sample are qualified estimated (J+) if MS or MSD recoveries are above the applicable recovery QC limit; non-detects are not qualified. Detected analytes in the parent sample are qualified estimated (J-) and non-detects were qualified estimated (UJ) if MS or MSD recoveries are below the applicable recovery QC limit but ≥10 percent. Non-detected sample results are qualified as recommended for exclusion (X), and detected analytes are qualified estimated (J-) if the associated MS/MSD recoveries were below 10 percent. All MS and MSD percent recoveries met criteria with the exception of one compound in one surface water spike and several compounds in one sediment spike that had recoveries above control limits; the two parent sample results were qualified as estimated (J+). The qualified data is summarized in Table G-1 with reason codes H01 and H04.

Isotope dilution analytes, or extracted internal standards (EISs), provide another measure of accuracy for PFAS. Sample results are qualified estimated (J+/UJ) if the associated EIS recoveries are below the lower control limit (LCL) but greater than 20 percent. Detected compounds are qualified estimated (J-) if the EIS recoveries are above the upper control limit (UCL). Detected and non-detected results are qualified as recommended for exclusion (X) if the EIS recoveries are below 20 percent. Seventeen sample results were qualified as estimated (UJ/J+) based on EIS recovery below the control limits. Qualified data are summarized in Table G-1 with reason code G02 for EIS recoveries less than 50 percent but greater than 20 percent.

Initial calibration of each instrument was completed in accordance with DoD QSM Version 5.4, Table B-15 requirements (DoD 2021). Initial calibration verifications (ICVs) and continuing calibration verifications (CCVs) of each instrument were completed in accordance with QSM criteria. Sample results are qualified estimated (J/UJ) if the associated ICV/CCV is below the LCL. Detected sample results are qualified estimated (J) if the associated ICV/CCV is above the UCL. CCV results for 1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 fluorotelomer sulfonic acid [FTS]) and EtFOSAA during one analysis were above the UCL, resulting in qualification of eight associated sample results as estimated (UJ). All remaining ICV and CCV results were within control limits.

The target compounds that were reported as detections satisfied all qualitative and quantitative identification with the exception of two compounds having transition ion ratios outside the control limit. Fourteen sample results were qualified as estimated (J) and summarized in Table G-1 with reason code M02. As noted above, 10 percent of the sample data were subjected to Stage 4 validation and results verified by recalculations from the raw data; no transcription or calculation errors were identified. Overall, excluding the limited data points recommended for exclusion, data met stated objectives for analytical accuracy.

G.1.4 SENSITIVITY

Sensitivity requirements were provided as minimum required LOQs and LODs in the Programmatic UFP-QAPP (Leidos 2022); these criteria were met.

G.1.5 REPRESENTATIVENESS

Representativeness was satisfied by ensuring that the Programmatic UFP-QAPP (Leidos 2022) and DDMT UFP-QAPP Addendum (Leidos 2023) protocols were followed, appropriate sampling techniques were used, established analytical procedures were implemented, and analytical holding times of the samples were not exceeded. Sample results are qualified estimated (J/UJ) if holding times were exceeded; samples analyzed after more than two times the method required holding time are recommended for exclusion (X) for non-detects and estimated (J) for detects. Based on an evaluation of sample collection and receipt, holding times, and precision and accuracy, the samples collected during the DDMT SI sampling and analysis event are considered to be representative of the environmental conditions.

G.1.6 COMPARABILITY

Comparability was achieved by using consistent, documented and UFP-QAPP approved methods and meeting project accuracy and precision objectives. Seven water samples contained significant amounts of solids and required centrifugation prior to extraction due to excessive solids. Centrifugation was performed following the laboratory's PFAS standard operating procedure. (Samples were spiked with EIS and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, with the solids remaining in the centrifuge bottle. The original sample bottle was rinsed as normal as was the centrifuge bottle with the rinsate added to the elution.

Samples were then concentrated in accordance with standard procedures.) Samples affected were DD529-SB03-EB, DD873-SB02EB, DDPER-MW-28, DD873-MW204B, DD529-MW287FD, DDPER-MW263, DD56004-SW01, and DD56004-SW01FD. Results for these samples were not qualified based on this documented protocol that was consistent with DoD QSM Version 5.4 Table B-15 (DoD 2021). Based on the precision and accuracy assessment presented in previous sections, and the use of established method criteria (i.e., DoD QSM Version 5.4, Table B-15 [DoD 2021]), the data collected during the DDMT SI are considered to meet project objectives for comparability.

G.1.7 COMPLETENESS

Completeness measures the amount of valid data obtained from the sampling and analysis effort. For analytical data to be usable, each data point must be validated and meet criteria without significant non-conformance. The DQOs for the DDMT SI were set at 90 percent for field sampling and laboratory completeness. All soil and groundwater samples proposed were collected. Analytical completeness was 100 percent.

G.1.8 DATA RECONCILIATION AND USABILITY

Data that have been qualified as estimated (J, J+, UJ) during validation indicate accuracy, precision, or sensitivity QC measurements may have exceeded criteria, but the results are considered valid. No data points were recommended for exclusion (X) during validation. All results are usable for evaluating project objectives.

Table G-1. Qualified DDMT Data, January 2023

Location	Sample ID	Chemical	Result	Units	Final Qual	Validation Code
DDMT-S18-02	DDS1802-SB03	Perfluoro-n-octanoic acid (PFOA)	0.29	µg/kg	J	M02
DDMT-308-04	DD30804-SW01	Perfluoro-n-butanoic acid (PFBA)	3.8	ng/L	J+	G02
DDMT-308-04	DD30804-SW01	Perfluorooctanesulfonic acid (PFOS)	1.5	ng/L	J	M02
DDMT-308-05	DD30805-SW01	Perfluoro-n-butanoic acid (PFBA)	3.5	ng/L	J+	G02
DDMT-529	DD529-SB03-EB	N-methylperfluoro-1-octanesulfonamide (MeFOSA)	8.0	ng/L	UJ	G02
DDMT-550-02	DD55002-SB02	Perfluorooctanesulfonic acid (PFOS)	0.47	µg/kg	J	M02
DDMT-PER-MW-28	DDPER-MW-28	Perfluorooctanesulfonic acid (PFOS)	7.8	ng/L	J	M02
DDMT-308-MW-103	DD308-MW103	Perfluorooctanesulfonic acid (PFOS)	4.5	ng/L	J	M02
DDMT-S18-MW221	DDS18-MW221	Perfluorooctanesulfonic acid (PFOS)	7.5	ng/L	J	M02
DDMT-S18-MW222	DDS18-MW222FD	Perfluorooctanesulfonic acid (PFOS)	1.6	ng/L	J	M02
DDMT-S18-MW134	DDS18-MW134	Perfluorooctanesulfonic acid (PFOS)	4.4	ng/L	J	M02
DDMT-873-MW216	DD873-MW216	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	3.8	ng/L	UJ	C05
DDMT-873-MW216	DD873-MW216	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.8	ng/L	UJ	C05
DDMT-873-MW216	DD873-MW216	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.8	ng/L	UJ	P01
DDMT-873-MW205A	DD873-MW205AFD	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	3.7	ng/L	UJ	C05
DDMT-873-MW205A	DD873-MW205AFD	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.7	ng/L	UJ	C05
DDMT-873-MW205A	DD873-MW205AFD	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.7	ng/L	UJ	P01
DDMT-873-MW197B	DD873-MW197B	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	3.7	ng/L	UJ	C05
DDMT-873-MW197B	DD873-MW197B	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.7	ng/L	UJ	C05
DDMT-873-MW197B	DD873-MW197B	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.7	ng/L	UJ	P01
DDMT-873-MW197B	DD873-MW197B	Perfluorooctanesulfonic acid (PFOS)	0.92	ng/L	J	M02
DDMT-873-MW204B	DD873-MW204B	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	3.5	ng/L	UJ	C05
DDMT-873-MW204B	DD873-MW204B	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.5	ng/L	UJ	C05
DDMT-873-MW204B	DD873-MW204B	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.5	ng/L	UJ	P01
DDMT-873-MW205B	DD873-MW205B	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	3.6	ng/L	UJ	C05
DDMT-873-MW205B	DD873-MW205B	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.6	ng/L	UJ	C05
DDMT-873-MW205B	DD873-MW205B	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.6	ng/L	UJ	P01
DDMT-873-MW205B	DD873-MW205B	Perfluorooctanesulfonic acid (PFOS)	0.96	ng/L	J	M02
DDMT-873-MW210B	DD873-MW210B	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	3.7	ng/L	UJ	C05
DDMT-873-MW210B	DD873-MW210B	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.7	ng/L	UJ	C05
DDMT-873-MW210B	DD873-MW210B	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.7	ng/L	UJ	P01
DDMT-873-MW205A	DD873-MW205A	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	3.8	ng/L	UJ	C05
DDMT-873-MW205A	DD873-MW205A	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.8	ng/L	UJ	C05
DDMT-873-MW205A	DD873-MW205A	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.8	ng/L	UJ	P01
DDMT-873-MW210A	DD873-MW210A	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	3.5	ng/L	UJ	C05

Table G-1. Qualified DDMT Data, January 2023 (Continued)

Location	Sample ID	Chemical	Result	Units	Final Qual	Validation Code
DDMT-873-MW210A	DD873-MW210A	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.5	ng/L	UJ	C05
DDMT-873-MW210A	DD873-MW210A	N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	3.5	ng/L	UJ	P01
DDMT-873-MW210A	DD873-MW210A	Perfluorooctanesulfonic acid (PFOS)	2.0	ng/L	J	M02
DDMT-PER-MW270	DDPER-MW270	Perfluorooctanesulfonic acid (PFOS)	9.9	ng/L	J	M02
DDMT-560-MW302	DD560-MW302EB	N-methylperfluoro-1-octanesulfonamide (MeFOSA)	7.5	ng/L	UJ	G02
DDMT-560-04	DD56004-SW01	Perfluorooctanesulfonic acid (PFOS)	9.4	ng/L	J+	H01, H04
DDMT-560-04	DD56004-SW01	Perfluorooctanesulfonic acid (PFOS)	9.4	ng/L	J	M02
DDMT-560-04	DD56004-SD01	Hexafluoropropylene oxide dimer acid (GenX)	3.4	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	N-methylperfluoro-1-octanesulfonamide (MeFOSA)	1.7	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluoro-1-butanesulfonic acid (PFBS)	0.43	µg/kg	J+	G02
DDMT-560-04	DD56004-SD01	Perfluoro-1-heptanesulfonic acid (PFHpS)	0.85	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluoro-1-octanesulfonamide (PFOSA)	0.85	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluoro-1-pentanesulfonic acid (PFPeS)	0.85	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluorohexanesulfonic acid (PFHxS)	0.85	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluoro-n-butanoic acid (PFBA)	0.85	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluoro-n-heptanoic acid (PFHpA)	0.85	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluoro-n-hexanoic acid (PFHxA)	0.85	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluoro-n-octanoic acid (PFOA)	0.85	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluoro-n-pentanoic acid (PFPeA)	0.85	µg/kg	UJ	G02
DDMT-560-04	DD56004-SD01	Perfluoro-1-butanesulfonic acid (PFBS)	0.43	µg/kg	J+	H01
DDMT-560-04	DD56004-SW01FD	Perfluorooctanesulfonic acid (PFOS)	8.9	ng/L	J	M02
DDMT-560-05	DD56005-SW01	Perfluoro-n-butanoic acid (PFBA)	4.1	ng/L	J+	G02

Validation Codes:
C05 = CCV percent difference was above the control limit
G02 = EIS recovery was less than 50 percent and greater than 20 percent
H01 = Matrix spike or spike duplicate recovery was above control limit
H04 = Matrix spike/matrix spike duplicate relative percent difference was above control limit
M02 = Transition ion ratios exceeded criteria
P01 = LCS percent recovery was above the control limit

Qualifiers:
J = The analyte was positively identified; the associated numerical value is an estimated concentration with an unknown bias.
J+ = The analyte was positively identified; the result is an estimated concentration and may be biased high.
UJ = The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.

G.2 REFERENCES

DoD (U.S. Department of Defense). 2020. *Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by Quality Systems Manual for Environmental Laboratories (QSM) Table B-15*. Environmental Data Quality Working Group. May.

DoD. 2021. *Quality Systems Manual for Environmental Laboratories*. Prepared by the U.S. Department of Defense and U.S. Department of Energy. Version 5.4. Final. May.

DoD. 2022. *Data Validation Guidelines Modules 1, 2, 3, and 4 Revised Table for Sample Qualification in the Presence of Blank Contamination.* February.

Leidos. 2022. *Programmatic Uniform Federal Policy-Quality Assurance Project Plan, Per- and Polyfluoroalkyl Substances Site Inspections at Multiple Base Realignment and Closure Installations, Nationwide*. February.

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APPENDIX H

DATA PRESENTATION TABLES

Table H-1. Soil Data Presentation: Building 308/DRMO (Hazardous Waste Storage) AOPI

Location ID		DDMT-308-01	DDMT-308-01	DDMT-308-01	DDMT-308-02	DDMT-308-02	DDMT-308-02	DDMT-308-03	DDMT-308-03	DDMT-308-03	DDMT-308-03
Sample ID		DD30801-SB02	DD30801-SB03	DD30801-SS01	DD30802-SB02	DD30802-SB03	DD30802-SS01	DD30803-SB02	DD30803-SB03	DD30803-SS01	DD308-SB02FD
Sample Type	Units	BORE	BORE	SURF	BORE	BORE	SURF	BORE	BORE	SURF	BORE
Depth (ft.)		6.0-8.0	13-15	0.0-0.5	6.0-8.0	13-15	0.0-0.5	6.0-8.0	13-15	0.0-0.5	6.0-8.0
Parameter / **Sample Date**		03/15/2023	03/15/2023	03/15/2023	03/15/2023	03/15/2023	03/15/2023	03/15/2023	03/15/2023	03/15/2023	03/15/2023
PFAS											
4:2-Fluorotelomersulfonic acid (4:2 FTS)	µg/kg	1 U	1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	µg/kg	1 U	1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	µg/kg	1 U	1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	µg/kg	2 U	2.4 U	2.2 U	2.5 U	2.4 U	2.3 U	2.4 U	2.1 U	2.3 U	2.5 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	µg/kg	1 U	1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	µg/kg	1 U	1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	µg/kg	1 U	1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.2 U	1.1 U	1.2 U	1.3 U
Perfluorobutanesulfonic acid (PFBS)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorobutanoic acid (PFBA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorodecanesulfonic acid (PFDS)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorodecanoic acid (PFDA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorododecanoic acid (PFDoA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluoroheptanesulfonic acid (PFHpS)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluoroheptanoic acid (PFHpA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorohexanesulfonic acid (PFHxS)	µg/kg	0.5 U	0.6 U	0.55 U	**0.75 J**	**0.33 J**	0.55 U	**0.5 J**	0.55 U	0.6 U	**0.37 J**
Perfluorohexanoic acid (PFHxA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorononanesulfonic acid (PFNS)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorononanoic acid (PFNA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorooctane Sulfonate (PFOS)	µg/kg	0.5 U	0.6 U	0.55 U	**9.1**	0.6 U	**4.5**	0.6 U	0.55 U	**1 J**	0.6 U
Perfluorooctanesulfonamide (PFOSA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorooctanoic acid (PFOA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluoropentanesulfonic acid (PFPS)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluoropentanoic acid (PFPA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorotetradecanoic acid (PFTeDA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluorotridecanoic acid (PFTriDA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U
Perfluoroundecanoic acid (PFUnA)	µg/kg	0.5 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U	0.6 U

Table H-2. Groundwater Data Presentation: Building 308/DRMO (Hazardous Waste Storage) AOPI

Parameter	Location ID Sample ID Sample Type Depth (ft.) Sample Date	Units	DDMT-308-MW-103 DD308-MW103 WELL 80 03/20/2023	DDMT-308-MW-264 DD308-MW264 WELL 110 03/20/2023	DDMT-308-MW-291 DD308-MW291 WELL 79 03/20/2023
PFAS					
4:2-Fluorotelomersulfonic acid (4:2 FTS)		ng/L	3.8 U	3.8 U	3.7 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)		ng/L	3.8 U	3.8 U	3.7 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)		ng/L	3.8 U	3.8 U	3.7 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)		ng/L	3.8 U	3.8 U	3.7 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)		ng/L	3.8 U	3.8 U	3.7 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ng/L	3.8 U	3.8 U	3.7 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ng/L	7.5 U	7.5 U	7.5 U
Perfluorobutanesulfonic acid (PFBS)		ng/L	**2.9 J**	1.9 U	**34**
Perfluorobutanoic acid (PFBA)		ng/L	**2 J**	1.9 U	**6.4**
Perfluorodecanesulfonic acid (PFDS)		ng/L	1.9 U	1.9 U	1.8 U
Perfluorodecanoic acid (PFDA)		ng/L	1.9 U	1.9 U	1.8 U
Perfluorododecanoic acid (PFDoA)		ng/L	1.9 U	1.9 U	1.8 U
Perfluoroheptanesulfonic acid (PFHpS)		ng/L	1.9 U	1.9 U	**1.5 J**
Perfluoroheptanoic acid (PFHpA)		ng/L	**1.4 J**	1.9 U	**1.7 J**
Perfluorohexanesulfonic acid (PFHxS)		ng/L	**4.2**	1.9 U	**47**
Perfluorohexanoic acid (PFHxA)		ng/L	**1.3 J**	1.9 U	**5.1**
Perfluorononanesulfonic acid (PFNS)		ng/L	1.9 U	1.9 U	1.8 U
Perfluorononanoic acid (PFNA)		ng/L	1.9 U	1.9 U	1.8 U
Perfluorooctane Sulfonate (PFOS)		ng/L	**4.5 J**	1.9 U	**160**
Perfluorooctanesulfonamide (PFOSA)		ng/L	1.9 U	1.9 U	1.8 U
Perfluorooctanoic acid (PFOA)		ng/L	**4.2**	1.9 U	**6.6**
Perfluoropentanesulfonic acid (PFPS)		ng/L	1.9 U	1.9 U	**4.6**
Perfluoropentanoic acid (PFPA)		ng/L	**1.2 J**	1.9 U	**3.2 J**
Perfluorotetradecanoic acid (PFTeDA)		ng/L	1.9 U	1.9 U	1.8 U
Perfluorotridecanoic acid (PFTriDA)		ng/L	1.9 U	1.9 U	1.8 U
Perfluoroundecanoic acid (PFUnA)		ng/L	1.9 U	1.9 U	1.8 U

Table H-3. Surface Water Data Presentation: Building 308/DRMO (Hazardous Waste Storage) AOPI

Parameter	Location ID / Sample ID / Sample Type / Sample Date	Units	DDMT-308-04 DD30804-SW01 SWTR 03/17/2023	DDMT-308-05 DD30805-SW01 SWTR 03/17/2023
PFAS				
4:2-Fluorotelomersulfonic acid (4:2 FTS)		ng/L	3.9 U	3.5 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)		ng/L	3.9 U	3.5 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)		ng/L	3.9 U	3.5 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)		ng/L	3.9 U	3.5 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)		ng/L	3.9 U	3.5 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ng/L	3.9 U	3.5 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ng/L	8 U	7 U
Perfluorobutanesulfonic acid (PFBS)		ng/L	**1.5 J**	**1.4 J**
Perfluorobutanoic acid (PFBA)		ng/L	**3.8 J+**	**3.5 J+**
Perfluorodecanesulfonic acid (PFDS)		ng/L	2 U	1.8 U
Perfluorodecanoic acid (PFDA)		ng/L	2 U	1.8 U
Perfluorododecanoic acid (PFDoA)		ng/L	2 U	1.8 U
Perfluoroheptanesulfonic acid (PFHpS)		ng/L	2 U	1.8 U
Perfluoroheptanoic acid (PFHpA)		ng/L	2 U	1.8 U
Perfluorohexanesulfonic acid (PFHxS)		ng/L	**17**	**14**
Perfluorohexanoic acid (PFHxA)		ng/L	2 U	1.8 U
Perfluorononanesulfonic acid (PFNS)		ng/L	2 U	1.8 U
Perfluorononanoic acid (PFNA)		ng/L	2 U	1.8 U
Perfluorooctane Sulfonate (PFOS)		ng/L	**1.5 J**	**3.9**
Perfluorooctanesulfonamide (PFOSA)		ng/L	2 U	1.8 U
Perfluorooctanoic acid (PFOA)		ng/L	2 U	1.8 U
Perfluoropentanesulfonic acid (PFPS)		ng/L	2 U	1.8 U
Perfluoropentanoic acid (PFPA)		ng/L	2 U	1.8 U
Perfluorotetradecanoic acid (PFTeDA)		ng/L	2 U	1.8 U
Perfluorotridecanoic acid (PFTriDA)		ng/L	2 U	1.8 U
Perfluoroundecanoic acid (PFUnA)		ng/L	2 U	1.8 U

Table H-4. Soil Data Presentation: Building 529 (General Purpose Warehouse) AOPI

Parameter	Units	Location ID: DDMT-529-01 Sample ID: DD52901-SB02 Sample Type: BORE Depth (ft.): 6.0-8.0 Sample Date: 03/15/2023	DDMT-529-01 DD52901-SB03 BORE 13-15 03/15/2023	DDMT-529-01 DD52901-SS01 SURF 0.0-0.5 03/15/2023	DDMT-529-02 DD52902-SB02 BORE 6.0-8.0 03/16/2023	DDMT-529-02 DD52902-SB03 BORE 13-15 03/16/2023	DDMT-529-02 DD52902-SB03FD BORE 13-15 03/16/2023	DDMT-529-03 DD52903-SB02 BORE 6.0-8.0 03/16/2023	DDMT-529-03 DD52903-SB03 BORE 13-15 03/16/2023
PFAS									
4:2-Fluorotelomersulfonic acid (4:2 FTS)	µg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.1 U	1.1 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	µg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.1 U	1.1 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	µg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.1 U	1.1 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	µg/kg	2.3 U	2.4 U	2.4 U	2.4 U	2.3 U	2.4 U	2.2 U	2.2 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	µg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.1 U	1.1 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	µg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.1 U	1.1 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	µg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.1 U	1.1 U
Perfluorobutanesulfonic acid (PFBS)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorobutanoic acid (PFBA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorodecanesulfonic acid (PFDS)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorodecanoic acid (PFDA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorododecanoic acid (PFDoA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluoroheptanesulfonic acid (PFHpS)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluoroheptanoic acid (PFHpA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorohexanesulfonic acid (PFHxS)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorohexanoic acid (PFHxA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorononanesulfonic acid (PFNS)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorononanoic acid (PFNA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorooctane Sulfonate (PFOS)	µg/kg	**0.56 J**	0.6 U	**2**	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorooctanesulfonamide (PFOSA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorooctanoic acid (PFOA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluoropentanesulfonic acid (PFPS)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluoropentanoic acid (PFPA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorotetradecanoic acid (PFTeDA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluorotridecanoic acid (PFTriDA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U
Perfluoroundecanoic acid (PFUnA)	µg/kg	0.55 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.55 U	0.55 U

Table H-5. Groundwater Data Presentation: Building 529 (General Purpose Warehouse) AOPI

Parameter	Units	DDMT-529-MW-214B DD529-MW214B WELL 105 03/22/2023	DDMT-529-MW-281 DD529-MW281 WELL 85 03/21/2023	DDMT-529-MW-287 DD529-MW287 WELL 89 03/21/2023	DDMT-529-MW-287 DD529-MW287FD WELL 89 03/21/2023	DDMT-529-MW-288 DD529-MW288 WELL 95 03/21/2023
Location ID / Sample ID / Sample Type / Depth (ft.) / Sample Date						
PFAS						
4:2-Fluorotelomersulfonic acid (4:2 FTS)	ng/L	3.6 U	3.5 U	3.9 U	3.9 U	3.9 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	ng/L	3.6 U	3.5 U	3.9 U	3.9 U	3.9 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	ng/L	3.6 U	3.5 U	3.9 U	3.9 U	3.9 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	ng/L	3.6 U	3.5 U	3.9 U	3.9 U	3.9 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	ng/L	3.6 U	3.5 U	3.9 U	3.9 U	3.9 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	3.6 U	3.5 U	3.9 U	3.9 U	3.9 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	ng/L	7 U	7 U	7.5 U	8 U	7.5 U
Perfluorobutanesulfonic acid (PFBS)	ng/L	**23**	**25**	**14**	**14**	**19**
Perfluorobutanoic acid (PFBA)	ng/L	**3.7**	**4**	**5.8**	**5.8**	**3.9**
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	2 U	2 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	2 U	2 U	1.9 U
Perfluorododecanoic acid (PFDoA)	ng/L	1.8 U	1.8 U	2 U	2 U	1.9 U
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	1.8 U	**1.5 J**	**1.7 J**	**1.7 J**	1.9 U
Perfluoroheptanoic acid (PFHpA)	ng/L	**2.2 J**	**1.6 J**	**4.8**	**4.5**	**2 J**
Perfluorohexanesulfonic acid (PFHxS)	ng/L	**22**	**44**	**98**	**97**	**24**
Perfluorohexanoic acid (PFHxA)	ng/L	**3.2 J**	**5.4**	**14**	**14**	**3.4 J**
Perfluorononanesulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	2 U	2 U	1.9 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	2 U	2 U	1.9 U
Perfluorooctane Sulfonate (PFOS)	ng/L	**24**	**150**	**16**	**16**	**41**
Perfluorooctanesulfonamide (PFOSA)	ng/L	1.8 U	1.8 U	2 U	2 U	1.9 U
Perfluorooctanoic acid (PFOA)	ng/L	**7.7**	**6.3**	**15**	**15**	**6.8**
Perfluoropentanesulfonic acid (PFPS)	ng/L	**1.7 J**	**4.6**	**9.2**	**9.6**	**1.7 J**
Perfluoropentanoic acid (PFPA)	ng/L	**2.5 J**	**3.2 J**	**8**	**7.7**	**2.8 J**
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	2 U	2 U	1.9 U
Perfluorotridecanoic acid (PFTriDA)	ng/L	1.8 U	1.8 U	2 U	2 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	2 U	2 U	1.9 U

Table H-6. Soil Data Presentation: Building 550 (1984 Plane Crash Site) AOPI

Location ID	Units	DDMT-550-01	DDMT-550-01	DDMT-550-01	DDMT-550-01	DDMT-550-02	DDMT-550-02	DDMT-550-02	DDMT-550-03	DDMT-550-03	DDMT-550-03
Sample ID		DD55001-SB02	DD55001-SB03	DD55001-SS01	DD55001-SS01FD	DD55002-SB02	DD55002-SB03	DD55002-SS01	DD55003-SB02	DD55003-SB03	DD55003-SS01
Sample Type		BORE	BORE	SURF	SURF	BORE	BORE	SURF	BORE	BORE	SURF
Depth (ft.)		6.0-8.0	13-15	0.0-0.5	0.0-0.5	6.0-8.0	13-15	0.0-0.5	6.0-8.0	13-15	0.0-0.5
Parameter / Sample Date		03/16/2023	03/16/2023	03/16/2023	03/16/2023	03/16/2023	03/16/2023	03/16/2023	03/17/2023	03/17/2023	03/17/2023
PFAS											
4:2-Fluorotelomersulfonic acid (4:2 FTS)	µg/kg	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.2 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	µg/kg	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.2 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	µg/kg	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.2 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	µg/kg	2.3 U	2.2 U	2.1 U	2.1 U	2.1 U	2.2 U	2.2 U	2.3 U	2.3 U	2.3 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	µg/kg	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.2 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	µg/kg	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.2 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	µg/kg	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.2 U
Perfluorobutanesulfonic acid (PFBS)	µg/kg	**0.41 J**	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	**0.64 J**	**0.25 J**	0.55 U
Perfluorobutanoic acid (PFBA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluorodecanesulfonic acid (PFDS)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluorodecanoic acid (PFDA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluorododecanoic acid (PFDoA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluoroheptanesulfonic acid (PFHpS)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluoroheptanoic acid (PFHpA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	**0.32 J**	0.55 U	0.55 U
Perfluorohexanesulfonic acid (PFHxS)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	**0.82 J**	**0.48 J**	0.55 U
Perfluorohexanoic acid (PFHxA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluorononanesulfonic acid (PFNS)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluorononanoic acid (PFNA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluorooctane Sulfonate (PFOS)	µg/kg	0.6 U	0.55 U	**0.64 J**	**0.42 J**	**0.47 J**	0.55 U	**0.25 J**	0.55 U	**1.4**	**1.5**
Perfluorooctanesulfonamide (PFOSA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluorooctanoic acid (PFOA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluoropentanesulfonic acid (PFPS)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluoropentanoic acid (PFPA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluorotetradecanoic acid (PFTeDA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluorotridecanoic acid (PFTriDA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
Perfluoroundecanoic acid (PFUnA)	µg/kg	0.6 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U

Table H-7. Groundwater Data Presentation: Building 550 (1984 Plane Crash Site) AOPI

Parameter	Location ID Sample ID Sample Type Depth (ft.) Sample Date	Units	DDMT-550-MW-215A DD550-MW215A WELL 135 03/22/2023	DDMT-550-MW-215B DD550-MW215B WELL 110 03/21/2023	DDMT-550-MW-215B DDMT550-MW215BFD WELL 110 03/21/2023
PFAS					
4:2-Fluorotelomersulfonic acid (4:2 FTS)		ng/L	3.5 U	3.6 U	3.6 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)		ng/L	3.5 U	3.6 U	3.6 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)		ng/L	3.5 U	3.6 U	3.6 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)		ng/L	3.5 U	3.6 U	3.6 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)		ng/L	3.5 U	3.6 U	3.6 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ng/L	3.5 U	3.6 U	3.6 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ng/L	7 U	7 U	7 U
Perfluorobutanesulfonic acid (PFBS)		ng/L	**19**	**7.6**	**8**
Perfluorobutanoic acid (PFBA)		ng/L	**2.7 J**	**2.5 J**	**2.4 J**
Perfluorodecanesulfonic acid (PFDS)		ng/L	1.8 U	1.8 U	1.8 U
Perfluorodecanoic acid (PFDA)		ng/L	1.8 U	1.8 U	1.8 U
Perfluorododecanoic acid (PFDoA)		ng/L	1.8 U	1.8 U	1.8 U
Perfluoroheptanesulfonic acid (PFHpS)		ng/L	1.8 U	1.8 U	1.8 U
Perfluoroheptanoic acid (PFHpA)		ng/L	**1.5 J**	**1.9 J**	**1.7 J**
Perfluorohexanesulfonic acid (PFHxS)		ng/L	**29**	**21**	**21**
Perfluorohexanoic acid (PFHxA)		ng/L	**2.8 J**	**2.9 J**	**2.5 J**
Perfluorononanesulfonic acid (PFNS)		ng/L	1.8 U	1.8 U	1.8 U
Perfluorononanoic acid (PFNA)		ng/L	1.8 U	1.8 U	1.8 U
Perfluorooctane Sulfonate (PFOS)		ng/L	**58**	**9.1**	**9.5**
Perfluorooctanesulfonamide (PFOSA)		ng/L	1.8 U	1.8 U	1.8 U
Perfluorooctanoic acid (PFOA)		ng/L	**5.1**	**9.5**	**8.9**
Perfluoropentanesulfonic acid (PFPS)		ng/L	1.8 U	**1.2 J**	**1.7 J**
Perfluoropentanoic acid (PFPA)		ng/L	**2.2 J**	**1.6 J**	**1.5 J**
Perfluorotetradecanoic acid (PFTeDA)		ng/L	1.8 U	1.8 U	1.8 U
Perfluorotridecanoic acid (PFTriDA)		ng/L	1.8 U	1.8 U	1.8 U
Perfluoroundecanoic acid (PFUnA)		ng/L	1.8 U	1.8 U	1.8 U

Table H-8. Soil Data Presentation: Building 560 (General Purpose Warehouse) AOPI

Location ID		DDMT-560-01	DDMT-560-01	DDMT-560-01	DDMT-560-01	DDMT-560-02	DDMT-560-02	DDMT-560-02	DDMT-560-03	DDMT-560-03	DDMT-560-03
Sample ID		DD56001-SB02	DD56001-SB03	DD56001-SS01	DD56001-SS01FD	DD56002-SB02	DD56002-SB03	DD56002-SS01	DD56003-SB02	DD56003-SB03	DD56003-SS01
Sample Type	Units	BORE	BORE	SURF	SURF	BORE	BORE	SURF	BORE	BORE	SURF
Depth (ft.)		6.0-8.0	13-15	0.0-0.5	0.0-0.5	6.0-8.0	13-15	0.0-0.5	6.0-8.0	13-15	0.0-0.5
Parameter Sample Date		03/18/2023	03/18/2023	03/18/2023	03/18/2023	03/18/2023	03/18/2023	03/18/2023	03/17/2023	03/17/2023	03/17/2023
PFAS											
4:2-Fluorotelomersulfonic acid (4:2 FTS)	µg/kg	1.1 U	1.2 U	0.95 U	1.1 U	1.2 U	1.1 U	0.95 U	1.1 U	1.2 U	1 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	µg/kg	1.1 U	1.2 U	0.95 U	1.1 U	1.2 U	1.1 U	0.95 U	1.1 U	1.2 U	1 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	µg/kg	1.1 U	1.2 U	0.95 U	1.1 U	1.2 U	1.1 U	0.95 U	1.1 U	1.2 U	1 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	µg/kg	2.1 U	2.3 U	1.9 U	2.1 U	2.4 U	2.2 U	1.9 U	2.2 U	2.3 U	2 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	µg/kg	1.1 U	1.2 U	0.95 U	1.1 U	1.2 U	1.1 U	0.95 U	1.1 U	1.2 U	1 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	µg/kg	1.1 U	1.2 U	0.95 U	1.1 U	1.2 U	1.1 U	0.95 U	1.1 U	1.2 U	1 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	µg/kg	1.1 U	1.2 U	0.95 U	1.1 U	1.2 U	1.1 U	0.95 U	1.1 U	1.2 U	1 U
Perfluorobutanesulfonic acid (PFBS)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorobutanoic acid (PFBA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorodecanesulfonic acid (PFDS)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorodecanoic acid (PFDA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorododecanoic acid (PFDoA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluoroheptanesulfonic acid (PFHpS)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluoroheptanoic acid (PFHpA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorohexanesulfonic acid (PFHxS)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorohexanoic acid (PFHxA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorononanesulfonic acid (PFNS)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorononanoic acid (PFNA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorooctane Sulfonate (PFOS)	µg/kg	0.5 U	0.55 U	0.48 U	**0.22 J**	0.6 U	0.55 U	**0.37 J**	0.55 U	0.6 U	**0.35 J**
Perfluorooctanesulfonamide (PFOSA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorooctanoic acid (PFOA)	µg/kg	0.5 U	0.55 U	**0.19 J**	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluoropentanesulfonic acid (PFPS)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluoropentanoic acid (PFPA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorotetradecanoic acid (PFTeDA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluorotridecanoic acid (PFTriDA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U
Perfluoroundecanoic acid (PFUnA)	µg/kg	0.5 U	0.55 U	0.48 U	0.5 U	0.6 U	0.55 U	0.47 U	0.55 U	0.6 U	0.5 U

Table H-9. Groundwater Data Presentation: Building 560 (General Purpose Warehouse) AOPI

Parameter	Units	DDMT-560-MW-271	DDMT-560-MW-284	DDMT-560-MW-302	DDMT-560-MW-307	DDMT-560-MW-311
Sample ID		DD560-MW271	DD560-MW284	DD560-MW302	DD560-MW307	DD560-MW311
Sample Type		WELL	WELL	WELL	WELL	WELL
Depth (ft.)		140	115	165	105	178
Sample Date		03/22/2023	03/20/2023	03/22/2023	03/23/2023	03/22/2023
PFAS						
4:2-Fluorotelomersulfonic acid (4:2 FTS)	ng/L	3.7 U	4.4 U	3.5 U	3.4 U	3.7 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	ng/L	3.7 U	4.4 U	3.5 U	3.4 U	3.7 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	ng/L	3.7 U	4.4 U	3.5 U	3.4 U	3.7 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	ng/L	3.7 U	4.4 U	3.5 U	3.4 U	3.7 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	ng/L	3.7 U	4.4 U	3.5 U	3.4 U	3.7 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	3.7 U	4.4 U	3.5 U	3.4 U	3.7 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	ng/L	7.5 U	8.5 U	7 U	7 U	7.5 U
Perfluorobutanesulfonic acid (PFBS)	ng/L	**1.7 J**	**45**	**30**	**99**	**28**
Perfluorobutanoic acid (PFBA)	ng/L	**1.4 J**	**3.5 J**	**3 J**	**6.1**	**4.3**
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	1.8 U
Perfluorododecanoic acid (PFDoA)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	1.8 U
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	**2 J**
Perfluoroheptanoic acid (PFHpA)	ng/L	**1.1 J**	**1.7 J**	1.8 U	**2 J**	**4.9**
Perfluorohexanesulfonic acid (PFHxS)	ng/L	**8.5**	**25**	**16**	**13**	**43**
Perfluorohexanoic acid (PFHxA)	ng/L	**2.1 J**	**3.5 J**	**3 J**	**3.4**	**9.1**
Perfluorononanesulfonic acid (PFNS)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	1.8 U
Perfluorooctane Sulfonate (PFOS)	ng/L	1.9 U	**31**	**4.2**	1.7 U	**130**
Perfluorooctanesulfonamide (PFOSA)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	1.8 U
Perfluorooctanoic acid (PFOA)	ng/L	**2.3 J**	**5.5**	**4.5**	**0.91 J**	**7.2**
Perfluoropentanesulfonic acid (PFPS)	ng/L	**1.1 J**	**2.2 J**	**2.6 J**	1.7 U	**3.1 J**
Perfluoropentanoic acid (PFPA)	ng/L	**2.1 J**	**2.6 J**	**1.4 J**	**4**	**9.4**
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	1.8 U
Perfluorotridecanoic acid (PFTriDA)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	2.2 U	1.8 U	1.7 U	1.8 U

Table H-10. Surface Water Data Presentation: Building 560 (General Purpose Warehouse) AOPI

Parameter	Location ID Sample ID Sample Type Depth (ft.) Sample Date	Units	DDMT-560-04 DD56004-SW01 SWTR 0.0 03/23/2023	DDMT-560-04 DD56004-SW01FD SWTR 0.0 03/23/2023	DDMT-560-05 DD56005-SW01 SWTR 0.0 03/23/2023
PFAS					
4:2-Fluorotelomersulfonic acid (4:2 FTS)		ng/L	3.7 U	3.9 U	3.7 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)		ng/L	3.7 U	3.9 U	3.7 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)		ng/L	3.7 U	3.9 U	3.7 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)		ng/L	3.7 U	3.9 U	3.7 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)		ng/L	3.7 U	3.9 U	3.7 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ng/L	3.7 U	3.9 U	3.7 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ng/L	7.5 U	7.5 U	7.5 U
Perfluorobutanesulfonic acid (PFBS)		ng/L	**53**	**54**	**9.1**
Perfluorobutanoic acid (PFBA)		ng/L	**4.7**	**4.9**	**4.1 J+**
Perfluorodecanesulfonic acid (PFDS)		ng/L	1.9 U	1.9 U	1.9 U
Perfluorodecanoic acid (PFDA)		ng/L	1.9 U	1.9 U	1.9 U
Perfluorododecanoic acid (PFDoA)		ng/L	1.9 U	1.9 U	1.9 U
Perfluoroheptanesulfonic acid (PFHpS)		ng/L	1.9 U	1.9 U	1.9 U
Perfluoroheptanoic acid (PFHpA)		ng/L	1.9 U	1.9 U	1.9 U
Perfluorohexanesulfonic acid (PFHxS)		ng/L	**5.4**	**4.9**	1.9 U
Perfluorohexanoic acid (PFHxA)		ng/L	**1.1 J**	**1.1 J**	1.9 U
Perfluorononanesulfonic acid (PFNS)		ng/L	1.9 U	1.9 U	1.9 U
Perfluorononanoic acid (PFNA)		ng/L	1.9 U	1.9 U	1.9 U
Perfluorooctane Sulfonate (PFOS)		ng/L	**9.4 J+**	**8.9 J**	**2.1 J**
Perfluorooctanesulfonamide (PFOSA)		ng/L	1.9 U	1.9 U	1.9 U
Perfluorooctanoic acid (PFOA)		ng/L	**1.9 J**	**1.6 J**	1.9 U
Perfluoropentanesulfonic acid (PFPS)		ng/L	1.9 U	1.9 U	1.9 U
Perfluoropentanoic acid (PFPA)		ng/L	**1 J**	**1.1 J**	1.9 U
Perfluorotetradecanoic acid (PFTeDA)		ng/L	1.9 U	1.9 U	1.9 U
Perfluorotridecanoic acid (PFTriDA)		ng/L	1.9 U	1.9 U	1.9 U
Perfluoroundecanoic acid (PFUnA)		ng/L	1.9 U	1.9 U	1.9 U

Table H-11. Sediment Data Presentation: Building 560 (General Purpose Warehouse) AOPI

Parameter	Location ID / Sample ID / Sample Type / Depth (ft.) / Sample Date	Units	DDMT-560-04 DD56004-SD01 SEDI 0.0-0.0 03/23/2023	DDMT-560-04 DD56004-SD01FD SEDI 0.0-0.0 03/23/2023
PFAS				
4:2-Fluorotelomersulfonic acid (4:2 FTS)		µg/kg	1.7 U	1.4 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)		µg/kg	1.7 U	1.4 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)		µg/kg	1.7 U	1.4 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)		µg/kg	3.4 UJ	2.7 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)		µg/kg	1.7 U	1.4 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		µg/kg	1.7 U	1.4 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		µg/kg	1.7 UJ	1.4 U
Perfluorobutanesulfonic acid (PFBS)		µg/kg	**0.43 J+**	0.7 U
Perfluorobutanoic acid (PFBA)		µg/kg	0.85 UJ	0.7 U
Perfluorodecanesulfonic acid (PFDS)		µg/kg	0.85 U	0.7 U
Perfluorodecanoic acid (PFDA)		µg/kg	0.85 U	0.7 U
Perfluorododecanoic acid (PFDoA)		µg/kg	0.85 U	0.7 U
Perfluoroheptanesulfonic acid (PFHpS)		µg/kg	0.85 UJ	0.7 U
Perfluoroheptanoic acid (PFHpA)		µg/kg	0.85 UJ	0.7 U
Perfluorohexanesulfonic acid (PFHxS)		µg/kg	0.85 UJ	0.7 U
Perfluorohexanoic acid (PFHxA)		µg/kg	0.85 UJ	0.7 U
Perfluorononanesulfonic acid (PFNS)		µg/kg	0.85 U	0.7 U
Perfluorononanoic acid (PFNA)		µg/kg	0.85 U	0.7 U
Perfluorooctane Sulfonate (PFOS)		µg/kg	**0.85 J**	0.7 U
Perfluorooctanesulfonamide (PFOSA)		µg/kg	0.85 UJ	0.7 U
Perfluorooctanoic acid (PFOA)		µg/kg	0.85 UJ	0.7 U
Perfluoropentanesulfonic acid (PFPS)		µg/kg	0.85 UJ	0.7 U
Perfluoropentanoic acid (PFPA)		µg/kg	0.85 UJ	0.7 U
Perfluorotetradecanoic acid (PFTeDA)		µg/kg	0.85 U	0.7 U
Perfluorotridecanoic acid (PFTriDA)		µg/kg	0.85 U	0.7 U
Perfluoroundecanoic acid (PFUnA)		µg/kg	0.85 U	0.7 U

Table H-12. Soil Data Presentation: Building 865 and 873 (Open Shed Warehouse/Recoupment Facilities) AOPI

Location ID / Sample ID / Sample Type / Depth (ft.) / Sample Date	Units	DDMT-873-01 DD87301-SB02 BORE 6.0-8.0 03/18/2023	DDMT-873-01 DD87301-SB03 BORE 13-15 03/18/2023	DDMT-873-01 DD87301-SS01 SURF 0.0-1.0 03/18/2023	DDMT-873-02 DD87302-SB02 BORE 6.0-8.0 03/18/2023	DDMT-873-02 DD87302-SB03 BORE 13-15 03/18/2023	DDMT-873-02 DD873-SB02FD BORE 6.0-8.0 03/18/2023	DDMT-873-03 DD87303-SB02 BORE 6.0-8.0 03/18/2023	DDMT-873-03 DD87303-SB03 BORE 13-15 03/18/2023
Parameter									
PFAS									
4:2-Fluorotelomersulfonic acid (4:2 FTS)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	µg/kg	2.4 U	2.2 U	2.3 U	2.4 U	2.2 U	2.3 U	2.4 U	2.2 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U
Perfluorobutanesulfonic acid (PFBS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorobutanoic acid (PFBA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorodecanesulfonic acid (PFDS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorodecanoic acid (PFDA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorododecanoic acid (PFDoA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluoroheptanesulfonic acid (PFHpS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluoroheptanoic acid (PFHpA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorohexanesulfonic acid (PFHxS)	µg/kg	0.6 U	0.55 U	0.55 U	**0.37 J**	0.55 U	**0.38 J**	0.6 U	0.55 U
Perfluorohexanoic acid (PFHxA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorononanesulfonic acid (PFNS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorononanoic acid (PFNA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorooctane Sulfonate (PFOS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorooctanesulfonamide (PFOSA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorooctanoic acid (PFOA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluoropentanesulfonic acid (PFPS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluoropentanoic acid (PFPA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorotetradecanoic acid (PFTeDA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluorotridecanoic acid (PFTriDA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U
Perfluoroundecanoic acid (PFUnA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U

Table H-13. Groundwater Data Presentation: Building 865 and 873 (Open Shed Warehouse/Recoupment Facilities) AOPI

Location ID / Sample ID / Sample Type / Depth (ft.) / Sample Date	Units	DDMT-873-MW-197B	DDMT-873-MW-204B	DDMT-873-MW-205A	DDMT-873-MW205A	DDMT-873-MW-205B	DDMT-873-MW-210A	DDMT-873-MW-210B	DDMT-873-MW-216
Sample ID		DD873-MW197B	DD873-MW204B	DD873-MW205A	DD873-MW205AFD	DD873-MW205B	DD873-MW210A	DD873-MW210B	DD873-MW216
Sample Type		WELL	WELL	WELL	WELL	WELL	WELL	WELL	WELL
Depth (ft.)		100	100	146	146	102	185	101	105
Parameter / Sample Date		03/23/2023	03/23/2023	03/22/2023	03/22/2023	03/22/2023	03/23/2023	03/23/2023	03/23/2023
PFAS									
4:2-Fluorotelomersulfonic acid (4:2 FTS)	ng/L	3.7 U	3.5 U	3.8 U	3.7 U	3.6 U	3.5 U	3.7 U	3.8 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	ng/L	3.7 U	3.5 U	3.8 U	3.7 U	3.6 U	3.5 U	**40**	3.8 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	ng/L	3.7 UJ	3.5 UJ	3.8 UJ	3.7 UJ	3.6 UJ	3.5 UJ	3.7 UJ	3.8 UJ
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	ng/L	3.7 U	3.5 U	3.8 U	3.7 U	3.6 U	3.5 U	3.7 U	3.8 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	ng/L	3.7 UJ	3.5 UJ	3.8 UJ	3.7 UJ	3.6 UJ	3.5 UJ	3.7 UJ	3.8 UJ
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	3.7 U	3.5 U	3.8 U	3.7 U	3.6 U	3.5 U	3.7 U	3.8 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	ng/L	7.5 U	7 U	7.5 U	7.5 U	7 U	7 U	7.5 U	7.5 U
Perfluorobutanesulfonic acid (PFBS)	ng/L	**3.8**	**1.4 J**	**2 J**	**2 J**	**2.4 J**	**27**	**100**	**1.8 J**
Perfluorobutanoic acid (PFBA)	ng/L	**2.3 J**	**7.4**	**1.4 J**	**1.4 J**	**1.8 J**	**3.6**	**31**	**2 J**
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Perfluorododecanoic acid (PFDoA)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Perfluoroheptanoic acid (PFHpA)	ng/L	**1.2 J**	**1.6 J**	1.9 U	1.9 U	**0.96 J**	**1.6 J**	**12**	**1.6 J**
Perfluorohexanesulfonic acid (PFHxS)	ng/L	**13**	**14**	**8.2**	**7.7**	**11**	**60**	**120**	**15**
Perfluorohexanoic acid (PFHxA)	ng/L	**2.7 J**	**7.2**	**1.7 J**	**1.7 J**	**2.7 J**	**8**	**95**	**3 J**
Perfluorononanesulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Perfluorooctane Sulfonate (PFOS)	ng/L	**0.92 J**	**3.1 J**	1.9 U	1.9 U	**0.96 J**	**2 J**	1.9 U	**1 J**
Perfluorooctanesulfonamide (PFOSA)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Perfluorooctanoic acid (PFOA)	ng/L	**1.6 J**	**3.1 J**	**1.8 J**	**1.8 J**	**1.8 J**	**3.1 J**	**7.4**	**2.9 J**
Perfluoropentanesulfonic acid (PFPS)	ng/L	**2.8 J**	**1.2 J**	**1.2 J**	**1.1 J**	**1.5 J**	**3.6**	**23**	**1 J**
Perfluoropentanoic acid (PFPA)	ng/L	**2.1 J**	**3.4 J**	**1.5 J**	**1.5 J**	**1.6 J**	**3.6**	**68**	**3 J**
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Perfluorotridecanoic acid (PFTriDA)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U

Table H-14. Soil Data Presentation: Dunn Field Site 18 AOPI

Parameter	Units	DDMT-S18-01 DDS1801-SB02 BORE 6.0-8.0 03/14/2023	DDMT-S18-01 DDS1801-SB03 BORE 13-15 03/14/2023	DDMT-S18-01 DDS1801-SS01 SURF 0.0-0.5 03/14/2023	DDMT-S18-02 DDS1802-SB02 BORE 6.0-8.0 03/14/2023	DDMT-S18-02 DDS1802-SB03 BORE 13-15 03/14/2023	DDMT-S18-02 DDS1802-SS01 SURF 0.0-0.5 03/14/2023	DDMT-S18-03 DDS1803-SB02 BORE 6.0-8.0 03/14/2023	DDMT-S18-03 DDS1803-SB03 BORE 13-15 03/14/2023	DDMT-S18-03 DDS1803-SS01 SURF 0.0-0.5 03/14/2023
PFAS										
4:2-Fluorotelomersulfonic acid (4:2 FTS)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.3 U	1.2 U	1.1 U	1.1 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.3 U	1.2 U	1.1 U	1.1 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.3 U	1.2 U	1.1 U	1.1 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	µg/kg	2.4 U	2.2 U	2.3 U	2.3 U	2.2 U	2.6 U	2.4 U	2.2 U	2.2 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.3 U	1.2 U	1.1 U	1.1 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.3 U	1.2 U	1.1 U	1.1 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	µg/kg	1.2 U	1.1 U	1.2 U	1.2 U	1.1 U	1.3 U	1.2 U	1.1 U	1.1 U
Perfluorobutanesulfonic acid (PFBS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorobutanoic acid (PFBA)	µg/kg	0.6 U	0.55 U	**0.25 J**	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorodecanesulfonic acid (PFDS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorodecanoic acid (PFDA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorododecanoic acid (PFDoA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluoroheptanesulfonic acid (PFHpS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluoroheptanoic acid (PFHpA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorohexanesulfonic acid (PFHxS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorohexanoic acid (PFHxA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorononanesulfonic acid (PFNS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorononanoic acid (PFNA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorooctane Sulfonate (PFOS)	µg/kg	0.6 U	0.55 U	**1.1**	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	**0.35 J**
Perfluorooctanesulfonamide (PFOSA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorooctanoic acid (PFOA)	µg/kg	**0.41 J**	**0.66 J**	**0.27 J**	**0.29 J**	**0.29 J**	0.65 U	0.6 U	0.55 U	0.55 U
Perfluoropentanesulfonic acid (PFPS)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluoropentanoic acid (PFPA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorotetradecanoic acid (PFTeDA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluorotridecanoic acid (PFTriDA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U
Perfluoroundecanoic acid (PFUnA)	µg/kg	0.6 U	0.55 U	0.55 U	0.6 U	0.55 U	0.65 U	0.6 U	0.55 U	0.55 U

Table H-15. Groundwater Data Presentation: Dunn Field Site 18 AOPI

Parameter	Location ID / Sample ID / Sample Type / Depth (ft.) / Sample Date	Units	DDMT-S18-MW-134	DDMT-S18-MW-221	DDMT-S18-MW-222	DDMT-S18-MW-222
	Sample ID		DDS18-MW134	DDS18-MW221	DDS18-MW222	DDS18-MW222FD
	Sample Type		WELL	WELL	WELL	WELL
	Depth (ft.)		80	75	75	75
	Sample Date		03/19/2023	03/19/2023	03/19/2023	03/19/2023
PFAS						
4:2-Fluorotelomersulfonic acid (4:2 FTS)		ng/L	4.1 U	4.2 U	3.5 U	4.1 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)		ng/L	4.1 U	4.2 U	3.5 U	4.1 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)		ng/L	4.1 U	4.2 U	3.5 U	4.1 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)		ng/L	4.1 U	4.2 U	3.5 U	4.1 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)		ng/L	4.1 U	4.2 U	3.5 U	4.1 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ng/L	4.1 U	4.2 U	3.5 U	4.1 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ng/L	8 U	8.5 U	7 U	8 U
Perfluorobutanesulfonic acid (PFBS)		ng/L	**6.2**	**3.6 J**	**3.7**	**3.4 J**
Perfluorobutanoic acid (PFBA)		ng/L	**1.6 J**	**2.1 J**	**1 J**	**1 J**
Perfluorodecanesulfonic acid (PFDS)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U
Perfluorodecanoic acid (PFDA)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U
Perfluorododecanoic acid (PFDoA)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U
Perfluoroheptanesulfonic acid (PFHpS)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U
Perfluoroheptanoic acid (PFHpA)		ng/L	2.1 U	**1.8 J**	1.8 U	2.1 U
Perfluorohexanesulfonic acid (PFHxS)		ng/L	**9.8**	**11**	**5.1**	**5.3**
Perfluorohexanoic acid (PFHxA)		ng/L	**2 J**	**2.4 J**	**1 J**	**1 J**
Perfluorononanesulfonic acid (PFNS)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U
Perfluorononanoic acid (PFNA)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U
Perfluorooctane Sulfonate (PFOS)		ng/L	**4.4 J**	**7.5 J**	**1.8 J**	**1.6 J**
Perfluorooctanesulfonamide (PFOSA)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U
Perfluorooctanoic acid (PFOA)		ng/L	**2.8 J**	**4.3**	**1.6 J**	**1.5 J**
Perfluoropentanesulfonic acid (PFPS)		ng/L	**1.1 J**	**1.9 J**	1.8 U	2.1 U
Perfluoropentanoic acid (PFPA)		ng/L	**2.4 J**	**2.5 J**	**1.1 J**	**1.2 J**
Perfluorotetradecanoic acid (PFTeDA)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U
Perfluorotridecanoic acid (PFTriDA)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U
Perfluoroundecanoic acid (PFUnA)		ng/L	2.1 U	2.1 U	1.8 U	2.1 U

Table H-16. Groundwater Data Presentation: Perimeter Wells

Location ID		DDMT-PER-MW-102B	DDMT-PER-MW-24	DDMT-PER-MW-28	DDMT-PER-MW-52	DDMT-PER-MW-93	DDMT-PER-MW-219	DDMT-PER-MW-263	DDMT-PER-MW-270
Sample ID		DDPER-MW102B	DDPER-MW24	DDPER-MW28	DDPER-MW52	DDPER-MW93	DDPER-MW219	DDPER-MW263	DDPER-MW270
Sample Type	Units	WELL	WELL	WELL	WELL	WELL	WELL	WELL	WELL
Depth (ft.)		130	105	60	99	100	105	74	82
Parameter / Sample Date		03/22/2023	03/22/2023	03/20/2023	03/22/2023	03/22/2023	03/22/2023	03/22/2023	03/21/2023
PFAS									
4:2-Fluorotelomersulfonic acid (4:2 FTS)	ng/L	4.1 U	3.4 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U	3.7 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)	ng/L	4.1 U	3.4 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U	3.7 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)	ng/L	4.1 U	3.4 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U	3.7 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	ng/L	4.1 U	3.4 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U	3.7 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)	ng/L	4.1 U	3.4 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U	3.7 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	4.1 U	3.4 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U	3.7 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	ng/L	8 U	7 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U
Perfluorobutanesulfonic acid (PFBS)	ng/L	2 U	**3.7**	**2.4 J**	**6.5**	**14**	**3.5 J**	**4.5**	**3 J**
Perfluorobutanoic acid (PFBA)	ng/L	**1.2 J**	**2.5 J**	**2 J**	**2.9 J**	**4.7**	**1.7 J**	**2.5 J**	**3.2 J**
Perfluorodecanesulfonic acid (PFDS)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
Perfluorododecanoic acid (PFDoA)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	**3.4 J**
Perfluoroheptanoic acid (PFHpA)	ng/L	2 U	**1.9 J**	**2.5 J**	**2.2 J**	**3.3 J**	**1.7 J**	**1.3 J**	**1.3 J**
Perfluorohexanesulfonic acid (PFHxS)	ng/L	**3.6 J**	**15**	**6**	**34**	**9**	**13**	**9.5**	**34**
Perfluorohexanoic acid (PFHxA)	ng/L	2 U	**3.3 J**	**3.5 J**	**5.1**	**6**	**5.2**	**1.7 J**	**2.7 J**
Perfluorononanesulfonic acid (PFNS)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
Perfluorononanoic acid (PFNA)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
Perfluorooctane Sulfonate (PFOS)	ng/L	2 U	1.7 U	**7.8 J**	**4.1**	2 U	**1.2 J**	**33**	**9.9 J**
Perfluorooctanesulfonamide (PFOSA)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
Perfluorooctanoic acid (PFOA)	ng/L	**1.1 J**	**2.2 J**	**5.8**	**5.2**	**5.4**	**12**	**4.8**	**9.1**
Perfluoropentanesulfonic acid (PFPS)	ng/L	2 U	**1.1 J**	1.9 U	**5.1**	**1.2 J**	**2.4 J**	**1.1 J**	**1.1 J**
Perfluoropentanoic acid (PFPA)	ng/L	**1.5 J**	**3 J**	**4.5**	**2.2 J**	**8.7**	**3.7**	**1.4 J**	**1.5 J**
Perfluorotetradecanoic acid (PFTeDA)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
Perfluorotridecanoic acid (PFTriDA)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	2 U	1.7 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U

Table H-17. Source Water Data Presentation

Parameter	Location ID Sample ID Sample Type Depth (ft.) Sample Date	Units	DDMT-SRC DDMT-SRC-01 FBLK 12/06/2022	DDMT-SRC DDMT-SRC-02 FBLK 12/06/2022
PFAS				
4:2-Fluorotelomersulfonic acid (4:2 FTS)		ng/L	4.0 U	3.8 U
6:2-Fluorotelomersulfonic acid (6:2 FTS)		ng/L	4.0 U	3.8 U
8:2-Fluorotelomersulfonic acid (8:2 FTS)		ng/L	4.0 U	3.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)		ng/L	4.0 U	3.8 U
N-ethyl perfluorooctancesulfonamidoacetic acid (NEtFOSAA)		ng/L	4.0 U	3.8 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ng/L	4.0 U	3.8 U
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ng/L	8.0 U	7.5 U
Perfluorobutanesulfonic acid (PFBS)		ng/L	2.0 U	1.9 U
Perfluorobutanoic acid (PFBA)		ng/L	2.0 U	1.9 U
Perfluorodecanesulfonic acid (PFDS)		ng/L	2.0 U	1.9 U
Perfluorodecanoic acid (PFDA)		ng/L	2.0 U	1.9 U
Perfluorododecanoic acid (PFDoA)		ng/L	2.0 U	1.9 U
Perfluoroheptanesulfonic acid (PFHpS)		ng/L	2.0 U	1.9 U
Perfluoroheptanoic acid (PFHpA)		ng/L	2.0 U	1.9 U
Perfluorohexanesulfonic acid (PFHxS)		ng/L	2.0 U	1.9 U
Perfluorohexanoic acid (PFHxA)		ng/L	2.0 U	1.9 U
Perfluorononanesulfonic acid (PFNS)		ng/L	2.0 U	1.9 U
Perfluorononanoic acid (PFNA)		ng/L	2.0 U	1.9 U
Perfluorooctane Sulfonate (PFOS)		ng/L	2.0 U	1.9 U
Perfluorooctanesulfonamide (PFOSA)		ng/L	2.0 U	1.9 U
Perfluorooctanoic acid (PFOA)		ng/L	2.0 U	1.9 U
Perfluoropentanesulfonic acid (PFPS)		ng/L	2.0 U	1.9 U
Perfluoropentanoic acid (PFPA)		ng/L	2.0 U	1.9 U
Perfluorotetradecanoic acid (PFTeDA)		ng/L	2.0 U	1.9 U
Perfluorotridecanoic acid (PFTriDA)		ng/L	2.0 U	1.9 U
Perfluoroundecanoic acid (PFUnA)		ng/L	2.0 U	1.9 U