**Partial Deletion Justification for Operable Unit (OU)-28**
**at the Redstone Arsenal (USARMY/NASA) Superfund Site**
**from the National Priorities List**
**July 2024**

**Purpose**

The U.S. Environmental Protection Agency (EPA) Region 4 is proposing the partial deletion of soils and sediments from Operable Unit (OU)-28 at Redstone Arsenal (USARMY/NASA) Superfund Site (RSA) from the National Priorities List (NPL). The EPA proposed the RSA to the NPL on June 23, 1993 (58 FR 34018) and listed the site on the NPL on May 31, 1994 (59 FR 27989). The National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center (MSFC) (hereinafter NASA MSFC) site is approximately 1,841 acres within the RSA boundary. The NASA MSFC is part of the RSA NPL listing, but is managed by NASA. The Army and NASA cleanup programs are separately funded and operated. The MSFC facility property was provided to NASA through an agreement signed on March 15, 1960, in which the Department of Army granted irrevocable use and occupancy of the lands and facilities thereon for a term of 99 years. This proposed partial deletion of NASA MSFC OU-8 (which will be referred to throughout this document) corresponds to RSA OU-28.

In 2001, the Alabama Department of Environmental Management (ADEM), EPA, and NASA entered into a Federal Facilities Agreement (FFA) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 120. The FFA outlines requirements and provides a framework to ensure that NASA, as the lead agency, identifies, investigates, evaluates, and manages contamination at the site in accordance with CERCLA, so as to protect human health and the environment. NASA has defined 13 OUs for MSFC as part of the CERCLA process, 6 of which are currently active. For remediation purposes, contaminated surface media sites have been separated from the contaminated groundwater media. Contaminated groundwater media beneath NASA MSFC, including contaminated subsurface media that contribute to the groundwater problems, are addressed under NASA MSFC OU-3. Currently, 75 specific sites associated with contamination from former land use or waste management practices have been identified and designated as CERCLA sites and placed into active OUs at MSFC. Detailed information about the OUs and the CERCLA sites within them, including maps and tabulations, is included in the final *Appendix A to the FFA Site Management Plan, FY 2024* (NASA, 2024).

The NASA MSFC OU-8 Site (hereinafter Site) has a total combined acreage of approximately 5.3 acres of contaminated soils and sediments related to the eight CERCLA sites that make up OU-8, as shown on Figure 1. The OU-8 contaminants of concern (COCs) include polycyclic aromatic hydrocarbons (PAHs) such as benzo(a)pyrene (BaP), polychlorinated biphenyls (PCBs) such as Aroclor-1254 and Aroclor-1260, dichlorodiphenyltrichloroethane (DDT), toxaphene, arsenic, chromium, and iron. In addition to these COCs, trichloroethylene (TCE) was found in certain areas and TCE contaminated soil that was considered RCRA Listed hazardous waste [F002] was removed and disposed in an EPA approved off-site RCRA permitted landfill as part of the selected remedy. The TCE concentrations were associated with OU-3 groundwater that was encountered during the deep soil removals at some areas.

The selected remedy for NASA MSFC OU-8 documented in the Record of Decision (ROD) [September 2013] and Explanation of Significant Differences (ESD) [December 2018] included the following components:

- 2013 ROD – Alternative 3B: Excavation, removal, and off-site disposal of contaminated surface soil, subsurface soil, and sediment from four areas of OU-8 (MSFC-033/ 043/068, MSFC-041, MSFC-058, and MSFC-059) that exceeded remedial goals (i.e., cleanup levels) based on residential criteria.
- 2018 ESD - Revised remedy to specify industrial land use cleanup levels for areas within OU-8 that could not achieve unrestricted use/unlimited exposure (UU/UE).
- NOTE: NASA continued to attempt to achieve unrestricted use/unlimited exposure (UU/UE) risk criteria where it was practical and cost-effective and evaluated each excavation on a case-by-case basis.
- Implementation of land use controls (LUCs) for those portions of the Site (i.e., contaminated soil beneath the footprint of Bldg. 4747 located in MSFC-058) where contamination has been left in place above cleanup levels and did not meet UU/UE criteria.

In addition to these items, several monitoring wells were abandoned during the course of the excavations.

NASA performed a prior emergency removal action in July 2010 on an approximately 1,560-square-foot area of soil associated with a portion of the drainage ditch near MSFC-043 (Waste Oil Trap for Building 4816) to a depth of up to 1 foot below ground surface (bgs) to remove an accumulation of soil and sediment that was blocking stormwater flow in the ditch.

This document provides EPA's justification for the proposed partial deletion of OU-8 from the NPL. All cleanup actions under CERCLA have been implemented for Site contaminated soils/sediments as specified in the OU-8 2013 ROD and OU-8 2018 ESD. LUCs have been implemented in accordance with the ROD/ESD and the LUC Remedial Design in Section 10 of the 2016 OU-8 Remedial Design Report to prevent unacceptable exposure to contamination remaining at the Site above UU/UE.

LUCs include the following:

- Recordation by NASA of a 2022 Notice of Environmental Use Restrictions (NEUR) consistent with ADEM regulations which identify land use restrictions for the Site.
- Updates of the Site Access Program (SAP) developed as a platform to complete demolition, construction, and maintenance activities at NASA MSFC that are within or adjacent to areas of environmental concern (AOECs) to prevent unauthorized digging.
- Recordation of deed restrictions in the event of property transfer and an environmental covenant consistent with ADEM Administrative Code regulations for an Environmental Covenant in the event of a property transfer to a non-governmental agency.
- Regular site inspections to ensure signage remains in place and that there are no unacceptable activities in the restricted areas.

Groundwater beneath OU-8 is part of OU-3 at NASA MSFC and will remain on the NPL for further response action pursuant to the FFA. All other media and OUs which are part of the RSA and NASA MSFC are not being considered for deletion as part of this action and will remain on the NPL.

A Notice of Intent for Partial Deletion (NOIPD, the proposed rulemaking) is expected to be published in the *Federal Register* (FR) in the near future. The NOIPD proposed rulemaking will note the deletion docket and information repositories that include the documents (including this justification) that provide support for the partial deletion.

Partial deletion from the NPL does not itself create, alter, or revoke any individual's rights or obligations. Partial deletion from the NPL does not in any way alter EPA's right to take enforcement actions, as appropriate. The NPL is designed primarily for informational purposes and to assist EPA's management of the most contaminated sites. Section 300.425(e)(3) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) states that partial deletion from the NPL does not preclude eligibility for future response actions, should future conditions warrant such actions.

**Partial Deletion Criteria Determination**

EPA has consulted with ADEM on this proposed partial deletion of the Site from the NPL. For the 5.3-acre area of soils/sediments being considered for deletion, EPA has determined that the response actions taken are protective of public health and the environment and, therefore, taking of additional remedial measures is not appropriate for the following reasons:

- The implemented remedy achieves the degree of cleanup or protection specified in the 2013 ROD and 2018 ESD for the Site. The remediation goals (RGs) for site-related COCs were derived based on continued future use of the facility as an industrial area and are calculated for a carcinogenic target risk level of $1\times10^{-5}$ and a noncarcinogenic hazard quotient (HQ) of 1 for industrial receptor based on the three party FFA for NASA MSFC.
- All selected remedial action objectives (RAOs) consistent with agency policy and guidance have been achieved. The proposed partial deletion meets the completion requirements as specified in Office of Land and Emergency Management (OLEM) Directive 9320.2-23, Close Out Procedures for National Priorities List Sites.
- All response activities are complete and LUCs that have been implemented are expected to prevent unacceptable activities and prevent exposure to contamination left in place. EPA and ADEM have determined that no further response is necessary for Site soils/sediments beyond LUCs.
- Pursuant to CERCLA Section 121(c) and the NCP at 40 CFR § 300.430(f)(4)(ii), a five-year review (FYR) will continue to be performed for OU-8 since hazardous substances remain at the Site above levels that allow for unlimited use and unrestricted exposure.

**State and Agency Concurrence**

EPA requested concurrence from ADEM to partially delete the Site from the NPL in a letter dated 09 May 2024. The State of Alabama through ADEM is supportive of this proposed partial deletion of approximately 5.3 acres of soils/sediments from MSFC NASA OU-8. The state signed a letter of concurrence on 13 June 2024.

**Community Involvement**

Public participation activities have been satisfied as required in CERCLA Section 113(k), *United States Code* (U.S.C.) Title 42, Section 9613(k) and CERCLA Section 117, 42 U.S.C. Section 9617 and the NCP at 40 CFR 300.430(f)(2) and (3). During the development and implementation of the remedy for the Site, a comment period was held for the proposed plan. There were no public comments. The documents and information that EPA relied on for this partial deletion of Site soils/sediments are in the Administrative Record docket and are available to the public in the information repositories. A notice of availability of the NOIPD will be published in the *Madison County Record* of Huntsville, Alabama, to satisfy public participation procedures required by *Code of Federal Regulations* Title 40, Section 300.425(e)(4).

**Site Background and History**

The U.S. Army at RSA (CERCLIS ID: AL7210020742) is an active installation that encompasses 38,300 acres of land southwest of Huntsville, Alabama (Madison County). NASA MSFC (1,841 acres) is in the central portion of the RSA installation and is part of the NPL listing. Cleanup of NASA MSFC performed under a CERCLA section 120 Federal Facility Agreement signed by NASA, EPA and ADEM. Current land use throughout NASA MSFC is class industrial and the land will retain this classification throughout the duration of NASA MSFCs' occupation of the property. NASA MSFC maintains a Master Plan that manages land use consistent with NASA's missions and programs. The land use for OU-8 is expected to remain industrial, as projected in the current NASA MSFC Master Plan.

OU-8 consists of eight CERCLA sites at which petroleum-based waste was managed, mainly waste compressor oil or waste fuel oil. However, there are hazardous substances that are unrelated to the petroleum-based waste at OU-8, as well as to other site-related activities, such as the application of pesticides and herbicides. The remaining COCs potentially are from the deterioration of underground piping. Typically, releases from these eight CERCLA sites to the environment were due to leaking tanks, oil/water separator discharges, compressor blowdown discharges, unloading areas, and container storage areas. EPA added RSA to the NPL on May 31, 1994, in the FR (59 FR 27989).

The following sections will briefly describe the remedy selection process for Site soils/sediments that included conducting a remedial investigation (RI), feasibility study (FS) which identified RAOs, and issuance of a Proposed Plan for public review and comment followed by the ROD and ESD that identified cleanup levels and remedy components.

**Remedial Investigation and Feasibility Study**

Previous Site investigations included sampling of surface soil, subsurface soil, and sediment at the eight CERCLA sites that make up OU-8; these sampling activities were conducted as part of the RI, which also included human health and ecological risk assessments for soil and sediment contamination associated with the Site. The results of the risk assessments indicated that response actions for soil and sediment, which were evaluated as part of the FS, were necessary because of unacceptable risks to human health and the environment.

The NASA MSFC RI and FS reports summarizing the Site soils/sediments are as follows:

- **OU-8 RI, December 2007**
- **OU-8 FS, May 2010**

In addition, NASA MSFC performed a prior emergency removal action in July 2010 on an approximately 1,560-square-foot area of soil associated with a portion of the drainage ditch near MSFC-043 (Waste Oil Trap for Building 4816).

**Remedial Action Objectives**

For Site soils/sediments, the RAOs included in the 2013 ROD and 2018 ESD were as follows:

- Eliminate unacceptable risks to current and future users at the site from soil (surface and subsurface) and sediment contamination that exceeds levels suitable for unrestricted use and unlimited exposure.
- Prevent and control migration of contaminants in surface soil at concentrations exceeding the cleanup levels into nearby surface water.
- Prevent exposure to soil contamination areas that present unacceptable risks to industrial workers, trespassers, and potential residential users.

In addition to achieving RAOs and mitigating unacceptable risk to human health and the environment, CERCLA Section 121(d)(2) and the NCP requires the attainment of all Applicable, Relevant and Appropriate Requirements (ARARs), which were listed in the 2013 ROD and 2018 ESD for the Site.

**Cleanup Levels**

The following table shows the cleanup levels (also referred to as RGs) established in the 2013 ROD and 2018 ESD for Site soils/sediments. Excavations were based initially on residential cleanup levels but revised in the 2018 ESD to be based on the industrial cleanup levels for certain areas, and LUCs have been implemented in locations where contamination has been left in place above the residential cleanup levels.

| **Contaminant of Concern** | **Residential Cleanup Level** (mg/kg = milligrams per kilogram) | **Industrial Cleanup Level** (mg/kg = milligrams per kilogram) |
|---|---|---|
| Soils/Sediments | | |
| PAHs (as a BaP equivalent) | 1.08 | 15.4 |

| | | |
|---|---|---|
| PCBs | 1 | 7.11 |
| Toxaphene | 4.41 | 15.7 |
| DDT | 17.2 | 70.3 |
| Arsenic | 14.2 | 23.9 |
| Chromium | 90.1 | 90.1 |
| Iron | 54,800 | 715,000 |

BaP = benzo(a)pyrene
DDT = dichlorodiphenyltrichloroethane
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl

**Selected Remedy**

To accomplish the RAOs for Site soils/sediments, the following remedial components were specified in the 2013 ROD and 2018 ESD for the Site:

- 2013 ROD – Alternative 3B: Excavation, removal, and off-site disposal of contaminated surface soil, subsurface soil, and sediment from four areas of OU-8 (MSFC-033/ 043/068, MSFC-041, MSFC-058, and MSFC-059) that exceeded remedial goals (i.e., cleanup levels) based on residential criteria. ;
- 2018 ESD - Revised remedy to specify industrial land use cleanup levels for areas within OU-8 that could not achieve unrestricted use/unlimited exposure (UU/UE).
- Implementation of Land use controls (LUCs) for those portions of the Site (i.e., contaminated soil beneath the footprint of Bldg. 4747 located in MSFC-058) where contamination has been left in place above cleanup levels and did not meet UU/UE criteria.

In addition to these items, several monitoring wells were abandoned during the course of the excavations.

As stated, NASA performed a prior emergency removal action in July 2010 on an approximately 1,560-square-foot area of soil associated with a portion of the drainage ditch near MSFC-043 (Waste Oil Trap for Building 4816).

**Response Actions**

Following the 2013 ROD for the Site, implementation of the remedial action (RA) detailed in the 2016 remedial design (RD) commenced in January 2016. Excavation activities were conducted in three main work zones; work was completed in the North Work Zone in June 2016, work was completed in the Central Work Zone in September 2017, and work was completed in the South Work Zone in January 2022. In addition, trichloroethylene (TCE) was found in certain areas and TCE contaminated soil that was considered RCRA Listed hazardous waste [F002] was removed and disposed in an EPA approved off-site RCRA permitted landfill as part of the selected remedy. The TCE concentrations were associated with OU-3 groundwater that was encountered during the deep soil removals at some areas.

The Remedial Action Completion Report (RACR) was finalized in December 2022 after regulatory approval of the accompanying 2022 NEUR and subsequent signature by ADEM.

**Monitoring Results and Attainment of Clean-up Criteria**

Excavations were conducted following the 2013 ROD (as amended by the 2018 ESD) for the Site in accordance with the project specifications and design drawings. Once confirmation sampling efforts demonstrated that all concentrations of Site COCs were below their respective industrial RGs, the excavation areas were backfilled to the original grade and the Site was restored to its original condition. Portions of the Site that did not achieve cleanup levels are subject to land use restrictions and implementation of land use controls as specified in Section 10 of the LUC Remedial Design within the 2016 OU-8 Remedial Design Report. Four samples above industrial standards north of Building 4747 originally designated for excavation were left in place because the building is an active nickel-plating facility. Excavations were considered unsafe because of the potential to cause damage to the building and utilities around the building. The area is paved, and any future excavations will require approval of EPA, ADEM and NASA MSFC according to the LUCs at the site.

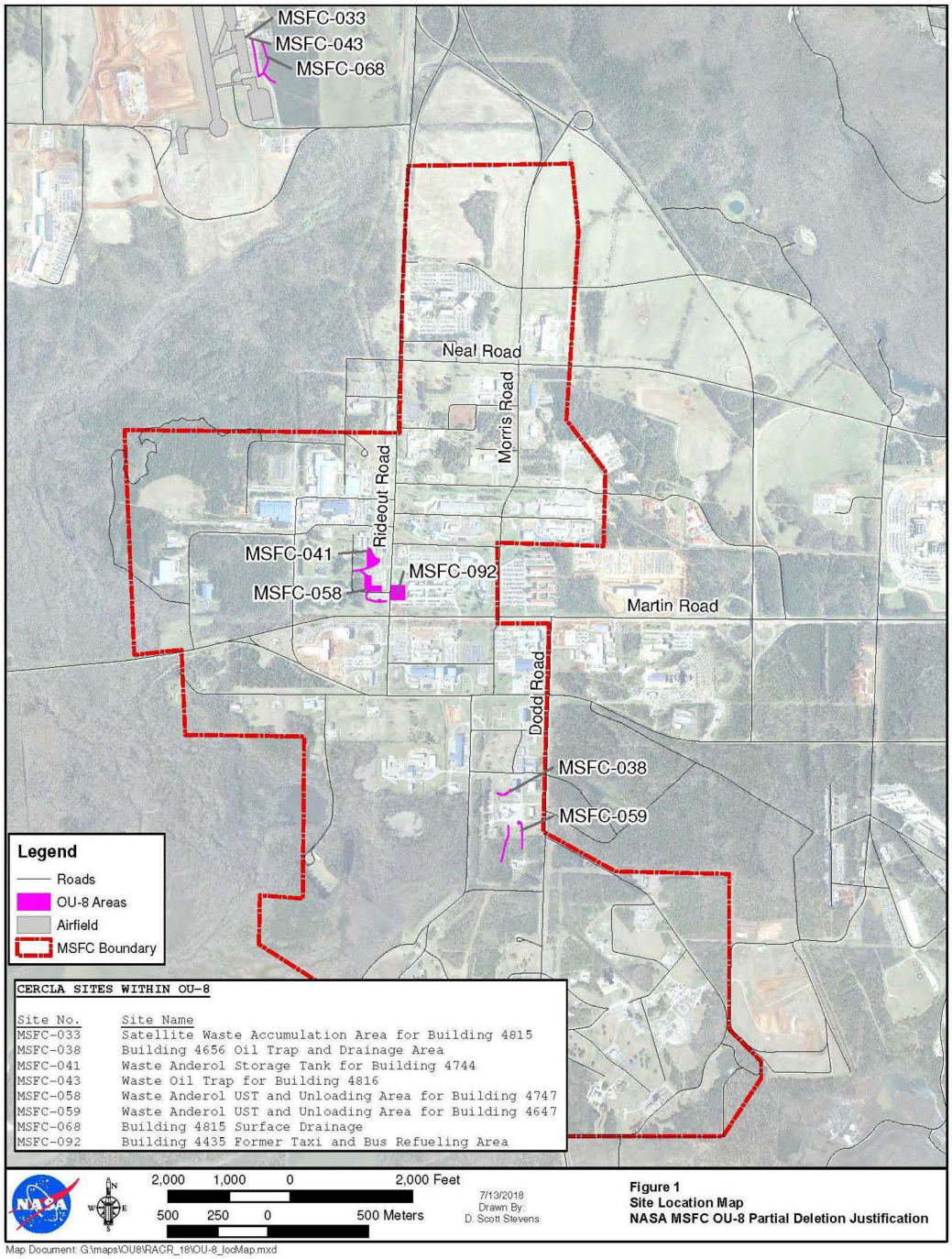
**Operation and Maintenance**

As documented in the RACR for the Site, no operation and maintenance (O&M) activities were included as part of the RA. LUCs including recordation of the 2022 NEUR have been implemented in accordance with the 2013 ROD and 2018 ESD. The corresponding LUC areas at OU-8 are shown on Figure 2.

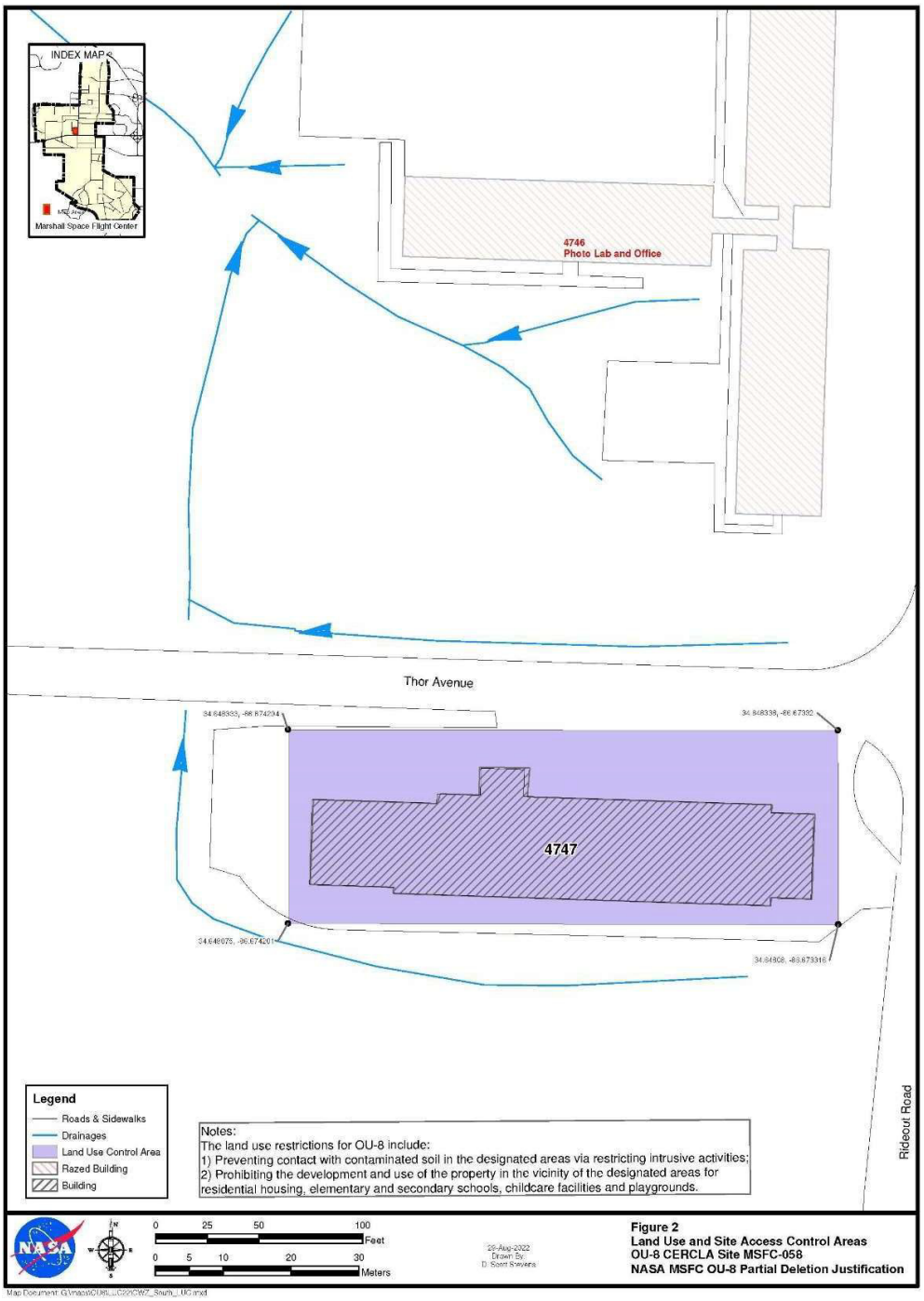
**Five-Year Review**

Pursuant to CERCLA Section 121(c) and the NCP at 40 CFR § 300.430(f)(4)(ii), statutory FYRs will be conducted at the Site since hazardous substances remain at the Site above levels that allow for UU/UE. EPA completed the Third FYR for MSFC in July 2023; as such, EPA plans to complete the Fourth FYR for MSFC before July 2028.

## Figure 1. Site Location Map



## Figure 2: Land Use and Site Access Control Areas



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10/10/2024