



Final

**Action Memorandum
Time-Critical Removal Action
Munitions and Explosives of
Concern Surface Sweep
Operations
Operable Unit 9
Formerly Used Defense Sites
Project 7 Boat Basin/Visitor Center**

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia

June 2022

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ACRONYMS AND ABBREVIATIONS

AAOC	Administrative Agreement on Consent
AOC	Area of Concern
AM	Action Memorandum
amsl	above mean sea level
AP-I	Armor Piercing-Incendiary
ARAR	applicable or relevant and appropriate requirement
ASR	Archive Search Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DDESB	Department of Defense Explosives Safety Board
DoD	Department of Defense
DMM	Discarded Military Munitions
ft	feet
FUDS	Formerly Used Defense Site
GPS	Global Positioning System
HE	High Explosive
HE-I	High Explosive-Incendiary
MaA	Magotha fine sandy loam
MD	munitions debris
MDAS	Material Documented as Safe
MEC	Munitions and Explosives of Concern
MGD	million gallons per day
mm	millimeter
MOA	Memorandum of Agreement
MoD	Molena loamy sand
MMRP	Military Munitions Response Program
MPPEH	Material Potentially Presenting an Explosive Hazard
MRS	Munitions Response Site
NAOTS	Naval Aviation Ordnance Test Station
NASA	National Aeronautics and Space Administration
NCP	National Contingency Plan
OU9	Operable Unit 9
PAL	Project Action Limit
PPE	personal protective equipment
RI	Remedial Investigation
TCRA	time-critical removal action
TtNUS	Tetra Tech NUS, Inc.
USDA	United States Department of Agriculture
UXO	unexploded ordnance
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VDEQ	Virginia Department of Environmental Quality
WFF	Wallops Flight Facility

I. PURPOSE

This Action Memorandum (AM) documents the decision by the National Aeronautics and Space Administration (NASA) to conduct a time-critical removal action (TCRA) for Munitions and Explosives of Concern (MEC) Support Services for Operable Unit 9 (OU9), Formerly Used Defense Site (FUDS) Project 7, Boat Basin and Visitor's Center site at the NASA Goddard Space Flight Center's Wallops Flight Facility (WFF) Visitor Center, located in Wallops Island, Virginia. The TCRA activities include a MEC surface sweep to remove potential unexploded ordnance (UXO) and other metal scrap from the grass area located behind the Visitor Center.

FUDS Project 7 is one of several projects identified under the FUDS Program at NASA WFF. In 2015, the Army and NASA entered into a Memorandum of Agreement (MOA) for the purpose of transferring Environmental Restoration, FUDS funds from the Army to NASA to conduct necessary response actions under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), consistent with the Defense Environmental Restoration Program and the National Contingency Plan (NCP). Prior to the MOA, the United States Army Corps of Engineers (USACE) was responsible for the management and implementation of environmental remedial activities at FUDS.

In 2021, NASA entered into an Administrative Agreement on Consent (AAOC) with the United States Environmental Protection Agency (USEPA), which applies to past releases of hazardous substances, waste, and/or constituents at WFF and identified CERCLA response requirements, policies, and guidance as the primary process for planning and performing work necessary to complete remedial and corrective actions at FUDS located at WFF (USEPA Docket No. RCRA-03-2021-0022TH).

This AM addresses only the TCRA MEC surface sweep for OU9 and does not address the ongoing remedial investigation (RI) at OU9. NASA is conducting the TCRA under the AAOC executed between NASA and the USEPA.

The objective of this project is to conduct a MEC surface sweep for the Visitor's Center portion of OU9, a FUDS Military Munitions Response Program (MMRP) site, managed by NASA. This work will address MEC items potentially becoming uncovered in the vicinity of the Visitor's Center portion of OU9 from frost heave cycles of the winter months and/or erosion. No intrusive actions will be conducted during the surface sweep activities.

The purpose of the TCRA MEC surface sweep is to ensure the safety of visitors and WFF personnel at the Visitor's Center and the surrounding area, and to remove potential MEC and Munitions Debris (MD) from the surface of the area of concern (AOC).

II. SITE CONDITIONS AND BACKGROUND

The NASA WFF is located in Accomack County, on the Eastern Shore of the Commonwealth of Virginia, approximately five miles south of the Maryland/Virginia boundary and just to the west of Chincoteague Island. The facility consists of three separate properties on which facilities have been constructed: Main Base, Mainland, and Wallops Island. The Visitor Center is associated with the Main Base and is located to the east of Route 175 (see **Figure 1**).

A. SITE DESCRIPTION

1. Site Layout

The Visitor Center consists of three buildings, a parking lot, walkways, outdoor displays, and an open lawn area. The complex is surrounded by a fence on three sides and a wetland on the fourth side. Vehicle access is controlled through gates. The area to be cleared of MEC consists of a four-acre lawn area located generally east and southeast of the Visitor Center building complex. The area is bordered by the Visitor Center buildings and concrete paving to the west, wooded land and a fence line to the south, wooded land to the north, and a wetland to the east (see **Figure 2** and **Figure 3**).

Ownership of the property was transferred from the Navy to NASA in 1959 and the former Test Cell area has been converted to a Visitor Center (see **Figure 1** for site location). The center consists of several buildings used for displays, educational classes, and offices, as well as outdoor displays including rockets, a parking lot, picnic tables, and an open mowed lawn (see **Figure 2**).

The Visitor Center is located within OU9, FUDS Project 7, which consists of four Munitions Response Sites (MRS) within the MMRP on the eastern portion of the Main Base. The MMRP includes the Pyrotechnic Dump (MRS 1), Gun Butt Number 1 (MRS 2), Gun Butt Number 2 (MRS 3), and the south bank of the Boat Basin (MRS 4). The AOC for this proposed TCRA MEC surface sweep will include the location of the former gun butts (MRS 2 and MRS 3) and the surrounding area (see **Figure 4**).

2. Historical Site Use

Archival information indicates that the Visitor Center area was used as a test range for munitions testing by the Navy and related Department of Defense (DoD) agencies from 1948 through 1959. The AOC was used during that time to ground test aircraft guns and ammunition and included two firing points and two firing-in butts. The test range was also used as a Test Cell during this period to test newly produced munitions and machine guns.

The current Visitor Center area was first developed by the Naval Aviation Ordnance Test Station (NAOTS) in 1948. The initial development included the construction and operation of a Test Cell and firing position and firing-in butt for the ground testing of aircraft machine guns and newly developed ammunition (USACE, 2005).

The NAOTS operation was expanded in 1952 and later further expanded in 1955 to include two firing points and two firing-in butts. The Test Cell complex included a production test range, an experimental range, a separate firing-in butt for each range, and a ready service magazine. Documents indicate that the range complex was in use at least through 1957, and it is conjectured that the range continued operations up to 1959 when the facility was closed.

Available information indicates that the primary use of the range was the testing of 20-millimeter (mm) and 30mm aircraft machine guns and ammunition. The Test Cell was used for the ground

firing test and evaluation of experimental aircraft guns and mechanisms and for proof testing of production lot of 20mm and 30mm ammunition. NASA and USACE conducted historical archive research and determined that by design and plan, explosive ammunition was not fired at the Test Cell/Gun Laboratory Range Area (USACE, 2005).

3. Site Characteristics

As shown on **Figures 2 and 3**, an approximate four-acre portion of the open lawn, starting about 200 feet (ft) from the building complex and extending to the east to a wetland, is the former location of the firing lanes and firing-in butts (MRS 2 and MRS 3). The vegetation within the investigation area at the site is primarily grasses with a few trees.

The majority of the WFF Main Base, including the OU9 area, is located on a high terrace landform (25 to 40 ft above mean sea level [amsl]) with the northern and eastern portions located on low terrace (0 to 25 ft amsl) and tidal marsh.

The soil classifications for the area of the WFF Visitor Center are primarily Molena loamy sand (MoD) and Magotha fine sandy loam (MaA), based on the 1988 Accomack County Soil Conservation Service soil classification map (NASA, 2017). The Coastal Plain soils of the Eastern Shore are generally very level soils and many soil types (not Molena or Magotha) are classified as prime farmland by the United States Department of Agriculture (USDA). The dominant soils in the area of the WFF are high in sand content, resulting in a highly leached condition, an acidic pH, and a low natural fertility.

The four major aquifers identified on the Eastern Shore of Virginia are the Columbia aquifer and the three aquifers comprising the Yorktown-Eastover multi-aquifer system.

The Columbia aquifer is known as the water table aquifer, and primarily consists of Pleistocene sediments of the Columbia Group. It is unconfined and typically overlain by wind-deposited beach sands, silts, and gravel. The aquifer occurs between the depths of 5 and 60 ft below the ground surface, with the water table ranging between the depths of 0 and 30 ft below the ground surface. Groundwater generally flows east and north toward local tributaries and streams at the WFF, and also toward a marsh area that separates Chincoteague Island from the Eastern Shore mainland to the northeast of the WFF.

The Yorktown-Eastover system is a multi-aquifer unit consisting of late Miocene and Pliocene deposits and is composed of the sandy layers of the Yorktown and Eastover Formations. The top of the shallowest confined Yorktown-Eastover aquifer in the area of WFF is found at depths of approximately 100 ft below the ground surface. It is separated from the overlying Columbia aquifer by a 20 to 30 ft confining layer (aquitard) of clay and silt. The Yorktown-Eastover aquifers are classified as the upper, the middle, and the lower Yorktown-Eastover aquifers. Correspondingly, each Yorktown-Eastover aquifer is overlain by the upper, middle, and lower Yorktown-Eastover aquitards (NASA, 2017).

B. REGULATORY HISTORY TO DATE

1. Previous Actions

The area of the Visitor Center (MRS 2 and MRS 3) and Boat Basin (MRS 4) was inspected during the performance of a Site Assessment in 1991 and it was reported that “a large number of spent 20mm practice rounds” were found scattered in the area of one of the former firing-in butts, in addition to two spent 75mm practice rounds (Metcalf & Eddy, 1991).

During a subsequent visual property inspection conducted in April 2005 as part of the Archive Search Report (ASR), six spent 20mm rounds were found in the vicinity east of the display rockets, approximately 400 ft southeast of the Visitor Center (USACE, 2005). In response to this finding in 2005, NASA erected a temporary fence to isolate and control access to the area east of the outdoor displays. The area between the temporary fence and the buildings was later walked during a site visit by Tetra Tech NUS, Inc. (TtNUS) and NASA, and several more 20mm projectiles were observed near the buildings. Because of this observation, NASA erected another temporary fence to restrict access to the lawn area east and southeast of the Visitor Center. Based on the findings in the ASR and the site walks, it was determined the area potentially presented a safety hazard that may constitute an imminent and substantial endangerment to WFF personnel and others using the Visitor Center complex. To mitigate the potential risks, NASA completed a 2006 UXO sweep and clearance of the area to a depth of 12 inches.

During the 2006 Visitor Center UXO Surface Sweep/Intrusive operations, 243 surface anomalies/targets were identified. Based on a review of the grid reporting sheets, the following items were found within the site clearance grids:

- 162 munitions items (20mm/30mm fragments and projectiles).
- 2 munitions-related scrap debris items (empty propellant charge canisters).
- 21 identified scrap metal items (e.g., pipe, rebar, wire, nails, etc.).
- 58 unidentified scrap metal items (generally small or rusted metal fragments).

A total of 2,150 target items were identified and excavated during the 2006 intrusive activities at the site. No live or fuzed Material Potentially Presenting an Explosive Hazard (MPPEH) items were found during the intrusive investigation. The following provides a summary of the items removed from the site:

- 1,106 munitions items (20mm/30mm fragments, projectiles, and empty cartridges).
- 7 munitions-related debris items (grenade handle, mortar fins, M-1 clips, and 75mm projectiles).
- 302 identified scrap metal items (pipe, rebar, nails, bolts, strapping, etc.).
- 332 unidentified scrap metal items (generally small or rusted metal fragments).

The following 341 items were left in-place during the 2006 subsurface investigation:

- 3 anomalies associated with an area identified as a probable former burn pit containing slag-like melted and consolidated metal debris including 20mm/30mm fragments. This area is covered by 12 inches or more of soil.
- 10 identified scrap metal items too large to move (large metal plates, concrete and rebar).
- 328 unidentified items at depths greater than 1 foot.

Three targets that were identified through the geophysical survey were not able to be located because no contact was made using the metal detectors or through hand excavations.

During the 2006 investigation, 62 anomalies identified during the geophysical survey were not investigated because they coincided with known man-made cultural features (sidewalks, utility lines, etc).

Based on the 2006 review of the activities conducted during the initial Visitor Center site clearance, the upper one-foot of ground within the site area investigated was considered clear of

MPPEH. This conclusion is further based on the fact that no live/fuzed/explosive containing items were identified anywhere on-site during the investigation.

Following the 2006 Visitor Center UXO Surface Sweep/Intrusive operations, the portion of the Visitor Center site covered under this investigation was recommended to be reopened for the current non-intrusive site uses. Based on the success of the clearance operations, periodic/regular surface sweeps were deemed not needed for current site use as long as no significant ground surface disruption occurred. It was recommended that a dig restriction be put in place for the site study area, including the approximate four-acre open field cleared during site activities as well as those areas immediately adjacent to the perimeter of the study area. The dig restriction was entered into the NASA WFF Facility Management Plan and Tools and no digging, disturbance of soils, or other intrusive activities are permitted without an approved plan. Approved plans must include the participation of qualified UXO Technicians or Specialists and must include UXO avoidance or clearance activities. These restrictions were recommended to remain in place until further response activities were completed at the Visitor Center. Further response actions, if deemed necessary, were the responsibility of the USACE.

Due to frost heave cycles and erosion, several MD were identified on the Visitor Center grounds in 2013. In June 2013, NASA completed a detector-aided MEC surface clearance within the Visitor Center area. Results of the surface survey included the following:

- No MEC or MPPEH was recovered on the surface during this investigation at the Visitor Center.
- A total of 60 items were recovered from the Visitor Center during the June 2013 surface clearance. All 60 items were identified as fragments from 20mm projectiles and were certified as Material Documented as Safe (MDAS).
- The highest concentration of recovered MDAS items were located in or near a depression located on the eastern portion of the Visitor Center site. It appears as though drainage/surface run-off flows in this area which contributes to erosion.
- High concentrations of additional anomalies were detected below the surface throughout the entire Visitor Center site (USACE, 2016).

All MDAS items were dual inspected and secured in a sealed drum. All secured MDAS items were certified as free and clear of any explosive hazard. The sealed MDAS drum was turned over to NASA base personnel for final disposition.

As part of RI activities in 2014, USACE conducted an intrusive investigation at each Project 7 OU9 MRS to determine the nature and extent of MEC and MD. The intrusive investigations at MRS 2 and MRS 3 (former gun butt locations near the Visitor Center) resulted in the identification of 293 MD objects, in addition to one potential 20mm discarded military munitions (DMM) item. A few of the items removed could not be completely cleared of dirt and were destroyed along with the potential DMM to adhere to regulations regarding the inspection of MPPEH.

Although the ASR found no documentation indicating high explosive ammunition or fuzes were used at the former Test Cell, USACE determined one potential MEC round was found.

2. Current actions

USACE drafted a RI report in 2019, prior to transferring site management activities to NASA. Currently, NASA is completing human health and ecological risk assessments to determine potential risks presented by MEC and munitions constituents in the Project 7 OU9 surface soil, subsurface soil, sediment, surface water, and groundwater. Following the completion of the RI,

NASA will issue a Feasibility Study and a Proposed Plan to address human health and ecological risks and outline a path forward.

C. ROLES OF STATE AND LOCAL AUTHORITIES

1. State and Local Actions to Date

Virginia Department of Environmental Quality (VDEQ) serves as the lead state regulatory agency for all actions being conducted under the CERCLA regulatory framework for FUDS at WFF. Although VDEQ is not included within the AAOC, VDEQ concurrence with site actions is necessary.

No state/local enforcement orders or agreements have been issued that are relevant to this TCRA.

2. Potential for Continued State and Local Response

VDEQ is expected to continue to provide technical advice, environmental regulatory oversight, and assistance until all remedial activities are complete.

III. THREATS TO PUBLIC HEALTH OR WELFARE OF THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

A. INTRODUCTION

The following factors, identified in Title 40, Code of Federal Regulations (CFR) §300.415(b)(2), were considered in evaluating the potential or actual threats to public health or welfare due to releases into the environment, and in determining the appropriateness of a TCRA at the WFF Visitor Center:

- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.
- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.

B. THREATS TO PUBLIC HEALTH OR WELFARE

Several MD objects have been recently identified throughout the Visitor Center area. A MEC surface sweep is recommended at this time to identify and remove potential MEC at the site to ensure the safety of WFF personnel and the public.

C. ENDANGERMENT DETERMINATION AND PROJECT ACTION LIMITS

The upper one foot of the AOC was cleared in 2006, and over 300 items were left in-place at depths greater than one foot. A surface sweep in 2013 identified 60 MD items, which were identified as MDAS and removed from the site. The 2013 surface sweep also identified high concentrations of additional anomalies below the surface, which were not investigated at that time. The 2014 intrusive investigation completed as part of the Project 7 OU9 RI to determine the nature and extent of MEC and MD, resulted in the identification of 293 MD objects, in addition to one potential 20mm DMM item. Although the ASR found no documentation indicating the use of high explosive ammunition or fuzes at the former Test Cell, USACE determined one potential MEC round was found.

Potential MEC poses a potentially unacceptable risk to human health and ecological receptors.

The Project Action Limits (PALs) for this surface sweep are as follows:

- Potential and confirmed MEC objects that are identified on the surface visually and/or through the use of a magnetometer will be inspected, identified, and the proper disposal method will be determined. All found items that are certified as MDAS (including MD, cultural debris, etc.) will be properly disposed (i.e., recycled). All items that cannot be certified as MDAS will be considered MEC and handled accordingly.
- The site surface sweep activities will generate a list of Global Positioning System (GPS) coordinates (GPS points) where subsurface anomalies were identified via hand-held magnetometer and left in-place. No intrusive work is included in this task.

The WFF Visitor Center is intended to remain in use as a public information center for the foreseeable future and future residential use is not planned, the PAL of clearing all potential MEC from the ground surface is considered conservative. However, NASA has made a risk management decision to consider the potential risk to the public, WFF personnel, and ecological receptors to be unacceptable; therefore, a conservative PAL was selected to make the site suitable for use in which the only restricted use is excavation.

IV. SELECTED REMOVAL ACTION AND ESTIMATED COSTS

A. SITUATION AND REMOVAL ACTIONS TO DATE

Based on the findings from the previous 2006, 2013, and 2014 MEC sweeps and intrusive investigations, and because recent MD items have recently surfaced, NASA is recommending a TCRA to address the current surface MD and any potential MEC items.

B. PLANNED REMOVAL ACTIONS

1. Selected Action Description

The objective of this TCRA is to conduct a MEC surface sweep for the WFF Visitor Center located within the OU9 site. This work will address MEC items potentially becoming uncovered in the vicinity of the WFF Visitor Center from frost heave cycles of the winter months and/or erosion. No intrusive actions will be conducted during the surface sweep activities.

The purpose of the MEC surface sweep is to ensure the safety of visitors using the center and the surrounding area, and to remove potential MEC and MD from the surface of the AOC.

2. Contribution to Remedial Performance

The selected action is an effective and efficient alternative that requires:

- The location, inspection, identification, physical removal, and disposal of potential MEC objects at the ground surface; and flagging and providing a list of coordinates for all subsurface anomalies observed.

3. Description of Alternative Technologies

This TCRA proposes a MEC surface clearance and removal of MD and potential MEC/DMM materials. Due to the time-critical nature, the surface clearance and potential treatment of identified MD and MEC was agreed as the preferred alternative to address potential risks to the public and surrounding environment. The current institutional controls (dig restrictions) will remain as the post-clearance site controls. Ongoing RIs will continue for the FUDS Project 7 OU9 site.

Removal will provide the greatest long-term effectiveness at the site and can be easily and rapidly implemented. The paragraphs below explain how the proposed TCRA meets the selection criteria (effectiveness, implementability, and cost) typically used to evaluate a remedial alternative.

The site restrictions prohibit unauthorized intrusive activity at the site. The proposed TCRA will effectively protect potential human and ecological receptors in the short term and subsequent surface sweeps, if determined necessary, will satisfy long term protection by removing the potential and/or confirmed MEC and MD that has migrated to the surface.

Alternatives to disposal include containment by capping, which would leave the potential MEC in place and require long-term monitoring and maintenance of the cap, but the objects would continue to migrate toward the surface as they have historically been verified to do. Removal for off-site disposal is the only realistic alternative to meet the project objectives in a timely manner.

The estimated cost of this proposed TCRA is \$116,568, including project management activities, preparing the planning documents, completing the surface sweep and removal action, and preparing a final report. Based on the surface sweep and intrusive investigations conducted at the site in 2013 and 2014, it is estimated that approximately one drum of MDAS will require

disposal to reduce the human health and ecological risk to acceptable levels, which would allow for unrestricted use of the ground surface (intrusive activities would remain restricted).

The proposed TCRA is considered reliable and effective because any MEC or MPPEH will be destroyed in-place and all MDAS will be disposed of off-site. Exposure risks to site workers during TCRA activities will be minimized by implementing administrative controls (including training, work protocols, personal protective equipment [PPE], and control zones) and engineering controls (including dust control and fencing that will be in place throughout the TCRA).

4. Compliance with ARARs

TCRAs should attain applicable or relevant and appropriate requirements (ARARs) to the extent practicable considering the exigencies of the situation. The potential ARARs for this project are discussed in detail in **Table 1** (attached).

The removal action described in this AM will be protective of the public and the environment by removing potential MEC from the ground surface.

Any potential MEC objects identified on the surface will be destroyed, reducing the unacceptable risk to potential future human and ecological receptors.

5. Project Schedule

Following approval of the Work Plan, it is anticipated that personnel will mobilize to the site on or about 11 July 2022 for site preparation and MEC surface sweep activities. The project schedule will be adjusted as necessary throughout the project.

Establishing the site grid system (**Figure 5**) and conducting the MEC surface sweep should evolve around a schedule of approximately four workdays. This schedule is based on 8-hour days including daily briefings and traveling to and from the site.

Overtime work (i.e., greater than 40-hours per week) may be required and workdays and/or the work week may be extended if it is determined to be beneficial to the project and achieving NASA's objective.

6. Estimated Costs

The costs associated with implementing this TCRA include planning document preparation, site preparation (including layout of the site boundaries and grid), a surface sweep of the MRS (visual and via magnetometer), inspection and identification of identified MEC objects, potential detonation of MEC, drumming and disposal (i.e., recycling) of MDAS, reporting, and project management.

Other costs include hand-held equipment rental (magnetometer) and potentially explosives for disposal of MEC. No annual operation and maintenance costs are associated with this TCRA.

The cost estimate of \$116,568 was prepared using information from the Work Plan.

V. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

A delay in action or no action to address potential MEC concerns at the Visitor Center would increase the actual or potential threats to the public, site personnel, and wildlife. In addition, there is potential for the transportation off-site of potential MEC via physical process through frost heave cycles and erosion, in addition to public exposure. If the action is further delayed, future cleanup will potentially become more difficult and more expensive as this may allow MEC to migrate from the site to adjacent wetlands. Ongoing RIs will continue at the FUDS Project 7 OU9 to address human health and ecological risks associated with site-wide munitions constituents.

VI. PUBLIC INVOLVEMENT

The Administrative Record for sites addressed under the AAOC is available to the public at the Information Repositories located at the Eastern Shore Public Library in Accomack, Virginia and the Island Library in Chincoteague, Virginia.

NASA will publish an online fact sheet describing the TCRA and comply with 40 CFR §300.415(n), which requires a notice of availability of the Administrative Record be published in a major local newspaper within 60 days after the onsite removal action begins. NASA will respond to public comments on the TCRA in the Completion Report after the TCRA.

NASA will notify Native American tribes prior to commencement of the surface sweep.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues for this TCRA.

VIII. ENFORCEMENT

As documented in the AAOC with USEPA, NASA will perform the voluntary proposed response promptly and properly. USEPA and VDEQ will remain in an oversight role for the duration of the removal action, reviewing the associated Work Plan and Completion Report. USEPA and VDEQ will be provided an opportunity to review and provide input on the Work Plan and the Completion Report.

IX. RECOMMENDATION

This AM was prepared in accordance with current USEPA and DoD guidance documents for TCRAs under CERCLA. This AM documents NASA's decision to undertake a TCRA at the WFF Visitor Center area within OU 9, FUDS Project 7, at Wallops Island, Virginia. This decision has been developed in accordance with the AAOC and USEPA guidance (USEPA, 2009).

A magnetometer-aided visual surface sweep of the delineated area where potential MEC has historically been observed, removed for disposal, and identified as potentially remaining in place below the ground surface will reduce potential human health and ecological risks associated with potential MEC within the designated FUDS Project 7, OU9 area. NASA, in cooperation with USEPA and VDEQ, recommends approval of the proposed removal action. NASA will implement, complete, and document this TCRA.

X. APPROVAL

This Action Memorandum represents the selected removal action for the Visitor Center portion of the FUDS Project 7 OU9 site at NASA WFF located in Accomack County, Virginia, developed in accordance with CERCLA, as amended, and is consistent with the AAOC.

David A. Reth, Director
Management Operations
NASA Goddard Space Flight Center

Date

XI. REFERENCES

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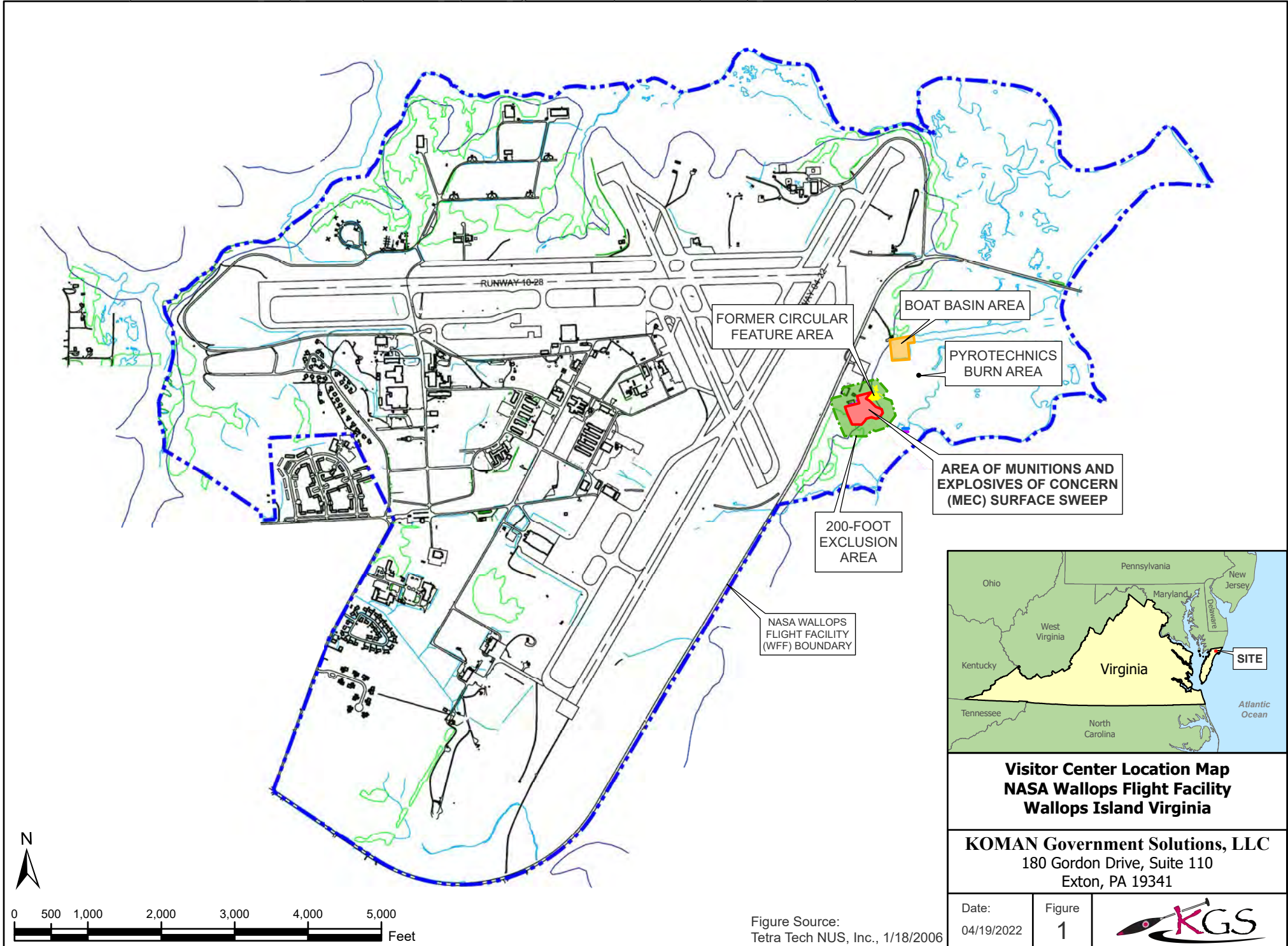
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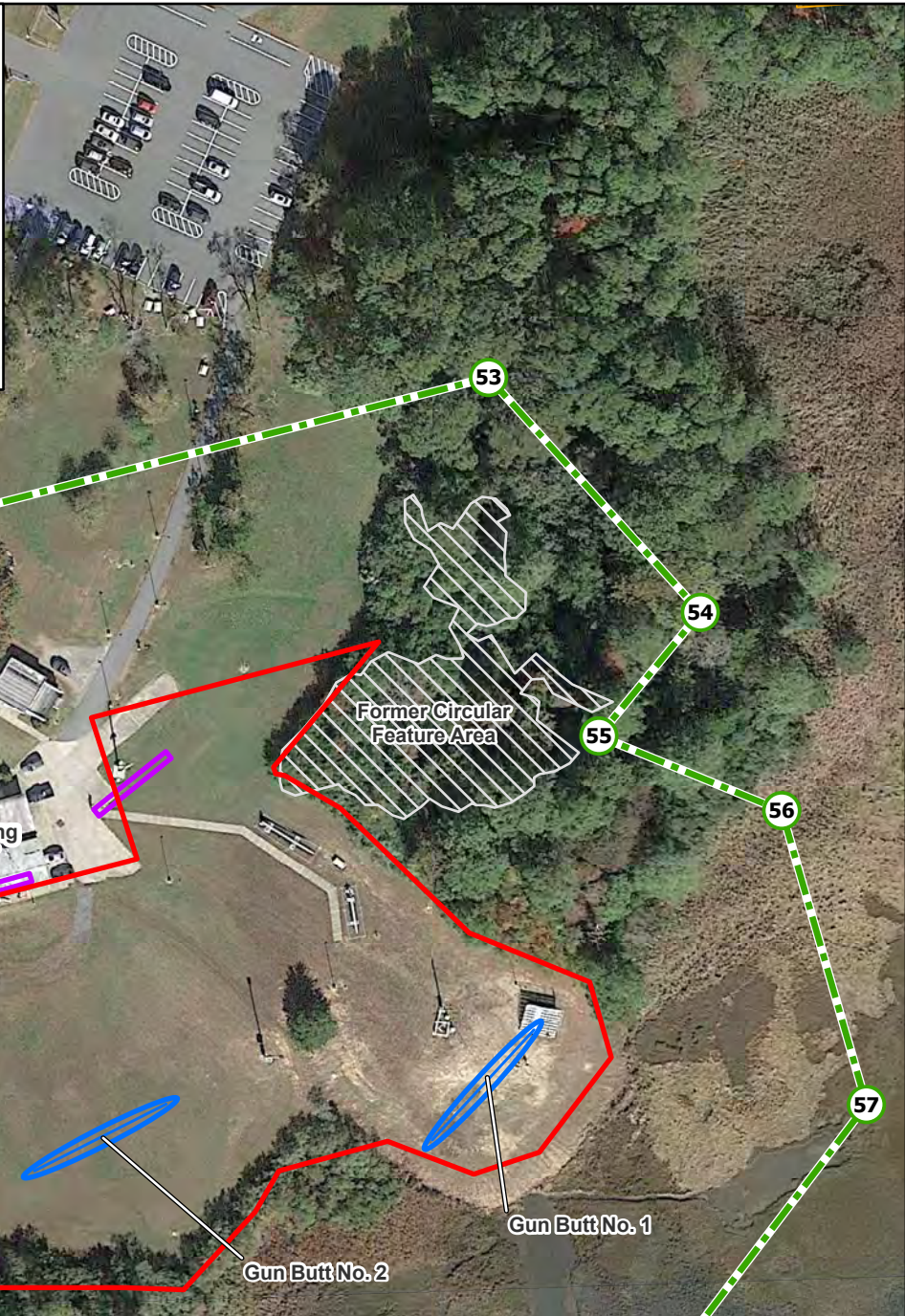
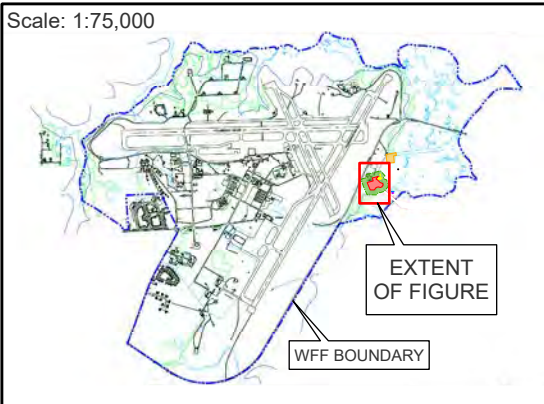
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FIGURES



Scale: 1:75,000



-  AREA OF MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) SURFACE SWEEP
-  200-FOOT EXCLUSION AREA
-  APPROXIMATE LOCATION OF FORMER FIRING-IN BUTT
-  APPROXIMATE LOCATION OF FORMER GUN MOUNTS

Visitor Center Site Map
NASA Wallops Flight Facility
Wallops Island Virginia

KOMAN Government Solutions, LLC
 180 Gordon Drive, Suite 110
 Exton, PA 19341

Date:
04/19/2022

Figure
2



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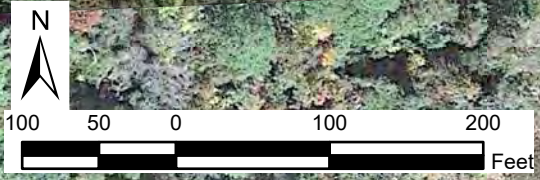
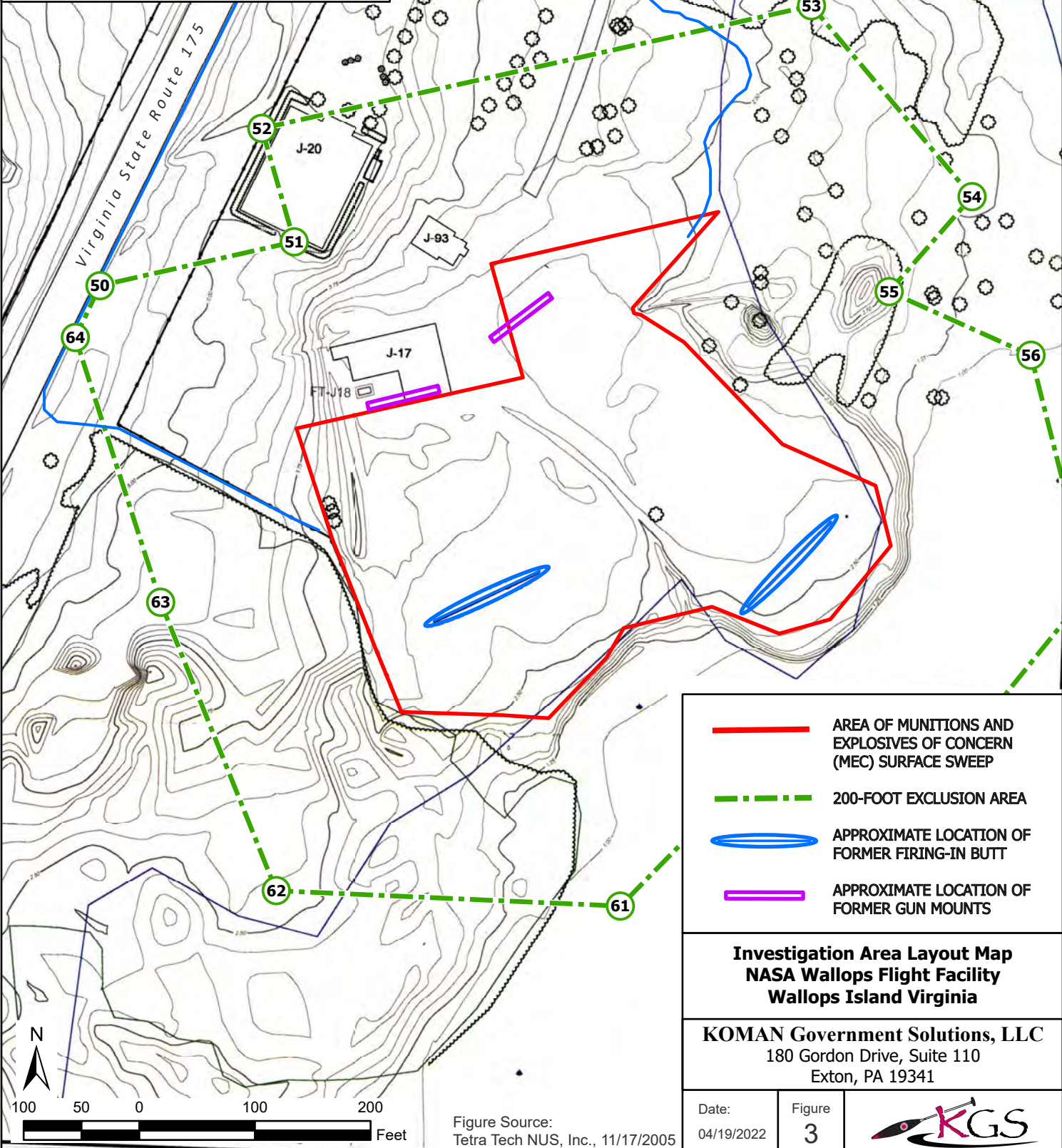
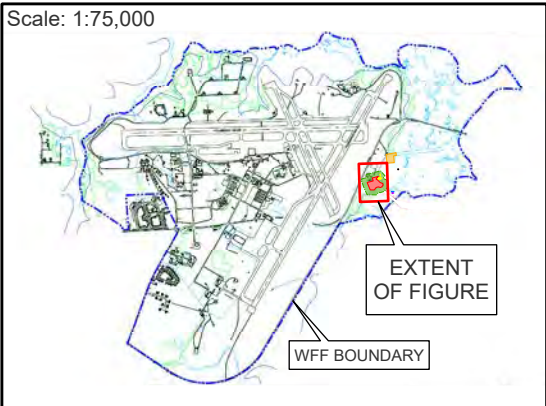






Figure Source:
Tetra Tech NUS, Inc., 1/19/2006

Scale: 1:75,000



-  AREA OF MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) SURFACE SWEEP
-  200-FOOT EXCLUSION AREA
-  APPROXIMATE LOCATION OF FORMER FIRING-IN BUTT
-  APPROXIMATE LOCATION OF FORMER GUN MOUNTS

**Investigation Area Layout Map
NASA Wallops Flight Facility
Wallops Island Virginia**

KOMAN Government Solutions, LLC
180 Gordon Drive, Suite 110
Exton, PA 19341

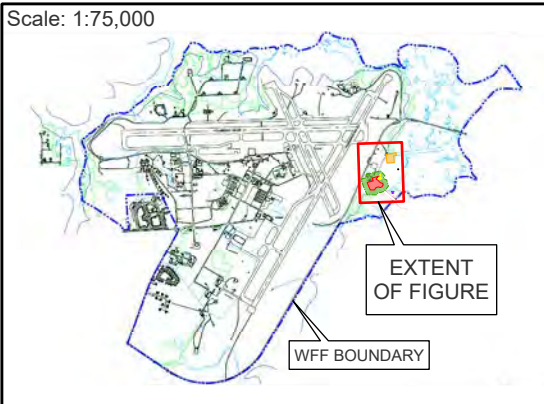
Date:
04/19/2022

Figure
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Figure Source:
Tetra Tech NUS, Inc., 11/17/2005

Scale: 1:75,000



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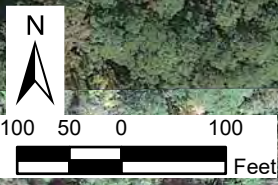


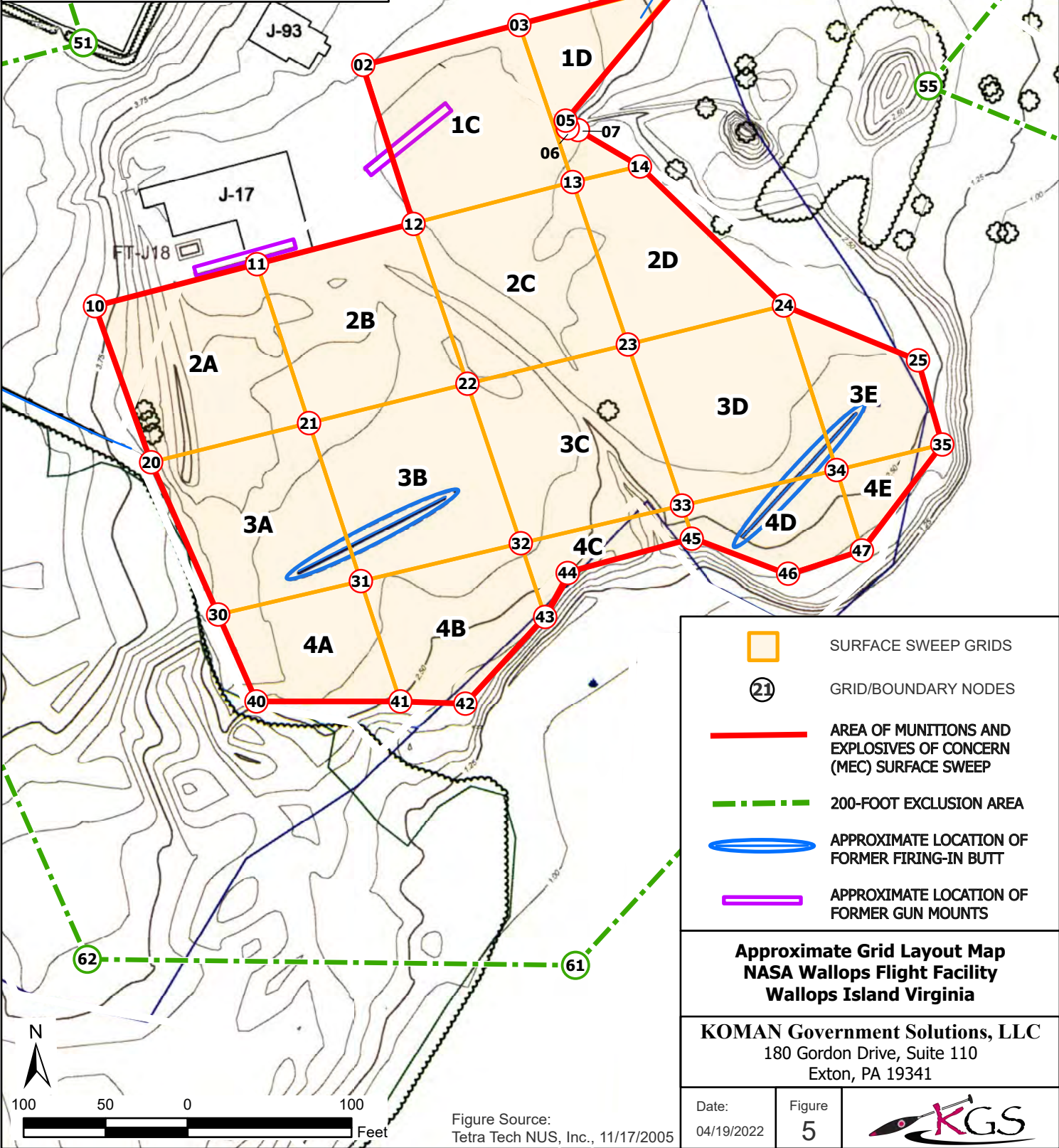
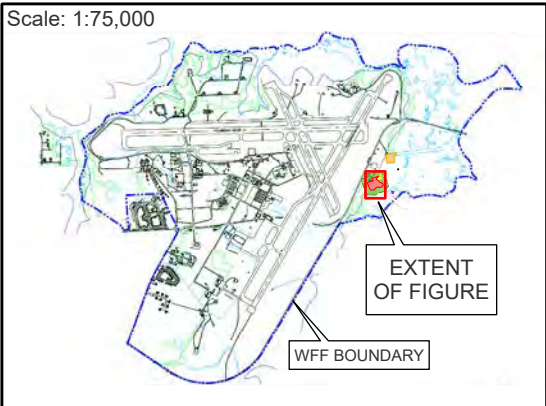
Figure Source: USACE Baltimore District







**FUDS Project 7 Site Map
NASA Wallops Flight Facility
Wallops Island Virginia**

KOMAN Government Solutions, LLC
180 Gordon Drive, Suite 110
Exton, PA 19341

Date: 05/12/2022	Figure 4	
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Scale: 1:75,000



-  SURFACE SWEEP GRIDS
-  GRID/BOUNDARY NODES
-  AREA OF MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) SURFACE SWEEP
-  200-FOOT EXCLUSION AREA
-  APPROXIMATE LOCATION OF FORMER FIRING-IN BUTT
-  APPROXIMATE LOCATION OF FORMER GUN MOUNTS

**Approximate Grid Layout Map
NASA Wallops Flight Facility
Wallops Island Virginia**

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180 Gordon Drive, Suite 110
Exton, PA 19341

Date:
04/19/2022

Figure
5



Figure Source:
Tetra Tech NUS, Inc., 11/17/2005

TABLE

**TABLE 1
 EVALUATION OF FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
 TIME-CRITICAL REMOVAL ACTION MEMORANDUM
 PROJECT 7 OU9, VISITOR CENTER MEC CLEARANCE
 NASA WFF, VIRGINIA**

Requirement	Citation	Status	Synopsis	Evaluation/Actions to be Taken
Federal				
Endangered Species Act of 1973	50 CFR Parts 81, 225, 402	Applicable	This act requires Federal agencies to act to avoid jeopardizing the continued existence of federally listed endangered or threatened species.	A review of available information to indicates no state or federally listed endangered or threatened species are known to permanently or seasonally reside in the immediate vicinity of the Visitor Center. However continual observations will occur throughout the TCRA to ensure there are no impacts to species. Since intrusive activities are not planned, no impacts to potential existing endangered species or their habitat are anticipated.
National Historic Preservation Act	36 CFR Part 800	Relevant and Appropriate	Requires federal agencies to consider the effects of their actions on historic properties before undertaking a project. Federal agencies are required to initiate consultation with the State Historic Preservation Office (SHPO) informing them of the planned action and requesting their submittal of any comments or concerns.	The Visitor Center area was identified during a Cultural Resources Assessment as having a high sensitivity to historic cultural resources. Since intrusive activities are not planned, no impacts to cultural resources are anticipated. The Virginia Department of Historic Resources (VDHR) and appropriate Native American tribes will be notified if any artifacts and/or human remains are encountered.

TABLE 1 (continued)
EVALUATION OF FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
TIME-CRITICAL REMOVAL ACTION MEMORANDUM
PROJECT 7 OU9, VISITOR CENTER MEC CLEARANCE
NASA WFF, VIRGINIA

Requirement	Citation	Status	Synopsis	Evaluation/Actions to be Taken
Regional Screening Levels	Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, which was amended by the 1986 Superfund Amendments and Reauthorization Act.	To Be Considered	Provides conservative, risk-based, chemical-specific screening action levels designed to protect human and ecological receptors.	The TCRA will not generate chemical risks and no chemical risks are known to exist at the site.
Military Munitions Rule	40 CFR 266.202 [(a)(1)(i), (iii), and (c)]	Applicable	Identifies when military munitions are regulated as solid waste and when they are exempt. Potential munitions identified during the TCRA were used in training and were not collected and disposed at the site.	If MEC/MPPEH items are recovered during the TCRA, they will be demilitarized to render them inert. Any onsite destruction will take place within the MRS.

TABLE 1 (continued)
EVALUATION OF FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
TIME-CRITICAL REMOVAL ACTION MEMORANDUM
PROJECT 7 OU9, VISITOR CENTER MEC CLEARANCE
NASA WFF, VIRGINIA

Requirement	Citation	Status	Synopsis	Evaluation/Actions to be Taken
State				
Endangered Species Act Regulations	4 VAC 15-20-130	Applicable	These regulations from the Department of Game and Inland Fisheries prohibit the taking of endangered species. The cited regulations provide listings of endangered species and definitions of actions which constitute taking.	A review of available information to indicates no state or federally listed endangered or threatened species are known to permanently or seasonally reside in the immediate vicinity of the Visitor Center. However continual observations will occur throughout the TCRA to ensure there are no negative impacts to species. Since intrusive activities are not planned, no negative impacts to potential existing endangered species or their habitat are anticipated.
VDEQ Water Permits	Code of Virginia Title 62.1	To Be Considered	VDEQ is the lead agency for developing and implementing the Commonwealth's statewide program to protect water quality. VDEQ controls pollution that may enter or affect surface and/or groundwater by issuing permits or requiring registration or certification.	While the TCRA is being conducted near to surface water and wetlands, the TCRA activities are not expected to negatively impact surface water or wetlands. However continual observations will occur throughout the TCRA to ensure there are no negative impacts to the adjacent wetlands by the TCRA activities.

**TABLE 1 (continued)
 EVALUATION OF FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
 TIME-CRITICAL REMOVAL ACTION MEMORANDUM
 PROJECT 7 OU9, VISITOR CENTER MEC CLEARANCE
 NASA WFF, VIRGINIA**

Requirement	Citation	Status	Synopsis	Evaluation/Actions to be Taken
Coastal Zone Management Act	VDEQ Following 15 CFR 923.48	To Be Considered	The Virginia CZM Program is a means to manage Virginia's coastal resources, the program relies on a network of state agencies and local governments to administer the enforceable laws and regulations that protect Virginia wetlands, dunes, subaqueous lands, fisheries, and air and water quality – within the Virginia “Coastal Zone.”	While the TCRA is being conducted within the coastal zone of Virginia, the TCRA activities are not expected to negatively impact the coastal zone. However continual observations will occur throughout the TCRA to ensure there are no negative impacts to the coastal zone by the TCRA activities.
Virginia Waste Management Board	9 VAC 20	Applicable	The Virginia Waste Management Board is responsible for carrying out the purposes and provisions of the Virginia Waste Management Act, Chapter 14 of Title 10.1 of the Code of Virginia, and compatible federal act provisions and is authorized to exercise general supervision and control over waste management activities in the Commonwealth.	The TCRA will not generate chemical risks and no chemical risks are known to exist at the site. No hazardous wastes will be generated during the TCRA. Any MD generated during the TCRA will be recycled. Any trash generated during the TCRA will be handled as general refuse and disposed accordingly.