Naval Facilities Engineering Command

ENGINEERING AND EXPEDITIONARY WARFARE CENTER

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INTERIM RESPONSE MEASURES WHEN POTENTIAL MUNITIONS AND EXPLOSIVES OF CONCERN ARE DISCOVERED

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14. ABSTRACT

Munitions and explosives of concern (MEC) or material potentially presenting an explosive hazard (MPPEH) may be encountered in previously unsuspected areas. This memorandum provides information on how and when to implement land use controls (LUCs) as interim response measures to address safety in the short term, while long-term actions are planned. Recommendations are made with respect to the steps to take within the first 24 hours, week, month, and six months of the MEC/MPPEH discovery to ensure that the site is secured and the appropriate personnel/organizations are aware of the hazard(s) while plans are developed for future action.

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ACRONYMS AND ABBREVIATIONS

3Rs	Recognize – Retreat – Report
BRAC	Base Realignment and Closure
CA	chemical agent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO	Commanding Officer
DDESB	Department of Defense Explosives Safety Board
DoD	Department of Defense
DOI	Department of the Interior
DON	Department of the Navy
EOD	explosive ordnance disposal
ERB	Environmental Restoration and BRAC
ESO	Explosives Safety Officer
ESS	Explosives Safety Submission
ESSDR	Explosives Safety Submission Determination Request
EZ	exclusion zone
GIS	geographic information system
HA	hazard assessment
LUC	land use control
MARCORSYSCOM	Marine Corps Systems Command
MCO	Marine Corps Order
MEC	munitions and explosives of concern
MPPEH	material potentially presenting an explosive hazard
MRP	munition response program
MRS	munitions response site
MRSPP	munitions response site prioritization protocol
NIRIS	Naval Installation Restoration Information Solution
NOSSA	Naval Ordnance Safety and Security Activity
NOSSAINST	Naval Ordnance Safety and Security Activity Instruction
NTCRA	non-time critical removal action
PAO	Public Affairs Officer
RI	remedial investigation
RPM	Remedial Project Manager

SI	site inspection
SME	subject matter expert
SOW	scope of work
TCRA	time-critical removal action
U.S. EPA	United States Environmental Protection Agency
UXO	unexploded ordnance

1.0 INTRODUCTION

Prior to starting work at an Environmental Restoration site, Remedial Project Managers (RPMs) should review the history and known hazards associated with the site. While munitions and explosives of concern (MEC) or material potentially presenting an explosive hazard (MPPEH) are most likely to be encountered in areas where the Department of the Navy (DON) was known to conduct historic munitions-related activities, MEC/MPPEH may be encountered in previously unsuspected areas. MEC/MPPEH may be discovered incidentally during the investigation and remediation of "traditional" environmental restoration sites and/or Munitions Response Sites (MRSs) may have an explosive hazard that requires control, but the funding for the investigation and removal action may be years out.

This memorandum provides information on how and when to implement land use controls (LUCs) as interim response measures (prior to a Record of Decision) to address safety in the short term, while long-term actions are planned. Recommendations are made with respect to the steps to take within the first 24 hours, week, month, and six months to ensure the hazard/site is secured and the appropriate personnel/organizations are aware of the hazard(s) while plans are developed for future action.

2.0 RESPONSE MEASURES

2.1 RESPONSE MEASURES DURING THE FIRST 24 HOURS FOLLOWING DISCOVERY OF MEC/MPPEH

The first 24 hours after discovery of MEC/MPPEH includes the critical period to address the immediate safety concerns. The highest priority is the safety of workers and the public from the potential explosive hazards. During safety tailgate meetings, all on-site personnel should be trained on the importance of the 3Rs: Recognize – Retreat – Report (see Table 1). On-site personnel should use the 3Rs approach to mitigate the hazards from encountering MEC/MPPEH at a site.

When an unexpected MEC/MPPEH item is first encountered at a site, the RPM must stop all operations that have the potential to put personnel, equipment, and/or property at risk. If the MEC/MPPEH constitutes an imminent threat to the public an emergency response will be required. The 3Rs approach should be followed by recognizing the item as a potential MEC/MPPEH, retreating (while stopping the work and establishing the exclusion zone [EZ]), and reporting the item. The RPM must ensure that on-site personnel establish an initial EZ around the discovered MEC/MPPEH item. Establishing and maintaining the EZ will do the most for safety of workers and the public. An initial EZ needs to be a minimum 200 ft radius around the item. The EZ will be adjusted by Explosive Ordnance Disposal (EOD) personnel or local law enforcement as noted below.

To initiate an emergency response, the applicable emergency response entity should be contacted (e.g., 911 or base emergency). For active installations, an EOD unit will act in an emergency response capacity to address imminent threats from suspected munitions. Active installations have developed emergency procedures and protocols that need to be followed to alert the proper personnel (e.g., notification to military police, fire, Explosives Safety Officer [ESO], base

environmental, Commanding Officer [CO], and Public Affairs Officer [PAO], etc.). At active installations, EOD personnel are on call and are trained and equipped to address the explosive hazards of conventional munitions, as well as other types of weapons including chemical agents (CAs). For former installations, local law enforcement will respond according to existing protocols between the military and the local authorities at the specific site (U.S. Department of the Interior [DOI], 2006). Appropriate site access controls should be maintained until it is determined what additional munitions response actions will or will not be required.

Table 1. On-Site Personnel should be Trained in the 3Rs Approach (adapted from U.S. Army, 2010)

Recognize	Recognizing that you may have encountered a munition is one of the most important steps in reducing the potential risk of injury or death. Because munitions pose a potential explosive hazard, they should never be touched, moved, or disturbed (handled).
Retreat	Upon discovery of a potential MEC/MPPEH item, on-site personnel should immediately stop work in the surrounding area and move personnel and equipment away from the item (an initial EZ of 200 ft is recommended). • If you encounter or suspect you may have encountered a munition, do not touch, move, or disturb it. Instead, carefully retreat from the area by retracing your steps. • Immediately stop all construction activities in the area, warning others of the potential danger. • Do not approach the munition or a suspect munition (some fuzes are sensitive to changes in temperature, movement, or pressure). • Move away from the area and keep others away from it.
Report	Once the immediate area is secure, report the item to the site supervisor or safety officer (who should inform the DON RPM and/or call 911). Report the following: • The area where you encountered it. • A general description of the munition (e.g., size, shape, readily visible markings - do not approach or handle the munition to see the markings).

Once the site is controlled and secured, the following actions will be taken by the explosive's safety team when MEC/MPPEH is reported:

- Item deemed safe, return to normal operations and notify Naval Ordnance Safety and Security Activity (NOSSA);
- Item deemed unsafe and can be moved to a safe location or blown-in-place; or
- Item deemed unsafe and cannot be moved to a safe location or blown-in-place immediately (e.g., item is unsafe to move and residents live in the immediate vicinity of the item making it unsafe to blow-in-place without evacuations).

For Actions 2 and 3, the site must be secured to prevent unauthorized persons from encountering the MEC/MPPEH item. A site can be secured in several ways, including:

- Evacuate the site and surrounding area (the evacuation area will be determined by the EOD/explosives safety team and depend on the size and type of MEC/MPPEH item);

- Restrict access by placing barriers (e.g., temporary barricades/fencing; warning signs);

- Request a security patrol for the site perimeter to prevent contact with MEC/MPPEH.

Communicating with the proper entities is important. To summarize, the following entities should be contacted as soon as possible following the unexpected discovery of MEC/MPPEH:

- The DON RPM should immediately contact the cognizant EOD unit (or local law enforcement authority) in order to remove/dispose the item or assess the area to determine the next steps.

- On active installations, the emergency protocols and procedures should be activated to address the potential MEC/MPPEH. This can include immediately notifying appropriate personnel such as police, fire, ESO, CO, PAO and base environmental.

- In the situation of possible imminent danger, evacuations may be necessary as soon as possible. Evacuations may be conducted by installation personnel on an active base or by local authorities at a former DON site.

- The installation and/or regional ESO should be notified of the MEC/MPPEH discovery, who can assist in risk communication to the CO.

- The RPM's supervisory chain should also be immediately notified of the MEC/MPPEH discovery.

- U.S. Environmental Protection Agency (U.S. EPA) recommends that the lead agency give at least verbal notification to the State or Tribal governments and, if applicable, to the relevant Federal Land Manager Agency within 24 hours of initiating an emergency response (U.S. EPA, 2019).

2.2 RESPONSE MEASURES DURING THE FIRST WEEK FOLLOWING DISCOVERY OF MEC/MPPEH

Within the first week (7 days) after the initial discovery of MEC/MPPEH, the RPM should notify the appropriate explosive safety authority of the encounter. For Navy sites, the RPM should notify NOSSA by submitting a "Munitions Response Site Identification and Notification Report." For Marine Corps sites, the RPM should notify the Marine Corps Systems Command (MARCORSYSCOM). Information provided will allow NOSSA/MARCORSYSCOM to evaluate the site-specific conditions and the risk/hazard assessment (HA) and provide their findings in writing. A response will be provided by e-mail within two weeks of receiving the report.

Depending on the circumstances involved, NOSSA/MARCORSYSCOM will either concur with the resumption of operations or require that an Explosives Safety Submission Determination Request (ESSDR) or an Explosives Safety Submission (ESS) be submitted and approved before operations can continue. More information on these submissions can be found in NOSSA Instruction (NOSSAINST) 8020.15 (Series) and Marine Corps Order (MCO) 8020.10 Marine Corps Explosives Safety Management Program.

Within the first week, RPMs should also complete the following actions:

- Coordinating with EOD through Fleet Emergency Management and installation personnel (ESO, etc.) on any emergency response actions and the documentation of the incident (munition type, location, etc.);

- Coordinating with and submitting the required information to NOSSA/ MARCORSYSCOM;

- Providing written notification to the State or Tribal governments and, if applicable, to the relevant Federal Land Manager Agency within 7 days of an emergency response (U.S. EPA, 2019); and

- Processing stop-work orders and coordinating with all contractors with current and/or future plans for work in the area affected by the MEC/MPPEH discovery.

2.3 RESPONSE MEASURES DURING THE FIRST 30 DAYS FOLLOWING DISCOVERY OF MEC/MPPEH

After the immediate safety issues are addressed, the near-term processes outlined for the next 30 days (1 month) allow the RPM to address the next steps. The RPM should continue to ensure the site is appropriately secured. As time allows, the RPM should update the project schedule and start planning for contracting and/or appropriate scope modifications to account for the MEC/MPPEH discovery.

During the first month, the RPM should receive a response from NOSSA/MARCORSYSCOM regarding the resumption of operations or the need for an ESSDR or ESS. Accordingly, the RPM should ensure these documents are initiated in a timely manner to meet the project execution requirements.

NOSSA/MARCORSYSCOM may determine that an ESS is not required for operations taking place in an area known or suspected to contain MEC/MPPEH when the likelihood of encountering them is low. To obtain NOSSA/MARCORSYSCOM determination that an ESS is not required, the RPM must complete and submit NOSSAINST 8020.15 (Series)/MCO 8020.10 Enclosure (2), "Explosives Safety Submission Determination Request." Information provided will allow NOSSA/MARCORSYSCOM to evaluate the site-specific conditions and the risk/HA and provide their findings in writing. If the determination is made that an ESS is not necessary, the ESSDR will be approved and work will be allowed to resume provided the protective measures detailed in the ESSDR are implemented.

If NOSSA/MARCOSYSCOM determines that an ESS is required, it should be prepared in accordance with NOSSAINST 8020.15 (Series)/MCO 8020.10, Enclosure (3)/MCO 8020.10 Appendix A. RPMs should revise the project schedule to include adequate time for preparation, review, and approval of an ESS. The updated schedule should then be clearly articulated with the entire project team, including regulatory agencies, stakeholders, and NOSSA/ MARCORSYSCOM.

In certain cases, LUCs will need to be implemented as a time-critical removal action (TCRA) to reduce exposure to the MEC/MPPEH hazard. These interim LUCs differ from conventional LUCs as they are implemented before the Record of Decision via a TCRA approach. A TCRA is a removal action for which the planning period is six months or less before field work is initiated.

It is anticipated that interim LUCs could be selected and defined within the first 30 days (with implementation initiated as soon as feasible within the six-month TCRA timeframe). LUCs are physical, legal, and/or administrative mechanisms that restrict access and specific activities. Interim LUCs can be used to manage risks/hazards at the site by controlling site access and preventing activities that could lead to a MEC/MPPEH encounter (ground-disturbing or intrusive activities), while long-term actions are pending. The Department of Defense (DoD) Policy on Land Use Controls Associated with Environmental Restoration Activities provides additional information on LUCs (U.S. DoD, 2001).

Typical interim LUCs for a MEC/MPPEH site may include:

- Restrictions on land use;
- Requirements for dig restrictions or dig permits;
- Fencing and signage; and
- Monitoring and enforcement.

Interim LUCs for these sites should be added to LUC Tracker in the Naval Installation Restoration Information Solution (NIRIS) so they can be properly defined and tracked. In addition, RPMs need to contact personnel in Asset Management to ensure this same information is provided in the Regional Shore Infrastructure Plan/Base Master Plan. In NIRIS, the interim LUCs can be defined as controlled areas and the site conditions or drivers resulting in specific restrictions and controls defined as highlighted below. The map boundaries for the interim LUCs should also be documented.

INSTRUCTIONS FOR ESTABLISHISHING INTERIM LUCS IN NIRIS

It is DoD policy for each component to maintain a LUC database. This requirement is fulfilled for the Navy and Marine Corps by the use of the LUC Tracker module contained in NIRIS. Interim LUCs are created in the NIRIS LUC Tracker module in a similar manner as conventional LUCs. The process is initiated by selecting “Controlled Areas” on the left side menu bar in the LUC Tracker, followed by clicking the “New Controlled Area” button (see Figure 1).

INSTRUCTIONS FOR ESTABLISHISHING INTERIM LUCS IN NIRIS (CONTINUED)

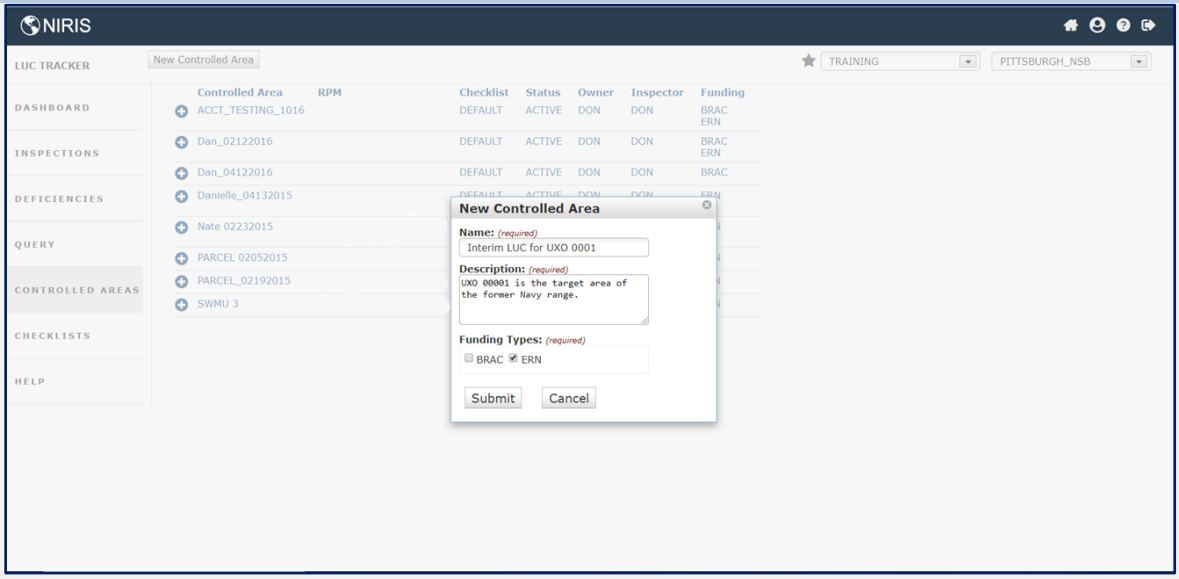

Figure 1. Establishing a New Controlled Area in NIRIS

From there, the controlled area should be defined with the settings outlined in Figure 2 if inspections will be performed. Or follow the process shown in Figure 3 if no inspections are needed. Next, the setup can continue in a similar manner as other LUCs, with the user establishing the appropriate Drivers, Restrictions, and Controls, as well as applicable sites relevant to the interim LUC.

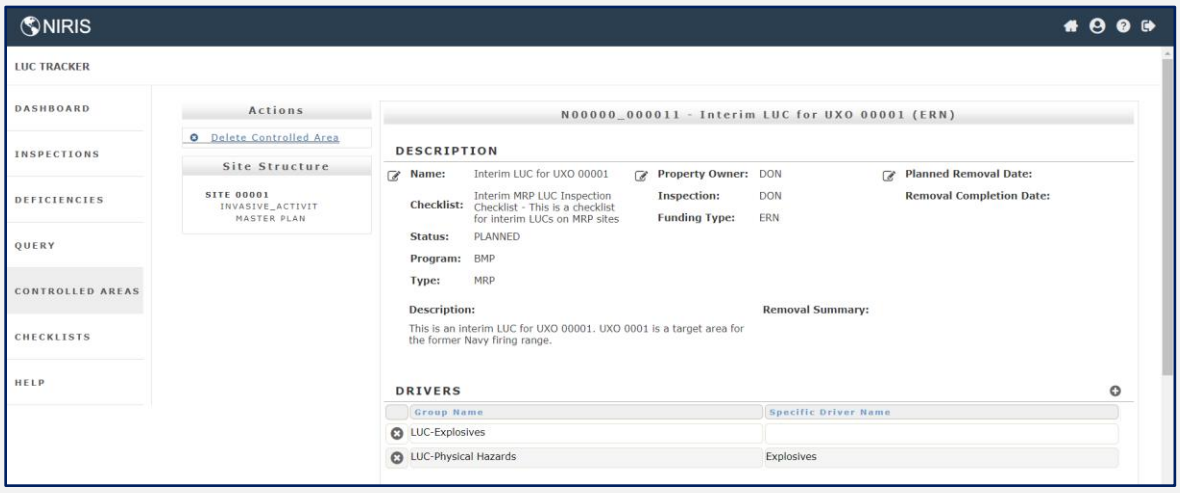

Figure 2. Steps to Establish a New Controlled Area with Inspections

When completed, a Support Request in NIRIS will automatically be created that will notify the Regional Data Manager to contact the appropriate RPM for an interim LUC boundary to load into the NIRIS geographic information system (GIS) database. Any questions on this process should be directed to the Regional Data Manager for confirmation.

INSTRUCTIONS FOR ESTABLISHISHING INTERIM LUCS IN NIRIS (CONTINUED)

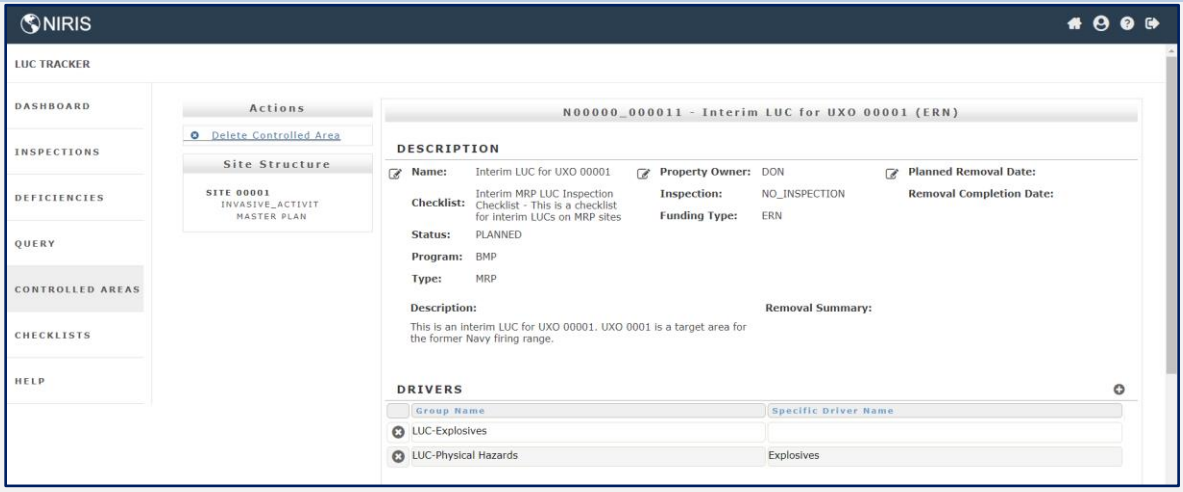

Figure 3. Steps to Establish a New Controlled Area without Inspections

2.4 RESPONSE MEASURES DURING THE FIRST SIX MONTHS FOLLOWING DISCOVERY OF MEC/MPPEH

The first six months after the discovery of MEC/MPPEH covers the steps taken after initial emergency response actions are addressed and planning for the long-term response is undertaken.

If NOSSA or MARCORSYSCOM determines that an ESS is required, the RPM should take the necessary steps to define the site as an MRS within the DON Munition Response Program (MRP). When an ESS is required, no site operations can begin unless NOSSA has endorsed and the Department of Defense Explosives Safety Board (DDESB) has approved the ESS. ESS approval must be obtained prior to conducting any actions that involve intentional physical contact with MEC/MPPEH, ground-disturbing, or intrusive activities in areas known or suspected to contain MEC/MPPEH. Therefore, it is important that the ESS be submitted in a timely manner that considers the required planning process.

For tracking purposes, each MRS will be assigned a unique MRS number and site name. The status of the MRS is then tracked in the DON NORM or "Normalization of Data" database using the Munitions Response Site Prioritization Protocol (MRSPP) module. The MRSPP provides a framework to determine the relative hazards/risks posed at each MRS. It is used to prioritize the response actions and determine the level of funding to be made available for high hazard/risk versus low hazard/risk sites. Other factors may weigh in as well (including community interest, value of land for development) (DON, 2018). More information is provided in the Munitions Response Site Prioritization Protocol Primer (DoD, 2007).

Once a site has been identified in NORM, EOD support should generally not be requested to respond again. Instead, RPMs should plan and execute actions utilizing appropriate contractor resources to conduct responses to MEC/MPPEH. An emergency response by an EOD team would

only be appropriate if the unexploded ordnance (UXO) contractor encounters a munition item that is beyond their capacity to safely manage (DON, 2018).

A number of actions may be appropriate depending on the hazard at a site. Continued investigations (site inspection [SI] or remedial investigation [RI]), non-TCRA, or TCRA are potential actions to be taken. As stated previously, a TCRA can be used to implement controls and address MEC/MPPEH (e.g., removal) that poses an imminent threat. Therefore, RPMs should define and contract the scope of work (SOW) and/or modifications needed to address the MEC/MPPEH as soon as feasible. SOW templates are available for SIs, RIs, and removal actions at MRSs including TCRAs and non-time critical removal actions (NTCRAs) on the NAVFAC Environmental Restoration and Base Realignment and Closure (BRAC) (ERB) Web site.

Continued implementation and maintenance of interim LUCs will occur during this timeframe including any required monitoring and inspections. The NIRIS LUC Tracker should be used to record, track, and update information pertaining to the interim LUCs established for the site. Example checklists are provided within NIRIS to perform the needed inspections.

The conduct of the removal action should be documented including the interim LUC design, implementation, and recommended maintenance actions. The required documentation for a TCRA involving MEC/MPPEH includes an Action Memorandum and After-Action Report per Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and NOSSAINST 8020.15 (Series)/MCO 8020.10 requirements, respectively.

3.0 CONCLUSIONS

This memorandum summarizes the recommendations with respect to the steps to take within the first 24 hours, week, month, and six months to ensure a site is secured via interim LUCs and other measures, while plans develop for future investigation or remediation of MEC/MPPEH. It is meant to provide a general overview of DoD/DON explosives safety policies and to concisely summarize programmatic guidance on removal actions and LUCs. RPMs should continue to rely on munitions-related subject matter experts (SMEs) and account for site-specific conditions when managing potential MEC/MPPEH. More information on DON policies establishing and managing MRSs is also included in the Navy Environmental Restoration Program Manual (DON, 2018).

4.0 REFERENCES

Marine Corps Systems Command (MARCORSYSCOM). 2015. MCO 8020.10 *Marine Corps Explosives Safety Management Program*. June.

Naval Facilities Engineering Command (NAVFAC). 2010. Statement of Work (SOW) Template for a Removal Action at a Munitions Response Site. May. Available at: https://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er_pdfs/s/navfac-ev-tmpl-mr-sow-removalaction-201005.pdf

NOSSA Instruction (NOSSAINST). 8020.15 (Series), *Explosives Safety Review, Oversight, and Verification of Munitions Responses.*

United States Army (U.S. Army). 2010. *3Rs Explosives Safety Guide Construction Industry*. https://www.denix.osd.mil/uxo/educational-resources/safety-guides/construction/3rs-guide-construction-2010-large-pdf/

United States Department of Defense (U.S. DoD). 2001. *Policy on Land Use Controls Associated with Environmental Restoration Activities*, January 17.

United States Department of Defense (U.S. DoD). 2007. *Munitions Response Site Prioritization Protocol Primer*.

United States Environmental Protection Agency (U.S. EPA). 2019. *Interim Final EPA Munitions Response Guidelines, OSWER Directive 9200.1-101*. Office of Solid Waste and Emergency Response, Federal Facilities Restoration Office. July.

United States Department of the Interior (U.S. DOI) Bureau of Land Management (BLM) and Fish and Wildlife Service (USFWS). 2006. *Military Munitions and Explosives of Concern: A Handbook for Federal Land Managers, with Emphasis on Unexploded Ordnance.* February. *https://www.fws.gov/refuges/whm/pdfs/UXO_Handbook_8-9-06.pdf*

United States Department of the Navy (DON). 2018. Department of the Navy Environmental Restoration Program Manual. March.