

Revised Proposed Plan

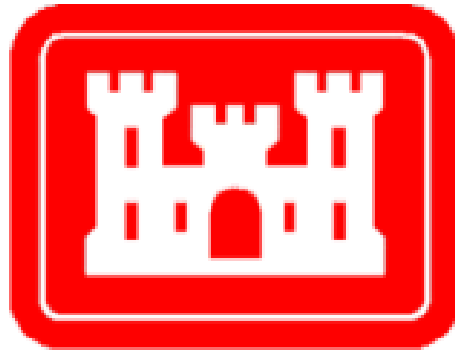
Iowa Army Ammunition Plant (IAAAP)

Remedial Action at Operable Unit 5 (OU5)
Possible Demolition Site (PDS) and Incendiary Disposal Area (InDA)
Des Moines County, Iowa

Contract Number: W912DY20D0017

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Prepared For:



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Introduction

This Revised Proposed Plan is an amendment to the May 2013 Proposed Plan for Operable Unit 5 (OU5) at Iowa Army Ammunition Plant (IAAAP) in Middletown, Iowa. The purpose of the amendment is to change the Preferred Remedial Alternative for two Munitions Response Sites (MRSs) within OU5 from Land Use Controls (LUCs) to Munitions and Explosives of Concern (MEC) Subsurface Clearance and off-site disposal to achieve Unlimited Use/Unrestricted Exposure (UU/UE). The two affected MRSs are the following:

- Possible Demolition Site (PDS): IAAP-004-R-01
- Incendiary Disposal Area (InDA): IAAP-006-R-01

This Revised Proposed Plan only details site history and information as it relates to these two MRSs. OU5 also includes seven other MRSs that are not affected by or included in this Revised Proposed Plan: Outside Blast Area (IAAP-002-R-02), Central Test Area (CTA; IAAP-001-R-01), Line 6 Ammo Production (Inside Blast Radii; IAAP-004-R-01), West Burn Pads (IAAP-003-R-01), West Burn Pads South of the Road (IAAP-005-R-01), and Maneuver Area (IAAP-006-R-01), and Possible Demolition Site -North (IAAP-004-R-02). Persons seeking information on these other OU5 MRSs should consult the May 2013 Proposed Plan, the December 2022 Revised Proposed Plan, and September 2014 Record of Decision (ROD).

The Incendiary Disposal Area (InDA; IAAP-006-R-01) and the portion of the Possible Demolition Site (PDS; IAAP-004-R-01) located south of K Road are the two MRSs that will be updated in this Proposed Plan revision. Due to change of mission, the future use of the parcels of land has changed to allow for development and increased access. This amended plan recommends a modified Alternative 3, including geophysical remapping of the site, classifying anomalies using Advanced Geophysical Classification (AGC), and investigating and removing the Targets of Interest (TOI), as the preferred remedy for these sites.

The locations of these MRSs within IAAAP are shown on [Figure 1](#).

This work is being conducted in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and the IAAAP Federal Facility Agreement (FFA). This document is issued by the U.S. Army, the owner of the IAAAP facility, and the U.S. Environmental Protection Agency (EPA). The State of Iowa is not a signatory to the IAAAP FFA. The Army is the lead agency, and EPA is the primary regulatory agency.

After reviewing and considering input submitted during the 30-day public comment period, the Army and EPA, in consultation with Iowa Department of Natural Resources (DNR), will select the final remedy and document the decision through a Record of Decision (ROD). The public is encouraged to review and comment on the preferred alternative and the rationale provided for this preference and all other presented remedial alternatives summarized in this Proposed Plan and presented in detail in the RI/FS. The Army and EPA, in consultation with Iowa DNR, may modify the proposed cleanup plan or may select another remedial alternative based on new information or public comments received during the public comment period.

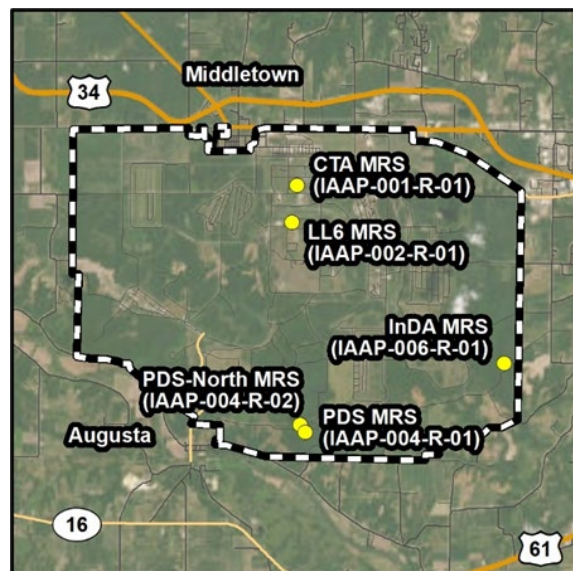


Figure 1 - Location of Munitions Response Sites

The Army and EPA are issuing this Revised Proposed Plan as part of the public participation responsibilities under CERCLA Section 117(a) and Section 300.430(f)(2) of the NCP.

Dates to Remember:

A) Public Comment Period

July 17, 2024 – August 21, 2024

B) Public Meeting

July 16, 2024, at 11:00 a.m.

The Army and EPA will accept written comments on the Revised Proposed Plan during a 30-day public comment period. The Army will hold a public meeting to explain the Revised Proposed Plan and the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at the West Burlington City Hall, 122 Broadway Street, West Burlington, Iowa.

For more information, see the Administrative Record File, which is located online at <https://iaaaprestoration.com/adminrecord/>, Operable Unit 5. A hard copy is housed in the IAAAP Restoration Repository located at 17571 DMC Highway 79, Middletown, Iowa 52638-5000.

The Burlington Public Library has computers available to the public for those interested in viewing the electronic version of the Administrative Record.

Please call 319-753-7339 to schedule an appointment for viewing the hard copy of the Administrative Record and directions.

This Revised Proposed Plan summarizes information that is presented in detail in the Remedial Investigation (RI) and the Feasibility Study (FS) and other documents in the IAAAP Administrative Record File (see above). The Administrative Record is a compilation of the information that was considered in making the proposal presented in this Revised Proposed Plan and presents a comprehensive description of the site investigation and proposed remediation activities.

Site History

IAAAP occupies approximately 19,011 acres adjacent to the town of Middletown in Des Moines

County, Iowa. IAAAP is a government-owned, contractor-operated facility under the command of the United States Army Joint Munitions Command, Rock Island, Illinois. Production of munitions began in 1941, including loading, assembling, and packing a variety of conventional munitions. The facility currently remains in operation.

Past IAAAP munitions production and associated testing and disposal operations have resulted in areas where leftover explosively configured items, referred to as MEC, are present in the environment. These MEC pose a safety hazard. Additionally, the chemical components of munitions, referred to as Munitions Constituents (MC), may also pose a concern to human health and the environment.

IAAAP was placed on the National Priorities List (NPL) in 1990. The Department of Defense (DoD), in accordance with CERCLA and the Defense Environmental Restoration Program (DERP), conducts response actions to address military munitions or the chemical residues of munitions at active installations. Sites associated with military munitions are managed under DERP in the Military Munitions Response Program (MMRP). In 2007, the Army completed a Historical Records Review, which identified the PDS and InDA MRSs addressed in this Revised Proposed Plan. The PDS and InDA MRSs were carried forward to the next phase, the Site Inspection (SI). The purpose of the SI was to determine whether further investigation, immediate response, or No Further Action (NFA) was required for the two MRSs. Prior to finalization of the SI, an EPA dispute resolution, dated December 20, 2006, determined that both the PDS and InDA MRSs would be carried forward to the RI. This resolution superseded the recommendations of the SI. Thus, the SI was finalized in 2007 as a desktop SI without site-specific field data collection, and the PDS and InDA MRSs were carried forward to the RI phase. An additional result of the 2006 EPA dispute resolution was the requirement for an Interim Action consisting of fence installation at both MRSs. The purpose of perimeter fencing is to deter entry into the MRSs to mitigate risk to the public.

The Army conducted an RI to fully delineate the nature and extent of MEC and MC contamination within the OU5 MRSs. The RI report was finalized

in 2011 and recommended that a FS be conducted for both the PDS and InDA MRSs due to the presence of MEC in soil, and a FS for MC at the PDS MRS due to the presence of Royal Demolition Explosive (RDX) and lead in soil. An FS was completed in 2012 to identify and evaluate alternatives for MEC and MC related remedial actions for the two MRSs.

The ROD was signed in 2014, and the selected remedy of LUCs for MEC (fence installation) was implemented by the Army at both the PDS and InDA MRSs. The secondary fencing at each MRS has been in place since 2017.

The selected remedy in the ROD addressing MC in the PDS MRS (excavation and offsite disposal) was also implemented by the Army. NFA has since been concurred for both RDX in soil (per the June 2017 Remedial Action Completion Report) and for lead in soil (per the August 2017 After Action Report).

In 2022 the Army delineated the PDS MRS into two separate MRSs. The current MRS identification for the PDS is IAAP-004-R-01, which will retain 31.41 acres located to the south of the northern edge of K Road. The remaining 8.27 acres of the PDS, located to the north of K Road, has been delineated as “PDS-North,” with MRS identification IAAP-004-R-02. [Figure 2](#) shows the MRS boundary for the PDS in yellow and the PDS-North in pink. The proposed remedy for PDS-North MRS is addressed in a separate PP with the other OU5 MRSs.

Site Background and Characteristics

The two MRSs addressed in this Revised Proposed Plan, PDS and InDA, are described in detail below.

Since 2013, OU5 MMRP sites have been discussed at the IAAAP Restoration Advisory Board Meetings. These meetings are open to the public and public comment is welcome.

Possible Demolition Site (IAAP-004-R-01)

The PDS is located in the south-central portion of IAAAP and covers approximately 39.68 acres.

The PDS was reportedly used during the 1940s and early 1950s as a demolition area for ammunition items and for demilitarizing white phosphorus rounds. It was reportedly located south of K Road and east of Long Creek.

At the present time, based on the 2014 selected remedy, the PDS MRS has LUCs in place in the form of fencing to restrict access and signage warning persons of the potential MEC hazards.

During the RI, MEC, including fuzes and an M5A1 cartridge, was found in the shallow subsurface soil. Non-hazardous munitions debris (MD) was also found, such as pieces of M1A1 mines, 81 millimeter (mm) mortars, and 75mm projectiles.

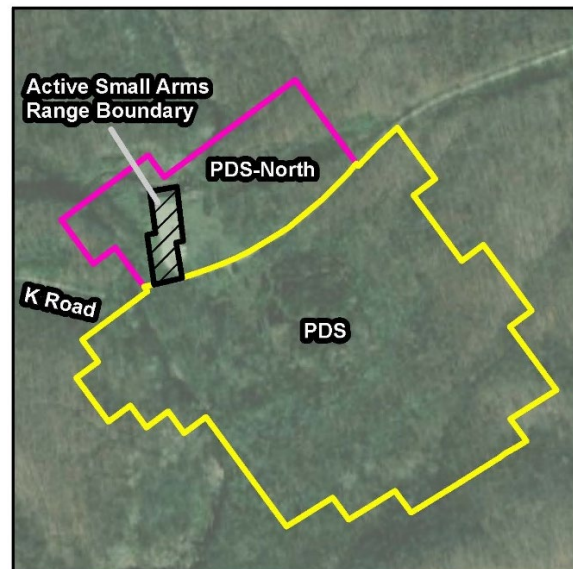


Figure 2 - PDS MRS

In addition, the Army collected and analyzed surface soil, subsurface soil, and groundwater samples for explosive compounds and certain metals associated with munitions (MC). No explosives were detected above screening criteria in soil except for RDX in one location at a depth of 0.5 to 2 feet below ground. The soil sample had an RDX concentration of 14 milligrams per kilogram (mg/kg), exceeding the 1.3 mg/kg Remedial Goal for the protection of groundwater. The sample location was adjacent to a fuze component, which was determined to be the source of the RDX. Copper and mercury were detected above ecological screening criteria in surface soil but were not found to pose unacceptable ecological risks in the risk assessment. The RI also identified lead contamination in soil at the Historical Small Arms Range located within the PDS footprint.

The Army conducted a remedial action to remediate the MC contaminated soils within the PDS. Contaminated soils were excavated and deposited

offsite as documented in the August 2017 After Action Report). Additional MC sampling conducted during soil remediation activities, documented in the June 2017 Remedial Action Completion Report, indicated that RDX was no longer present at levels above the Remedial Action Objectives (RAOs), and NFA was for MC in the PDS MRS was warranted.

As a result of the 2006 EPA dispute resolution, the Army installed fencing around the perimeter of the PDS MRS in 2012.

Incendiary Disposal Area (IAAP-00-R-01)

The Incendiary Disposal Area is located north of K Road, near the east boundary of IAAAP, and covers approximately 34 acres. The MRS boundary is shown in [Figure 3](#).

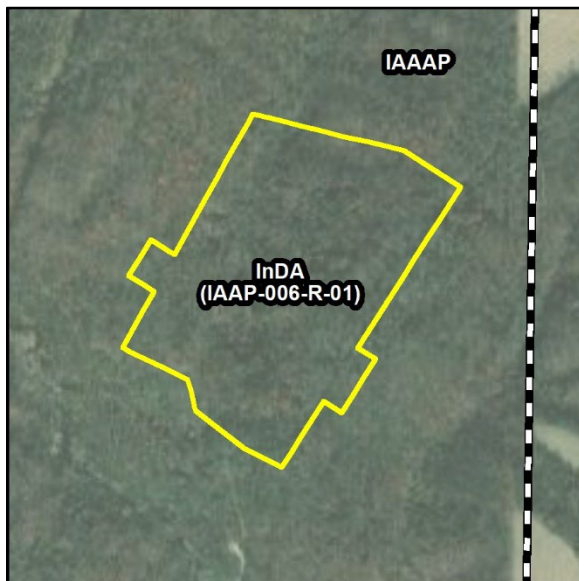


Figure 3 - Incendiary Disposal Area MRS

The InDA was reportedly used by the Army as a high explosives demolition area and/or for burial of unknown materials. Historical drawings indicate that the InDA was small (approximately 40 feet by 60 feet) and surrounded by a barbed wire fence. Through various investigations, the boundary has expanded to the current 34 acres.

During the RI, four MEC items were recovered on the surface of the InDA, and 17 MEC items were recovered from the subsurface. Recovered MEC items included nineteen 75mm projectiles and two M1A1 mines. Many fragments of these and other munitions were also recovered.

Scope and Role of Response Action

This Revised Proposed Plan only details site history and information as it relates to the PDS (IAAP-004-R-01) and InDA (IAAP-006-R-01) MRSs. OU5 also includes seven other MRSs that are not affected by or included in this Revised Proposed Plan: Outside Blast Area (IAAP-002-R-02), Central Test Area (CTA; IAAP-001-R-01), Line 6 Ammo Production (Inside Blast Radii; IAAP-004-R-01), West Burn Pads (IAAP-003-R-01), West Burn Pads South of the Road (IAAP-005-R-01), and Maneuver Area (IAAP-006-R-01), and Possible Demolition Site -North (IAAP-004-R-02). Persons seeking information on these other OU5 MRSs should consult the May 2013 Proposed Plan, the December 2022 Revised Proposed Plan, and September 2014 Record of Decision (ROD). The actions selected will be the final actions to address unacceptable risk related to MEC within the PDS and InDA MRSs. The overall cleanup strategy is to take

appropriate action to remedy environmental contamination when there is an unacceptable risk to human health or the environment. Environmental contamination at the MMRP MRSs consist of MEC. The RAOs for MEC are to reduce explosives safety hazards to human receptors associated with potential MEC commensurate with current and reasonably anticipated future land use at the MRSs.

MC contamination in soils within the PDS MRS have been previously remediated per the 2014 ROD RAOs as documented in the June 2017 and August 2017 After Action Reports and NFA for MC in soils has been achieved.

Summary of Site Risks

The Army assessed risk to determine current and future effects of contaminants on human health and the environment from MEC.

MEC Hazard Assessment

A MEC Hazard Assessment (MEC HA) was performed in accordance with the October 2008 guidance developed by the DoD and EPA to assess explosive hazards. The MEC HA model assigns a relative Hazard Level from 1 to 4, with 1

representing the highest level of hazard and 4 representing the lowest.

The MEC HA model evaluates MEC exposure pathways and potential explosives safety hazards based on three critical elements: 1) MEC presence (source); 2) Receptor; and 3) Interaction between source and receptor. A completed pathway, indicating a MEC hazard, can only exist if all three elements are present, and risk management response actions can be developed and implemented effectively based on eliminating any one of the three elements.

The RI found that there is a potential for MEC to be present at the MRSs that are being reevaluated in this Revised Proposed Plan:

- Possible Demolition Site
- Incendiary Disposal Area

MEC can be present either in the surface or subsurface soil, although the MEC surface clearance activities completed at these MRSs during the RI has led to a reduction of MEC items on the surface. However, subsurface MEC sources may migrate to the surface (i.e., via erosion or frost heave) over time. Thus, the probability of encountering residual surface MEC at the two MRSs still exists but is considered low.

The PDS and InDA MRSs are currently undeveloped. Development at these MRSs is not currently anticipated, however the potential for future development by the Army is possible. Beneficial use of groundwater is currently not anticipated and not expected to change with anticipate future land use. Access to these two MRSs by the general public is limited, as IAAAP is a secure facility that is completely fenced. Entry points to IAAAP are manned by security personnel and security personnel patrol the facility 24 hours a day. Additionally, secondary fences with locked gates surround the two MRSs within IAAAP. Current and future human receptors to MEC include site workers (IAAAP personnel), construction workers, trespassers, hunters, and ecological receptors. However, the current project objective is to achieve UU/UE, which would address the MEC hazards such that there would no longer be need for the secondary fencing.

The potential for interaction between source and receptor has previously been limited, given the undeveloped land use and controlled access to the IAAAP and correspondingly few people that traffic these MRSs. LUCs implemented at IAAAP limit construction activities and require site work permits. The types of receptor activity at this time are most likely to be related to potential construction activities and permitted hunting activities.

Application of the MEC HA resulted in a Hazard Level score of 3 for the PDS and InDA MRSs.

It is the Army's current judgment that the Preferred Alternative identified in this Revised Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from MEC at the following MRS:

- Possible Demolition Site
- Incendiary Disposal Area

Human Health Risk Evaluation

At both MRSs, no chemicals were detected at concentrations that would pose the potential for unacceptable human health risk based on direct contact exposures to media that were evaluated. The human health risk screening results indicated all potential risks were below 1×10^{-6} ; therefore, further evaluation in a baseline human health risk assessment was not required for any of the MRSs.

Ecological Risk Evaluation

At the PDS, copper and mercury were detected above ecological screening criteria. However, the ecological risk assessment determined that all hazard quotients were less than 1, indicating that these chemicals do not pose potential unacceptable risks to ecological receptors in the area.

At the InDA MRS, no chemicals were detected at concentrations exceeding ecological risk screening criteria, indicating that no action is warranted.

Remedial Action Objectives

Remedial Action Objectives describe what the proposed cleanup alternative is expected to accomplish and serve as the basis for development and evaluation of the selected remedial alternatives.

The development of RAOs for MEC focuses on addressing the physical hazards to human receptors. Thus, the RAO for MEC is to reduce explosives safety hazards to human receptors associated with potential MEC commensurate with current and reasonably anticipated future land use for the following MRSs:

- Possible Demolition Site
- Incendiary Disposal Area

Summary of Remedial Alternatives

In the FS, three remedial alternatives were developed to address MEC hazards at the two MRSs:

- MEC Alternative 1 – No Action
- MEC Alternative 2 – Land Use Controls
- MEC Alternative 3 – MEC Subsurface Clearance.

The No Action alternative is required by the National Oil and Hazardous Substances Pollution Contingency Plan for baseline comparison purposes (40 CFR 300.430[e][6]).

MEC alternatives 2 requires LUCs such as access restrictions, educational awareness, and fencing to limit the use of portions of the property or to ensure that groundwater is not used for drinking water purposes. These resource use restrictions are discussed in each alternative as appropriate. Monitoring to ensure the effectiveness of the remedy is also a component of alternative 2.

The three MEC alternatives are described below along with estimated capital, operations and maintenance (O&M), and present worth costs. Present worth cost is the amount of money that would need to be invested in the current year to sufficiently fund the alternative for its duration with a fixed discount rate.

MEC Alternatives

MEC Alternative 1 – No Action

Estimated Capital Cost: \$0
Total 30-Year O&M Cost: \$0
Total Present Worth Cost: \$0

The No Action alternative assumes no remedial action would be taken to address MEC hazards. No

administrative or engineering LUCs would be implemented, and existing fencing would not be maintained.

MEC Alternative 2 – Land Use Controls

Possible Demolition Site

Estimated Capital Cost: \$32,642^{a,b}
Total 30-Year O&M Cost: \$145,628^{a,b}
Total Present Worth Cost: \$173,803^{a,b}

Incendiary Disposal Area

Estimated Capital Cost: \$53,164^a
Total 30-Year O&M Cost: \$236,255^a
Total Present Worth Cost: \$221,691^a

^a Escalated from May 2013 (date of original OU5 Proposed Plan) to April 2023 using 1.34 index derived from the St. Louis Federal Reserve (<https://fred.stlouisfed.org/series/WPSFD49215#0>).

^b LUC costs for PDS-North and PDS estimated by prorating total PDS cost from September 2014 ROD based on proportional perimeter of each.

Alternative 2 includes LUCs at each MRS. LUCs consist of administrative and engineering controls that prevent or reduce the hazards associated with MEC. The alternative would not allow unrestricted use and unlimited exposure.

Administrative controls would consist of access restrictions, legal notices, requirements for construction support, educational awareness, and health and safety programs. Construction support would include specialized unexploded ordnance (UXO) technicians for stand-by support during installation of fencing and signage to ensure the safety of construction personnel from the harmful effects of MEC. The alternative includes the development of a Land Use Control Implementation Plan to establish specific controls and to implement and monitor the specific procedures for LUCs.

Engineering controls for MEC hazards would consist of fencing and signage to restrict access and inform people of the presence of MEC.

O&M costs include maintenance of fencing and signage, periodic future assessments regarding changes to land use, and five-year reviews to evaluate the continued effectiveness and permanence of the alternative. LUCs are anticipated to be required for the foreseeable future; however, for the purposes of comparing costs of

alternatives, the alternative duration is assumed to be 30 years.

MEC Alternative 3 – MEC Subsurface Clearance

Possible Demolition Site

Estimated Capital Cost: \$1,548,058^{a,b}

Total 30-Year O&M Cost: \$0

Total Present Worth Cost: \$1,548,058^{a,b}

Incendiary Disposal Area

Estimated Capital Cost: \$1,677,063^a

Total 30-Year O&M Cost: \$0

Total Present Worth Cost: \$1,677,063^a

^a Estimated capital cost based on current contract awarded to implement the MEC Subsurface Clearance at each site.

^b Alternative 3 costs for the PDS estimated by prorating total PDS cost from September 2014 ROD based on proportion of area allotted to the PDS.

MEC Alternative 3 includes a MEC subsurface clearance to site-specific depth at each MRS. MEC subsurface clearances would significantly reduce the risk of explosives safety hazards associated with MEC at each MRS by removing MEC and Material Potentially Presenting an Explosive Hazard (MPPEH) remaining within subsurface soil. The intent of this Alternative is to achieve UU/UE; there is no associated ongoing O&M cost.

The MEC subsurface clearance activities will include remapping of the sites, classifying anomalies with AGC, and intrusive investigation of TOIs. Potential MEC items and TOI would be removed using manual removal techniques (e.g., shovels, hand equipment). All TOI locations will have the removal of the anomalies verified by post dig verification using an AGC sensor. Recovered MEC will be destroyed, and non-hazardous munitions material will be handled, stored, demilitarized, and recycled in accordance with DoD requirements.

Approximate response action acreages are 31.41 acres for the PDS MRS and 34 acres for the InDA MRS.

Evaluation of Alternatives

The NCP at 300.430(e)(9)(iii) articulates nine evaluation criteria for assessing remedial

alternatives for sites that require remediation or mitigation. A detailed comparison of the alternatives is included in the RI/FS. The alternatives were compared to the nine criteria in the NCP. The nine criteria are divided into three categories by USEPA: threshold factors, balancing factors, and modifying criteria. Overall protection of human health and the environment and compliance with Applicable or Relevant and Appropriate Requirements (ARARs) (unless a specific ARAR is waived) are threshold factors and must be met by each alternative in order to be eligible for selection. Effectiveness (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness), implementability, and cost are balancing criteria. The balancing criteria are used to evaluate alternatives in detail and to balance the relative advantages and disadvantages of each alternative. State acceptance and community acceptance are modifying criteria and are fully considered after public comments on this Proposed Plan are received.

Per the NCP at 300.430(e)(6) the no-action alternative shall be developed, but is not eligible for selection here and is used for comparison purposes only in the remaining Alternatives 2 and 3 for each of the nine criteria specified in the NCP. For additional information and to access the RI/FS documentation, please refer to the Administrative Record File, which is located online at <https://iaaprestoration.com/adminrecord/>.

Threshold Criteria:

1) Overall Protection of Human Health and the Environment

MEC Alternative 1 (No Action) would not be protective of human health and the environment because there would be no mechanism in place to prevent receptors from interacting with MEC.

MEC Alternative 2 (Land Use Controls) provides moderate protection by removing or reducing the potential for exposure to MEC through access restrictions and administrative and engineering controls.

MEC Alternative 3 (MEC Subsurface Clearance) provides the greatest protection to human health

and the environment because the MEC source is removed to the greatest extent possible.

2) Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

MEC Alternative 1 (No Action) may not comply with ARARs because explosives safety hazards associated with MEC would remain and would continue to present an endangerment to human health and the environment.

MEC Alternative 2 (Land Use Controls) and MEC Alternative 3 (MEC Subsurface Clearance) would comply with ARARs.

Balancing Criteria

3) Long-Term Effectiveness and Permanence

MEC Alternative 1 (No Action) does not provide long-term effectiveness because no action would be taken to address the explosives safety hazards.

MEC Alternative 2 (Land Use Controls) would provide moderate long-term effectiveness by implementing controls to restrict access, completing five-year reviews, and incorporating construction support during future intrusive activities.

MEC Alternative 3 (MEC Subsurface Clearance) would provide the highest level of long-term effectiveness when compared with all other alternatives. Removal of MEC significantly reduces explosives safety hazards.

4) Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

MEC Alternative 1 (No Action) and MEC Alternative 2 (Land Use Controls) do not provide any additional reduction in mobility or volume of MEC. However, it should be noted that these alternatives build on the previous work done at the MRSs which included the removal of all MEC exposed at the surface accomplished during the RI.

MEC Alternative 3 (MEC Subsurface Clearance) reduces the volume and mobility of MEC.

5) Short-Term Effectiveness

MEC Alternative 1 (No Action) includes no additive short-term impacts to the community, workers, or environment associated with the

implementation of this alternative, because no action will be taken.

MEC Alternative 2 (Land Use Controls) involves a relatively low risk of explosives safety hazards to workers during installation or maintenance of fencing and signage due to limited worker interaction with media containing MEC.

MEC Alternative 3 (MEC Subsurface Clearance) would require more hazardous exposure to field personnel than MEC Alternatives 1 and 2.

6) Implementability

MEC Alternative 1 (No Action) does not include an action to implement.

MEC Alternative 2 (Land Use Controls) is considered moderately difficult to implement technically and administratively.

MEC Alternative 3 (MEC Subsurface Clearance) is technically and administratively more difficult to implement than MEC Alternatives 1 and 2 considering challenges associated with the MEC subsurface clearance.

7) Cost

The total present worth for each alternative by Site is summarized in Table 1.

Table 1 - Total Present Worth Cost Summary

MRS	MEC Alternative		
	1	2	3
Possible Demolition Site	\$0	\$173,803	\$ 1,548,058
Incendiary Disposal Area	\$0	\$221,691	\$1,677,063
Total Costs for each Alternative	\$0	\$395,494	\$3,225,122

MEC Alternative 1 (No Action) has no associated costs.

MEC Alternative 2 (Land Use Controls) costs include capital costs for fencing and signage, and O&M costs for annual maintenance of fencing and signage, and five-year reviews. Alternative 2

overall costs are significantly less than Alternative 3.

MEC Alternative 3 (MEC Subsurface Clearance) costs are the highest due primarily to capital costs for the MEC subsurface clearance.

Modifying Criteria

The modifying criteria State/Support Agency Acceptance and Community Acceptance will be evaluated in the ROD following agency and public comments on the Revised Proposed Plan.

Consideration of Green and Sustainable Remediation Practices

Pursuant to the DERP Manual (August 2018), Green and Sustainable Remediation (GSR) expands on DoD's current environmental practices and employs strategies for environmental restoration that:

- Use natural resources and energy efficiently;
- Reduce negative impacts on the environment;
- Minimize or eliminate pollution at its source; and
- Reduce waste to the greatest extent possible.

Green and sustainable remediation uses strategies that consider all environmental effects of remedy implementation and operation and incorporates options to maximize the overall environmental benefit of environmental response actions. The Manual further states that "the DoD Component should consider and implement green and sustainable remediation opportunities in current and future remedial activities when feasible."

A 2012 GSR Evaluation for IAAAP sites included GSR Evaluation for the CTA, LL6 (Inside Blast Radii), and PDS. The GSR evaluation concluded that MEC Alternative 2 (Institutional Controls) is estimated to cost substantially less than MEC Alternative 3 (MEC Subsurface Clearance) for each MRS. The GSR footprint results indicate that MEC Alternative 2 also has lower footprints for nearly all the GSR parameters. Most notable footprint advantages for MEC Alternative 2 relative to MEC Alternative 3 are:

- Energy use is lower;

- Greenhouse gas emissions are lower;
- Criteria pollutant emissions are lower; and
- Risk of injury/fatality is lower.

The only significant footprint advantage for MEC Alternative 3 is that refined materials are not used, whereas steel and concrete for signs are needed for Alternative 2.

Preferred Alternative

MEC Alternative 3 – MEC Subsurface Clearance

MEC Alternative 3 (MEC Subsurface Clearance) is the preferred alternative to address MEC at the PDS and InDA MRSs. MEC Alternative 3 is recommended because it will achieve substantial risk reduction to current and future human receptors by removing potential surface and subsurface MEC. MEC Alternative 3 meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Army expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA §121(b): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element, or explain why the preference for treatment will not be met.

MEC Alternative 3 includes remapping of the sites, classifying anomalies using AGC, and intrusive investigation of the TOI. MEC subsurface clearances would significantly reduce the risk of explosives safety hazards associated with MEC at each MRS, by removing MEC and MPPEH remaining within subsurface soil.

The intrusive removal of potential MEC items would be completed using manual removal techniques (e.g., shovels, hand equipment). All TOI excavations will be verified by post-dig verification using an AGC sensor. Recovered MEC will be destroyed, and non-hazardous munitions material will be handled, stored, demilitarized, and recycled in accordance with DoD requirements.

Approximate MRS response action acreages are 31.41 acres for the PDS and 34 acres for the InDA.

Preferred Alternative Summary

Table 2 provides a summary of the preferred alternatives for each MRS addressed in this Revised Proposed Plan.

Table 2 - Preferred Alternative Summary

Munitions Response Site	Preferred Alternative
Possible Demolition Site	MEC Alternative 3 – Subsurface Clearance
Incendiary Disposal Area	MEC Alternative 3 – Subsurface Clearance

The Army and EPA support the Preferred Remedial Alternatives stated above and believe they provide the best remedial alternatives with respect to the evaluation criteria. The Army and EPA expect the Preferred Remedial Alternative to satisfy the following statutory requirements of CERCLA Section 121(b): 1) be protective of human health and the environment; 2) comply with ARARs; 3) be cost effective; and 4) utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

The Preferred Alternative can change in response to public comment or new information.

Community Participation

Detailed information regarding this proposed action is available in the Administrative Record File, which is located online under Operable Unit 5 at <https://iaaaprestoration.com/adminrecord/>. A hard copy is located at the IAAAP Restoration Repository. The Burlington Public Library has computers available to the public for those interested in viewing the electronic version of the Administrative Record. An announcement of the availability of this Revised Proposed Plan will be published in the Hawk Eye newspaper during the week of July 08, 2024, in accordance with CERCLA.

The Army is seeking comments on the action recommended in this Revised Proposed Plan. A public comment period will run from July 17, 2024

to August 21, 2024, during which comments will be accepted and considered prior to a final decision on the three MRS. In addition, a public meeting will be held at the West Burlington City Hall, 122 Broadway Street, West Burlington, Iowa, on July 16, at 11:00 a.m. to explain this proposed action and to answer questions and accept comments. A comment form has been included at the end of this document to submit input on the Revised Proposed Plan.

For additional information, please contact:

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Acronyms and Abbreviations

AGC	Advanced Geophysical Classification
ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CTA	Central Test Area
DERP	Defense Environmental Restoration Program
DMM	Discarded Military Munitions
DoD	Department of Defense
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
FS	Feasibility Study
GSR	Green and Sustainable Remediation
IAAAP	Iowa Army Ammunition Plant
InDA	Incendiary Disposal Area
LL6	Load Line 6
LUC	Land Use Control
MC	Munitions Constituents
MD	Munitions Debris
MEC HA	MEC Hazard Assessment
MEC	Munitions and Explosives of Concern
mg/g	milligrams per gram
mg/kg	milligrams per kilogram
mm	millimeter
MMRP	Military Munitions Response Program
MPPEH	Material Potentially Presenting an Explosive Hazard
MRS	Munitions Response Site
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
NPL	National Priorities List
O&M	Operations & Maintenance
OU5	Operable Unit 5
PDS	Possible Demolition Site
ppm	parts per million
RAO	Remedial Action Objective
RDX	Royal Demolition Explosive
RI	Remedial Investigation
RG	Remediation Goals
ROD	Record of Decision
SI	Site Inspection
TOI	Targets of Interest
UU/EE	Unlimited Use/Unrestricted Exposure
UXO	Unexploded Ordnance

Glossary of Terms

Administrative Record File – A compilation of documents that serve as the basis for the decision in selecting a response action to be taken at a site.

Advanced Geophysical Classification (AGC) – Advanced geophysical sensors and classifiers are used to estimate physical properties of an item (e.g., depth, aspect ratio, wall thickness, symmetry) and determine whether the item is a Target of Interest (i.e., highly likely to be MEC) or non-TOI (i.e., highly unlikely to be MEC).

Anomaly – Any item that is seen as a subsurface irregularity after geophysical investigation. This irregularity will deviate from the expected subsurface ferrous and non-ferrous material at a site (i.e., pipes, power lines, etc.).

Applicable or Relevant and Appropriate Requirements (ARARs) – The federal and state environmental laws that a selected remedy will meet. These requirements may vary among sites and alternatives.

Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) – The federal law that addresses problems resulting from releases of hazardous substances to the environment.

Discarded Military Munitions (DMM) – Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include UXO, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations.

Feasibility Study (FS) – This CERCLA document develops and evaluates options for remedial action. The FS emphasizes data analysis and is generally performed concurrently in an interactive fashion with the RI, using data gathered during the RI.

Land Use Controls (LUCs) – Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, contaminated property to reduce risk to human health and the environment. Physical mechanisms encompass a variety of engineered remedies to contain or reduce contamination and physical barriers to limit access to property, such as fences or signs. The legal mechanisms are imposed to ensure the continued effectiveness of land use restrictions imposed as part of a remedial decision. Legal mechanisms include restrictive covenants, negative easements, equitable servitudes, and deed notices. Administrative mechanisms include notices, adopted local land use plans and ordinances, construction permitting, or other existing land use management systems that may be used to ensure compliance with use restrictions.

Military Munitions – Ammunition products and components produced for or used by the armed forces for national defense and security. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes and incendiaries, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof.

Munitions Constituents (MC) – Any materials originating from UXO, discarded military munitions, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

Munitions Debris (MD) – Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

Munitions and Explosives of Concern (MEC) – A specific category of military munitions that may pose unique explosives safety risks, including (a) Unexploded Ordnance; (b) Discarded Military Munitions; or (c) Munitions Constituents (e.g., TNT, RDX) present in high enough concentrations to pose an explosive hazard.

Munitions Response – Response actions, including investigation, removal and remedial actions to address the explosives safety, human health, or environmental risks presented by UXO, DMM, or MC.

Munitions Response Site (MRS) – A discrete location that is known to require a munitions response.

National Priorities List (NPL) – EPA’s list of uncontrolled or abandoned waste sites that present the greatest potential threat to human health or the environment.

Operable Unit – A portion of a site separately considered for remedial or corrective action.

Operations and Maintenance (O&M) – Measures required to operate and maintain remedial systems to ensure the effectiveness of the response action.

Part per Million (ppm) – A unit of concentration equal to one part in one million (ppm)/and one milligram per gram (mg/g).

Preferred Remedial Alternative – The remedial alternative selected by the Army and EPA, based on a comparison of various remedial alternatives using specific evaluation criteria.

Present Worth – The amount of money that would need to be invested in the current year, at a particular discount rate, to sufficiently evaluate criteria.

Proposed Plan – CERCLA document that summarizes evidence to support the selection of a preferred remedial alternative at a CERCLA site. The document is intended for public distribution to solicit comments on the proposed action(s).

Record of Decision (ROD) – The CERCLA decision document that presents the cleanup remedy selected by the Army and EPA.

Remedial Action Objectives (RAOs) – Site- specific goals to protect human health and the environment.

Remedial Investigation (RI) – A process under CERCLA to determine the nature and extent of the problem presented by a contaminant release. The RI includes sampling, monitoring, and gathering of sufficient information to determine the necessity for remedial action.

Remediation Goals (RGs) – Contaminant concentrations used to identify the soil requiring excavation, treatment, and disposal to meet the RAOs and provide protection for human health and the environment.

RDX (Royal Demolition Explosive) – Hexahydro- 1,3,5-trinitro-1,3,5-triazine. A common military munitions explosive; considered a possible human carcinogen.

Target Risk Range – EPA-established acceptable risk range for carcinogens of 1×10^{-4} to 1×10^{-6} . Estimated excess cancer risks within this range are generally considered unlikely in the general population. If calculated risks fall within the risk range, risk managers must determine whether remedial action is warranted to reduce the risk. If the risks are less than 1×10^{-6} (less than 1 in 1 million), no remedial action is required. If the risks are greater than 1×10^{-4} (1 in 10 thousand), remedial action is generally required.

Unexploded Ordnance (UXO) – Military munitions that: (a) Have been primed, fuzed, armed, or otherwise prepared for action; (b) Have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (c) Remain unexploded either by malfunction, design, or any other cause.

