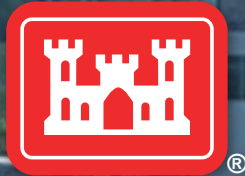


Final
Land Use Control Implementation Plan

**Michie Stadium Munitions Response Site
U.S. Army Garrison West Point
West Point, New York**

January 2015

Prepared for:



**U.S. Army Corps of Engineers
Baltimore District
10 South Howard Street
Baltimore, Maryland 21201-1715**

Prepared by:



Weston Solutions, Inc. • 1400 Weston Way • West Chester, PA 19380

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Final

**LAND USE CONTROL IMPLEMENTATION PLAN
MICHIE STADIUM MUNITIONS RESPONSE SITE
U.S. ARMY GARRISON WEST POINT
WEST POINT, NEW YORK**

**Contract No.: W912DR-09-D-0006
Delivery Order No.: 0001**

Prepared For:



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BALTIMORE DISTRICT**
10 South Howard Street
Baltimore, MD 21201-1715

Prepared By:



Weston Solutions, Inc.
1400 Weston Way
West Chester, PA 19380

WESTON SOLUTIONS, INC. PROJECT NO.: 03886.551.001.0110

January 2015

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LIST OF ACRONYMS AND ABBREVIATIONS

Army	U.S. Army
CENAB	USACE Baltimore District
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CTT	closed, transferred, and transferring
DD	Decision Document
DERP	Defense Environmental Restoration Program
DMM	discarded military munitions
DoD	Department of Defense
EPA	U.S. Environmental Protection Agency
FS	feasibility study
GIS	geographic information system
HRR	Historical Records Review
IC	institutional control
LUCIP	Land Use Control Implementation Plan
LUC	land use control
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
MEC HA	munitions and explosives of concern hazard assessment
MMRP	Military Munitions Response Program
MRS	munitions response site
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NYSDOH	New York State Department of Health
NYSDEC	New York State Department of Environmental Conservation
PP	Proposed Plan
RAO	remedial action objective
RDX	cyclotrimethylenetrinitramine
RI	remedial investigation
SARA	Superfund Amendments and Reauthorization Act
SI	Site Inspection
TLI	TLI Solutions, Inc.
U.S.	United States
U.S.C.	United States Code

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

USACE	U.S. Army Corps of Engineers
UXO	unexploded ordnance
West Point	U.S. Army Garrison West Point, West Point, New York
WESTON®	Weston Solutions, Inc.

GLOSSARY OF TERMS

Administrative Record – A collection of documents containing all the information and reports generated during the entire phase of investigation and cleanup at a site, which are used to make a decision on the selection of a response action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This file is to be available for public review, and a copy is to be maintained near the site.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) – A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA) to investigate and clean up hazardous substances.

Construction Support – Assistance provided by the Department of Defense (DoD) Explosive Ordnance Disposal or unexploded ordnance (UXO)-qualified personnel during intrusive construction activities on property known or suspected to contain UXO, other munitions that may have been subject to abnormal environments (e.g., discarded military munitions), or munitions constituents (MC) in high enough concentrations to pose an explosive hazard. This assistance is provided to ensure the safety of personnel or resources from any potential explosive hazard (Department of the Army, 2005).

Decision Document (DD) – DoD has adopted the term Decision Document (DD) to refer to a legal public document, similar to a Record of Decision completed for National Priorities List sites, that: certifies that the cleanup plan selection process was carried out in accordance with CERCLA and, to the extent practical, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP); provides a substantive summary of the technical rationale and background information in the Administrative Record file; provides information necessary in determining the conceptual engineering components to achieve the remedial action objective (RAO) established for a site; and serves as a key communication tool for the public, explaining the identified hazards that the selected cleanup will address and the rationale for cleanup plan selection. The DD will be maintained in the Administrative Record file.

Explosive Safety Risk – The probability for a munitions and explosives of concern (MEC) item to detonate and potentially cause harm to people, property, the environment, or operational

GLOSSARY OF TERMS (CONTINUED)

capability and readiness as a result of human activities. An explosive safety risk exists if a person can come into contact with a MEC item and act upon it to cause detonation. The potential for an explosive safety risk depends on the presence of three critical elements: a source (presence of MEC), a receptor or person, and an interaction between the source and the receptor (such as picking up the item or disturbing the item by plowing). There is no explosive safety risk if any one element is missing.

Feasibility Study (FS) – An evaluation of potential remedial technologies and treatment options that can be used to clean up a site.

Historical Records Review (HRR) – The historical records review involves proper collection, analysis, and documentation of historical information pertaining to the property potentially impacted by munitions-related activities. Historical research may indicate that a munitions response may be required to address potential hazards on these sites. Alternatively, historical research may establish that military munitions-related activities were never conducted on the property and, therefore, that no further action is warranted.

Land Use Controls (LUCs) – Physical, legal, or administrative mechanisms that restrict the use of, or that 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 generally the same as those used for institutional controls (ICs) as discussed in the NCP. ICs are a subset of LUCs and are primarily legal mechanisms 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 (DoD, 2012).

GLOSSARY OF TERMS (CONTINUED)

Military Munitions – All ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the DoD, the U.S. Coast Guard, the Department of Energy, and the Army National Guard. 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). The term does not include wholly inert items, improvised explosive devices, nuclear weapons, nuclear devices, and nuclear components, except that the term does include non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under 42 United States Code (U.S.C.) 2011 (Atomic Energy Act) have been completed (10 U.S.C. 2710(e)(3)(A) and (B)).

Munitions Constituents (MC) – Any materials originating from UXO, discarded military munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (10 U.S.C. 2710(e)(3)).

Munitions Debris (MD) – Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal (Department of the Army, 2005).

Munitions and Explosives of Concern (MEC) – This term distinguishes specific categories of military munitions that may pose unique explosive safety risks, including (1) UXO, (2) DMM, and (3) MC (e.g., trinitrotoluene, cyclotrimethylenetrinitramine [RDX]) present in high enough concentrations to pose an explosive hazard (Department of the Army, 2005).

GLOSSARY OF TERMS (CONTINUED)

Munitions Response Site (MRS) – A discrete location within a munitions response area that is known to require a munitions response (Department of the Army, 2005).

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) – The Federal regulation that implements CERCLA. The NCP was revised in February 1990. The purpose of the NCP is to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, or contaminants.

Proposed Plan (PP) – A document that presents a proposed cleanup alternative, rationale for the preference, and requests public input regarding the proposed alternative.

Remedial Action Objective (RAO) – Objectives established for remedial actions to guide the development of alternatives and focus the comparison of acceptable remedial action alternatives, if warranted. RAOs also assist in clarifying the goal of minimizing risk and achieving an acceptable level of protection for human health and the environment.

Remedial Investigation (RI) – A study of a site that provides information supporting the evaluation for the need and/or selection of a remedy for a site where hazardous substances have been discarded. The RI identifies the nature and extent of contamination at the facility.

Receptors – A human individual or individuals, ecological population, or sensitive environment subject to, or potentially subject to, the hazard of contaminant exposure. Receptors may come into contact with a hazardous substance, including munitions and munitions constituents, either directly (e.g., picking an item up) or indirectly (e.g., through ingestion). Ecological receptors include any living organisms other than humans, the habitat that supports such organisms, or natural resources that could be adversely affected by environmental contamination resulting from a release at or migration from a site.

Site Inspection (SI) – The objective of the SI is to eliminate from further consideration those sites that pose no significant threat to public health or the environment (i.e., determine whether a

GLOSSARY OF TERMS (CONTINUED)

release has occurred), and/or to collect data to help characterize the release for effective initiation of the Remedial Investigation (RI).

Statutorily Required 5-Year Reviews – Reviews required by CERCLA no less than every 5 years to assure that human health and the environment are being protected by the selected remedial action, where the remedial action does not allow for unlimited use and unrestricted exposure.

Unexploded Ordnance (UXO) – UXO are military munitions that:

- Have been primed, fused, armed, or otherwise prepared for action.
- Have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material.
- Remain unexploded, whether by malfunction, design, or any other cause (10 U.S.C. 101(e)(5)).

Note to the reader: Definitions of bold-faced terms in the text are provided in the “Glossary of Terms” located at the front of this document.

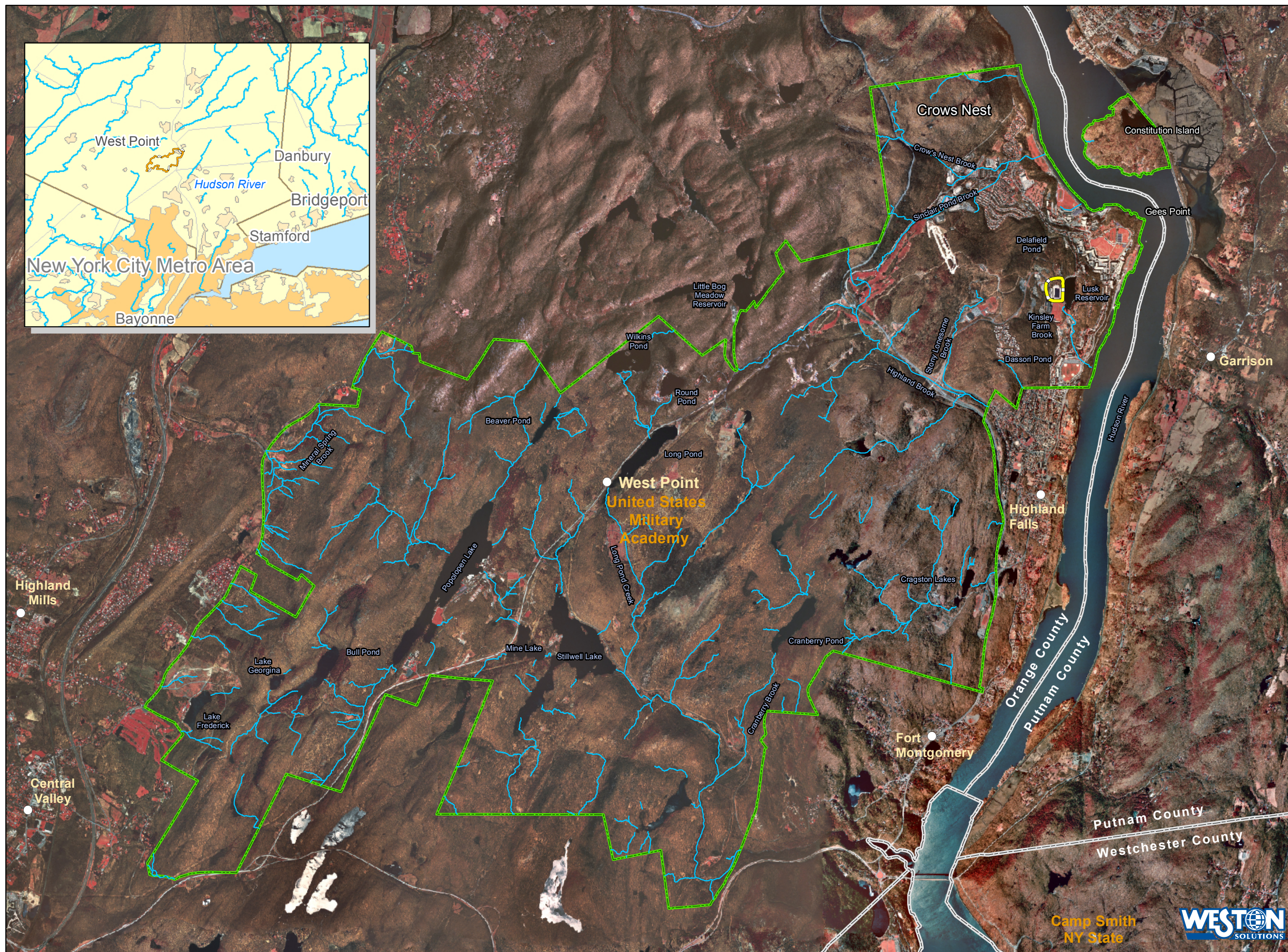
1. PURPOSE

The purpose of the Land Use Control Implementation Plan (LUCIP) is to detail the approach for providing risk management/**land use controls (LUCs)** for the Michie Stadium **Munitions Response Site (MRS)** (WSTPT-022-R-01) located at the United States (U.S.) Army Garrison West Point (West Point) in West Point, New York (see Figure 1-1). The Michie Stadium MRS (see Figure 1-2) is one of the sites included in the Defense Environmental Restoration Program (DERP) – **Military Munitions Response Program (MMRP)**. The remedy presented in the 2015 Final **Decision Document (DD)** was selected in accordance with the **Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)** (42 U.S.C. 960 et seq.) of 1980 and its amendments, and, to the extent practicable, the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)** (40 Code of Federal Regulations [CFR] 300). This decision is based on the MRS investigation documents contained in the **Administrative Record** for the Michie Stadium MRS. The DD was issued by the U.S. Army (Army), the lead agency managing remediation of **munitions and explosives of concern (MEC)** and **munitions constituents (MC)** at the Michie Stadium MRS, in accordance with CERCLA as required by DERP.

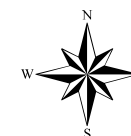
The Michie Stadium MRS is not included on the National Priorities List promulgated under CERCLA and the NCP, and maintained by the U.S. Environmental Protection Agency (EPA). Under DERP-MMRP, the Army is establishing risk management for the MRS with regulatory support provided by the New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and EPA Region 2.



- Legend**
- Installation Boundary
 - Michie Stadium - 14.1 Acres
 - Streams



Imagery Source: Digital Orthophoto
USDA-FSA-APFO
November 2003



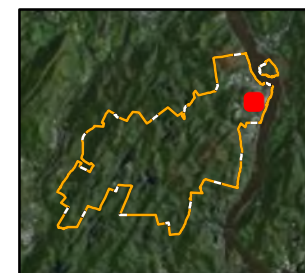
0 1 2
Miles

Figure 1-1
Regional Location Map
U.S. Army Garrison West Point

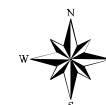


Legend

 Michie Stadium -14.1 Acres



Imagery Source: ESRI, Imagery Mapping Service. 2013



0 120 240 Feet

Figure 1-2
Michie Stadium MRS
(WSTPT-022-R-01)
U.S. Army Garrison West Point

2. SITE CONDITIONS AND BACKGROUND

2.1 SITE DESCRIPTION

The Michie Stadium MRS is 14.1 acres around the stadium, which is owned by West Point, and lies within Orange County, West Point, New York at 700 Mills Road (see Figure 1-2).

West Point encompasses 15,974 acres that are divided into two areas, the Military Reservation (13,444 acres) and the Main Post or campus (2,530 acres). The Military Reservation is largely undeveloped and contains operational training facilities such as firing ranges and bivouac areas, which are used during the summer to house and train cadets.

The Main Post includes the majority of the academic, residential, and support facilities for West Point. Michie Stadium has been part of the Main Post area of West Point since the installation was established in 1802 and has been used for recreational and athletic activities throughout its history. The Michie Stadium MRS is owned and managed by the Army. To effectively manage the overall cleanup of former munitions sites at West Point under the MMRP, the Army has identified 10 MRSs within the installation boundary. The Michie Stadium MRS is one of these 10 sites.

The MRS is bordered by Howze Field to the south, Holleder Center to the southwest, and Lusk Reservoir to the east (see Figure 1-2). The Michie Stadium MRS intersects a capped landfill at Service A Lot to the west and extends about 200 feet north of Stony Lonesome Road to the north. Several athletic complexes, including the Holleder Center, Howze Field, Kimsey Center, and Randall Hall, are located at or immediately adjacent to the MRS.

Based on historical document reviews and on-site investigations conducted to date, it is believed that MEC is present in the Michie Stadium MRS as a result of importing fill material during construction activities. MEC and **munitions debris (MD)** recovered to date include 3-inch Stokes mortars and fragments or components associated with 3-inch Stokes mortars.

2.2 CURRENT AND FUTURE USE

Current land use in the Michie Stadium MRS includes recreational activities and non-recreational activities (e.g., public attendance at athletic events, property maintenance). Potential **receptors** include the general public and athletes using Michie Stadium for recreational purposes, and West Point personnel and their contractors performing maintenance or construction activities within the MRS boundary. Although future plans for the MRS include the construction of an additional athletic building (Lacrosse Center), no change to the current land use is anticipated.

2.3 MMRP ACTIONS TO DATE

The MMRP began at West Point in 2004 when an Army-led range inventory identified 12 MRSs at the installation. A detailed review of the MRSs was made in the subsequent **Site Inspection (SI)** (TLI Solutions, Inc. [TLI], 2007), in which the MRS count was modified to 10 on-post MRSs. During the **historical records review (HRR)**, five new MRSs were determined to be eligible for the MMRP, and three MRSs (WSTPT-004-R-01, WSTPT-008-R-01, and WSTPT-016-R01) were each separated into two areas (i.e., WSTPT-004-R-01 and WSTPT-004-R-02), resulting in eight additional MRSs. The Final SI recommended no further action for seven MRSs. Three MRSs (WSTPT-004-R-01, WSTPT-004-R-02, and WSTPT-016-R-01) are located off of Army-owned land.

The next phase of the CERCLA process for West Point was the SI. The SI was completed using a two-phase approach. An HRR (TLI, 2006) was the initial step of the MMRP SI. During the HRR, record searches were performed to supplement the information gathered during the Phase 3 closed, transferred, and transferring (CTT) inventory and to help facilitate decision-making processes to determine the next step for the SI (TLI, 2006).

Based on the HRR results, one MRS at West Point was determined to require no further action. All other MRSs in the Phase 3 CTT, including the Michie Stadium MRS, were found to require a field inspection. The field inspection phase of the SI was performed in April, May, and September 2006. The combination of the HRR and field inspection results performed during the SI indicated that 11 MRSs, including the Michie Stadium MRS, required further investigation

and should proceed to the **remedial investigation (RI)** phase of CERCLA (TLI, 2007). Although no MEC was identified during the field inspection at the Michie Stadium MRS, the recommendation to proceed with an RI was made because of MEC recovered during the previous construction activities. Based on the screening-level MC assessment performed as part of the SI, further evaluation of MC was not recommended unless concentrations of MEC and MD were identified.

An **RI/feasibility study (FS)**, completed in accordance with the NCP (40 CFR 300.430(d) and (e)), was initiated in 2010 and concluded in 2012. The sources of data evaluated as part of the RI to characterize contamination at the Michie Stadium MRS included historical information and archival searches, results of the RI field effort, site layouts based on historical maps and photos, and the visual inspection of terrain and structures. The data collected during the field investigation and the conclusions drawn in the RI regarding hazards and risks to human health and the environment were used to develop the FS, finalized in February 2013 (Weston Solutions, Inc. [WESTON®], 2013).

The RI findings support the conclusion that the MEC and MD recovered from the Michie Stadium MRS were likely transported to the MRS in fill material deposited during various construction projects. MEC and MD recovered to date include 3-inch Stokes mortars and fragments or components associated with 3-inch Stokes mortars. A review of historical topographic maps and current site conditions was used to delineate the extent of the fill material potentially containing MEC and MD at the MRS and to establish the 14.1-acre MRS boundary. The results of the RI are fully documented in the *Final Remedial Investigation Report for the Michie Stadium Munitions Response Site* (WESTON, 2012).

Primary components of the FS that were important in determining a Selected Remedy for the Michie Stadium MRS included development of **remedial action objectives (RAOs)** to protect human health and the environment, followed by the development and evaluation of remedial alternatives to address the potential residual MEC in the MRS. Four remedial alternatives were developed for the MRS, including no action, risk management, surface removal of MEC with risk management, and subsurface removal of MEC to instrument detection depth (includes surface and subsurface soil) with risk management. These alternatives provided a range of

options for comparison in their ability to meet the nine criteria prescribed by the NCP (40 CFR 300.430(e)(9)(iii)(A)-(I)) that are considered for remedy selection.

The results of the FS were presented in the *Final Feasibility Study, Michie Stadium Munitions Response Site* (WESTON, 2013), and summarized in the *Final Proposed Plan, Michie Stadium Munitions Response Site* (WESTON, 2014). As required by the NCP (40 CFR 300.800(a)), both technical documents are available as part of the Administrative Record file.

The **Proposed Plan (PP)** was finalized in February 2014, and submitted with an opportunity for public comment (February 17 to March 20, 2014). All public comments received were considered prior to selecting the final remedy. The recommended alternative was identified as Alternative 2, Risk Management.

Following the PP, the Army responded in writing to comments in a responsiveness summary that became part of the 2015 Final DD (WESTON, 2015). The Army determined that the remedial alternative selected in the DD for the Michie Stadium MRS is necessary to protect public health, welfare, and/or the environment from the hazards associated with MEC, based on the current and intended future use of the MRS. NYSDEC, NYSDOH, and EPA Region 2 concurred with this determination.

The selected remedial action is Alternative 2 Risk Management, and consists of:

- Notification during permitting and contracting.
- Updating the Real Property Master Plan database.
- Brochures/fact sheets.
- **Unexploded ordnance (UXO) construction support** activities.
- **Statutorily required 5-year reviews** completed by the Army.

2.4 ROLE OF FEDERAL, STATE, AND LOCAL AUTHORITIES

The Army is the lead agency for investigating, reporting, making cleanup decisions, and taking cleanup actions regarding MEC at the MRS, with technical support provided by the U.S. Army Corps of Engineers (USACE), Baltimore District (CENAB). The Army is responsible for funding the efforts at the Michie Stadium MRS. EPA Region 2, NYSDEC, and NYSDOH are the lead regulatory agencies. EPA Region 2 and state regulators (NYSDEC and NYSDOH) were

engaged to review and comment on the Michie Stadium PP deliverable for West Point. Public input, including input from representatives of local government if they chose to participate, was also solicited during the PP public review phase. A notice regarding the opportunity to review the PP ran in the local newspapers. The 30-day review period began on February 17, 2014 and concluded on March 20, 2014. No comments were received from the public on the PP.

3. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Based on the screening-level risk assessment completed in the SI, MC, including metals and explosive compounds, was not detected at concentrations that pose an unacceptable risk to human health or the environment. The only risk considered at the Michie Stadium MRS, therefore, is explosive hazards associated with MEC.

An explosive hazard is the probability for a MEC item to detonate and potentially cause harm because of human activities. An explosive hazard exists if a person can come into contact with a MEC item and act upon it to cause detonation. The potential for an **explosive safety risk** depends on the presence of three critical elements: a source (presence of MEC), a receptor (person), and an interaction between the source and receptor (such as picking up the item or disturbing the item). There is no explosive safety risk if any one element is missing.

Explosive hazards for the Michie Stadium MRS were evaluated in accordance with the 2008 *Interim Munitions and Explosives of Concern Hazard Assessment Methodology* (MEC HA) (EPA, 2008), designed to be used as the CERCLA hazard assessment methodology for MRSs where there is an explosive hazard from the known or suspected presence of MEC. The MEC HA was used to evaluate the baseline hazard associated with the MRS based on the nature and extent of MEC and exposure risks related to the current use identified during the RI. Subsequently, the MEC HA methodology was used to facilitate the evaluation of remedial alternatives by adjusting the input parameters to account for the potential effects of remedial alternative implementation.

Based on the current use scenario, the Michie Stadium MRS was assigned a baseline Hazard Level Category of 4. This category indicates that the MRS has a low hazard potential based on only subsurface MEC and MD, coupled with exposure limited to a low number of contact hours by the public and maintenance personnel.

3.1 RISK TO HUMAN HEALTH AND THE ENVIRONMENT

The Selected Remedy, Alternative 2, will protect public health and welfare through mitigation of hazards to public health and welfare from exposure to potential residual MEC. This alternative will provide protection through the following activities:

- Education of current users of the area regarding the potential existence of MEC and its recognition and avoidance.
- The provision of UXO construction support for intrusive activities (i.e., building construction).

Threats to the environment are not anticipated while the suspected MEC remains in place. Based on the results of the RI Report, an ecological risk assessment was not warranted because nearly all of the Michie Stadium MRS has been disturbed by the development of the athletic complex. The potential risk from MC in soil to populations (i.e., plants and wildlife) is low because the developed area limits the habitable area and the ecological receptors within the Michie Stadium MRS.

4. SELECTED DECISION DOCUMENT LUC ACTIONS AND ESTIMATED COSTS

4.1 SELECTION OF DD LUC ACTIONS

Detailed documentation describing the development of each of the four alternatives with the results of the detailed and comparative analyses conducted as part of the FS are available for review in the Administrative Record (see *Final Feasibility Study Report for the Michie Stadium Munitions Response Site*, West Point, NY [WESTON, 2013]). In the FS, the alternatives were evaluated and compared in relation to the nine NCP criteria prescribed for remedy selection in accordance with CERCLA.

The Selected Remedy for the Michie Stadium MRS is Alternative 2 – Risk Management. Managing risks by implementing Alternative 2 includes continuing restrictions on land use, updating the Real Property Master Plan database, requiring UXO construction support during future intrusive activities, developing and distributing information materials during permitting/contracting for construction activities, and providing brochures/fact sheets to the public and to West Point public officials and emergency management agencies. In addition, 5-year reviews will be conducted by the Army. This alternative reduces exposure risks to the public and to West Point personnel.

4.1.1 Description of LUCs

In general, all organizations interviewed for the FS expressed an interest/willingness to participate in risk management. Risk management access control and/or public awareness components recommended for the Michie Stadium MRS include the following:

- Notification during permitting and contracting.
- Updating the Real Property Master Plan database.
- Brochures/fact sheets.
- UXO construction support activities.
- Statutorily required 5-year reviews completed by the Army.

CERCLA, Section 121(c), and Section 300.430(f)(4)(ii) of the NCP require the review of remedial actions no less than every 5 years to ensure that human health and the environment are being protected. Statutorily required 5-year reviews (see Subsection 5.3.2) determine whether a

remedial action continues to minimize explosives safety risks; is protective of human health, safety, and the environment; and provides an opportunity to assess the applicability of new technology for addressing previous technical impracticability determinations. Because the selected alternative for the MRS does not allow for unlimited use and unrestricted exposure, reviews will be completed by the Army at least every 5 years.

4.1.2 Contribution to Remedial Performance

The access control and/or public awareness will reduce the possibility of direct contact with MEC and will thus reduce the exposure and safety risk to humans at the MRS. No action, however, will be taken to remove or remediate MEC at the Michie Stadium MRS. Potential residual hazard from MEC, therefore, will remain on-site.

4.1.3 Project Schedule

The major milestones for the LUCIP project are summarized in Table 4-1.

Table 4-1 Estimated Project Schedule for LUCs

Phase	Date
Draft LUCIP	May 2014
Draft Final LUCIP	October 2014
Final LUCIP	January 2015
Implementation of LUCs	January 2015

4.2 ESTIMATING COSTS AND LUC FUNDING

Implementing the LUCs at the Michie Stadium MRS is estimated to cost \$154,596 in the first year (2015), \$1,265 for operations and maintenance, and a total of \$181,998 (present value cost), including the 5-year review every fifth year for the following 30 years. The program is projected to continue through FY2045. Table 4-2 summarizes the costs of LUCs for the Michie Stadium MRS. The basis of these estimated costs is shown in detail in the Final DD (WESTON, 2015).

Table 4-2 Cost Estimate for Risk Management

Michie Stadium MRS Risk Management								
CAPITAL COST:								
Bid Item No.	Description	QTY	Unit	Team Production (Units/Day)	# Teams	Duration (Weeks)	Weekly Cost Per Team	Total
0100	Work Plans	0.50	LS	N/A	N/A	N/A	99,000	\$49,500
0110	Explosives Safety Submission	0.50	LS	N/A	N/A	N/A	38,500	\$19,250
0800	Risk Management	1.00	LS	N/A	N/A	N/A	42,350	\$42,350
	Sub-Total							\$111,100
	Contingency	15%						\$16,665
	Sub-Total							\$127,765
	Infrastructure Improvements	2%						\$2,555
	Project Management	5%						\$6,388
	Remedial Design	8%						\$10,221
	Construction Management	6%						\$7,666
Total Capital Cost								\$154,596
PERIODIC COST:								
	Description			Year	QTY	Unit	Unit Cost	Total
0900	Risk Management - Annual Cost			5 - 30	1	LS	\$1,265	\$1,265
1000	Five-Year Review - First Review			5	1	EA	\$8,800	\$8,800
1010	Five-Year Review - Years 10, 15, 20, 25 & 30			10 - 30	1	EA	\$5,500	\$5,500
1100	Four to Five Year UXO Construction Support			5 - 30	0	EA	\$24,072	\$0

Table 4-2 Cost Estimate for Risk Management (Continued)

Michie Stadium MRS Risk Management (continued)					
PRESENT VALUE ANALYSIS:					
<u>Cost Type</u>	<u>Year</u>	<u>Total Cost</u>	<u>Total Cost Per Year</u>	<u>Discount Factor (%)</u>	<u>Present Value</u>
Capital Cost	0	\$154,596	\$154,596	1	\$154,596
Periodic Cost	5	\$10,065	\$10,065	0.854	\$8,596
Periodic Cost	10	\$6,765	\$6,765	0.737	\$4,986
Periodic Cost	15	\$6,765	\$6,765	0.633	\$4,282
Periodic Cost	20	\$6,765	\$6,765	0.543	\$3,673
Periodic Cost	25	\$6,765	\$6,765	0.467	\$3,159
Periodic Cost	30	\$6,765	\$6,765	0.400	\$2,706
		\$198,486			\$181,998
Total Present Value of Alternative					\$181,998

Notes:

EA = each, LS = lump sum, N/A = not applicable

5. IMPLEMENTING LAND USE CONTROLS

5.1 INTRODUCTION

This section presents the actions necessary to implement in FY2015, to maintain from FY2016 through termination, and to terminate (in approximately FY2045) the LUCs at Michie Stadium MRS. Subsection 5.1.1 provides a general overview of the LUCs. Subsection 5.2 describes the specific actions needed for the implementation and maintenance of individual LUC components. Subsection 5.3 presents monitoring, statutorily required 5-year reviews, and records management. These descriptions are based on the guidelines for implementing LUCs found in *DoD Policy on Land Use Controls Associated with Environmental Restoration Activities* (DoD, 2001).

5.1.1 Selected LUCs

The following LUC components were established by the Final DD (WESTON, 2015) and will be implemented at the Michie Stadium MRS:

1. Notification during permitting and contracting.
2. Updating the Real Property Master Plan database.
3. Brochures/fact sheets.
4. UXO construction support activities.
5. Statutorily required 5-year reviews completed by the Army.

5.1.2 Responsible Offices

The Army is responsible for implementing, maintaining, reporting on, and enforcing risk management measures. Although the Army may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Army shall retain ultimate responsibility for the remedy integrity. WESTON is under contract to provide LUC support, which includes development of brochures/fact sheets. The Army will be responsible for working with West Point to provide the necessary UXO construction support. The Army is responsible for ensuring that during permitting and contracting for activities conducted within the Michie Stadium MRS, the necessary LUC information is provided in the appropriate documents. Other offices involved in the implementation of these LUCs include:

- Master Planning Division.
- Geographic Information System (GIS) Office.
- Construction Office.
- Public Affairs Office.
- Safety Office.

5.1.3 Initial Implementation and Maintenance of LUCs

The actions that will be taken by the Army to implement the selected LUCs are summarized in Table 5-1.

Table 5-1 Actions to Implement and Maintain LUCs

LUC Component and Actions	Initial Implementation	Frequency	Responsible Party	
			Initial	Maintenance
1. Notification during permitting and contracting	Year 1	Ongoing, as needed	Army	Army
2. Brochures/fact sheets	Year 1	Once	WESTON	Army
3. Updating the Real Property Master Plan database	Year 1	As needed	Army	Army
4. UXO construction support activities	To coincide with scheduled construction activities	As needed	Army	Army
5. Statutorily required 5-year reviews	Prior to Year 5	No less than every 5 years	Army	Army

5.1.4 Documentation

The key documents used in preparing the Michie Stadium MRS LUCIP are as follows:

- *Final Remedial Investigation Report for the Michie Stadium Munitions Response Site, West Point, New York (WESTON, 2012).*
- *Final Feasibility Study Report for the Michie Stadium Munitions Response Site, West Point, New York (WESTON, 2013).*
- *Final Decision Document for the Michie Stadium Munitions Response Site, West Point, New York (WESTON, 2015).*
- GIS shape files: These are data files providing the shape and coordinates of the Michie Stadium MRS.

5.2 COMPONENTS OF THE SELECTED LUCs

The selected LUCs listed in Subsections 5.2.1 through 5.2.4 are anticipated to take approximately 45 days to initiate. The selected LUCs can be implemented because there are no technical difficulties associated with these controls, and the materials and services needed to implement these controls are available.

5.2.1 Notifications for Permitting and Contracting

5.2.1.1 Permitting

The Department of Public of Works participates in the review and approval process for excavation and construction permits at West Point. The Department of Public of Works will inform the other offices involved in the reviews (including Master Planning Division, GIS Office, Construction Office, and Safety Office) of the MEC issues at the MRS and the selected land use restrictions.

5.2.1.2 Contracting

The Army will inform contractors performing construction activities about the explosive hazards associated with MEC for the Michie Stadium MRS. Information will be provided through the use of brochures (see Subsection 5.2.2). The contracts for the activities within the Michie Stadium MRS will include information about the dangers of MEC and the steps to follow in case suspected MEC is encountered. UXO construction support activities are not included under WESTON's contract. When required, these services will be provided by the Army.

5.2.2 Brochures and Fact Sheets

Brochures will be provided to contractors performing construction activities. West Point personnel should be prepared to answer questions on MEC hazards and to provide assistance to visitors who may encounter MEC. The safety message in the brochures and fact sheets will focus on the “**3Rs**”: **R**ecognize the hazard, **R**etreat from the hazard, and **R**eport the hazard to the appropriate authorities.

5.2.3 UXO Construction Support Activities

UXO construction support will be provided for intrusive activities (i.e., construction activities) conducted by West Point at Michie Stadium. Each UXO construction support event could support area clearance, foundation construction, and/or soil moving activities. UXO construction support activities are not included under WESTON's contract. When required, these services will be provided by the Army to West Point.

5.3 MONITORING, REPORTING, AND RECORDS

5.3.1 Monitoring

West Point will monitor the activities throughout the Michie Stadium MRS to ensure users are aware of the MEC hazards and adhere to the land use restrictions. Additionally, the Army will conduct 5-year reviews to assess the selected remedial actions.

5.3.2 Statutorily Required 5-Year Reviews

Reviews will be conducted once every 5 years as required by CERCLA to assess the MRS condition and the degree of protectiveness to human health and the environment. Documentation for reviews will be maintained by the Army.

The findings from the periodic reviews will be compiled into a 5-Year Review Report. The report will be placed in the internal files at West Point. The results of the 5-year reviews will be made available upon request to regulatory stakeholders. Reviews will be completed by the Army and will include the following general steps:

- Prepare 5-Year Review Plan.
- Establish project delivery team and begin community involvement activities.
- Review existing documentation.
- Identify/review new information and current site conditions.
- Prepare preliminary Site Analysis and Work Plan.
- Conduct site visit.
- Prepare 5-Year Review Report.

5.3.3 Records Management

Records associated with the Michie Stadium MRS will be maintained by the Army. Hard copies of documents are also available at the West Point Post Library (Building 622), 622 Swift Rd, West Point, NY 10996.

6. REFERENCES

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