Draft Final

Remedial Investigation Report

Target Hill Munitions Response Site

U.S. Army Garrison West Point
West Point, New York

November 2013

Prepared for:

U.S. Army Corps of Engineers
Baltimore District

Prepared by:

Weston Solutions, Inc.

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DRAFT FINAL
REMEDIAL INVESTIGATION REPORT

TARGET HILL MUNITIONS RESPONSE SITE
U.S. ARMY GARRISON WEST POINT
WEST POINT, NEW YORK

Contract No.: W912DR-09-D-0006
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Prepared For:

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LIST OF ACRONYMS

ºF	degrees Fahrenheit
amsl	above mean sea level
APP	Accident Prevention Plan
ARAR	applicable or relevant and appropriate requirement
ASTM	American Society for Testing and Materials
bgs	below ground surface
CENAB	U.S. Army Corps of Engineers, Baltimore District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHE	Chemical Warfare Materiel Hazard Evaluation
CSM	Conceptual Site Model
CTT	closed, transferred, and transferring
CWM	chemical warfare materiel
DERP	Defense Environmental Restoration Program
DGM	digital geophysical mapping
DMM	discarded military munitions
DoD	Department of Defense
DoDD	Department of Defense Directive
DQO	data quality objective
EHE	Explosives Hazard Evaluation
EPA	U.S. Environmental Protection Agency
ESP	Explosives Site Plan
FS	feasibility study
GIS	Geographic Information System
gpm	gallons per minute
GPS	Global Positioning System
GSV	geophysical system verification
HE	high explosive
HHE	Health Hazard Evaluation
HRR	Historical Records Review
ISO	industry standard object
IVS	Instrument Verification Strip
MAMMS	Multiple Award Military Munitions Services
MC	munitions constituents
MD	munitions debris
MDAS	material documented as safe
MDEH	material documented as an explosive hazard
MEC HA	Munitions and Explosives of Concern Hazard Assessment
MEC	munitions and explosives of concern
mg/kg	milligram per kilogram
mm	millimeter
MMRP	Military Munitions Response Program
mph	miles per hour
MPPEH	material potentially presenting an explosive hazard
MQO	measurement quality objective
MRS	munitions response site
MRSPP	Munitions Response Site Prioritization Protocol
mV	millivolt
NAD	North American Datum
NCAA	National Collegiate Athletic Association
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEA	Northern Ecological Associates, Inc.

LIST OF ACRONYMS (CONTINUED)

NFA	no further action
NYCRR	New York Codes, Rules and Regulations
NYNHP	New York Natural Heritage Program
NYSDEC	New York State Department of Environmental Conservation
PA	preliminary assessment
PRG	preliminary remediation goal
QA	quality assurance
QC	quality control
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
RTK	Real Time Kinematic
SARA	Superfund Amendments and Reauthorization Act
SI	site inspection
SSHP	Site Safety and Health Plan
SUXOS	Senior UXO Supervisor
TAL	Target Analyte List
TBC	to be considered criteria
TCL	Target Compound List
TLI	TLI Solutions, Inc.
TPP	Technical Project Planning
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
UTM	Universal Transverse Mercator
UXO	unexploded ordnance
UXOQCS	UXO Quality Control Specialist
VSP	Visual Sample Plan
West Point	U.S. Army Garrison West Point
WESTON®	Weston Solutions, Inc.
WPMR	West Point Military Reservation

EXECUTIVE SUMMARY

A remedial investigation (RI) was completed at the U.S. Army Garrison West Point (West Point) Target Hill Munitions Response Site (MRS) (WSTPT-017-R-01) in support of the Active Army Military Munitions Response Program (MMRP).

The purpose of the MMRP RI conducted at the Target Hill MRS (WSTPT-017-R-01) was to determine whether further response action pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) is warranted at this MRS. The RI was designed to determine the nature and extent of munitions and explosives of concern (MEC) and munitions constituents (MC) and to determine the hazards and potential risks posed to human health and the environment by MEC and MC.

The RI report presents the characterization strategy and the results from the digital geophysical mapping (DGM) surveys and the intrusive investigation performed at the Target Hill Field MRS. The results were used to further assess explosives hazards posed by MEC. The Target Hill MRS encompasses approximately 14 acres.

Historical Information

Artillery firing may have been conducted at Target Hill as early as 1812 from the West Point Foundry located in Cold Spring, New York. In October 1889, heavy guns on the northern side of the post were scheduled to fire at Target Hill for target practice. Target Hill continued to be used until the late 1930s, primarily by West Point cadets for short-range artillery training. Munitions associated with training at Target Hill included large caliber high explosive (HE) and practice rounds (TLI Solutions, Inc. [TLI], 2006).

The excavation of soil from Target Hill for use as fill material for the construction of the North Athletic Field began in 1944 and was completed the following year. Approximately 60,000 square yards of level ground were added to the area comprising North Athletic Field. It is possible that after the North Athletic Field construction occurred, munitions-related materials remained in the area surrounding Target Hill; however, there are no records of munitions-related material being recovered from Target Hill (TLI, 2006).

Land Use

Target Hill MRS is located in the Cadet Support land use zone and is used for recreational and athletic activities. The Anderson Rugby Complex in the northern half of the MRS is used in the spring and fall by the West Point men's and women's rugby teams. A football field and multiple soccer fields are located in the southern half of the MRS. Construction of additional facilities in the MRS is not currently planned; however, if future construction were to occur, it would be to support the continued use of the MRS as a Cadet Support area for recreational and athletic activities.

Site Inspection

The site inspection (SI) field activities at the Target Hill MRS, which took place in spring 2006, included conducting visual surveys along approximately 4.4 linear miles, performing DGM surveys along approximately 1.2 miles (0.5 acre), and collecting one surface soil sample for MC analysis. No MEC or munitions debris (MD) was observed during the visual surveys. Because no evidence of military munitions was observed at the MRS during the visual and digital geophysical surveys, one soil sample (the minimum required) was collected from the middle of the playing field to the south of the Anderson Rugby Complex and along the geophysical survey transect. The sample was analyzed for Target Compound List (TCL) explosives and a subset of the Target Analyte List (TAL) metals. Metals were selected for analysis based on the metals known to be associated with the munitions historically used at West Point. The soil sample was analyzed for antimony, copper, iron, lead, mercury, potassium, and zinc.

The analytical results for seven TAL metals and TCL explosives were compared, for evaluation purposes only, against U.S. Environmental Protection Agency (EPA) Region 9 preliminary remediation goals (PRGs) for residential soils, where available. MC was not detected above EPA Region 9 PRGs for residential soils.

In the SI Report, the Target Hill MRS was recommended for further investigation of MEC.

Remedial Investigation

Between April and June 2011, Weston Solutions, Inc. (WESTON®) performed RI field activities at the Target Hill MRS to assess the nature and extent of MEC in the MRS. Approximately 1.13

linear miles (1.37 acres) of transects and 0.92 acre within seven grids were geophysically mapped and intrusively investigated in the Target Hill MRS. The remainder of the MRS was not accessible for geophysical mapping and intrusive investigation because of ground maintenance associated with the Anderson Rugby Complex.

A total of 205 anomalies were selected from the geophysical data for intrusive investigation. Although no MEC was found, three MD items, including one 6.5-inch cannonball (solid shot), one 8-inch mortar (empty), and one 15-inch cannonball (Rodman test round, solid shot), were recovered. The three MD items were cast iron, two were solid shot and the 8-inch mortar was empty. Although the 8-inch mortar recovered was identified as empty, 8-inch mortars typically would have used black powder as their explosive charge. The components of these items (iron or potassium nitrate [component of black powder]) were deemed to not be a hazard and analysis was not required in accordance with the MMRP RI MC sampling approach outlined in the MC Sampling Methodology Memorandum (Appendix G of the Final RI Work Plan). The remaining 202 anomalies were identified as non-MD-related material, consisting of four seed items, 188 documented as cultural debris (scrap metal and utilities), and 10 documented as no contacts. The MD was transferred to the West Point Museum.

In accordance with the Final RI Work Plan, MC sampling would be conducted in the Target Hill MRS only if a MEC release (i.e., a concentrated munitions use area) was identified or if visible evidence of an MC release was observed. No MEC was identified within the MRS and there was no evidence of an MC release; therefore, MC sampling was not warranted during the RI characterization.

Revised Conceptual Site Model

The information collected during the RI was used to update the conceptual site model (CSM). The purpose of the CSM is to identify the complete, potentially complete, or incomplete source-receptor interactions for reasonably anticipated future land use activities at the MRS. An exposure pathway is the course a MEC item or MC takes from a source to a receptor. Each pathway includes a source, interaction, and receptor.

The MRS was documented in the preliminary CSM as a target area. The Siege Battery and Fort Clinton range fans overlap the Target Hill MRS.

A target area was formerly present at the Target Hill MRS. The target area has since been removed, and the MRS has been significantly reworked during construction and development activities. To test whether potential target areas or a MEC source remains at the MRS, 2.29 acres of DGM characterization coverage were performed to ensure a 95% probability of traversing and detecting elevated anomaly density areas.

The excavation of soil from Target Hill for use as fill material for the construction of the North Athletic Field began in 1944 and was completed the following year. Approximately 60,000 square yards of level ground were added to the area comprising North Athletic Field. It is possible that munitions-related materials from Target Hill were transported to the North Athletic Field during construction. Consequently, the concentrations of potential munitions-related materials, if present at Target Hill, were greatly reduced during the soil excavation.

A statistical approach was taken for the characterization at the Target Hill MRS, and a portion of the MRS was investigated by geophysical surveys and intrusive investigations to provide a statistical confidence for the proportion of MEC to non-MEC-related material. No MEC was observed at the Target Hill MRS during the field activities; however, three MD items were confirmed to be present in the subsurface during the RI. The MD items were solid and/or inert, and posed no explosives safety hazard.

Based on the results of the RI field investigations, the use or introduction of munitions at the MRS is confirmed. Because no direct evidence of an explosive hazard exists, the pathways for MEC are considered incomplete; however, there is a low potential for MEC or additional MD to be present in the subsurface.

The DGM survey coverage and the intrusive investigation approach for the RI were designed using statistical tools. The field work results suggest it is statistically possible that MEC may be present at the MRS although confirmed discoveries have not been made to date. Even though MD was recovered during the intrusive investigations, the items were solid and/or inert and posed no explosives safety hazard. Only a statistical portion of the MRS was investigated; however, during the intrusive investigation of 205 anomalies within the accessible portion of the MRS where the highest probability of encountering MEC would be anticipated, no MEC was found, suggesting no MEC source is present at the Target Hill MRS.

Sampling for MC was not conducted at the Target Hill MRS during the RI because MEC and MD were not found in high enough concentrations to warrant MC sampling. The pathways for human and ecological receptors to contact MC are considered incomplete because it has not been established that MC associated with munitions is present at the Target Hill MRS and thus no potential risk is known to exist in the Target Hill MRS.

Uncertainties

The primary uncertainty for the RI is related to the statistical calculations performed using Visual Sample Plan (VSP). The transect spacing was planned using VSP to ensure a 95% probability of traversing and detecting a potential MEC target area in the Target Hill MRS. Based on the VSP computations, DGM surveys were performed across the southern half of the MRS at a 52-foot spacing to achieve the statistical requirements for survey coverage.

DGM grids were placed at anomaly cluster areas identified during the transect surveys for subsequent survey and anomaly investigation. A DGM grid was placed at each anomaly cluster to determine the source of the anomalies and to reduce the characterization uncertainty following the RI. Three MD items were recovered during the intrusive investigations, confirming that only low concentrations of MEC and MD could be present within the Target Hill MRS. By assessing each anomaly cluster with DGM surveys and intrusive investigations, it was determined that high concentrations of MEC and MD associated with a target area were not detected in the MRS.

Additional uncertainty is related to the number of anomalies chosen for intrusive investigation and the proportion of anomalies that are MEC. A total of 362 anomalies were detected within the grids on the southern end of the MRS. The dig list was finalized using an estimation approach. The approach used a hypergeometric estimation process to determine the necessary number of anomalies to be intrusively investigated. The sample size of the total population of anomalies detected during the RI was determined using an estimation formula. The sample size is the number of anomalies requiring investigation to be 95% confident that the sample population can adequately estimate the proportion of MEC to non-MEC across the total population of anomalies (with an acceptable margin of error of ±1%). Based on historical information and observations during the RI, the proportion of MEC to non-MEC was estimated to be 0.5% to 99.5%. The total number of anomalies requiring investigation using these values is 126 anomalies. The actual

number of anomalies investigated at Target Hill during the RI was 205 anomalies. Thus there is a 95% confidence that 0.5% of the total population of anomalies is MEC with a margin of error ±1%.

During the RI data collection, an anomaly density of 128.55 anomalies/acre was calculated using VSP. The MRS is 14 acres; therefore, the total number of potential anomalies is 1,800 anomalies. If 0.5% of the total population of anomalies could be MEC, then it is statistically possible for nine MEC to remain within the MRS (± 1 MEC item).

In addition, characterization activities could not be performed on the Rugby Field located in the northern portion of the Target Hill MRS. Significant development as a result of the Rugby Field construction has occurred in the northern portion of the MRS. No MEC or MD was reported during the construction.

The original Target Hill was removed for use as fill material during the construction of the North Athletic Field. It is likely that the majority of MEC and MD from former weapons and munitions training would have been removed during construction. Three MD items were recovered during the RI, which supports this observation. Although no characterization work was performed in the northern portion of the Target Hill MRS because of the Rugby Field, no MEC or MD was reported during construction of the field. The northern portion of the MRS has undergone more development than the southern portion of the MRS. Based on the RI results and the amount of development that has occurred at the Target Hill MRS, concentrations of MEC and MD, if formerly present, would have been removed during construction and would no longer be present in the MRS.

The DGM survey coverage and the intrusive investigation approach for the RI were designed using statistical tools. The field work results suggest it is statistically possible that MEC may be present at the MRS although confirmed discoveries have not been made to date. Even though MD was recovered during the intrusive investigations, the items were solid and/or inert and posed no explosives safety hazard. Because the data quality objectives (DQOs) were achieved and no explosives safety hazards were identified during the RI field activities, the exposure pathways to MEC are considered incomplete.

Conclusions and Recommendations

Based on the results of the RI field activities, the following conclusions were determined for the Target Hill MRS:

- A target area was historically present at the location of the Target Hill MRS; however, the target area has since been removed and the site significantly reworked.
- MD was recovered during intrusive investigations, but the items were solid and/or inert, and posed no explosive safety hazards.
- No MEC was found during RI field activities, and an explosive safety hazard is not anticipated to exist at the MRS.
- MC sampling was not warranted during the RI field activities because no MEC was found at the MRS.

It has been determined that the DQOs for the Target Hill MRS have been satisfied and the nature and extent of MEC and MC have been adequately characterized. A feasibility study (FS) is recommended for the Target Hill MRS (WSTPT-017-R-01) to assess possible response action alternatives because MD has been found and some statistical uncertainty remains for MEC.

1. INTRODUCTION

1.1 PROJECT AUTHORIZATION

Weston Solutions, Inc. (WESTON®) was authorized to perform the remedial investigation (RI) at the Target Hill Munitions Response Site (MRS) (WSTPT-017-R-01) under the United States Army Corps of Engineers (USACE), Baltimore District (CENAB) Multiple Award Military Munitions Services (MAMMS) Contract W912DR-09-D-006, Delivery Order 0001. The RI was completed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) process outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). In accordance with Executive Order 12580, the U.S. Army is the lead agency with support from the State of New York. This RI Report is consistent with the U.S. Environmental Protection Agency (EPA) October 1988 document *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988) and the U.S. Army Military Munitions Response Program (MMRP) document, *Final Munitions Response Remedial Investigation/Feasibility Study Guidance* (U.S. Army, 2009).

1.2 PURPOSE AND SCOPE

The U.S. Congress established the MMRP under the Defense Environmental Restoration Program (DERP) to address munitions and explosives of concern (MEC), including unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC) located on current and former defense sites. MMRP-eligible sites include locations other than operational ranges where UXO, DMM, or MC are known or suspected and where the release occurred prior to 30 September 2002. Properties classified as operational military ranges, permitted munitions disposal facilities, or operating munitions storage facilities are not eligible for the MMRP. The DERP, including the MMRP, typically follows CERCLA and the NCP.

The U.S. Army conducted an inventory of closed, transferred, and transferring (CTT) military ranges and defense sites (also known as the Phase 3 CTT), which meets the requirements of a CERCLA Preliminary Assessment (PA). In the Phase 3 CTT at the U.S. Army Garrison West Point, New York (West Point), 10 closed ranges and 2 transferred areas with the potential for MEC, which includes both UXO and DMM and/or MC, were identified as eligible for action under

the MMRP. The Phase 3 CTT Range Inventory Report for West Point (Malcolm Pirnie, 2004) was completed in August 2004.

The next phase of the CERCLA process at West Point was the site inspection (SI). The SI was completed in a two-phase approach. The Historical Records Review (HRR) was the initial step in the MMRP SI. During the HRR, records searches were performed to supplement the information gathered during the Phase 3 CTT and to help facilitate decision-making processes to determine the next step for the SI. The Final HRR Report was presented to the Army and stakeholders in March 2006 (TLI Solutions, Inc. [TLI], 2006). Based on the HRR results, one MRS was determined to require no further action (NFA). All other MRSs in the Phase 3 CTT required a field inspection. These field inspections were performed in April, May, and September 2006. The results of the SI (TLI, 2007) indicated that multiple MRSs required further investigation through an RI. The SI report identified 11 MRSs at West Point to be evaluated in the RI phase of the CERCLA process. The April and May 2006 SI field activities are discussed in more detail in Section 1.4.2. As part of the SI, a preliminary conceptual site model (CSM) was developed for West Point in its entirety. Individual CSMs were also developed for each of the MRSs, including the Target Hill MRS.

The purpose of the MMRP RI conducted at the Target Hill MRS (WSTPT-017-R-01) was to determine whether further response action pursuant to CERCLA and the NCP is warranted at this MRS. The RI was designed to determine the nature and extent of MEC and MC and to determine the hazards and potential risks posed to human health and the environment by MEC and MC.

1.3 PROPERTY DESCRIPTION AND PROBLEM IDENTIFICATION

1.3.1 Project Location and Site Description

West Point is located in Orange and Putnam Counties, New York, on the west bank of the Hudson River. West Point is approximately 50 miles north of New York City and approximately 13 miles south of Newburgh. In its entirety, the installation consists of three parts: (1) Main Post, (2) West Point Military Reservation (WPMR), and (3) Constitution Island. Main Post, or the cantonment, is approximately 2,500 acres and is the academic, administrative, and community area along the Hudson River. The WPMR is generally considered to be the 14,000-acre area to

the west of Main Post that serves as the field training facility for U.S. Army Garrison West Point. The Main Post and the WPMR are separated by Route 9W (Tetra Tech, Inc., 2011).

Both the Main Post and the WPMR lie entirely in Orange County, New York. Directly across the Hudson River from the Main Post is Constitution Island, located in the township of Philipstown, Putnam County, New York. Constitution Island is bounded by the Hudson River on three sides except the eastern border, where it is bounded by Metro-North railroad tracks (Tetra Tech, Inc., 2011). **Figure 1-1** provides a regional view of West Point.

The Target Hill MRS (WSTPT-017-R-01) encompasses 14 acres located within the West Point Main Post (**Figure 1-2**). The Target Hill MRS served as a target area with firing points from the Cold Spring Foundry, which is located across the Hudson River, and Target Flats, which is located in the area north of the North Athletic Field. The entire MRS is overlapped by both the Siege Battery and Fort Clinton range fans. The Hudson River, River Road, and the West Shore Railroad mark the eastern boundary of the MRS. The western boundary is located at the base of the Lee Housing Area. The Target Hill wastewater treatment plant is located to the south of the MRS. The area immediately north of the MRS is forested.

1.3.2 Climate

The climate of the region including West Point is characterized as a humid, continental climate. Summers are warm and have periods of high humidity. The semi-permanent Bermuda High brings south to southwest warm and humid air to the area. July is the hottest month, with a mean temperature of 86 degrees Fahrenheit (ºF); and the coldest month of the year is January, which has a mean temperature of 27 ºF. Winters are cold with extended periods of snow cover and are influenced by the cold Hudson Bay air masses. Most winters are characterized by one or more warm periods when soils nearly or completely thaw (Tetra Tech, Inc., 2011).

A third weather pattern that influences the climate of West Point is an air mass that flows inland from the North Atlantic Ocean bringing cool, cloudy, and damp weather to the region. Prevailing winds are generally westerly (Tetra Tech, Inc., 2011).

Thunderstorms occur approximately 20 times per year. Tornadoes have a frequency of occurring 3 to 4 times a year in the region, although no significant tornadoes have occurred at West Point

for more than 20 years. Total annual precipitation is greater than 49.5 inches, with the least amount (approximately 3.5 inches each month) occurring in January and February, and the most occurring in May (approximately 4.9 inches) (Tetra Tech, Inc., 2011).

1.3.3 Geology

West Point lies in the Hudson Highlands, a low, rugged mountain range, that forms a zone of folded and faulted metamorphic and igneous rocks subjected to extensive weathering and erosion. Precambrian-age granite, diorite, gneiss, and schist compose the majority of the crystalline bedrock underlying West Point. Granite, the most prevalent rock type in the bedrock, is typically medium-grained and composed of quartz, feldspar, and mica. Granite and pegmatite are igneous rocks and occur as dikes and sills within the gneiss. Igneous rocks on the installation consist of plagioclase feldspar, hornblende, pyroxene, and biotite mica and quartz (Tetra Tech, Inc., 2011).

The metamorphic rocks of West Point exist in sequences. These sequences are composed of a hard, layered, banded rock, gneiss, which is sometimes intruded by igneous rocks. Marble, quartzite, schist, and amphibolite are other metamorphic rocks present in the Highlands area. The metamorphic rocks were deposited as marine sediments, volcanic ashes, and volcanic rocks. During the Precambrian period, these sediments and rocks were possibly subject to three phases of folding, extensive regional metamorphism, partial melting, and magmatic intrusion. The cantonment area, which is bounded by the Hudson River, is underlain by exposed bedrock and glacial alluvium (Tetra Tech, Inc., 2011).

Faults mapped at the surface near and within the habitation area at West Point include the Long Pond, the Crown Ridge, and the Highland Brook faults. The habitation area includes most of the developed areas of West Point. The Long Pond fault trends northeast-southwest along the northwestern boundary of the habitation area and the Storm King Highway (NY Route 218). The Crown Ridge fault also trends northeast-southwest and extends through Lusk Reservoir. The Highland Brook fault trends northwest-southeast along Route 9W and the Storm King Highway between the Long Pond and Crown Ridge faults (Tetra Tech, Inc., 2011).

Surficial geologic formations on the installation are outcroppings, talus, and glacial deposits. During glacier retreat, features were formed along the valley walls. The most prominent features

are the kame terraces. In all but the flat, marshy areas, bedrock can be observed. A thin veneer layer of Pleistocene-age glacial deposits, both stratified and unstratified, overlies the igneous and metamorphic bedrock sequence. The stratified drift consists primarily of sand and gravel deposited in glacial lakes and streams. The unstratified drift consists of glacial till material, which is mainly large boulders and clay, sand, and gravel deposited directly from glacial ice as it progressed or regressed across the area (Tetra Tech, Inc., 2011).

Site-specific geologic investigations were not conducted for the Target Hill MRS. The boring data from nearby monitoring wells are not relevant because of an approximate distance of 505 feet. Regional geologic maps (Cadwell, 1989; Fisher et al., 1970) indicate that the bedrock geology of the Target Hill MRS is rusty and gray biotite-quartz-feldspar paragneiss and leucogranitic gneiss.

1.3.4 Topography

The topography of West Point is described as having moderately steep hills and numerous escarpments. Slopes from 10 to 60% are common on the installation. Areas in between the hills are interspersed with small plains, basins, and narrow valleys with slopes less than 3%. The topography of the surrounding region is undulating and rugged. These characteristics, along with the alluvium and till deposits in the lowland areas and the relatively flat valley bottoms of the region, are the result of glaciation (Tetra Tech, Inc., 2011). The MRS is extensively developed with athletic fields and facilities and contains mostly permeable surfaces. The topography is relatively flat; the MRS lies at an elevation of approximately 12 to 17 feet above mean sea level (amsl).

1.3.5 Soils

The soil types within the Target Hill MRS include Chenango gravelly silt loam, steep Otisville and Hoosic soils, and moderately steep Rock outcrop-Hollis complex soils (**Figure 1-3**). Chenango soils comprise a majority of the MRS. These are somewhat excessively drained to well-drained soils.

A band of steep Otisville and Hoosic soils are located in the northwestern corner of the MRS, and underlie the Anderson Rugby Complex. This soil type contains excessively drained Otisville

soil and the somewhat excessively drained Hoosic soil. The extreme northwestern corner is comprised of moderately steep Rock outcrop-Hollis complex soils, which are excessively drained to well drained.

1.3.6 Hydrology

In December 2004, prior to the construction of the Anderson Rugby Complex, a detailed geotechnical investigation was conducted at the location of the proposed structure to address concerns regarding the ability of the soil to support the proposed building. The investigation determined that the soils underlying the topsoil consisted of native sand soils and an approximately 2- to 5-foot-thick layer of fill overlying native sand soils (Northern Ecological Associates, Inc. [NEA], 2005). The origin, extent of the fill throughout the MRS, and the timeframe that the fill was introduced to the Target Hill MRS are unknown.

1.3.6.1 Surface Water

Surface waters in the vicinity of the Target Hill MRS include the Hudson River, which is immediately adjacent to this MRS, and the Crows Nest Brook. Several other water bodies are located within a 3-mile radius: Cragston Lakes, Sinclair Pond Brook, Delafield Pond, Lusk Reservoir, Kinsley Farm Brook, Stony Lonesome Brook, Highland Brook, and Dassori Pond (see **Figure 1-1**).

Crows Nest Brook is a perennial stream that flows from west to east through the approximate center of the Target Hill MRS. The stream flows through a box culvert that is buried beneath the surface of the soccer fields. Crows Nest Brook originates from several small tributaries that flow from Crows Nest Mountain in the northeastern portion of West Point, and discharges into the Hudson River immediately adjacent to the Target Hill MRS (NEA, 2005) (see **Figure 1-2**).

1.3.6.2 Groundwater

Groundwater on West Point occurs in an unconsolidated aquifer consisting of alluvial deposits and a consolidated bedrock aquifer. Water within the unconsolidated aquifer occurs primarily in the sands and gravels of the stratified drift deposits. These deposits represent the most prolific sources of groundwater on the installation, but the deposits are thin and generally have fairly small well yields that average about 40 gallons per minute (gpm). Water in the unconsolidated

aquifer usually occurs under water table conditions. Recharge to the aquifer is primarily from local precipitation, but hydrologic communication occurs between the alluvial and the bedrock aquifers, and some upward seepage from the bedrock aquifer occurs in low-lying areas (Tetra Tech, Inc., 2011; TLI, 2007). However, an unconsolidated aquifer does not exist within the Target Hill MRS based on the geology.

Site-specific groundwater investigations were not conducted as part of the RI for the Target Hill MRS. However, groundwater as shallow as approximately 10 feet below existing grade was measured as part of the geotechnical investigation conducted prior to the construction of the Anderson Rugby Complex (NEA, 2005).

1.3.7 Ecology

West Point lies in New York State, bordering the west bank of the Hudson River in the lower Hudson River Valley. Its environmental setting is unique in that five physiographic provinces—the Appalachian Plateaus, Folded Appalachians (Valley and Ridge), New England, Piedmont, and Coastal Plain—converge within a 35-mile radius of the installation. West Point is located in the New England Province in an area known as the Hudson Highlands (Tetra Tech, Inc., 2011).

1.3.7.1 Special Natural Areas

West Point has identified 12 sites that are to be specially managed because of ecological or geological significance, unique geological structure, and/or aesthetic and educational value to the installation; however, the Target Hill MRS is not located within or adjacent to any of the 12 identified sites (Tetra Tech, Inc., 2011).

1.3.7.2 Wetlands

Approximately 1,010 acres of wetlands are located throughout West Point in association with streams, ponds, depressions, and seeps (Tetra Tech, Inc., 2011); however, the Target Hill MRS does not contain wetlands (TLI, 2007; WESTON, 2011).

1.3.7.3 Flora

Vegetation within the Target Hill MRS is limited to mowed athletic fields and a border of trees that is characteristic of developed, landscaped areas.

1.3.7.4 Fauna

Forty-eight species of mammals, 249 species of birds, 22 species of reptiles, and 18 species of amphibians have been documented on West Point, in addition to many species of fish and invertebrate species (Tetra Tech, Inc., 2011). Because the Target Hill MRS is extensively developed and maintained as active athletic fields, it is unlikely that the majority of these species would rely on the Target Hill MRS for habitat.

1.3.7.5 Ecological Receptors

Potential ecological receptors are presented in the overall CSM for West Point and are listed below. Because nearly all of the Target Hill MRS has been disturbed by the development of the athletic fields and associated buildings and structures, it is expected that the MRS-specific list of ecological receptors would include significantly fewer receptors than listed below, because the habitable area within the Target Hill MRS is limited. Although ecological receptors are not likely to rely on the Target Hill MRS for habitat, there is a possibility that ecological receptors may pass through the Target Hill MRS, or rely on the nearby vicinity for habitat.

The following ecological receptors are included in the overall CSM for West Point and may have the potential to pass through the Target Hill MRS:

- Mammals: Small-footed bat and Indiana bat.
- Birds: Cooper's hawk, Northern goshawk, sharp-shinned hawk, golden eagle, red-shouldered hawk, whip-poor-will, common nighthawk, cerulean warbler, Peregrine falcon, bald eagle, yellow-breasted chat, red-headed woodpecker, osprey, vesper sparrow, and golden-winged warbler.
- Reptiles: Eastern wormsnake, spotted turtle, wood turtle, timber rattlesnake, Eastern hognose, and Eastern box turtle.
- Amphibians: Jefferson salamander, blue-spotted salamander, and marbled salamander.
- S1* Plants: Virginia snakeroot, glomerate sedge, stripe-fruited sedge, and Carolina cranesbill.
- S2* Plants: midland sedge, violet wood sorrel, Carey's smartweed, and small-flowered crowfoot.

- S2S3* Plants: Cluster sedge, purple milkweed, Emmon's sedge, Bicknell's sedge, Bush's sedge, weak stellate sedge, yellow harlequin, racemed pinweed, violet bush clover, and slender knotweed.

*Notes:

S1 = Critically imperiled in New York State because of extreme rarity (5 or fewer sites or very few remaining individuals) or extremely vulnerable to extirpation from New York State due to biological or human factors.

S2 = Imperiled in New York State because of rarity (6 to 20 sites or few remaining individuals) or highly vulnerable to extirpation from New York State due to biological or human factors.

S3 = Rare in New York State (usually 21 to 35 extant sites).

Double Ranks (i.e., S2S3) = The first rank indicates rarity based upon current documentation. The second rank indicates the probable rarity after all historical records and likely habitat have been checked.

1.3.8 Sensitive Environmental Resources within the MRS

WESTON submitted a request for review by the New York Natural Heritage Program (NYNHP) to determine whether there are records of any known rare, threatened, and endangered species or species of special concern located within or near the West Point MRSs. In response, the NYNHP identified the following species for the potential to occur in the West Point MRSs: one mammal species (small-footed myotis (bat) [*Myotis leibii*]), two species of birds (bald eagle [*Haliaeetus leucocephalus*] and the least bittern [*Ixobrychus exilis*]), one reptile species (timber rattlesnake [*Crotalus horridus*]), three fish (shortnose sturgeon [*Acipenser brevirostrum*], Atlantic sturgeon [*Acipenser oxyrhynchus*], and Atlantic silverside [*Menidia menidia*]), and one insect (Needham's skimmer [*Libellula needhami*]). With the exception of the three fish species and the least bittern and Needham's skimmer, the remaining species have the potential to occur within the Target Hill MRS; however, given its degree of development and level of activity, it is unlikely that any of these species would be permanent residents within the MRS. The NYNHP did not identify any federally threatened or endangered plant species within any of the West Point MRSs.

1.3.9 Cultural and Archaeological Resources

Because West Point is one of the older training grounds in the United States that is still intact, it contains numerous cultural, archaeological, and historical sites; however, the Target Hill MRS does not contain any known cultural resources (WESTON, 2011).

1.3.10 Current and Projected Land Use

Most of the lands on the Main Post are highly developed or are considered undevelopable because of steep slopes. West Point lands have been divided into four land use zones based on the functional categories that reflect the West Point missions (Tetra Tech, Inc., 2011):

- Cadet Use: Academic, intramural athletic, billeting, and parading.
- Cadet Support: Intercollegiate athletic fields and some cadet support facilities.
- Post Support: Housing, commercial, and service support to staff and faculty, non-West Point military personnel, and military retirees.
- Recreational, Industrial, Field Training: Building and storage area support for industrial operation, field training areas, recreation areas, and open space.

Target Hill MRS is located within a Cadet Support area and is used for recreational and athletic activities. The Anderson Rugby Complex, which is located in the northern half of the MRS, is used in the spring and fall by the West Point men's and women's rugby teams. A football field and multiple soccer fields are located in the southern half of the MRS. Construction of additional facilities in the MRS is not currently planned; however, if future construction were to occur, it would be to support the continued use of the MRS as a Cadet Support area for recreational and athletic activities.

1.4 PREVIOUS INVESTIGATIONS

1.4.1 Historical Information

Artillery firing may have been conducted on Target Hill as early as 1812 from the West Point Foundry located in Cold Spring, New York. A map dated 1883 indicates that the area of Target Hill was called Valley Point. The point was on land projecting into the Hudson River. A map dated 1903 indicates that the area of the Hudson River to the southeast of Target Hill had been backfilled to create the land that would later be identified as the North Athletic Field. This map also indicates the placement of 1,000-yard target butts on Target Hill. The firing point associated with these target butts was located on Target Flats in the area of the North Athletic Field (TLI, 2006).

In October 1889, heavy guns on the northern side of the post were scheduled to fire at Target Hill for target practice. Target Hill continued to be used until the late 1930s, primarily by West Point cadets for short-range artillery training. Munitions associated with training at Target Hill included large caliber high explosive (HE) and practice rounds (TLI, 2006).

Excavated soil from Target Hill was used as fill material for the construction of the North Athletic Field, which began in 1944 and was completed the following year. Approximately 60,000 square yards of level ground were added to the area comprising North Athletic Field. It is possible that after the North Athletic Field construction occurred, munitions-related materials remained in the area surrounding Target Hill; however, there are no records of munitions-related material being recovered from Target Hill (TLI, 2006).

1.4.2 Site Inspection Report and Results

The SI field activities took place in spring 2006 at the Target Hill MRS and included conducting visual surveys along approximately 4.4 linear miles, performing a geophysical survey of approximately 1.2 miles (0.5 acre), and collecting one surface soil sample for MC analysis.

During the visual survey, each team member walked individual transects, spaced at 10- to 50-foot intervals (based on terrain, ground cover, and vegetation) to identify and record MEC, munitions debris (MD), and munitions-related materials. Hand-held Global Positioning System (GPS) units were used to track the visual survey transects, and a waypoint was logged if an ordnance item was observed. GPS units were accurate to within 15 to 40 feet, depending on satellite availability and the tree canopy. In addition, Schonstedt magnetic locators and hand-held electromagnetic metal detectors were used throughout the visual survey to aid in the identification of metallic items and to ensure the safety of the field teams. The use of the hand-held electromagnetic metal detectors was particularly important in the areas of tall grass and thick leaf coverage on the ground. At times it was necessary to extend the visual surveys beyond the boundaries of the MRS. Work outside the MRS boundaries was required for several reasons, including attempts to accurately locate firing points, the need to circumvent unsafe terrain or dense vegetation, and the need to access sites from outside locations (TLI, 2007). The visual survey coverage and sample locations are presented in **Figure 1-4**.

No MEC or MD was observed during the SI visual surveys. However, hand-held metal detectors identified a large number of subsurface anomalies under the grass playing surface in the area immediately south of the Anderson Rugby Complex, which was under construction at the time. The Target Hill MRS is completely surrounded by the Siege Battery MRS. Extensive MD was found within the Siege Battery MRS to the west and northwest of the Target Hill MRS (TLI, 2007).

The SI geophysical mapping data included 119 anomalies of interest, which equated to an anomaly density of 238 anomalies per acre. The geophysical data collected by the field team was overlaid with the utility data for possible interference. The data points identified along the fence line to the north and south are considered "feedback" from the metal fence as well as the water line on the northern boundary. However, the data indicated that the majority of anomalies located in the central portion of the field may not be associated with underground utilities (TLI, 2007).

Because no evidence of military munitions was observed at the MRS during the visual survey, one soil sample (the minimum required) was collected from the middle of the playing field to the south of the Anderson Rugby Complex and along the geophysical survey transect (TLI, 2007).

The sample was analyzed for Target Compound List (TCL) explosives by Method 8330 and a subset of the Target Analyte List (TAL) metals by Methods SW846 6010B and 7471A. Metals were selected for analysis based on the metals known to be associated with the munitions historically used at West Point. The sample was analyzed for antimony, copper, iron, lead, mercury, potassium, and zinc. The analytical results for seven TAL metals and TCL explosives were compared, for evaluation purposes only, against EPA Region 9 preliminary remediation goals (PRGs) for residential soils, where available (TLI, 2007).

Trace amounts of 1,3,5-trinitrobenzene (0.027 milligrams per kilogram [mg/kg]) and 4-amino-2,6-dinitrotoluene (0.26 mg/kg) were detected in the sample; however, these values are well below the respective EPA Region 9 PRG. The remaining explosive compounds were not detected at this MRS (TLI, 2007).

Copper, iron, lead, mercury, potassium, and zinc were detected in the sample collected from the Target Hill MRS; however, all concentrations were below the applicable screening criteria (TLI, 2007).

The SI Report provided the following recommendation for the Target Hill MRS:

- As a result of the geophysical survey, numerous subsurface anomalies were identified at the Target Hill MRS. However, no MEC or MD was identified during the visual survey. The geophysical anomalies were compared to underground utilities and fencing within the MRS. The Target Hill MRS is recommended for further investigation for MEC to include confirmation sampling of the anomalies identified during the geophysical survey.

1.4.3 Munitions Response Site Prioritization Protocol Scoring

The Munitions Response Site Prioritization Protocol (MRSPP) reflects the statement in 10 United States Code (U.S.C.) §2710(b)(2) that the priority assigned should be based on the overall conditions at each location, taking into consideration various factors relating to safety and environmental hazard potential. As required under 10 U.S.C. §2710(b)(1), the priority assigned to each MRS will be included with the inventory information made publicly available. The requirement for an inventory of MRSs known or suspected of containing UXO, DMM, or MC is found at 10 U.S.C. §2710(a). The assigned priority will be updated annually to reflect new information that becomes available.

The MRSPP evaluates the following potential explosive safety and environmental hazards:

- Explosive hazards posed by UXO and DMM.
- Hazards associated with the effects of chemical warfare materiel (CWM).
- The chronic health and environmental hazards posed by MC or other chemical constituents.

The Department of Defense (DoD) recognized the different hazards inherent to each class of materials. To address these differences, the MRSPP has three hazard evaluation modules, each of which is specific to one type of hazard:

- Explosives hazards are evaluated using the Explosives Hazard Evaluation (EHE) module.

- CWM-related hazards are evaluated using the Chemical Warfare Materiel Hazard Evaluation (CHE) module.
- Health and environmental hazards posed by MC are evaluated using the Health Hazard Evaluation (HHE) module.

DoD recognized that sufficient data to apply all three of the hazard evaluation modules may not be immediately available for some MRSs. In such cases where data are available for only one or two of the modules, the priority will be assigned based on the modules for which sufficient data are available. This initial priority may change when additional data are collected and all three modules are evaluated. Modules for which there are insufficient data will be assigned a status of "evaluation pending."

Upon completion of the necessary munitions response at an MRS, the status of "prioritization no longer required" will be assigned. The sequencing of MRSs for environmental restoration activities will be based primarily on the priority assigned, but may also reflect other relevant information, such as stakeholder concerns, economic issues, and program management considerations.

The MRSPP for the Target Hill MRS was completed after the SI. The Target Hill MRS was given a Priority 7 (out of 8) based on the potential explosive hazard identified during construction activities. Priority 1 indicates the highest potential hazard and Priority 8 the lowest potential hazard. Under the MRSPP, only MRSs with CWM can be assigned to Priority 1, and no MRS with CWM can be assigned to Priority 8. Based on this ranking system, the Target Hill MRS falls among the lower priorities based on its lower potential for hazard. The MRSPP was updated with the RI results and is presented in Section 6.2.

1.5 REMEDIAL INVESTIGATION REPORT ORGANIZATION

The RI Report is organized as follows:

- Section 1 provides the purpose and scope of the project, a description and history of the MRS, and a summary of previous investigations.
- Section 2 includes discussions of the preliminary CSM, preliminary remediation goals, data needs, and data quality objectives (DQOs) used to develop the RI.

- Section 3 provides details on the approach, methods, and procedures used to characterize MEC.
- Section 4 presents the results of the RI, the MEC and MD characterization, and the on-site distribution of MEC and MD. Section 4 also includes the preliminary identification of applicable or relevant and appropriate requirements (ARARs).
- Section 5 presents the MEC fate and transport process.
- Section 6 provides a revised CSM based on the findings of the RI.
- Section 7 includes an evaluation of the potential current and future adverse hazards caused by MEC.
- Section 8 presents the RI summary and conclusions.
- Section 9 provides a list of references used in preparing the report.

SECTION 1
FIGURES

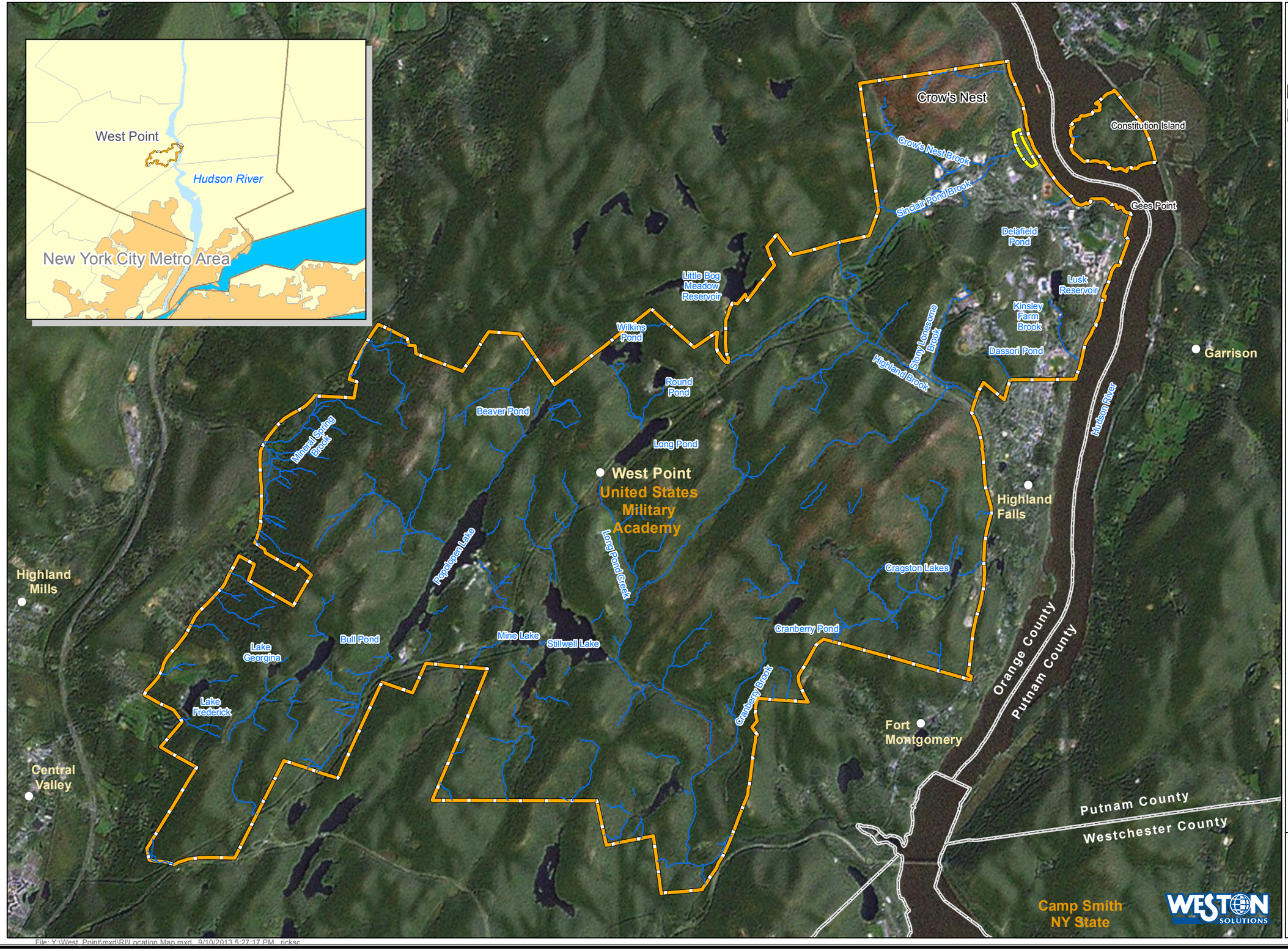

Figure 1-1
Regional Location Map
U.S. Army Garrison West Point

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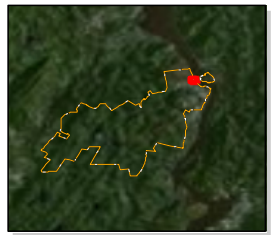
Legend

Target Hill MRS - 14 Acres



Imagery Source: ESRI, Bing Mapping Service. 2011

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Figure 1-2
Target Hill MRS
(WSTPT-017-R-01)
U.S. Army Garrison West Point

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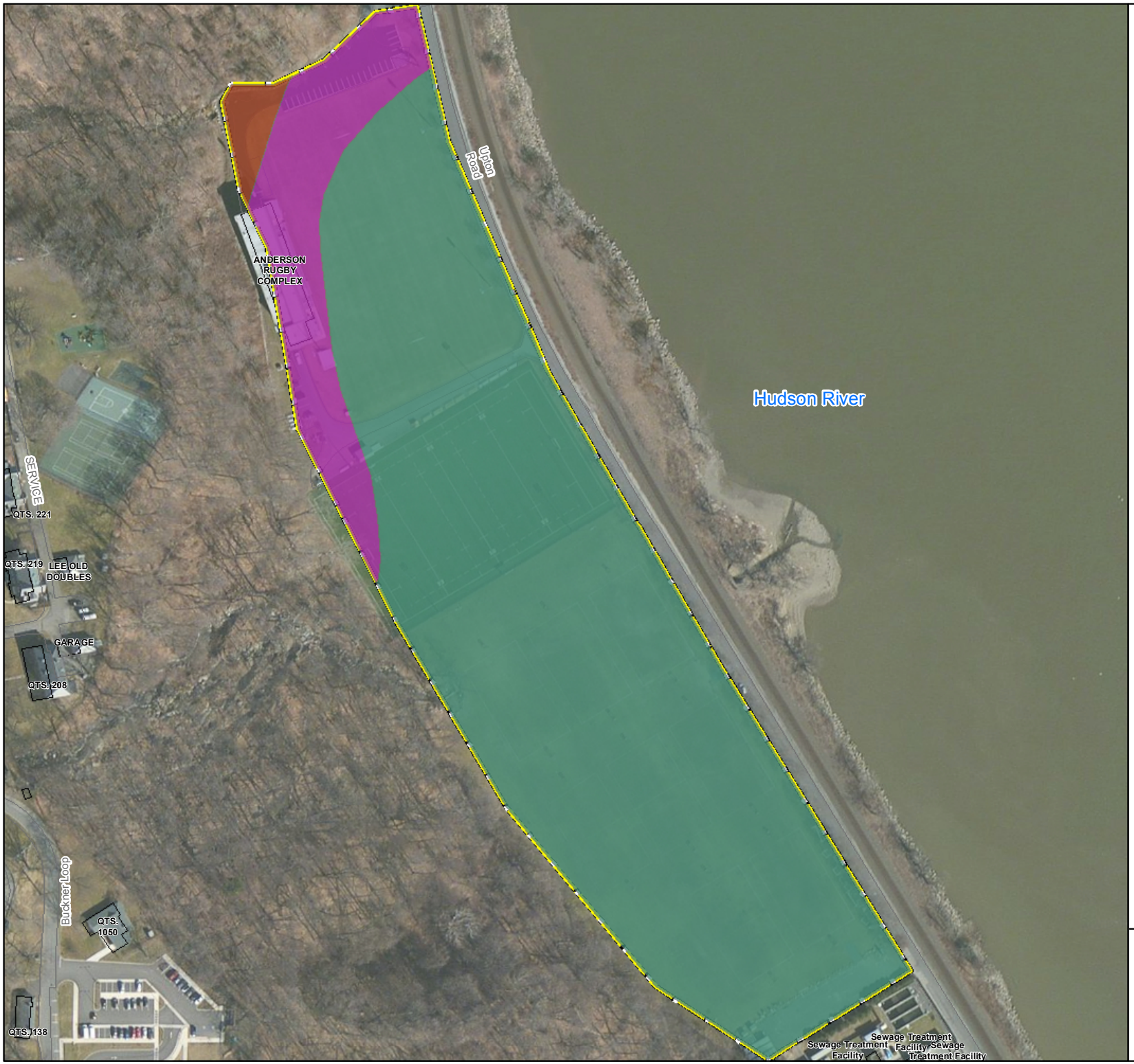
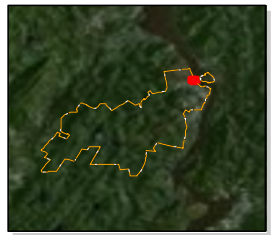


Legend

Target Hill MRS - 14 Acres

Target Hill Soil Series

- Chenango gravelly silt loam, 0 to 3 percent slopes
- Otisville and Hoosic soils, steep
- Rock outcrop-Hollis complex, moderately steep



Imagery Source: ESRI, Bing Mapping Service. 2011

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Figure 1-3
Target Hill MRS
(WSTPT-017-R-01)
Soil Series
U.S. Army Garrison West Point

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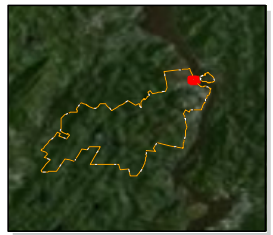
Legend

- Target Hill MRS - 14 Acres
- MC Sampling Location
- Visual Survey
- Meandering Digital Geophysical Mapping Surveys



Imagery Source: ESRI, Bing Mapping Service. 2011

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Figure 1-4
Target Hill MRS
(WSTPT-017-R-01)
SI Results
U.S. Army Garrison West Point

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2. PROJECT REMEDIAL RESPONSE OBJECTIVES

The goal of the RI was to conduct an on-site investigation at the Target Hill MRS to adequately characterize the nature and extent of potential MEC contamination, and to assess any potential risks to human health or the environment that might result from that contamination so that possible remedial alternatives could be developed and assessed. The overall RI approach included the following:

- Developing DQOs and data needs through the Technical Project Planning (TPP) process.
- Delineating the extent of potential MEC within accessible areas of the MRS using digital geophysical mapping (DGM).
- Reacquiring anomalies detected by the DGM surveys.
- Intrusively investigating selected anomalies within DGM survey areas to evaluate the nature and extent of MEC and MC if necessary based on determinations of a MEC release (i.e., a concentrated munitions use area).
- Removing and disposing of recovered MEC and material documented as safe (MDAS).
- Conducting MC soil sampling as necessary where a MEC release, or where visible explosives residue or other indications of potential MC were observed.
- Reporting results through the TPP process throughout the RI to gain stakeholder concurrence.
- Updating the CSM and MRSPP.
- Submitting the RI Report.

The specific processes and procedures used to conduct the investigation are detailed in the RI Work Plan (WESTON, 2011). This characterization approach follows the methods presented and approved in the TPP 1 and TPP 2 meetings (see Section 2.2). These investigation methods are summarized in Section 3 of the RI report, and the RI results are presented in Section 4.

2.1 CONCEPTUAL SITE MODEL AND PROJECT APPROACH

The CSM is used as a planning tool to integrate MRS information from a variety of sources, to evaluate the information with respect to project objectives and data needs, and to respond

through an iterative process for further data collection or action. The CSM development should be viewed as a process that reflects the progress of activities at an MRS from initial assessment through closeout. The CSM is divided into three primary components: potential sources, interaction, and receptors for MEC and/or MC, with complete, potentially complete, and incomplete exposure pathways identified for each receptor. Each component is described below:

- Sources — Sources are those areas where MEC or MC has entered (or may enter) the physical system. An objective of the RI is to detect and delineate sources using geophysical surveys and intrusive investigations.
- Interactions — The hazard from MEC and risk from MC is a result of direct human contact from some activity. Interactions describe ways that receptors come into contact with a MEC and/or MC source. For MC, interactions can include physical transportation of the contaminant and transfer from one media to another through various processes such that media other than the source area can become contaminated. Interactions also include exposure routes (ingestion, inhalation, and dermal contact) for each receptor. For MEC, movement is not typically significant, and interaction will occur only at the source area, limited by access and activity. Movement of MEC can occur through natural processes such as frost heave and soil erosion.
- Receptors — A receptor is an organism (human or ecological) that contacts a chemical or physical agent. The pathway evaluation must consider both current and reasonably anticipated future land use because receptors are determined on that basis. Receptors include human receptors, such as West Point personnel, site visitors, recreational users (athletes), and contractor personnel, and ecological receptors.

The preliminary CSM for the Target Hill MRS was based on information collected during the SI (TLI, 2007). Based on the SI results, exposure pathways for human and ecological receptors to contact MEC are complete because MD was observed in areas surrounding the Target Hill MRS. The primary exposure mechanism for human and ecological receptors to surface MEC is through handle/tread underfoot. Also, a subsurface pathway may occur because biota may nest or burrow at the Target Hill MRS (TLI, 2007).

Based on the results of SI soil sampling, no MC was identified above the EPA Region 9 PRGs (screening levels current at that time) at the Target Hill MRS; therefore, the pathways of MC to all human and ecological receptors were considered incomplete (TLI, 2007).

Figure 2-1, which depicts the exposure pathways for the Target Hill MRS, indicates that the exposure pathways for human and ecological receptors to contact MEC are complete based on

physical evidence of MD at an adjacent MRS. **Figure 2-2** depicts the exposure pathways for human and ecological receptors to contact MC. This figure demonstrates that the exposure pathways are considered incomplete for the Target Hill MRS.

The CSM is updated as new data become available. The data collected during the RI were incorporated into this model, and a revised CSM is presented in Section 6.

2.2 TECHNICAL PROJECT PLANNING

Prior to the initiation of RI field activities, representatives and stakeholders from USACE, West Point, EPA, New York State Department of Environmental Conservation (NYSDEC), WESTON, and TLI participated in two TPP meetings. TPP 1 was conducted on 29 July 2010. At this meeting, the MRS summary and RI approach, objectives, planning documentation, and field investigation and reporting requirements were discussed.

TPP 2 was conducted on 3 February 2011. The project stakeholders reviewed the RI Work Plan and identified and discussed project goals and DQOs. Details regarding the implementation of the MMRP RI were presented and discussed among the group. Based on the results of the second meeting, specific details of the investigation approach for the MRS, including coverage area, survey type (grid versus transect), and quantities, were determined.

2.3 PRELIMINARY REMEDIATION GOALS AND ACTION OBJECTIVES

PRGs are defined to determine the appropriate investigation approach and the effectiveness of remedial actions. PRGs are both site- and contaminant-specific and define the conditions considered by stakeholders to be protective of human health and the environment. PRGs are developed for MEC based on MRS requirements and exposure pathways. PRGs for MEC focus on limiting or removing the exposure pathway (U.S. Army, 2009). Similar to the CSM, PRGs may be reevaluated and refined throughout the remedial investigation and feasibility study (RI/FS) process as new information becomes available. The PRGs for the Target Hill MRS are based on the screening values agreed upon by the TPP Team to protect potential on-site receptors by identifying any unacceptable risks associated with exposure.

2.4 DATA QUALITY OBJECTIVES

2.4.1 Overview

DQOs were developed for the Target Hill MRS based on the EPA Quality Assurance (QA)/G-4HW guidance (EPA, 2000). DQOs are qualitative and quantitative statements that define the type, quantity, and quality of data necessary to support the decision-making process during the RI. The DQO process includes the following seven steps:

1. **State the problem:** Provide a concise description of the problem.
2. **Identify the decisions:** Develop decision statements to solve the problem.
3. **Identify inputs to the decision**: Identify information and measurements needed to make the decisions.
4. **Define study boundaries:** Identify conditions such as spatial and temporal boundaries.
5. **Develop a decision rule:** Qualify the decisions to understand data needs.
6. **Specify tolerable limits on decision errors:** Develop performance criteria.
7. **Optimize the design:** Design an effective data collection strategy based on the previous steps.

2.4.1.1 Target Hill (WSTPT-017-R-01) Data Quality Objectives

The following DQOs were created specifically for the Target Hill MRS and were agreed upon by the stakeholders during the TPP sessions:

1. **State the problem:** This MRS was a former target area associated with artillery training activities. Target butts for the former 1,000-yard small-arms range fired from the North Athletic Field MRS were also at Target Hill. In 1944, soil was removed from Target Hill and used as fill at the North Athletic Field MRS. The MRS is now used for athletic fields. The current landscape is much different from the appearance of the area when it was used as the Target Hill impact area. No MEC has been reported at the MRS; however, part of the impact area may still be present. MC may also be present if a MEC release is detected within the MRS.

2. **Identify the decisions:** The primary decisions for this MRS include:

   - Determine whether a MEC release is present within the MRS using Visual Sample Plan (VSP) (see Section 3 of the RI Work Plan [WESTON, 2011]).

   - If a MEC release is observed in the MRS, characterize the nature and extent of MEC and evaluate MC.

3. **Identify inputs to the decision:** Several inputs will be acquired during the course of the RI to support the decision. Initially, VSP input parameters were determined for the MRS

based on historical and current conditions. The entire Target Hill was a former impact area for artillery training. The size of the impact area probably was reduced during the soil removal. Based on the current size of the MRS and the extent of development (e.g., utility corridors) where no MEC has been reported, a 100-foot radius circular target radius was used as the VSP input. DGM transects will be traversed on a 52-foot spacing to ensure a high probability of detection (greater than 95%) of that circular target area. DGM will be performed in grids to evaluate the anomaly density variation that may be observed along the transects. Selected anomalies will be investigated. Intrusive results for MEC, MD, and non-MD will be evaluated in the project Geographical Information System (GIS). If a MEC release is detected, discrete or incremental soil and sediment sampling will be performed to determine whether MC is present. **Table 2-1** details the VSP parameters and coverage requirements for the Target Hill MRS.

Table 2-1 VSP Parameters and Coverage Requirements for Target Hill MRS

VSP Parameter	VSP Input and Coverage Requirements
Munitions Response Site	Target Hill (WSTPT-017-R-01)
Shape of Target Area	Circular
Target Radius	100 ft
Anomaly Density Indicator	50 anomalies/acre
Transect Width	3.25 ft
Transect Spacing	48.75 ft (52 ft on centers)
Transect Distance	1.13 miles
Transect Acreage	0.41 acre

4. **Define study boundaries:** This MRS is a 14-acre area that is developed with athletic fields. The MRS is bounded by the Siege Battery MRS. The extent of potential MEC and MC observed during the RI will be delineated using DGM, discrete MC sampling, and incremental MC sampling.

5. **Develop a decision rule:** The results of the RI at the Target Hill MRS will be used to:

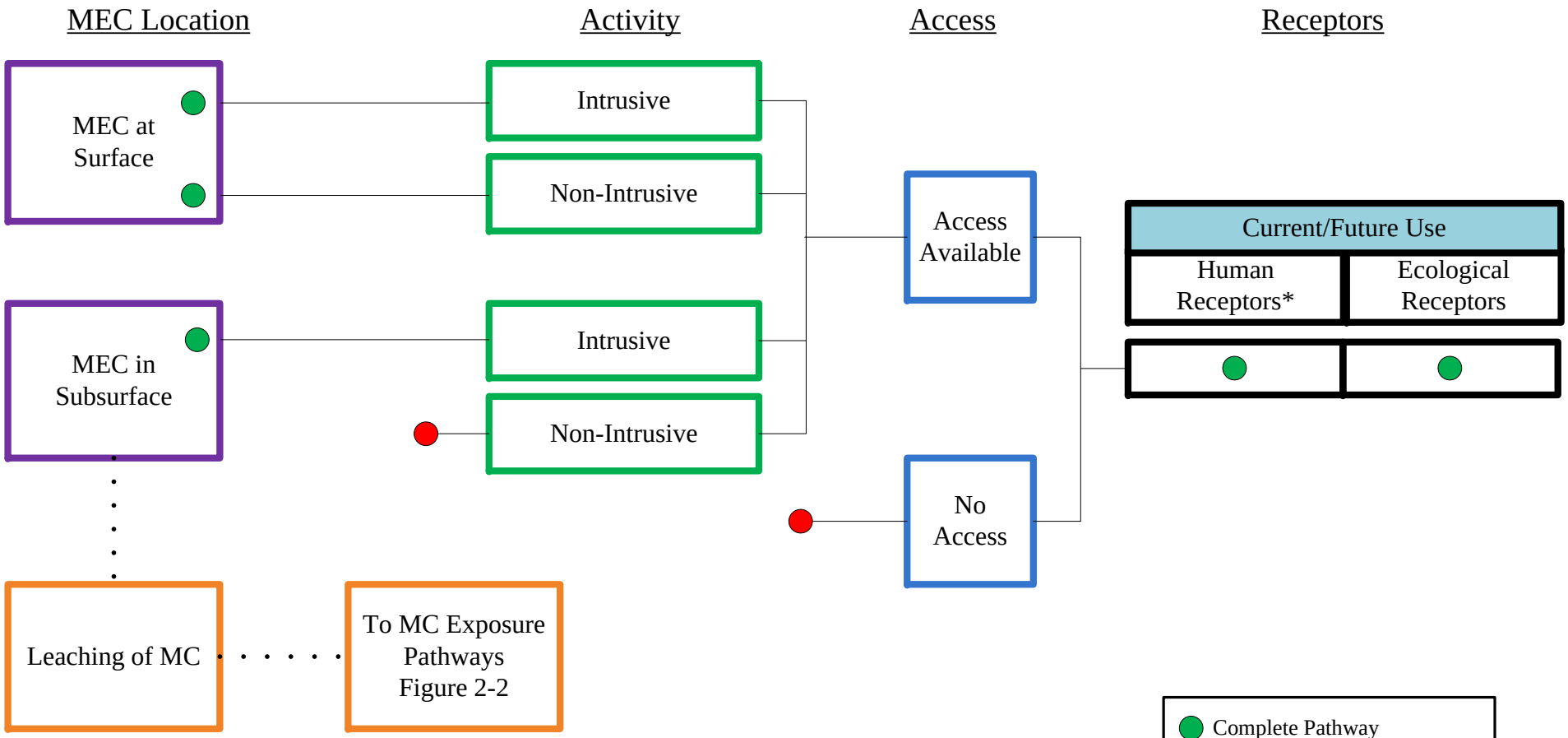
   - Determine anomaly densities based on DGM transect surveys.

   - Assess, based on intrusive anomaly investigations, whether increased anomaly densities represent MEC releases.

6. **Specify tolerable limits on decision error:** It is anticipated that a low density of MEC exists at this MRS after the soil removal. The characterization approach will confirm whether a MEC release with a circular 100-foot radius is present at the MRS. Additional surveys will be performed to completely characterize a MEC release if present.

7. **Optimize the design:** DGM transect surveys using an EM61-MK2 will be performed across the MRS at 52-foot spacings. Anomaly densities will be calculated from the transect surveys. Grids will be placed at varying anomaly densities and digitally mapped using the EM61-MK2. Intrusive results at selected anomaly locations will be used to determine the nature of the anomalies detected. Four grids are anticipated to be required for this MRS.

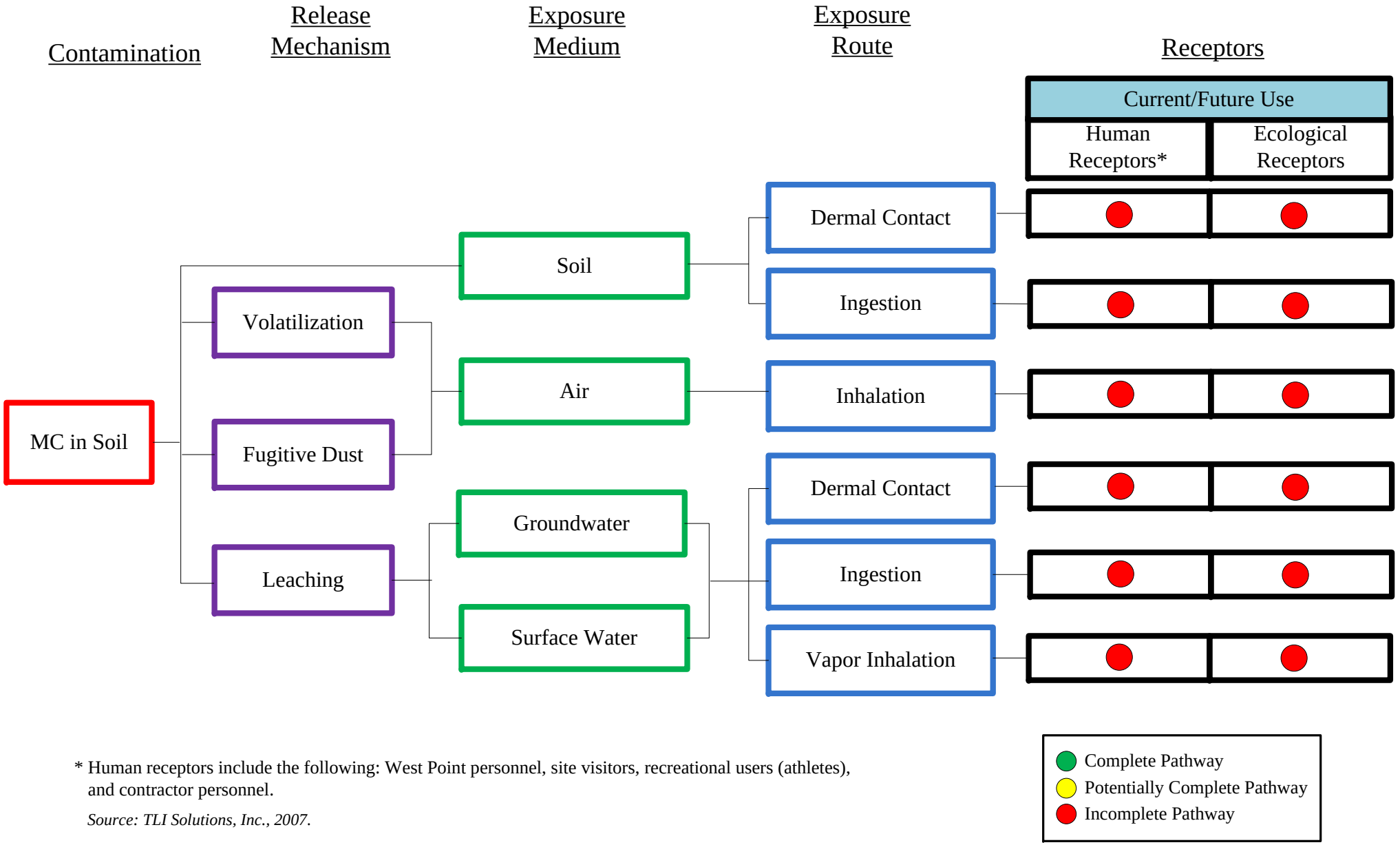
SECTION 2
FIGURES



* Human receptors include the following: West Point personnel, site visitors, recreational users (athletes), and contractor personnel.

Source: TLI Solutions, Inc., 2007.

Figure 2-1
SI Exposure Pathways for Receptors to MEC, Target Hill MRS



* Human receptors include the following: West Point personnel, site visitors, recreational users (athletes), and contractor personnel.

Source: TLI Solutions, Inc., 2007.

Figure 2-2
SI Exposure Pathways for Receptors to MC, Target Hill MRS

3. INVESTIGATION AND CHARACTERIZATION OF MUNITIONS AND EXPLOSIVES OF CONCERN

This section provides the comprehensive approach, methods, and operational procedures used for the MEC characterization performed at the Target Hill MRS. The RI field activities were conducted between 28 April and 20 June 2011 (see **Table 3-1**).

Table 3-1 Target Hill RI Field Activities

RI Field Activity	Dates
Location Surveying and Mapping	04/19/11 and 04/28/11
DGM Survey	04/12/11 and 04/29/11
Intrusive Investigation	06/17/11 and 06/20/11

3.1 INVESTIGATION COVERAGE REQUIREMENTS

Visual Sample Plan (VSP) is an industry-accepted software program used to analyze geophysical data and design investigation plans, particularly when target locations are unknown at a site. VSP was used to develop a defensible transect pattern to traverse the MRS and to detect the locations where the clustering of anomalies potentially represents elevated densities of MEC and MD related to previous munitions training activities. Using VSP calculations ensures a high probability of success in traversing and detecting potential MEC target areas in the MRS.

The VSP module entitled Transect Spacing Needed to Locate a UXO Target Area was used for the Target Hill MRS. The module requires several inputs and assumptions including:

Survey and Target Area Pattern

- Transect Pattern: Transect patterns can be manually selected as parallel, square, or rectangular. A parallel pattern was selected for the Target Hill MRS.
- Target Area Size and Pattern: The entire Target Hill was a former target area for artillery training. The size of the target area was reduced during soil removal activities associated with facility development. Based on the current size of the MRS and the extent of development (e.g., utility corridors) where no MEC has been reported, a 100-foot radius circular target radius was used as the VSP input.

Transect Spacing

- Design Objective: The design objective is to ensure a high probability of traversing and detecting potential MEC target areas.
- Background Density of Anomalies: Background anomalies are anomalies not associated with a MEC target area. These anomalies are either related to geology, cultural debris, and/or potentially non-clustered, munitions-related material, including MEC and MD. An average background density of anomalies of 5 anomalies per acre was used in the calculation.
- Expected Target Area Density Above Background: This is the anticipated anomaly density within an anomaly cluster potentially representing a target area. Anomaly clusters are assumed to have a bivariate-normal distribution. In other words, a higher density of anomalies would be anticipated in the center of the anomaly clusters rather than the edges. The anticipated average anomaly density above background is 50 anomalies per acre.
- Instrument False Negative Rate: The instrument false negative rate is the number of anomalies that may not be detected by the selected geophysical instrument. For the Target Hill MRS, the anticipated instrument false negative rate is 0%, which means that the selected geophysical instrument will always detect individual anomalies because of the anticipated size of the target munitions items.

Based on these inputs and assumptions, VSP was used to calculate a transect spacing of 52 feet to ensure a 95% probability of traversing and detecting MEC target areas with a 100-foot radius and a density of 50 anomalies per acre.

3.1.1 Data Collection and Site Coverage

To achieve the investigation coverage calculated by VSP, DGM surveys were performed at pre-planned transect locations. Additional grid surveys were conducted based on the transect results. Investigation coverage of 2.29 acres was performed at the Target Hill MRS. **Figure 3-1** shows the locations of the transects and grids.

3.1.1.1 Location Surveys and Mapping

Location surveys and mapping activities were conducted for the Target Hill MRS in accordance with the procedures outlined in the Final Work Plan (WESTON, 2011). Surveying was performed by Beatty & Watson, a New York-licensed surveyor. The location surveys and

mapping task included establishing site control relative to North American Datum 1983 (NAD 83), Universal Transverse Mercator (UTM) coordinate system, in units of U.S. Survey Feet.

3.1.1.2 Digital Geophysical Mapping Surveys

DGM transect surveys totaling 1.13 linear miles or 1.37 acres were completed in the MRS. Transect locations were adjusted in the field to avoid obstructions that might affect data quality or coverage. Once the general locations of the DGM transects were established, DGM surveys were then performed using a Geonics EM61-MK2 with Trimble R8 Real Time Kinematic (RTK) GPS for navigation and positioning. DGM surveys were conducted in the Target Hill MRS in accordance with the procedures outlined in the Final Work Plan (WESTON, 2011). Any obstructions, such as trees or landscaping, were documented in the field notes. **Figure 3-1** and **Appendix A** present the DGM survey locations in the Target Hill MRS.

Within VSP, areas of elevated anomaly density within the MRS boundaries were calculated using the "Locate and Mark Target Areas Based on Anomaly Density" tool. A background density of 90 anomalies/acre was calculated using a 40-meter window size. These parameters were then used to delineate areas of elevated anomaly density (>90 anomalies/acre) within the MRS. The "Geostatistical Mapping of Anomaly Density" tool was then used to generate an estimated anomaly density map (see **Figure 3-2**).

Four areas of elevated anomaly density were delineated within the surveyed portion of the MRS. Three 100-foot x 100-foot grids and four 50-foot x 50-foot grids were placed within the MRS, primarily focused on areas of moderate density (90 to 160 anomalies/acre) and high density (>160 anomalies/acre) to further characterize the source of the anomalies. Grids totaling 0.92 acre were geophysically mapped and intrusively investigated within the Target Hill MRS. **Figure 3-1** and **Appendix A** present the survey locations in the MRS. The remainder of the MRS was not accessible for geophysical mapping and intrusive investigation because of restrictions associated with the Anderson Rugby Complex located on the northern end of the MRS.

3.1.1.3 Geophysical System Verification

The geophysical system verification (GSV) approach was used to monitor and verify geophysical equipment functionality during the DGM surveys. The GSV approach includes an Instrument Verification Strip (IVS) and a production area seeding program to monitor sensor detection performance throughout the DGM survey effort.

3.1.1.3.1 Instrument Verification Strip

The IVS was installed near current H-Block Field and linearly seeded with five items, including one small industry standard object (ISO), two medium ISOs, one inert 37 millimeter (mm) projectile, and one inert 75mm projectile. Item types were confirmed with the USACE QA Geophysicist prior to construction. **Table 3-2** lists the IVS seed items and descriptions.

Table 3-2 Instrument Verification Strip Seed Items and Descriptions

IVS Seed Item Type	Northing	Easting	Orientation	Depth	Description
Small ISO[a] (1 inch by 4 inches)	15033479.01	1921684.05	Horizontal	4.2 inches	Part Number[b]: 44615K466 ASTM Specification: A53/A773.
Medium ISO[a] (2 inches by 8 inches)	15033473.57	1921675.82	Horizontal	7.7 inches	Part Number[b]: 44615K529 ASTM Specification: A53/A773.
37mm projectile	15033467.92	1921667.50	Horizontal	4.3 inches	Inert projectile.
75mm projectile	15033462.55	1921659.03	Horizontal	10.7 inches	Inert shrapnel projectile.
Medium ISO[a] (2 inches by 8 inches)	15033457.11	1921650.70	Horizontal	6.8 inches	Part Number[b]: 44615K529 ASTM Specification: A53/A773.

Notes:
[a] ISOs are schedule 40 pipe nipples, threaded on both ends, made from black welded steel and manufactured to an American Society for Testing and Materials (ASTM) specification.
[b] Part number from the McMaster-Carr catalog.

Instrument Verification Strip Procedure

The items were seeded linearly over 70 feet and were spaced 10 feet apart horizontally (least favorable orientation) with the long axis aligned parallel to the ground surface. Item types were confirmed with the USACE QA Geophysicist prior to construction. After IVS construction, a DGM survey was performed to demonstrate instrument functionality and to verify that the seed item responses were consistent with instrument response curves calculated for the EM61-MK2.

All responses matched the appropriate response curves based on the seed item type and depth. IVS-specific data and results are provided in **Appendix B**.

The IVS and unseeded test strip were visited daily before and after the DGM surveys and intrusive investigations. Both the EM61-MK2 and White's XLT were tested at the IVS. The results of this survey were then compared to the seed item response baseline and sensor response curves to determine that the geophysical equipment was operating properly.

The pre- and post-survey IVS results for the days that DGM data were collected at the Target Hill MRS are presented in **Table 3-3**. Results collected for each day of DGM at the IVS show agreement and repeatable results for the series of seeds. The seed items placed within the IVS were observed in the geophysical data with signals consistent with the sensor response curves developed for the EM61-MK2. All peak responses from the seed items were observed to be greater than the least favorable orientation response and to have consistent responses between the surveys. The results demonstrate that the digital geophysical equipment was functioning within a tolerable range to achieve detection performance metrics. Photographs of the equipment are provided in **Appendix C**.

Table 3-3 Instrument Verification Strip Results

Item Description	Small ISO	Medium ISO	37mm Projectile	75mm Projectile	Medium ISO
Item Depth (inches)	4.2	7.7	4.3	10.7	6.8
Calculated least favorable orientation response (mV)	10.8	64.2	14.8	60.6	73.4
IVS Date	**Response (mV)**				
12 April 2011 Pre-Survey	29	116.65	47.42	91.26	91.84
12 April 2011 Post-Survey	26.27	111.57	45.18	86.19	88.42
29 April 2011 Pre-Survey	27.51	107.64	40.43	84.22	84.04
29 April 2011 Post-Survey	25.17	106.82	42.85	83.46	85.31

3.1.1.3.2 Production Area Seeding

A seeding program was instituted in the DGM survey grids to provide ongoing monitoring of the geophysical instrumentation detection performance. Seeds were blind to the geophysical data collection teams. Three medium ISO seed items were placed within the Target Hill MRS as a

method of monitoring detection and positioning performance throughout the course of the project. After the seed items were placed, the location and depths of the seed items were then surveyed. The blind seed items placed within the geophysical survey grids were observed in the geophysical data with a signal consistent with the sensor response curves developed for the EM61-MK2, and within the 3.25-feet offset metric established in the project-specific measurement quality objectives (MQOs).

The seeds were recovered by the UXO dig teams during intrusive investigations. **Table 3-4** lists the type, depth, geophysical response, and offset of the seed items placed within the DGM grid. The locations and depths of the seed items were surveyed by Beatty & Watson, a New York-licensed surveyor.

Table 3-4 Blind Seeding Results

Grid	Item	Depth (inches)	Orientation	Target ID	Status	Peak Response (mV)	Offset (inches)
TH-02	Medium ISO (2-inch x 8-inch pipe)	6.0	Horizontal	TH-02-20	Recovered	99.57	4.0
TH-04	Medium ISO (2-inch x 8-inch pipe)	3.0	Horizontal	TH-04-25	Recovered	129.73	0
TH-05	Medium ISO (2-inch x 8-inch pipe)	6.0	Horizontal	TH-05-55	Recovered	106.56	2.0

3.1.1.4 Geophysical Survey Data Processing and Quality Control

The EM61-MK2 data were imported into Geonics® DAT61MK2 software for pre-processing. DAT61MK2 is used to convert the raw binary sensor data into a Geosoft®-compatible XYZ data file. Each XYZ file contains data for each of the four time gates recorded, the position, and the time stamp associated with each reading. Digital data were processed by the Site Geophysicist using Geosoft's Oasis montaj software. The IVS and quality parameters that were monitored and assessed daily during data processing included:

- Coverage.
- Velocity.
- Sample separation.
- Noise.
- Function tests: static, static response, and cable connection tests.

Instrument functionality tests were conducted before and after DGM surveying adjacent to the IVS located at H-Block Field. The Static Test and Static Response Test involved collecting non-dynamic data for a period of one minute without and with a small ISO item, respectively. Tests for the EM61-MK2 show background noise levels ranging from 0.5 to 2.2 standard deviations, with minimum and maximum readings between -6 millivolt (mV) and 2 mV. The Static Spike Test measurements ranged from a minimum value of 38 mV to a maximum value of 46 mV with a standard deviation between 0.66 and 1.86. Static Response Test data for the EM61-MK2 showed consistent response values within the ±20% metric over the test object in pre- and post-survey tests. The project metric for test data was established at a standard deviation of less than 2.5. No anomalous data spikes or outside interference was observed during the static instrument tests.

Background noise was evaluated for each dataset by windowing a section of the data and generating statistics using the UX-Process Quality Control (QC) module. Statistics calculated for the Target Hill DGM data are presented in **Table 3-5**. Channel 2 was then gridded using a grid cell size of 0.25 foot with a search radius of 2 feet and a blanking distance of 2.25 feet.

Table 3-5 DGM Data Parameters

Data Metric		Mean Sample Separation (ft)	Mean Velocity (mph)	Background Noise (mean)	Background Noise (standard deviation)
DQO		< 0.5 ft	< 3 mph	MRS Specific	< 2.5
Grid ID	TH-01	0.31	2.12	0.08	0.84
	TH-02	0.32	2.15	0	0.556
	TH-03	0.31	2.11	0.51	0.9
	TH-04	0.35	1.99	0.41	1.17
	TH-05	0.34	2.25	0.51	0.91
	TH-06	0.31	2.1	0.44	0.62
	TH-07	0.33	2.22	0.77	2.32

Anomalies were selected from the Channel 2 gridded data using the Blakely Test target selection algorithm. A target threshold value of 7.2 mV on Channel 2, as approved by the USACE QA Geophysicist, was used to select the initial target list. This threshold was based on the sensor response curve for a 75mm projectile at a depth of 3 feet in the least favorable (horizontal) orientation. Target review consisted of manually evaluating all selected targets and removing or

merging multiple targets associated with large anomalies. Where necessary, targets were moved to the location of the peak response associated with a given anomaly. Processing parameters are listed in **Table 3-6**.

Table 3-6 EM61-MK2 Data Processing Parameters

Process	Parameter
Drift – Non-Linear Drift Correction Filter (UCEDRIFT.GX)	Window Length: 100 % lowest values ignored: 10% % highest values ignored: 70% All data channels were processed using the same parameters.
Statistical Evaluation of Background Noise	Windowed section of background/using UX-Process QA/QC module to evaluate standard deviation and mean noise values.
Grid	Cell Size: 0.25 ft Blanking Distance: 2.25 ft Search Radius: 2 ft
Blakely Peak Picking Algorithm	Smooth Filter: 3 Normal Peak Detection Grid Value Cutoff: EM 7.2 mV
Target Decay Analysis	Performed based on each data channel.
Target Review	Performed.

A target decay analysis was run to remove targets that had an atypical decay between the four time gate channels. An atypical decay occurs when an anomaly undergoes a decay that does not decrease through time, but instead shows an increase in any of the subsequent time gate channels. **Appendix D** presents the DGM data results with target locations.

3.1.2 Anomaly Investigation Activities

A total of 362 anomalies were detected within the grids on the south end of the Target Hill MRS. The dig list was finalized using an estimation approach. The approach used a hypergeometric estimation process to determine the necessary number of anomalies to be intrusively investigated. Anomalies were selected using a simple random sample of the total anomaly list based on the estimation calculation. The investigation results were then extrapolated within the MRS to evaluate the proportion of MEC to non-MEC within a specific confidence level.

Values used for the anomaly selection determination include the following elements:

- Confidence level: 95%.
- Proportion of MEC classified anomalies: 0.005.
- Proportion of non-MEC classified anomalies: 0.995.
- Acceptable margin of error for proportion being estimated: 0.01.
- Total number of anomalies to be reacquired and investigated: 126.

A total of 205 anomalies were selected as part of the DGM data analysis. Each of these anomalies was compiled into a dig list. The dig list data were logged into a hand-held computer and managed using WESTON's RespondFast® UXO Investigation software.

These anomalies were reacquired and intrusively investigated. Anomaly reacquisition was performed using a Trimble R8® RTK for navigation to the precise location of each target. A reacquisition team navigated to the location and marked it with a non-metallic pin flag designated by the unique anomaly ID. These anomalies were investigated as they were detected by UXO Technicians. The dig list is provided in **Appendix E**.

3.1.2.1 Anomaly Investigation Procedures

Intrusive investigations were conducted at the locations of the 205 anomalies detected as part of the geophysical surveys in accordance with the RI Work Plan (WESTON, 2011), including the approved Accident Prevention Plan (APP)/Site Safety and Health Plan (SSHP) and Explosives Site Plan (ESP). Intrusive investigations at the selected anomaly locations were performed to positively identify and recover MEC, material potentially presenting an explosive hazard (MPPEH), and MD. All recovered items were treated as MPPEH and were subject to field inspection to determine the nature of recovered anomalies. All items were verified free of explosives hazards prior to being relocated for future disposal.

The Senior UXO Supervisor (SUXOS) conducted oversight of all intrusive investigations, and the UXO Quality Control Specialist (UXOQCS) conducted daily QC following target reacquisition and intrusive investigation as documented in the Daily Reports for the RI (see **Appendix F**).

UXO Technicians began the anomaly investigations by sweeping a 3-foot radius around the pin flag with a White's XLT all-metals detector to focus the excavation at the peak response. The

offset and the northing and easting position of the peak response were recorded for each anomaly. Intrusive operations at each anomaly location were performed using hand tools. The UXO Technicians excavated at the location of the highest detector response until the source of the anomaly was found. The target location was considered clear when a signal source was no longer detected after removal of the conductive item, or the source of the signal was identified to be associated with a cultural feature such as a fence or building.

Exclusion zones during intrusive operations were based on the project munition with the greatest fragmentation distance, which is a 75mm HE projectile. The minimum separation distance for nonessential personnel was 238 feet.

Dig teams used the personal handheld computers with RespondFast UXO Investigation software to electronically log the target characteristics real-time in the field. Characteristics logged in RespondFast include item category, item type, depth, dig data, and final disposition.

Results of the intrusive investigation are provided in the expanded dig lists in **Appendix E.** Photographs of the anomaly reacquisition process are provided in **Appendix C.**

3.1.2.1.1 Inspection of Material Potentially Presenting an Explosive Hazard

During the course of the RI intrusive activities, military munitions-related items were considered MPPEH until properly inspected by a qualified UXO Technician II or higher. When it was encountered in the field, MPPEH was inspected by a UXO Technician II and Technician III and classified as material documented as safe (MDAS) or material documented as an explosive hazard (MDEH). Items classified in the field as MDAS pose no explosive hazard and were transported to a collection point for final disposal as MD (as described below).

3.1.2.1.2 Munitions Debris Management

All items classified as MD were recovered from the grid, certified, verified as free from explosives, and stored in a locked container. Following recovery, the SUXOS inspected the MD followed by re-inspection by the UXOQCS to verify the process and to ensure that only inert items were stored in the locked container. A final inspection was conducted immediately prior to the transfer of MD to the West Point Museum. Certified MD was transferred with the completed

DoD Form 1348-1A, signed by the SUXOS to certify that the material listed had been thoroughly inspected and, to the best of the SUXOS's knowledge and belief, was inert and/or free of explosives or related materials.

After the DoD Form 1348-1A was verified and signed by the UXOQCS, a copy was maintained and the original accompanied the MD to its final disposition at the West Point Museum. A copy of the form is presented in **Appendix G**.

3.1.2.2 Intrusive Investigation Quality Control

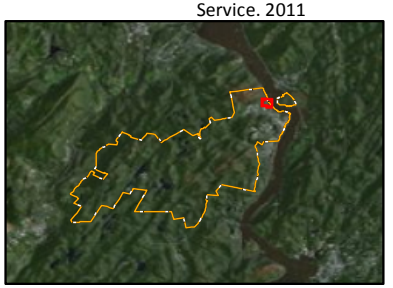
In accordance with the RI Work Plan, the UXOQCS inspected at least 10% of the dig locations using a White's XLT all-metals detector to determine whether or not the removal was effective. The UXOQCS joined the intrusive team and inspected all of the digs made during one day. The results of the QC inspections for the intrusive investigation are provided in the UXOQCS reports (**Appendix F**).

SECTION 3
FIGURES

Legend

- Target Hill MRS - 14 Acres
- DGM Survey Area
- DGM Transects
- Target Locations

Imagery Source: ESRI, Bing Mapping Service. 2011

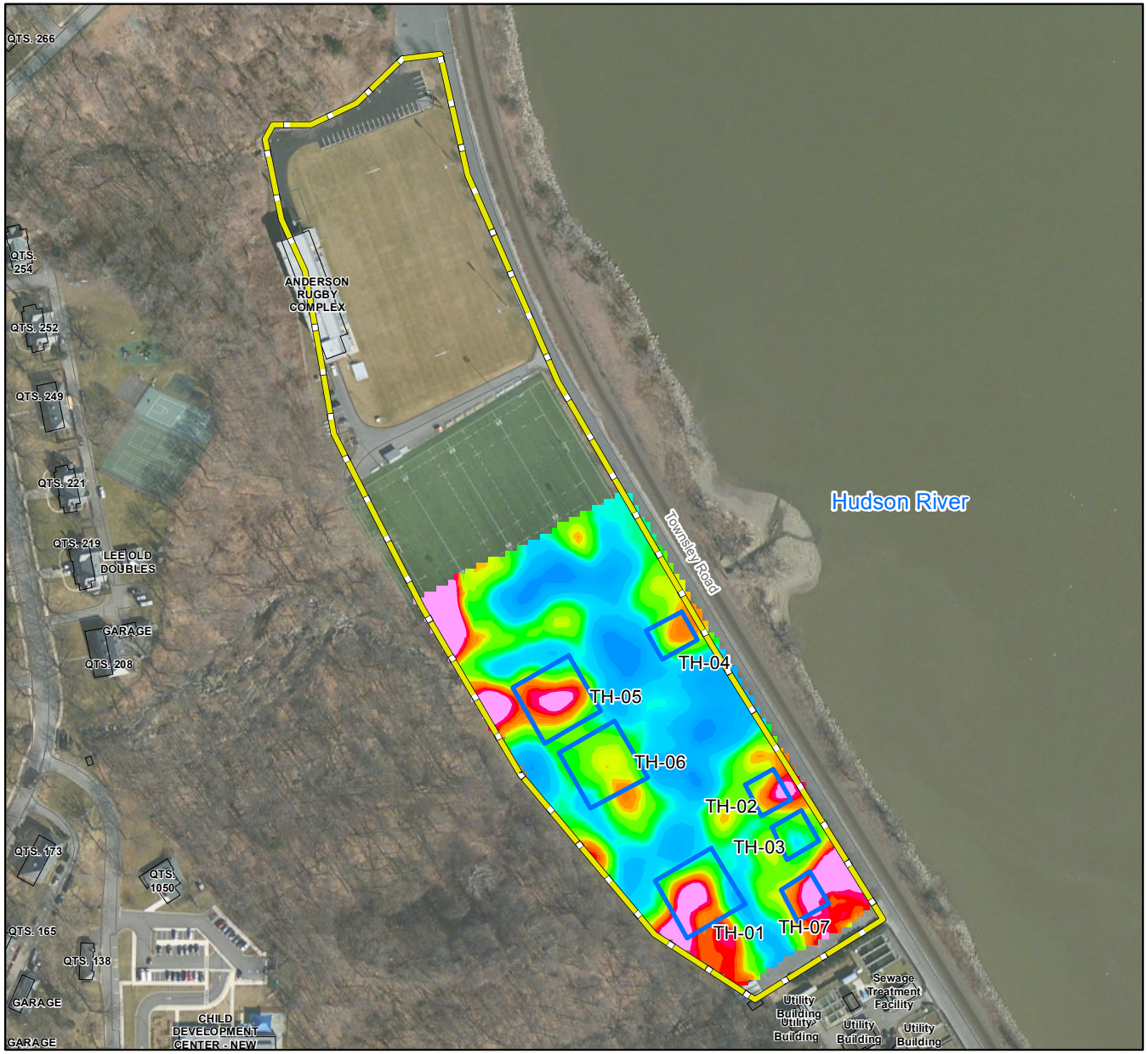


0 275

Feet

Figure 3-1
Target Hill MRS
(WSTPT-017-R-01)
Transect and Target Locations
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\RI\TH_transects_targets.mxd, 4/20/2012 2:29:29 PM, ricksc



Legend

Target Hill MRS - 14 Acres

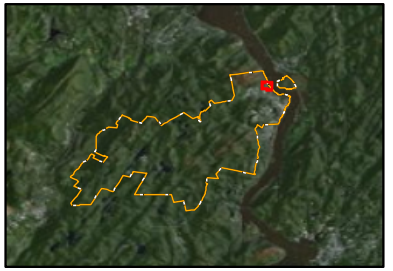
DGM Survey Area

Anomaly Density (from VSP)

Anomalies/Acre

22 50 72 91 106 133 157 194 254

Imagery Source: ESRI, Bing Mapping Service. 2011



0 275

Feet

Figure 3-2
Target Hill MRS
(WSTPT-017-R-01)
Anomaly Density Map
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\RI\TH_anomaly_density.mxd, 4/20/2012 2:29:22 PM, ricksc

4. REMEDIAL INVESTIGATION RESULTS

This section presents the results of the MEC characterization at the Target Hill MRS and the preliminary identification of ARARs.

4.1 RESULTS FOR MUNITIONS AND EXPLOSIVES OF CONCERN CHARACTERIZATION

The following sections present the results of the RI field efforts that were performed to achieve the DQOs defined in Section 2.4 and to delineate the nature and extent of MEC in the surface and subsurface at the Target Hill MRS. As described in Section 3 of the report, the RI for MEC characterization involved the following tasks:

- DGM data collection.
- Digital data processing, analysis, and anomaly selection.
- Anomaly reacquisition.
- Intrusive investigation of reacquired anomalies.
- Determination that evidence of a MEC release was not present at the MRS.

The following paragraphs detail the results of these activities.

4.1.1 Geophysical Survey Results

DGM transect and grid surveys were performed using a man-portable EM61-MK2 sensor in cart mode. Transects totaling 1.13 linear miles or 1.37 acres were geophysically mapped to identify anomaly cluster areas and subsequently to determine the areas of the MRS where DGM grid surveys and intrusive investigation were required. DGM surveys totaling 0.92 acre in seven grids were performed based on the transect results and anomaly density calculations. A total of 205 anomalies were selected from the geophysical data for intrusive investigation. The intrusive investigation results are discussed in Section 4.1.2.

4.1.2 Intrusive Investigation Results

No MEC were recovered from within the seven grids at the Target Hill MRS. Of the 205 anomalies investigated, three MD items were recovered. The MD items included one 6.5-inch cannonball (solid shot), one 8-inch mortar (empty), and one 15-inch cannonball (Rodman test

round, solid shot). The three MD items were cast iron; two were solid shot and the 8-inch mortar was empty. Although the 8-inch mortar recovered was identified as empty, 8-inch mortars typically would have used black powder as their explosive charge. The components of these items (iron or potassium nitrate [component of black powder]) were deemed to not be a hazard, and analysis was not required in accordance with the MMRP RI MC sampling approach outlined in the MC Sampling Methodology Memorandum (Appendix G of the Final RI Work Plan). The remaining 202 anomalies were identified as non-munitions-related material, consisting of four seed items that had been placed by the project team, 188 documented as cultural debris (scrap metal, utilities), and 10 documented as no contacts. The MD was recovered between 0 inches and 15 inches below ground surface (bgs). The remaining non-munitions related material was recovered between 0 inches and 36 inches bgs. Munitions associated with training at the Target Hill MRS are large caliber HE and practice rounds, including the MD identified (cannonballs and a mortar).

Figure 4-1 and **Appendix D** show the locations of the items recovered from the MRS. **Table 4-1** summarizes the MD recovered from the MRS. The complete dig list is provided in **Appendix E**. Because a MEC release was not observed during the intrusive investigation, no MC characterization was warranted.

Table 4-1 MD Summary at the Target Hill MRS

Target ID	Item Type	Item Description	Dig Date	Depth (inches)	Weight (lb)
TH-04-35	Munitions Debris	6.5-inch Cannonball (solid shot)	06/20/11	0.00	30.0
TH-05-132	Munitions Debris	8-inch Mortar (empty)	06/20/11	15.00	49.0
TH-06-19	Munitions Debris	15-inch Cannonball (Rodman test round, solid shot)	06/20/11	9.00	60.0

4.1.3 Visual Sample Plan Analysis Results

A statistical transect approach was planned using VSP to ensure a 95% probability of traversing and detecting a potential MEC target area in the Target Hill MRS. Based on the VSP computations, geophysical surveys were performed across the southern half of the MRS at a 52-foot spacing to achieve the statistical requirements for survey coverage.

Based on the DGM transect results, DGM grids were placed at anomaly cluster areas for subsequent survey and anomaly investigation. A DGM grid was placed at each anomaly cluster to determine the source of the anomalies and to reduce the characterization uncertainty following the RI. Three MD items were recovered during the intrusive investigations, confirming that only low concentrations of MEC and MD are present within the Target Hill MRS. By assessing each anomaly cluster with DGM surveys and intrusive investigations, it was determined that high concentrations of MEC and MD associated with a target area were not detected in the MRS.

Characterization activities could not be performed on the Rugby Field located in the northern portion of the Target Hill MRS. The northern portion of the MRS has undergone significantly more development as a result of the Rugby Field construction than the southern portion of the MRS. No MEC or MD was reported during the construction.

The original Target Hill was removed for use as fill material during the construction of North Athletic Field. It is likely that the majority of MEC and MD from former weapons and munitions training would have been removed during construction. Three MD items were recovered during the RI, which supports this observation. Although no characterization work was performed in the northern portion of the Target Hill MRS because of the Rugby Field, no MEC or MD was reported during construction of the field. The northern portion of the MRS has undergone more development than the southern portion of the MRS. Based on the RI results and the amount of development that has occurred at the Target Hill MRS, concentrations of MEC and MD, if formerly present, would have been removed during construction and would no longer be present in the MRS.

4.2 PRELIMINARY IDENTIFICATION OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

A preliminary identification of ARARs is conducted during RI characterization. The ARARs are used as a “starting point” in determining the protectiveness of a remedy.

As the RI/FS process continues, the list of ARARs will be further refined. The ARARs are used to establish the appropriate extent of cleanup; to aid in scoping, formulating, and selecting proposed treatment technologies; and to govern the implementation and operation of the selected remedial alternative.

Pursuant to Section 300.400(g) of the NCP, a list of ARARs and other to-be-considered advisories, criteria, and guidance (to be considered information [TBCs]) is developed for a site or sites to identify the requirements that may apply to response actions. CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the NCP provide that the development and evaluation of remedial actions under CERCLA must include remedial alternatives to attain ARARs and to ensure protection of public health and the environment.

ARARs are defined as follows:

- Applicable requirements—Those cleanup standards, standards of control, and other substantive environmental protection requirements promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site.
- Relevant and appropriate requirements—Those cleanup standards, standards of control, and other substantive environmental protection requirements promulgated under federal or state law that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at a CERCLA site.

It is first determined whether an ARAR is applicable for the site. If it is not applicable, then it is determined whether the ARAR is relevant and appropriate. The procedure for determining whether a requirement is relevant and appropriate is a two-step process. First, to determine relevance, it is evaluated whether the requirement addresses problems or situations sufficiently similar to the circumstances of the proposed response action. Second, for appropriateness, the determination must be made about whether the requirement would also be well-suited to the conditions of the site. In some cases, only a portion of a requirement would be both relevant and appropriate. Once a requirement is deemed relevant and appropriate, it must be attained (or waived). If a requirement is not both relevant and appropriate, it is not an ARAR. The results of this selection process for the Target Hill MRS are provided in **Table 4-2**.

"Applicable requirements" and "relevant and appropriate requirements" are considered to have the same weight under CERCLA. Section 121(d) of CERCLA, as amended by SARA, requires the attainment of federal ARARs and of state ARARs if the state environmental or facility siting laws are promulgated, are more stringent than federal laws, and are identified by the state in a timely manner.

Table 4-2 Applicable or Relevant and Appropriate Requirements and TBCs

Standard, Requirement, Criteria, or Limitation	Citation	Description of Requirement	Comments (Applicable or Relevant and Appropriate, or TBC)
Action-Specific			
DoD Explosive Safety Manual	DoD Manual 6055.09-M	Requires that specialized personnel be employed to detect, remove, and dispose of munitions. This manual also defines the safety precautions and procedures for the detonation or disposal of munitions.	*TBC* Establishes DoD ammunition and explosives safety standards.
Military Munitions Rule	40 CFR Part 266, Subpart M	Regulates unused munitions, munitions used for intended purposes, and used or fired munitions.	*Applicable* Identify when military munitions become a solid waste; and, if these wastes are also hazardous under this subpart or 40 CFR Part 261, identify the management standards that apply to these wastes.
Environment and Explosives Safety Management	DoDD 4715.11	Establishes policy for management of active and inactive military ranges. Includes guidelines for range clearance operations, hazard assessment, and recycling /disposal.	*TBC*
NY Division of Water - Classes and Standards of Quality and Purity and EPA National Pollutant Discharge Elimination System	6 NYCRR §750-1.5 and 40 CFR Part 122.26	Establishes water quality standards, including classifications of New York waters and water quality criteria to protect the ground and surface water resources; and controls stormwater and effluent discharges, including toxic substances, into State waters.	*Relevant and Appropriate* For remedial alternatives where soil excavation activities are performed and require stormwater management. Construction activities disturbing one or more acres of soil must be authorized under the NY General Permit for Stormwater Discharges from Construction Activities.
Hazardous Waste Manifest System and Related Standards For Generators, Transporters and Facilities	6 NYCRR Part 372	Establishes standards for generators and transporters of hazardous waste and standards for generators, transporters, and treatment, storage, or disposal facilities relating to the use of the manifest system and its record keeping requirements.	*Applicable* in the event that hazardous waste is generated as part of a remedial alternative; for example, if MEC items were removed and would need to be shipped (by a party other than the Army) as hazardous waste.

Table 4-2 Applicable or Relevant and Appropriate Requirements and TCBs (Continued)

Standard, Requirement, Criteria, or Limitation	Citation	Description of Requirement	Comments (Applicable or Relevant and Appropriate, or TBC)
Waste Transporter Permits	6 NYCRR Part 364	Protects the environment from mishandling and mismanagement of regulated waste transported from the site of generation to the site of ultimate treatment, storage, or disposal.	*Applicable* to any off-site transport and disposal of classified hazardous wastes, if generated as part of remedial alternative.
Air Quality Classifications and Standards	6 NYCRR Parts 257-1.3 and 257-1.4	Designed to provide protection from the adverse health effects of air contamination; intended to protect and conserve the natural resources and environment.	*Relevant and Appropriate* in the event that a remedial alternative, such as soil excavation/grading, could impact ambient air quality or an extended period of time. The state regulation has 12-month average standards for dust levels from a specific source.
DoD Contractors Safety Manual for Ammunition and Explosives	DoD 4145.26M	Manual provides safety requirements for contractual work involving ammunition and explosives.	*TBC*

Notes:

CFR	Code of Federal Regulations	NYCRR	New York Codes, Rules and Regulations
DoDD	DoD Directive	TBC	To be considered

CERCLA and the NCP also identify the TBC category, which includes nonpromulgated federal and state criteria, advisories, and guidance documents. TBCs do not have the same status as ARARs; however, if no ARAR exists for a substance or particular situation, TBCs may be used to ensure that a remedy is protective.

Generally, ARARs pertain to either contaminant levels or to performance or design standards to ensure protection at all points of potential exposure. ARARs are divided into three general categories: chemical-specific ARARs, location-specific ARARs, and action-specific ARARs.

Throughout the RI/FS phase, ARARs are identified and used by taking into account the following:

- Contaminants suspected or identified to be at the MRS.
- Chemical analysis performed or scheduled to be performed.
- Types of media (air, soil, groundwater, surface water, and sediment).
- Geology and other MRS characteristics.
- Use of MRS resources and media.
- Potential contaminant transport mechanisms.
- Purpose and application of potential ARARs and TBCs.
- Remedial alternatives considered for MRS cleanup.

Action-specific ARARs are usually technology or activity-based requirements or limitations placed on actions taken with respect to cleanup actions, or requirements to conduct certain actions to address particular circumstances at a MRS. The preliminary ARARs are summarized in **Table 4-2.** Based on the findings of the RI, it is anticipated that the remedial alternatives will not include on-site treatment, on-site storage (greater than 90 days), or on-site disposal of hazardous waste; therefore, certain potential ARARs related to these activities were not considered applicable at this time. The ARARs will be further refined during future phases of work (i.e., a feasibility study) at the Target Hill MRS. In addition, there are no wetlands at or near the MRS that could potentially be affected by remedial alternatives anticipated for this MRS. The Hudson River is located across the road from the Target Hill MRS; however, it is not expected to be impacted by potential remedial alternatives.

Location-specific ARARs were not identified for the Target Hill MRS. Location-specific ARARs generally are restrictions placed on the concentration of hazardous substances or the

conduct of activities to prevent damage to unique or sensitive areas, such as floodplains, wetlands, historic places, and sensitive ecosystems or habitats. The Target Hill MRS does not contain sensitive or unique areas.

Chemical-specific ARARs are health-based or risk-based numerical values that establish the acceptable amount or concentration of a chemical that may remain in, or be discharged to, the ambient environment. Chemical-specific ARARs are used to provide benchmarks with which to compare environmental sampling results for metals and explosives. Chemical-specific ARARs were not identified for the Target Hill MRS because the field investigation (DGM and intrusive investigation) results did not indicate the need for MC sampling. There were no MEC releases found to require MC sampling.

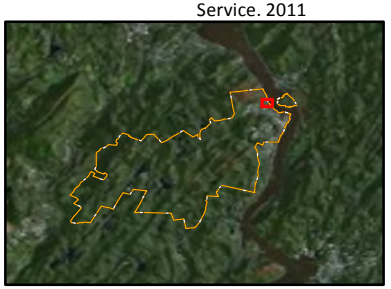
NYSDEC participated in TPP 1 (General Project Introduction and Approach) and TPP 2 (Presentation of RI Field Work Approach). Discussions at TPP 1 and TPP 2 generally consisted of establishing which NYSDEC and EPA standards for MC would apply to the whole project, and the state approved the ARARs section presented in the Final Work Plan (WESTON, 2011). The RI reports will be presented at the TPP 3 meeting.

SECTION 4
FIGURE

Legend

- Target Hill MRS - 14 Acres
- DGM Survey Area
- DGM Transects
- 15" Rodman Test Round (Cannonball - solid shot)
- 6.5" Cannonball (solid shot)
- 8" Mortar (empty)

Imagery Source: ESRI, Bing Mapping Service. 2011



WESTON SOLUTIONS

N W E S

0 275

Feet

Figure 4-1
Target Hill MRS
(WSTPT-017-R-01)
Dig Results
U.S. Army Garrison West Point

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5. CONTAMINANT FATE AND TRANSPORT

The intent of this section is to describe the fate of contaminants in the environment and the potential transport mechanisms for MEC and MC at the Target Hill MRS. No MEC was found at the MRS during the RI field activities, and an explosive safety hazard is not anticipated to exist at the MRS; therefore, a discussion of the fate and transport of MEC at the MRS is determined to be unwarranted.

In accordance with the Final RI Work Plan, MC sampling would be conducted in the Target Hill MRS only if a MEC release was identified or if visible evidence of an MC release was observed. No MEC was identified within the MRS and there was no evidence of an MC release; therefore, MC sampling was not warranted during the RI characterization.

6. REVISED CONCEPTUAL SITE MODEL

This section presents the revised CSM for the Target Hill MRS based on the results of the data collected for the RI and the previous information provided in the SI report. The preliminary CSM is discussed in Section 2.1.

6.1 REVISED MUNITIONS AND EXPLOSIVES OF CONCERN CONCEPTUAL SITE MODEL

The MRS was documented in the preliminary CSM as being a former target area. The Siege Battery and Fort Clinton range fans overlap the Target Hill MRS.

The excavation of soil from Target Hill for use as fill material for the construction of the North Athletic Field began in 1944 and was completed the following year. Approximately 60,000 square yards of level ground were added to the area comprising North Athletic Field. It is possible that munitions-related materials within Target Hill were transported to the North Athletic Field during construction. Consequently, the concentrations of potential munitions-related materials, if present at Target Hill, were greatly reduced during the soil excavation.

6.1.1 Revised Munitions and Explosives of Concern Exposure Pathway Analysis

The MEC exposure pathway analyses for the Target Hill MRS are summarized in this section. Each pathway includes a source, interaction, and receptor, with complete, potentially complete, and incomplete exposure pathways identified for each receptor. A pathway is considered complete when a source (MEC) is known to exist and when receptors have access to the MRS while engaging in an activity that results in contact with the source. A pathway is considered potentially complete when a source (MEC) has not been confirmed, but is suspected to exist and when receptors have access to the MRS while engaging in an activity that results in contact with the source. A pathway is considered incomplete if any one of the three components (source, interaction, or receptors) is not present at an MRS.

6.1.1.1 Source

A MEC source is the location where MEC is situated or is expected to be found. A target area was formerly present at the Target Hill MRS. The target area has since been removed, and the MRS has been significantly reworked during construction and development activities. To test

whether potential target areas or a MEC source remains at the MRS, 2.29 acres of DGM characterization coverage were performed to ensure a 95% probability of traversing and detecting elevated anomaly density areas.

No MEC was observed at the Target Hill MRS during the field activities. Three MD items were recovered at the Target Hill MRS during the RI. The MD included one 6.5-inch cannonball (solid shot), one 8-inch mortar (empty), and one 15-inch cannonball (Rodman test round, solid shot). The MD items were solid and/or inert, and posed no explosives safety hazard. No other MD has been historically documented as being found in the MRS.

During the RI data collection, an anomaly density of 128.55 anomalies/acre was calculated using VSP. The MRS is 14 acres; therefore, the total number of potential anomalies is 1,800 anomalies. If 0.5% of the total population of anomalies could be MEC, then it is statistically possible for nine MEC to remain within the MRS (±1 MEC item). The number of remaining MEC was calculated using the hypergeometric estimation process to calculate the number of anomalies required for investigation.

The DGM survey coverage and the intrusive investigation approach for the RI were designed using statistical tools. The field work results suggest it is statistically possible that MEC may be present at the MRS although confirmed discoveries have not been made to date. Even though MD was recovered during the intrusive investigations, the items were solid and/or inert and posed no explosives safety hazard. Only a statistical portion of the MRS was investigated; however, during the intrusive investigation of 205 anomalies within the accessible portion of the MRS where the highest probability of encountering MEC would be anticipated, no MEC was found, suggesting no MEC source is present at the Target Hill MRS.

6.1.1.2 Interaction

Interaction describes the ways that receptors come in contact with a source and includes both access and activity considerations. Activity describes the action by which receptors come in contact with a source. Access describes the degree to which a MEC source or environment containing MEC is available to potential receptors. Typically, a receptor may contact MEC, if present, on the ground surface simply by walking. A receptor may contact MEC in the

subsurface, if present, by performing intrusive activities. The Target Hill MRS is located in the Cadet Support land use zone. Once on the installation, access is to the MRS is unrestricted.

The Target Hill MRS is used for recreational and athletic activities. The Anderson Rugby Complex, which is in the northern half of the MRS, is used in the spring and fall by the West Point men's and women's rugby teams. A football field and multiple soccer fields are in the southern half of the MRS.

6.1.1.3 Receptors

A receptor is an organism (human or ecological) that comes in physical contact with MEC. Human receptors identified for the Target Hill MRS include West Point personnel, site visitors, recreational users (athletes), and contractor personnel.

Potential ecological receptors are presented in Section 1.3.7.5. Because the entire Target Hill MRS is extensively developed, ecological receptors are not likely to rely on the MRS for habitat. However, there is a possibility that ecological receptors may pass through the Target Hill MRS or rely on the nearby vicinity for habitat.

6.1.2 MEC Exposure Pathway Conclusions

The information collected during the RI was used to update the preliminary MEC CSM for the Target Hill MRS and to identify complete, potentially complete, or incomplete source-receptor interactions for the MRS for current and anticipated future land users.

A statistical approach was taken for the characterization at the Target Hill MRS, and a portion of the MRS was investigated by geophysical surveys and intrusive investigations to provide a statistical confidence for the proportion of MEC to non-MEC-related material. No MEC was observed at the Target Hill MRS during the field activities; however, three MD items were confirmed to be present in the subsurface during the RI.

Based on the results of the RI field investigations, the use or introduction of munitions at the MRS is confirmed. Because no direct evidence of an explosive hazard exists, the pathways for MEC are incomplete; however, there is a low potential for MEC or additional MD to be present in the subsurface.

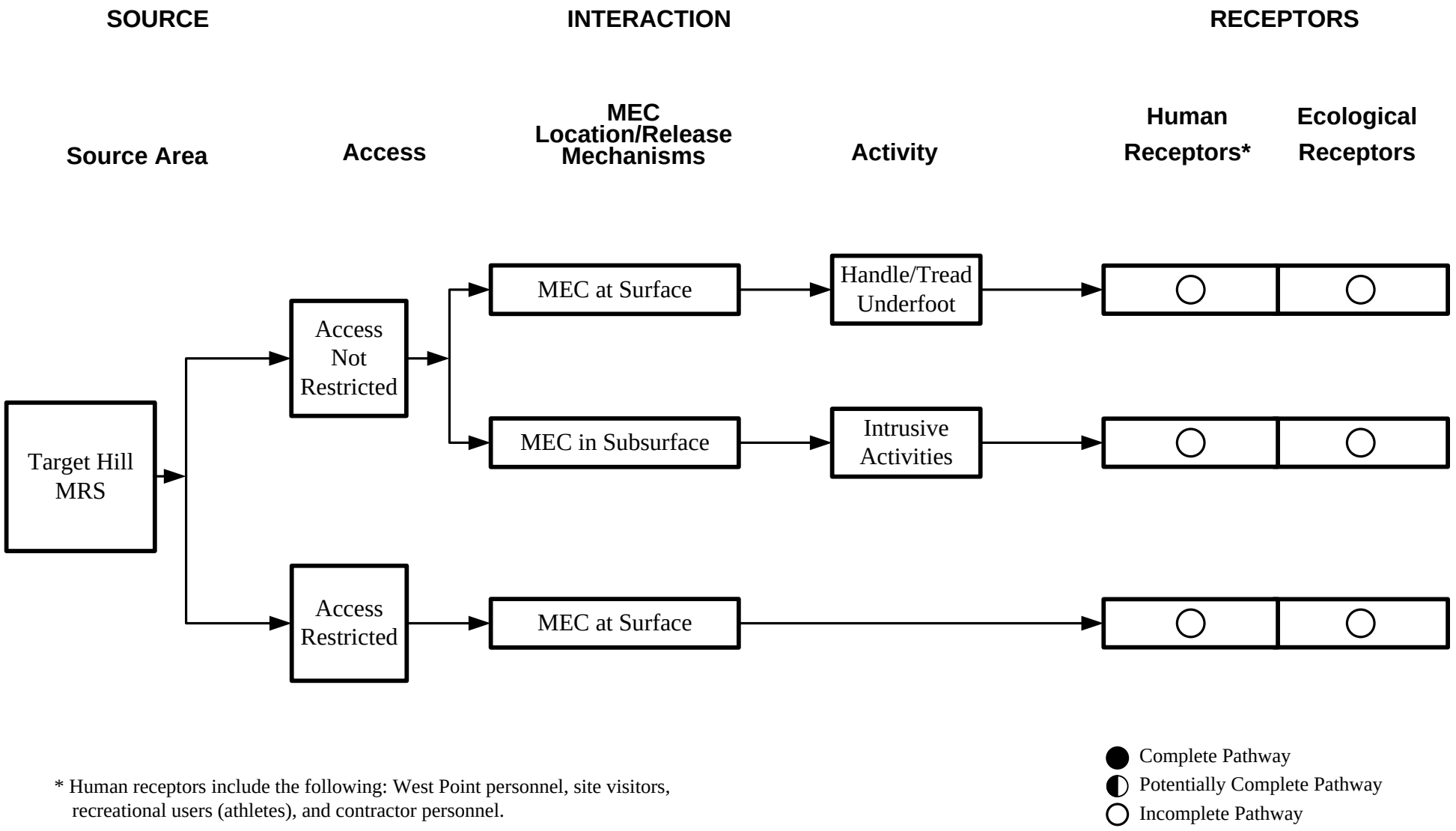
The MEC exposure pathways are depicted on the CSM shown in **Figure 6-1**.

6.2 REVISED MUNITIONS CONSTITUENT PATHWAY ANALYSIS

A MEC release was not observed during the intrusive investigation; therefore, in accordance with the Final Work Plan (WESTON, 2011), no MC characterization was warranted. No MC sampling was conducted in the Target Hill MRS because no MEC was identified and because of the type and/or condition of MD found at the MRS. Sampling was proposed only near MEC found during the MMRP RI, and only when field observation indicated that a potential release had occurred (e.g., visual evidence of staining; cracked or corroded munitions). No MEC was identified, and the MD identified within the MRS did not show any indication of a release; therefore, MC sampling was not conducted.

Exposure pathways are considered incomplete because it has not been established that MC associated with munitions is present at the Target Hill MRS.

SECTION 6
FIGURES



* Human receptors include the following: West Point personnel, site visitors, recreational users (athletes), and contractor personnel.

Figure 6-1
RI Exposure Pathways for Receptors to MEC in the Target Hill MRS

Target_Hill_Figure_6-1.vsd

7. MUNITIONS AND EXPLOSIVES OF CONCERN HAZARD ASSESSMENT AND MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL UPDATE

7.1 MUNITIONS AND EXPLOSIVES OF CONCERN HAZARD ASSESSMENT

The CERCLA process for responding to releases or potential releases of hazardous substances includes the development of site-specific risk assessments appropriate to the requirements of a site. The results of the risk assessments are used to help site managers decide whether a response action is required and to support the risk management decisions that are made through the remedy evaluation, selection, and implementation process.

The CERCLA methodology for human health chemical risk assessment was not designed to address explosive safety hazards at MEC sites. In October 2008, the Technical Working Group for Hazard Assessment, which included representatives from DoD, Department of the Interior, EPA, and others, made available the technical reference document *Interim Munitions and Explosives of Concern Hazard Assessment Methodology* (MEC HA) (EPA, 2008).

No MEC has been observed at the Target Hill MRS during the SI, RI, or on any other occasion; therefore, a MEC HA was not conducted.

7.2 MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL SCORING UPDATE

Results from the RI were used to update the MRSPP scoring. Following the SI, the MRS priority was determined to be a 7. Following the RI, revisions were made to the EHE module as a result of the evidence of no MEC and only MD being recovered at the MRS. Furthermore, the HHE rating was also revised because the RI results indicate there is no known or suspected MC hazard. The revised rating for the Target Hill MRS remains 7, the same as the SI rating. Priority 1 indicates the highest potential hazard and Priority 8 the lowest potential hazard. Under the MRSPP, only MRSs with CWM can be assigned to Priority 1 and no MRS with CWM can be assigned to Priority 8. The MRS falls at the lower end of the ranking system. The revised MRSPP forms are provided in **Appendix H**.

8. CONCLUSIONS AND RECOMMENDATIONS

This section presents a summary of the results and conclusions of the RI activities conducted at the Target Hill MRS located at West Point. The objectives of the RI were to determine the nature and extent of MEC and MC and the potential explosive hazards and risks posed by MEC and MC and to provide data to assist in determining what remedial alternatives, if any, are necessary. As a result of the characterization activities conducted at the Target Hill MRS, the objectives of the RI have been satisfied.

8.1 SUMMARY OF REMEDIAL INVESTIGATION ACTIVITIES

The preliminary CSM for the Target Hill MRS aided in developing data needs and DQOs as documented in the Final Work Plan because of the former use of the MRS as a target area. The data needs and DQOs for the Target Hill MRS focused on characterizing the nature and extent of MEC and MC that may be present in the MRS because of the former use of the MRS as a target area. The characterization activities to support the data needs and DQOs were used to gather information to evaluate whether there are unacceptable potential risks to human health and the environment associated with MEC and to determine whether further action is required under the CERCLA process.

VSP was used to develop a statistically comprehensive characterization strategy. DGM surveys were performed at the MRS between April and June 2011 to assess the nature and extent of MEC in the MRS. DGM transect surveys totaling 1.13 miles or 1.37 acres were performed based on the VSP results. The transect surveys were used to determine the location of 0.92 acre of DGM grids. The DGM survey coverage totaled 2.29 acres in the Target Hill MRS. A total of 205 anomalies were selected from the DGM grid data and intrusively investigated.

Of the 205 anomalies investigated, a total of three MD items were recovered. The MD items included one 6.5-inch cannonball (solid shot), one 8-inch mortar (empty), and one 15-inch cannonball (Rodman test round, solid shot). The remaining 202 anomalies were identified as non-MD-related material, consisting of four seeds that had been placed by the project team, 188 documented as cultural debris (scrap metal, utilities), and 10 documented as no contacts. The MD was recovered between 0 inches and 15 inches bgs. The remaining non-MD-related material

was recovered between 0 inches and 36 inches bgs. No evidence of potential disposal areas was observed during these investigations.

In accordance with the Final RI Work Plan, MC sampling would be conducted in the Target Hill MRS only if a MEC release was identified or if visible evidence of an MC release was observed. No MEC was identified within the MRS and there was no evidence of an MC release; therefore, MC sampling was not warranted during the RI characterization.

8.2 REVISED CONCEPTUAL SITE MODEL

A discussion of the preliminary CSM, based on the available data and historical information compiled prior to the RI activities is presented in Section 2.1. The information collected during the RI was used to update the CSM (Section 6). The purpose of the CSM is to identify the complete, potentially complete, or incomplete source-receptor interactions for reasonably anticipated future land use activities at the MRS.

The MRS was documented in the preliminary CSM as a former target area. The Siege Battery and Fort Clinton range fans overlap the Target Hill MRS. The excavation of soil from Target Hill for use as fill material for the construction of the North Athletic Field began in 1944 and was completed the following year. Approximately 60,000 square yards of level ground were added to the area comprising North Athletic Field. It is possible that munitions-related material from Target Hill was transported to the North Athletic Field during construction. Consequently, concentrations of potential munitions-related material, if present at Target Hill, were greatly reduced during the soil excavation.

DGM transects totaling 1.13 miles or 1.37 acres were investigated to ensure a 95% probability of traversing and detecting a MEC target area. DGM grids totaling 0.92 acre were investigated to assess anomaly clusters. No MEC was observed at the Target Hill MRS during the field activities; however, three MD items were identified. Based on the results of the RI field investigations, the use or introduction of munitions within the MRS is confirmed. Because no direct evidence of an explosive hazard exists, the pathways for MEC are considered incomplete; however, there is a low potential for MEC or additional MD to be present in the subsurface.

During the RI data collection, an anomaly density of 128.55 anomalies/acre was calculated using VSP. The MRS is 14 acres; therefore, the total number of potential anomalies is 1,800 anomalies. If 0.5% of the total population of anomalies could be MEC, then it is statistically possible for nine MEC to remain within the MRS (± 1 MEC item).

Based on the DQOs, if evidence of a MEC release had been observed, then MC sampling would have been conducted in the Target Hill MRS. No MEC was observed and only three MD items were recovered during intrusive activities within the MRS; therefore, no MC sampling was warranted. The pathways for human and ecological receptors to contact MC are considered incomplete because it has not been established that MC associated with munitions is present at the Target Hill MRS and thus no potential risk is known to exist in the Target Hill MRS.

8.3 MUNITIONS AND EXPLOSIVES OF CONCERN HAZARD ASSESSMENT

No MEC was observed at the Target Hill MRS during the SI, RI, or on any other occasion; therefore, a MEC HA was not conducted.

8.4 UNCERTAINTIES

The primary uncertainty for the RI is related to the statistical calculations performed using VSP. The transect spacing was planned using VSP to ensure a 95% probability of traversing and detecting a potential MEC target area in the Target Hill MRS. Based on the VSP computations, DGM surveys were performed across the southern half of the MRS at a 52-foot spacing to achieve the statistical requirements for survey coverage.

DGM grids were placed at anomaly cluster areas identified during the transect surveys for subsequent survey and anomaly investigation. A DGM grid was placed at each anomaly cluster to determine the source of the anomalies and to reduce the characterization uncertainty following the RI. Three MD items were recovered during the intrusive investigations, confirming that only low concentrations of MEC and MD could be present within the Target Hill MRS. By assessing each anomaly cluster with DGM surveys and intrusive investigations, it was determined that high concentrations of MEC and MD associated with a target area were not detected in the MRS.

Additional uncertainty for the RI is related to the number of anomalies chosen for intrusive investigation and the proportion of anomalies that are MEC. A total of 362 anomalies were

detected within the grids on the southern end of the MRS. The dig list was finalized using an estimation approach. The approach used a hypergeometric estimation process to determine the necessary number of anomalies to be intrusively investigated. The sample size of the total population of anomalies detected during the RI was determined using an estimation formula. The sample size is the number of anomalies requiring investigation to be 95% confident that the sample population can adequately estimate the proportion of MEC to non-MEC across the total population of anomalies (with an acceptable margin of error of ±1%). Based on historical information and observations during the RI, the proportion of MEC to non-MEC was estimated to be 0.5% to 99.5%, respectively. The total number of anomalies requiring investigation using these values is 126 anomalies. The actual number of anomalies investigated at Target Hill during the RI was 205 anomalies. Thus there is a 95% confidence that 0.5% of the total population of anomalies is MEC with a margin of error ±1%.

During the RI data collection, an anomaly density of 128.55 anomalies/acre was calculated using VSP. The MRS is 14 acres; therefore, the total number of potential anomalies is 1,800 anomalies. If 0.5% of the total population of anomalies could be MEC, then it is statistically possible for nine MEC to remain within the MRS (± 1 MEC item).

In addition, characterization activities could not be performed on the Rugby Field located in the northern portion of the Target Hill MRS. Significant development as a result of the Rugby Field construction has occurred in the northern portion of the MRS. No MEC or MD was reported during the construction; however, MEC and MD could be present in the subsurface.

The original Target Hill was removed for use as fill material during the construction of the North Athletic Field. It is likely that the majority of MEC and MD from former weapons and munitions training would have been removed during construction. Three MD items were recovered during the RI, which supports this observation. Although no characterization work was performed in the northern portion of the Target Hill MRS because of the Rugby Field, no MEC or MD were reported during construction of the field. The northern portion of the MRS has undergone more development than the southern portion of the MRS. Based on the RI results and the amount of development that has occurred at the Target Hill MRS, concentrations of MEC and MD, if formerly present, would have been removed during construction and would no longer be present in the MRS.

The DGM survey coverage and the intrusive investigation approach for the RI were designed using statistical tools. The field work results suggest it is statistically possible that MEC may be present at the MRS although confirmed discoveries have not been made to date. Even though MD was recovered during the intrusive investigations, the items were solid and/or inert and posed no explosives safety hazard. Because the DQOs were achieved and no explosives safety hazards were identified during the RI field activities, the exposure pathways to MEC are considered incomplete.

8.5 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the RI field activities, the following conclusions were determined for the Target Hill MRS:

- A target area was historically present at the location of the Target Hill MRS; however, the target area has since been removed and the site significantly reworked.
- MD was recovered during intrusive investigations, but the items were solid and/or inert, and posed no explosive safety hazards.
- No MEC was found during RI field activities, and an explosive safety hazard is not anticipated to exist at the MRS.
- MC sampling was not warranted during the RI field activities because no MEC was found at the MRS.

It has been determined that the DQOs for the Target Hill MRS have been satisfied and the nature and extent of MEC and MC have been adequately characterized. An FS is recommended for the Target Hill MRS (WSTPT-017-R-01) to assess possible response action alternatives because MD has been found and some statistical uncertainty remains for MEC.

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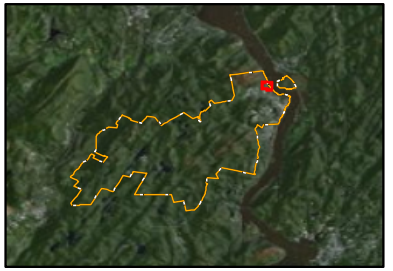
APPENDIX A
DIGITAL GEOPHYSICAL MAPPING (DGM) SURVEY COVERAGE MAP

Legend

- Target Hill MRS - 14 Acres
- DGM Survey Area
- DGM Transects

Imagery Source: ESRI, Bing Mapping Service. 2011



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Feet

Appendix: A

Target Hill MRS
(WSTPT-017-R-01)
Dig Results
U.S. Army Garrison West Point

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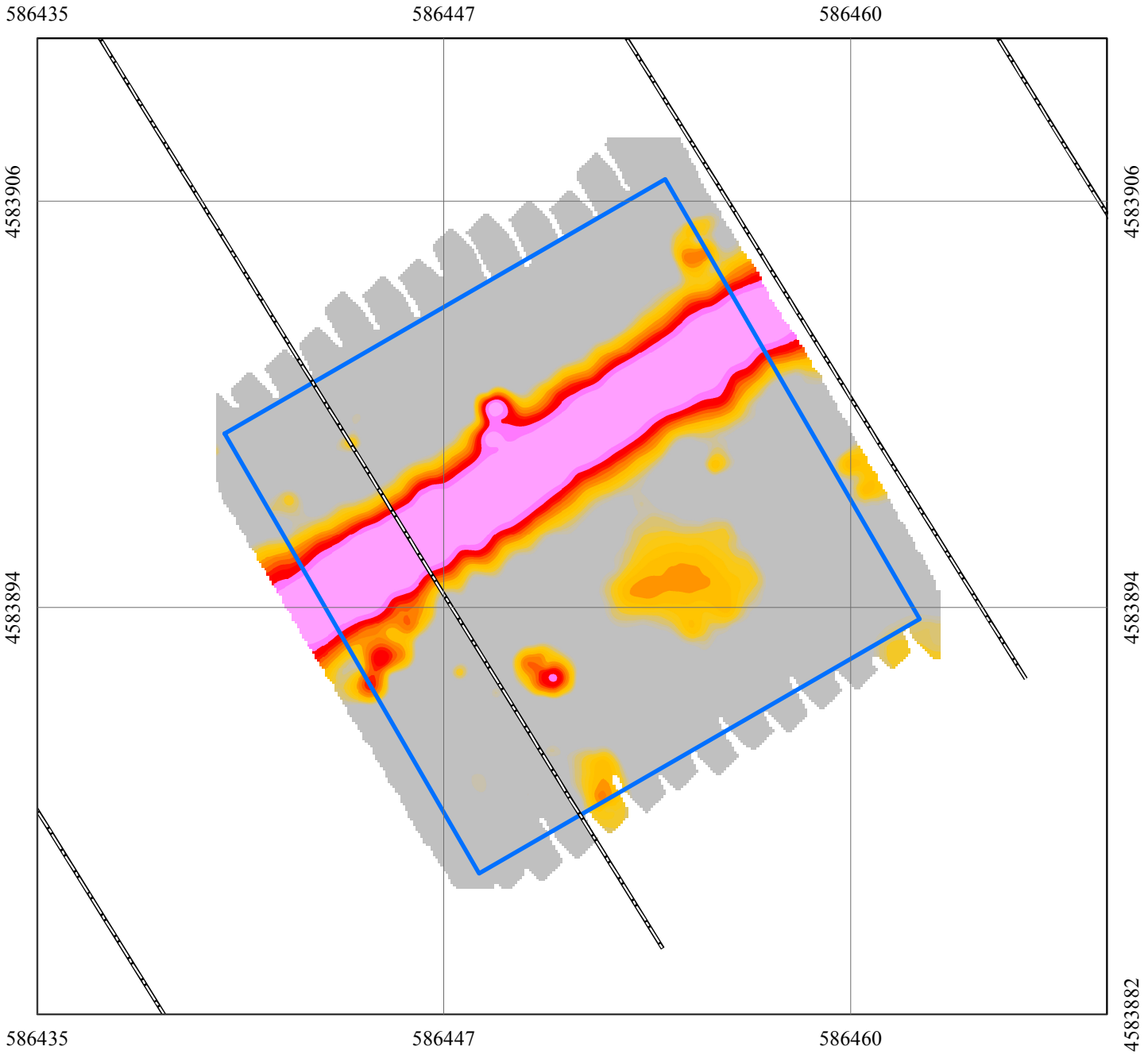

Legend

DGM Survey Area

DGM Transects

CH2 Response (mV)

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0 15

Feet

Appendix A-1
DGM Survey Area: TH-01
Target Hill MRS
(WSTPT-017-R-01)
DGM Survey Coverage Map
U.S. Army Garrison West Point

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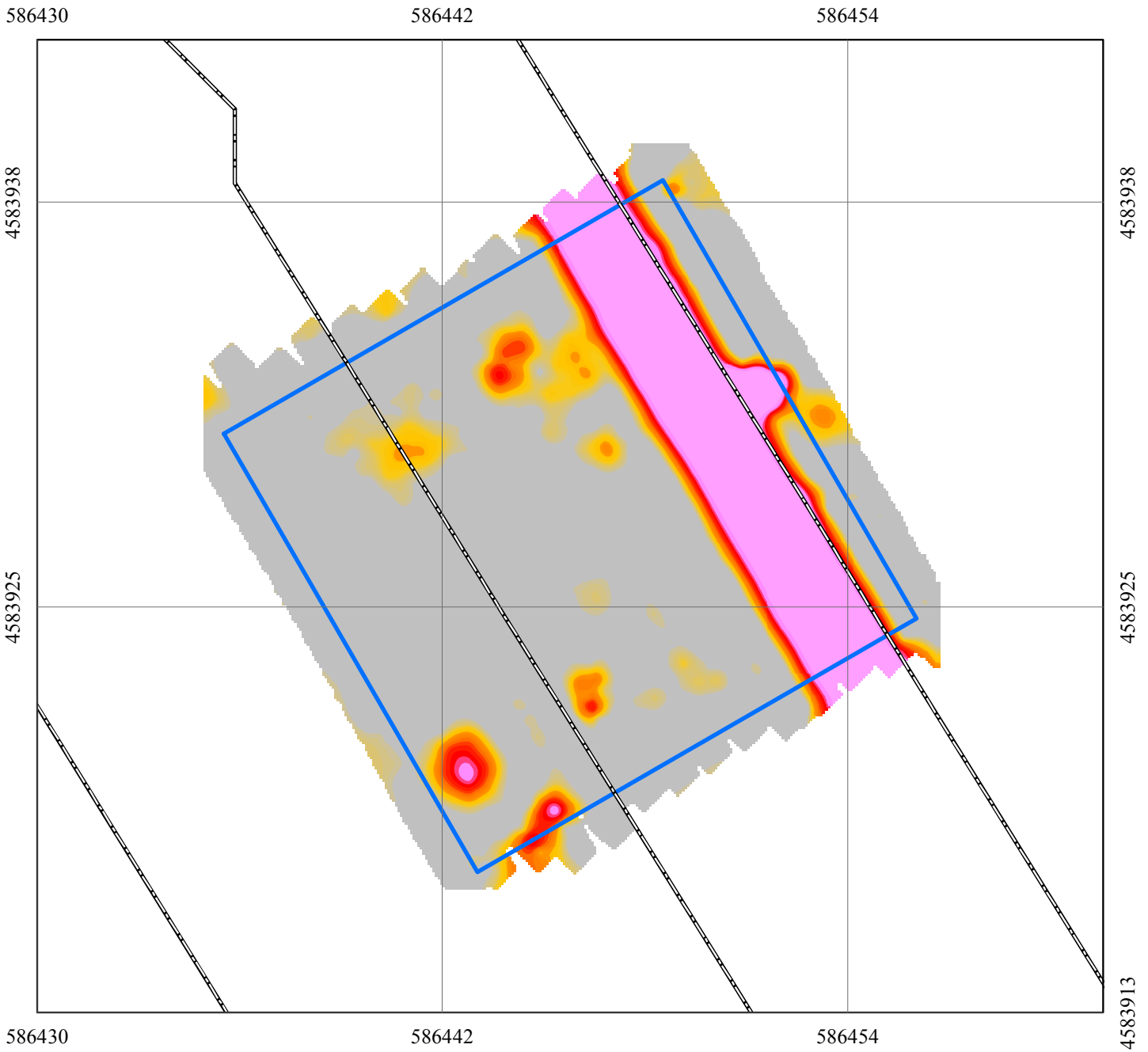

Legend

DGM Survey Area

DGM Transects

CH2 Response (mV)

0 2 4 6 7 8 11 17 26 57

WESTON SOLUTIONS

N

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Appendix A-2
DGM Survey Area: TH-02
Target Hill MRS
(WSTPT-017-R-01)
DGM Survey Coverage Map
U.S. Army Garrison West Point

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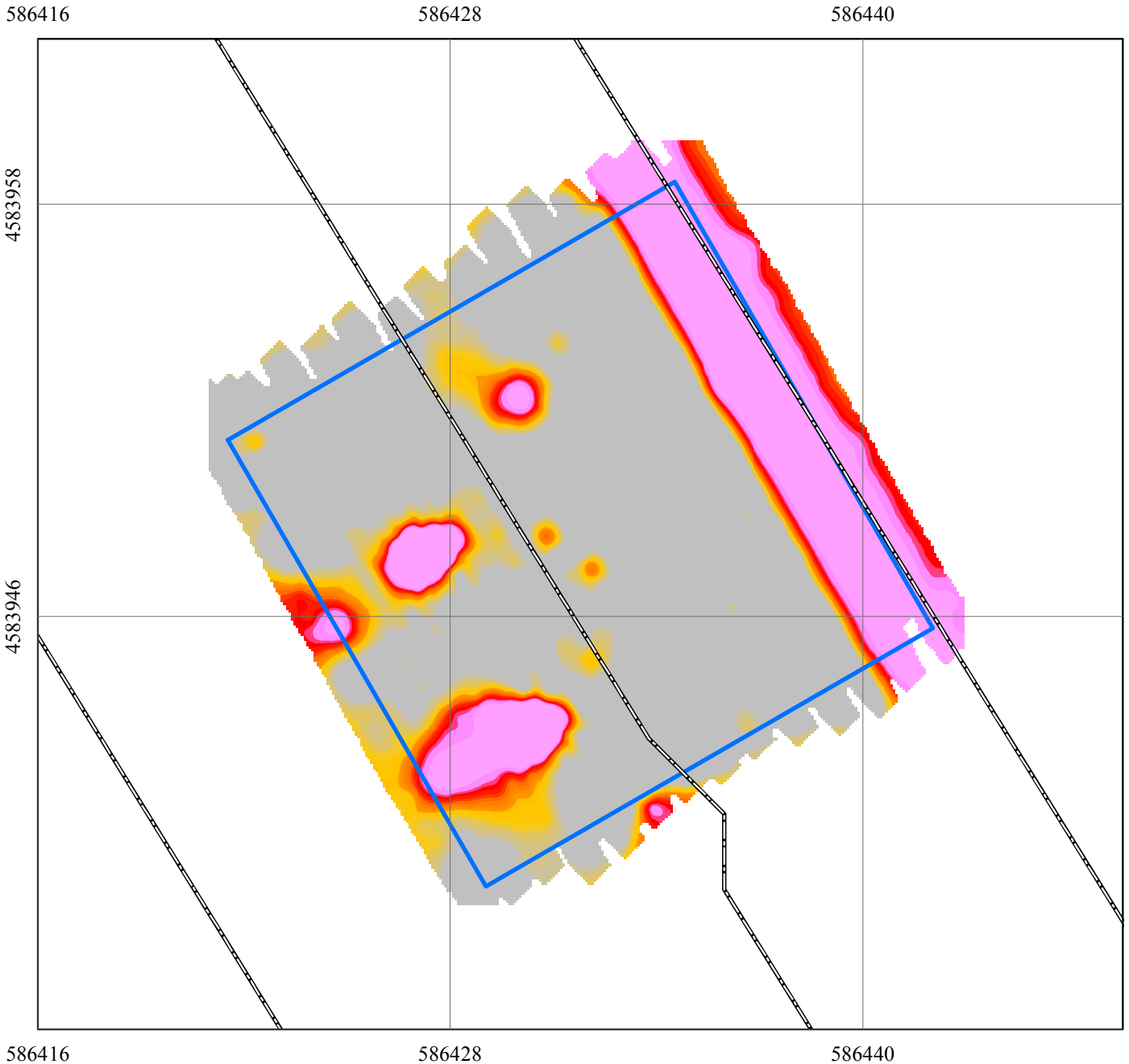

Legend

DGM Survey Area

DGM Transects

CH2 Response (mV)

0 2 4 6 7 8 11 17 26 57

0 15

Feet

Appendix A-3
DGM Survey Area: TH-03
Target Hill MRS
(WSTPT-017-R-01)
DGM Survey Coverage Map
U.S. Army Garrison West Point

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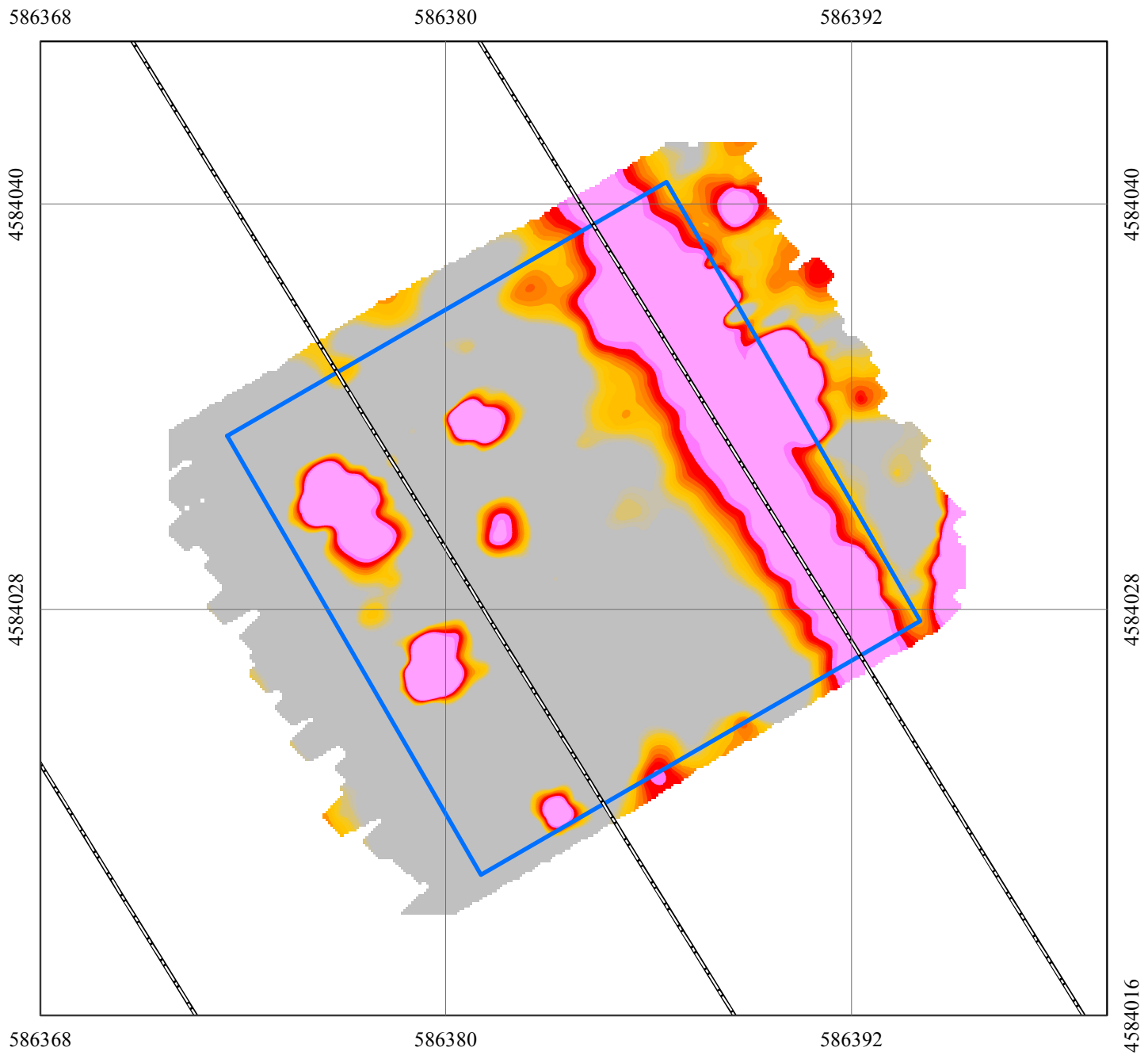

Legend

DGM Survey Area

DGM Transects

CH2 Response (mV)

0 2 4 6 7 8 11 17 26 57

WESTON SOLUTIONS

0 15

Feet

Appendix A-4
DGM Survey Area: TH-04
Target Hill MRS
(WSTPT-017-R-01)
DGM Survey Coverage Map
U.S. Army Garrison West Point

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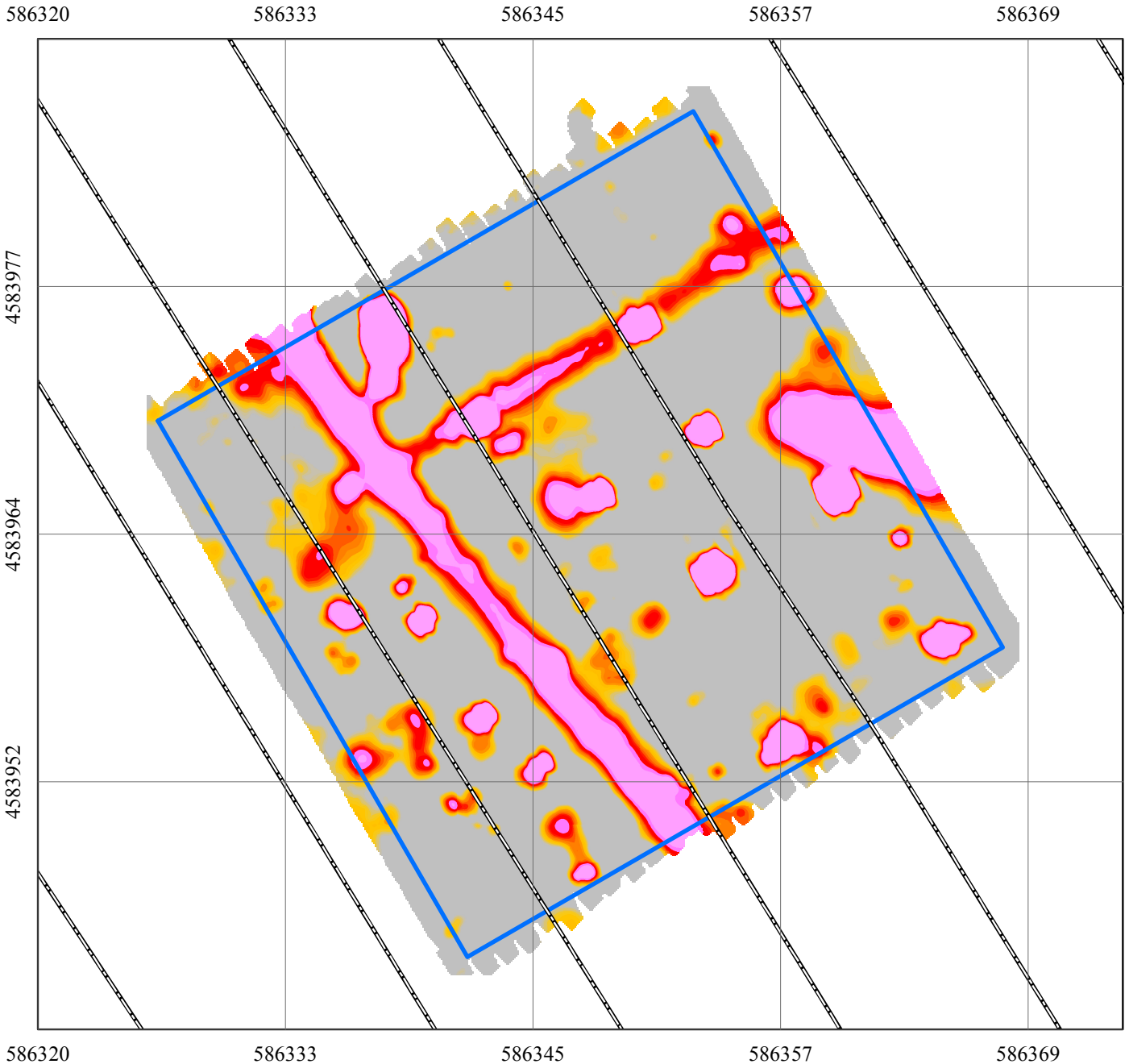

Legend

DGM Survey Area

DGM Transects

CH2 Response (mV)

0 2 4 6 7 8 11 17 26 57

WESTON SOLUTIONS

0 25

Feet

Appendix A-5
DGM Survey Area: TH-05
Target Hill MRS
(WSTPT-017-R-01)
DGM Survey Coverage Map
U.S. Army Garrison West Point

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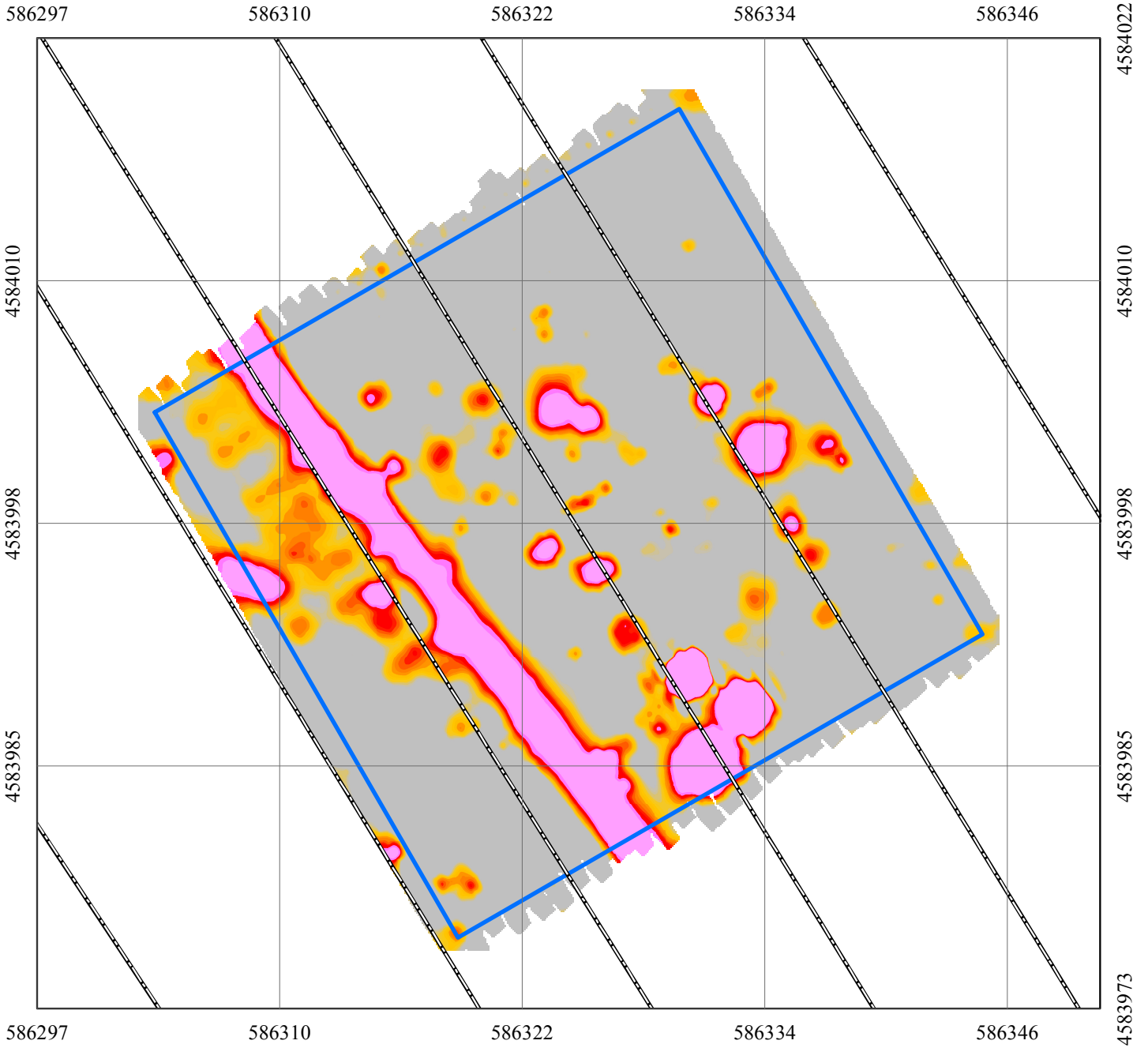


Legend

DGM Survey Area

DGM Transects

CH2 Response (mV)

0 2 4 6 7 8 11 17 26 57

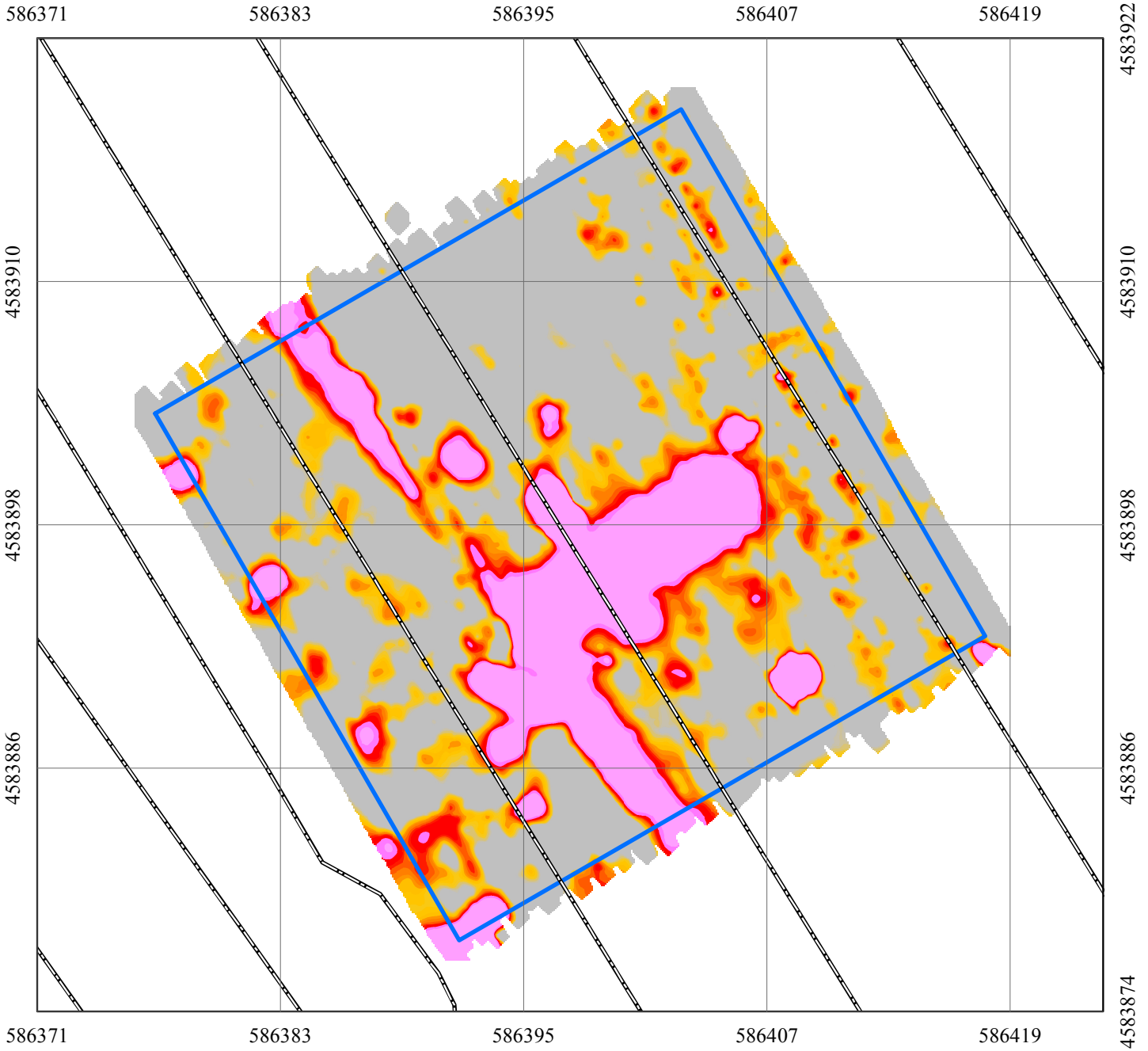
WESTON SOLUTIONS

0 25

Feet

Appendix A-6
DGM Survey Area: TH-06
Target Hill MRS
(WSTPT-017-R-01)
DGM Survey Coverage Map
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\RI\TH_DGM_Survey_Grids_8.5X11.mxd, 3/12/2013 11:41:22 AM, ricksc



Legend

DGM Survey Area

DGM Transects

CH2 Response (mV)

0 2 4 6 7 8 11 17 26 57

WESTON SOLUTIONS

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0 25

Feet

Appendix A-7
DGM Survey Area: TH-07
Target Hill MRS
(WSTPT-017-R-01)
DGM Survey Coverage Map
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\RI\TH_DGM_Survey_Grids_8.5X11.mxd, 3/12/2013 11:41:22 AM, ricksc

APPENDIX B
DGM DATA

Appendix B is provided separately on the CD.

APPENDIX C
PHOTOGRAPH LOG

Photo No. 01	**Date:** 4/28/2011
Description: Geophysical Technician testing RTK GPS at Target Hill MRS.	

Photo No. 02	**Date:** 4/28/2011
Description: Grid layout at TH-01 in Target Hill MRS.	

Photo No. 03	**Date:** 4/29/2011
Description: Geophysical Technician setting up a grid at Target Hill MRS.	

Photo No. 04	**Date:** 4/29/2011
Description: Geophysical Technician collecting DGM data at Target Hill MRS.	

Photo No. 05	**Date:** 4/29/2011	
Description: Geophysical Technician collecting DGM data at Target Hill MRS.		

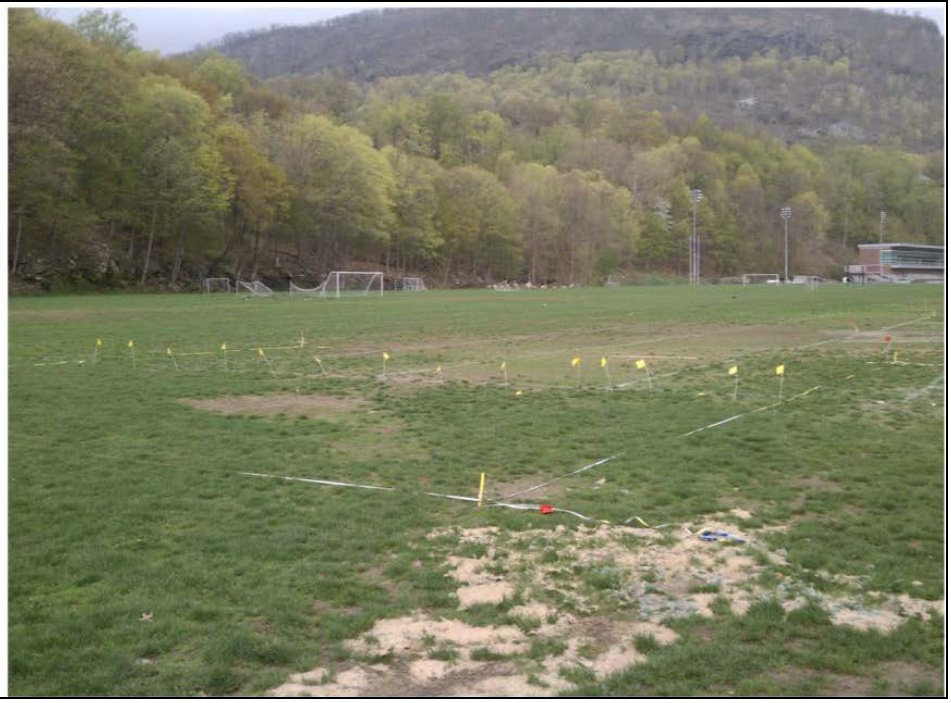
Photo No. 06	**Date:** 4/29/2011	
Description: Grid setup at grid TH-01 at Target Hill MRS.		

Photo No. 07	**Date:** 6/20/2011	
Description: 15” cannonball (training shot) recovered from Target Hill MRS.		

APPENDIX D
DGM RESULTS, TARGET LOCATIONS, AND DIG RESULTS

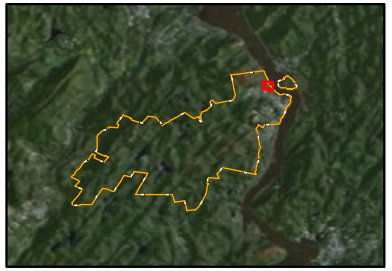
Legend

- Target Hill MRS - 14 Acres
- DGM Survey Area
- DGM Transects
- Target Not Investigated
- Target Investigated as per Estimation process
- 15" Rodman Test Round (Cannonball - solid shot)
- 6.5" Cannonball (solid shot)
- 8" Mortar

CH2 Response (mV)

0 2 4 6 7 8 11 17 26 57

Imagery Source: ESRI, Bing Mapping Service. 2011



WESTON SOLUTIONS

N W E S

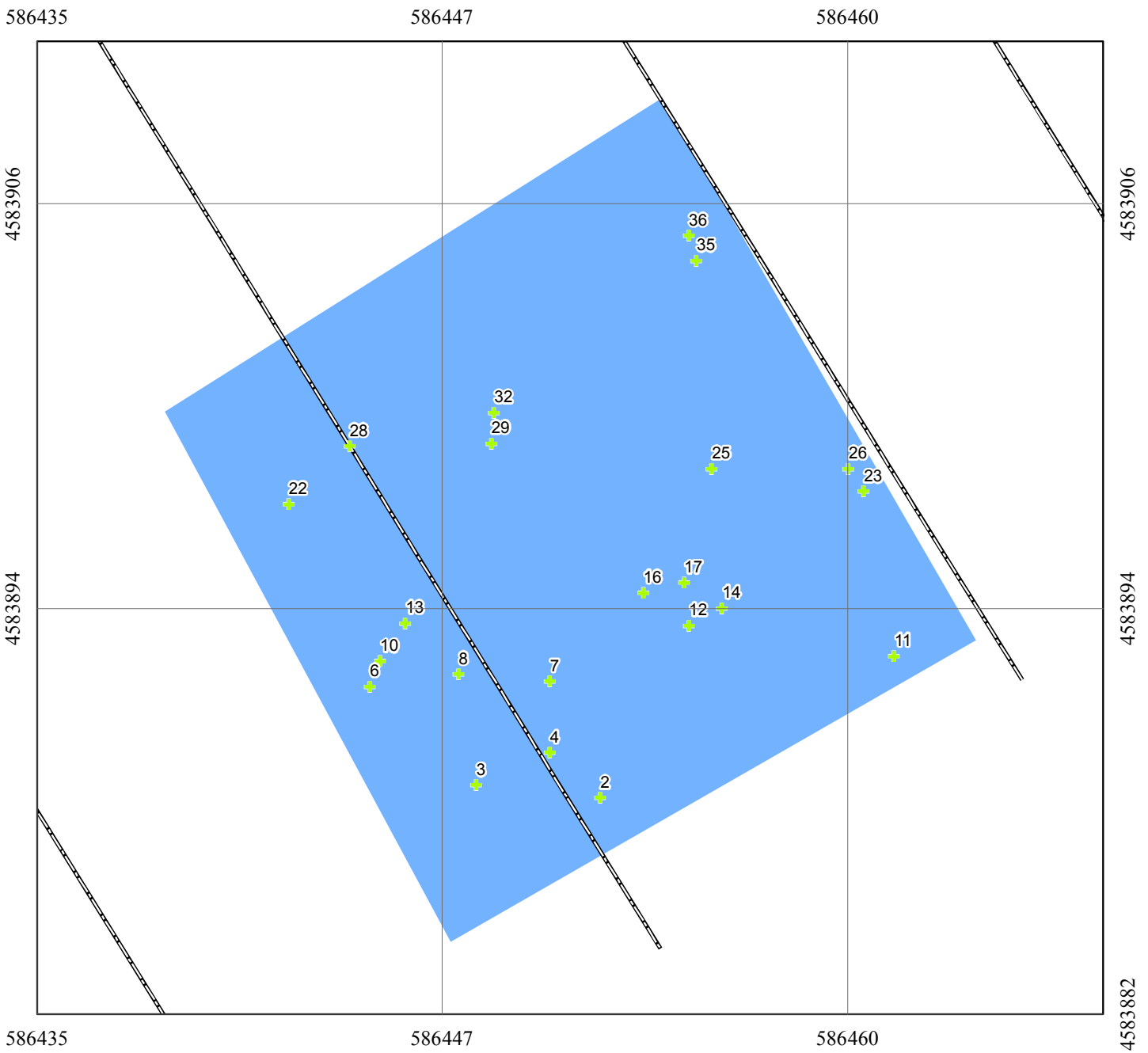
0 275

Feet

Appendix: D

Target Hill MRS
(WSTPT-017-R-01)
Dig Results
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\RI\TH_results_target_locs_letter.mxd, 9/5/2013 10:16:47 AM, ricksc



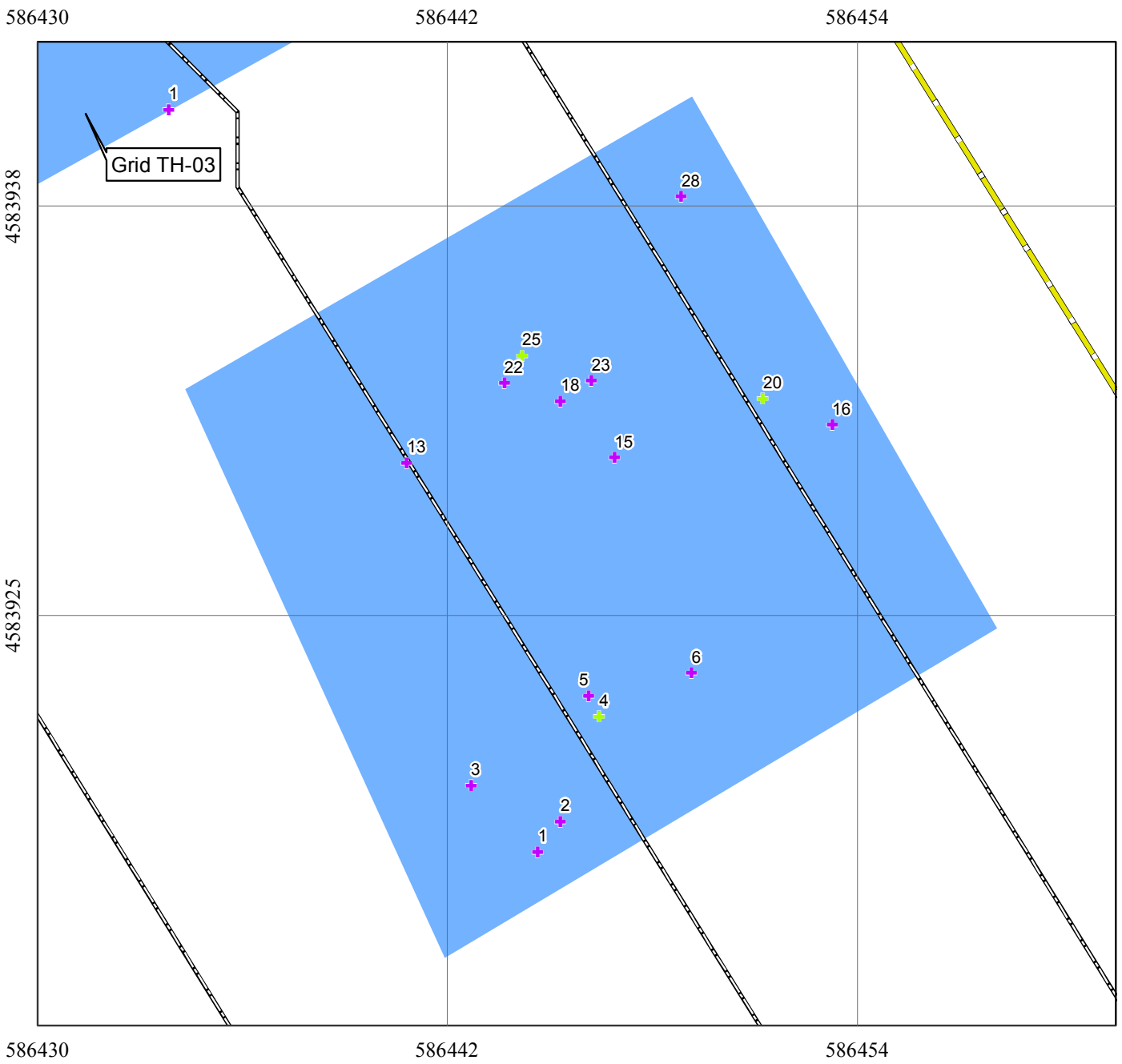
Legend

- Target Hill MRS - 14 Acres
- DGM Survey Area
- DGM Transects
- Target Not Investigated
- Target Investigated as per Estimation process
- 15" Rodman Test Round (Cannonball - solid shot)
- 6.5" Cannonball (solid shot)
- 8" Mortar

0 15
Feet

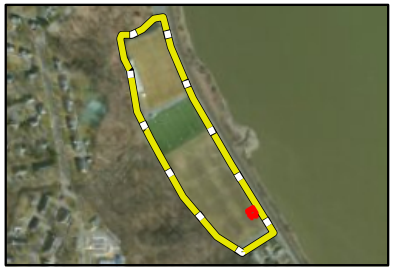
Appendix: D-1
DGM Survey Area: TH-01
Target Hill MRS
(WSTPT-017-R-01)
Dig Results
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\RI\TH_dig_results_8.5X11.mxd, 9/5/2013 10:07:25 AM, ricksc



Legend

- Target Hill MRS - 14 Acres
- DGM Survey Area
- DGM Transects
- Target Not Investigated
- Target Investigated as per Estimation process
- 15" Rodman Test Round (Cannonball - solid shot)
- 6.5" Cannonball (solid shot)
- 8" Mortar



0 15
Feet

Appendix: D-2
DGM Survey Area: TH-02
Target Hill MRS
(WSTPT-017-R-01)
Dig Results
U.S. Army Garrison West Point

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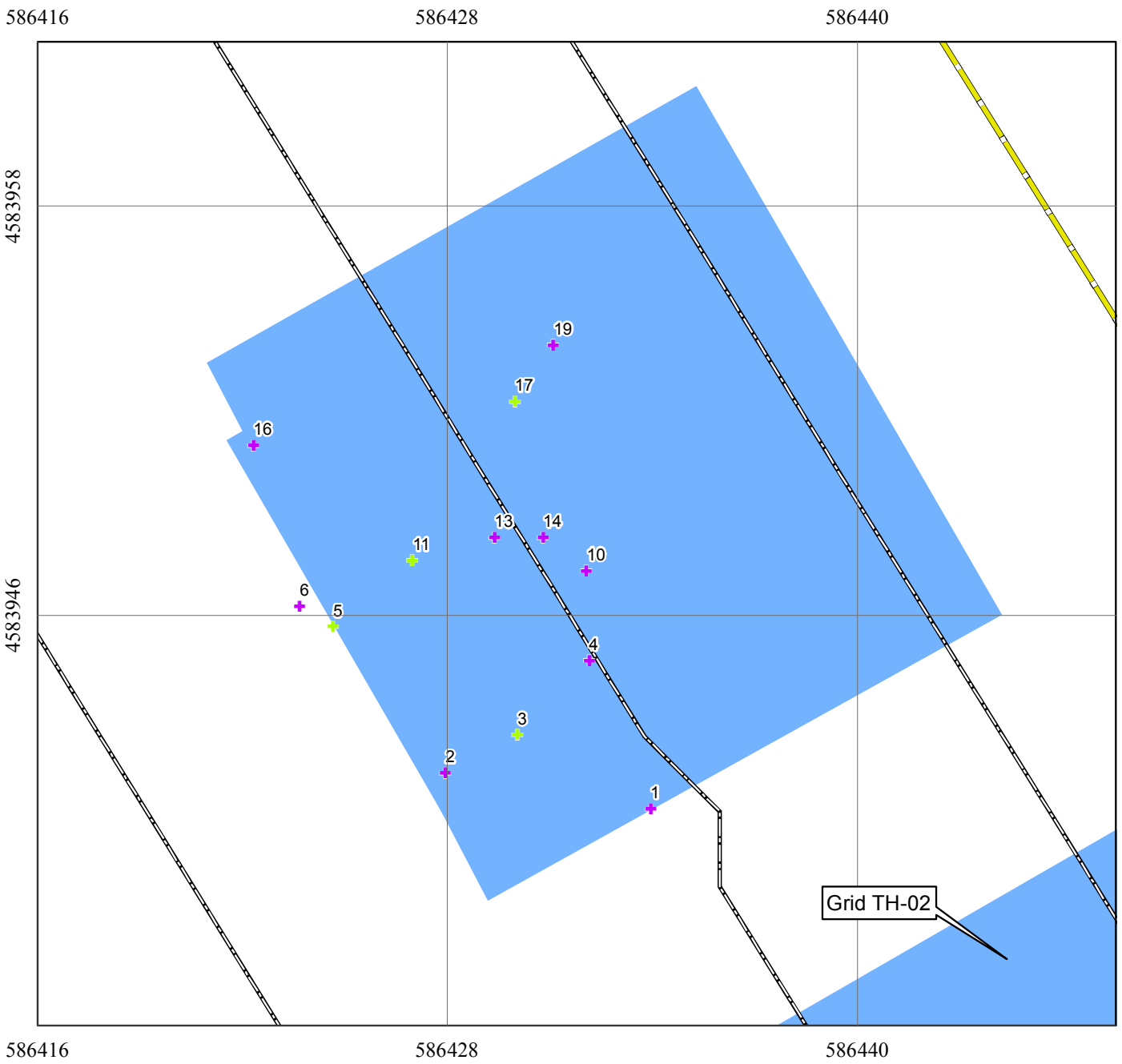


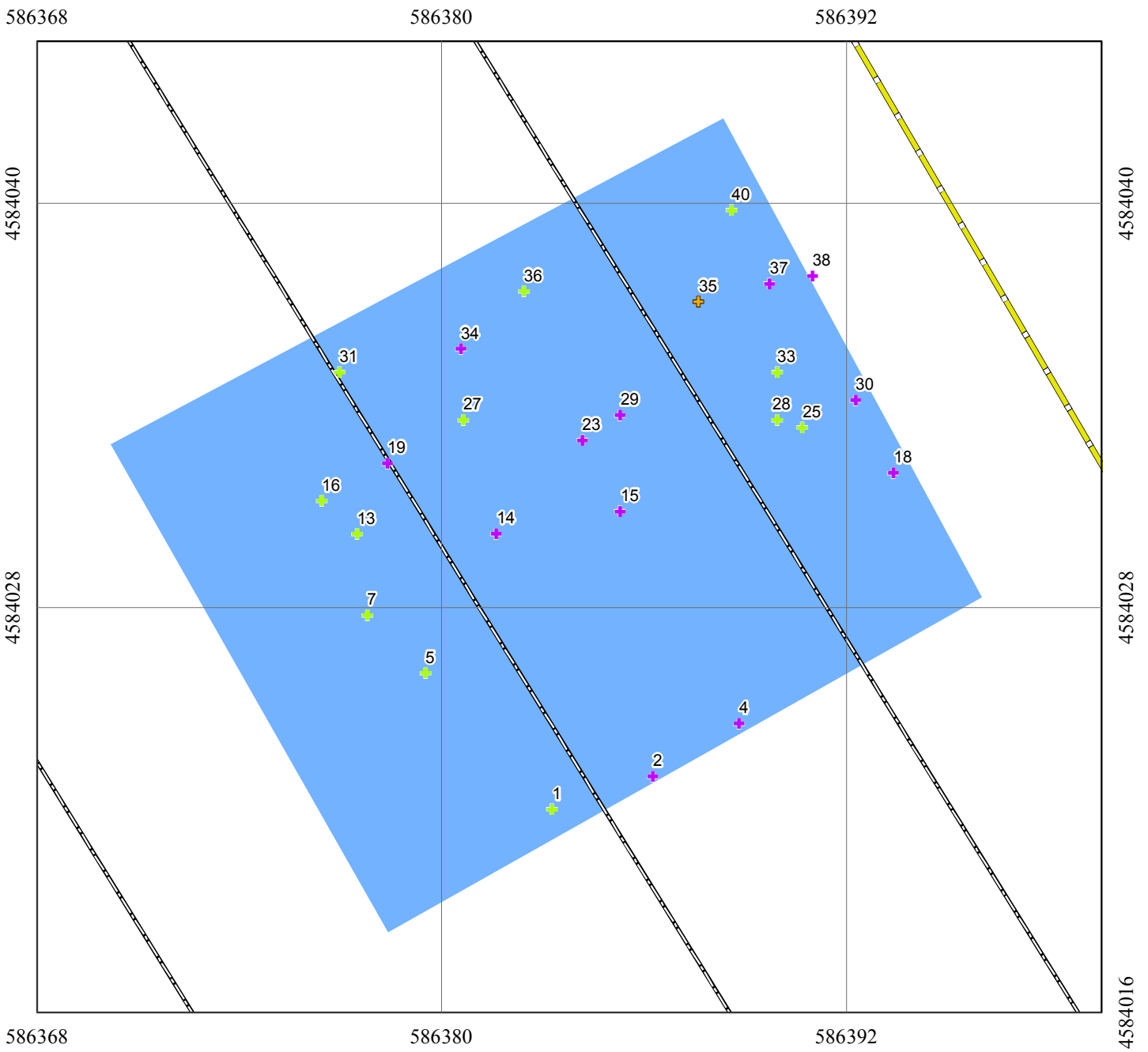
Legend

- Target Hill MRS - 14 Acres
- DGM Survey Area
- DGM Transects
- Target Not Investigated
- Target Investigated as per Estimation process
- 15" Rodman Test Round (Cannonball - solid shot)
- 6.5" Cannonball (solid shot)
- 8" Mortar

0 15
Feet

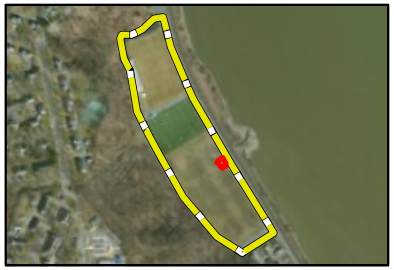
Appendix: D-3
DGM Survey Area: TH-03
Target Hill MRS
(WSTPT-017-R-01)
Dig Results
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\RI\TH_dig_results_8.5X11.mxd, 9/5/2013 10:07:25 AM, ricksc



Legend

- Target Hill MRS - 14 Acres
- DGM Survey Area
- DGM Transects
- Target Not Investigated
- Target Investigated as per Estimation process
- 15" Rodman Test Round (Cannonball - solid shot)
- 6.5" Cannonball (solid shot)
- 8" Mortar



WESTON SOLUTIONS

N
W E
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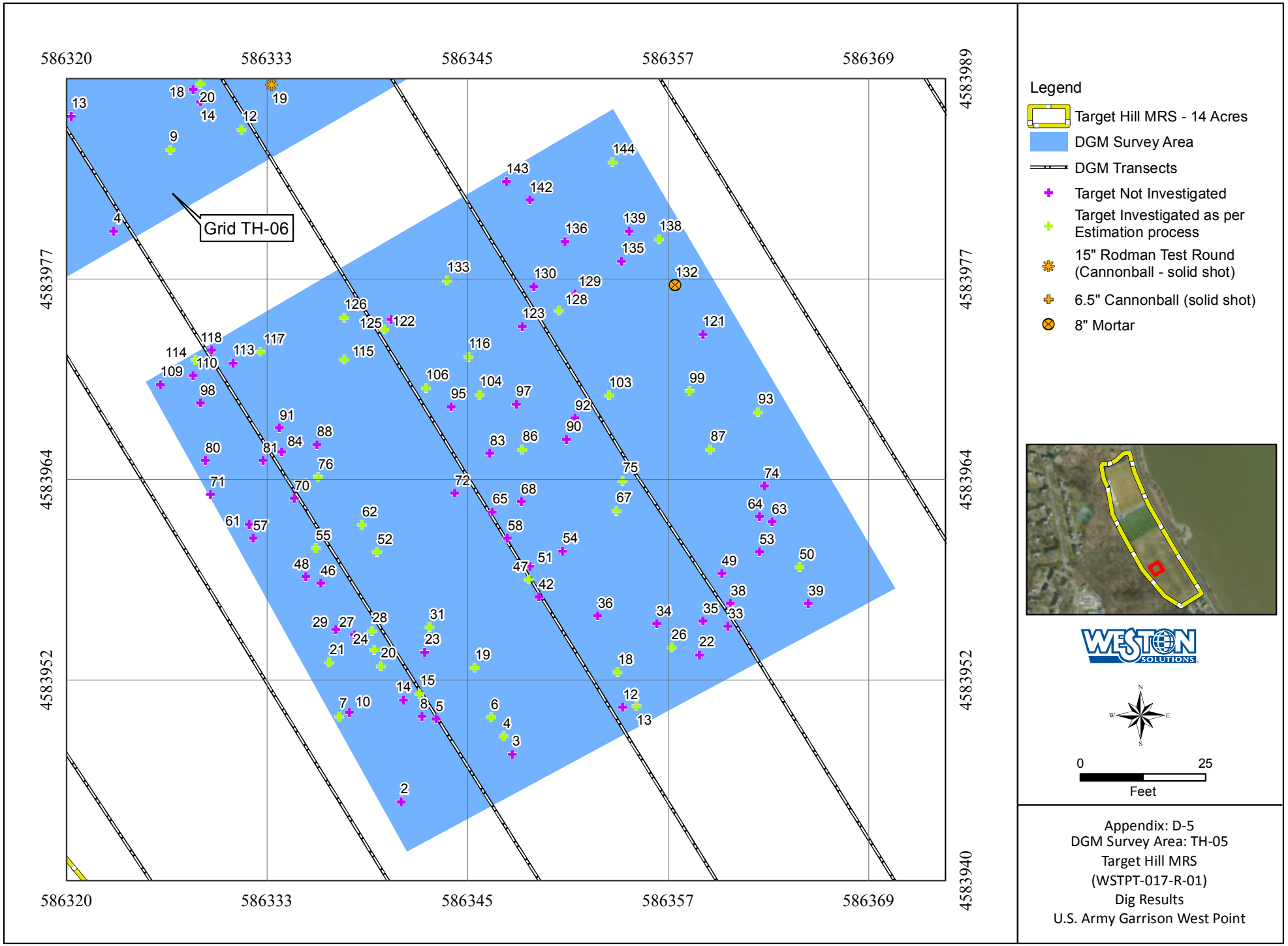
0 15
Feet

Appendix: D-4
DGM Survey Area: TH-04
Target Hill MRS
(WSTPT-017-R-01)
Dig Results
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\RI\TH_dig_results_8.5X11.mxd, 9/5/2013 10:07:25 AM, ricksc



Appendix: D-5
DGM Survey Area: TH-05
Target Hill MRS
(WSTPT-017-R-01)
Dig Results
U.S. Army Garrison West Point

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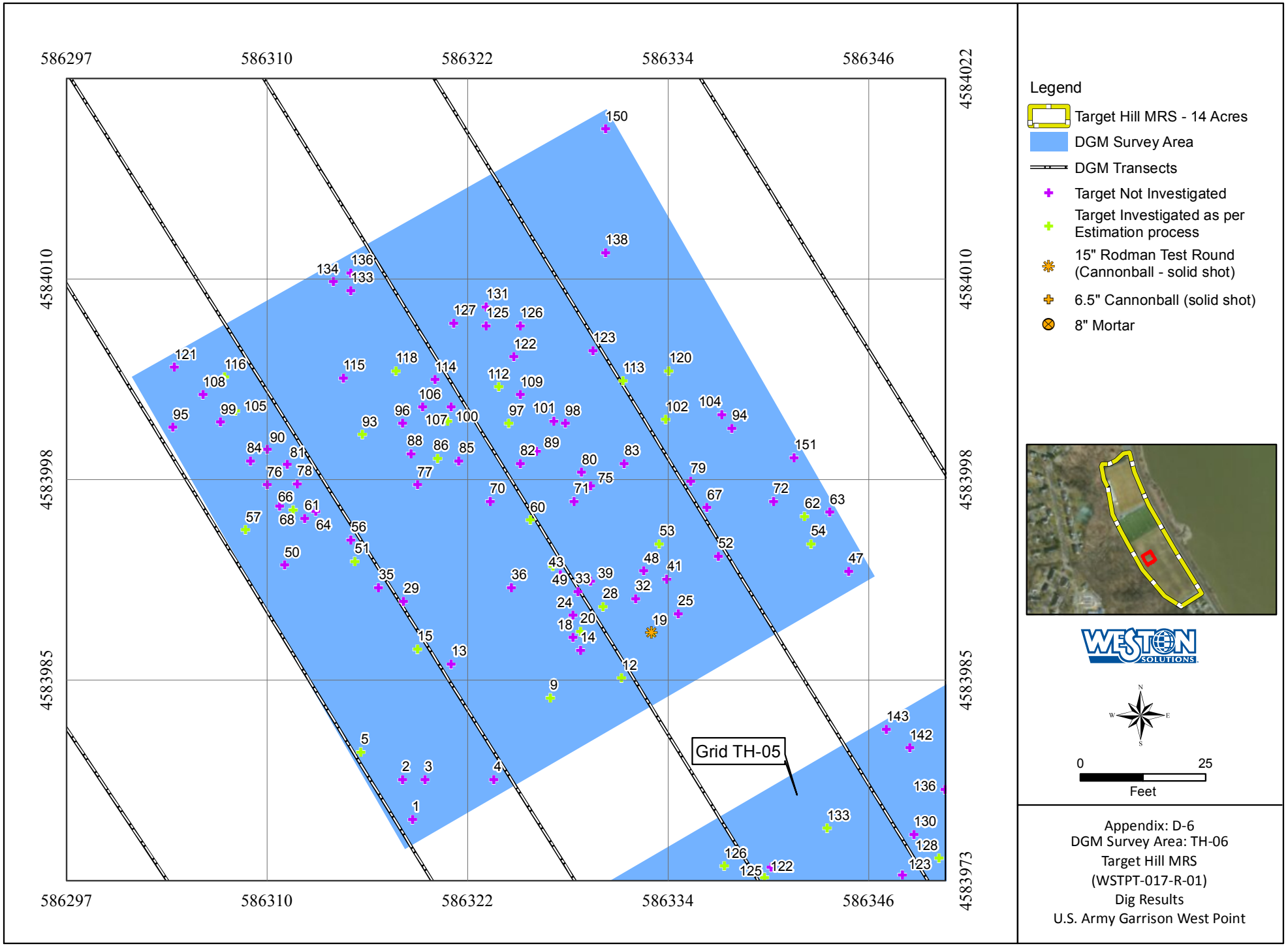

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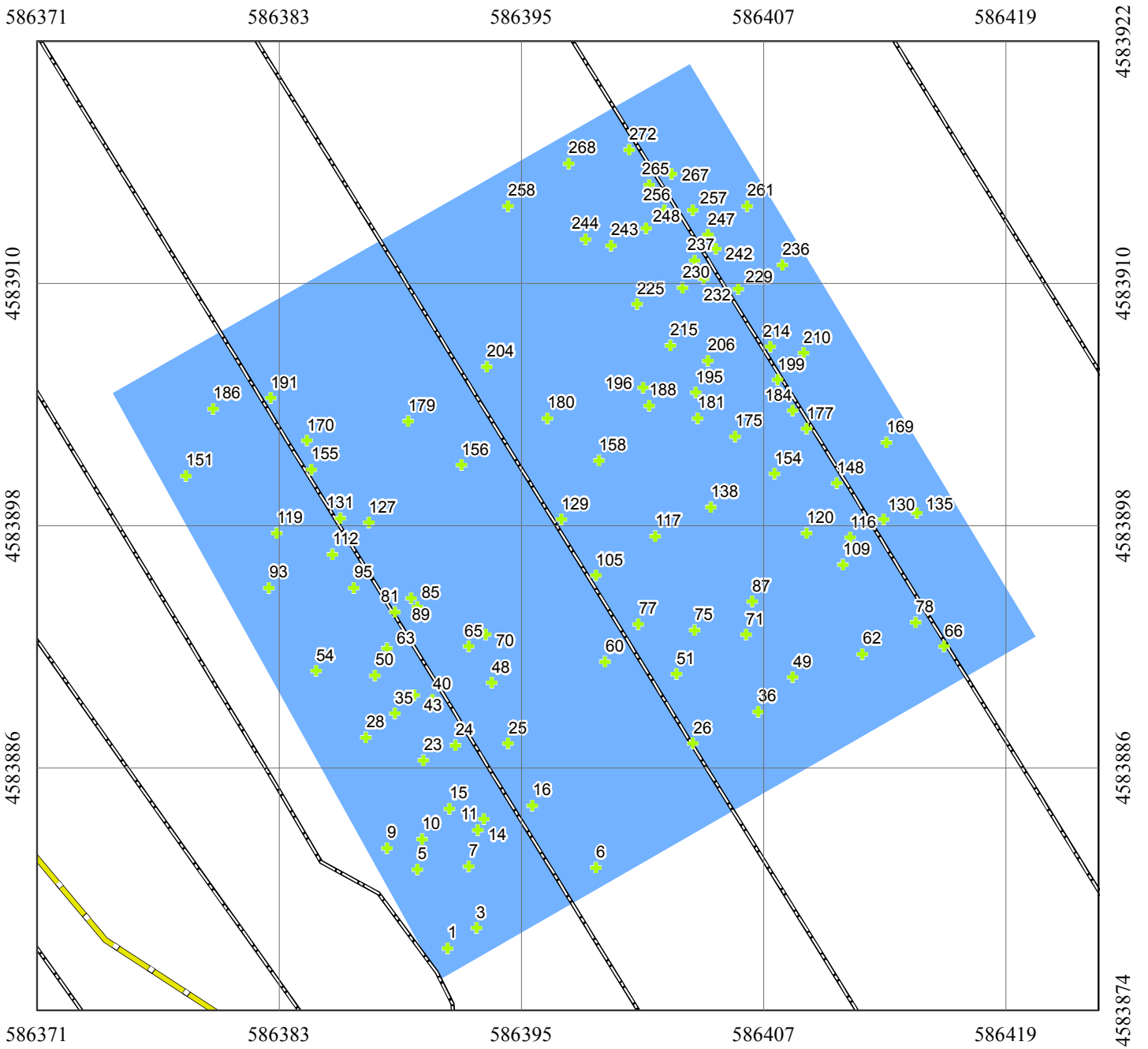


Legend

- Target Hill MRS - 14 Acres
- DGM Survey Area
- DGM Transects
- Target Not Investigated
- Target Investigated as per Estimation process
- 15" Rodman Test Round (Cannonball - solid shot)
- 6.5" Cannonball (solid shot)
- 8" Mortar

WESTON SOLUTIONS

0 25
Feet

Appendix: D-7
DGM Survey Area: TH-07
Target Hill MRS
(WSTPT-017-R-01)
Dig Results
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\RI\TH_dig_results_8.5X11.mxd, 9/5/2013 10:07:25 AM, ricksc

APPENDIX E
DIG LIST

Project Name: West Point
Project Location: West Point
Date: 6/17/2011
Coordinate System: UTM
Survey Area ID: TH-01

Geophysical Contractor: WESTON
Project Geophysicist: Ryan Steigerwalt
Site Geophysicist: Brian Junck
USACE Geophysicist: Tom Colozza

		DGM Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item (in)	Dig Date	Team Leader Initials	Final Disposition
Target Hill	TH-01-2	1924052.00	15038973.00	CH2	18.15	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1924052.00	15038972.75	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-3	1924039.75	15038974.25	CH2	6.39	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1924039.75	15038974.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-4	1924047.00	15038977.50	CH2	6.74	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1924047.00	15038977.67	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-6	1924029.25	15038984.00	CH2	27.77	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	1	1924029.33	15038984.00	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-7	1924047.00	15038984.50	CH2	37.14	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1924047.00	15038985.00	6	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-8	1924038.00	15038985.25	CH2	9.49	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1924038.00	15038985.67	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-10	1924030.25	15038986.50	CH2	33.06	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1924030.25	15038987.00	6	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-11	1924081.00	15038987.00	CH2	9.35	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1924081.00	15038987.17	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-12	1924060.75	15038990.00	CH2	12.77	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	4	1924060.42	15038990.00	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-13	1924032.75	15038990.25	CH2	20.96	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	4	1924032.75	15038990.58	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-14	1924064.00	15038991.75	CH2	13.80	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1924064.00	15038992.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-16	1924056.25	15038993.25	CH2	16.08	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	0	1924056.25	15038993.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-17	1924060.25	15038994.25	CH2	16.04	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	0	1924060.25	15038994.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-22	1924021.25	15039002.00	CH2	9.18	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1924021.25	15039002.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-23	1924078.00	15039003.25	CH2	13.94	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	5	1924078.00	15039003.67	6	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-25	1924063.00	15039005.50	CH2	12.16	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1924063.00	15039006.00	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-26	1924076.50	15039005.50	CH2	14.01	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	1	1924076.50	15039005.42	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-28	1924027.25	15039007.75	CH2	11.07	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	3	1924027.25	15039008.00	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-29	1924041.25	15039008.00	CH2	50.36	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.50	7	1924041.25	15039008.58	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-32	1924041.50	15039011.00	CH2	59.44	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	3	1924041.50	15039011.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-35	1924061.50	15039026.00	CH2	18.94	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	0	1924061.50	15039026.00	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-01-36	1924060.75	15039028.50	CH2	12.66	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	4	1924060.75	15039028.83	3	6/17/2011	BA	Transferred to West Point Recycle Center

Project Name: West Point
Project Location: West Point
Date: 6/20/2011
Coordinate System: UTM
Survey Area ID: TH-02

Geophysical Contractor: WESTON
Project Geophysicist: Ryan Steigerwalt
Site Geophysicist: Brian Junck
USACE Geophysicist: Tom Colozza

		DGM Survey					Dig Results										
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item (in)	Dig Date	Team Leader Initials	Final Disposition
Target Hill	TH-02-04	1924033.75	15039085.75	CH2	20.14	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1924033.75	15039086.17	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-02-20	1924049.75	15039116.75	CH2	99.57	4/29/2011	White's XLT	Seed	2" x 8" Pipe		1.00	4	1924049.75	15039117.08	6	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-02-25	1924026.25	15039121.00	CH2	16.64	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1924026.25	15039121.00	3	6/20/2011	BA	Transferred to West Point Recycle Center

Project Name: West Point
Project Location: West Point
Date: 6/20/2011
Coordinate System: UTM
Survey Area ID: TH-03

Geophysical Contractor: WESTON
Project Geophysicist: Ryan Steigerwalt
Site Geophysicist: Brian Junck
USACE Geophysicist: Tom Colozza

		DGM Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item (in)	Dig Date	Team Leader Initials	Final Disposition
Target Hill	TH-03-03	1923978.75	15039152.25	CH2	540.01	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		4.00	1	1923978.75	15039152.33	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-03-05	1923960.75	15039162.75	CH2	42.03	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	5	1923960.75	15039162.33	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-03-11	1923968.50	15039169.25	CH2	483.68	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		6.00	6	1923968.50	15039168.75	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-03-17	1923978.50	15039184.75	CH2	51.32	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	2	1923978.50	15039184.92	3	6/20/2011	BA	Transferred to West Point Recycle Center

Project Name:	West Point	Geophysical Contractor:	WESTON
Project Location:	West Point	Project Geophysicist:	Ryan Steigerwalt
Date:	6/20/2011	Site Geophysicist:	Brian Junck
Coordinate System:	UTM		
Survey Area ID:	TH-04	USACE Geophysicist:	Tom Colozza

		DGM Survey					Dig Results										
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item (in)	Dig Date	Team Leader Initials	Final Disposition
Target Hill	TH-4-01	1923825.50	15039411.75	CH2	112.85	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	3	1923825.25	15039411.75	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-4-05	1923813.00	15039425.25	CH2	543.38	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		3.00	4	1923813.00	15039425.58	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-4-07	1923807.25	15039431.00	CH2	11.54	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923807.25	15039431.42	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-4-13	1923806.25	15039439.00	CH2	84.36	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923806.25	15039439.00	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-4-16	1923802.75	15039442.25	CH2	471.59	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923802.75	15039442.50	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-4-25	1923850.25	15039449.50	CH2	129.73	4/29/2011	White's XLT	Seed	2" x 8" Pipe		1.00	0	1923850.25	15039449.50	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-4-27	1923816.75	15039450.25	CH2	262.78	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	3	1923816.75	15039450.50	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-4-28	1923847.75	15039450.25	CH2	143.14	4/29/2011	White's XLT	Seed	Duplicate Target Pick	Same as TH-4-25	-	-	-	-	-	6/20/2011	BA	-
Target Hill	TH-4-31	1923804.50	15039455.00	CH2	14.36	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923804.50	15039455.42	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-4-33	1923847.75	15039455.00	CH2	607.53	4/29/2011	White's XLT	Cultural Debris	Pipe	Left In Place	-	-	-	-	-	6/20/2011	BA	-
Target Hill	TH-4-35	1923840.00	15039462.00	CH2	1196.33	4/29/2011	White's XLT	Munitions Debris	Cannon Ball, 6.5"	Solid Shot	30.00	0	1923840.00	15039462.00	0	6/20/2011	BA	Transferred to West Point Museum
Target Hill	TH-4-36	1923822.75	15039463.00	CH2	20.74	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/20/2011	BA	-
Target Hill	TH-4-40	1923843.25	15039471.00	CH2	87.75	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923843.50	15039471.00	3	6/20/2011	BA	Transferred to West Point Recycle Center

Project Name: West Point
Project Location: West Point
Date: 6/20/2011
Coordinate System: UTM
Survey Area ID: TH-05

Geophysical Contractor: WESTON
Project Geophysicist: Ryan Steigerwalt
Site Geophysicist: Brian Junck
USACE Geophysicist: Tom Colozza

		DGM Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item (in)	Dig Date	Team Leader Initials	Final Disposition
Target Hill	TH-05-04	1923707.00	15039171.75	CH2	20.40	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923707.25	15039171.75	6	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-06	1923704.50	15039175.50	CH2	43.22	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	5	1923704.50	15039175.92	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-07	1923674.25	15039175.75	CH2	12.91	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923674.25	15039176.08	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-13	1923733.50	15039177.75	CH2	26.42	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	1923733.50	15039177.83	6	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-15	1923690.25	15039180.25	CH2	25.58	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	8	1923690.25	15039180.92	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-18	1923729.75	15039184.50	CH2	26.10	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	10	1923730.58	15039184.50	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-19	1923701.25	15039185.50	CH2	141.08	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	1	1923701.25	15039185.58	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-20	1923682.50	15039185.75	CH2	37.80	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923682.50	15039186.08	15	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-21	1923672.25	15039186.50	CH2	46.14	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/20/2011	BA	-
Target Hill	TH-05-24	1923681.25	15039189.00	CH2	28.98	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923681.25	15039189.33	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-26	1923740.50	15039189.50	CH2	597.90	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		3.00	4	1923740.50	15039189.83	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-28	1923680.75	15039192.75	CH2	40.26	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923680.25	15039192.75	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-31	1923692.25	15039193.50	CH2	228.06	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	1923692.25	15039193.67	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-47	1923712.00	15039203.00	CH2	21.75	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923712.00	15039203.42	15	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-50	1923766.00	15039205.50	CH2	424.80	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	1923766.00	15039206.00	6	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-52	1923681.75	15039208.50	CH2	262.86	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	7	1923682.33	15039208.50	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-55	1923669.50	15039209.25	CH2	106.56	4/29/2011	White's XLT	Seed	2" x 8" Pipe		1.00	2	1923669.50	15039209.42	6	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-62	1923678.75	15039214.00	CH2	57.81	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1923678.75	15039214.17	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-67	1923729.50	15039216.75	CH2	1200.80	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		7.00	2	1923729.50	15039216.92	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-75	1923730.75	15039222.75	CH2	9.33	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923730.75	15039222.75	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-76	1923670.00	15039223.50	CH2	23.77	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923670.00	15039223.92	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-86	1923710.75	15039229.00	CH2	508.98	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	2	1923710.58	15039229.00	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-87	1923748.25	15039229.00	CH2	1410.59	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		7.00	0	1923748.25	15039229.00	0	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-93	1923757.75	15039236.50	CH2	159.87	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	8	1923757.75	15039237.17	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-99	1923744.11	15039240.63	CH2	137.33	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	2	1923744.11	15039240.80	0	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-103	1923728.00	15039239.75	CH2	601.07	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	4	1923728.00	15039240.08	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-104	1923702.25	15039240.00	CH2	17.19	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1923702.42	15039240.00	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-106	1923691.50	15039241.25	CH2	424.62	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	4	1923691.50	15039241.58	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-114	1923645.50	15039246.75	CH2	21.22	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1923645.50	15039246.92	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-115	1923675.25	15039247.00	CH2	131.08	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	0	1923675.25	15039247.00	18	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-116	1923700.00	15039247.50	CH2	47.56	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	10	1923700.00	15039248.33	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-117	1923658.50	15039248.50	CH2	39.27	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923658.50	15039248.83	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-122	1923683.25	15039253.00	CH2	9.93	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923683.25	15039252.58	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-126	1923675.25	15039255.25	CH2	509.68	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/20/2011	BA	-
Target Hill	TH-05-128	1923718.00	15039256.75	CH2	502.94	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	6	1923718.00	15039257.25	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-132	1923741.25	15039261.75	CH2	117.33	4/29/2011	White's XLT	Munitions Debris	Mortar, 8"		49.00	0	1923741.25	15039261.75	15	6/20/2011	BA	Transferred to West Point Museum
Target Hill	TH-05-133	1923695.75	15039262.75	CH2	12.07	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	10	1923695.75	15039263.58	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-138	1923738.00	15039271.00	CH2	36.32	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923738.00	15039271.00	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-05-144	1923728.75	15039286.25	CH2	32.28	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	1923728.75	15039286.17	3	6/20/2011	BA	Transferred to West Point Recycle Center

Project Name: West Point
Project Location: West Point
Date: 6/20/2011
Coordinate System: UTM
Survey Area ID: TH-06

Geophysical Contractor: WESTON
Project Geophysicist: Ryan Steigerwalt
Site Geophysicist: Brian Junck
USACE Geophysicist: Tom Colozza

		DGM Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item (in)	Dig Date	Team Leader Initials	Final Disposition
Target Hill	TH-06-05	1923602.75	15039278.00	CH2	64.95	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923602.75	15039278.33	0	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-09	1923640.50	15039288.75	CH2	59.99	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	1	1923640.50	15039288.83	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-12	1923654.75	15039292.75	CH2	1106.98	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	2	1923654.58	15039292.75	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-15	1923614.00	15039298.50	CH2	17.05	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923614.00	15039299.00	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-19	1923660.75	15039301.75	CH2	2316.81	4/29/2011	White's XLT	Munitions Debris	Cannon Ball, 15"	Rodman Test Round, Solid Shot	60.00	0	1923660.75	15039301.75	9	6/20/2011	BA	Transferred to West Point Museum
Target Hill	TH-06-20	1923646.50	15039302.00	CH2	15.04	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923646.50	15039302.25	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-28	1923651.00	15039307.00	CH2	2641.99	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		3.00	6	1923651.00	15039307.50	30	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-49	1923641.00	15039315.00	CH2	34.62	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	2	1923641.00	15039315.17	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-51	1923601.50	15039316.00	CH2	29.81	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	10	1923601.50	15039316.83	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-53	1923662.25	15039319.50	CH2	22.13	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923662.25	15039319.50	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-54	1923692.50	15039319.50	CH2	11.82	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	1	1923692.50	15039319.58	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-57	1923579.75	15039322.25	CH2	84.35	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	6	1923579.75	15039322.75	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-60	1923636.50	15039324.25	CH2	102.99	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1923636.50	15039324.75	9	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-62	1923691.25	15039325.00	CH2	10.54	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923691.25	15039325.00	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-66	1923589.25	15039326.25	CH2	22.55	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923589.58	15039326.25	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-86	1923618.00	15039336.50	CH2	18.51	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923618.00	15039336.75	6	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-93	1923603.00	15039341.25	CH2	52.27	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923603.00	15039341.75	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-97	1923632.25	15039343.50	CH2	17.56	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923632.25	15039343.50	0	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-100	1923620.00	15039344.00	CH2	24.81	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923620.42	15039344.00	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-102	1923663.50	15039344.25	CH2	173.07	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	2	1923663.50	15039344.42	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-105	1923577.75	15039346.00	CH2	15.78	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/20/2011	BA	-
Target Hill	TH-06-112	1923630.25	15039350.75	CH2	107.92	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	3	1923630.50	15039350.75	24	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-113	1923655.00	15039352.00	CH2	114.44	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923655.00	15039352.00	3	6/20/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-06-116	1923575.50	15039352.75	CH2	13.76	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/20/2011	BA	-
Target Hill	TH-06-118	1923609.75	15039354.00	CH2	12.53	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/20/2011	BA	-
Target Hill	TH-06-120	1923664.18	15039354.02	CH2	18.81	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923664.18	15039354.35	3	6/20/2011	BA	Transferred to West Point Recycle Center

Project Name:	West Point	Geophysical Contractor:	WESTON
Project Location:	West Point	Project Geophysicist:	Ryan Steigerwalt
Date:	6/17/2011	Site Geophysicist:	Brian Junck
Coordinate System:	UTM		
Survey Area ID:	TH-07	USACE Geophysicist:	Tom Colozza

		DGM Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item (in)	Dig Date	Team Leader Initials	Final Disposition
Target Hill	TH-07-01	1923852.00	15038936.00	CH2	297.58	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	3	1923852.00	15038936.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-03	1923856.75	15038939.25	CH2	252.59	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		3.00	1	1923856.75	15038939.33	27	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-05	1923847.00	15038949.00	CH2	26.01	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/17/2011	BA	-
Target Hill	TH-07-06	1923876.50	15038949.25	CH2	30.01	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923876.50	15038949.58	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-07	1923855.50	15038949.50	CH2	26.13	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	1923855.58	15038949.50	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-09	1923842.00	15038952.50	CH2	47.04	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/17/2011	BA	-
Target Hill	TH-07-10	1923847.75	15038954.00	CH2	37.00	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	1923847.75	15038954.08	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-11	1923857.00	15038955.50	CH2	12.16	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923857.00	15038955.83	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-14	1923858.00	15038957.25	CH2	16.05	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	7	1923858.58	15038957.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-15	1923852.25	15038959.00	CH2	25.24	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1923852.25	15038959.17	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-16	1923866.00	15038959.50	CH2	93.51	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923866.00	15038959.92	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-23	1923848.00	15038967.00	CH2	17.20	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1923848.50	15038967.00	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-24	1923853.25	15038969.50	CH2	15.77	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1923853.25	15038969.67	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-25	1923862.00	15038969.75	CH2	108.90	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	5	1923862.00	15038970.17	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-26	1923892.50	15038969.75	CH2	22.03	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923893.00	15038969.75	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-28	1923838.50	15038970.75	CH2	52.91	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923838.50	15038970.75	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-35	1923843.25	15038974.75	CH2	12.20	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923843.25	15038975.17	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-36	1923903.25	15038975.00	CH2	17.13	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	3	1923903.25	15038975.25	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-40	1923849.50	15038977.00	CH2	11.54	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923849.08	15038977.00	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-43	1923846.50	15038977.75	CH2	11.51	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923846.50	15038978.25	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-48	1923859.25	15038979.75	CH2	199.90	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	3	1923859.25	15038980.00	36	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-49	1923909.00	15038980.75	CH2	1198.81	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	5	1923909.00	15038981.17	30	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-50	1923840.00	15038981.00	CH2	16.59	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923840.25	15038981.00	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-51	1923889.75	15038981.25	CH2	35.70	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923889.75	15038981.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-54	1923830.25	15038981.75	CH2	33.55	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1923830.25	15038982.25	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-60	1923878.00	15038983.25	CH2	50.44	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	1	1923878.00	15038983.33	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-62	1923920.50	15038984.50	CH2	18.92	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	1923920.50	15038984.58	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-63	1923842.00	15038985.50	CH2	9.36	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	5	1923842.42	15038985.50	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-65	1923855.50	15038985.75	CH2	36.76	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923855.50	15038986.25	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-66	1923934.00	15038985.75	CH2	29.17	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	1923934.00	15038985.83	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-70	1923858.25	15038987.75	CH2	20.45	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	5	1923858.67	15038987.75	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-71	1923901.25	15038987.75	CH2	21.07	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923901.25	15038988.08	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-75	1923892.75	15038988.50	CH2	22.58	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1923892.75	15038988.67	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-77	1923883.50	15038989.50	CH2	83.09	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	3	1923883.50	15038989.75	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-78	1923929.25	15038989.75	CH2	9.32	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923929.25	15038990.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-81	1923843.25	15038991.50	CH2	22.07	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	1923843.25	15038991.50	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-85	1923847.00	15038992.25	CH2	16.98	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/17/2011	BA	-
Target Hill	TH-07-87	1923902.25	15038993.25	CH2	38.26	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923902.75	15038993.25	9	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-89	1923846.00	15038993.75	CH2	14.24	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1923846.00	15038993.92	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-93	1923822.50	15038995.50	CH2	83.12	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	1923822.50	15038996.00	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-95	1923836.50	15038995.50	CH2	18.94	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923836.08	15038995.50	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-105	1923876.50	15038997.50	CH2	265.39	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	1923877.00	15038997.50	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-109	1923917.25	15038999.25	CH2	10.74	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1923917.25	15038999.75	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-112	1923833.00	15039001.00	CH2	7.24	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923833.00	15039001.50	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-116	1923918.50	15039003.75	CH2	33.31	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	5	1923918.50	15039004.17	6	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-117	1923886.25	15039004.00	CH2	211.94	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	1923886.25	15039004.50	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-119	1923823.75	15039004.50	CH2	18.96	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923823.75	15039004.92	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-120	1923911.25	15039004.50	CH2	25.34	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923911.25	15039005.00	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-127	1923839.00	15039006.25	CH2	7.58	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923839.00	15039006.67	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-129	1923870.75	15039006.75	CH2	756.28	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		6.00	2	1923870.75	15039006.92	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-130	1923924.00	15039006.75	CH2	14.57	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923923.50	15039006.75	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-131	1923834.25	15039007.00	CH2	17.09	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923834.25	15039007.42	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-135	1923929.50	15039007.75	CH2	10.37	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923929.50	15039008.17	3	6/17/2011	BA	Transferred to West Point Recycle Center

Project Name: West Point
Project Location: West Point
Date: 6/17/2011
Coordinate System: UTM
Survey Area ID: TH-07

Geophysical Contractor: WESTON
Project Geophysicist: Ryan Steigerwalt
Site Geophysicist: Brian Junck
USACE Geophysicist: Tom Colozza

		DGM Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item (in)	Dig Date	Team Leader Initials	Final Disposition
Target Hill	TH-07-138	1923895.50	15039008.75	CH2	345.88	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		8.00	5	1923895.50	15039009.17	24	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-148	1923916.25	15039012.75	CH2	35.08	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923916.75	15039012.75	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-151	1923808.75	15039014.00	CH2	74.25	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	1923808.75	15039014.50	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-154	1923906.00	15039014.25	CH2	23.30	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	4	1923906.00	15039014.58	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-155	1923829.50	15039015.00	CH2	12.11	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923829.75	15039015.00	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-156	1923854.25	15039015.75	CH2	85.71	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	3	1923854.25	15039016.00	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-158	1923877.00	15039016.50	CH2	21.46	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923877.00	15039016.75	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-169	1923924.50	15039019.50	CH2	19.21	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923924.83	15039019.50	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-170	1923828.75	15039019.75	CH2	14.92	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923828.75	15039020.17	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-175	1923899.50	15039020.50	CH2	120.57	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923899.50	15039020.92	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-177	1923911.25	15039021.75	CH2	11.76	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923911.67	15039021.75	9	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-179	1923845.50	15039023.00	CH2	31.60	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923845.50	15039023.50	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-180	1923868.50	15039023.50	CH2	67.64	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1923868.50	15039023.67	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-181	1923893.25	15039023.50	CH2	16.99	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923893.25	15039023.83	9	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-184	1923909.00	15039024.75	CH2	29.34	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	4	1923909.00	15039025.08	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-186	1923813.25	15039025.00	CH2	21.36	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923813.25	15039025.33	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-188	1923885.25	15039025.50	CH2	18.05	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923884.92	15039025.50	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-191	1923822.75	15039026.75	CH2	8.21	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923822.75	15039027.17	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-195	1923893.00	15039027.75	CH2	16.99	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1923893.00	15039028.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-196	1923884.25	15039028.50	CH2	17.16	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923884.25	15039028.83	6	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-199	1923906.50	15039029.75	CH2	46.42	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1923907.00	15039029.75	9	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-204	1923858.50	15039032.00	CH2	11.16	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923858.50	15039032.42	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-206	1923895.00	15039033.00	CH2	11.74	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923895.00	15039033.50	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-210	1923910.75	15039034.25	CH2	10.67	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	7	1923910.75	15039034.83	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-214	1923905.25	15039035.25	CH2	19.04	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	8	1923905.25	15039035.92	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-215	1923888.75	15039035.50	CH2	8.02	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	7	1923888.75	15039036.08	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-225	1923883.25	15039042.25	CH2	12.78	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	9	1923882.50	15039042.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-229	1923900.00	15039044.75	CH2	16.76	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	7	1923900.00	15039045.33	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-230	1923890.75	15039045.00	CH2	19.70	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923890.75	15039045.33	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-232	1923894.25	15039046.50	CH2	10.03	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923894.25	15039046.75	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-236	1923907.25	15039048.75	CH2	27.20	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	4	1923907.25	15039049.08	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-237	1923892.75	15039049.50	CH2	20.28	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923893.17	15039049.50	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-242	1923896.25	15039051.50	CH2	19.69	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923896.25	15039051.75	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-243	1923879.00	15039052.00	CH2	24.26	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	1923879.00	15039052.17	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-244	1923874.75	15039053.00	CH2	29.30	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	1923875.00	15039053.00	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-247	1923895.00	15039053.75	CH2	39.10	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923895.00	15039054.17	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-248	1923884.75	15039054.75	CH2	7.24	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923884.75	15039055.25	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-256	1923887.75	15039057.75	CH2	15.83	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923888.17	15039057.75	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-257	1923892.50	15039057.75	CH2	29.10	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	1923892.50	15039058.25	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-258	1923862.00	15039058.50	CH2	16.31	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923862.00	15039058.92	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-261	1923901.50	15039058.50	CH2	16.83	4/29/2011	White's XLT	No Contact	-		-	-	-	-	-	6/17/2011	BA	-
Target Hill	TH-07-265	1923885.25	15039062.00	CH2	12.59	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	1923885.25	15039062.42	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-267	1923889.00	15039063.75	CH2	28.27	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	2	1923889.00	15039063.92	3	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-268	1923872.00	15039065.50	CH2	9.54	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	1923871.50	15039065.50	0	6/17/2011	BA	Transferred to West Point Recycle Center
Target Hill	TH-07-272	1923882.00	15039067.75	CH2	10.71	4/29/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	1923882.00	15039068.08	3	6/17/2011	BA	Transferred to West Point Recycle Center

APPENDIX F
DAILY REPORTS

Note:

In some cases, multiple munitions response sites (MRSs) were investigated on the same day; therefore, information from multiple MRSs may be included in the Daily Reports.

Daily Site Progress Report

MMRP RI - US Army Garrison – West Point

CONTRACT NO. / D.O. NO.:	WORK ORDER NO.:	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	04/28/2011 0700 - 1400

WEATHER/TEMPERATURE: Cool in the morning, heavy rain/storms in the afternoon 70 high/61 Low °F

WORK LOCATION: West Point, NY

WORK COMPLETED:

- ☐ Surveyor activities.
- ☐ Mag and Dig activities).
- ☒ DGM activities (List grids).
- ☐ Reacquisition of DGM anomaly targets (List grids).
- ☐ Grid QC List (List completed grids).
- ☐ Grid QA (CENAB-List completed grids).
- ☐ Munitions Constituents Sampling.
- ☒ UXO Technician Escort activities.
- ☐ Equipment Transport (mob/demob to/from site-List).
- ☐ Equipment Maintenance
- ☐ Equipment Issues (List below).
- ☐ _____

Comments:
Left site at 2pm due to heavy rain/storms moving through the area

MATERIALS DELIVERED (Amount, Condition, and Purpose):
None

PROBLEMS/RESOLUTIONS:
None

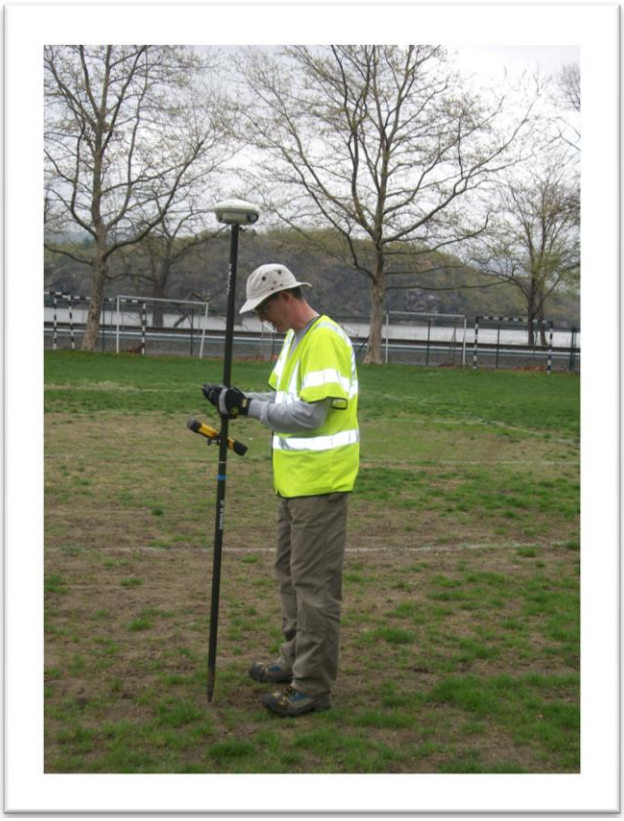
DATA TRACKING:
Conducted DGM surveys at Lusk Reservoir MRS, started grid setup at Target Hill MRS.
Completed Grids:
LR-01

Comments:

FURTHER DISCUSSION (List Topic and Comment):

Planned activities for 04/29/11: DGM surveys at Target Hill MRS and North Athletic Field MRS.

PREPARED BY:	SIGNATURE:
Brian Junck – Site Geophysicist	



Geophysical Technician testing RTK GPS at Target Hill MRS.

Grid layout at LR-01 in Lusk Reservoir MRS.

Grid layout at TH-01 in Target Hill MRS.

Daily Safety Quality Control Report

CONTRACT NO. / D.O. NO.:	WESTON PROJECT NO.	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	4-28-11 0700

WEATHER/TEMPERATURE:
LOW- 61 HIGH- 70 Heavy Rain/Wind/T STORMS

WORK LOCATION:
West Point, NY

PERSONNEL/AFFILIATION (PRINT)	SIGNATURE
BRIAN JUNCK - WESTON	
BRIAN GRASSMEYER - WESTON	
BRIAN GUTHRIE - WESTON	
Kim Churchill - WESTON	
Mark Saunders	

HEALTH AND SAFETY:

☒ Daily H&S Brief and Discussion
- Prior to work and as needed.

☒ UXO Safety Discussion
- Prior to work and as needed.

Discussion Topics: Lightning Strikes, Rain Storms, Vehicle safety,

☒ Personnel Sign In ☐ Review Applicable SOPs ☒ Phone/Radio Check ☐ Wetland Issues ☐ First Aid Kit ☐ Fire Prevention Equipment ☐ Issues / Injuries

Daily Site Progress Report

MMRP RI - US Army Garrison – West Point

CONTRACT NO. / D.O. NO.:	WORK ORDER NO.:	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	04/29/2011 0700 - 1700

WEATHER/TEMPERATURE: Cool and sunny 66 high/52 Low °F

WORK LOCATION: West Point, NY

WORK COMPLETED:

- ☐ Surveyor activities.
- ☐ Mag and Dig activities).
- ☒ DGM activities (List grids).
- ☐ Reacquisition of DGM anomaly targets (List grids).
- ☐ Grid QC List (List completed grids).
- ☐ Grid QA (CENAB-List completed grids).
- ☐ Munitions Constituents Sampling.
- ☒ UXO Technician Escort activities.
- ☐ Equipment Transport (mob/demob to/from site-List).
- ☐ Equipment Maintenance
- ☐ Equipment Issues (List below).
- ☐ _____

Comments:

MATERIALS DELIVERED (Amount, Condition, and Purpose):

None

PROBLEMS/RESOLUTIONS:

None

DATA TRACKING:

Conducted DGM surveys at Target Hill MRS.
Completed Grids:
TH-01, TH-02, TH-03, TH-04, TH-05, TH-06, TH-07

Comments:

FURTHER DISCUSSION (List Topic and Comment):

Planned activities for 05/02/11: DGM surveys at Artillery Firing Range MRS.

PREPARED BY:	SIGNATURE:
Brian Junck – Site Geophysicist	

Geophysical Technician setting up a grid at Target Hill MRS.

Geophysical Technician collecting DGM data at Target Hill MRS.

Geophysical Technician collecting DGM data at Target Hill MRS.

Grid setup at grid TH-01 at Target Hill MRS.

Daily Safety Quality Control Report

CONTRACT NO. / D.O. NO.:	WESTON PROJECT NO.	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	4-29-11 0700

WEATHER/TEMPERATURE:
LOW- 52 HIGH- 66 SUNNY & CLEAR

WORK LOCATION:
West Point, NY

PERSONNEL/AFFILIATION (PRINT)	SIGNATURE
BRIAN JUNCK - WESTON	
BRIAN GRASSMEYER - WESTON	
BRIAN GUTHRIE - WESTON	
Kim Churchill - WESTON	
Mark SAUNDERS	

HEALTH AND SAFETY:

☒ Daily H&S Brief and Discussion
- Prior to work and as needed.

☒ UXO Safety Discussion
- Prior to work and as needed.

Discussion Topics:

VEHICLE SAFETY, PPE, TRAVEL

☒ Personnel Sign In ☐ Review Applicable SOPs ☒ Phone/Radio Check ☐ Wetland Issues ☐ First Aid Kit ☐ Fire Prevention Equipment ☐ Issues / Injuries

Daily Site Progress Report

MMRP RI - US Army Garrison – West Point

CONTRACT NO. / D.O. NO.:	WORK ORDER NO.:	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	06/17/2011 0430 - 1500

WEATHER/TEMPERATURE: Cloudy with intermittent rain 74 high/61 Low °F

WORK LOCATION: West Point, NY

WORK COMPLETED:

- ☐ Surveyor activities.
- ☐ Mag and Dig activities).
- ☐ DGM activities (List grids).
- ☒ Reacquisition of DGM anomaly targets (List grids).
- ☐ Grid QC List (List completed grids).
- ☐ Grid QA (CENAB-List completed grids).
- ☐ Munitions Constituents Sampling.
- ☐ UXO Technician Escort activities.
- ☐ Equipment Transport (mob/demob to/from site-List).
- ☐ Equipment Maintenance
- ☐ Equipment Issues (List below).
- ☐ _____

Comments:

MATERIALS DELIVERED (Amount, Condition, and Purpose):
None

PROBLEMS/RESOLUTIONS:
None

DATA TRACKING:

DGM Grids Reacquired: North Athletic Field (82% complete)
Target Hill MRS: TH-01, TH-07

Mag and Dig Transects: None today

Mag and Dig Grids: None today

Comments: None

FURTHER DISCUSSION (List Topic and Comment):

Planned activities for 06/20/11: Continue anomaly reacquisition and intrusive investigation in North Athletic Field MRS, Target Hill MRS.

PREPARED BY:	SIGNATURE:
Brian Junck – Site Geophysicist	

Flagged anomaly locations in North Athletic Field MRS.

UXO technician investigating an anomaly in North Athletic Field MRS.

Daily UXO SUXOS Site Report

CONTRACT NO. / REQ. NO.:W912DR-09-D-0006 Delivery Order: 0001 | **DATE: 17 June 2011**

WORK LOCATION: West Point, NY (MMRP Remedial Investigation)

WORK COMPLETED:

- ☒ Mag and Dig activities.
- ☐ Survey work.
- ☐ Brush clearing.
- ☐ Grid QC List.
- ☐ Grid QA (CENAB).
- ☐ UXO Technician Escort activities.
- ☐ Magazine secured
- ☐ Equipment Maintenance
- ☒ Reacquire Anomaly
- ☒ Safety briefing given

Comments:

PROBLEMS/RESOLUTIONS:

DAILY ACTIVITIES:

Total Number of grids completed MRS :
Grid North Athletic Field (NAF grid) (845 anomalies in NAF 82% completed).
Target Hill DGM Grid (TH-01) 100% complete.
Target Hill DGM Grid (TH-07) 100% complete.

Total Transect completed MRS: None.

Cultural Debris, Munitions Debris, and UXO:

Grid CD: 29 lbs	**Transect CD:** 0 lbs
Grid MD: 0	**Transect MD:** 0 lbs
Grid UXO: 0	**Transect UXO:** 0

Total Number of Areas QC / QA (List Areas): None

UXO items located: None

UXO Daily Total: None

Remarks:

Total Lightning Delay 3 hrs

GEO Team acquired anomalies for North Athletic Field (NAF).

Team 1: Brian Addison, Chris George, Donald Koetje, Cindy Grassmyer

Team 2: Terry Wilson, Roger Perkins

Geo Team: Brian Junck, Paul Novak

PREPARED BY:
Brian Grassmyer

SIGNATURE:

Daily Health & Safety Report

General Information:

MMRP Remedial Investigation, West Point, NY **Report #10** **Date: 6/17/2011**
Contract #: W912DR-09-D-006 **Delivery Order: 0001**
Start Time: 0430 **End Time: 1500**
Project Manager: John Gerhard

Weather Conditions:

High Temp: 74	**Low Tem: 61**		**Precipitation:** Intermitant	**Lightning:** Intermitant
Winds: Light	**Sunrise: 0522**	**Sunset: 2030**	**Humidity: 80+%**	

Site Personnel:

SUXOS:	**UXOSO/UXOSQC:**
Brian Grassmyer	**Bruce Carnal**

Detail Of Daily Events:

Daily safety meeting given by UXOSO. Topics covered were APP for Target Hill, group discussion of demo procedures for yesterday and weekend drinking and driving awareness.

Exclusion area around Bldg 673 finished despite large amounts of down time with thunderstorm delays.

No areas were QC'd

I CERTIFY THAT THE ABOVE REPORT IS COMPLETE, CORRECT AND IN STRICT COMPLIANCE WITH THE SPECIFIC HEALTH AND SAFETY PLAN.

UXO Safety Officer

Safety Meeting Attendance Log

Date:	6/17/2011	Time:	0430	Contract Number:	W912DR-09-D-0006
Delivery Order Number:	0001	Location:	West Point, New York		
Weather Conditions:	Temp: 61 High: 74 Sunrise: 5:22 Sunset: 8:31 Humidity: 88-84% (thru the day)				

I. Safety Meeting Topic (Briefly describe):	Weekend and driving/alcohol awareness. APP for Target Hill area. Group discussion of yesterdays events, pros/cons.

II. Attendees:	

Name	Signature	Company
Elbert Caraballo		USACE Baltimore
John Gerhard		Weston
Brian Grassmyer		Weston
Brian Junck		Weston
Paul Novak		Weston
Bruce Carnal		Weston
Brian Addison		Weston
Terry Wilson		Weston
Roger Perkins		Weston
Chris George		Weston
Donald Koetje		Weston
Cindy Grassmyer		Weston
Al Lankins		Weston

Daily Site Progress Report

MMRP RI - US Army Garrison – West Point

CONTRACT NO. / D.O. NO.:	WORK ORDER NO.:	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	06/20/2011 0430 - 1500

WEATHER/TEMPERATURE: Sunny and warm 80 high/54 Low °F

WORK LOCATION: West Point, NY

WORK COMPLETED:

- ☐ Surveyor activities.
- ☐ Mag and Dig activities).
- ☐ DGM activities (List grids).
- ☒ Reacquisition of DGM anomaly targets (List grids).
- ☐ Grid QC List (List completed grids).
- ☐ Grid QA (CENAB-List completed grids).
- ☐ Munitions Constituents Sampling.
- ☐ UXO Technician Escort activities.
- ☐ Equipment Transport (mob/demob to/from site-List).
- ☐ Equipment Maintenance
- ☐ Equipment Issues (List below).
- ☐ _____

Comments:

MATERIALS DELIVERED (Amount, Condition, and Purpose):
None

PROBLEMS/RESOLUTIONS:
None

DATA TRACKING:

DGM Grids Reacquired: North Athletic Field (100% complete)
Target Hill MRS: TH-02, TH-03, TH-04, TH-05, TH-06

Mag and Dig Transects: None today

Mag and Dig Grids: None today

Comments: None

FURTHER DISCUSSION (List Topic and Comment):

Planned activities for 06/21/11: Mag and Dig transects in Siege Battery MRS, Mag and Dig Grids in Fort Clinton – West MRS.

PREPARED BY:	SIGNATURE:
Brian Junck – Site Geophysicist	

15” cannonball (training shot) recovered from Target Hill MRS.

UXO technician investigating an anomaly in North Athletic Field MRS.

8” mortar recovered from Target Hill MRS.

Daily UXO SUXOS Site Report

CONTRACT NO. / REQ. NO.:W912DR-09-D-0006 Delivery Order: 0001

DATE: 20 June 2011

WORK LOCATION: West Point, NY (MMRP Remedial Investigation)

WORK COMPLETED:

- ☒ Mag and Dig activities.
- ☐ Survey work.
- ☐ Brush clearing.
- ☐ Grid QC List.
- ☐ Grid QA (CENAB).
- ☐ UXO Technician Escort activities.
- ☐ Magazine secured
- ☐ Equipment Maintenance
- ☒ Reacquire Anomaly
- ☒ Safety briefing given

Comments:

PROBLEMS/RESOLUTIONS:

DAILY ACTIVITIES:

Total Number of grids completed MRS :
Grid North Athletic Field (NAF grid) (845 anomalies in NAF 100% completed).
Target Hill DGM Grid (TH-02, TH-03, TH-04, TH-05, and TH-06) 100% complete.

Total Transect completed MRS: None.

Cultural Debris, Munitions Debris, and UXO:
Grid CD: 24 lbs
Grid MD: 550 lbs (1 ea - 4.5" Cannonball, 1 piece of Frag, 1 ea - 6.5" Cannonball, 1 ea - 8" Mortar, and 1 ea - 15" Cannonball)
Grid UXO: 0

Total Number of Areas QC / QA (List Areas): None

UXO items located: None

UXO Daily Total: None

Remarks:

TLI (MC sampling) arrived on-site. Safety Brief covering APP and SSHP was given by UXOSO.

GEO Team acquired anomalies for North Athletic Field (NAF and Target Hill).

Team 1: Brian Addison, Chris George, Donald Koetje, Cindy Grassmyer

Team 2: Terry Wilson, Roger Perkins

Geo Team: Brian Junck, Paul Novak

PREPARED BY:
Brian Grassmyer

SIGNATURE:
Brian Grassmyer

Daily Health & Safety Report

General Information:

MMRP Remedial Investigation, West Point, NY **Report #11** **Date: 6/20/2011**
Contract #: W912DR-09-D-006 **Delivery Order: 0001**
Start Time: 0430 **End Time: 1500**
Project Manager: John Gerhard

Weather Conditions:

High Temp: 80 **Low Tem: 54** **Precipitation:** Intermitant **Lightning:** Intermitant
Winds: Light **Sunrise: 0523** **Sunset: 2032** **Humidity: 86-40%**

Site Personnel:

SUXOS: **Brian Grassmyer**
UXOSO/UXOSQC: **Bruce Carnal**

Detail Of Daily Events:

Daily safety meeting given by UXOSO. Topics covered were grounding of firing circuits and how to prevent them and the rounds that were forcast for the TH area and a review of their fuzing.

TLI samplers arived and briefed them in on the WP and HASP. They will attend the future morning meetings.

No areas were QC'd

Most of day spent verifying rounds uncovered on NAF and TH. Made liason with Base Safety, Security and Base ACE to ensure they were comfortable and to keep them in the loop.

I CERTIFY THAT THE ABOVE REPORT IS COMPLETE, CORRECT AND IN STRICT COMPLIANCE WITH THE SPECIFIC HEALTH AND SAFETY PLAN.

UXO Safety Officer

Safety Meeting Attendance Log

Date:	6/20/2011	Time:	0430	Contract Number:	W912DR-09-D-0006
Delivery Order Number:	0001	Location:	West Point, New York		
Weather Conditions:	Temp: 54 High: 80 Sunrise: 5:23 Sunset: 8:32 Humidity: 86-40% (thru the day)				

I. Safety Meeting Topic (Briefly describe):	Grounding of firing circuits and how to prevent them. Rounds that could be found in the TH area and a review of them.

II. Attendees:	

Name	Signature	Company
Elbert Caraballo		USACE Baltimore
John Gerhard		Weston
Brian Grassmyer		Weston
Brian Junck		Weston
Paul Novak		Weston
Bruce Carnal		Weston
Brian Addison		Weston
Terry Wilson		Weston
Roger Perkins		Weston
Chris George		Weston
Donald Koetje		Weston
Cindy Grassmyer		Weston

APPENDIX G
DOD FORM 1348-1A

Note:

In some cases, multiple munitions response sites (MRSs) are included in these forms.

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 9 of 12

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone # (502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone # (845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Recycling Center

3a. Transporter 1 phone # (845) 938-4281

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone # ( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone # ( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #
1832951/52/55/56/59/60	43100Lbs			

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Barrels containing Munitions Debris from West Point MMRP/RI. No MEC or MC in barrels.	Munitions Debris	3	55 gal Drum

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian Grassmyer	08 12 13

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	08 23 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	08 23 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	08 23 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
CARL Iagrosse	Carl Iagrosse	08 23 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption	24. Final Disposition of Material
N/A	N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1	2	3	4	5	6	7	23	24	25	26	27	28	29	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
DOC	IDENT		RI FROM			M&S	UNIT		ISS		QUANTITY			SMR	SUPPLEMENTARY ADDRESS				SIG	FUND		DISTRIBUTION			PROJECT			PRI		REQD	DEL	DATE	ADV		RI			O/P	COND	MGT										

UNIT PRICE DOLLARS	CTS	1. TOTAL PRICE DOLLARS	CTS	2. SHIP FROM	3. SHIP TO
				Weston Solutions Office	USMA Recycling Center
				4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
082311				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
3					

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Munitions Debris

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE
	6	4300 LBS	

22. RECEIVED BY	23. DATE RECEIVED
Cho Iqua	0825-11

26. RIC (4-6)
UI (23-24)
QTY (25-29)
CON CODE (71)
DIST (55-56)
UP (74-80)

(3) 55 gal drums containing Munitions Debris. No Munitions of Explosive Concern (MEC) or Munitions Constituents (MC) .are contained within.
(3) 55 gal drums containing steel/iron scrap having no MD/MEC/MC.

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 6/12

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone #
(502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone #
(845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Museum (Les Jenkins)

3a. Transporter 1 phone #
(845) 938-7339

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone #
( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone #
( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
8" Butler Cored Shot fragments of full round	Munitions Debris	1	180 lbs
10" Parrot Chilled Shot (Bottle Nosed Bolt)	Munitions Debris	1	223 lbs
24 Pdr Solid Shot	Munitions Debris	1	24 lbs
5.3" Parrot Chilled Shot (Bottle Nosed Bolt(	Munitions Debris	1	51 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian K Grassmyer	08 01 4 2011

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	08 05 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	08 05 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	08 05 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
Leslie D Jenson		08 05 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption
N/A

24. Final Disposition of Material
N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

DOC IDENT	RI FROM	M&S	UNIT ISS	QUANTITY	SER	SUPPLEMENTARY ADDRESS	SIG	FUND	DISTRIBUTION	PROJECT	PRI	REQD	DELDATE	ADV	RI	O/P	CONDMGT	UNIT PRICE DOLLARS	UNIT PRICE CTS	1. TOTAL PRICE DOLLARS	1. TOTAL PRICE CTS

2. SHIP FROM	3. SHIP TO
Weston Solutions Office	USMA Museum

4. MARK FOR

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
072911				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
4					

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE

Munitions Debris

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED 8/5/11

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

8" Butler Cored Shot Fragments of Full Round	QTY: 1
10" Parrot Chilled Shot (Bottle Nosed Bolt)	QTY: 1
5.3" Parrot Chilled Shot (Bottle Nosed Bolt)	QTY: 1
24 Pdr Round Solid Shot	QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 5

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone # (502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone # (845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Range Control (Andrew Felo)

3a. Transporter 1 phone # (845) 938-3930

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone # ( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone # ( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
3" Stokes Mortar, Fired/Empty (originally sand filled)	Munitions Debris	1	10 Lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian R Grassmyer	07 29 2011

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 29 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 29 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 29 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
Andrew R. Felo	Andrew R. Felo	07 29 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption	24. Final Disposition of Material
N/A	N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1 2 3 4 5 6 7	23 24 25 26 27 28 29	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DOC IDENT / RI FROM / M&S	UNIT / ISS / QUANTITY	SER / SUPPLEMENTARY ADDRESS / SIG / FUND / DISTRIBUTION / PROJECT / PRI / REQD / DEL / DATE / ADV / RI / O/P / COND / MGT	UNIT PRICE DOLLARS CTS / DOLLARS / CTS	Weston Solutions Office	USMA Range Control
				4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
072911				

10. QTY. REC'D	11. UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Munitions Debris

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED
07/29/11

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

3" Stokes Mortar, Fired/Empty QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 4

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone #
(502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone #
(845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Museum (Les Jenkins)

3a. Transporter 1 phone #
(845) 938-7339

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone #
( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone #
( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Revolutionary War 4 (?) Pdr French Solid Shot	Munitions Debris	1	4 lbs
WW I US Mk I Hand Grenade Body	Munitions Debris	1	2 lbs
WW I US Mk II Hand Grenade Body	Munitions Debris	1	2 lbs
WW I French F-1 Hand Grenade Body	Munitions Debris	1	2 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian Grassmyer	07 29 2011

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	07 29 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	07 29 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	07 29 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
Les Jensen	Les Jensen	08 03 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption	24. Final Disposition of Material
N/A	N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1	2	3	4	5	6	7	23	24	25	26	27	28	29	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
DOC	IDENT			RI FROM		M&S	UNIT		ISS	QUANTITY				SER	SUPPLE-MENTARY ADDRESS				SIG	FUND	DIS-TRI-BU-TION		PRO-JECT		PRI	REQD	DEL	DATE	ADV		RI		O/P	COND	MGT	UNIT PRICE DOLLARS	CTS	1. TOTAL PRICE DOLLARS	CTS	2. SHIP FROM Weston Solutions Office						3. SHIP TO USMA Museum			

4. MARK FOR

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
072911				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
4					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE

Munitions Debris

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED 8/3/11

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Revolutionary War 4 (?) pdr French Solid Shot	QTY: 1
WW I US Mk I Hand Grenade Body	QTY: 1
WW I US Mk II Hand Grenade Body	QTY: 1
WW I French F-1 Hand Grenade Body	QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer 07/29/11

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 3

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone # (502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone # (845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Museum (Les Jenkins)

3a. Transporter 1 phone # (845) 938-7339

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone # ( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone # ( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Revolutionary War 6 Pdr Solid Shot	Munitions Debris	1	6 lbs
Butler 8" Cored Shot	Munitions Debris	1	182 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian R Grassmyer	07 15 2011

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 13 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 13 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 13 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
Les Jenson		07 13 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption
N/A

24. Final Disposition of Material
N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

1 2 3 4 5 6 7	23 24 25 26 27 28 29	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DOC IDENT / RI FROM / M&S	UNIT / ISS / QUANTITY	SER / SUPPLEMENTARY ADDRESS / SIG / FUND / DISTRIBUTION / PROJECT / PRI / REQD / DEL / DATE / ADV / RI / O/P / COND / MGT	UNIT PRICE DOLLARS CTS / DOLLARS / CTS	Weston Solutions Office	USMA Museum
				4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
071311				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Munitions Debris

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED
7/13/11

PREVIOUS EDITION MAY BE USED

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Revolutionary War 6 pdr Solid Shot QTY: 1
Butler 8" Cored Shot QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 1

GENERAL

1. Generator's Name and Mailing Address Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996	1a. Generator's Phone # (502) 664-7926
2. Generator's Project Location West Point MMRP RI Contract No. W912DR-09-D0006	2a. Project Phone # (845) 839-0621
3. Transporter 1 Name and Mailing Address US Military Academy Museum, West Point, NY 10996	3a. Transporter 1 phone # (845) 938-7339
4. Transporter 2 Name and Mailing Address N/A	4a. Transporter 2 phone # ( )
5. Qualified Recycler (QR) Name and Mailing Address N/A	5a. QR phone # ( ) 5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Civil War 32 Pdr Solid Shot Canon Ball	Munitions Debris	1	32 lbs
Civil War 8" Mortar Shell (Empty)	Munitions Debris	1	48 lbs
Civil War Rodman 15" Solid Shot	Munitions Debris	1	450 lbs
Civil War 4.26" x 12" Parrot Shell (Empty)	Munitions Debris	1	25 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1		
Printed/Typed Name Brian Grassmyer	Signature Brian Grassmyer	Month Day Year 01 16 19 2011
16. Inspector 2		
Printed/Typed Name Bruce A. Carnal	Signature Bruce A Carnal	Month Day Year 01 01 21 91 11
17. Certified By:		
Printed/Typed Name Bruce A. Carnal	Signature Bruce A Carnal	Month Day Year 01 01 21 91 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:		
Printed/Typed Name Bruce A. Carnal	Signature Bruce A Carnal	Month Day Year 01 01 21 91 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)		
Printed/Typed Name Les Jensen	Signature Les Jensen	Month Day Year 01 16 21 91 11
20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)		
Printed/Typed Name N/A	Signature N/A	Month Day Year

QUALIFIED RECYCLER

21. Discrepancy Indication Space N/A		
22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)		
Printed/Typed Name N/A	Signature N/A	Month Day Year

23. Qualified Recycler Certification of Consumption N/A	**24. Final Disposition of Material** N/A

Printed/Typed Name N/A	Signature N/A	Month Day Year

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1 2 3 4 5 6 7	23 24 25 26 27 28 29	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DOC IDENT / RI FROM / M&S	UNIT / ISS / QUANTITY	SER / SUPPLEMENTARY ADDRESS / SIG / FUND / DISTRIBUTION / PROJECT / PRI / REQD / DELL / DATE / ADV / RI / O/P / COND / MGT	UNIT PRICE DOLLARS CTS / DOLLARS / CTS	Weston Solutions Office	USMA Museum
				4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
062911				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE: Munitions Debris

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED: 06/29/11

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Civil War 15" Rodman Solid Shot	QTY: 1
Civil War 4.26" Parrot Shell (Empty)	QTY: 1
Civil War 8" Mortar Shell (Empty)	QTY: 1
Civil War 32 Pdr Solid Shot	QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 2

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone # (502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone # (845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Range Control (Andrew Felo)

3a. Transporter 1 phone # (845) 938-3930

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone # ( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone # ( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Civil War 12 Pdr Solid Shot	Munitions Debris	1	12 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian Grassmyer	

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	01 02 19 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	01 02 19 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	01 02 19 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
ANDREW FELO	Andrew R. Felo	06 21 19 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption	24. Final Disposition of Material
N/A	N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1 2 3 4 5 6 7	23 24 25 26 27 28 29	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DOC IDENT / RI FROM / M&S	UNIT ISS / QUANTITY	SER / SUPPLEMENTARY ADDRESS / SIG / FUND / DISTRIBUTION / PROJECT / PRI / REQD / DELDATE / ADV / RI / O/P / COND / MGT	UNIT PRICE DOLLARS CTS / DOLLARS CTS	Weston Solutions Office	USMA Range Control
				4. MARK FOR	

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
062911				

10. QTY. REC'D	11. UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Munitions Debris

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED
6/29/2011

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Civil War 12 pdr Solid Shot QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

APPENDIX H
MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL

COMPANHIA TEXTIL KARSTEN, Calle Grande, 25–27, 67890 Lisbon, Portugal, PTKAR2527LIS
HURON LANDMARK, 1840 Huron Road, Windsor, ON, Canada N9C 2L5; XOHURLAN1840WIN

PART 141—ENTRY OF MERCHANDISE

■ 5. The general authority citation for Part 141 and specific authority citation for § 114.113 continue to read as follows:

Authority: 19 U.S.C. 66, 1448, 1624.

* * * * *

Section 141.113 also issued under 19 U.S.C. 1499, 1623.

§ 141.113 [Amended]

■ 6. In § 141.113, paragraph (b) is amended by removing the words ''12.130 of this chapter'' and by adding, in their place, the words ''§ 102.21 or § 102.22 of this chapter, as applicable,''.

PART 144—WAREHOUSE AND REWAREHOUSE ENTRIES AND WITHDRAWALS

■ 7. The general authority citation for Part 144 continues to read as follows:

Authority: 19 U.S.C. 66, 1484, 1557, 1559, 1624.

* * * * *

§ 144.38 [Amended]

■ 8. In § 144.38, paragraph (f)(1) is amended by removing the words ''§ 12.130 of this chapter'' and by adding, in their place, the words ''§ 102.21 or § 102.22 of this chapter, as applicable''.

PART 146—FOREIGN TRADE ZONES

■ 9. The authority citation for Part 146 is revised to read as follows:

Authority: 19 U.S.C. 66, 81a–81u, 1202 (General Note 3(i), Harmonized Tariff Schedule of the United States), 1623, 1624.

§ 146.63 [Amended]

■ 10. In § 146.63, paragraph (d)(1) is amended by removing the words § 12.130 of this chapter'' and by adding, in their place, the words ''§ 102.21 or § 102.22 of this chapter, as applicable''.

PART 163—RECORDKEEPING

■ 11. The authority citation for Part 163 continues to read as follows:

Authority: 5 U.S.C. 301; 19 U.S.C. 66, 1484, 1508, 1510, 1624.

■ 12. The Appendix to Part 163 is amended by removing under section IV the listing of ''§ 12.130 Textiles and textile products Single country declaration Multiple country declaration VISA'' and the listing of ''§ 12.132 NAFTA textile requirements'', and by adding a new listing under section IV in numerical order to read as follows:

Appendix to Part 163—Interim (a)(1)(A) List.

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IV. * * *

§ 102.25 NAFTA textile requirements

* * * * *

Robert C. Bonner,

Commissioner of Customs and Border Protection.

Approved: September 30, 2005.

Timothy E. Skud,

Deputy Assistant Secretary of the Treasury.

[FR Doc. 05–19985 Filed 9–30–05; 2:38 pm]

BILLING CODE 9110–06–P

DEPARTMENT OF DEFENSE

Office of the Secretary

32 CFR Part 179

Munitions Response Site Prioritization Protocol

AGENCY: Department of Defense.

ACTION: Final rule.

SUMMARY: The Department of Defense (hereinafter the Department) is promulgating the Munitions Response Site (MRS) Prioritization Protocol (MRSPP) (hereinafter referred to as the rule) as a rule. This rule implements the requirement established in section 311(b) of the National Defense Authorization Act for Fiscal Year 2002 for the Department to assign a relative priority for munitions responses to each location (hereinafter MRS) in the Department's inventory of defense sites known or suspected of containing unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC).

DATES: This rule is effective October 5, 2005.

FOR FURTHER INFORMATION CONTACT: If there are specific questions or to request an opportunity to review the docket for this rulemaking, please contact Ms. Patricia Ferrebee, Office of the Deputy Under Secretary of Defense (Installations & Environment) [ODUSD (I&E)], 703–571–9060. This final rule along with relevant background information is available on the World Wide Web at the Defense Environmental Network & Information eXchange Web site, *https://www.denix.osd.mil/MMRP*.

SUPPLEMENTARY INFORMATION:

Preamble Outline

I. Authority

This rule is being finalized under the authority of section 311(b) of the National Defense Authorization Act for Fiscal Year 2002, codified at section 2710(b) of title 10 of the U.S. Code [10 U.S.C. 2710(b)].

II. Background

The Department of Defense (hereinafter the Department) developed the rule in consultation with states and tribes, as required by statute. The Department published the proposed rule in the **Federal Register** as a proposed rule on August 22, 2003, at 68 FR 50900. A technical correction to the proposed rule was published on September 10, 2003, at 68 FR 53430.

The public comment period for the proposed rule ended November 19, 2003. Sixteen commenters submitted comments on the proposed rule. The preamble to this final rule consists mainly of an explanation of the Department's responses to these comments. Therefore, both this preamble and the preamble to the proposed rule should be reviewed should a question arise as to the meaning or intent of the final rule. Unless directly contradicted or superseded by this preamble to the rule or by the rule, the preamble to the proposed rule reflects the Department's intent for the rule.

The preamble to the final rule provides a discussion of each proposed rule section on which comments were received. Revisions to the proposed rule that are simply editorial or that do not

reflect substantive changes are not addressed in this preamble.

In addition to the comments on the proposed rule, the Department received a number of comments that addressed topics outside the scope of the proposed rule. These topics included: The universe of sites that comprise the inventory, which is established by statute; funding for munitions responses; comments on data quality; a proposal for training to educate Department personnel, regulators, and/or stakeholders; and implementing guidance that the Department may develop for the rule. These comments are not addressed in this rule. All comments the Department received are presented in a ''Response to Comments'' document, which has been placed in the docket for this rulemaking.

III. Summary of Significant Changes to the Final Rule

The Department made a number of changes to the proposed rule that are reflected in this final rule. Many of these revisions pertain to clarification of terms and definitions based on comments received, or changes to reflect new statutory definitions promulgated in the National Defense Authorization Act for 2004 and codified at 10 U.S.C. 101.

The most significant change to the proposed rule pertains to the module that evaluates the potential health hazards associated with MC. The Department modified this module in response to several comments. This module now has seven potential outcomes (*i.e.*, A through G) rather than the three potential outcomes described in the proposed rule (*i.e.*, high, medium, and low). A detailed explanation of this modification is provided in a following section of this preamble.

The Department has also revised the proposed rule to clarify that current land owners may participate in application of the rule at Formerly Used Defense Sites (FUDS). Another change was to clarify that the quality assurance panel that reviews each priority will consist of only Department personnel.

IV. Response to Comments

This section contains the Department's responses to the comments received on the proposed rule, organized by the structure of the proposed and final rules.

A. Section 179.2. Applicability and Scope

Several commenters stated that the proposed rule should be published as Departmental guidance and not as a federal regulation. The Department, however, interpreted the language in the National Defense Authorization Act for 2002 as a term of art invoking the requirement for public comment provided in the Administrative Procedures Act. The Department is proceeding with publishing the final rule as a federal regulation.

One commenter stated that sites containing chemical warfare materiel (CWM) should be included as potential MRSs. The Department observes that the proposed rule makes clear that, if CWM is present at a defense site [as defined in 10 U.S.C. 2710(e)] in the form of UXO, DMM, or MC, that site would be an MRS and would be included in the inventory, and that all MRSs in the inventory are addressed under the rule. The Department made no change to the rule to address this comment.

Another comment stated that the Department had not clearly explained the scope of the exclusion for ''combat operations'' under 10 U.S.C. 2710(d)(2). This exclusion exempts from the requirement for inclusion in the inventory and application of the rule all locations where ''the presence of military munitions'' resulted ''from combat operations.'' The Department has not modified the rule.

A commenter requested that the Department change the Department's Control classification in the Status of Property data elements (proposed rule, Appendix A, Tables 5 and 15) to include land or water bodies owned, leased, or otherwise possessed by state military departments. The Department declined to make this change, as the Department does not have jurisdiction over properties owned, leased, or otherwise possessed by state military departments. Such locations are under state jurisdiction and would not be included in the 10 U.S.C. 2710(a) inventory.

B. Section 179.3. Definitions

This section of the preamble addresses comments on the definitions in section 179.3 of the proposed rule.

The Department has modified definitions from the proposed rule or included certain new definitions to make this regulation consistent with terms and definitions promulgated by the National Defense Authorization Act for Fiscal Year 2004. These terms and definitions are codified at 10 U.S.C. 101. Affected terms are military munitions, operational range, range activities, and UXO.

The Department has also added the term ''munitions and explosives of concern (MEC)'' to the final rule for consistency with new Department policy. MEC, which is intended to distinguish specific categories of military munitions that may pose unique explosives safety risks, means UXO, as defined in 10 U.S.C. 101(e)(5); discarded military munitions, as defined in 10 U.S.C. 2710(e)(2); or munitions constituents (*e.g.*, TNT, RDX), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard. As used in the rule, this term does not create any new category of materials covered under the proposed rule, nor does it exclude any category of materials covered under the proposed rule, and is adopted herein simply for consistency with terminology used elsewhere within the Department.

In response to a comment, the term ''chemical warfare agents'' has been changed to ''chemical agents.'' The definition of ''chemical warfare agents'' has also been changed to read: ''Chemical agent means a chemical compound (to include experimental compounds) that, through its chemical properties produces lethal or other damaging effects on human beings, is intended for use in military operations to kill, seriously injure, or incapacitate persons through its physiological effects. Excluded are research, development, testing and evaluation (RDTE) solutions; riot control agents; chemical defoliants and herbicides; smoke and other obscuration materials; flame and incendiary materials; and industrial chemicals. This definition is adopted based on 50 U.S.C. 1521(j)(1) in which the term ''chemical agents and munitions'' means ''* * * an agent or munition that, through its chemical properties, produces lethal or other damaging effects on human beings, except that such term does not include riot control agents, chemical herbicides, smoke, and other obscuration materials.'' This change makes the terminology used in the final rule consistent with the existing statutory definition of ''chemical agent and munition'' in 50 U.S.C. 1521(j)(1). The Department observes that chemical agents under 50 U.S.C. 1521(j)(1) include the V- and G-series nerve agents; H-series (*i.e.*, ''mustard'' agents) and L-series (*i.e.*, lewisite) blister agents; and certain industrial chemicals, including hydrogen cyanide (AC), cyanogen chloride (CK), or carbonyl dichloride (called phosgene or CG), when contained in a military munition; and does not include riot control agents (*e.g.*, w-chloroacetophenone [CN] and o-chlorobenzylidenemalononitrile [CS] tear gas); chemical defoliants and herbicides; smoke and other obscuration materials; flame and incendiary materials; and industrial chemicals that

are not configured as a military munition.

The definition of ''chemical warfare materiel (CWM)'' has changed to reflect the adoption of the term ''chemical agent'' discussed previously in this rule.

One commenter stated that although the definition of ''military range'' includes buffer zones with restricted access and exclusionary areas, exclusionary zones at some former target bombing areas are not well defined. While the Department realizes this may be the case at some former military ranges, it believes site conditions and personnel experience will help ensure such areas are included and provide for reasonable application of the rule.

A commenter requested a change to the definition of ''MRS,'' maintaining that portions of a munitions response area (MRA) may not be part of an MRS and, therefore, would not be evaluated using this rule. The Department would like to clarify that, depending on site-specific factors, an MRA may be designated a single MRS or may be subdivided for the purposes of evaluation into multiple MRSs. In each and every case, however, once all the MRSs comprising an MRA have been evaluated (whether the MRA consists of a single MRS or multiple MRSs), the total acreage encompassed by the MRA will have been evaluated using this rule. Through this disciplined and documented approach, the protocol will ensure that an MRA's entire acreage will be addressed.

For example, in investigating a 1,000-acre MRA, the Department may identify five discrete locations (*e.g.*, MRS 1 through 5) that constitute 1,000 acres that require evaluation. Formal decision documents will be prepared for all five MRSs that document the Department's evaluations for the entire 1000 acres. This will ensure that the entire MRA acreage will be evaluated using the protocol.

One commenter requested adding to the end of the definition of ''MRA'': ''* * * therefore, all property within a munitions response area is known to require a munitions response.'' The Department observes that the definition of ''MRA'' already states, ''An MRA is comprised of one or more munitions response sites'' and the definition of an ''MRS'' is ''* * * a discrete location within an MRA that is known to require a munitions response.'' Because an MRA must comprise at least one MRS, the Department does not believe the definition requires modification as suggested by the commenter.

In response to another comment as to whether or not the acreage of an MRA includes water bodies, the Department observes that the acreage of an MRA may extend beyond the terrestrial boundary and include water bodies, such as lakes, ponds, streams, and coastal areas.

One commenter requested adding CWM, in addition to UXO, DMM, and MC, to the definitions of several terms, including MRA and MRS, and at several locations in the tables (Appendix A) of the proposed rule. The Department points out that the definition of ''military munitions'' already includes CWM; therefore, all other terms that build on the military munitions definition, specifically UXO and DMM, already include CWM.

C. Section 179.4. Policy

One commenter noted many positive attributes to the proposed rule. These included affirmative statements concerning the Department's active solicitation of participation by and inclusion of the states, the tribes, and stakeholders; identifying the need for a quality assurance panel to promote consistency in the application of the rule; straightforward recognition that the same level of information will not be available for all sites, and that for some sites, more information will be required in order to realistically apply the rule; and weighting factors, for the most part, are well explained and easy to understand. These comments did not require changing the proposed rule.

One commenter stated that the team approach to prioritization was too broad and implies that several people from multiple agencies, community groups, or tribes will need to be involved in the application of the rule to a specific MRS. The Department continues to believe that it is important to receive input and feedback from such sources in assigning a relative priority for response activities to each MRS and has not amended the proposed rule to address this comment.

The Department received a comment recommending that a state regulatory agency be designated to play a major role in the munitions response process, and if a state agency is unable to perform in this capacity, the U.S. Environmental Protection Agency (U.S. EPA) should do so. In such situations, involvement of U.S. EPA personnel is a matter for U.S. EPA to decide and not the Department; however, the Department notes that it will use a team approach for prioritization and encourages these agencies to participate.

The Department received a comment soliciting clarification on whether stakeholders will have input on the ''no longer required'' determination. An MRS will have the ''no longer required'' determination assigned only after the Response Complete (RC) or Remedy-in-Place (RIP) milestone is achieved. Stakeholders are afforded opportunities to participate and provide input throughout the munitions response process, to include prior to and following these milestones; however, stakeholders do not have a role in determining when an MRS has met the requirements for achieving these milestones.

D. Section 179.5. Responsibilities

A comment was received regarding the term ''administrative control'' and whether this term referred to specific Component's ownership responsibilities. The Department would like to clarify that the phrase ''under their administrative control'' reflects the delegation of responsibilities for munitions responses within the Department. This responsibility does not require the Department to have a current real property interest at a particular MRS.

The Department received several comments pertaining to prioritization at FUDS sites. One commenter asked for clarification of the phrase ''under the administrative control of,'' specifically pertaining to how the rule will apply at a FUDS. Under 10 U.S.C. 2701, the Department is required to ''carry out a program of environmental restoration * * * at each facility or site which was under the jurisdiction of the Secretary * * * at the time of actions leading to contamination.'' Therefore, under this requirement, the Department will apply the rule to an MRS at a FUDS if that MRS is included in the 10 U.S.C. 2710(a) inventory. FUDS, however, are not considered under the Department's control for the purposes of the Status of Property data elements in Appendix A, Tables 5 and 15.

Another commenter noted that for FUDS, the property owner should be involved with applying the rule to any MRS at the FUDS. The Department agrees and has modified section 179.5 to state: ''Ensure that EPA, other federal agencies (as appropriate or required), state regulatory agencies, tribal governments, local restoration advisory boards or technical review committees, local community stakeholders, and the current property owner (if the MRS is outside Departmental control) are offered opportunities to participate throughout the process of application of the rule and in making sequencing recommendations.''

Several commenters stated concerns pertaining to MRSs that have already been evaluated using the Risk

Assessment Code (RAC). The Department wishes to clarify that all MRSs in the 10 U.S.C. 2710(a) inventory will be evaluated using the rule and the most current information available, irrespective of whether that MRS has been evaluated under the RAC framework.

One commenter inquired whether a low prioritization score means ''no further action.'' The Department would like to clarify this is not the case. Prioritization scores are the first tool when defining the need for a munitions response.

One commenter asked the Department to add a definition of ''evaluation pending'' to the rule and publish procedures and time frames that apply to evaluation pending sites. The Department's response is that evaluation pending status is given to an MRS only when there is insufficient information to complete the evaluation using the rule. As soon as sufficient data are available, the MRS will be evaluated. Although the Department is not specifying time frames for addressing the MRS in evaluation pending status as part of this regulation, the Department will be developing specific goals to drive program progress.

A commenter asked for clarification as to when the rule will be applied at sites where the environmental restoration process is considered complete. The Department responds that, as stated in the proposed rule, an MRS no longer requires a priority when the Department has achieved the RC or RIP milestones. This means that a Component or another entity has conducted a munitions response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and/or five-year reviews, is required.

There were many comments pertaining to the quality assurance panel that will review prioritization decisions, especially inquiries about the panel's composition and authority. The Department wishes to clarify that the panel will comprise Component representatives trained in application of the rule who were not involved in the initial scoring of a specific MRS being reviewed. Stakeholders participate in application of the rule at an MRS, but will not be part of the quality assurance panel. The panel is an internal management and oversight function to ensure consistency of the rule's application. Components are, however, required to provide regulators and stakeholders the opportunity to comment on the quality assurance panel's rationale for any changes to the priority originally assigned.

One commenter proposed that the circumstances under which the rule shall be reapplied include when a quality assurance panel recommends a priority change. In response, the Department states that the panel will not direct a Component to reapply the rule; rather, the panel's decision, when adopted, will supersede the original priority assigned. If the panel recommends a change that results in a different priority, the Component will report, in the inventory data submitted to the ODUSD(I&E), the rationale for this change. The Component will also provide this rationale to the appropriate regulatory agencies and involved stakeholders for comment before finalizing the change.

Another commenter expressed support for the quality assurance panel in ensuring uniform application of the rule, but voiced concern this panel may not be effective if they must review all decisions before the prioritization can be finalized. According to the comment, initially it may be more productive to require that the panel review a percentage of the priority decisions to ensure they can review enough data to decide either to support or to change the priority assigned. The Department's response is that absent a review of each prioritization decision, it cannot be stated with authority that all decisions are in fact representative of site conditions and that the rule has been applied in a consistent manner. For this reason, at least initially, the Department is unwilling to consider a sampling-based approach to the work of the quality assurance panel.

One commenter stated that the rule's emphasis on Management Action Plans (MAPs) may place a strain on already limited state resources, especially in those states that do not already have a MAP. The Department responds that MAPs have been a requirement for all sites addressed under the Defense Environmental Restoration Program (DERP) for many years. If a specific site is not addressed in a MAP, that matter should be referred to the appropriate Component's Deputy Assistant Secretary with responsibility for environmental matters. Should such a referral not result in action, the matter should then be referred to the ODUSD(I&E).

Another commenter questioned how the MAPs for several MRSs would be integrated with the statewide MAP being developed in the FUDS program. The Department would like to clarify that the statewide MAP in the FUDS program collectively addresses all FUDS within a state, and that a MAP for each individual FUDS is also required.

Several commenters noted that conditions at an MRS are subject to change and such changes should be reflected in the priority. The Department agrees and has designed the rule to be reapplied if any specific factor considered in the application of the rule changes and if that change has the potential to affect the priority assigned.

There were several comments pertaining to sites where investigations were previously conducted. In response, the Department affirms that an appropriate munitions response is required for each MRS, and that an MRS reaches the ''no longer required'' evaluation only when the Department has conducted a munitions response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and/or five-year reviews, is required.

One commenter questioned the Department's reasons for rescoring sites based on a munitions response, arguing that the result will be to lower scores at the MRS without making progress toward completing all required munitions response activities. The commenter feels that partial munitions responses and continual rescoring is an inefficient approach to the program as a whole. The commenter suggests that once an MRS has received a score suitable to obtain funding, the score should not be lowered based on a munitions response that does not comprehensively and completely address the hazards present at the MRS. The Department disagrees, and notes that an annual reevaluation of the priority assigned to each MRS is statutorily mandated under 10 U.S.C. 2710(c)(1).

In response to a comment received on the certified letter the Department will send to states, territories, federal agencies, and tribal and local governments requesting their involvement in prioritization, the Department will send the letter to any known designee specified by the organization, or in the absence of such a designation, to the head of the organization.

E. Section 179.6. Procedures

This section addresses comments received on section 179.6 of the proposed rule and on the classification tables in Appendix A.

One commenter recommended that the Department revise the rule so that all data elements are consistent using a scale of zero to five; the Explosive Hazard Evaluation (EHE) module,

Chemical Warfare Materiel Hazard Evaluation (CHE) module, and Relative Risk Site Evaluation (RRSE) module be combined into one module; and the priority assigned to a site not be influenced by the type or source of the hazard that may be present at the site. The Department has not adopted such a change. Reducing the scale from seven to five, eliminating the modules, and not addressing the type and source of the hazard will not ensure that the priority given to an MRS adequately reflects the hazard posed by conditions at the MRS. The Department's objectives for the rule are: (1) ensuring that the priority sufficiently reflects actual conditions and potential hazards at the MRS, and (2) that the tool used be straightforward and easy to use. The current construct achieves those objectives.

One commenter requested clarification as to the correct procedure when multiple classifications apply at a given MRS. The commenter questioned whether the scores are cumulative within the module or if only the highest value is used. The Department wishes to clarify that the one highest value within each data element is used. For example, if at a specific MRS both (1) hand grenades containing an explosive filler, which would be categorized as sensitive under Appendix A, Table, and would score 30, and (2) DMM, containing a high-explosive filler, that have not been damaged by burning or detonation, which would be categorized as high explosive (unused) under Appendix A, Table 1, and would score 15 are present, the score (30 points) for the hand grenades containing an explosive filler would be selected.

Numerous comments received address both the EHE and CHE modules, particularly pertaining to the accessibility and receptor factors of these modules. Where this is the case, the comment and response appear under the EHE module responses for simplicity, but pertain to both sections.

1. Section 179.6(a). Explosive Hazard Evaluation Module

The Department received numerous comments on the Munitions Type data element (Appendix A, Table 1) and modified the rule to address many of the comments. For example, the Department modified two classifications within this data element to reflect the inherent difference between primary and secondary explosives. Explosives are classified as primary or secondary based on their susceptibility to initiation. Primary explosives, such as lead azide, are highly susceptible to initiation. Secondary explosives (*e.g.*, TNT, RDX, HMX), which constitute the bulk of the explosives likely to be present at an MRS, are formulated to be far less susceptible to initiation. To address these differences, the Department added to the sensitive classification: ''Bulk primary explosives, or mixtures of these with environmental media such that the mixture poses an explosive hazard.'' The Department also revised the Bulk high explosives, pyrotechnics or propellant classification to exclude primary explosives: ''Bulk secondary explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.''

Also pertaining to the Munitions Type data element, another commenter noted that bulk high explosives mixed with environmental media can be reactive as well as explosive, and the hazard threshold of explosive is too high and should be lowered. The commenter suggested adding ''or reactive'' after ''that result in the mixture being explosive'' in the description of ''bulk high explosives'' and definitions for the terms ''reactive'' and ''explosive soil.'' The Department chose not to make these changes because the commenter did define ''reactive'' in this context, and the focus of the EHE module is explosive hazards.

The Department also added an additional classification to the Munitions Type data element to reflect the lesser risk posed by pyrotechnics that are unused or undamaged. The Pyrotechnic (used or damaged) classification is assigned a score of 20 points, while the Pyrotechnic (not used or damaged) classification is assigned a score of 10 points.

The Department modified the text of the Propellant classification to be consistent with the other classifications, adding ''* * * that have been damaged by burning or detonation'' and ''* * * that are deteriorated to the point of instability'' to the criteria for propellants that are DMM. The Department also corrected the Practice classification pertaining to the criteria for DMM to read: ''* * * that have not been damaged by burning or detonation'' and ''* * * that have not deteriorated to the point of instability.'' The Department also provided greater detail in the definition of a ''practice munition.''

One commenter stated that all practice munitions should be classified together and any MRS with practice munitions should receive a score of 15. The commenter's position is that many practice munitions with sensitive fuzes have miniscule amounts of explosives, while other practice munitions without sensitive fuzes have a much larger explosive or pyrotechnic spotting charge (*e.g.*, practice bombs). Because practice bombs, which receive a score of 5, account for some of the most common and dangerous UXO and cause many serious injuries, the commenter feels that practice munitions without sensitive fuzes that have explosive or pyrotechnic spotting charges are not classified correctly. The Department agrees with the commenter that practice munitions with explosive or pyrotechnic charges do pose an explosive hazard. When developing the rule, the Department defined practice munitions as those munitions that contain inert filler. Practice munitions with explosive or pyrotechnic charges are classified separately under the same data element and are given a value.

One commenter identified an inconsistency pertaining to the Munitions Type data element in that the definition of ''small arms ammunition'' category used the term ''evidence'' but did not specify whether this included ''historical evidence'' and ''physical evidence,'' as is the case for ''evidence of no munitions.'' The Department has revised the small arms ammunitions category within the Munitions Type data element to state: ''All used munitions or DMM that are categorized as small arms ammunition. [Physical evidence or historical evidence that no other types of munitions (*e.g.*, grenades, sub-caliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.]''

Several commenters questioned the level of investigation required for assessing whether physical or historical evidence indicates that no UXO or DMM are present and suggested that specific investigation requirements should be developed for different sites. The Department has defined both historical evidence and physical evidence in the rule. The personnel applying the rule at an MRS will determine the appropriate level of evidence. The Department will not provide additional detail in the final rule, but may address this situation in implementing guidance or training materials.

One commenter requested clarification on the applicability of the proposed rule to open burning/open detonation (OB/OD) units. The commenter expressed concern that the rule indicates that OB/OD sites are excluded because they were used or permitted for disposal of military munitions. The Department would like to clarify that OB/OD units are subject

to prioritization under the rule only when the unit meets the requirements for inclusion in the 10 U.S.C. 2710(a) inventory.

One commenter suggested specifically including quality assurance test ranges within the EHE module Source of Hazard data element (Appendix A, Table 2) as they are not currently identified. To the extent that a quality assurance test range is a location that is known or suspected of containing UXO, DMM, or MC and is included in the inventory required under 10 U.S.C. 2710(a), the rule would be applied to that location. To the extent that such a quality assurance test range meets the criteria of Appendix A, Table 2 (*i.e.*, it meets the test for being a ''former range''), it is already included.

One commenter did not understand why a former munitions treatment area or unit would receive a lower score than a former military range given the unknown hazard posed by munitions that have been treated by OB/OD. The Department's response is that the higher value assigned to former military ranges reflects the fact that UXO are fuzed munitions that have been through their firing and arming cycle. In contrast, munitions treated in an OB/OD unit, while potentially damaged, are not normally fuzed and would most likely not complete their arming sequence. For this reason, UXO at a former military range is considered to pose a greater hazard than DMM at an OB/OD site.

In response to a comment, the Department modified the Former industrial operating facilities classification within the Source of Munitions data element to include former munitions maintenance facilities.

A commenter requested the definition of ''evidence of no munitions'' within the Munitions Type, Source of Hazard, and Location of Munitions (Appendix A, Tables 1, 2, and 3) data elements be changed to indicate that evidence shows that no UXO or DMM were ''ever''resent. The Department declines to make this change as the Department does not want to exclude sites from this classification where evidence indicates that munitions were at one time present but have since been removed, for example, as part of normal Department operation of a military range while the range was in use. This situation is different from UXO or DMM that are removed as part of a munitions response, as described in the next paragraph.

Another commenter asked about UXO that is on the surface and has since been removed, and UXO that is emergent from year to year, such as through frost heave. If munitions were found on the surface of an MRS, the MRS would be classified as Confirmed Surface. If investigation confirms that there are only subsurface munitions present, and natural phenomena (*e.g.*, frost heave or tidal action) occur on the MRS, the second-highest category—Confirmed subsurface, active—should be selected.

In response to a comment, the Department clarified the definition of ''on the surface'' to mean above the soil layer. UXO found in the tundra of Alaska, for example, is considered ''on the surface'' for the purposes of the rule, as the tundra is above the soil layer.

Several commenters stated that within the Information on the Location of Munitions and the Information on the Location of CWM data elements (Appendix A, Tables 3 and 13), no water depth is specified for the Subsurface, physical constraint category. The Department, however, would like to note that in these tables, a water depth of 120 feet was cited as a physical constraint.

Several commenters asked the relevance for selecting 120 feet as the depth for constituting a subsurface physical constraint. The Department selected this depth because of the limited time (less than 15 minutes) normally allowed to scuba divers at this depth, the considerable effort needed to dive to and below this depth, and the dangers associated with such deep dives to basic scuba divers.

Also pertaining to Appendix A, Tables 3 and 13, a commenter requested that the Department use caution when evaluating activities that are ''likely to occur'' because land use and recreational activities can change in ways that no one can predict. The commenter also noted that similar caution is needed when evaluating physical constraints because some constraints are barriers only if they are both kept in place and maintained. The Department agrees with the commenter that conditions may change over time. To address changes that may occur over time, the rule requires reevaluation and rescoring if site conditions change.

Pertaining to the Ease of Access data elements (Appendix A, Tables 4 and 14), one commenter stated that the proposed rule was unclear if deep-water areas without any monitoring would be scored as a complete or incomplete barrier. The Department's response is that if a barrier such as deep water is present, it is evaluated as to its effectiveness in preventing access to all parts of the MRS. In the specific case described in the comment, deep-water areas not subject to surveillance would be scored as Barrier to MRS access is complete, but not monitored.

One commenter stated that it is inequitable that the highest score under the Ease of Access data element (Appendix A, Tables 4 and 14) is a ''10,'' indicating all areas of the MRS are accessible, whereas the Information on Location of Munitions and Information on Location of CWM data elements (Appendix A, Tables 3 and 13) have a maximum score of 20, and a score of 10 represents only the suspected presence of UXO or DMM. The Department believes the current construct is appropriate because the Information on Location of Munitions and Information on Location of CWM data elements address access to the munition or CWM, while the Ease of Access data elements address access to the MRS.

Some commenters noted that some terms, such as ''barrier,'' need further clarification to ensure all users apply the term consistently. For example, people may assess differently whether a security patrol is a partial barrier to the MRS or not a barrier at all. Additionally, perceptions of a barrier may vary, as ''deep or fast-moving water'' may be a challenge instead of a barrier to some people. The Department recognizes these commenters' points but believes the definition is sufficient for the purposes of prioritization. Final determination as to what features, either natural or man-made, are barriers should be based on site-specific knowledge and the judgment of the personnel applying the rule to a specific MRS. Additionally, the Component's quality assurance panels will ensure consistency in the final rule's application.

One commenter stated that some data elements, specifically within the accessibility and receptor factors, within the various modules and among modules, are redundant and should be consolidated. The Department disagrees. Each data element provides important information on its own, bringing data from different perspectives together to best reflect actual site conditions.

Several commenters expressed concern that the receptor factors of the EHE and CHE modules do not capture transient populations. The Department points out that two of the three data elements that address human receptors attempt to address population, regardless of whether it is permanent or transient. The Population Density data elements (Appendix A, Tables 6 and 16) focus on permanent population as based on U.S. Census Bureau data within a city, town, or county. The Population Near Hazard data elements (Appendix A, Tables 7 and 17) are based on any

inhabited structures, whether they are permanent or temporary, that are routinely occupied for any portion of a day. The Type of Activities/Structures data elements (Appendix A, Tables 8 and 18) are also intended to address both permanent and transient populations. The Department is confident that, combined, these data elements sufficiently address both permanent and transient populations.

A commenter questioned the relevance of the Population Density data element in scoring the EHE module because, per the comment, (1) this number is dependent upon and controlled by the Ease of Access data element, and (2) by including the Population Density element, the EHE module score unjustifiably and unnecessarily prioritizes higher those MRSs that are in more densely populated areas, even when potential access to the MRS is precluded by barriers. The Department disagrees because the Population Density data element considers both the on-site and off-site populations surrounding an MRS. While access is a prerequisite for an on-site population, the effects of an event (*e.g.*, an explosion) at an MRS may affect populations that are not on site. This is one of the reasons that several of the elements in the receptor factor include a swath extending up to two miles from the perimeter of the MRS. The same commenter also believed the Types of Activities/Structures data elements (Appendix A, Tables 8 and 18) can be reasonably measured via the Population Near Hazard data elements (Appendix A, Tables 7 and 17), noting that including the Types of Activities/Structures data elements only complicates the process and favors MRSs in higher population areas. The Department again disagrees. The Department included the Types of Activities/Structures data elements to account for the types of activities occurring on a site, and the potential for those activities to bring a receptor into contact with UXO or DMM. It was not developed to give undue weight to high-population areas.

One commenter did not agree that the two-mile criterion applied to evaluating the Population Near Hazard data element is reasonable or necessary for any MRS not having the potential to create a chemical agent hazard that could affect inhabitants within two miles of the boundary. Instead, distance criteria that more reasonably consider the risks from the actual or suspected types of explosive hazards should be used. The Department disagrees because the two-mile radius considers not only the size of the population that may come onto the MRS, but also the effects that an explosion on the MRS may have to areas off the MRS (*e.g.*, blast overpressure, fragment throw). While this distance may be less than two miles, the two-mile distance was selected as a conservative measure.

One commenter stated that the Population Near Hazard data elements should bear greater weight than the Population Density data elements because the greatest hazard is to the population closest to the MRS. The Department, however, notes that these data elements evaluate different aspects of population. The Population Density data elements are used to assess the number of persons that could possibly access the MRS, while the Population Near Hazard data elements focus on the population (through number of structures) within a two-mile range that could be impacted by an unintentional explosion or CA release. The data elements are complementary.

Several commenters disagreed with the Department's use of inhabited structures to indicate population in the Population Near Hazard and Types of Activities/Structures data elements as, for example, ''people may engage in all sorts of activities despite the absence of structures in the vicinity, and many of these activities would put them at considerably greater risk from military munitions than populations that are, relatively speaking, protected within structures.'' The Department notes the concern, but believes the rule sufficiently accounts for these populations. The rule relies on several indicators to assess potentially exposed populations. The Types of Activities/Structures data elements address activities conducted on the MRS, and the number of permanent or temporary structures present. Parks and recreational areas, where hikers, campers, and tourists may be present, are specifically included in the Types of Activities/Structures elements.

In response to one commenter's statement that UXO may be encountered through nonintrusive activities such as boating and fishing, the Department believes that such activities are accounted for in the Types of Activities/Structures data elements.

Several commenters noted that Types of Activities/Structures data elements seem structured to give the greatest weight to activities and structures involving the most people, and that warehousing, industrial, agricultural, and forestry activities are weighted less. Some commenters are concerned because these areas experience high-density populations and activities that penetrate the ground surface during working hours. The Department recognizes the commenters' concerns but notes that, even though agricultural and forestry activities penetrate the ground surface, the exposed population is typically smaller than commercial, residential, or recreational areas. The Department is balancing activity intrusiveness with the potential population that could be exposed to a hazard. The rule does, however, require reevaluation if site conditions change.

One commenter questioned how the scoring values among modules and within modules were selected. The commenter specifically noted that the numerical weighting assigned within and among data elements seemed arbitrary and unnecessarily complicated. Further, there is no rationale for applying a score of 30 (worst case score) to certain data elements and a value of only 5 (worst case score) to other data elements within the same module. The commenter cites the Population Near Hazard data element as an example. Within this data element, there are six classifications established based on the number of inhabited structures within a two-mile distance of an MRS. In this data element, 1–5 inhabited structures receives a score of only 1, while 26 or more inhabited structures receives a score of 5. The commenter believes that the score should be the same, regardless of whether a single residence or 26 residences were on or near the MRS. The Department disagrees with the commenter that all situations should be scored the same because it impairs differentiation and thus prioritization, which is the purpose of this rule. The rule-making development effort involved a series of meetings over a year and a half, including substantial consultation with states, tribes, and other federal agencies. The Department also tested the developing model during this time to determine if the model outcomes were reasonable given what was known about the trial MRSs. The data elements and scores as presented in the proposed rule provided the most rational results and distribution among the sites.

Many commenters believe that the definition of ''ecological resources'' (Appendix A, Tables 9 and 19) in the rule is too limited. The Department does not mean to imply that less sensitive ecological resources are not important. For the purposes of assigning a relative priority to each MRS, however, the Department believes that limiting this definition to the most sensitive habitats is appropriate so that these areas are elevated in priority.

Similar to the comments for ecological resources, a commenter noted that the definition of ''cultural resources'' used in the EHE and CHE modules is too narrow and the list of statutes should not be limited. The Department believes this definition is appropriate for the purposes of assigning a relative priority to each MRS.

One commenter stated that there may be only a few MRSs that score high enough to be included in the highest tier of the EHE module, and therefore, more sites will be distributed among the lower tiers. Based on the testing described in the proposed rule, the Department expects the universe of sites to be adequately distributed among the possible scores. The highest hazard sites are not expected to be the most numerous, nor are the lowest hazard sites expected to be the most numerous. The Department believes this construct is appropriate.

2. Section 179.6(b). Chemical Warfare Materiel Hazard Evaluation Module

One commenter agreed with the Department that MRSs with known or suspected CWM are important and deserve special attention. The commenter did state, however, that the potential for public exposure should be an important consideration when ranking such MRSs. MRSs that have high potential for public exposures and risk should be ranked higher than an MRS with CWM that has minimal opportunity for public exposure. The Department addressed this concern during the development of the rule by including data elements to factor in population density and public exposure. Based on the data used in the rule, an MRS with known or suspected CWM does not always rank higher than a site without CWM.

A commenter suggested that receptors under the CHE module should be weighted higher than those under the EHE module because CWM pose hazards associated with both the explosive impact and the dispersion of the chemical agents. The Department believes that the rule appropriately accounts for the special characteristics of CWM in the CWM Configuration and Sources of CWM data elements (Appendix A, Tables 11 and 12).

One commenter asked if all CWM is considered similar in the severity of its effects and regardless of concentration. The Department's response is that the rule does not consider the differences in the mechanism of action (e.g., neurotransmitter disruption) or the toxicological properties (*e.g.*, Lethal Dose for 50 percent of the exposed population [LD50]). The CWM Configuration and Sources of CWM data elements do address the differences in the hazards posed by CWM (*e.g.*, CWM with an explosive burster scores higher than CWM without a burster).

One commenter felt that classifying CWM mixed with UXO lower than CWM under the CWM Configuration data element does not make sense. The commenter stated that this implies that placing some conventional UXO at an MRS with known or suspected CWM can reduce the hazard at that site. To remedy the conflict, the commenter suggested deleting the category CWM mixed with UXO from Appendix A, Table 11 and treating all MRSs containing CWM UXO or damaged CWM DMM as the highest scoring hazard, irrespective of the presence of conventional munitions that are UXO or DMM. The Department, however, believes that explosively configured CWM, which are designed to achieve optimal dispersion of their chemical agent fill, that are UXO or that are damaged DMM should be assigned a higher score than undamaged CWM/DMM or CWM not configured as a munition that are mixed with conventional munitions that are UXO. The Department left this classification unchanged because the detonation of a conventional munition that both is a UXO and mixed with undamaged CWM/DMM or CWM not configured as a munition is less likely to result in a dispersal of any chemical agent present. The Department believes that the classifications assigned appropriately differentiate between the potential chemical agent hazards presented.

One commenter questioned why production facilities; research, development, testing and evaluation facilities; training facilities; and storage or transfer points were identified as separate categories with different hazard scorings within the Sources of CWM data element (Appendix A, Table 12). According to the commenter, the only important issues are: (1) The type of CWM (*i.e.*, it must be either UXO or DMM); (2) its condition (damaged or undamaged); and (3) the strength of evidence (known or suspected CWM contamination). The commenter recommended deleting all other categories. The Department does not believe that there are only three important issues and that the other categories are extraneous. The Department has identified those separate categories under the CWM Configuration and Sources of CWM data elements to enable it to evaluate all known and relevant data and to assign appropriate priorities.

One commenter stated that the rule does not consider CWM that has been managed via OB/OD activities or via on-site disposal (*e.g.*, burial). The Department disagrees, and observes that while not specifically described as OB/OD or burial sites, these sites have in common that any CWM present is DMM. The CWM Configuration data element (Appendix A, Table 11) specifically includes CWM that are DMM, and addresses those differently depending on whether or not the CWM has been damaged (irrespective of how that damage occurred). The Sources of CWM data element (Appendix A, Table 12) specifically considers DMM that are on the surface or in the subsurface, irrespective of how the CWM came to be there.

One commenter stated that it is not clear whether CWM mixed with UXO includes or purposely excludes explosively configured CWM. The Department's response is that explosively configured CWM that is either UXO or damaged DMM receives a score of 30 in Table 11 of Appendix A. The CWM mixed with UXO is used for undamaged CWM that are DMM or that are not configured as a munition, and that are commingled with conventional munitions that are UXO. These score 25.

One commenter questioned whether the receptor factor in the CHE module should be the same as for the EHE, given the impact of wind drift on populations if a chemical agent is released. Evaluation of factors such as dispersion by wind current is far more complex than is appropriate for a prioritization tool. Such factors may, however, be important during a munitions response and be important considerations in the evaluation of remedial alternatives. The Department believes that the current receptor construct is sufficient for assigning each MRS a relative priority.

3. Section 179.6(c). Health Hazard Evaluation (HHE) Module

The Department received a number of comments on the Relative Risk Site Evaluation (RRSE) module, which is intended to evaluate the health hazards associated with MC and any incidental nonmunitions-related contaminants at an MRS. The Department has revised and renamed this module in response to the most significant comments received on the proposed rule. Several commenters noted that although the EHE and CHE module results seemed well balanced in terms of the distribution of outcomes, the RRSE module appeared to score too many sites as ''high,'' inappropriately skewing the overall priority assigned to the MRS.

Specifically, it was observed that having only three outcomes (*i.e.*, high, medium, and low) as provided in the RRSE module can result in this one module being the dominating factor in the overall priority assignment. In response to this significant comment, the Department analyzed the construct of the module and revised it so that the outcome in the rule has seven possible answers, increasing the ability to differentiate among MRSs. Accordingly, the Department believes that the revised module better reflects the relative evaluation of explosive, CWM, and MC hazards potentially present at the site. The Department has also changed the name of the module to the Health Hazard Evaluation (HHE) Module to differentiate it from the three-outcome RRSE used in the Department's Installation Restoration program (IRP). The Department will apply the HHE only to MRSs subject to this rule. The HHE module is intended to evaluate health hazards associated with MC at an MRS, with only incidental nonmunitions-related contaminants addressed under the MMRP.

The RRSE will continue to be applied to sites in the IRP category of the DERP.

Within the revised framework, the data and the process by which the data are evaluated are the same as within the RRSE; however, the distinction between the previous and revised frameworks lies in the greater number of outcomes (*i.e.*, seven versus three). Only MRSs with the maximum results for the three factors (*i.e.*, Contaminant Hazard Factor (CHF), Receptor Factor, and Migration Pathway Factor) are assigned the highest priority (*i.e.*, Category A). In other words, only those MRSs with significant MC-related health hazards, an identified receptor, and an evident migration pathway are assigned to Category A for the HHE module.

Tables 1, 2, and 3 below illustrate the derivation of the seven categories of the HHE. Table 1, which reproduces Table 21 of Appendix A, provides the three potential outcomes for each of the factors in the HHE. Table 2, which reproduces Table 22 of Appendix A, illustrates the different possible combinations of the results. The frequency in this table denotes the number of times each combination is used. Table 3, which reproduces Table 23 of Appendix A, spreads the possible combinations across seven categories, permitting only the most and least hazardous combinations in the highest and lowest categories. The other combinations are spread across the five remaining categories in a bell curve based on frequency of the combination.

TABLE 1.—HHE MODULE RATING

Contaminant hazard factor		Receptor factor		Migration pathway factor	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

TABLE 2.—HHE MODULE RATING

Contaminant hazard factor	Receptor factor	Migration pathway		
		Evident	Potential	Confined
Significant	Identified	HHH	HHM	HHL
	Potential	HHM	HMM	HML
	Limited	HHL	HML	HLL
Moderate	Identified	HHM	HMM	HML
	Potential	HMM	MMM	MML
	Limited	HML	MML	MLL
Minimal	Identified	HHL	HML	HLL
	Potential	HML	MML	MLL
	Limited	HLL	MLL	LLL

TABLE 3.—HHE MODULE

Combination	Frequency	Category
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

A commenter asked why the ecological receptors for surface water and sediment in the Receptor factor are limited to critical habitats ''and other similar environments.'' The Department's response is that it chose to focus on locations of critical habitat as a means of delineating among ecological receptors. Almost all areas are habitat for some species, and considering all habitats equally provides no differentiating criteria. In response to the same commenter, the Department wishes to clarify that consumption of fish in contaminated waters is accounted for in the HHE.

One commenter questioned the exclusion of an ecological endpoint during the evaluation of surface soils and requested that the Department consider groundwater as a minor receptor factor. The Department's response is that ecological receptors are not considered for evaluation of the surface soil since ecological standards are generally not available for the CHF calculation.

Some comments were received requesting that the Department change the comparison value used for carcinogens from a 1×10^{-4} to a 1×10^{-6} value, which would make it consistent with some states' cleanup goals. This rule, however, is not using the 1×10^{-4} value for cleanup; it is being used to assign a relative priority for action. The Department believes that 1×10^{-4} is an appropriate value for prioritization. Further, changing the range will not change the relative ranking of any individual site, as all sites would shift equally if a different endpoint were used.

One commenter stated that the Receptor Factor should not be limited to surface soil as receptors have the potential for exposure to subsurface soil during intrusive activities or after development where subsurface soils have been brought to the surface. The

Department responds that where subsurface soil is coming to the surface, or is exposed in a manner in which people can contact it (*e.g.,* in an excavation), it is treated as surface soil.

Another commenter stated the module appears to underestimate the risks posed by landfills. The Department points out the releases from landfills usually do not include UXO, DMM, or MC. It is more likely that a landfill would be addressed under the IRP category of the DERP and, as such, would not be evaluated under this rule.

One commenter stated there is little detail describing the terms ''identified,'' ''potential,'' and ''limited'' receptors. Until guidance specific to the HHE is developed, the Department suggests reviewing the Relative Risk Site Evaluation Primer (available at *http://www.dtic.mil/envirodod*) for detailed information on the use of this factor.

A commenter remarked that the Receptor Factor for groundwater should consider individuals exposed inadvertently, such as construction workers conducting invasive activities, in addition to water supply exposure. The HHE was primarily developed to consider long-term chronic exposures, not short-term exposures, through water consumption because such exposures are the dominant case associated with groundwater contamination. Further, as part of prioritization, it would be difficult to determine if workers are being exposed in this way. Finally, this rule is not intended as a risk assessment nor will it take the place of a risk assessment, where unusual exposure scenarios can be properly considered.

A few commenters were concerned as to whether or not CHF values are established for all constituents, and if not, how the Department would establish these values. The Department will initially adopt the current contaminant tables in the Relative Risk Site Evaluation Primer as a basis for the HHE. These values are updated every few years. The Department will also continue to work with U.S. EPA in its efforts to promulgate CHF values for MC and for other constituents.

Several comments pertained to state involvement and concerns about data quality and consistency. The Department intends on developing guidance and conducting training to ensure consistency in implementation of the rule. Additionally, states will be involved in applying the rule, including the HHE module.

4. Section 179.6(d). Determining the MRS Priority

The Department received several comments regarding how the module for MC is integrated into the overall priority matrix because the EHE and CHE modules have seven categories and the RRSE category has three. Some commenters believe that because there are too few RRSE categories, sites with high RRSE scores drive the priority unnecessarily too high. In response to this and other comments, the Department revised the RRSE module (now the HHE module) to provide a number of categories consistent with the other modules in the rule.

One commenter remarked on the pros and cons of driving module scores into tiers versus discrete scores and on the Department's intentions. The Department's response is that the Department's intent was to assign relative priorities to each MRS, not to develop a one-N listing of priorities. If the latter had been the intent, the number of possible outcomes would have become unwieldy.

One commenter maintained that the module with the lowest numerical priority value should not determine the MRS priority. The commenter's view is that this approach is intrinsically flawed because it fails to consider the cumulative risk posed by the two modules having a lesser priority ranking, even though those risks may be significant, and when combined, may be greater than that posed by the third module. The commenter suggested that all module priority scores be considered cumulatively in determining the priority for establishing which MRS presents the greatest overall hazard. The Department acknowledges the commenter's concern that there is a cumulative aspect to the hazards evaluated by each module. During the development of the rule, the Department considered using a cumulative total to assign the priority but was unable to define the mathematical relationship between the three modules in a manner that appeared rational or acceptable to the states, tribes, and others consulted during the development. Therefore, the Department's approach is to assign the priority based on the highest hazard posed by the conditions at the site.

F. Section 179.7. Sequencing

Two commenters stated that although the factors to be considered in making sequencing decisions include the ''reasonably anticipated future land use,'' land use assumptions, even reasonable ones, may change and need to be reconsidered. The Department's response is that the rule is used to assign to each MRS a relative priority, given the associated risks. To the extent any specific factors considered in application of the rule change, and that change affects the priority assigned to an MRS, the annual reexamination of assigned priorities should identify and consider the change. As a rule, the Department will address those sites with the highest risk first. Sequencing decisions are, however, often driven by other factors. Although sequencing decisions may change as relative priorities change, once a sequencing decision is made and execution of the munitions response has begun, it is unlikely that a change in relative priority would affect the sequencing decision.

One commenter noted that the proposed rule required the Department to report the results of sequencing; however, there is no mention of how the Department will make available all the results of the ranking. In response, the Department will compile the sequencing results and make them available to the public.

V. Administrative Requirements

A. Regulatory Impact Analysis Pursuant to Executive Order 12866

Executive Order 12866 (58 FR 51735 [October 4, 1993]) requires each agency taking regulatory action to determine whether that action is ''significant.'' The agency must submit any regulatory actions that qualify as ''significant'' to the Office of Management and Budget (OMB) for review, assess the costs and benefits anticipated as a result of the proposed action, and otherwise ensure that the action meets the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may (1) have an annual effect on the economy of $100 million or more or adversely effect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The Department has determined that the rule is not a significant rule under Executive Order 12866 because it is not likely to result in a rule that will meet any of the four prerequisites.

(1) The rule will not have an annual effect on the economy of $100 million or more or adversely affect in a material

way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities.

The primary effect on the economy will be the necessity for state and/or local governments to conduct oversight of the environmental restoration activities. The Department previously determined that the rule does not place a burden in excess of $100 million each year on state, local, or tribal governments. The changes from the proposed rule do not significantly change the analysis conducted in support of the proposed rule, which showed that the effects on the economy as a whole, any particular sector of the economy, productivity, competition, or jobs are not significant. In addition, because the one impact that was identified, costs for state oversight are reimbursable through the Defense and State Memorandum of Agreement (DSMOA) program, the overall impact to any individual state is minimal.

Similarly, the previous determination that the proposed rule does not have a direct adverse effect on the environment, public health, and safety remains unchanged by the final rule. Any adverse effects were either a result of the actions that caused the UXO, DMM, or MC to be present at the MRS (e.g., the site's use as a military range, treatment of waste military munitions at the site) , which predate the application of the rule, or are the result of the munitions response activities that are implemented after the application of the rule. In the latter case, munitions response activities are performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), a process that fully considers the overall impacts to human health and the environment posed by UXO, DMM, or MC and the response to such.

For these reasons, the Department has determined that the rule will not adversely affect, in a material way, the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities.

(2) The rule will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.

Implementation of the rule will not create a serious inconsistency or otherwise interfere with another agency's action because the Department has lead authority for administering the DERP under 10 U.S.C. 2701(a)(1). The DERP statute delineates the responsibilities of the Department and authority of U.S. EPA to some extent. The Department is required by 10 U.S.C. 2701(a)(3) to consult with the U.S. EPA in its administration of the environmental restoration program. Further, Section 2701(c)(2) of the statute gives the Department the responsibility of conducting environmental restoration activities on all properties owned or leased by it, except those for which U.S. EPA has entered into a settlement with a potentially responsible party. The rule's ranking system will not interfere with the Hazard Ranking System (HRS) maintained by the U.S. EPA because each serves its own purpose. U.S. EPA uses the HRS to place uncontrolled waste sites on the National Priorities List (NPL). U.S. EPA does not use the HRS to determine the priority in funding U.S. EPA remedial response actions. The Department will use the rule to assign a relative priority to each MRS based on the risks posed at each MRS, relative to the risks posed at other MRSs, and may use the rule as a basis for determining which MRS will receive funding. The Department's use of the rule should not interfere with U.S. EPA's use of the HRS. The Department action may interfere with U.S. EPA action in a situation where U.S. EPA decides to pursue response action at an MRS that the Department has designated as a low priority. Where this occurs, the Department will cooperate, to the extent possible, with U.S. EPA and rely on existing interagency processes to reach agreement on MRS priorities and response actions. Based on the above reasoning, the Department has determined that there is minimal potential for inconsistencies or interference with action by any other agency.

(3) The rule will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof.

The rule will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof because no entitlements, grants, user fees, or loan programs are invoked through prioritization of each MRS for response activities.

(4) The rule will not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Finally, the rule does not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order. Congress has already established the requirement for environmental restoration of MRSs and for the Department's development of a method to assign each MRS a relative priority. The rule is merely a method for the Department to determine a relative priority of an MRS for response action. The Department has identified no novel legal or policy issues that this rule will create on either an MRS-specific basis or overall. Nor has the Department identified any novel legal or policy issues arising out of the President's priorities or principles set forth in the Regulatory Impact Analysis.

B. Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.,* as amended by the Small Business Regulatory Enforcement Fairness Act [SBREFA] of 1996), requires that an agency conduct a regulatory flexibility analysis when publishing a notice of rulemaking for any proposed or final rule. The regulatory flexibility analysis determines the impact of the rule on small entities (*i.e.*, small businesses, small organizations, and small governmental jurisdictions). SBREFA amended the Regulatory Flexibility Act to require federal agencies to state the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

The Department hereby certifies that the rule will not have a significant economic impact on a substantial number of small entities. The nature of the rule provides the factual basis for a determination that no regulatory flexibility analysis is required. The rule merely provides a procedure by which the Department may assign a relative priority to each MRS for response actions. No costs are directly imposed on small entities nor is any action directly required of small entities through this rule. Because the Department bears the financial responsibility for remediating MRSs, and the source of its funding is Congress, implementation of the rule will not directly affect small entities in a financial manner. For the foregoing reasons, the Department believes that the rule, if promulgated, would not have a significant economic impact on a substantial number of small entities.

C. Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, requires federal agencies to assess the effects of their regulatory actions on state, local, and tribal

governments and the private sector. Section 202 of the UMRA requires that, prior to promulgating proposed and final rules with ''federal mandates'' that may result in expenditures by state, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more in any one year, the agency must prepare a written statement, including a cost-benefit analysis of the rule. Under Section 205 of the UMRA, the Department must also identify and consider a reasonable number of regulatory alternatives to the rule and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. Certain exceptions to Section 205 exist. For example, when the requirements of Section 205 are inconsistent with applicable law, Section 205 does not apply. In addition, an agency may adopt an alternative other than the least costly, most cost-effective, or least burdensome in those cases where the agency publishes with the final rule an explanation of why such alternative was not adopted. Section 203 of the UMRA requires that the agency develop a small government agency plan before establishing any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments. The small government agency plan must include procedures for notifying potentially affected small governments, providing officials of affected small governments with the opportunity for meaningful and timely input in the development of regulatory proposals with significant federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

The Department has determined that the rule does not contain a federal mandate that may result in expenditures of $100 million or more for state, local, and tribal governments in the aggregate, or by the private sector in any one year. The term ''federal mandate'' means any provision in statute or regulation or any federal court ruling that imposes ''an enforceable duty'' upon state, local, or tribal governments, and includes any condition of federal assistance or a duty arising from participation in a voluntary federal program that imposes such a duty. The rule does not contain a federal mandate because it imposes no enforceable duty upon state, tribal, or local governments. The Department is responsible for funding munitions responses and imposes no costs on other entities by prioritizing MRSs using the rule. The Department recognizes that the state, local, or tribal government may expend funds to conduct oversight of the response activities. The rule, however, does not require such oversight. To the degree such oversight is required, it is required by preexisting law on which the rule has no effect.

D. Paperwork Reduction Act

The Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.*, prohibits a federal agency from conducting or sponsoring a collection of information that requires OMB approval, unless such approval has been obtained and the collection request displays a currently valid OMB control number. Nor is any person required to respond to an information collection request that has not complied with the PRA. The term ''collection of information'' includes collection of information from ten or more persons. The Department has determined that the PRA does not apply to this rule because, although the Department will collect information on the MRS, it does not mandate that any person supply information. All information collected from persons will be voluntary, for example, through an interview. Therefore, the PRA does not apply to the rule.

E. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, Section 12(d) (15 U.S.C. 272 note), directs federal agencies to use technical standards developed by voluntary consensus standards bodies in its regulatory activities, except in those cases in which using such standards would be inconsistent with applicable law or otherwise impractical. ''Technical standards'' means performance-based or design-specific technical specifications and related management systems practices. Voluntary consensus means that the technical standards are developed or adopted by voluntary consensus standards organizations. In those cases in which a federal agency does not use voluntary consensus standards that are available and applicable, the agency must provide OMB with an explanation.

The rule does not involve performance-based or design-specific technical specifications or related management systems practices. The values for relative risk used in the HHE module, to the extent they qualify as technical standards, were formed through consensus. The rule is therefore in compliance with the NTTAA.

F. Environmental Justice Requirements Under Executive Order 12898

Under Executive Order 12898, ''Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,'' a federal agency must, where practicable and appropriate, collect, maintain, and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin, or income. To the extent practical and appropriate, federal agencies must then use this information to determine whether their activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

The Department believes that implementation of the rule will address environmental justice concerns in several ways. First, the rule will address environmental justice by ensuring that prioritization is based primarily on risk to the human health and environment of all populations. The Department recognizes that prioritization of MRSs for response action could result in a low-priority designation for some MRSs located in low-income or minority neighborhoods. Under the risk-based approach, such prioritization could only be viewed as environmental injustice if low-income and minority populations were disproportionately located near low-risk MRSs. However, should this be the case, the final rule would allow the Department to consider this fact in its sequencing decisions. Second, the Department has reserved a step in the rule for consideration of environmental justice concerns, having supplemented the risk-based prioritization decision with consideration of whether low-income or minority populations are near the MRS in question. Third, because the rule will provide the Department with an established method for choosing which MRSs to address first, it will ensure uniformity among decisions and eliminate the potential for intentional discrimination against low-income and minority populations. Finally, the Department's engagement with various stakeholders, most notably tribal governments, in developing the rule has helped to build consideration of environmental justice concerns into the rule.

The Department plans to continue to study the environmental justice effects once the rule is implemented. Until that time, no data exist regarding whether low-income and minority populations live near high-risk MRSs as opposed to low-risk MRSs. As such, there is

currently no way of determining whether generally focusing response efforts first at those MRSs that pose a relatively higher risk will in any way adversely affect these or any particular segment of the population. The Department decided to include environmental justice considerations in the body of the proposed rule as a precautionary measure, but will examine the effect of the rule on low-income and minority populations, once the Department has implemented it and has compiled data from which to draw.

At this time, the Department believes that no action will directly result from the rule that will have a disproportionately high and adverse human health and environmental effect on any segment of the population. The Department will examine, however, the effects of implementation to ensure that no disproportionately high and adverse human health or environmental effect occurs.

G. Federalism Considerations Under Executive Order 13132

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), establishes certain requirements for federal agencies issuing regulations, legislative comments, proposed legislation, or other policy statements or actions that have ''federal implications.'' Under the Executive Order, any of these agency documents or actions have ''federal implications'' when they have ''substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.'' Section 6 of the Executive Order prohibits any agency from issuing a regulation that has federal implications, imposes substantial direct compliance costs on state and local governments, and is not required by statute. Such a regulation may be issued only if the federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments, or the agency consults with state and local officials early in the process of developing the proposed regulation. Further, a federal agency may issue a regulation that has federalism implications and preempts state law only if the agency consults with state and local officials early in the process of developing the proposed regulation.

The rule does not have federalism implications because it will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. The statute authorizing the Department's environmental restoration program, 10 U.S.C. 2701, clearly defines the role and responsibilities of the Department with respect to state and local governments. The role and primary responsibility of the Department is to implement an appropriate environmental restoration program at MRSs. The Department funds environmental restoration activities and does not directly affect the states in any manner. The only potential dispute regarding distribution of power may arise where the state attempts to require the Department to respond to an MRS under a state hazardous waste law, and the Department has not ranked the MRS as a high priority or allocated funding for environmental restoration of the MRS. Such a situation, however, would be dealt with per established legal principles regarding the relationship of states to the federal government. The rule does not alter this relationship. Additionally, it would not be appropriate for the rule to attempt to assign roles to the Department or any state because such assignment of roles is outside the scope of the statutory mandate. The rule does not impose direct compliance costs on state or local governments because the Department funds environmental restoration activities.

Finally, development of a method for prioritizing action at MRSs was specifically required by statute. Therefore, the requirements of the Executive Order, Section 6, do not apply to the rule.

List of Subjects in 32 CFR Part 179

Arms and munitions, Environmental protection, Government property, Military personnel.

■ Accordingly, 32 CFR part 179 is added to Chapter 1, Subchapter H to read as follows:

PART 179—MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL (MRSPP)

Sec.

Authority: 10 U.S.C. 2710 *et seq.*

§ 179.1 Purpose.

The Department of Defense (the Department) is adopting this Munitions Response Site Prioritization Protocol (MRSPP) (hereinafter referred to as the ''rule'') under the authority of 10 U.S.C. 2710(b). Provisions of 10 U.S.C. 2710(b) require that the Department assign to each defense site in the inventory required by 10 U.S.C. 2710(a) a relative priority for response activities based on the overall conditions at each location and taking into consideration various factors related to safety and environmental hazards.

§ 179.2 Applicability and scope.

(a) This part applies to the Office of the Secretary of Defense, the Military Departments, the Defense Agencies and the Department Field Activities, and any other Department organizational entity or instrumentality established to perform a government function (hereafter referred to collectively as the ''Components'').

(b) The rule in this part shall be applied at all locations:

(1) That are, or were, owned by, leased to, or otherwise possessed or used by the Department, and

(2) That are known to, or suspected of, containing unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC), and

(3) That are included in the inventory established pursuant to 10 U.S.C. 2710(a).

(c) The rule in this part shall not be applied at the locations not included in the inventory required under 10 U.S.C. 2710(a). The locations not included in the inventory are:

(1) Locations that are not, or were not, owned by, leased to, or otherwise possessed or used by the Department,

(2) Locations neither known to contain, or suspected of containing, UXO, DMM, or MC,

(3) Locations outside the United States,

(4) Locations where the presence of military munitions results from combat operations,

(5) Currently operating military munitions storage and manufacturing facilities,

(6) Locations that are used for, or were permitted for, the treatment or disposal of military munitions, and

(7) Operational ranges.

§ 173.3 Definitions.

This part includes definitions for many terms that clarify its scope and applicability. Many of the terms relevant to this part are already defined, either in 10 U.S.C. 101, 10 U.S.C.

2710(e), or the Code of Federal Regulations. Where this is the case, the statutory and regulatory definitions are repeated here strictly for ease of reference. Citations to the U.S. Code or the Code of Federal Regulations are provided with the definition, as applicable. Unless used elsewhere in the U.S. Code or the Code of Federal Regulations, these terms are defined only for purposes of this part.

Barrier means a natural obstacle or obstacles (*e.g.*, difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (*e.g.*, fencing), and combinations of natural and man-made obstacles.

Chemical agent (CA) means a chemical compound (to include experimental compounds) that, through its chemical properties produces lethal or other damaging effects on human beings, is intended for use in military operations to kill, seriously injure, or incapacitate persons through its physiological effects. Excluded are research, development, testing and evaluation (RDTE) solutions; riot control agents; chemical defoliants and herbicides; smoke and other obscuration materials; flame and incendiary materials; and industrial chemicals. (This definition is based on the definition of ''chemical agent and munition'' in 50 U.S.C. 1521(j)(1).)

Chemical Agent (CA) Hazard is a condition where danger exists because CA is present in a concentration high enough to present potential unacceptable effects (*e.g.*, death, injury, damage) to people, operational capability, or the environment.

Chemical Warfare Materiel (CWM) means generally configured as a munition containing a chemical compound that is intended to kill, seriously injure, or incapacitate a person through its physiological effects. CWM includes V- and G-series nerve agents or H-series (mustard) and L-series (lewisite) blister agents in other-than-munition configurations; and certain industrial chemicals (*e.g.*, hydrogen cyanide (AC), cyanogen chloride (CK), or carbonyl dichloride (called phosgene or CG)) configured as a military munition. Due to their hazards, prevalence, and military-unique application, chemical agent identification sets (CAIS) are also considered CWM. CWM does not include riot control devices; chemical defoliants and herbicides; industrial chemicals (*e.g.*, AC, CK, or CG) not configured as a munition; smoke and other obscuration-producing items; flame and incendiary-producing items; or soil, water, debris, or other media contaminated with low concentrations of chemical agents where no CA hazards exist. For the purposes of this Protocol, CWM encompasses four subcategories of specific materials:

(1) *CWM, explosively configured* are all munitions that contain a CA fill and any explosive component. Examples are M55 rockets with CA, the M23 VX mine, and the M360 105-mm GB artillery cartridge.

(2) *CWM, nonexplosively configured* are all munitions that contain a CA fill, but that do not contain any explosive components. Examples are any chemical munition that does not contain explosive components and VX or mustard agent spray canisters.

(3) *CWM, bulk container* are all non-munitions-configured containers of CA (e.g., a ton container) and CAIS K941, toxic gas set M–1 and K942, toxic gas set M–2/E11.

(4) *CAIS* are military training aids containing small quantities of various CA and other chemicals. All forms of CAIS are scored the same in this rule, except CAIS K941, toxic gas set M–1; and CAIS K942, toxic gas set M–2/E11, which are considered forms of CWM, bulk container, due to the relatively large quantities of agent contained in those types of sets.

Components means the Office of the Secretary of Defense, the Military Departments, the Defense Agencies, the Department Field Activities, and any other Department organizational entity or instrumentality established to perform a government function.

Defense site means locations that are or were owned by, leased to, or otherwise possessed or used by the Department. The term does not include any operational range, operating storage or manufacturing facility, or facility that is used for or was permitted for the treatment or disposal of military munitions. (10 U.S.C. 2710(e)(1))

Discarded military munitions (DMM) means 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. (10 U.S.C. 2710(e)(2))

Explosive hazard means a condition where danger exists because explosives are present that may react (*e.g.,* detonate, deflagrate) in a mishap with potential unacceptable effects (*e.g.,* death, injury, damage) to people, property, operational capability, or the environment.

Military munitions means 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 Department of Defense, the Coast Guard, the Department of Energy, and the 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, and demolition charges; and devices and components of any item thereof. The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, other than nonnuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 *et seq.*) have been completed. (10 U.S.C. 101(e)(4))

Military range means designated land and water areas set aside, managed, and used to research, develop, test, and evaluate military munitions, other ordnance, or weapon systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, and buffer zones with restricted access and exclusionary areas. (40 CFR 266.201)

Munitions and explosives of concern distinguishes specific categories of military munitions that may pose unique explosives safety risks, such as UXO, as defined in 10 U.S.C. 101(e)(5); discarded military munitions, as defined in 10 U.S.C. 2710(e)(2); or munitions constituents (*e.g.,* TNT, RDX), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard.

Munitions constituents means any materials originating from UXO, discarded military munitions, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. (10 U.S.C. 2710(e)(3))

Munitions response means response actions, including investigation, removal actions, and remedial actions, to address the explosives safety, human

health, or environmental risks presented by UXO, discarded military munitions (DMM), or munitions constituents (MC), or to support a determination that no removal or remedial action is required.

Munitions response area (MRA) means any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Examples are former ranges and munitions burial areas. An MRA comprises one or more munitions response sites.

Munitions response site (MRS) means a discrete location within an MRA that is known to require a munitions response.

Operational range means a range that is under the jurisdiction, custody, or control of the Secretary of Defense and that is used for range activities, or although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities. (10 U.S.C. 101(e)(3))

Range means a designated land or water area that is set aside, managed, and used for range activities of the Department of Defense. The term includes firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas. The term also includes airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration. (10 U.S.C. 101(e)(1)(A) and (B))

Range activities means research, development, testing, and evaluation of military munitions, other ordnance, and weapons systems; and the training of members of the armed forces in the use and handling of military munitions, other ordnance, and weapons systems. (10 U.S.C. 101(3)(2))

Unexploded ordnance (UXO) means military munitions that:

(1) Have been primed, fuzed, armed, or otherwise prepared for action;

(2) Have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and

(3) Remain unexploded, whether by malfunction, design, or any other cause. (10 U.S.C. 101(e)(5))

United States means, in a geographic sense, the states, territories, and possessions and associated navigable waters, contiguous zones, and ocean waters of which the natural resources are under the exclusive management authority of the United States. (10 U.S.C. 2710(e)(10))

§ 179.4 Policy.

(a) In assigning a relative priority for response activities, the Department generally considers those MRSs posing the greatest hazard as being the highest priority for action. The priority assigned should be based on the overall conditions at each MRS, taking into consideration various factors relating to safety and environmental hazard potential.

(b) In addition to the priority assigned to an MRS, other considerations (*e.g.,* availability of specific equipment, intended reuse, stakeholder interest) can affect the sequence in which munitions response actions at a specific MRS are funded.

(c) It is Department policy to ensure that U.S. EPA, other federal agencies (as appropriate or required), state regulatory agencies, tribal governments, local restoration advisory boards or technical review committees, and local stakeholders are offered opportunities to participate in the application of the rule in this part and making sequencing recommendations.

§ 179.5 Responsibilities.

Each Component shall:

(a) Apply the rule in this part to each MRS under its administrative control when sufficient data are available to populate all the data elements within any or all of the three hazard evaluation modules that comprise the rule. Upon further delineation and characterization of an MRA into more than one MRS, Components shall reapply the rule to all MRSs within the MRA. In such cases where data are not sufficient to populate one or two of the hazard evaluation modules (*e.g.,* there are no constituent sampling data for the Health Hazard Evaluation [HHE] module), Components will assign a priority based on the hazard evaluation modules evaluated and reapply the rule once sufficient data are available to apply the remaining hazard evaluation modules.

(b) Ensure that the total acreage of each MRA is evaluated using this rule (i.e., ensure the all MRSs within the MRA are evaluated).

(c) Ensure that EPA, other federal agencies (as appropriate or required), state regulatory agencies, tribal governments, local restoration advisory boards or technical review committees, local community stakeholders, and the current landowner (if the land is outside Department control) are offered opportunities as early as possible and throughout the process to participate in the application of the rule and making sequencing recommendations.

(1) To ensure EPA, other federal agency, state regulatory agencies, tribal governments, and local government officials are aware of the opportunity to participate in the application of the rule, the Component organization responsible for implementing a munitions response at the MRS shall notify the heads of these organizations (or their designated point of contact), as appropriate, seeking their involvement prior to beginning prioritization. Records of the notification will be placed in the Administrative Record and Information Repository for the MRS.

(2) Prior to beginning prioritization, the Component organization responsible for implementing a munitions response at the MRS shall publish an announcement in local community publications requesting information pertinent to prioritization or sequencing decisions to ensure the local community is aware of the opportunity to participate in the application of the rule.

(d) Establish a quality assurance panel of Component personnel to review, initially, all MRS prioritization decisions. Once the Department determines that its Components are applying the rule in a consistent manner and the rule's application leads to decisions that are representative of site conditions, the Department may establish a sampling-based approach for its Components to use for such reviews. This panel reviewing the priority assigned to an MRS shall not include any participant involved in applying the rule to that MRS. If the panel recommends a change that results in a different priority, the Component shall report, in the inventory data submitted to the Office of the Deputy Under Secretary of Defense (Installations & Environment) (ODUSD[I&E]), the rationale for this change. The Component shall also provide this rationale to the appropriate regulatory agencies and involved stakeholders for comment before finalizing the change.

(e) Following the panel review, submit the results of applying the rule along with the other inventory data that 10 U.S.C. 2710(c) requires be made publicly available, to the ODUSD(I&E). The ODUSD(I&E) shall publish this information in the report on environmental restoration activities for that fiscal year. If sequencing decisions result in action at an MRS with a lower MRS priority ahead of an MRS with a higher MRS priority, the Component shall provide specific justification to the ODUSD(I&E).

(f) Document in a Management Action Plan (MAP) or its equivalent all aspects

of the munitions responses required at all MRSs for which that MAP is applicable. Department guidance requires that MAP be developed and maintained at an installation (or Formerly Used Defense Site [FUDS] property) level and address each site at that installation or FUDS. For the FUDS program, a statewide MAP may also be developed.

(g) Develop sequencing decisions at installations and FUDS with input from appropriate regulators and stakeholders (*e.g.,* community members of an installation's restoration advisory board or technical review committee), and document this development in the MAP. Final sequencing may be impacted by Component program management considerations. If the sequencing of any MRS is changed from the sequencing reflected in the current MAP, the Component shall provide information to the appropriate regulators and stakeholders documenting the reasons for the sequencing change, and shall request their review and comment on that decision.

(h) Ensure that information provided by regulators and stakeholders that may influence the priority assigned to an MRS or sequencing decision concerning an MRS is included in the Administrative Record and the Information Repository.

(i) Review each MRS priority at least annually and update the priority as necessary to reflect new information. Reapplication of the rule is required under any of the following circumstances:

(1) Upon completion of a response action that changes site conditions in a manner that could affect the evaluation under this rule.

(2) To update or validate a previous evaluation at an MRS when new information is available.

(3) To update or validate the priority assigned where that priority has been previously assigned based on evaluation of only one or two of the three hazard evaluation modules.

(4) Upon further delineation and characterization of an MRA into MRSs.

(5) To categorize any MRS previously classified as ''evaluation pending.''

§ 179.6 Procedures.

The rule in this part comprises the following three hazard evaluation modules.

(a) Explosive Hazard Evaluation (EHE) module.

(1) The EHE module provides a single, consistent, Department-wide approach for the evaluation of explosive hazards. This module is used when there is a known or suspected presence of an explosive hazard. The EHE module is composed of three factors, each of which has two to four data elements that are intended to assess the specific conditions at an MRS. These factors are:

(i) *Explosive hazard,* which has the data elements *Munitions Type* and *Source of Hazard* and constitutes 40 percent of the EHE module score. (See Appendix A to this part, Tables 1 and 2.)

(ii) *Accessibility,* which has the data elements *Location of Munitions, Ease of Access,* and *Status of Property* and constitutes 40 percent of the EHE module score. (See Appendix A, Tables 3, 4, and 5.)

(iii) Receptors, which has the data elements *Population Density, Population Near Hazard, Types of Activities/Structures,* and *Ecological and/or Cultural Resources* and constitutes 20 percent of the EHE module score. (See Appendix A, Tables 6, 7, 8, and 9.)

(2) Based on MRS-specific information, each data element is assigned a numeric score, and the sum of these score is the EHE module score. The EHE module score results in an MRS being placed into one of the following ratings. (See Appendix A, Table 10.)

(i) *EHE Rating A (Highest)* is assigned to MRSs with an EHE module score from 92 to 100.

(ii) *EHE Rating B* is assigned to MRSs with an EHE module score from 82 to 91.

(iii) *EHE Rating C* is assigned to MRSs with an EHE module score from 71 to 81.

(iv) *EHE Rating D* is assigned to MRSs with an EHE module score from 60 to 70.

(v) *EHE Rating E* is assigned to MRSs with an EHE module score from 48 to 59.

(vi) *EHE Rating F* is assigned to MRSs with an EHE module score from 38 to 47.

(vii) *EHE Rating G (Lowest)* is assigned to MRSs with an EHE module score less than 38.

(3) There are also three other possible outcomes for the EHE module:

(i) *Evaluation pending.* This category is used when there are known or suspected UXO or DMM, but sufficient information is not available to populate the nine data elements of the EHE module.

(ii) *No longer required.* This category is reserved for MRSs that no longer require an assigned priority because the Department has conducted a response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and recurring reviews, is required.

(iii) *No known or suspected explosive hazard.* This category is reserved for MRSs that do not require evaluation under the EHE module.

(4) The EHE module rating shall be considered with the CHE and HHE module ratings to determine the MRS priority.

(5) MRSs lacking information for determining an EHE module rating shall be programmed for additional study and evaluated as soon as sufficient data are available. Until an EHE module rating is assessed, MRSs shall be rated as ''evaluation pending'' for the EHE module.

(b) Chemical Warfare Materiel Hazard Evaluation (CHE) module. (1) The CHE module provides an evaluation of the chemical hazards associated with the physiological effects of CWM. The CHE module is used only when CWM are known or suspected of being present at an MRS. Like the EHE module, the CHE module has three factors, each of which has two to four data elements that are intended to assess the conditions at an MRS.

(i) *CWM hazard,* which has the data elements *CWM Configuration* and *Sources of CWM* and constitutes 40 percent of the CHE score. (See Appendix A to this part, Tables 11 and 12.)

(ii) *Accessibility,* which focuses on the potential for receptors to encounter the CWM known or suspected to be present on an MRS. This factor consists of three data elements, *Location of CWM, Ease of Access,* and *Status of Property,* and constitutes 40 percent of the CHE score. (See Appendix A, Tables 13, 14, and 15.)

(iii) *Receptor,* which focuses on the human and ecological populations that may be impacted by the presence of CWM. It has the data elements *Population Density, Population Near Hazard, Types of Activities/Structures,* and *Ecological and/or Cultural Resources* and constitutes 20 percent of the CHE score. (See Appendix A, Tables 16, 17, 18, and 19.)

(2) Similar to the EHE module, each data element is assigned a numeric score, and the sum of these scores (*i.e.*, the CHE module score) is used to determine the CHE rating. The CHE module score results in an MRS being placed into one of the following ratings. (See Appendix A, Table 20.)

(i) *CHE Rating A (Highest)* is assigned to MRSs with a CHE score from 92 to 100.

(ii) *CHE Rating B* is assigned to MRSs with a CHE score from 82 to 91.

(iii) *CHE Rating C* is assigned to MRSs with a CHE score from 71 to 81.

(iv) *CHE Rating D* is assigned to MRSs with a CHE score from 60 to 70.

(v) *CHE Rating E* is assigned to MRSs with a CHE score from 48 to 59.

(vi) *CHE Rating F* is assigned to MRSs with a CHE score from 38 to 47.

(vii) *CHE Rating G (Lowest)* is assigned to MRSs with a CHE score less than 38.

(3) There are also three other potential outcomes for the CHE module:

(i) *Evaluation pending.* This category is used when there are known or suspected CWM, but sufficient information is not available to populate the nine data elements of the CHE module.

(ii) *No longer required.* This category is reserved for MRSs that no longer require an assigned priority because the Department has conducted a response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and recurring reviews, is required.

(iii) *No known or suspected CWM hazard.* This category is reserved for MRSs that do not require evaluation under the CHE module.

(4) The CHE rating shall be considered with the EHE module and HHE module ratings to determine the MRS priority.

(5) MRSs lacking information for assessing a CHE module rating shall be programmed for additional study and evaluated as soon as sufficient data are available. Until a CHE module rating is assigned, the MRS shall be rated as ''evaluation pending'' for the CHE module.

(c) Health Hazard Evaluation (HHE) module.

(1) The HHE provides a consistent Department-wide approach for evaluating the relative risk to human health and the environment posed by MC. The HHE builds on the RRSE framework that is used in the Installation Restoration Program (IRP) and has been modified to address the unique requirements of MRSs. The HHE module shall be used for evaluating the potential hazards posed by MC and other chemical contaminants. The HHE module is intended to evaluate MC at sites. Any incidental nonmunitions-related contaminants may be addressed incidental to a munitions response under the MMRP.

(2) The module has three factors:

(i) Contamination Hazard Factor (CHF), which indicates MC, and any nonmunitions-related incidental contaminants present; this factor contributes a level of High (H), Middle (M), or Low (L) based on Significant, Moderate, or Minimal contaminants present, respectively. (See Appendix A to this part, Table 21.)

(ii) Receptor Factor (RF), which indicates the receptors; this factor contributes a level of H, M, or L based on Identified, Potential, or Limited receptors, respectively. (See Appendix A, Table 21.)

(iii) Migration Pathway Factor (MPF), which indicates environmental migration pathways, and contributes a level of H, M, or L based on Evident, Potential or Confined pathways, respectively. (See Appendix A, Table 21.)

(3) The H, M, and L levels for the CHF, RF, and MPF are combined in a matrix to obtain composite three-letter combination levels that integrate considerations of all three factors. (See Appendix A, Table 22.)

(4) The three-letter combination levels are organized by frequency, and the resulting frequencies result in seven HHE ratings. (See Appendix A, Table 23.)

(i) HHE Rating A (Highest) is assigned to MRSs with an HHE combination level of high for all three factors.

(ii) HHE Rating B is assigned to MRSs with a combination level of high for CHF and RF and medium for MPF (HHM).

(iii) HHE Rating C is assigned to MRSs with a combination level of high for the CHF and RF and low for MPF (HHL), or high for CHF and medium for the RF and MPF (HMM).

(iv) HHE Rating D is assigned to MRSs with a combination level of high for the CHF, medium for the RF, and low for the MPF (HML), or medium for all three factors (MMM).

(v) HHE Rating E is assigned to MRSs with a combination level of high for the CHF and low for the RF and MPF (HLL), or medium for the CHF and RF and low for the MPF (MML).

(vi) HHE Rating F is assigned to MRSs with a combination level of medium for the CHF and low for the RF and MPF (MLL).

(vii) HHE Rating G (Lowest) is assigned to MRSs with a combination level of low for all three factors (LLL).

(5) The HHE three-letter combinations are replaced by the seven HHE ratings. (See Appendix A, Table 24.)

(6) There are also three other potential outcomes for the HHE module:

(i) *Evaluation pending.* This category is used when there are known or suspected MC, and any incidental nonmunitions-related contaminants present, but sufficient information is not available to determine the HHE module rating.

(ii) *No longer required.* This category is reserved for MRSs that no longer require an assigned MRS priority because the Department has conducted a response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and recurring reviews, is required.

(iii) *No known or suspected munitions constituent hazard.* This rating is reserved for MRSs that do not require evaluation under the HHE module.

(7) The HHE module rating shall be considered with the EHE and CHE module ratings to determine the MRS priority.

(8) MRSs lacking information sufficient for assessing an HHE module rating shall be programmed for additional study and evaluated as soon as sufficient data are available. Until an HHR module rating is assigned, the MRS shall be classified as ''evaluation pending'' for the HHE module.

(d) Determining the MRS priority. (1) An MRS priority is determined based on integrating the ratings from the EHE, CHE, and HHE modules. Until all three hazard evaluation modules have been evaluated, the MRS priority shall be based on the results of the modules completed.

(2) Each MRS is assigned to one of eight MRS priorities based on the ratings of the three hazard evaluation modules, where Priority 1 indicates the highest potential hazard and Priority 8 the lowest potential hazard. Under the rule in this part, only MRSs with CWM can be assigned to Priority 1 and no MRS with CWM can be assigned to Priority 8. (See Appendix A to this part, Table 25.)

(3) An ''evaluation pending'' rating is used to indicate that an MRS requires further evaluation. This designation is only used when none of the three modules has a numerical rating (*i.e.*, 1 through 8) and at least one module is rated ''evaluation pending.'' The Department shall develop program metrics focused on reducing the number of MRSs with a status of ''evaluating pending'' for any of the three modules. (See Appendix A, Table 25.)

(4) A ''no longer required'' rating is used to indicate that an MRS no longer requires prioritization. The MRS will receive this rating when none of the three modules has a numerical (*i.e.*, 1 through 8) or an ''evaluation pending'' designation, and at least one of the modules is rated ''no longer required.''

(5) A rating of ''no known or suspected hazard'' is used to indicate that an MRS has no known or expected hazard. This designation is used only when the hazard evaluation modules are

rated as ''no known or suspected explosive hazard,'' ''no known or suspected CWM hazard,'' and ''no known or suspected MC hazard.'' (See Appendix A, Table 25.)

§ 179.7 Sequencing.

(a) *Sequencing considerations.* The sequencing of MRSs for action shall be based primarily on the MRS priority determined through applying the rule in this part. Generally, an MRS that presents a greater relative risk to human health, safety, or the environment will be addressed before an MRS that presents a lesser relative risk. Other factors, however, may warrant consideration when determining the sequencing for specific MRSs. In evaluating other factors in sequencing decisions, the Department will consider a broad range of issues. These other, or risk-plus factors, do not influence or change the MRS priority, but may influence the sequencing for action. Examples of factors that the Department may consider are:

(1) Concerns expressed by regulators or stakeholders.

(2) Cultural and social factors.

(3) Economic factors, including economic considerations pertaining to environmental justice issues, economies of scale, evaluation of total life cycle costs, and estimated valuations of long-term liabilities.

(4) Findings of health, safety, or ecological risk assessments or evaluations based on MRS-specific data.

(5) Reasonably anticipated future land use, especially when planning response actions, conducting evaluations of response alternatives, or establishing specific response action objectives.

(6) A community's reuse requirements at Base Realignment and Closure (BRAC) installations.

(7) Specialized considerations of tribal trust lands (held in trust by the United States for the benefit of any tribe or individual). The United States holds the legal title to the land and the tribe holds the beneficial interest.

(8) Implementation and execution considerations (*e.g.*, funding availability; the availability of the necessary equipment and people to implement a particular action; examination of alternatives to responses that entail significant capital investments, a lengthy period of operation, or costly maintenance; alternatives to removal or treatment of contamination when existing technology cannot achieve established standards [*e.g.*, maximum contaminant levels]).

(9) Mission-driven requirements.

(10) The availability of appropriate technology (*e.g.*, technology to detect, discriminate, recover, and destroy UXO).

(11) Implementing standing commitments, including those in formal agreements with regulatory agencies, requirements for continuation of remedial action operations until response objectives are met, other long-term management activities, and program administration.

(12) Established program goals and initiatives.

(13) Short-term and long-term ecological effects and environmental impacts in general, including injuries to natural resources.

(b) *Procedures and documentation for sequencing decisions.* (1) Each installation or FUDS is required to develop and maintain a Management Action Plan (MAP) or its equivalent. Sequencing decisions, which will be documented in the MAP at military installations and FUDS, shall be developed with input from appropriate regulators and stakeholders (*e.g.*, community members of an installation's restoration advisory board or technical review committee). If the sequencing of an MRS is changed from the sequencing reflected in the current MAP, information documenting the reasons for the sequencing change will be provided for inclusion in the MAP. Notice of the change in the sequencing shall be provided to those regulators and stakeholders that provided input to the sequencing process.

(2) In addition to the information on prioritization, the Components shall ensure that information provided by regulators and stakeholders that may influence the sequencing of an MRS is included in the Administrative Record and the Information Repository.

(3) Components shall report the results of sequencing to ODUSD(I&E) (or successor organizations). ODUSD(I&E) shall compile the sequencing results reported by each Component and publish the sequencing in the report on environmental restoration activities for that fiscal year. If sequencing decisions result in action at an MRS with a lower MRS priority ahead of an MRS with a higher priority, specific justification shall be provided to the ODUSD(I&E).

Appendix A to Part 179—Tables of the Munitions Response Site Prioritization Protocol

The tables in this Appendix are solely for use in implementing 32 CFR part 179.

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Table 1
Classifications Within the EHE Module *Munitions Type* Data Element

Classification	Description	Score
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (e.g., submunitions, 40mm high-explosive [HE] grenades, white phosphorus [WP] munitions, high-explosive antitank [HEAT] munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions). • All hand grenades containing energetic filler. • Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." • All DMM containing a high-explosive filler that have: - Been damaged by burning or detonation - Deteriorated to the point of instability.	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: - Been damaged by burning or detonation - Deteriorated to the point of instability.	20
High explosive (unused)	• All DMM containing a high explosive filler that: - Have not been damaged by burning or detonation - Are not deteriorated to the point of instability.	15
Propellant	• All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., rocket motor). • All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., rocket motor) that are: - Damaged by burning or detonation - Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	• All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., rocket motor), that are deteriorated. • Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10

Table 1
Classifications Within the EHE Module *Munitions Type* Data Element

Classification	Description	Score
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: – Have not been damaged by burning or detonation – Are not deteriorated to the point of instability.	10
Practice	• All UXO that are practice munitions that are not associated with a sensitive fuze. • All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: – Been damaged by burning or detonation – Deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	• All used munitions or DMM that are categorized as small arms ammunition. [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former military range") means the MRS is a location that was (1) closed by a formal decision made by the Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or smaller, or for shotguns.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used. [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.]	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former military range") means the MRS is a location that was (1) closed by a formal decision made by the Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or below, or for shotguns.

Table 3
Classifications Within the EHE Module *Information on the Location of Munitions* Data Element

Classification	Description	Score
Confirmed surface	• Physical evidence indicates that there are UXO or DMM on the surface of the MRS. • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence (e.g., munitions debris, such as fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2

Table 3
Classifications Within the EHE Module *Information on the Location of Munitions* Data Element

Classification	Description	Score
Small arms (regardless of location)	• The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability. [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.]	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or smaller, or for shotguns.

Table 4
Classifications Within the EHE Module *Ease of Access* Data Element

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0

Notes:

• *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.

Table 5
Classifications Within the EHE *Status of Property* Data Element

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24 hours per day, every day of the calendar year.	0

Table 6
Classifications Within the EHE Module *Population Density* Data Element

Classification	Definition	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100 to 500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1

Notes:

- If an MRS is in more than one county, the Component will use the largest population value among those counties. If the MRS is within or borders a city or town, the population density for that city or town, instead of the county population density, is used.

Table 7
Classifications Within the EHE Module *Population Near Hazard* Data Element

Classification	Description	Score
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than military munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 8
Classifications Within the EHE Module *Types of Activities/Structures* Data Element

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9
Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act [ESA]) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. As examples: American Indians or Alaska Natives deem an MRS to be of religious significance; there are areas used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10
Determining the EHE Rating from the EHE Module Score

Overall EHE Module Score	EHE Rating
The MRS has an overall EHE module score from 92 to 100.	EHE Rating A
The MRS has an overall EHE module score from 82 to 91.	EHE Rating B
The MRS has an overall EHE module score from 71 to 81.	EHE Rating C
The MRS has an overall EHE module score from 60 to 70.	EHE Rating D
The MRS has an overall EHE module score from 48 to 59.	EHE Rating E
The MRS has an overall EHE module score from 38 to 47.	EHE Rating F
The MRS has an overall EHE module score less than 38.	EHE Rating G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard

Table 11
Classifications Within the CHE Module *CWM Configuration* Data Element

Classification	Description	Score
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0

Notes:

- The term *CWM/UXO* means CWM that are UXO.
- The notation *CWM/DMM* means CWM that are DMM, to include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11.
- The term CAIS/DMM means CAIS, other than CAIS K941 and K942.
- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former military range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former military range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface commingled with conventional munitions that are UXO.	10
Damaged CWM/DMM surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
CAIS/DMM surface	• There are CAIS/DMM on the surface.	10
Undamaged CWM/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
CAIS/DMM subsurface	• There are CAIS/DMM in the subsurface at the MRS.	5
Former CA or CWM Production Facilities	• The MRS is a facility that formerly engaged in production of CA or CWM, and CWM/DMM is suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM or CAIS/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0

Notes:

- The term *CWM /UXO* means CWM that are UXO.
- The notation *CWM/DMM* means CWM that are DMM, to include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11.
- The term CAIS/DMM means CAIS, other than CAIS K941 and K942.
- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score
Confirmed surface	• Physical evidence indicates that there are CWM on the surface of the MRS. • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence, other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating that CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence that there is no CWM present or there is historical evidence indicating that no CWM are present.	0

Notes:

- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 14
Classifications Within the CHE Module *Ease of Access* Data Element

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0

Notes:

- *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.

Table 15
Classifications Within the CHE Module *Status of Property* Data Element

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16
Classifications Within the CHE Module *Population Density* Data Element

Classification	Definition	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100 to 500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1

Notes:

• If an MRS is in more than one county, the Component will use the largest population value among those counties. If the MRS is within or borders a city or town, the population density for that city or town, instead of the county population density, is used.

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	Description	Score
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than military munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18
Classifications Within the CHE Module *Types of Activities/Structures* Data Element

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary, or within the MRS's boundary, that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19
Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act [ESA]) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. As examples: American Indians or Alaska Natives deem an MRS to be of spiritual significance; there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20
Determining the CHE Rating from the CHE Module Score

Overall CHE Module Score	CHE Rating
The MRS has an overall CHE module score from 92 to 100.	CHE Rating A
The MRS has an overall CHE module score from 82 to 91.	CHE Rating B
The MRS has an overall CHE module score from 71 to 81.	CHE Rating C
The MRS has an overall CHE module score from 60 to 70.	CHE Rating D
The MRS has an overall CHE module score from 48 to 59.	CHE Rating E
The MRS has an overall CHE module score from 38 to 47.	CHE Rating F
The MRS has an overall CHE module score less than 38.	CHE Rating G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard

Table 21
HHE Factor Levels

Contaminant Hazard Factor		Receptor Factor		Migration Pathway Factor	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22
HHE Three-letter Combination Levels

Contaminant Hazard Factor	Receptor Factor	Migration Pathway		
		Evident	Potential	Confined
Significant	Identified	HHH	HHM	HHL
	Potential	HHM	HMM	HML
	Limited	HHL	HML	HLL
Moderate	Identified	HHM	HMM	HML
	Potential	HMM	MMM	MML
	Limited	HML	MML	MLL
Minimal	Identified	HHL	HML	HLL
	Potential	HML	MML	MLL
	Limited	HLL	MLL	LLL

Table 23
HHE Module Ratings

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	
HML	D
MMM	
HLL	E
MML	
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 24
HHE Module Rating

Contaminant Hazard Factor	Receptor Factor	Migration Pathway		
		Evident	Potential	Confined
Significant	Identified	A	B	C
	Potential	B	C	D
	Limited	C	D	E
Moderate	Identified	B	C	D
	Potential	C	D	E
	Limited	D	E	F
Minimal	Identified	C	D	E
	Potential	D	E	F
	Limited	E	F	G

Table 25
MRS Priority Based on Highest Hazard Evaluation Module Rating

EHE Module Rating	Priority	CHE Module Rating	Priority	HHE Module Rating	Priority
Hazard Evaluation A (Highest)	2	Hazard Evaluation A (Highest)	1	Hazard Evaluation A (Highest)	2
Hazard Evaluation B	3	Hazard Evaluation B	2	Hazard Evaluation B	3
Hazard Evaluation C	4	Hazard Evaluation C	3	Hazard Evaluation C	4
Hazard Evaluation D	5	Hazard Evaluation D	4	Hazard Evaluation D	5
Hazard Evaluation E	6	Hazard Evaluation E	5	Hazard Evaluation E	6
Hazard Evaluation F	7	Hazard Evaluation F	6	Hazard Evaluation F	7
Hazard Evaluation G (Lowest)	8	Hazard Evaluation G (Lowest)	7	Hazard Evaluation G (Lowest) Low	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard	

Dated: September 27, 2005.

L.M. Bynum,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

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Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from Service and DoD databases. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the **MRS Summary**, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental nonmunitions-related contaminants (e.g., benzene, trichloroethylene) found at the MRS, and any potentially exposed human and ecological receptors. If possible, include a map of the MRS.

Munitions Response Site Name:	Target Hill (WSTPT-017-R-01)
Component:	US Army
Installation/Property Name:	U.S. Army Garrison - West Point
Location (City, County, State):	West Point, Orange County, NY
Site Name/Project Name (Project No.):	Target Hill/West Point - MMRP (W912DR-09-D-006, DO 001)
Date Information Entered/Updated:	2/20/2012
Point of Contact (Name/Phone):	Jeff Sanborn, US-Army Garrison West Point, Directorate of Public Works –Environmental Management Division (845-938-5041)

Project Phase ("X" only one):										
	PA		**SI**	**X**	**RI**		**FS**		**RD**
	RA-C		**RIP**		**RA-O**		**RC**		**LTM**

Media Evaluated ("X" all that apply):				
	Groundwater		**Sediment (human receptor)**
	Surface soil		**Surface water (ecological receptor)**
	Sediment (ecological receptor)		**Surface water (human receptor)**

MRS Summary: The Target Hill MRS is comprised of active athletic fields consisting of the West Point Rugby Center and several soccer fields.

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM, or MC known or suspected to be present. When possible, identify munitions, CWM, and MC by type:

Artillery firing toward Target Hill may have begun as early as the War of 1812 with rounds being fired into the hill from the Cold Spring Foundry located across the Hudson River. By 1890, the hill was used as target practice for batteries located along the north side of the installation. Target Hill continued to be used as an impact area until the late 1930s by West Point cadets for short-range artillery training. Munitions associated with training at Target Hill include large caliber HE and practice rounds. In 1903, 1,000 yard target butts were identified on Target Hill. The firing point associated with these butts was located on Target Flats in the area of the North Athletic Field. Between 1944 and 1945, soil from Target Hill was excavated and used for fill dirt for the construction of the North Athletic Field. Approximately 60,000 square yards of level ground were added to the area comprising North Athletic Field. No MEC were identified during the SI or RI field activities.

Description of Pathways for Human and Ecological Receptors:

The MEC exposure pathway for human and ecological receptors to surface MEC is through handling/treading underfoot or unintentional disturbance (e.g., hitting item during construction activities). A receptor may contact MEC in the subsurface by performing intrusive activities. Maintenance activities in the Target Hill MRS may disturb surface and subsurface soils. Based on the results of the RI field investigations, the use or introduction of munitions at the MRS is confirmed. No MEC was observed at the Target Hill MRS during the field activities. While there is a low potential for MEC or additional MD to be present in the subsurface throughout the MRS, the pathways for MEC are incomplete for all receptors with access to the MRS.

Based on the results of SI soil sampling, no MC was identified above the EPA Region 9 PRGs (screening levels current at that time) at the Target Hill MRS; therefore, the pathways of MC to all human and ecological receptors were considered incomplete (TLI, 2007).

Description of Receptors (Human and Ecological):

Current receptors include West Point personnel, site visitors, recreational users (athletes), and contractor personnel who have passed through initial post security at the entrance gate. The Target Hill MRS is developed with athletic fields. Potential ecological receptors (e.g., mammals, birds, and insects) are presented in the RI Report Section

Table 1
EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Annotate the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions* , *small arms ammunition* , *physical evidence* , and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
Sensitive	♦ UXO that are considered most likely to function upon any interaction with exposed persons (e.g., submunitions, 40mm high-explosive [HE] grenades, white phosphorous [WP] munitions, high-explosive antitank [HEAT] munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions). ♦ Hand grenades containing energetic filler. ♦ Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	30	
High explosive (used or damaged)	♦ UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." ♦ DMM containing a high-explosive filler that have: ■ Been damaged by burning or detonation ■ Deteriorated to the point of instability.	25	
Pyrotechnic (used or damaged)	♦ UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). ♦ DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ■ Been damaged by burning or detonation ■ Deteriorated to the point of instability.	20	
High explosive (unused)	♦ DMM containing a high-explosive filler that have not been damaged by burning or detonation, or are not deteriorated to the point of instability.	15	
Propellant	♦ UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ♦ DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ■ Damaged by burning or detonation ■ Deteriorated to the point of instability.	15	
Bulk secondary high explosives, pyrotechnics, or propellant	♦ DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ♦ DMM that are bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10	
Pyrotechnic (used or damaged)	♦ DMM containing a pyrotechnic filler (i.e. red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation, or are not deteriorated to the point of instability.	10	
Practice	♦ UXO that are practice munitions that are not associated with a sensitive fuze. ♦ DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ■ Been damaged by burning or detonation ■ Deteriorated to the point of instability.	5	
Riot control	♦ UXO or DMM containing a riot control agent filler (e.g., tear gas).	3	
Small arms	♦ Used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions [e.g., grenades, subcaliber training rockets, demolition charges] were used or are present on the MRS is required for selection of this category.].	2	
Evidence of no munitions	♦ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).		**0**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

NOTES: No UXO have been reported at the Target Hill MRS, but during the RI, several pieces of munitions debris were discovered. Investigation results are presented in Section 4 of the RI Report for the Target Hill MRS. Reference RI Report Section 1.4.1.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Annotate the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range* , *practice munitions* , *small arms range* , *physical evidence* , and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
Former range	♦ The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas and associated buffer and safety zones.	10	10
Former munitions treatment (i.e. OB/OD) unit	♦ The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8	
Former practice munitions range	♦ The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6	
Former maneuver area	♦ The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5	
Former burial pit or other disposal area	♦ The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5	
Former industrial operating facilities	♦ The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4	
Former firing points	♦ The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4	
Former missile or air defense artillery emplacements	♦ The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2	
Former storage or transfer points	♦ The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2	
Former small arms range	♦ The MRS is a former military range where only small arms ammunition was used (There must be evidence that no other types of munitions [e.g., grenades] were used or are present to place an MRS into this category.)	1	
Evidence of no munitions	♦ Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).		**10**

DIRECTIONS: Document any MRS-specific data used in selecting the **Source of Hazard** classifications in the space provided.

NOTES: The Target Hill MRS consists of a former range impact area used for firing large caliber high explosive (HE) and practice rounds. Target Hill MRS is currently developed with athletic fields consisting of the West Point Rugby Center and several soccer fields. Between 1944 and 1945, approximately 60,000 square yards of soil were removed from Target Hill to level the North Athletic Field. This resulted in the removal of the impact area known as Target Hill. No UXO were identified during the SI or RI. Reference RI Report Section 1.4.1.

Table 3
EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Annotate the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *confirmed, surface* , *subsurface, small arms ammunition, physical evidence* , and *historical evidence* are defined in Appendix C of the Primer .

Classification	Description	Possible Score	Score
Confirmed surface	♦ Physical evidence indicates that there are UXO or DMM on the surface of the MRS. ♦ Historical evidence (i.e., a confirmed incident report such as an explosive ordnance disposal [EOD], police, or fire department report that an incident or accident that involved UXO or DMM occurred) indicates there are UXO or DMM on the surface of the MRS.	25	
Confirmed subsurface, active	♦ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS; and, the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ♦ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS; and, the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20	
Confirmed subsurface, stable	♦ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS; and, the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ♦ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS; and, the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15	
Suspected (physical evidence)	♦ There is physical evidence (e.g., munitions debris such as fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10	10
Suspected (historical evidence)	♦ There is historical evidence indicating that UXO or DMM may be present at the MRS.	5	
Subsurface, physical constraint	♦ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2	
Small arms (regardless of location)	♦ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability. (There must be evidence that no other types of munitions [e.g., grenades] were used or are present at the MRS to place an MRS into this category.)	1	
Evidence of no munitions	♦ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0	
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).		**10**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

NOTES: No evidence of UXO has been reported at the Target Hill MRS, but during the RI, several pieces of munitions debris were discovered. The MD items included one 6.5-inch cannonball (solid shot), one 8-inch coehorn siege mortar, and one 15-inch cannonball (Rodman test round, solid shot). Reference RI Report Section 4.1.2.

Table 4
EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to the MRS. Annotate the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
No barrier	♦ There is no barrier preventing access to any part of the MRS (i.e. all parts of the MRS are accessible).	10	10
Barrier to MRS access is incomplete	♦ There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8	
Barrier to MRS access is complete but not monitored	♦ There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5	
Barrier to MRS access is complete and monitored	♦ There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0	
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).		**10**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

NOTES: This MRS has recreational and athletic fields, which are currently used for numerous events. Once inside the main gates, access within the MRS is unrestricted. Reference RI Report Section 1.3.10.

Table 5
EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Annotate the score that corresponds with the status of property at the MRS.

Classification	Description	Possible Score	Score
Non-DoD control	♦ The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and, land or water bodies managed by other federal agencies.	5	
	♦ The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day.		
Scheduled for transfer from DoD control	♦ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied.	3	
DoD control	♦ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **<u>the single highest score</u>** from above in the box to the right (maximum score = 5).		**0**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

NOTES: This is an active military base with security measures.

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Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Annotate the most appropriate score.

Note: Use the U.S. Census Bureau tract data available to capture the **highest** population density within a two-mile radius of the perimeter of the MRS.

Classification	Description	Possible Score	Score
> 500 persons per square mile	♦ There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	5	
100 - 500 persons per square mile	♦ There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	3	3
< 100 persons per square mile	♦ There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	1	
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).		**3**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

NOTES: The 2010 Census reports a population of 6,763 for West Point, and a population density per square mile of 271.
http://2010.census.gov/2010census/popmap/ipmtext.php?fl=3680747
This corresponds to more than 250 people per square mile, but less than 500.

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Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the potential population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and annotate the score that corresponds with the number of inhabited structures.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
26 or more inhabited structures	♦ There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5	5
16 to 25 inhabited structures	♦ There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4	
11 to 15 inhabited structures	♦ There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3	
6 to 10 inhabited structures	♦ There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2	
1 to 5 inhabited structures	♦ There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1	
0 inhabited structures	♦ There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0	
POPULATION NEAR HAZARI	**DIRECTIONS:** Record **<u>the single highest score</u>** from above in the box to the right (maximum score = 5).		**5**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

NOTES: The 2010 Census reports 843 housing units for West Point.
http://2010.census.gov/2010census/popmap/ipmtext.php?fl=3680747

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and annotate the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
Residential, educational, commercial, or subsistence	♦ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5	5
Parks and recreational areas	♦ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	4	4
Agricultural, forestry	♦ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3	
Industrial or warehousing	♦ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	2	
No known or recurring activities	♦ There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1	
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).		**5**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

NOTES: Target Hill MRS is located within a Cadet Support area of West Point and is used for recreational and athletic activities. The Anderson Rugby Complex, which is located in the northern half of the MRS, is used in the spring and fall by the West Point men's and women's rugby teams. A football field and multiple soccer fields are located in the southern half of the MRS. Within a 2-mile radius of the MRS are areas consisting of housing areas, schools, and critical assets (i.e., a hospital). Reference RI Report Section 1.3.10.

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and annotate the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
Ecological and cultural resources present	There are ecological and cultural resources present on the MRS.	5	
Ecological resources present	There are ecological resources present on the MRS.	3	
Cultural resources present	There are cultural resources present on the MRS.	3	
No ecological or cultural resources present	There are no ecological resources or cultural resources present on the MRS.	0	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).		**0**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

NOTES: None of the potential ecological receptors listed for the MRS were observed on-site during RI activities. Habitat for potential ecological receptors is limited within the Target Hill MRS, as a majority of the MRS is developed and contains athletic fields consisting of the West Point Rugby Center and several soccer fields. While no ecological resources are known to be present on the MRS, habitat exists in the surrounding area for ecological resouces consisting of the Hudson River to the northeast, a wooded area bounding the north and western MRS boundaries, and Crows Nest Brook also to the west of the MRS. There are no cultural resources present on the MRS. Reference RI Report Sections 1.3.7.5, 1.3.9, and Figure 1-2.

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Table 10

Determining the EHE Module Rating

		Source	Score	Value
DIRECTIONS:	**Explosive Hazard Factor Data Elements**			
1. From Tables 01 - 09, record the data element scores in the **Score** boxes to the right.	Munitions Type	Table 1	0	10
	Source of Hazard	Table 2	10	
	Accessibility Factor Data Elements			
	Location of Munitions	Table 3	10	20
	Ease of Access	Table 4	10	
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.	Status of Property	Table 5	0	
	Receptor Factor Data Elements			
	Population Density	Table 6	3	13
	Population Near Hazard	Table 7	5	
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.	Types of Activities/Structures	Table 8	5	
	Ecological and/or Cultural Resources	Table 9	0	
	EHE MODULE TOTAL			**43**

	EHE Module Total	**EHE Module Rating**
4. Circle the appropriate range for the **EHE Module Total** below.	92 to 100	A
	82 to 91	B
	71 to 81	C
	60 to 70	D
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of this table.	48 to 59	E
	38 to 47	F
	less than 38	G
NOTE: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.	Alternative Module Ratings	Evaluation Pending
		No Longer Required
		No Known or Suspected Explosive Hazard
	EHE MODULE RATING	**F**

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Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Annotate the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO* , *CWM/DMM* , *physical evidence* , and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
CWM, that are either UXO, or explosively configured, damaged DMM	The CWM known or suspected of being present at the MRS are: ♦ CWM that are UXO (i.e. CWM/UXO) ♦ Explosively configured CWM that are DMM (i.e. CWM/DMM) that have been damaged.	30	
CWM mixed with UXO	♦ The CWM known or suspected of being present at the MRS are undamaged CWM/DMM or CWM not configured as a munition that are commingled with conventional munitions that are UXO.	25	
CWM, explosive configuration that are undamaged DMM	♦ The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20	
CWM/DMM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS are: ♦ Nonexplosively configured CWM/DMM either damaged or undamaged ♦ Bulk CWM (e.g., ton container).	15	
CAIS K941 and CAIS K942	♦ The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12	
CAIS (chemical agent identification sets)	♦ CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10	
Evidence of no CWM	♦ Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0	0
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).		**0**

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

Notes: There is no known or suspected CWM hazard at this MRS.

Tables 12 through 19 are intentionally omitted according to Active-Army Guidance because there is evidence of no CWM at this MRS.

Table 20

Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11 - 19, record the data element scores in the **Score** boxes to the right.

2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.

3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/Structures	Table 18	0	
Ecological and/or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			**0**

4. Circle the appropriate range for the **CHE Module Total** below.

5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of this table.

NOTE: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	**No Known or Suspected CWM Hazard**

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional groundwater contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
No samples have been collected from the MRS.			
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value
CHF > 100	H (High)
100 > CHF >2	M (Medium)
2 > CHF	L (Low)

CHF = ∑ ([Max Conc. of Contaminant] / [Comparison Value for Contaminant])

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MRS Summary:	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Groundwater MC Hazard	

Table 22

HHE Module: Surface Water - Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the surface water, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
No samples have been collected from the MRS.			
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value
CHF > 100	H (High)
100 > CHF >2	M (Medium)
2 > CHF	L (Low)

CHF = ∑ ([Max Conc. of Contaminant] / [Comparison Value for Contaminant])

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MRS Summary:	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Surface Water (Human Endpoint) MC Hazard	

Table 23

HHE Module: Sediment - Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
No samples have been collected from the MRS.			
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value
CHF > 100	H (High)
100 > CHF >2	M (Medium)
2 > CHF	L (Low)

CHF = ∑ ([Max Conc. of Contaminant] / [Comparison Value for Contaminant])

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MRS Summary:	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Sediment (Human Endpoint) MC Hazard

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Table 24

HHE Module: Surface Water - Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use either dissolved or total metals analyses.

Contaminant [CAS No.]	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
No samples have been collected from the MRS.			
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value	CHF = ∑ ([Max Conc. of Contaminant] / [Comparison Value for Contaminant])
CHF > 100	H (High)	
100 > CHF >2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Surface Water (Ecological Endpoint) MC Hazard	

Table 25

HHE Module: Sediment - Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
No samples have been collected from the MRS.			
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value
CHF > 100	H (High)
100 > CHF >2	M (Medium)
2 > CHF	L (Low)

CHF = ∑ ([Max Conc. of Contaminant] / [Comparison Value for Contaminant])

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Sediment (Ecological Endpoint) MC Hazard	

Table 26

HHE Module: Surface Soil - Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface soil contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
No samples have been collected from the MRS.			
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value
CHF > 100	H (High)
100 > CHF >2	M (Medium)
2 > CHF	L (Low)

CHF = $\sum$ ([Max Conc. of Contaminant] / [Comparison Value for Contaminant])

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Surface Soil MC Hazard	

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants in any given medium present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B of the Primer) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Do not to add ratios from different media.

Media	Contaminant [CAS No.]	Maximum Concentration	Units	Comparison Value	Units	Ratios
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
					SUBTOTAL FOR SURFACE SOIL	0.00
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
					SUBTOTAL FOR SEDIMENT	0
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
					SUBTOTAL FOR SURFACE WATER	0

NOTES:

					SUBTOTAL FOR GROUNDWATER	0

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard**, **Migration Pathway**, and **Receptor Factors** for the media (from Tables 21 - 26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter-Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the HHE ratings provided below, determine each medium's rating (A - G) and record the letter in the corresponding **Media Rating** box below.

No samples have been collected from the MRS.

Medium (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A - G)
Table 21 - Groundwater	N/A	N/A	N/A	N/A	N/A
Table 22 - Surface Water (Human Endpoint)	N/A	N/A	N/A	N/A	N/A
Table 23 - Sediment (Human Endpoint)	N/A	N/A	N/A	N/A	N/A
Table 24 - Surface Water (Ecological Endpoint)	N/A	N/A	N/A	N/A	N/A
Table 25 - Sediment (Ecological Endpoint)	N/A	N/A	N/A	N/A	N/A
Table 26 - Surface Soil	N/A	N/A	N/A	N/A	N/A
			HHE MODULE RATING		**No Known or Suspected MC Hazard**

DIRECTIONS (Continued):

4. Select the single highest **Media Rating** (A is the highest; G is the lowest) and enter the letter in the **HHE Module Rating** box below.

HHE Ratings (for reference only)	
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G

NOTE: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

Alternative Module Ratings
Evaluation Pending
No Longer Required
No Known or Suspected MC Hazard

Table 29

MRS Priority

DIRECTIONS: In the chart below, enter the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Enter the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this relative priority in the **MRS Priority or Alternative MRS Rating** at the bottom of the table.

NOTE: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard	

Reference Table 10:		Reference Table 20:		Reference Table 28:	
EHE Module Rating	Priority	CHE Module Rating	Priority	HHE Module Rating	Priority
F	7	No Known or Suspected CWM Hazard	No Known or Suspected CWM Hazard	No Known or Suspected MC Hazard	No Known or Suspected MC Hazard

MRS Priority or Alternative MRS Rating	7