

**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**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, trichlorethylene) found at the MRS, and any potentially exposed human and ecological receptors. If possible, include a map of the MRS.

Munitions Response Site Name: Battery Complex & Other No Hazard Areas

Component: USACE FUDS/USACE FUDS/NAD/New England District (NAE)

Installation/Property Name: NJ29799F692400 Fort Hancock

Location (City, County, State): HIGHLANDS, MONMOUTH, NJ

Site Name/Project Name (Project No.): Battery Complex & Other No Hazard Areas (07)

Date Information Entered/Updated: 3/22/2024

Point of Contact (Name/Phone): Public Affairs, 978-318-8238

**Project Phase (check only one):**

<input type="checkbox"/> PA	<input type="checkbox"/> SI	<input type="checkbox"/> RI	<input type="checkbox"/> RI/FS	<input type="checkbox"/> RD
<input type="checkbox"/> RA-C	<input type="checkbox"/> RIP	<input type="checkbox"/> RA-O	<input checked="" type="checkbox"/> RC	<input type="checkbox"/> LTM

**Media Evaluated (check all that apply):**

<input checked="" type="checkbox"/> Groundwater	<input checked="" type="checkbox"/> Sediment (human receptor)
<input checked="" type="checkbox"/> Surface soil	<input checked="" type="checkbox"/> Surface Water (ecological receptor)
<input checked="" type="checkbox"/> Sediment (ecological receptor)	<input checked="" type="checkbox"/> Surface Water (human receptor)

**MRS Summary:**

**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:**

Project/MRS 07 is approx. 774 acres and encompasses the majority of the eastern side of the Sandy Hook peninsula. The southern portion of the MRS was used from 1874 to 1918 as part of the Army's first proving ground used for testing weapons and ordnance. The northern portion was used for coastal defense; multiple firing batteries were placed, which faced the Atlantic Ocean. No MEC or MD was found on those portions investigated during the RI, and the Final Record of Decision concluded that there was no unacceptable risk for MRS 07. The remedy is no further action. (2023 ROD Section 1.3, 1.4.3 and 2.7.2) A rating of No Known or Suspected Hazard was assigned.

Sediment and surface water samples were collected from three locations in the Nike pond during the RI. No explosives were detected in the surface water samples, but several MC metals were detected above background concentrations. 2,6-Dinitrotoluene was detected in sediment, along with several metals above background. Five groundwater samples collected during the RI were used to represent conditions across all MRSS. No explosives were detected, and no metals were detected above background concentrations (Secs 4.2.3 and 5.3.3, RI Report). Because the human health and ecological risk assessments determined that no unacceptable risk is posed by surface water or sediment (Sections 6.2.3.3 and 6.2.3.8, RI Report), the HHE module has been assigned the rating of No Known or Suspected Hazard.

Both physical and historical evidence indicates that CWM was not present at this MRS (Secs 1.2.1 and 1.4.2, RI Report). Therefore, the CHE module has been assigned the alternative rating of No Known or Suspected CWM Hazard. Stakeholder coordination of the MRSP evaluation occurred through review of the RI Addendum #1.

Stakeholder coordination of the MRSP evaluation occurred through the technical project planning process for the RI. Documentation of stakeholder coordination can be found in FUDSDocs at C02NJ000403\_01.22\_0500. The MRSP scores were also provided in the RI Report and Addendums, which the stakeholders reviewed. Documentation of stakeholder coordination of the RI and Addendums can be found in FUDSDocs at C02NJ000403\_03.01\_0640\_a, C02NJ000403\_03.01\_0531\_a and C02NJ000403\_03.01\_0558\_a

Throughout the MRSP:

- "RI Report" refers to the "Final MMRP Remedial Investigation Report, Remedial Investigation/Feasibility Study, Fort Hancock Formerly Used Defense Site, Monmouth County, New Jersey," dated January 2014, on FUDSDocs at C02NJ000403\_03.10\_0500 and \_0501.
- "RI Addendum #1" refers to the "Final Military Munitions Response Program, Remedial Investigation Addendum #1 Report," dated 2016, located on FUDSDocs at C02NJ000403\_03.10\_0502
- "EOD, 2015" refers to an e-mail from EOD, Naval Weapons Station Earle, to USACE listing items found at Sandy Hook in 2010, 2011, and 2013, dated October 29, 2015 and located on FUDSDocs at C02NJ000407\_01.01\_0500.

**Description of Pathways for Human and Ecological Receptors:**

The potential exposure media and associated exposure pathways for human receptors are: Soil: direct contact with surface soil (ingestion, dermal contact); inhalation via the soil-to-air pathway; Groundwater: direct contact (ingestion, dermal contact). The potential exposure pathways for ecological receptors are: Soil: Direct contact; and Bioaccumulation into plants, soil invertebrates, and small mammals, and consumption of these food items. Potential for contact with MEC includes walking over surface MEC, handling/collecting MEC, or contact with subsurface MEC due to any intrusive activities (Sections 6.2.1 and 6.3.1, RI Report).

**Description of Receptors (Human and Ecological):**

Based on the current land use, the following human receptors were identified: Outdoor maintenance worker (represents a National Park Service [NPS] ranger who spends the majority of his/her time patrolling the area on foot); Adult and child recreational user (represent members of the public who partake in recreational activities at Fort Hancock); and NPS Archaeologist. Ecological receptors include three potentially-affected terrestrial avian communities (granivores, insectivores, and carnivores) are represented by the mourning dove (granivore), American woodcock (insectivore), red-tailed hawk (carnivore) and the great blue heron (piscivore). For terrestrial mammals, the representative species will be the meadow vole (herbivore), short-tailed shrew (insectivore), and red fox (carnivore) (Sections 6.2.1.2 and 6.3.1, RI Report).

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Table 1

## EHE Module: Munitions Type Data Element Table

Directions: Below are 11 classifications of munitions and their descriptions. Check the scores that correspond with all the munitions types known or suspected to be present at the MRS.

Notes: The terms practice munitions, small arms ammunition, physical evidence, and historical evidence are defined in Appendix C of the Primer.

Classification	Description	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 phosphorus [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.	<input type="checkbox"/> 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	<input type="checkbox"/> 25
Pyrotechnic (used or damaged)	*UXO containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades). *DMM containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades) that have: *Been damaged by burning or detonation *Deteriorated to the point of instability	<input type="checkbox"/> 20
High explosive (unused)	*DMM containing a high-explosive filler that: *Have not been damaged by burning or detonation *Deteriorated to the point of instability	<input type="checkbox"/> 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	<input type="checkbox"/> 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.	<input type="checkbox"/> 10
Pyrotechnic (not used or damaged)	*DMM containing a pyrotechnic filler (i.e., red phosphorus), other than white phosphorus filler, that: *Have not been damaged by burning or detonation *Are not deteriorated to the point of instability.	<input type="checkbox"/> 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	<input type="checkbox"/> 5
Riot control	*UXO or DMM containing a riot control agent filler (e.g., tear gas).	<input type="checkbox"/> 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.)	<input type="checkbox"/> 2
Evidence of no munitions	*Following investigation of the MRS, there is a physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	<input checked="" type="checkbox"/> 0
<b>Munitions Type</b>	<b>DIRECTIONS: Record the single highest score from above in the box to the right(maximum score = 30).</b>	0

DIRECTIONS: Document any MRS - specific data used in selecting the Munitions Type classifications in the space provided.) No MEC or MC was found in the MRS. (Sec 1.3, RI Report and Sec 6.2, RI Addendum #1). Tables 2-9 are intentionally omitted in accordance with Army guidance.

**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**Table 10**  
**EHE**

Directions: 1. From Tables 1-9, 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 EHE Module Total below. 4. Check the appropriate range for the EHE Module Total below. 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 the table.

Notes: 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.

	Source	Score	Value
<b>Explosive Hazard Factor Data Elements</b>			
Munitions Type	Table 1	0	0
Source of Hazard	Table 2		
<b>Accessibility Factor Data Elements</b>			
Location of Munitions	Table 3		0
Ease of Access	Table 4		
Status of Property	Table 5		
<b>Receptor Factor Data Elements</b>			
Population Density	Table 6		0
Population Near Hazard	Table 7		
Types of Activities/Structures	Table 8		
Ecological and/or Cultural Resources	Table 9		
<b>EHE Module Total</b>			0
<b>EHE Module Total</b>	<b>EHE Module Rating</b>		
92 to 100	A		
82 to 91	B		
71 to 81	C		
60 to 70	D		
48 to 59	E		
38 to 47	F		
0 to 37	G		
Alternative Module Ratings	<input type="checkbox"/> Evaluation Pending		
	<input type="checkbox"/> No Longer Required		
	<input checked="" type="checkbox"/> No Known or Suspected Explosive Hazard		
<b>EHE Module Rating</b>	No Known or Suspected Explosive Hazard		

EHE Module Description (4000 characters max):

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Table 11

## CHE Module: CWM Configuration Data Element Table

Directions: Below are seven classification of CWM configuration and their descriptions. Check the scores that correspond with all the CWM configurations known or suspected to be present at the MRS.

Notes: The terms CWM/UXO, CWM/DMM, physical evidence, and historical evidence are defined in Appendix C of the Primer.

Classification	Description	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.	<input type="checkbox"/> 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.	<input type="checkbox"/> 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.	<input type="checkbox"/> 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).	<input type="checkbox"/> 15
CAIS K941 and CAIS K942	*The CWM/DMM known or suspected of being present at the MRS are CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M2/E11.	<input type="checkbox"/> 12
CAIS (chemical agent identification sets)	*CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	<input type="checkbox"/> 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.	<input checked="" type="checkbox"/> 0
<b>CWM Configuration</b>	<b>DIRECTIONS: Record the single highest score from above in the box to the right(maximum score = 30).</b>	0

DIRECTIONS: Document any MRS - specific data used in selecting the CWM Configuration classifications in the space provided.) Both physical and historical evidence indicates that CWM was not present at this MRS (see Sections 1.2.1 and 1.4.2 of the RI Report). Tables 12-19 are intentionally omitted in accordance with Army guidance.

**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**Table 20**  
**CHE**

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. 4. Check the appropriate range for the CHE Module Total below. 5. Check 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 the table.

Notes: 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.

	Source	Score	Value
<b>CWM Hazard Factor Data Elements</b>			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12		
<b>Accessibility Factor Data Elements</b>			
Location of CWM	Table 13		0
Ease of Access	Table 14		
Status of Property	Table 15		
<b>Receptor Factor Data Elements</b>			
Population Density	Table 16		0
Population Near Hazard	Table 17		
Types of Activities/Structures	Table 18		
Ecological and/or Cultural Resources	Table 19		
<b>CHE Module Total</b>			0
<b>CHE Module Total</b>	<b>CHE Module Rating</b>		
92 to 100	A		
82 to 91	B		
71 to 81	C		
60 to 70	D		
48 to 59	E		
38 to 47	F		
0 to 37	G		
Alternative Module Ratings	<input type="checkbox"/> Evaluation Pending		
	<input type="checkbox"/> No Longer Required		
	<input checked="" type="checkbox"/> No Known or Suspected CWM Hazard		
<b>CHE Module Rating</b>	No Known or Suspected CWM Hazard		

CHE Module Description (4000 characters max):

**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**Table 21**  
**Groundwater**

**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	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF Scale	CHF Value	Sum The Ratios	0
CHF > 100	H (High)	$CHF = \sum \frac{[Maximum\ Concentration\ of\ Contaminant]}{[Comparison\ Value\ for\ Contaminant]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

<b>CONTAMINANT HAZARD FACTOR</b>	<b>DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).</b>	
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**Migratory Pathway Factor**

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	<input type="checkbox"/> H
Potential	Contamination in the 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.	<input type="checkbox"/> M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possible due to the presence of geological structures or physical controls).	<input type="checkbox"/> L

<b>MIGRATORY PATHWAY FACTOR</b>	<b>DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).</b>	
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**Receptor Factor**

Classification	Description	Value
Identified	Identified receptors have access to groundwater to which contamination has moved or can move.	<input type="checkbox"/> H
Potential	Potential for receptors have access to groundwater to which contamination has moved or can move.	<input type="checkbox"/> M
Limited	Little or no potential for receptors to have access to groundwater to which contamination has moved or can move.	<input type="checkbox"/> L

<b>RECEPTOR FACTOR</b>	<b>Check the value that corresponds most closely to the groundwater receptors at the MRS.</b>	
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No Known or Suspected Groundwater MC Hazard ☒

DIRECTIONS: Document any MRS - specific data used in selecting the ground water contaminants in the space provided.

No explosives compounds were found above the detection limit in any sample. Only Arsenic and manganese concentrations were found at levels higher than the screening level. However, arsenic appears to be consistent with NJ background concentrations and the highest manganese concentration was from the untreated raw water of the potable drinking water well. (Secs 4.2.3 and 5.3.3, RI Report). Detections are not indicative of munitions activities and would not impact the MRS Score.



**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**Table 22**  
**Surface Water - Human Endpoint**

**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	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Arsenic	2.80	4.50	0.6222
Iron	777	11000	0.07063636
Lead	6.60	15	0.44
Thallium	1.30	0.16	8.1250
Antimony	0.61	15	0.0407
Copper	18	620	0.02903226
Manganese	37.30	1700	0.0219
<b>CHF Scale</b>	<b>CHF Value</b>	<b>Sum The Ratios</b>	9.34946862
CHF > 100	H (High)	$\text{CHF} = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

<b>CONTAMINANT HAZARD FACTOR</b>	<b>DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).</b>	<b>M</b>
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**Migratory Pathway Factor**

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	<input type="checkbox"/> H
Potential	Contamination in the 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.	<input checked="" type="checkbox"/> M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possible due to the presence of geological structures or physical controls).	<input type="checkbox"/> L

<b>MIGRATORY PATHWAY FACTOR</b>	<b>DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).</b>	<b>M</b>
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**Receptor Factor**

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	<input type="checkbox"/> H
Potential	Potential for receptors have access to surface water to which contamination has moved or can move.	<input checked="" type="checkbox"/> M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	<input type="checkbox"/> L

<b>RECEPTOR FACTOR</b>	<b>Check the value that corresponds most closely to the surface water receptors at the MRS.</b>	<b>M</b>
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No Known or Suspected Surface Water (Human Endpoint) MC Hazard

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DIRECTIONS: Document any MRS - specific data used in selecting the surface water contaminants in the space provided.  
 Surface water sample results are summarized in Tables 2.12 of Appendix G-1, RI Report.



**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**Table 23**  
**Sediment - Human Endpoint**

**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 with human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
2,6-Dinitrotoluene	0.16	18	0.00888889
Arsenic	7.70	22	0.35
Iron	14600	23000	0.6348
Lead	286	400	0.7150
Total Chromium (1:6 ratio Cr VI:Cr III)	34.60	1600	0.021625
Antimony	2.20	31	0.07096774
Copper	41.20	3100	0.01329032
<b>CHF Scale</b>	<b>CHF Value</b>	<b>Sum The Ratios</b>	1.81457195
CHF > 100	H (High)	$\text{CHF} = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

<b>CONTAMINANT HAZARD FACTOR</b>	<b>DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).</b>	L
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**Migratory Pathway Factor**

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	<input type="checkbox"/> H
Potential	Contamination in the 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.	<input checked="" type="checkbox"/> M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possible due to the presence of geological structures or physical controls).	<input type="checkbox"/> L

<b>MIGRATORY PATHWAY FACTOR</b>	<b>DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).</b>	M
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**Receptor Factor**

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	<input type="checkbox"/> H
Potential	Potential for receptors have access to sediment to which contamination has moved or can move.	<input checked="" type="checkbox"/> M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	<input type="checkbox"/> L

<b>RECEPTOR FACTOR</b>	<b>Check the value that corresponds most closely to the sediment receptors at the MRS.</b>	M
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No Known or Suspected Sediment (Human Endpoint) MC Hazard ☐

DIRECTIONS: Document any MRS - specific data used in selecting the sediment contaminants in the space provided.  
Sediment sample results are summarized in Table 2.11 of Appendix G-1, RI Report.

**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**Table 24**  
**Surface Water - Ecological Endpoint**

**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 ecological endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Lead	6.60	2.50	2.64
Thallium	1.30	0.80	1.6250
Antimony	0.61	30	0.02033333
Arsenic	2.80	150	0.01866667
Manganese	37.30	120	0.31083333
Copper	18	9	2
Iron	777	1000	0.7770
<b>CHF Scale</b>	<b>CHF Value</b>	<b>Sum The Ratios</b>	<b>7.39183333</b>
CHF > 100	H (High)	$\text{CHF} = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

<b>CONTAMINANT HAZARD FACTOR</b>	<b>DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).</b>	<b>M</b>
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**Migratory Pathway Factor**

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	<input type="checkbox"/> H
Potential	Contamination in the 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.	<input checked="" type="checkbox"/> M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possible due to the presence of geological structures or physical controls).	<input type="checkbox"/> L

<b>MIGRATORY PATHWAY FACTOR</b>	<b>DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).</b>	<b>M</b>
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**Receptor Factor**

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	<input type="checkbox"/> H
Potential	Potential for receptors have access to surface water to which contamination has moved or can move.	<input checked="" type="checkbox"/> M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	<input type="checkbox"/> L

<b>RECEPTOR FACTOR</b>	<b>Check the value that corresponds most closely to the surface water receptors at the MRS.</b>	<b>M</b>
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No Known or Suspected Surface Water (Ecological Endpoing) MC Hazard ☐

DIRECTIONS: Document any MRS - specific data used in selecting the surface water contaminants in the space provided.  
 Surface water sample results are summarized in Tables 2.12 of Appendix G-1, RI Report.

**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**Table 25**  
**Sediment - Ecological Endpoint**

**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 with ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Arsenic	7.70	9.80	0.7857
Mercury	0.34	0.18	1.8889
Selenium	2.50	2	1.25
Iron	14600	20000	0.73
Lead	286	35.80	7.9888
Antimony	2.20	2	1.10
Copper	41.20	31.60	1.3038
2,6-Dinitrotoluene	0.16	0.0398	4.0201
Total Chromium (1:6 ratio Cr VI:Cr III)	34.60	43.40	0.7972
<b>CHF Scale</b>	<b>CHF Value</b>	<b>Sum The Ratios</b>	19.8645
CHF > 100	H (High)	$\text{CHF} = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

<b>CONTAMINANT HAZARD FACTOR</b>	<b>DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).</b>	<b>M</b>
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**Migratory Pathway Factor**

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	<input type="checkbox"/> H
Potential	Contamination in the 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.	<input checked="" type="checkbox"/> M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possible due to the presence of geological structures or physical controls).	<input type="checkbox"/> L

<b>MIGRATORY PATHWAY FACTOR</b>	<b>DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).</b>	<b>M</b>
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**Receptor Factor**

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	<input type="checkbox"/> H
Potential	Potential for receptors have access to sediment to which contamination has moved or can move.	<input checked="" type="checkbox"/> M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	<input type="checkbox"/> L

<b>RECEPTOR FACTOR</b>	<b>Check the value that corresponds most closely to the sediment receptors at the MRS.</b>	<b>M</b>
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No Known or Suspected Sediment (Ecological Endpoint) MC Hazard ☐

DIRECTIONS: Document any MRS - specific data used in selecting the sediment contaminants in the space provided.

Sediment sample results are summarized in Table 2.11 of Appendix G-1, RI Report.

**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**Table 26**  
**Surface Soil**

**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	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	CHF Value	Sum The Ratios	0
CHF > 100	H (High)	$\text{CHF} = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

<b>CONTAMINANT HAZARD FACTOR</b>	<b>DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).</b>	
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**Migratory Pathway Factor**

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	<input type="checkbox"/> H
Potential	Contamination in the 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.	<input type="checkbox"/> M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possible due to the presence of geological structures or physical controls).	<input type="checkbox"/> L

<b>MIGRATORY PATHWAY FACTOR</b>	<b>DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).</b>	
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**Receptor Factor**

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	<input type="checkbox"/> H
Potential	Potential for receptors have access to surface soil to which contamination has moved or can move.	<input type="checkbox"/> M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	<input type="checkbox"/> L

<b>RECEPTOR FACTOR</b>	<b>Check the value that corresponds most closely to the surface soil receptors at the MRS.</b>	
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No Known or Suspected Surface Soil MC Hazard



DIRECTIONS: Document any MRS - specific data used in selecting the soil contaminants in the space provided.  
 No explosives compounds were detected in surface soil samples, and metals were found to be at or below background concentrations (Secs 6.2.3.1-5, RI Report). Detections are not indicative of munitions activities, and would not impact the MRS Score.

# C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas

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 media's rating (A-G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)	
Groundwater (Table 21)						
Surface Water - Human Endpoint (Table 22)	M	M	M	MMM	D	
Sediment - Human Endpoint (Table 23)	L	M	M	LMM	E	
Surface Water - Ecological Endpoint (Table 24)	M	M	M	MMM	D	
Sediment - Ecological Endpoint (Table 25)	M	M	M	MMM	D	
Surface Soil (Table 26)						
<p><b>DIRECTIONS (cont.):</b> 4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the HHE Module Rating box.</p> <p>Notes: 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.</p>				<b>HHE MODULE RATING</b>		D
				<b>HHE Ratings (for reference only)</b>		
				<b>Combination</b>	<b>Rating</b>	
				HHH	A	
				HHM, HMH, MHH	B	
				HHL, HLH, LHH, HMM, MHM, MMH	C	
				HML, HLM, MHL, MLH, LHM, LMH, MML, LML, LLM	D	
				HLL, LHL, LLH, MML, MLM, LMM	E	
				MLL, LML, LLM	F	
				LLL	G	
Alternative Module Ratings		<input type="checkbox"/> Evaluation Pending				
		<input type="checkbox"/> No Longer Required				
		<input type="checkbox"/> No Known or Suspected MC Hazard				

HHE Module Description (4000 characters max):

Because the human health and ecological risk assessments determined that no unacceptable risk is posed by surface water or sediment (Sections 6.2.3.3 and 6.2.3.8, RI Report), the HHE module has been assigned the rating of No Known or Suspected Hazard.

**C02NJ0004 Fort Hancock - 07 - MMRP - Battery Complex & Other No Hazard Areas**  
**Table 29**  
**MRS Priority**

In the chart below, circle the letter rating for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Check 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.

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	
MRS Priority or Alternative MRS Rating				5	