

**C02NJ0004 Fort Hancock - 12 - MMRP - Livens Discovery Area - No Action
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: Livens Discovery Area - No Action
 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.): Livens Discovery Area - No Action (12)

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

MRS 06 Livens Discovery Area is 24 acres and overlaps the proving ground between the 3,000-yd and 3-mile impact areas (Fig A-1, RI Addendum #2 Report, 2016). The RI Addendum #2 effort provided additional information about the locations and potential locations of MEC, MPPEH, and MD within MRS 06, and areas known or suspected to contain MEC or MD are now smaller. Consequently, the MRS 06 boundary has been reduced accordingly. The revised MRS footprint for MRS 06 is based on MEC/MD Hazard Area 6A boundary as shown in Figure A-6, RI Addendum #2 Report. The new acreage for the revised MRS 06 is 5.0 acres; the remaining 19 acres were added to MRS 12. The 2014 RI Report contains more detailed information on Fort Hancock in general, and the MRS 06 area specifically, than the summary level information presented in the RI Addendum #2 Report. NPS granted access to investigate the 24 acres of MRA 06 during the RI Addendum #2.

The investigation of the original 24 acres of MRS 6 found intact Livens projectiles, a partial Livens projectile, 5 Stokes Mortar MK1 fuzes, 4 Livens burster tubes, an MK1 detonator, an M-1 smoke canister, and a brass base fuze. The RI concluded that there was unacceptable risk for 5 acres (now identified as MRS 06) of the MRA, and No Action was required for 19 acres (now identified as MRS 12). As no MEC was identified in MRS 12, the EHE module for MRS 12 has been assigned No Known or Suspected Hazard.

Five surface soil samples were collected in MRS 06 during the 2007 SI, and 21 surface soil samples were collected during the 2014 RI across the MRS (NPS allowed access for sampling). No explosives were detected, and all metals were consistent with background concentrations (Secs 5.3.1.2, 6.1.1, and 6.2.3.5, 2014 RI Report). Two additional surface soil samples were collected during the 2016 RI Addendum #2, and no explosives were detected. Five groundwater samples collected during the RI were used to represent conditions across all MRSs. No explosives were detected; metals were detected but not above background concentrations (Secs 4.2.3 and 5.3.3, 2014 RI Report). Per the approved RI work plan, no surface water or sediment samples were collected in the MRS. The RI concluded there is no source of MC in the MRS and no risks to receptors (Table 8-4, 2014 RI Report). As a result, the HHE module has been assigned the alternative rating of No Known or Suspected MC Hazard.

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 2014 RI Report. Therefore, the CHE module has been assigned the alternative rating of No Known or Suspected CWM Hazard.

Stakeholder coordination of the MRSPP 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 MRSPP scores were also provided in the RI Report and Addendums, which the stakeholders reviewed. Documentation of stakeholder coordination of the RI and Addendum can be found in FUDSDocs at C02NJ000403_03.01_0640_a. and C02NJ000403_03.01_0531_a

Throughout the MRSPP, the reference to the "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, found on FRMD under document sequence no. C02NJ000403_03.10_0500 and _0501 and _502. RI Addendum #2 is provided at on FUDSDocs at C02NJ000403_03.10_0506.

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, 2014 RI Report).

Description of Receptors (Human and Ecological):

Based on the current land use, the following human receptors were identified: Outdoor maintenance worker (represents an 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).(see Sections 6.2.1.2 and 6.3.1 2014 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
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.) No MEC or MD was found in MRS 12 during the Remedial Investigation. RI Addendum #2, Section 5. Tables 2 through 9 omitted per guidance.

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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
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	0	0
Source of Hazard	Table 2	0	
Accessibility Factor Data Elements			
Location of Munitions	Table 3		0
Ease of Access	Table 4		
Status of Property	Table 5		
Receptor Factor Data Elements			
Population Density	Table 6		0
Population Near Hazard	Table 7		
Types of Activities/Structures	Table 8		
Ecological and/or Cultural Resources	Table 9		
EHE Module Total			0
EHE Module Total	EHE 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		
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		
EHE Module Rating	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
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.) 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). Therefore, Tables 12 through 19 are intentionally omitted according to Army Guidance. Tables 12 to 19 omitted per Army Guidance

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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
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12		
Accessibility Factor Data Elements			
Location of CWM	Table 13		0
Ease of Access	Table 14		
Status of Property	Table 15		
Receptor Factor Data Elements			
Population Density	Table 16		0
Population Near Hazard	Table 17		
Types of Activities/Structures	Table 18		
Ecological and/or Cultural Resources	Table 19		
CHE Module Total			
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		
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		
CHE Module Rating	No Known or Suspected CWM Hazard		

CHE Module Description (4000 characters max):

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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)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
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).	
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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

MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	
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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

RECEPTOR FACTOR	Check the value that corresponds most closely to the groundwater receptors at the MRS.	
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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.
Groundwater samples did not contain any MC above background concentrations (Secs 4.2.3 and 5.3.3, RI Report)

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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
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)		

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).	
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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 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

MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	
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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 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

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

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

Per the Final RI Work Plan, no surface water samples were collected in this MRS (Section 4.2.2, RI Report).

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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
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)		

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).	
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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 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

MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	
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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 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

RECEPTOR FACTOR	Check the value that corresponds most closely to the sediment receptors at the MRS.	
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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.
Per the Final RI Work Plan, no sediment samples were collected in this MRS (Section 4.2.2, RI Report).

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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
CHF Scale	CHF Value	Sum The Ratios	0
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
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).	
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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 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

MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	
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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 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

RECEPTOR FACTOR	Check the value that corresponds most closely to the surface water receptors at the MRS.	
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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.
Per the Final RI Work Plan, no surface water samples were collected in this MRS (Section 4.2.2, RI Report).

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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
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)		

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).	
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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 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

MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	
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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 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

RECEPTOR FACTOR	Check the value that corresponds most closely to the sediment receptors at the MRS.	
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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.
Per the Final RI Work Plan, no sediment samples were collected in this MRS (Section 4.2.2, RI Report).

**C02NJ0004 Fort Hancock - 12 - MMRP - Livens Discovery Area - No Action
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)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
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).	
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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

MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	
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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

RECEPTOR FACTOR	Check the value that corresponds most closely to the surface soil receptors at the MRS.	
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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.
Five grab samples were collected during the SI and 21 grab samples were collected during the RI; no explosives were detected and all metals were determined to be consistent with background concentrations (sections 5.3.1.2, 6.1.1, and 6.2.3.5, RI Report). Therefore, no soil results are reported above.

**C02NJ0004 Fort Hancock - 12 - MMRP - Livens Discovery Area - No Action
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)					
Sediment - Human Endpoint (Table 23)					
Surface Water - Ecological Endpoint (Table 24)					
Sediment - Ecological Endpoint (Table 25)					
Surface Soil (Table 26)					
HHE MODULE RATING					N
HHE Ratings (for reference only)					
Combination					Rating
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 checked="" type="checkbox"/> No Known or Suspected MC Hazard

HHE Module Description (4000 characters max):

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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				No Known or Suspected Hazard	