



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

JUL 18 2006

CESAJ-DP-S

MEMORANDUM FOR Commander, U.S. Army Engineering and Support
Center, Huntsville, ATTN: CEHNC-OE-CX
(Mr. John C. Potter), P.O. Box 1600,
Huntsville, Alabama 35807-4301

SUBJECT: Approval of Action Memorandum for Engineering
Evaluation and Cost Analysis (EE/CA) for the Former Fort
Segarra, Defense Environmental Restoration Program for Formerly
Used Defense Sites (DERP-FUDS), Project Number I02VI097701

1. Reference Memorandum, CEHNC-OE-CX, 25 May 2006, subject:
Action Memorandum for Engineering Evaluation and Cost Analysis
(EE/CA), Former Fort Segarra, United States Virgin Islands.
2. In response to the referenced memorandum, enclosed you will
find the original, signed Action Memorandum Approval for the
subject project.
3. Please refer any questions to Mr. Michael Ornella, at
904-232-1600.

FOR THE COMMANDER:

Encl

RICHARD E. BONNER
Deputy District Engineer
for Project Management

CF (w/encl):
Commander, U.S. Army Engineering and Support Center,
Huntsville, ATTN: CEHNC-OE-CX (James Manthey)
CEHNC-OE-CW (Roger Fitzpatrick)



**U.S. Army Corps of Engineers
Jacksonville District**

**Engineering Evaluation and Cost Analysis
Action Memorandum**

**Former Fort Segarra
Water Island, U.S. Virgin Islands**

U.S. Army Engineering & Support Center, Huntsville

**ENGINEERING EVALUATION AND COST ANALYSIS
ACTION MEMORANDUM
FORMER FORT SEGARRA
WATER ISLAND, U.S. VIRGIN ISLANDS**

FOREWORD

This Engineering Evaluation and Cost Analysis (EE/CA) Action Memorandum presents the selected Recovered Chemical Warfare Materiel (RCWM) response actions for former Fort Segarra, Water Island, U.S. Virgin Islands. The United States Army Corps of Engineers (USACE) is the executing agency under the Defense Environmental Restoration Program (DERP), and developed this EE/CA Action Memorandum in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended; and consistent with the National Contingency Plan (NCP). This decision is based on the information contained in the administrative record for this site. This document has been approved by the undersigned.

for



Robert M. Carpenter
Colonel, Corps of Engineers
Commanding

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1.0 INTRODUCTION

1.1 Fort Segarra is a Formerly Used Defense Site (FUDS) located on Water Island, approximately 1,800 feet south of St. Thomas Island in the U.S. Virgin Islands. Fort Segarra was used for Chemical Warfare Materiel (CWM) testing from May 1948 to September 1950 and was transferred to the Department of the Interior (DoI) in 1952. An Engineering Evaluation and Cost Analysis (EE/CA) was conducted during Summer 2003 at Test Area 4, Test Area 5, Test Area 8, and the Flamingo Bay Landfill Area to characterize the nature and extent of chemical agent contamination, identify the presence of chemical agent contaminated media, identify potential safety concerns associated with recovered chemical warfare materiel (RCWM), study risk management alternatives, recommend response action alternatives, and document the recommended alternative. A map depicting the location of the areas investigated is presented as Figure 1.

1.2 Several weapons tests were conducted at the former Fort Segarra, which involved chemical agent. The tests consisted of detonating M70 500-pound chemical bombs filled with mustard statically at various orientations in different environmental conditions. In addition to the static tests conducted with the M70 chemical bombs, smoke pots designed to release chemical warfare agent were also tested. The tests were conducted in Test Area 4, Test Area 5, and Test Area 8. Test Area 8 was the location of the Toxic Storage Yard and other support facilities associated with the former Fort Segarra. Surveillance of stored chemical bombs filled with cyanogen chloride and mustard was conducted at the Toxic Storage Yard. The Flamingo Bay Landfill Area was the location of transfer and possibly disposal operations. Two suspect chemical bombs were located in the Flamingo Bay Landfill Area during a dredging operation in 1966 and were disposed of by personnel from Roosevelt Roads Naval Base.

1.3 The EE/CA conducted at the former Fort Segarra did not confirm the presence of RCWM. During the EE/CA, two suspect CWM-related items (a vented 1-ton storage cylinder and a concrete-filled M78 500-lb bomb) were identified in the Flamingo Bay Landfill Area; however, there is extremely low risk to public safety and the environment from these 3X items, since they have been demilitarized since the closure of the former Fort Segarra and have been significantly weathered since that time. 3X items are considered to be potential agent-contaminated media. A response action to mitigate possible remaining RCWM hazards and manage residual risk has been approved for Test Area 4, Test Area 5, Test Area 8, and the Flamingo Bay Landfill Area. This response action, which includes removal of 3X items and the recommended site-wide institutional controls, constitutes the remedial action planned for the former Fort Segarra. The recurring review process will be conducted for a period of twenty years and constitutes the long-term management for the former Fort Segarra. Other than the response actions included in this Action Memorandum, no additional response actions are planned for the former Fort Segarra.

2.0 STATEMENT OF BASIS AND PURPOSE

2.1 The purpose of this EE/CA Action Memorandum is to set forth the selected RCWM response actions for former Fort Segarra. The United States Army Corps of Engineers (USACE) is the executing agency under the Defense Environmental Restoration Program (DERP) and there are no outstanding policy issues regarding the recommendations at this site. No other potentially responsible party has been identified for CWM contamination at this site. This decision document presents the selected response action for former Fort Segarra, which as been chosen in accordance with the requirements under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and DERP.

2.2 Based on the results of the completed EE/CA, the USACE will conduct a removal action of the 3X items at the Flamingo Bay Landfill Area. The removal action will consist of the removal of the empty, vented, one-ton chemical agent shipping container and the concrete-filled M78 500-lb chemical bomb casing identified at the site. An additional response action was recommended and approved, site-wide institutional controls consisting of warning signs and informational brochures. This additional response action addresses the residual risk from any potential chemical agent contaminated media that could possibly remain on the property. The results of the EE/CA indicate that the residual risk from chemical agent contaminated media does not pose an imminent and substantial endangerment to the public safety and the environment. The response actions and costs associated with the implementation of the recommended response alternatives are summarized in Table 1.

Table 1
Recommended Alternatives Cost Summary

Response Action	Cost
3X Removal Action at Flamingo Bay Landfill Area	\$35,900
Site-Wide Institutional Controls	\$17,200 \$9,500 Annually
Response Action Total	Initial: \$53,100 Annual: \$9,500

2.3 Based on the data collected during the EE/CA and the historical information presented in the 1991 Archives Search Report (ASR) and in the 2004 Final ASR, chemical agent contaminated media that may remain at the former Fort Segarra potentially consists of unaccounted for munitions and scrap metal from chemical weapons tests that occurred onsite.

2.4 The Final EE/CA Report describes the potential response alternatives that were evaluated for the former Fort Segarra and presents the recommended response alternative. The recommended response alternatives were determined to be the appropriate course of action as they address the residual risk due to chemical agent contaminated media that

may possibly remain. The DoI has been actively involved in the document review process and concurs with the selected response alternatives presented here. The U.S. Environmental Protection Agency also reviewed the report. The administrative record for this site is located at the Enid Bau Public Library at Dronningh Gade, St. Thomas Island and at the main library of the University of U.S. Virgin Islands.

3.0 PROJECT JUSTIFICATION

Results of the EE/CA did not confirm that RCWM hazards are present within the former Fort Segarra; however, there is a potential that hazards due to agent contaminated media may be present at the site. The public has access to all of the test areas as well as the Flamingo Bay Landfill Area. Currently, there are no administrative or engineering controls in place to modify public behavior and reduce potential exposure to chemical agent contaminated media not identified by this investigation. The residual risk associated with the potential presence of chemical agent contaminated media within the test areas or the Flamingo Bay Landfill Area does not pose an imminent and substantial endangerment to public safety and the environment. The USACE will remove the two 3X items and implement the selected institutional controls.

4.0 ALTERNATIVES CONSIDERED

A response action consisting of the removal of 3X scrap items and implementation of institutional controls was developed to address the residual risks associated with chemical agent contaminated media potentially remaining at Test Area 4, Test Area 5, Test Area 8, and the Flamingo Bay Landfill Area. Several response action alternatives were considered for Test Area 4, Test Area 5, Test Area 8, and the Flamingo Bay Landfill Area. These response action alternatives consist of:

- No DoD Action Indicated (NDAI),
- Institutional Controls, and
- Removal Actions.

5.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

5.1 Two public meetings were held on June 10, 2004, one at the Emerald Beach Resort on St. Thomas Island and one at Honeymoon Beach on Water Island, to present the conclusions and recommendations of the EE/CA, and to address any public concerns. The attendees of the public meetings were informed that written comments concerning the EE/CA and recommendations would be accepted through July 2004. There were no written comments received. However, some residents of Water Island did voice concerns about the aesthetics and information presented on the signs and informational brochures and did not support the implementation of these institutional controls.

5.2 A meeting was also held on June 10, 2004 with the U.S. Virgin Islands Governor's office. The results of the EE/CA and a description of recommended activities

for former Fort Segarra were presented to the U.S. Virgin Islands Governor's office officials. No comments were provided by the Governor's office.

6.0 COORDINATION SUMMARY

Project activities for the EE/CA were coordinated with the DoI, U.S. Environmental Protection Agency, and St. Thomas Island government officials. All phases from the work plans through the Draft and Final EE/CA reports were reviewed by the agencies listed above. Fieldwork activities were also coordinated with the State U.S. Fish and Wildlife Service to ensure that endangered species and sensitive habitats were not adversely affected by the EE/CA. In response to the SHPO inquiry concerning whether any cultural resources had been encountered or impacted during the excavations conducted, a letter report was provided to USAESCH that described the items identified during the excavation conducted as part of the EE/CA. The letter report is included as Appendix E of the Final EE/CA report. The DoI supports the findings and recommendations of the EE/CA.

7.0 SELECTION CRITERIA

The selection criteria used to evaluate the three response action alternatives included:

- Overall protection of human health and the environment,
- Compliance with applicable or relevant and appropriate requirements,
- Long-term effectiveness and permanence in reducing public safety risks,
- Short-term effectiveness in reducing public safety risks,
- Implementability of the alternative, and
- Cost of implementing the alternative.

These criteria are discussed further in Sections 6, 7, and 8 of the Final EE/CA Report.

8.0 DESCRIPTION OF SELECTED REMEDIES

8.1 The selected response action alternative is to implement a site-wide institutional controls program, in addition to the removal of the 3X items identified during the EE/CA. The site-wide institutional controls component that is considered effective, implementable, and cost effective is the installation of warning signs with an accompanying printed brochure informing residents and visitors on Water Island about the location and history of the test areas and the Flamingo Bay Landfill Area. The informational brochure will also include the locations of the additional test areas and other military related structures located on Water Island such as the gun emplacement and the bunkers. No additional institutional control components were appropriate for the test areas or the Flamingo Bay Landfill Area. The costs for the 3X removal action and the implementation of the site-wide institutional controls is presented in Table 1.

8.2 The 3X removal action will be performed at the Flamingo Bay Landfill Area. Both items identified as potential 3X will be shipped off-site for incineration and disposal in accordance with applicable DoD and Department of Transportation regulations. No other 3X items were identified during the EE/CA within the test areas or Flamingo Bay Landfill Area.

8.3 Follow-on activities associated with the test areas and the Flamingo Bay Landfill Area will be conducted by the USACE in the form of recurring reviews. The recurring review process requires that periodic reviews (minimum of every five years) be conducted for sites where residual risk remains following the implementation of a response action. Data gathered during the review process will be used to determine if additional action needs to be taken to protect public safety and the environment. If no changes in land use, site demographics, available information, or risk to the public and/or the environment have taken place, the test areas and the Flamingo Bay Landfill Area will continue to be monitored at the specified intervals. A Recurring Review Report of the results of the recurring review will be prepared by USACE and signed by the executing district Commander. A public notice will be placed in the local newspaper concerning the continued effectiveness of the response action. No formal Decision Document will be prepared as part of this recurring review process. Recurring reviews including document review, site visit, and documentation of findings are expected to cost approximately \$17,100 every five years. The total cost for conducting recurring reviews for a twenty-year period is \$68,400. Following the recommended period of monitoring and recurring reviews, project closeout will be conducted for the site. The project closeout will consist of issuing a public notice of the recommendation, contacting local officials and property owners, and sending a letter to regulators for concurrence. If it is determined former Fort Segarra no longer poses a risk, project closeout will be conducted.

9.0 TRADE OFF ANALYSIS

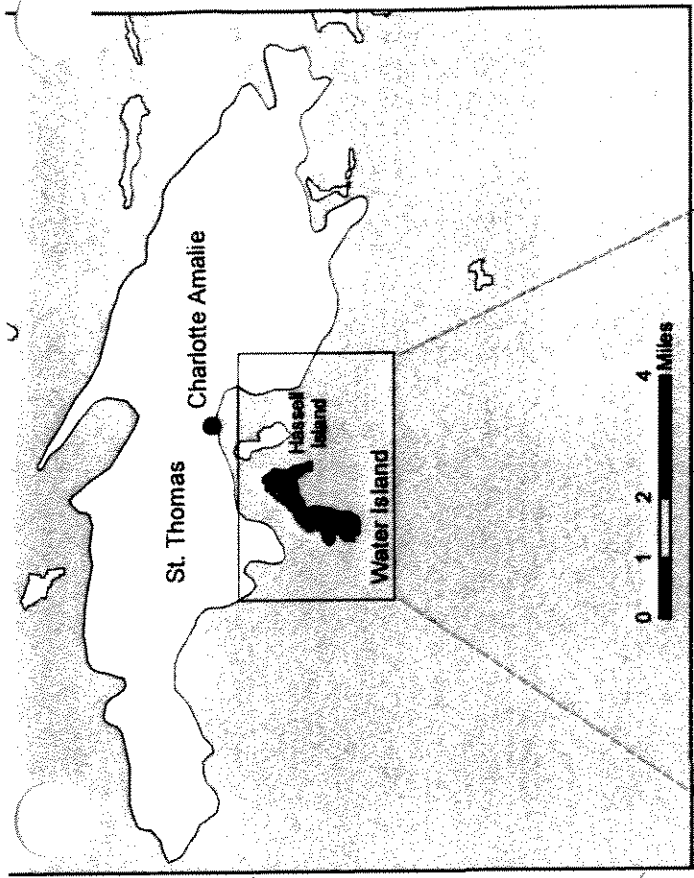
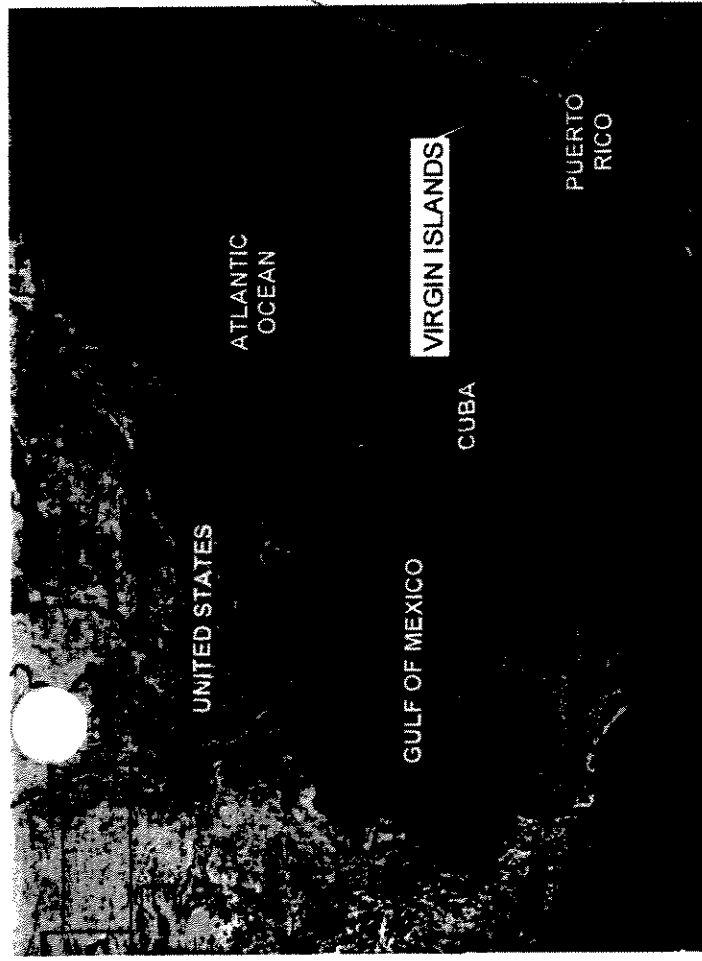
The alternatives recommended for the test areas and the Flamingo Bay Landfill Area are the best alternatives as determined from the available historical records and data gathered in support of the EE/CA. No impact to natural resources is expected due to the actions proposed; therefore, mitigative measures are unnecessary.

10.0 DOCUMENTATION OF SIGNIFICANT CHANGES

Currently, the test areas and the Flamingo Bay Landfill Area are undeveloped. However, once the property is transferred to the U.S. Virgin Islands Government, the final disposition and land use may change. No significant changes relating to existing or proposed development have been identified within the test areas or the Flamingo Bay Landfill Area at this time.

11.0 RESPONSIVENESS SUMMARY

Some Water Island residents that voiced concerns about the implementation of the institutional controls, specifically the signs and the informational brochures, were assured that the signage and informational brochures would be tasteful and not alarming.



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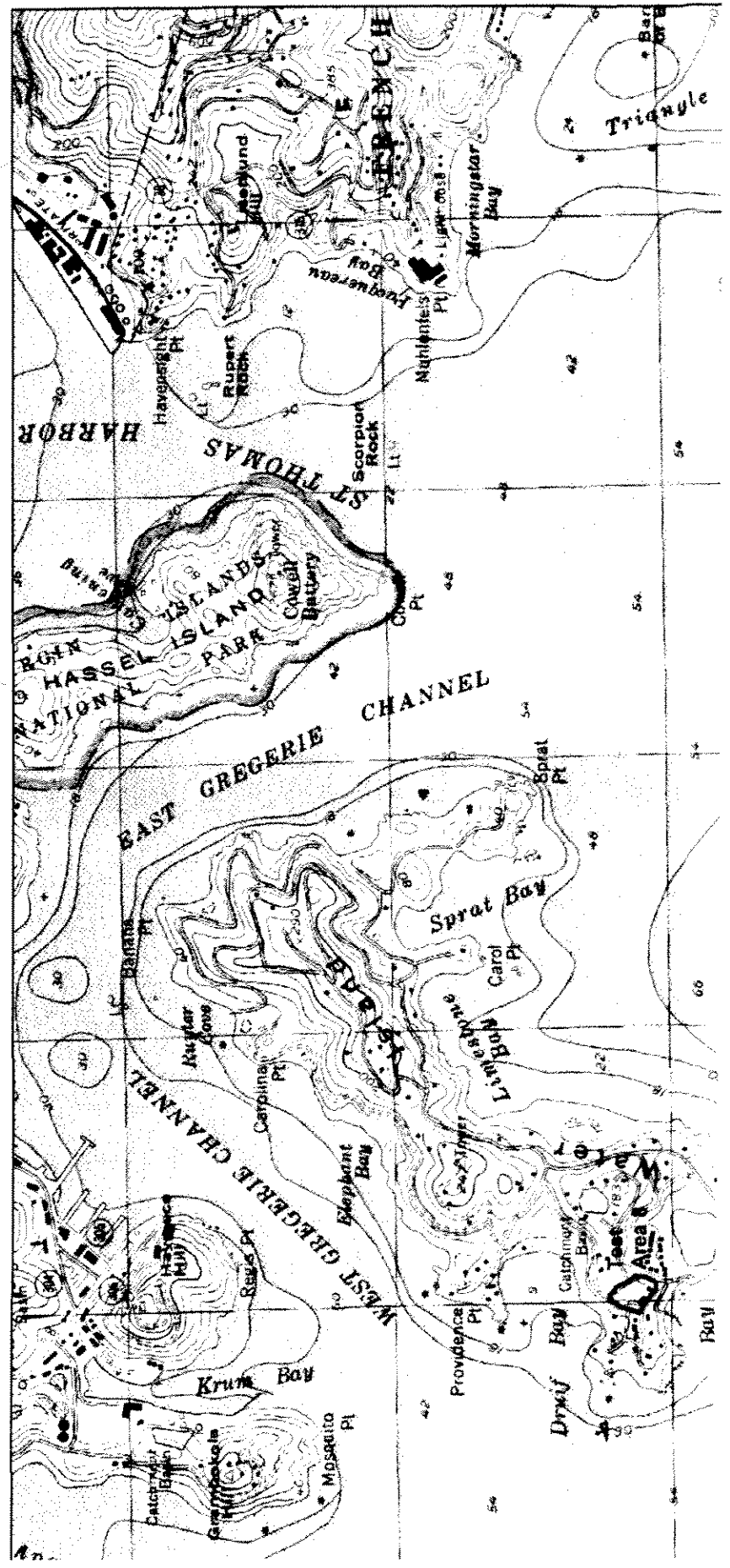


Image Source:

**JACKSONVILLE DISTRICT
STAFF SUMMARY**

NAME: Michael Ornella DATE: 07/05/2006 SUSPENSE: 07/07/2006

CE SYMBOL: CESAJ-DP-S

TELEPHONE: 904-232-1600

	Concur (initials)		Concur (initials)
☒ DE COMMANDER	_____	☐ EN ENGINEERING	_____
☒ DD DEPUTY COMMANDER	①	☐ IM INFORMATION MGMT	_____
☐ DA DEP CDR, SOUTH FL	_____	☐ IR INTERNAL REVIEW	_____
☐ DS DEP CDR, ANTILLES	_____	☐ LM LOGISTICS	_____
☒ DE DEP DIST ENGR (PM)	M	☐ OC OFFICE OF COUNSEL	_____
☐ DR RESTORATION PROGRAM	_____	☐ PD PLANNING	_____
☒ DX EXECUTIVE ASSISTANT	Tdy	☐ PM SECURITY	_____
☐ DB SMALL BUSINESS	_____	☐ RE REAL ESTATE	_____
☐ CC CORPORATE COMM	_____	☐ RD REGULATORY	_____
☐ CO CON-OPS	_____	☐ RM RESOURCE MGMT	_____
☐ CP CIVILIAN PERSONNEL	_____	☐ SO SAFETY OFFICE	_____
☐ CT CONTRACTING	_____	☐ SP STRATEGIC PLANNING	_____
☐ EE EQUAL EMPLOYMENT OFC	_____		

Purpose:

For DE signature on Action Memorandum (AM) Approval & Transmittal Memorandum to HNC. This Engineering Evaluation & Cost Analysis (EE/CA) AM serves as the primary decision document for the Ordnance & Explosive response action for the former Fort Segarra site. It identifies, substantiates & explains the rationale for response action selection & documents that the appropriate process was followed in the selection of the response.

Background:

The Former Fort Segarra is a formerly used defense site (FUDS) which consists of the entire 500-acre Water Island, located in St. Thomas harbor, U.S. Virgin Islands. The EE/CA investigation conducted at the site did not confirm the presence of RCWM (recovered chemical warfare material), but identified two suspect CWM related items; however there is extremely low risk to public safety and the environment from these 3X items. The purpose of this EE/CA AM is to set forth the selected OE response actions for the Former Fort Segarra.

Discussion:

The EE/CA AM identifies, substantiates & explains the rationale for response action selection & documents that the appropriate process was followed in selection of the response. The EE/CA investigation conducted at the site did not confirm the presence of RCWM, but did identify two suspect CWM related items; however there is extremely low risk to public safety and the environment from these 3X items.

Action	☐ Approval	☐ As Requested	☐ Comment
☐ FYI	☐ Note and Return	☐ Per Conversation	☒ Signature