

US Army Corps
of Engineers
HUNTSVILLE ENGINEERING
AND SUPPORT CENTER

FINAL VERSION

Defense Environmental Restoration Program
for
Formerly Used Defense Sites

Ordnance and Explosives
Chemical Warfare Materials

ARCHIVES SEARCH REPORT
VOLUME I
(SECTION 2 OF 2)

FORMER FORT SEGARRA

U.S. VIRGIN ISLANDS

Project Number - I02VI097701

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Prepared by
US ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

FORMER FORT SEGARRA

PROJECT MANAGEMENT PLAN



JACKSONVILLE DISTRICT

U. S. ARMY CORPS OF ENGINEERS

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Fort Segarra files
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JAX 2

PROJECT MANAGEMENT PLAN
Ordnance and Explosive Waste (OEW) Program
Former Ft. Segarra Project
Water Island, St. Thomas, US Virgin Islands
Project No. I02VI097701

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PROJECT MANAGEMENT PLAN

1. **WORK SCOPE.**

A. Background.

In June 1963, the US Army initiated a program with the express purpose of excessing US Government property (no longer beIng used for defense related purposes) owned by the Department of Defense. Recipient of the property at the former Ft. Segarra is the US Department of Interior. The Comprehensice Environmental Response, Compensation and Liability Act (CERCLA), originally enacted in 1980, was amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and mandated that property containing hazardous and toxic wastes or ordnance was the responsibility of the entity contributing to the contamination. Even though DOD no longer has title to the properly, CERCLA and SARA define the US Government as a potential responsible party, provided that the US Army was determned to be at least partially the source of the contamination.

Under the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS), the former Fort Segarra has been identified as as site requiring OEW clean-up support. USAHND was assigned the Mandatory Center of Expertise (MCX) and Design Center for Explosive Ordnance (EXO) on 5 Apr 90. EXO has now been designated has Ordance an Explosive Waste (OEW). All work at the former Fort Segarra will be performed in accordance with the Management Plan for Ordnance and Explosive Waste (OEW) Mandtory Center of Expertise and Design Center (CEHND 1105-3-9).

Insert role of USACMDA.

Insert role of Center for Disease Control (CDC), National Environmental Health Center (NEHC).

Insert role of Army Technical Escort Unit (TEU)

The Commander, South Atlantic Division (CESAD) has determined that Jacksonville District (CESAJ) will be responsible for Project Management for the project. In this regard, CESAJ will correlate the requirements of all responsible organizations and develop the FFS Project Management Plan. A comprehensive network of all program activities to be performed by CEHND, USACMDA, CESAJ, TEU, NEHA, and others. Primary responsibility for matters relating to Public Affairs will be CESAJ. In addition, the CESAJ Antilles Area Offive in San Juan, Puerto Rico will be the primary point of contact for any matters involving the coordination and input of the local governmental agencies in St. Thomas, USVI.

B. Site History and Description.

(1) The former Fort Segarra is located on Water Island. Water Island is located in the St. Thomas Bay, between the East and West Greggerie Channels, south of the city fo Charlotte Amalie, St. Thomas, US Virgin Islands. The former Fort Segarra site has historically been stated as being approximately 500 acres which was acquired from the East Asiatic Company/West Indian Company through condemnation in June 1944. Water Island was acquired for a coastal defense installation known as Fort Segarra. The Department of the Army (DA) was constructing the coastal defense installation when World War II ended and construction was halted.

(2) The Army's Chemical Corps moved its San Jose Project (tropical test site) from Panama to the Virgin Islands in 1948. Between 1948 and 1949, the Chemical Corps upgraded the previously constructed facilities. A review of lists of approved test plans shows that early tests on Water Island focused primarily on blister (mustard) and choking (chlorine, phosgene, and cyanogen chloride) agents, and that later tests were planned to shift to captured German munitions and nerve agents. In 1949, the US Army Technical Escort Unit (TEU) brought unidentified chemical munitions to the Virgin Islands. By late 1949, the Chemical Corps was dissatisfied with the Virgin Islands and decided to shift operations to Dugway Providing Ground, UT even though chemical testing was ongoing. In 1950, the Virgin Islands project was terminated and chemical munitions removed by TEU. The items removed were E46 chemical bombs (modified 115 lb. M70 bombs filled with nerve agent GA or possibly GB) and E52 bombs (modified T3E1 125 lb. bombs filled with GA or possibly GB).

(3) The following sites are known or thought to have been used for ordnance and chemical weapons testing activities:

(a) Test Area 1. This area is located on the northwest shore of Water Island on Ruyter Bay, just north of Carolina Point. The area is currently occupied by a home and small parking garage. Two ammunition bunkers are located nearby.

(b) Test Area 2. This area is located on the north side of Providence Point adjacent to Phillips Landing. The Test Area was dredged out several years ago in preparation for a small harbor, but was subsequently filled in again.

(c) Test Area 3. This area is located at the point of Druif Bay, and is just east of the Water Island Hotel beach area. It has been reported that this area was excavated for fill in 1981 and subsequently refilled with soil from another location on the island.

(d) Test Area 4. This area is located to the south and southwest of the Flamingo Bay Harbor. The site straddles the road from the deep-water dock. The area north of the road is relatively clear of debris however, the area south of the road is the island junk yard with about 50 abandoned vehicles.

(e) Test Area 5. This area is located south and southeast of the Flamingo Bay Harbor and is south of the road from the deep-water dock. This area was used to accumulate and burn debris from Hurricane Hugo in 1989. There is a substantial aount of metallic debris on the ground.

(f) Test Area 6. This area is located on the eastern shore of the southern part of the island, due east of Flamingo Bat. This site has been extensively developed along the ridge line, and the lower parts of the site are along a rocky shore.

(g) Test Area 7. This area is located on the north part of the island and extends from the point of Sprat Bay northeast to East Grefferie Channel. The northern part of the Test Area is covered with a pond of red-colored water.

(h) Test Area 8. This area is now covered by the Water Island Hotel. The hotel has not been repaired or occupied since its destruction by Hurricane Hugo.

(i) Flamingo Bay Landfill and Warehouse Area. A metal warehouse was constructed by the Water Island Hotel near the deep-water dock for storage of vehicles and materials. The warehouse was constructed on an area filled in for this purpose. The are south of the warehoused was the site where chemical bombs were discovered in 1966. The bombs were discovered while a dragline was removing "Elephant Muck." After this discovery, the site was filled in and covered with borrowed soil to a depth of about three feet. Debris, abandoned vehicles, and scrap now cover the site. [The DOI, as owner, may be liable for the costs of removing the scrap and debris from this site (and other sites) prior to commencing OEW remediation. USAEHD provided DOI with an estimate of $145,000 to remove this debris.]

(j) In addition to the Test Areas and the landfill site, salt water tidal pools around Water Island are a primary potential target for dumping of OEW and chemical agent filled ordnance.

(4) The Army turned over Water Island to the Department of the Interior (DOI) by an indefinite revocable permit. The DOI assigned the permit to the St. Thomas Development Authority (STDA) in 1951. The STDA then leased Water Island to Water Island, Inc., a local development corporation. On 11 Jul 1952, Public Law 511 (82nd Congress) authorized the transfer of Water Island from the DA to the DOI. On 10 Dec 1952, the DOI executed a new lease to the Water Island, Inc., which proceeded to develop the Island into a resort with many subleases. This lease expired on 31 December 1992. The Island is currently the site of a large tourist resort hotel and is also inhabited by about 300 people during the winter season. Many cruise ships call in St. Thomas with many docking near Water Island.

(5) In 1966, during the construction of the Flamingo Bay warehouse, a crew employed by the lessee, Water Island, Inc., uncovered several large objects that resembled bombs. An EOD team rom Roosevelt Roads Naval Base(San Juan, Puerto Rico) identified the objects as M-70/M-78 series chemical ordnance bombs. The EOD team indicated that this site had been used by the Army as a chemical ordnance disposal area. The EOD team vented the bombs and warned the construction crew not to excavate in this area again. The lessee notified the DOI of the problem but no further investigations have been performed. No known injuries or other problems have occurred at this site. The site is on the southwest part of the Island near Flamingo Bay along the seashore and is known locally as the Flamingo Bay Landfill. It is an unstable area subject to storms and high tides.

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C. Status Update.

(1) In October 1985, the DOI sent a memo to Mr. Lewis D. Walker (DA Deputy Assistant Secretary for Environment, Safety and Occupational Health) requesting that the Army determine if Water Island was ever used for chemical warfare testing or similar activities. No correspondence can be found of Mr. Walker's reply, but subsequent to this DOI memo, Fort Segarra was added to the FUDS Inventory for a future Preliminary Assessment (PA).

(2) In the spring of 1989, Congressional Delegate Ron de Lugo of the Virgin Islands and Chairman of the House Interior Subcommittee on Insular and Internation Affairs, introduced legislation (HR 1345) which would authorize the Secretary of the Interior to transfer title of Water Island to the Government of the Virgin Islands. Status of this legislation is unknown in January 1993. If this legislation were not to pass, the DOI, at the expiration of the lease (Dec 1992), will be required under current law to declare Water Island excess to its needs and turn over the Island to General Services Administration (GSA) for disposal pursuant to the Federal Property and Administrative Services Act (40 USC 471).

(3) In the summer of 1989, Jacksonville District (CESAJ) commenced work on the Fort Segarra Inventory Project Report (INPR). The draft INPR was completed by CESAJ in Dec 1989. The final INPR was completed in June 1990, and forwarded by CEHND to HQUSACE for approval. On 20 Aug 1990, HQUSACE approved the INPR and authorized CEHND to proceed (subject to availability of funds) with the removal action. On 24 Oct 90, CESAJ informed DOI of the approval of the INPR and the fact that the Corps would be commencing cleanup operations in the near future.

(4) CEHND personnel met with TEU and Department of the Army (DA) on 19-20 Dec 90, concerning their need for TEU assistance at Fort Segarra. LTC Doc Bishop, Director of the CWM Program at the DA, indicated that the TEU unable , at this time, to provide transport and storage services for any CWM recovered at Fort Segarra. The reasons for this are very complex. Recently within DA and AMC, the policy seems to have shifted to calling recovered CWM a hazardous and toxic waste (HTW) under EPA regulations. This policy shift creates many complex problems. First, by calling CWM an HTW item, CWM must be transported by an EPA licensed transporter and manifested as HTW. The TEU is not an EPA licensed transporter and private contractors are not allowed by Army regulations to transport CWM. Simply put, this means that any CWM recovered in the future must remain on-site where discovered.

Second, there are only seven installations in the CONUS that are authorized to store CWM. However, the commanders of these seven installations refuse to accept any CWM manifested as HTW as this would violate their EPA Part B permits concerning the storage of HTW generated from off their installations.

Third, the EPA would be the lead agency, not DOD, concerning the statutes governing transport and storage of CWM-HTW. DOD would no longer control the CWM whih is contrary to Army regulations. Fourth, LTC Bishop stated that the above seven installations have nearly reached their physical capacity to store recovered CWM even though AR-50-6 says they must accept the CWM. These installations will remain at or near capacity until such time as the Chemical Demilitarization Program reduces the CONUS unitary stockpile.

Finally, Johnston Island (JI) can no longer accept CWM for storage and demilitarization from any areas of the world other than the Pacific Basin. This is a result of the "Venatu Agreement" where President Bush agreed with the Government of the Solomon Islands not to accept at JI any CWM found outside the Pacific Basin. The first three issued create "administrative gridlock" since the requirements of the Army's CWM program and the EPA's HTW statutes cannot be met concurrently.

(5) On 9 Jan, 1991, CEHND formally requested in writing, with a 28 Feb 91 suspense date, Commander Army Material Command (AMCCOM) and TEU support to cleanup Fort Segarra. AMCCOM was provided all of the pertinent background information and the reasons for the urgency.

(6) CEHND and CESAJ briefed the Virgin Islands Governor, Alexander Farrelly, on 21 Mar 91, concerning the status of the Fort Segarra (Water Island) project and the U.S. Government's plans for eventual remediation of the site, as necessary. An overview of the CEHND Ordnance and Explosive Waste (OEW) Program was also presented. Governor Farrelly requested that a search of military records be performed on all Formerly Used Defense Sites in the U.S. Virgin Islands.

(7) On 12 April 1991, CEHND, contracted with Ebasco, Inc. to perform an Archives Search of Fort Segarra and all other FUDS located within the U.S. Virgin Islands. The Archives Search Report was completed on 3 Jul 91. The history of Fort Segarra and the nature of the testing conducted there are contained in the Archives Search Report. The report provided a Risk Assessment Code (RAC) of 1 for the Flamingo Bay Landfill area. Based on the RAC 1 scoring, CEHND awarded a contract to install a fence around the Flamingo Bay Landfill.

(8) On 18 Jul 91, CEHND and HQUSACE, briefed Congressional Delegate Ron DeLugo on the status of the Water Island project. The findings of the recently completed Archives Search of the Former Fort Segarra and other FUDS in the U,S. Virgin Islands were discussed. The primary concern emphasized by CEHND was the RAC 1 (Flamingo Bay Landfill) site on Water Island.

(9) On 14 Aug 91, the Governor was briefed by CEHND and CESAJ on the results of the Archives Search. A press release was issued to the public advising of the issuance of the Archives Report. Later that day representatives from CEHND and CESAJ held a public meeting on Water Island and briefed the residents on the Report. They were also informed on the plans to fence the Flamingo Bay Landfill area and to complete topographic surveying of Water Island.

(10) The contract to fence the Flamingo Bay Landfill and to perform topographic surveying was awarded on 14 Aug 91. The contract was awarded to Ebasco, Inc., the same firm that performed the Archives Search. Installation of the fence was completed on 4 Oct 91, and topographic surveys were completed on 14 Nov 91. The Flamingo Bay Landfill and Test Areas 2, 4, 5, 6, and 7 were mapped at a scale of one inch equals 30 feet (1"=30'). In addition, the entire Water Island was planimetrically mapped at a scale of one inch equal 200 feet (1"=200')

(11) Another contract was awarded to Ebasco, Inc. on 27 Sep 91, to prepare concept ordnance remediation work plans. The final concept work plans were completed on 16 Mar 92. Ultimately, these work plans will be provided to the remediation contractor to finalize.

(12) The Governor's Press Secretary, Mr.James O'Bryan, was briefed by CEHND and CESAJ on 4 Dec 91 regarding the status of Water Island project. On the same day a meeting was held with the residents of Water Island. For the benefit of the island residents that were not at the 14 Aug 91 meeting Archives Search Report was discussed. Status of CEHND remediation contracting action was discussed. The public was given an opportunity to obtain copies of the recently completed topo and planimetric maps.

(13) On 3 Feb 92, CESAJ briefed the CESAJ Commander, COL Salt, on the history and status of the Water Island project

(14) Insert CEHND and CESAJ July 1992 trip to Water Island for pre-proposal site visit with MTA, Inc. Meetings with Mr. James O'Brien, DOI representative Mr, Robert Bunn, and local officials.

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D. Strategy.

Areas suspected of containing OEW and chemical warfare material (CWM) have been identified through archives searches. Interim Removal Actions for OEW have been initiated to address areas which present an imminent and substantial danger to the public. The CEHND approach to the OEW problem is based on removing the imminent and substantial danger to the public. CEHND will respond to special requests from ----- and AMCCOM where OEW is suspected.

An Interim Removal Action (IRA) was performed at the Flamingo Bay Landfill by fencing the landfill.

Remaining strategy TBD.

2. **WORK BREAKDOWN STRUCTURE (WBS).** The WBS is furnished at Annex A.

3. **ORGANIZATION, RESPONSIBILITIES, AND AUTHORITY.**

A. Organizational Breakdown Structure (OBS):

100 Department of the Army 9DA)
200 US Army Corps of Engineers Headquarters (HQUSACE)
300 US Army Engineering Division, Huntsville (CEHND)
- 310 Commander (CEHND-DE)
- 320 Deputy Commander Programs and Technical Management (CEHND-DC)
- 330 Assistant Division Commander (CEHND-AD-M)
- 340 Directorate of Programs and Project Management (CEHND-PM)
- 350 Directorate of Engineering (CEHND-ED)
  - 351 Systems Engineering Division (CEHND-ED-SY)
  - 352 Design Engineering Division (CEHND-ED-CS/ CEHND-ED-ME)
  - 353 Cost Engineering Division (CEHND-ED-ES)
- 360 Directorate of Resource Management (CEHND-RM)
- 370 Directorate of Contracting (CEHND-CT)
- 380 Office of Counsel (CEHND-OC)
- 390 Public Affairs Office (CEHND-PA)

400 U.S. Army Engineering Division, South Atlantic (CESAD)
- 410 Commander (CESAD-)
- 420 Directorate of Programs and Project Management (CESAD-PM)

500 U.S. Army Engineer District, Jacksonville (CESAJ)
- 510 Commander (CESAJ-DE)
- 520 Deputy District Engineer for Programs and Project Management (CESAJ-DP)
  - 521 Individual Project Manager (CESAJ-DP-I)
- 530 Deputy District Engineer Antilles Area Office (CESAJ-DS)
- 540 Public Affairs Office (CESAJ-PA)
- 560 Chief, Planning Division (CESAJ-PD)
  - 561 Chief, Environmental Branch (CESAJ-PD-E)
  - 562 (CESAJ-PD-EE)
  - 563 (CESAJ-PD-)
  - 564 (CESAJ-PD-)
- 570 Chief, Construction Operations Division (CESAJ-CO)
- 580 Chief, Contracts Division (CESAJ-CT)
- 590 Chief, Safety Office (CESAJ-SO)

600 U.S. Army Chemical Material Destruction Agency (USACMDA)
- 610 Non-Program Stockpile Program Manager (USACMDA)

700 US Army Technical Escort Unit (TEU)

B. Responsibilities:

DA	Definition of required work
HQUSACE	Top-level funding and scheduling for DERP-FUDS
CEHND	Detailed scheduling, budgeting and cost control Progress and financial reporting Execution and review of required work CO and COR designtation Contractor selection/award Work plans and field work Ordnance QA Assist in project QA oversight OEW report Coordinate with HTW plans
CESAD	Coordination and rview of required work and coordination of HTW interface
CESAJ	Overall Project Management Coordination and review of required work On-site participation in execution (COR) Project QA oversight Budget and cost control Progress and financial reporting Historical data Obtaining Rights-of-Entry Media interaction Environmental review Coordinate with HTW plans
USACMDA	
EPA	
CDC	
TEU	On-site participation in execution Coordination and review of required work Regulators Coordination

C. Authorities:

DA	Approve/provide funding
HQUSACE	Approve/provide funding for FUDS
CEHND	Define scope of work Approve work, budget, and schedule Allocate resources to perform work Contracting Officer
CESAJ	On-site project management
USACMDA	
TEU	CWM regulations

4. **RESPONSIBILITY ASSIGNMENT MATRIX.** The Responsibility Assignment Matric is furnished at Annex B.

5. **SCHEDULE.**

A. Period of Performance. TBD.

B. Current Project Schedule. Current Project Schedule is furnished at Annex C.

6. BUDGET AND COST ESTIMATE

A. Program Budget. The Program Budget is generated through funding Work Plans that are established for the overall DERP-FUDS program related to OEW. Funds of $ are expected to be dedicated to Fort Segarra for the remainder of FY-92. These funds will be used for site investigations.

CEHND.

(a) FUDS Contract Funds (To Date $379,000)

(b) FUDS Contract Funds (Remainder of FY-92 - $)

(c FUDS Contract Funds (FY93 - $_____)

(d) FUDS Contract Funds (FY94 - $_____)

(B) Organizational Cost Estimates.

CEHND.

(a) FUDS In-House Labor (To Date $_____

(b) FUDS In-House Labor (Remainder of FY-92 - $)

(c) FUDS In-House Labor (FY93 - $_____)

(d) FUDS In-House Labor (FY94 - $_____)

(2) CESAD/CESAJ:

(a) FUDS In-House Labor (To Date $_____)

(b) FUDS In-House Labor (Remainder of FY-92 - $

(c) FUDS In-House Labor (FY93 - $_____

3) USACMDA:
(a) In-House Assistance (To Date $_____)

(b) In-House Assistance (Remainder of FY93 - $
4 TEU.

(a) FUDS In-House Assistance (To Date $_____)

(b) FUDS In-House Assistance (Remainder of FY92 - $

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7. **RESOURCE ALLOCATION PLAN.** The following in-house resources will be required to support this project:

Engineering Directorate:
- Civil/Structures Division:
  - Site Development Branch
  - Geotechnical Branch
  - Environmental Protection & Utilities Branch
- Cost Engineering Division:
  - Cost Engineering Branch
  - Service Branch
- Systems Engineering Division:
  - Analysis Branch
  - System Safety Section

Program & Project Management Directorate:
- Ordnance & Technical Programs Division
- A-E Contracts Division

Resource Management Directorate:
- Program Budget Division
- Finance and Accounting Division

Contracting Directorate:
- Environmental Acquisition Division

Public Affairs Office

8. **LOCAL COOPERATION PLAN.**

Rights-of-Entry and site clearance activities will be coordinated through CESAJ with property owners and federal, state, and local regulators. CESAJ will develop necessary plans and coordinate with CEHND for approval. Plans may include Local Cooperation Agreement (LCA) package in accordance with ER-1165-2-131.

9. **ACQUISITION PLAN.**

A Project Definition.

The project has been adequately definitized by the previous Archives Search.

B. Interim Removal Actions. Contracting action is underway to obtain a remediation contractor. This contractor will perform sweeps of areas with the lowest potential for chemical contamination. As part of the sweeps, the contractor will obtain and analyze soil, sediment, and water samples for HTW and chemical agent.

C. Studies. An Environmental Assessment (EA) may be required prior to commencing full-scale remediation on Water Island.

D. Removal Actions. TBD.

REAL ESTATE PLAN.

No real estate will be required. On 3 Jan 91, CEHND received from CESAJ the Rights-of-Entry (ROE) to enter DOI and lessee property to perform site investigation and clean-up work. The ROE was to expire on 14 Sep 1991 but was re-executed by CESAJ on 20 Aug 91 with a new expiration date of August 1993.

TOTAL QUALITY PLAN.

Quality Assurance (QA) and Quality Control (QC) plans have been developed and will continue to be developed insite work plans. CEHND is responsible for OEW QA. The contractor is responsible for QC.

12. VALUE ENGINEERING (VE) PLAN.

The VE program will be administered by CEHND VE Office (CEHND-ED-SY). For the most part, this will consist of evalaution of removal action efficiency.

SAFETY PLAN

Site Specific Health and Safety Plans (SSHSP) are developed for this project by the contractors performing the work. CEHND Safety Office (CEHND-ED-SY) approval of the plans is necessary before commencement of investigation or removal activities. Contractor and Corps personnel must follow the requirements of Corps of Engineers manual EM 385-1-1.

14. SECURITY PLAN

Since this project contains properties owned or leased by various entities, security (safety related) will be provided as called for in work plans with CESAJ providing coordination.

15. CULTURAL RESOURCE PLAN.

A Cultural Resource Plan may be required. If so, CESAJ will be responsible for preparing the plan. This plan may be required due to the existence of two pre-Columbian sites, the ruins of two plantations dating from the 17th century (one on Carolina Point and one on Sprat Bay), at least two 19th century shipwrecks, and World War II military fortifications. None of the sites have been nominated to the National Register of Historic Places. However, the Territorial Archaeologist points out that three sites have not yet been systematically excavated, and that the Elephant Bay site may be of considerable importance.

16. **ENVIRONMENTAL PLAN.**

A. Environmental Assessments (EA)

EA's, if necessary, will be performed by CESAJ and coordinated with CEHND with resulting Environmental Impact Statements (EIS), if nay, also being coordinated through USAEDSA. The rumored existence on Water Island of two endangered species (the leatherback turtle and the brown tree boa) must be further investigated.

B. Environmental Permits.

Environmental Permits are not necessary for CERCLA actions. CEHND is responsible for resolving any permit issued with the Territorial and Federal regulators.

MANAGEMENT CONTROL PLAN.

Life Cycle Project Management (LCPM) procedures will be used in the management of this OEW project. They will be integrated nto and used for OEW where imminent safety hazards exist. CEHND is the Mandatory Center of Expertise (MCX) for OEW. CEHND is responsible for planning, design, and removal of OEW. CESAJ will serve as the Project Manager and provide Contracting Officer Representative (COR) support with on-site control of removal contracts. CEHND is responsible for monitoring ordnance efforts. TEU is responsible for CWM removal and safety. USACMDA is responsible for the destruction CWM.

REPORTING REQUIREMENT

Quality Assurance Report (QAR) - Daily Log of OEW Removal (CEHND), Fact Sheets (CEHND and CESAJ), Weekly Progress Reports (Contractor), Weekly/ Monthly Cost Reports (Contractor), and the LCPM Reporting System (LRS), ER 5-2-1, will be used for project control.

CHANGE CONTROL PLAN.

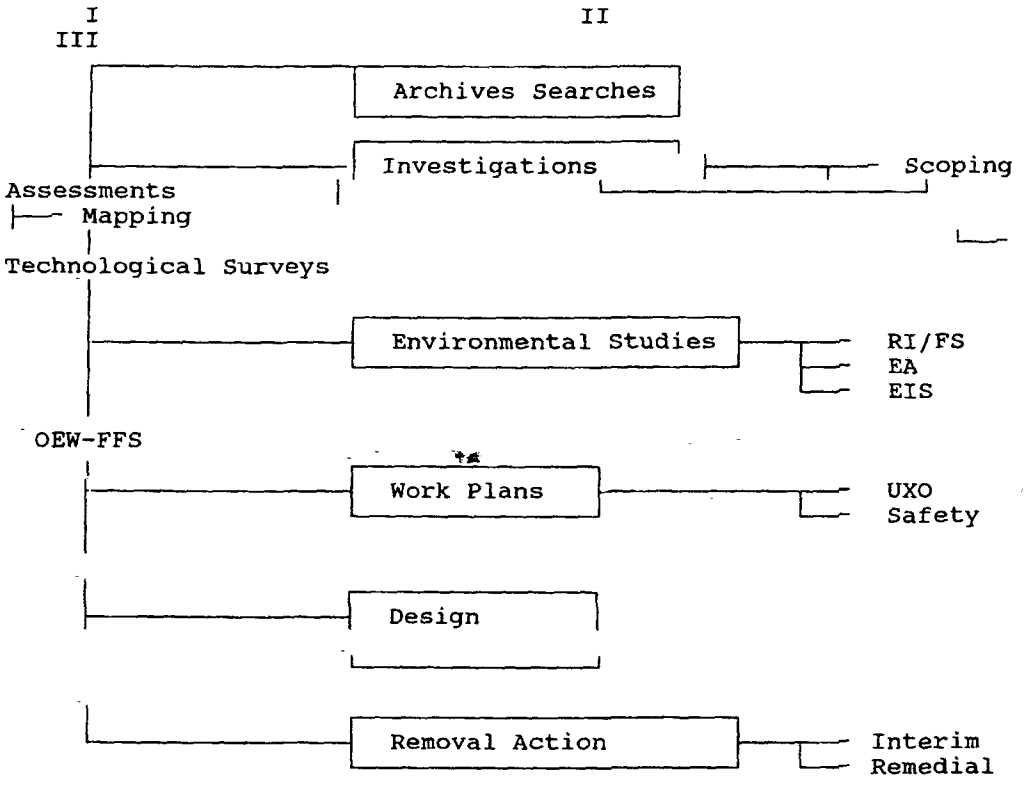
Work will be performed in accordance with Approved Work Plans with any deviation to be approved by CEHND.

20. PROPERTY MANAGEMENT PLAN (PMP).

For CPFF and T&M contracts, the Contractor will be required to prepared a detailed PMP describing the equipment to be employed to perform all necessary operations. The PMP shall describe and quantify both field equipment (such as site trailer, track hoes, back hoes, trucks, bulldozers, front-end loaders, chainsaws, magnometers, etc.) and office equipment (such as computer, printer, FAX, copier, 2-way radios, camcorder, telephones, etc.) and consumable supplies (both office and field) intended to be used. The Contractor will be required to describe in the PMP the source and rental/acquisition costs for all field and office equipment and consumable supplies. Three quotes must be obtained and provided in the PMP for each piece of field and office equipment and the PMP must indicate that the vendor with the lowest price quote was used for rental/acquisition. The Contractor will indicate in the PMP when rental costs exceed acquisition costs for a particular piece of equipment over the life of the project. In these instances, the Contracting Officer may direct the Contractor to purchase that equipment. After Contracting Officer approval of the Work Plans/Property Management Plan, additional field/office equipment and consumable supplies in excess of $100 (aggregate total) may not be rented/acquired without Contracting Officer approval.

At the conclusion of all work at Fort Segarra, all consumable supplies (such as shovels, chainsaws, trimmers, chains, lumber, office supplies, etc.) will be turned over to the nearest Defense Reutilization and Marketing Office (DRMO) for ultimate disposal.

ANNEX A
WORK BREAKDOWN STRUCTURE



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ANNEX B
RESPONSIBILITIES ASSIGNMENT MATRIX

	DA	HQUSACE	CEHND		CESAJ	TEU	EPA	Local
POLICY	A	R A C	A X		S	X	C	C
PROGRAMMING	A	A X	C X	X	X	N	C	C
ARCHIVES SEARCHES	N	S	A X	R	R	R	C	C
REAL ESTATE / RIGHTS OF ENTRY	N	N	C	C	C X	N	N	N
SCOPING ASSESSMENTS/ INVESTIGATIONS	N	S	A X M	R	S	R	C	C
EA/EIS	N	S	R	A	S	R	C	C
SCHEDULES	N	C	A X	C	C R	C	C	C
WORK PLANS	N	S	A X M R	C	C R	R	C	C
SAFETY PLANS	N	S	A X M R	N	C R	R	C	S
REMOVAL ACTIONS	A	S	X M	C	S	S	C	C

DESIGN								
	A	S	A	X	M	C	N	N
OTHER STUDIES/PLANS	N	S	R		R	R	C	C
NEW REPORT	R	R	X	N	A	R	R	R
	X	X	X		X	A		

SYMBOL	EXPLANATION
A = Approval	An approval of programmatic material, concepts, or other program requirements
C = Coordination	A requirement to participate more or less continuously in the ongoing development activities, such that input and advice would have been included in the programmatic materials.
M = Monitor	A requirement to advise and participate in those functions which will increase the value of the program/ project.
N = Not Applicable	Not Applicable.
R = Review	A requirement to review the work of others and provide comment, generally without continuous involvement in the development process for the material being reviewed.
S = Support	A requirement to provide manpower, technical data, or other active participation in the development process upon request.
X = Execution	An assignment of responsibility to carry out necessary actions required to achieve assigned goals for that function.

PROJECT FACT SHEET
FORMERLY USED DEFENSE SITES (FUDS)
09 May 94

1. **SITE NAME:** Former Fort Segarra

SITE NUMBER: I02VI097700

LOCATION: Water Island
Virgin Islands of the United States

PROJECT NUMBER: I02VI097701

CATEGORY: CWM

2. **POC'S:**

PROJECT MANAGER:
Bridgers, Robert
CESAJ-DP-I
904-232-3085

DIVISION POC:
Ernst, Sharon
CESAD-PM
404-331-2495

TECHNICAL MANAGER:
Fitzpatrick, Roger A.
CEHND-PM-OT
205-955-1297

PUBLIC AFFAIRS (AREA OFFICE):
Jimenez, Elsa
CESAJ-DS
809-729-6876

HEADQUARTERS POC:
Coppola, James
CEMP-RF
202-504-4992

PROPERTY OWNER:
Bunn, Robert
Department of Interior
Territorial Affairs
809-774-1190

WATER ISLAND CIVIC ASSOCIATION
Auer, John (President)
8 Water Island
St. Thomas
U.S. Virgin Islands 00802
809-774-2017

3. **SITE DESCRIPTION:** The former Fort Segarra is located on Water Island, the fourth largest of the US Virgin Islands. The former fort site comprises the entire island of approximately 500 acres.

a. Geological Conditions: These islands were formed during the Cretaceous by volcanic action on the northern margin of the Caribbean plate. The island is characterized by steep, rocky slopes and a highly indented coastline with numerous narrow bays and beaches. A pronounced central ridgeline runs the length of the island from northeast to southwest, with elevations reaching 290 feet.

b. Hydrologic Conditions: There are no permanent streams; fresh surface water occurs only intermittently in runoff channels. Salt water is present in brackish ponds near the coast. Shallow wells dating from the eighteenth century tapped the limited,

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potable, unpalatable ground water as a source for resupply of sailing ships, giving the island its name. Permanent settlements used catchment and cistern systems for fresh water, as are used today.

c. Meteorologic Conditions: The prevailing maritime tropical conditions maintain the average daily temperature within the eighties (Fahrenheit) throughout the year. Rainfall averages 44 inches per year with the first seven months appreciably drier than the others. Typically, February and March are the driest with September and October the wettest months. Evaporation rates are high and droughts are common; conditions of mild to moderate drought are typical. Easterly trade winds provide constant breezes averaging 5-15 mph daily. Hurricanes occur about once every decade. Tidal variation averages 10-11 inches with severe tidal flooding/storm surges up to 12 feet occuring about once every 30 years. One high magnitude storm with extensive damage can be expected each century.

d. Population: The island is currently populated by several hundred residents. Separated from the mainland by about 2000 feet of open water, Water Island is a major feature defining the modern port of St. Thomas. Approaches to the harbor, including to the major docking facilities at Crown Bay, occur on both sides of the island through East Gregarie and West Gregarie channels. In 1862, a channel was cut through Hassel Island linking Crown Bay and St. Thomas Harbor, facilitating movement throughout the harbor area, and reducing siltation in the port. Contact with the mainland, both in the past and present, is accomplished by boat. Since the demise of the hotel during hurricane Hugo, 1982, there is very little visitation of the island by other than residents, since if has no commercial facilities. The northwest shore provides protected anchorage for numerous pleasure craft in all seasons.

e. Archeological: There are 11 recorded archeological sites on the island, 8 of which have been proposed for inclusion in the National Register of Historic Places. None of these coincide with portions of the site identified for our investigations.

f. Ecological: There are three Federally and two Territorially Listed endangered species confirmed to be on the Island. There are two additional Federally Listed species could potentially be on the Island, but have not been observed. There are also three identified poisonous plants and five varieties of cactus on the Island.

(1) Endangered Species:

(a) Federal:

1) Observed:

a)Green Sea Turtle [Chelonia Mydas]
b)Hawksbill Turtle [Eretmochelys Imbricata]

c)Brown Pelican [Pelecanus Occidentalis]

2) Potential:

a)Virgin Island Tree Boa [Epicrates Monensis]
b)St.Thomas Prickly Ash [Zanthoxylum Thomasianum]

(b) Territorial (Observed):

1) White-cheeked Pintails
2) Malpighia Wooburyana

(2) Endangering Species:

1) Poisonous:

a) Pencil Bush [Euphobia Tirucalli]
b) Dumb Cane [Diefenbachia]
c) Manchioneel Tree [Hippomanae Mancinella]

2) Perforation: 5 varieties of cactus

4. SITE HISTORY:

a. THE FORT: The United States military departments have maintained a predence in the U.S. Virgin Islands since they were purchased from Denmark in 1917. In 1944, the U.S. Army installed coastal artillery as a portion of the harbor defense facilities for Roosevelt Roads Naval Station. Coastal artillery gun emplacements were condtructed to defend the Port of Charlotte Amalie and the Submarine Base, and a number of observation posts were established on St. Thomas. The main defensive battery was located with the artillery headquarters on Water Island. The facilities on the island were designated Fort Segarra in honor of U.S. Army Lieutenant Colonel Rafael Anfel Segarra. Approximately 33 structures were constructed before the end of the war canceled the need for the installation before it became operational. Upon termination, no armaments had been installed and no ammunition delivered.

b. THE CHEMICAL CORPS:

(1) THE PROJECT: During World War II, the U.S. Army initiated a project to determine the effectiveness of chemical munitions and defenses in jungle terrain, and the effects on chemical munitions in storage in tropical climates. This project was initiated in 1943 on the Panamanian Island of San Jose and was named the San Jose Project. The project continued with success after the end of World War II until December 1947, when negotiations fot extendion of the lease on San Jose Island from Panama failed. By the end of January 1948, the San Jose Project had been completely withdrawn from San Jose Island and was temporarily quartered in the Panama Canal Zone. By May 1948, the

facilities on St. Thomas, which were formerly known as the Submarine Base and Fort Segarra, were taken over for use in continuing the tropical testing of chemical weapons systems.

(2) THE MOVE: Toxic chemicals and CW munitions were towed over on two 500 ton ocean-going barges arriving at St. Thomas on 21 May 1948. The explosives arrived on 27 May. Quarters, administration, shops, and laboratory were set up on St. Thomas at the former Submarine Base. Approximately 2,095 acres consisting of the entire west end of St. Thomas and the Cays to the west were condemned and siezed for test sites and down wind exclusion zone. The only test reports relating to testing on St. Thomas indicate only non-persistent choking agent was used there. Eight test areas were designated on Water Island, but due to the need to revise test plans for the new loaction and obtain Chief, U.S. Army Chemical Warfare Service approval, only four of the test areas were used. The headquarters buildings and surrounding area of the incompleted Fort Segarra were adapted as the toxic storage yard. Serveillance tests of stored munitions were continued after relocation from San Jose Island, however, extensive testing of persisnent or lethal agents appears to have been frustrated by shortages of time, equipment, funds, and/or approval.

(3) THE TERMINATION: The San Jose Project continued to operate until May 1950, when the project was canceled. By September 1950, all testing was concluded and the project closed. All remaining requirements for testing were transferred to Dugway Proving Grounds, Utah. Disposition of inventory was directed to Dugway, Edgewood Arsenal, Maryland, or disposal. Sea dumping was an accepted disposal practice at the time and particullarly convenient at this location. The Virgin Islands Basin between St. Thomas and St. Croix has depths of 4,500 meters; immediately north of St. Thomas is the Puerto Rican Trench, the deepest area in the Atlantic, with depths to 9,710 meters. All Leases were terminated and the properties which were owned in fee by the U.S. Army were declared excess and transferred to the Department of Interior for use or disposal.

c. THE DEPARTMENT OF INTERIOR: In 1950, the Army granted a permit to use the island to the Department of Interior (DOI). In 1952, permanent control of the Island was transferred to the DOI which subsequently leased the Island to Water Island, Incorporated for development as a resort area. In 1965, Water Island, Inc. sold its rights in the lease to Water Isle Hotel and Beach Club, which retained the master lease when it expired on 31 December 1972. It was subsequently renewed for another 20 year term. Upon approach of the expiration date without hope of renewal, the master lease holder terminated the lease on 28 December 1992. The master lease holder had extensively subdivided and sublet the property. Numerous homes have been constructed or created by conversion of military buildings. Under the master lease, Water Isle Hotel and Beach Club constructed an approximately 100 room hotel on Rainbow Point, north of Flamigo Bay. The structure was substantially damaged by Hugo in 1982. Attempts to reconstruct were thwarted by

disagreement of applicability of code and permit authority. The structure and support facilities have since deteriorated to ruin. The DOI and master lease holder are under litigation to resolve the current relationship and that of sublettors.

d. THE INCIDENT: In 1985, a representative of the master lease holder related the following to the DOI: In 1966, during the construction of a warehouse, a crew employed by Water Isle Hotel and Beach Club, uncovered several large objects that resembled bombs. An EOD team from Roosevelt Roads Naval Base identified the objects as M-70/M-78 series chemical ordnance bombs. The EOD team indicated that this site had been used by the Army as a chemical ordnance disposal area. The EOD team vented the bombs and warned the construction crew not to excavate in this area again. No known injuries or other problems have occured at this site. The site of this find is on the southwest part of the island near Flamingo Bay along the seashore. The Territorial Affairs desk reported the incident through DOI headquarters to the Department of Defense.

e. THE CORPS: An Archive Search was completed in July 91 (EBASCO $98,032). Topographic Mapping (RD) and isolation of the area where objects were found by fencing (IA) was accomplished in October 91 (EBASCO $232,349). Evaluation and recommendation "Draft Work Plan" was completed March 92 (EBASCO $52,197). The original intent to proceed with emergency removal has been overtaken by events. On 30 September 92, a contract was awarded for RI/FS (sba) and DO issued for data review, land classification, non intrusive RI Work Plans and costing (MTA $80,000). The draft Work Plans and supporting documents were submitted 7 December 92. A conference of reviewers from USACMDA, USTEU, CESAD, CESAJ, and CEHND met with MTA on 14-15 January 93. New requirements concerning CWM safety, evaluation of RI environmental impact, and areas to be investigated were identified. The SOW for Work Plans was revised in August and September with a new Work Plan submitted on 10 Dec 93. Extensive revision took place in Jan 94, resubmission in Feb and Mar 94 with final approval on 11 Mar 94. The contractor mobilized on 14 Mar 94 to execute the initial non-intrusive phase of investigation.

5. PROJECT DESCRIPTION:

FLAMINGO BAY LANDFILL AND WAREHOUSE AREA:

SIZE:

USE: During the period of Chemeical Corps proprietorship, a salt water pond occupied the center of this site. Interviews of the first civilian residents on the island purport "empties" (demilitarized munition casings) were left in this area by the Army. During Water Isle Hotel and Beach Club's construction of the hotel and support facilities, this pond was mucked out and filled in with any solid material available. A manufactured steel building used as a warehouse and a small packaged sewage treatment plant have been erected on site by the club. The remainder of the area, including the find location, has been used for general open

storage/surface disposal.

ORDNANCE FOUND:

The 1966 find occured during mucking with a dragline at a depth of approximately 12 ft. According to a Club employee present, the location was subsequently filled with stable material to an elevation of approximately 12 ft above grade, rendering the find location 24 ft below the present surface.

One resident reported filling an "empty" with concrete for use as a mooring. It is still on site and has been identified as an ANM-79, 1000lb bomb. Fuse ports contained transport plugs. The casing had been vented by shape charge, a common demilitarization technique used at the time. The most likely fill from archives would have been cyanogene chloride (CK). An examination is being made during the non-intrusive phase to determine if the booster and/or burster tube still contain explosives.

On 11 Apr 94, the contractor found a Chemical Corps one ton storage container on the surface during non-intrusive investigation. It had been breached

RCB
14 APR 94

FROM: ~~ROBERT~~ BRIDGERS
TO CESAT-DP-A ~~one~~ m

SUBJ. FT. SEGARRA SITE CHARACTERIZATION

1. I WAS JUST INFORMED BY ROBER FITZPARICK, CEHND-PM-OT, THAT A 1,000 lb CHEMICAL WARFARE CONTAINER WAS FOUND TODAY IN THE FLAMINGO BAY LANDFILL AREA. THE CONTAINER WAS POSSIBLY USED TO STORE PHOSGENE. IT HAD BEEN DE-MILITARIZED AND CRUSHED.

2. WILL PROVIDE ADDITIONAL INFO. AS SOON AS IT IS AVAILABLE.

Robert Bridgers
PROJ. MGR.

[redacted]

Jax-040901-004

Jax4

TS-PIC-91331
July 1991

Area Analysis
St. Thomas & Vicinity
Virgin Islands

by
Mary D. Sitton, Imagery Analyst
The Bionetics Corporation
Warrenton, Virginia 22186

Contract No. 68-03-3532

Project Officer
Gordon E. Howard, Jr.
Environmental Photographic Interpretation Center
Environmental Monitoring Systems Laboratory
Warrenton, Virginia 22186, FTS 557-3110

ENVIRONMENTAL MONITORING SYSTEMS LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
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Jax-040901-005 JAY 5

DISCLAIMER

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as official Department of the Army positions, policies or decisions unless so designated by other documentation.

ABSTRACT

This report presents an analysis of aerial photography from 1948 to 1958 of three areas on and in the vicinity of St. Thomas, Virgin Islands. The analysis was performed to support the U.S. Army Toxic & Hazardous Materials Agency (USATHAMA) in the environmental evaluation and identification of potential contamination sources within the study areas. Collateral data from USATHAMA indicates that this area was used on a limited scale from 1948 to 1950 as a tropical field testing center (as part of the San Jose Project) to collect data on the behavior of U.S. Army chemical agents and munitions.

The aerial photographic analysis revealed very few potential contamination sources within the three areas. The features annotated and discussed in the report may also indicate test activity. The following potential contamination sources/test activities were observed: open storage areas with containers, excavations and pits, submerged barges, disturbed and/or cleared areas, debris, drums, and mounded material.

A field check of the areas was conducted between May 4-7, 1991 to verify activity that may or may not have occurred in potential contamination areas that were observed on the historical photography. Only one photo identified area was determined to be used as a test and disposal area (see analysis section, Photo Area B, for details).

The combination of results from the aerial photographic analysis, field work, and review of collateral data revealed very few potential contamination sources. Further investigation and testing (i.e., subsurface) would be necessary to definitely verify any further sources.

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INTRODUCTION

An analysis of aerial photography was performed on three areas on and in the vicinity of St. Thomas, Virgin Islands. The analysis was performed to support the U.S. Army Toxic & Hazardous Materials Agency (USATHAMA) in the environmental evaluation and identification of potential contamination sources in this area. A field check was conducted in May 1991. Results of the aerial photographic analysis and field work are included in the analysis section of this report.

Figure 1 shows the area locations (Areas A, B1 and B2), keyed to a photocopy (reduced) mosaic of two U.S. Geological Survey (USGS) 1:24,000-scale topographic maps. Site boundaries or areas used in this analysis were determined from collateral data provided by USATHAMA and do not necessarily denote legal property lines or ownership.

Black and white aerial photography of the study areas was obtained for 1948, 1954 and 1958.[1] The 1948 photography only covered Area A. Its large scale (1:6,000) created report quality reproduction problems; therefore, an overlay for 1948 is included over the 1954 photography for Area A.

Collateral data from USATHAMA indicates that these areas were used on a limited scale from 1948 to 1950 as a tropical field testing center to collect data on the behavior of U.S. Army chemical agents and munitions. The test program was designated as the San Jose Project and was originally established in 1943 on San Jose Island, 96 kilometers (60 miles) south-southeast of the Panama Canal. Upon expiration of the lease on San Jose Island in 1948, the San Jose Project was relocated to St. Thomas, Virgin Islands. The project was terminated in 1950.[2]

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[1] A complete listing of maps and photography used in this report is provided in the References section.

[2] Collateral data provided by USATHAMA. This information will be denoted throughout this analysis by an asterisk (*).

The San Jose Project was transferred to St. Thomas on 14 April 1948. Toxic chemicals were transported on barges and arrived at St. Thomas on 21 May 1948. Explosives arrived on 27 May 1948 and completed the movement of the San Jose Project from the Canal Zone. Activities of the project were reportedly located in three areas on St. Thomas and vicinity. Barracks, administration buildings, shops, etc. were located on the main post, a former U.S. Navy Submarine Base just west of the town of Charlotte Amalie on St. Thomas (see Photo Area B, Section B1). Secondly, an area of over 2,000 acres comprising the western end of St. Thomas (and possibly a much larger offshore area to the west) was used for test areas (see Photo Area A). Thirdly, the whole of Water Island, a former Army cantonment, was used as a test area (see Photo Area B, section B2). A toxic storage yard was reportedly located on Water Island.* No definite evidence of a storage yard was noted on the aerial photography, although containers were noted stored in a cleared area in 1958.

The EPA's Environmental Photographic Interpretation Center in Warrenton, Virginia, a branch of the Advanced Monitoring Systems Division of the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, performed this analysis at the request of USATHAMA, located in Aberdeen, Maryland. This analysis covers the period from 1954 to 1958, and this report was completed in July 1991.

METHODOLOGY

A search of government and commercial sources was undertaken to obtain the best available aerial photography of the site spanning the desired time frame. The photography and other sources of information used in this report are listed in the References section.

The analysis was performed by viewing backlit transparencies of aerial photography through stereoscopes. Stereoscopic viewing creates a perceived three-dimensional effect which, when combined with viewing at various magnifications, enables the analyst to identify signatures associated with different features and environmental conditions. The term "signature" refers to a combination of visible characteristics (such as color, tone, shadow, texture, size, shape, pattern, and association) which permit a specific object or condition to be recognized on aerial photography.

Photographic prints were made from those years of aerial photographic coverage that reveal significant information about the site. The analyst's findings are annotated on overlays to prints and/or base maps and described in the accompanying text. Site boundaries or areas used in this analysis were determined from collateral data supplied by USATHAMA and do not necessarily denote legal property lines or ownership.

Due to factors inherent in the photographic printing process, prints do not exhibit the level of detail that is visible in the original aerial photography. Therefore, some features identified from the aerial photography may not be clearly discernible, or even visible, on the photographic prints presented in this report.

The terms "possible" and "probable" are used to indicate the degree of certainty of signature identification. "Possible" is used when only a few characteristics are discernible or these characteristics are not unique to a signature. "Probable" is used when incrementally more characteristics are discernible. No qualifying terms are used when the characteristics of a signature allow for a definite feature identification.

AERIAL PHOTO SITE ANALYSIS

SEPTEMBER 8, 1948 & JANUARY 29, 1954 - AREA A (FIGURES 2A & 2B)

Area A consists of the majority of the area covered on the USGS 1:24,000 scale topographic map for Western St. Thomas; however, the photo enlargement only covers a portion of this area (see Figure 1). Only a small cleared area, possibly a natural feature, was noted on Cockroach Island in 1954. No other significant activity or features were noted within the area not covered by the photo enlargement.

Two pits are visible on the 1954 photography at the center of Dutchcap Cay along the top of a ridge. A small trail or access road (not annotated) leads toward the pits. It could not be determined if the pits contained any materials or liquids. No 1948 photography was available for this area.

The majority of the features noted on the western tip of St. Thomas in 1948 and 1954 consist of cleared (CA) and disturbed areas (DA). Features such as this could represent testing/training activity or residential/agricultural activity. The buildings (B) which are annotated do not appear residential. Two large gun emplacements, each containing a gun, appear at the east end of the photograph. Only the emplacements remain in 1954. A probable storage silo is located southwest of the gun emplacements in both 1948 and 1954.

Field work conducted in this area revealed that many of the cleared areas are now revegetated or are residential areas. Some of the areas were inaccessible (private property). One clearing near the center of the Area A was noted as cleared during the 1991 field investigation. This large, circular cleared area is located at the top of a hill and possibly contains fill material. A 360-degree view is seen from the top of this cleared area. A series of FAA towers/structures are located just northwest of this cleared area (these towers were not present on the 1948 or 1954 photography; however, an access road leading to this area was present in both years.

JANUARY 29, 1954 - PHOTO AREA B, SECTIONS B1 AND B2 (FIGURE 3)

Area B1 covers the area reportedly formerly used as a U.S. Navy Submarine Base. Area B2 covers Water Island.

Area B1 - Several storage (S) buildings are present within Area B. An open storage (OS) area of crates and/or containers is also found here. A large pit, apparently empty, is present at the south end of Area B. An extraction (EX) area, possibly containing liquid (LQ), and an empty extraction area are visible southeast of the pit.

Area B2 - Approximately 12 poles are located just off the northwest shore of Water Island. The poles are likely for docking and boat protection. A large submerged barge is visible east of the poles. Southwest of the poles, submerged barges and debris are visible along the shoreline. A ship, apparently abandoned, is also present here. Per a conversation with William Couter, Water Island Administrator, this material was removed from the area sometime in the mid-1960's. The barges were reportedly empty.

A tower and a building foundation (BF) are located near the center of the island. An access road leads to a disturbed area along the western shoreline. Field check indicates this disturbed area is now Honeymoon Beach, a popular recreation area.

The southwest corner of the island contains a low, wet area and possible scattered debris. According to a conversation with William Couter, this area was formerly used as a dump. The low, wet area was filled sometime after 1965 and is now used as a parking area for vehicles and equipment. A disturbed area and a cleared area are visible east of the low wet area. A channel was cut through the disturbed area during the mid-1960's. Reportedly this disturbed area was used as a test area. Field check indicates the cleared area remains and is currently used as a junkyard. A depression is located farther east. Field check indicates this area was used as a borrow pit sometime after 1954. Debris is currently scattered in this area. William Couter indicated this area was used to dispose of residential and

commercial debris from all parts of the island as a result of Hurricane Hugo damage.

A tower and a pit are visible at the south end of the island. Field check and conversation with William Couter indicates these features represent a pillbox (gun emplacement/defensive position), remnants of Fort Seggaro.

OCTOBER 28, 1958 - AREAS B1 AND B2 (FIGURE 4)

Area B1 - Storage areas, open storage areas, vehicles (V) and equipment (E) appear within Area B1. Drums, possible drums and other unidentifiable material are visible within the open storage areas. A stain (ST) or area of wet ground (WG) appears to emanate from a storage building in the central part of B1. The pit remains to the south and now has vegetation growing within it. The excavations are no longer visible.

Area B2 - The poles and the barge noted in 1954 are no longer visible.
The submerged barges and debris as well as the abandoned ship remain. The tower and the building foundation also remain; however, the building foundation is now covered with vegetation. A possible submerged barge is visible farther west.

Three cleared areas are located near the center of the island. The southern cleared area contains mounded probable earthen material (MM). A possible trench (TR) is noted north of this cleared area. Several cleared areas appear where a disturbed area was noted in 1954 along the western shore. All of these features likely represent residential/recreational development.

Probable containers (C) appear where debris was noted in 1954 at the southwest corner of the island. The low, wet area appears ponded at this time. The cleared area east of the ponded area now appears very wet; five probable containers appear here. The disturbed area noted here in 1954 is now a cleared area. An access road (not annotated) leads to a pit within the depression. This may indicate disposal/test activity or the beginning of borrow activity.

The tower and pit (pillbox) remain at the south end of the island.

REFERENCES

AERIAL PHOTOGRAPHY

Date	Agency	Mission Code	Agency Frame #	Orig. Scale	EPIC Frame #
September 8, 1948	DIA[1]	506	1-87	1:6,000	---
January 29, 1954	USGS[2]	YM	1:159-166; 167-172; 21,22	1:28,000	18723,32969, 32970,33633-33645
October 28, 1958	NOS[3]	58L	7338-7341; 7348-7368; 7456-7464; 7301	1:14,000	32986-32989; 32669-32699

MAPS

Source	Name	Scale	Date
USGS	Western St. Thomas, VI	1:24,000	1982
USGS	Central St. Thomas, VI	1:24,000	1982
USC&GS[4]	St. Thomas, West Indies, VI	1:40,000	1922

[1]Defense Intelligence Agency, U.S. Department of Defense

[2]U.S. Geological Survey, U.S. Department of the Interior

[3]National Ocean Survey, U.S. Department of Commerce

[4]U.S. Coast & Geodetic Survey, U.S. Department of Commerce

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DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
P.O. BOX 889
SAVANNAH, GEORGIA 31402-0889

REPLY TO
ATTENTION OF:
CESAS-PM

8 February 1994

MEMORANDUM FOR Commander, South Atlantic Division, ATTN: CESAD-PD-R (Mauldin)

SUBJECT: DERP-FUDS Inventory Project Reports (INPRs) for Site No. I02VI097702, Fort Segarra, Water Island, VI, Site No. I04FL027502, Opalocka Army Air Field, Miami, FL, and Site No. I02Fl002300, Fort Dade, FL

1. We have reviewed the subject Inventory Project Reports (INPRs) and have technical comments as follows. Enclosure 1 contains technical comments for the Fort Segarra INPR. Enclosure 2 contains technical comments for the Opalocka Army Air Field INPR which are outstanding from an initial review. Enclosure 3 contains technical comments for the Fort Dade INPR which was returned for revision. In addition, the District Office of Counsel has conducted a legal sufficiency review of these three INPRs, as required by current policy (CEMRD-ED-HT memorandum dated 15 July 1993), and concurs with their findings and recommendations.

3. We recommend that you forward these INPRs to HQUSACE with the recommendation to approve the projects for further study, subject to the enclosed comments. If you have any questions, contact David Roulo at (912)652-5945.

FOR THE COMMANDER:

FRED KITCHENS, P.E.
Deputy District Engineer for
Project Management

Encls

CF:
CESAJ-PD-EE
CEMRD-MD-HA

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PROJECT REVIEW COMMENTS	Date: 6 Jan 94	Page 1 of 1
To: CESAJ-PD-EE	From: (Section) CESAS-EN-GH (Reviewer) John Roberts	
Project: -- Fort Segarra Location: Water Island, Virgin Islands	Year: FY-94	DERP-FUDS Project No.:I02VI097702

Type of Action: (Check Appropriate boxes)

- ☐ Preliminary
- ☐ Final
- ☐ Concept
- ☐ Other _____
- ☐ Geology and Hydrogeology
- ☒ Hazardous and Toxic Waste
- ☐ Site Development
- ☐ Soils

Item No.	Drawing No. or Par. No.	Comments	Review Action
1	Project Summary Sheet	The first two paragraphs contain spelling and grammatical errors which should be corrected.	
2	General	The proposed HTW and OEW projects should be addressed separately.	
3	General	There are references to the need for a Site Investigation and a Remedial Investigation/Feasibility Study throughout the INPR. The phase of the HTRW project should be referred to consistently.	
4	Project Planning Sheet, Para. 8	As stated in this paragraph, the HTRW project cannot be addressed until the OEW/CWM issues are resolved. Actions such as the establishment of a Community Relations Plan and geophysical investigation should be accomplished during the OEW/CWM investigations.	

SAD Form 3058-R
1 Mar 81 PREVIOUS EDITION MAY BE USED UNTIL SUPPLY EXAUSTED

ENCL 1

page 2 of 13

SITE SURVEY SUMMARY SHEET
FOR
DERP-FUDS SITE NO. I02VI097700
FORT SEGARRA, WATER ISLAND

16 March 1993

SITE NAME: Fort Segarra

LOCATION: St. Thomas and Water Island, Virgin Islands (see site map as attachment 1)

SITE HISTORY: The site consisting of approximately 500 acres was acquired in 1944 for use as a coastal defense installation. The Army utilized the property until 1950 when it was turned over to the Department of Interior (DOI) by an indefinite, revocable permit. The DOI, assigned the permit to the St. Thomas Development Authority (STDA) in 1951. The STDA leased Water Island to Water Island, Inc., a local development corporation. On 11 July 1952 Public Law 511 (82nd Congress) authorized the transfer of Water Island from the Army to the DOI. On 10 December 1952 the DOI executed a new lease to Water Island, Inc., which proceeded to develop the Island into a resort, with many subleases. Water Island, Inc., is still the lessee of the DOI.

SITE VISIT: Mr. Ivan Acosta, CESAJ-PD-EE conducted a site visit of the former Fort Segarra on 17 December 1992. The areas of concern remain undeveloped and are under investigation by Hunstville Division for the OEW/CWM portion.

CATEGORY OF HAZARD: HTW, OEW/CWM

PROJECT DESCRIPTION: There are 2 potential projects in the area (one HTW project, and one OEW/CWM project).

a. HTW. Probable hazardous and toxic waste contamination of soils and groundwater at a landfill, in the area. A Site Investigation Feasibility Study to characterize the extent of hazardous and toxic waste (HTW) contamination is recommended.

c. OEW/CWM. Records indicate that a chemical/ordnance testing existed within the facility. There is evidence that explosive/chemical devices may still remain. This requires investigation beyond the scope of this preliminary assessment. The site is presently under investigation by the Huntsville Division which is the design facility for OEW/CWM.

AVAILABLE STUDIES AND REPORTS:

PA POC: Ivan Acosta (904 232-1693 is CESAJ district POC.

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FORMERLY USED DEFENSE SITES
FINDINGS AND DETERMINATION OF ELIGIBILITY

Fort Segarra (Water Island), USVI

Site No. I02VI097700

FINDINGS OF FACT

1. The United States of America acquired fee title to Water Island, consisting of approximately 500 acres, more or less, by condemnation action in 1944. Water Island was acquired for an Army coastal defense installation known as Fort Segarra.

2. The Army constructed 53 structures, including barracks, gun emplacements, watch towers, underground bunkers, and other military facilities on Water Island. The Department of the Army's Chemical Warfare Division utilized the island to conduct secret experiments with poison gases until 1950.

3. The Army determined the property was surplus to their needs and turned it over to the Department of the Interior (DOI) by an indefinite, revocable permit in 1950. DOI, assigned the permit to the St. Thomas Development Authority in 1951. The St. Thomas Development Authority leased Water Island to Water Island, Inc., a local development corporation. On 11 July 1952, Public Law 511 (82nd Congress) authorized the transfer of Water Island from the Department of the Army to DOI. On 10 December 1952, DOI executed a new lease to Water Island, Inc., which proceeded to develop the Island into a resort, with many subleases. Water Island, Inc. is still the lessee of DOI.

DETERMINATION

Based on the foregoing findings of fact, Fort Segarra (Water Island), USVI, has been determined to be formerly used by the Department of Defense. It is therefore eligible for the Defense Environmental Restoration Program - Formerly Used Defense Sites established under 10 USC 2701, et seq.

_____
DATE

_____
ROGER F. YANKOUPE
Brigadier General, USA
Commanding

PROJECT SUMMARY SHEET
FOR
DERP FUDS HTW PROJECT NO. I02VI097702
FORT SEGARRA, WATER ISLAND, VI
SITE NO. I02VI097700

17 March 1993

PROJECT DESCRIPTION: The project is on the former Fort Segarra. There is one suspected site of possible contamination. It is suspected to be former landfill area. The waste disposed of in the area could have contained hazardous and/or toxic material since records are neither specific or complete. The area is shown in attachment 1.

PROJECT ELIGIBILITY: The area in question is probably a result of DOD use of the base as the site was built and utilized by the Army. It is estimated that these area was the only disposal area used by the base which had over 53 buildings, was used over 6+ years, and may have housed tenths of hundreds of Army.

POLICY CONSIDERATIONS: The area is eligible for DERP-FUDS if they pose a hazard.

PROPOSED ACTIVITIES: Site investigations comprising of geophysical surveys, soil gas surveys, soil sampling/analysis, confirmatory test pits, and ground water sampling analysis should be performed. Information gathered from these investigations can be used to assess potential remedial alternatives necessary for proper remediation or closure. This INPR should be referred to CEMRD or the currently designated design District for SAD for a determination of further details. A planning project sheet and project cost estimate are included as attachment 3.

FORM 1391 AND EPA FORM 2070-12: Attachment 2.

PA POC: Mr. Ivan Acosta 904-232-1693 is the district POC.


Revolution
Bromme Hill
Harry S. Truman Airport
Frenchtown
Crown Bay
Garden Hill
Banana Pt
Ruyter Cove
Regis Pt
Carolina Pt
Mosquito Pt
Elephant Bay
WEST GREGERIE CHANNEL
EAST GREGERIE CHANNEL
Krum Bay
Providence Pt
Druif Bay
Limetree
Carol Pt
Spriet Bay
Spriet Pt
Cowell Battery
HTRW SITE
Flamingo Bay
Flamingo Pt
CARIBBEAN SEA
SCALE 1:24000

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EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: FL | 02 SITE NUMBER: I02VI09

II. SITE NAME AND LOCATION

01 SITE NAME	03 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
FT Segarra	Water Island

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE
Charlotte Amalie	VI			

08 COORDINATES LATITUDE	LONGITUDE	
18 15 02.0	064 57 02.0	Central St. Thomas Quadrangle

10 DIRECTIONS TO SITE: 1 mile south of Charlotte Amalie, Flamingo Bay, Water Island

III. RESPONSIBLE PARTIES

01 OWNER	02 STREET		
Department of Interior			
03 CITY	**04 STATE**	**05 ZIP CODE**	**06 TELEPHONE NUMBER**
			( )
07 OPERATOR	**08 STREET**		
09 CITY	**10 STATE**	**11 ZIP CODE**	**12 TELEPHONE NUMBER**
			( )

13 TYPE OF OWNERSHIP: ☐ A. PRIVATE ☒ B. FEDERAL: Department of Interior ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER: _____ ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE: ☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ ☐ B. UNCONTROLLED WASTE SITE DATE RECEIVED: ___/___/___ ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION: ☒ YES DATE 12,17,92 ☐ NO — BY: ☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR ☐ E. LOCAL HEALTH OFFICIAL ☒ F. OTHER: USACOE — CONTRACTOR NAME(S):

02 SITE STATUS: ☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN
03 YEARS OF OPERATION: 1944 (BEGINNING YEAR) | 1950 (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Possible residual contamination from an old sanitary fill area. Possible hazardous and/or toxic wastes may have been disposed in an abandoned landfill area.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
The potential hazards are groundwater contamination, surface water contamination and contamination of soil

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION: ☒ A. HIGH ☐ B. MEDIUM ☐ C. LOW ☐ D. NONE

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Ivan Acosta	COE - Jax District	(904) 232-1

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Ivan Acosta	COE	U.S. Army	(904) 232-1693	3 / 11 / 93

EPA FORM 2070-12 (7-81)

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EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- _ A SOLID
- _ B POWDER, FINES
- X C SLUDGE
- _ D OTHER _____ (Specify)
- _ E SLURRY
- _ F LIQUID
- _ G GAS

02 WASTE QUANTITY AT SITE

(Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS

NO OF DRUMS

03 WASTE CHARACTERISTICS (Check all that apply)

- X A TOXIC
- _ B CORROSIVE
- _ C RADIOACTIVE
- _ D PERSISTENT
- _ E SOLUBLE
- _ F INFECTIOUS
- _ G FLAMMABLE
- _ H IGNITABLE
- _ I HIGHLY VOLATILE
- _ J EXPLOSIVE
- _ K REACTIVE
- _ L INCOMPATIBLE
- _ M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 1000+
02 ☐ OBSERVED (DATE:) X POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Possible residual contamination from an old landfill area. Possible hazardous and/or toxic wastes may have been disposed at the subject landfill used by the Ft. Segarra facilities.

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 10,000+
02 ☐ OBSERVED (DATE:) X POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
See A., above

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED:
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None Noted

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED
4
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED
11
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 2
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
See A, above

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED:
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None noted

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED:
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
11

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: 1000+
02 ☐ OBSERVED (DATE:) X POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
See A above

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None Noted

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
"

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
"

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES — 02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: — 04 NARRATIVE DESCRIPTION
"

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
"

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
"

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
"

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS
"

III. TOTAL POPULATION POTENTIALLY AFFECTED: 10000+

IV. COMMENTS
None

V. SOURCES OF INFORMATION
Inventory project report for Ft. Segarra, March 93, DERP-FUDS site, No. I02VI097700. Site is depicted in the Project Summary Sheet Attachment 1.

EPA FORM 2070-12 (7-81)

CESAJ-EN-GS 20 May 1993

PROJECT PLANNING SHEET

1. INSTALLATION NAME: Former Fort Segarra

LOCATION: Water Island, U.S. Virgin Islands

SITE IDENTIFICATION: DERP-FUDS Site No. I02VI097700

PROJECT TYPE: HTW, OEW/CWM

PROJECT PHASE: Remedial Investigation/Feasibility Study (RI/FS)

2. DESIGN DISTRICT PROJECT MANAGER: TBD

3. SITE DESCRIPTION: The site in question is an approximately one-acre landfill located near the southwest end of the island, on the south side of Flamingo Bay, and known as the "Flamingo Bay Landfill". The existence of this landfill was discovered in 1966, when dredging uncovered several chemical bombs. After the discovery, the site was filled in and covered with an additional three feet of soil. Debris, abandoned vehicles, and scrap now cover this area.

4. SITE HISTORY:

a. The former Ft. Segarra site was approximately 500 acres in size and was acquired from the East Asiatic/West Indian Company through condemnation in 1944. It was intended to be developed as a coastal defense installation, but construction was halted before completion when World War II ended.

b. In 1948, the Army's Chemical Corps moved its project for testing chemical warfare agents in a tropical environment (known as the San Jose Project) from Panama to Water Island. Between 1948 and 1949, the Chemical Corps upgraded the facilities previously constructed for Ft. Segarra, and began testing blister and mustard agents. Test plans indicate that later tests were to be conducted on captured German munitions and nerve agents, and a number of unidentified chemical munitions were brought to the island.

c. The Chemical Corps became dissatisfied with this site in late 1949 and decided to move operations to Dugway Proving Ground, Utah. In 1950, the property was turned over to the Department of the Interior by an indefinite, revocable permit. The Department of the Interior assigned the permit to the

MTA, INCORPORATED
2225 Drake Avenue, Suite 8
Huntsville, Alabama 35805

DRAFT

WATER ISLAND PUBLIC MEETING
Thursday, 10 February 1994
Contract No. DACA87-92-D-0147, Delivery Order 003

Attached is a complete transcription of the Corps of Engineers meeting that took place on Water Island, U. S. Virgin Islands, Thursday, 10 February 1994 scheduled for 1500 hours in the afternoon.

The meeting was called to order at 1510 hours by John Aver, a resident of Water Island

John Aver: May I have your attention for just a minute. I am pleased to present to you Lt. Col. (LTC) Benton, who is certainly well versed at what he's going to do here today.

LTC Benton: Thank you. I would like to welcome everyone here this afternoon. I was telling John and a few other people a little bit earlier, my expectation of the quantity of people that would be here was definitely down. Everybody kept saying, its Thursday afternoon, 1500 hours, nobody really wants to show up. So, Elsa Jimenez, who a lot of you know, was really dampened by my expectations. So, I was joking that if we had taken one of these little pools, about how many people would have been here, I would have lost royally, but I am pleased. I am very glad that so many of you all decided to come, because I hope this is a subject of interest to you, of interest to the Corps and I know of interest to the governmental officials here today. Again, I want to thank you for coming, I especially appreciate the different centers here this afternoon and representatives from the territorial government. Also from the Department of Interior, Carol, I appreciate you showing up and all of the residents here on Water Island. Before I start, I'd like to take a moment to introduce, some of the members of our staff. A few of them are going to talk with us this afternoon, hopefully not too long, and at the end, what I would like to do is go through it and then we will have an opportunity for you to ask any questions you might have. We will stay as long as you have questions, and if we don't have the answers, you can expect we will try to get back with an answer expeditiously. So, without further ado, let me introduce the people from San Juan. I am the Deputy District Engineer for the Antilles, I live in San Juan, so I live in the islands and came over here for the day, but the people out of my office, present with me today is Elsa Jimenez, as many of you know, is our Public Affairs Specialist in San Juan. From our headquarters in Jacksonville, my district headquarters, we have Mr. Robert Bridges, the Project Manager out of Jacksonville, Florida. Alright, we also have from Huntsville Division, Corps of Engineers, who supports us because the project we are working on is of a chemical nature, Mr. Roger Fitzpatrick.

JAX-040901-007

Jat7

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LTC. Benton: We have SFC Robinson, who works also in Huntsville. Let me run down the list to make sure I didn't forget anyone. We also have from the Technical Escort Unit, Cpt. Martinez. We have from the U.S. Army Chemical Materiel Destruction Agency, Mr. Vern Skinner, Mr. Steve Bird, Senior Engineer, and Louise Dyson, who is Public Affairs. We have from our contractor, MTA, Incorporated, which is based in Huntsville, Alabama, who will be working on the first portion of this job. We have two representatives, one of them, Mr. Jack Thomas, had difficulty coming out of the east coast with all the bad weather. Also from MTA, we have Mr. Frank Smith and Gloria Smith, who is also down here helping. Let me very quickly tell you, early this morning we stopped by and briefed the territorial officials, Mr. O'Bryan, and gave him an update on what we were doing this afternoon. I expect that I'll tell some media people what we did today. What we plan to do this afternoon, are my quick remarks that we have here, turn it over to Mr. Roger Fitzpatrick to talk to you a little bit about the overall work plan. We will then talk about what MTA is going to be doing. At the conclusion of that, Mr. Thomas from MTA, if he shows up here, he will have a presentation, otherwise we will then go into questions you have and close at that time. As you are aware, this project has been going on for a while, and to a lot of residents, probably the only thing you have seen other than people coming down to visit here on the islands and asking questions, doing some investigations, looking at different things around the island, is the construction of that fence over there on the other bay. We are now at the point where we are getting ready to, at the end of this month come in and go into what we call the next step, which is, I would say, probably a more formal site characterization. And in your handouts that we presented to you, it gives you the details, telling you what we are basically trying to do is come in and using magnetometers, we will take down to six inches in depth, take some soil samples that will allow us to understand what's at some of the different sites as shown on the map. Based upon that information, we will then decide what we do next. Theoretically, it will be all the wager, as to a do nothing approach, there is nothing here, there's nothing to be done, there is risk, to we have a big time problem. We are going to have to do some other type of work and do something else, we got to do it tomorrow, or we can put off for a while. There is a whole magnitude of things that can happen, but this is a very critical stage that we are entering into because this is going to give us more detailed information over what we already have; and so that is basically what we are doing and what will happen here during the next month, and again for, approximately two months at the latest. So without further ado, I will turn it over to Roger Fitzpatrick, who will go through and talk to you, give an overview of the work.

Roger Fitzpatrick: The Huntsville Division of the Corps of Engineers as the Center of Expertise for the Department of Army, became involved in this project in the summer of 1991. It has been on the books, but there was no reason to suspect anything seriously wrong, until there was a report of two chemical items being found during the Bridging Operations in 1966. That's the area that was fenced off during the interim removal action, to make sure that no further excavation take place. An archive search was started September of 1991, the records were searched for

Roger Fitzpatrick: operations provided under the Corps while they were on the Island. An aerial photograph survey was done later on that year (1991) in the winter and a couple graphic surveys were completed, that were identified at the test area provided at that time. Since that time, a plan has been developed and reviewed, commented on and re-developed on a method of investigating for chemical conditions, developed in fields that are new, has been done before items that were deposed of, in what was then a proper manner. By direct burial, other means of disposing of decontamination of items, deeply involved some of the other agencies that have to be coordinated with, has taken this long to come up with a plan that is acceptable to everyone, in beginning an initial investigation and characterization. At this point, I would have turned it over to Jack Thomas, who was here in August, some of you met him, who developed the plan for this phase of the investigation. He is more knowledgeable in it than I am. But I can give you a brief overview of the plan and we hope he will arrive soon. The areas that we found sufficient evidence to investigate are shown on the map: The Flamingo Bay and Landfill & Warehouse Area, we talked about earlier, a fence was put up. We will be looking for magnetometers to locate magnetic anomalies within the warehouse area and back behind it, to see whether it may have been used for temporary storage during off loading operations of chemical munitions, while the San Jose was in effect on the island. The portion that is fenced has been continually observed but, we really don't expect to find any, but we will go in and try to locate magnetic anomalies, to confirm their identity. We suspect that the old swabbing materiel that was in there was removed to a depth of about 22 feet deep and replaced with stable materiel, so it could be really nothing further left from the time they were recorded in the island. We will look at the periphery of that area to insure that things that might have been missed by those operations, will be located. Soil samples will be taken in that area although no chemical tests were actually done. The next area we have on our list is the Tamarind Bay area which is just south of the Marina, up the Northwest coast of the Island. According to the archives and records from the San Jose Project, there were no activities that took place in that area. But in 1992, when the Corps did an archaeological survey of the island, it noted some suspicious areas where vegetation was stressed. They found a piece from a 1943 quarter master plate in that area indicating either during the construction of Fort Segarra or during chemical corps operations, it may have been used as general dump ground. So we will be looking in that area to seek and gather soil samples to see what contamination has occurred. The next area we will be looking at is Area 4, Test Area 4, in which three chemical tests were conducted between November and December of 1949. That's the area where mostly Non-DoD debris is located, and we will be searching from the lagoon side, the Flamingo side of the road where the area extended out onto the land where it has since been excavated and removed from Flamingo Bay. A test was conducted in that area. We took soil samples and removed debris, under cover areas for further survey and certain soil samples. The next area we will investigate is Test Area 5, and that's the area against the mountain where I think there used to be a high type asphalt plant in operation. It is fairly clear of any debris or vegetation, we will cover that entirely by magnetometer surveys to look about 4 feet and by surface soil samples. It is also the area we intend to prepare for relocated debris that has to

Roger Fitzpatrick: be moved in order for us to do work in other areas, especially in Area 4. The next area that will be investigated is Test Area 6. There were two chemical tests conducted in that area. I think that will be east of the intersection of the paved road at the east end of Flamingo Bay. Other than the test that was done on the surface, there is no other activity in that area that we know of, so there will be basically a test of soil samples and some magnetometry work in the ditch that we dug during the investigation in that area. The last area we have for investigation is the Test Area Number 8 the Hotel location. This is the east end of the parking lot of the hotel. Two chemical tests were conducted in that area on the surface, and some magnetometry work to try and locate the remnants of the test itself. That will complete our operations. All during the testing and sampling, a technical escort unit will be in support providing real-time monitoring of low level of agent and agent breakdown. That is basically what the work plan will be. Are there any questions?

QUESTION AND ANSWER PERIOD

Warren A. Pord: When you first proposed to...

LTC Benton: Will you state your name when you have a question? We want to make sure we know who you are. State you name please.

Warren A. Pord: My name is Warren Pord, I am a sub-lessee to this island. When you first came here to tell us that you were going to investigate the dump there, we pointed out that there were probably anywhere from six to 20 feet deep worth of vehicles, smashed up and squashed down and everything else. The initial response we got from you people was that you were going to remove that stuff from the island. If I read correctly, what you give us today and what you have said, you don't plan to take it out of here rather dig it up and just put it some place else, it that correct?

Roger Fitzpatrick: Actually, we don't really intend to do any excavation anywhere except for identification and exploration. That will take place in the next phase. Those items that were put in the landfill, that are identified as later than the era in which we are concerned with, (the operations in 1949 of the chemical corps), we will probably not go any deeper than that.

Warren A. Pord: Does the magnetometer tell you the age of a piece steel?

Roger Fitzpatrick: No, however; during our activities in about September, when we identify areas we need to excavate, we will probably do some identification in that area.

Warren A. Pord: I mean the whole purpose of this thing was to see if there were some buried munitions here, is that correct?

Roger Fitzpatrick: That's right.

Warren A. Pord: If it is buried under six feet of buses, how are you going to tell?

LTC Benton: What you will do, you're looking for what is of an unsafe nature, we will do a magnetometer sweep, and the work we will do in the next two months, will be work that will allow us to characterize them. We might have anomaly hits or magnetic finds that you find aground which are of such a large size, which is not, could not be any way, shape or form that will violate the risk of that find, that could not be anything related to chemical warfare, test materiel or bomb.

Warren A. Pord: I guess the concern we have here is that you go around the island digging stuff up and just leave it? Now its underground, it's not the best looking place in the world, but it looks a lot better than if you guys dig it up and just take it to some other location and leave it.

LTC Benton: Let me clarify. Guaranteed, the next two months, there is nothing being dug dipper than six inches. We are taking soil samples, we are not going down any deeper.

Warren A. Pord: Okay.

LTC Benton: This process will allow us to determine what is down there and then determine whether or not we will have to do further digging. That's what I said, there could be a total no action, nothing more will be done, all the way up to what you are envisioning and in so doing, well, what I am telling you, what I am telling you today is what is going on, it could all the way be that we would be digging up and that we would have to handle whatever is found down there in an appropriate manner, but at this point and time, what we are talking about today is not, does not encompass doing that, what might be done is removal of things on the surface so that we can properly characterize with the best available instruments that we have what's underneath.

Warren A. Pord: Sudden change in plan.

LTC Benton: That is still different, we are still probably going to get to that point, what we are doing is a greater characterization of what's there, so that we don't have to go in and do some deep excavation, if it has nothing to do with chemical warfare and materiel. So this is still along the process of further defining the site and what is there.

Roger Fitzpatrick: It is somewhat a change in what we were considering in August. I think we discussed with you at that time we were hoping to receive funds from the Department of Interior for active disposal of the debris on the surface that we knew we would have to move in order to conduct our work. That funding, although it was appropriated, DOI had a conflict, they have to conduct an environmental baseline assessment, in order to eventually get rid of the property on their records and that's where the funding went to. At the current time we

Roger Fitzpatrick: don't have funding from them to actively dispose of that debris which was not created by the Department of Defense. We are working with Department of Defense funds and we'll move it just as much as we have to, to do our work.

Bruce Robertson: The contaminants are right on the surface. When the Department of the Defense or Army built the attachment, which is asbestos, or that is all decomposing and now as for anything else being removed, I am not worried about, do you contemplate any asbestos 50 years old now that's an attachment?

LTC Benton: If asbestus is found, that is considered hazardous and toxic waste, I would have to handle it properly.

Bruce Robertson: Yea, but I don't see it on your..

LTC Benton: Okay, again, the expectation again is that we would not be removing anything other than what is necessary to do the site characterization. What happens in September, if I have to go in and do some deeper things, part of my plan is how I handle asbestos, if I have to take it out and remove it. This is in the area, which site area are you talking about?

Bruce Robertson: The one right at the top of the hotel

LTC Benton: Area 5?

Bruce Robertson: Yes.

LTC Benton: Yes sir.

Walter Phillips: I was the original developer of Water Island. We arrived here right after the chemical warfare left in September, 1950. We arrived here in January 1951 four months later and there were a lot people around that were very familiar with the situation. We were told it was no poison gas over here. In the 43 years that we have been here, we have not found any poison gas, now; we did find some empties over there which had gashes in them and I don't know what happened to them, the young man who was in charge here was a naval officer and he was familiar with poison gas. I think he just took them out to sea and just dumped them. But there was a dump over there that had, not a lot, but a certain number of empties. Everyone of which had a gash in it. Now, there was one, a great big one there that we took and filled with concrete and used it as a mooring for a floating dock. But we never saw any poison gas, but, I don't think you are going to find anything because it isn't anything here and never has been anything here. Now there are people over there in St. Thomas who were members of this Corps of Army Engineers that did the work here, and they tell us that they really were not able to do their experiments because the reason this site was chosen was that the wind is, the prevailing wind out of the northeast would carry the fumes off to sea, but the winds kept shifting around to the southeast carrying the fumes back to St. Thomas, so they never really were able to complete their experiments. They did very little here and they left very few empties.

Walter Phillips: Now, you people have put up a chain length fence over there, but the joke is you haven't included the place where the poison gas empties dump was. It's not even included in where you put it.

LTC Benton: I think all of those areas, Mr. Phillips, are noted in the archives search and those are the areas that they will be looking at this time. And I am very hopeful that we will find nothing Mr. Phillips...

Walter Phillips: I am sure you will not find anything, because there has never been anything here.

LTC Benton: Any further questions?

Dick Webber:

LTC Benton: State you name for the report please?

Dick Webber: After this initial testing, I guess the next two months, and you find something what is your overall, what is the time frame for this?

LTC Benton: We state in here late 1994, to go into the next phase.

Dick Webber:

LTC Benton: My expectation is, if I have a minor amount of excavation, that will need to be taken care of, that we will hope to be able to try to do something in the very late summer or early fall, that will be my goal.

Dick Webber: Of 1994 or 95?

LTC Benton: 1994, this year. We have a lot of interest, a lot of desire to make some progress on this site. It has been hanging around too long. I mean bluntly, it has been dragging on and it is time to get the, either all the ghost back in the closet or get it taken care of, if there is a major problem, I will not at all try to delude you that it will not take some time, probably a lot of research and definitely a lot of coordination with agencies that you see represented here today, to be able to handle if there were some chemical munitions out there that has to be removed.

Dick Webber: I think that is one-third of the overall time frame for the operation.

LTC Benton: I, all I can tell you is I have a plan that has us planning and working to try and get this worked on now, this next step, so that we can be able to come back and in September, like I say, late summer, early fall to move into the next step. You know how those things work. When you coordinate with many agencies, there are all types of ways that things could be delayed, in such that, but we will keep the residents association knowledgeable of what happens. Right now we have to find out more to find out what my next step is, honestly, that is what these next two months are. Any other questions? Well, I'll tell you what, my daddy didn't teach a fool, when I was growing up if you don't have questions, I don't stand

LTC Benton: up here. I will be happy to answer and those with us today, will be happy to remain here for a while and answer any and all of your questions you have, if there are questions you want to address individually with us, we will be more than happy to try to answer them. I will tell you Mr. Jack Thomas, from the contractor will be doing the work, MTA, Incorporated will, as well as the weather allows and the boats, and everything else get out of his way, he will be over here this afternoon and, I think it will be well to meet with some of you all so that you can know who that man is and who he has that will be doing work over here and the expectation is that at the end of the month will start mobilizing them during the week of 28 February over here to do this work. I again thank you very much for taking the time out of your, I am not going to say busy schedule, some of ya'll have a great schedule. I wish I had a schedule like that.

Senator Virdin Brown: The literature makes some reference to activity on the western end of St. Thomas. I wanted to know if you have other details that would indicate anything did happen on the western end of St. Thomas?

LTC Benton: Subject to my having to go back and review this, I remembered viewing, when I scanned through that, my understanding is that all was fairly well discharged and confirmed that nothing occurred there. They had land, but no testing or anything ever actually did occur, so the risk there was almost beyond being able to measure. There again, I am not aware of no plans to do anything over there or even anything in the investigation. Now again, like always, if there is more information, we are always willing to listen and find out more information, so that we have the best knowledge, I mean, we are engineers, we want to get all the knowledge you bring, so we can solve the problems. You have any more questions?

Bruce Robertson: Just one more, the Department of Interior of course has to propose an offer for our lot, hopefully a contract to sell it. Apparently, that's all being held up pending this work. At what are they expecting a certification from you that this whole contamination or problem is okay for purchase?

LTC Benton: I think you are talking about things many steps above me, I am only a Lt. Col. ah, my, let me give you my blunt, trip. I informed the DOI what we are doing, I informed the territorial government. Anything I am doing at this stage and time does not, as far as I know have any relationship to it. Now, I am not a fool, I realize that the DOI cannot turn over land that has some tainted records with them, so, but, how they handle it, there are many different people, that is why they have lawyers out there are, there ways to do things in different manners. But I...

Bruce Robertson: You don't, you sign off, and say let them have their land.

LTC Benton: Well, at this point and time, no, my signature block is not on any document that I know of, or is being contemplated at this time that I have to sign off that this place is safe. Now, who knows, maybe someone will tell me that tomorrow, but at this time and place, no one has even, no one has ever discussed that with me.

LTC Benton: Okay, those things are being done at the Washington level, that's beyond me, well beyond me. Any other questions? Alright, thanks again, appreciate it.

Water Island Resident: Thank you.

Meeting adjourned at 1540 Hours

ATTACHMENTS:

1. Agenda
2. Copy of the Information Bulletin
3. List of Attendees

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U.S. ARMY CORPS OF ENGINEERS
ANTILLES OFFICE

ACTIVITY: _____ DATE 10 FEBRUARY 1994 TIME 3:00 P.M.

ATTENDANCE ROSTER

	NAME	FIRM NAME/DEPARTMENT		
1-2	Henry Burkhardt + wife	Water Island	774-5973	
(3-4)	Ben Vicens + wife	" "	774-2267	
5-6	Art + Patty Sewell	" "	774-6466	
7	Paul Maxwell A. Callahan	30 Water Island	7749358	
8	Sally Tatum	#2 Waterfront	774-4269	
9	Roger K. Shipman	86 Water Island	774-0857	
10	Angela Otley	WSTA Radio Talk Show Host	776-2768	
11	Elsie Kebler	43 Water Island	774-4127	
12	John Allen	6 Water Island	774-2017	

U.S. ARMY CORPS OF ENGINEERS
ANTILLES OFFICE

ACTIVITY: WATER ISLAND DATE 10 FEBRUARY 1994 TIME 3:00 P.M.

ATTENDANCE ROSTER

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	NAME	FIRM NAME/DEPARTMENT	TELEPHONE NO.	TELEFAX NO.
13	CHARLES & IDA MARSHALL	WATER ISLAND	774-8837	
14-15		15 Water Island	774-6407	
16	CHARLES STARR	3 WATER ISL.	774-7058	
17	Kate Stull	91 Water Island	774 6178	
18-19	Mary Jo + Bruce Pritchett	41 Water Island	774-3783	
20-21	Louis A. + Isabel Matras	94 " "	774-9414	
22	Mamie HERMANN	142	775 6155	
23	Pauline Humes	38 Waterisland	774-6975	
24	Ann BARKER	12 "	776-1514	

(1)

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U.S. ARMY CORPS OF ENGINEERS
ANTILLES OFFICE

ACTIVITY: WATER ISLAND DATE 10 FEBRUARY 1994 TIME 3:00 P.M.

ATTENDANCE ROSTER

	NAME	FIRM NAME/DEPARTMENT	TELEPHONE NO.	TELEFAX NO.
25	James W. Schneider	—	609-774-602[illegible]	—
26	[illegible]			
27	Gerald Shaffer		809-774-5698	
28	BARRY D. LOECKLER	W.I RESIDENT, Villa #23	774-9849	
29	Warren A Pond	W.I Sub-Lessee	774-0145	
30	Oscar Medina	" "	778-4717	
31	[illegible]	[illegible]	508 349 9830	—
32	Patricia Charleswell Congressman de Lugo's offic	[illegible]	809-774-4408 E	3:00 P.M.
33	Edyth Hopson	W.I Resident - Same	7740857	same

ACTIVITY: _____ TIME 3:00 P.M.

ATTENDANCE ROSTER

	NAME	FIRM NAME/DEPARTMENT	TELEPHONE NO.	TELEFAX NO.
34	Margaret Medina	W.I. sub-Lessee	774-4717	
35	Ivan I. Robertson	Smart Bay	774-2568	
36	Ruth Pence	Villa 5-6	776-1387	
37	Victoria Reynolds	LT 78 Sub-Lease	777-8414	
38	MANNY RAMOS	DPNR - CZM PERMIT SECTION	774-3320 X170	
39	ALLAN HUGHES	WATER ISLAND TERRACE	774 2916	
40	Janet Malewicz		777-4149	
41	Vanessa Weiner	Limestone Reef Terraces	774-2148	
42	Robert A Smith	Bldg H	774-2524	

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ATTENDANCE ROSTER

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	NAME	FIRM NAME/DEPARTMENT	TELEPHONE NO.	TELEFAX NO.
43	LEARMONT E		774-6987	
44	Learmont T		774-0987	
45	BATEMAN, M		774-5512	
46	Carol Richardson	OTIA	774-1190	776-1204
47	VIRGIN BROWN	V.I. LEGISLATURE ST. THOMAS	774-4846 774-9263	
48	Leonard Reed	VIDPNR/DEP	774 3320 Fax 45416	
49	Dick Webster	67 SPRAT BAY WI.		
50	Joseph Sutton	DPNR	774-3320	
51	Mary + Sam Leppla	Mpls MN - visitors	612-781-2008	612-788-5933

U.S. ARMY CORPS OF ENGINEERS
ANTILLES OFFICE

ACTIVITY: WATER ISLAND DATE 10 FEBRUARY 1994 TIME 3:00 P.M.

ATTENDANCE ROSTER

	NAME	FIRM NAME/DEPARTMENT	TELEPHONE NO.	TELEFAX NO.
52	Angelo Morales	Potential Buyer	744 2148	
53	Steve Rampino	Landing Craft Operator 2 Houses 3 lot owner	775-5770	
54	Lee Vanterpool	VI Legislature Media Director	774-0880	
55	Bingley G. Richardson	Senate President VI Legislature	774-6484	774-7314
56	Sutton	DPNR – ~~Forests~~ Enforcement		
57	Mr. Vern Skinner	USACAMIDA		
58	Cpt Steve Bird	"		
59	Louise Upton	"		
60	Roger Fedyszak	Huntsville Division		

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ATTENDANCE ROSTER

	NAME	FIRM NAME/DEPARTMENT	TELEPHONE NO.	TELEFAX NO.
61	CPT Martinez	Huntsville Div.		
62	SFC Michael Robinson	- Army Tech Escort		
63	Jack Thomas	MTA		
64		MTA		
65		MTA		
66	LtCol S. Benton	- Antilles DDE		
67	Robert Bridges	- JTAV - P. Management		
68	Elsa Jimenez	- Antilles - Public Affairs		

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MAIL LISTING FOR Robert Bridgers, DP-I July 8, 1994

- - Mail - -

July 7, 1994 11:24pm MAIL IS - Private

RLB
FT. SEGARRA
FY94

FROM: Stephen R Benton, LTC
TO: Richard E Bonner
SUBJECT: Fort Segarra Plans
COPY: Terrence C Salt, COL
Robert C Bridgers
James W Woodey
Hal K Alguire, MAJ
Neal R Thibault, CPT
Yamil Castillo
Stephen R Benton, LTC

Richard:

We need to talk about the apparent inconsistency between the directed action in Mr. Cary Jones' draft letter to SAD. The guidance in paragraph 4 is to do "screening excavations to remove scrap and other non-ordnance material ... however, only to the extent that no CWM is recovered." In the concluding paragraph it says, "Our best course of action is to press on with our plans to excavate ordnance as soon as possible after Jan 95, and be ready to execute when CWM storage/disposal support from a receiving installation becomes available."

What I don't understand is why we want to excavate to remove non-CWM material. I thought anything non-CWM was okay sitting buried in the ground as it was no danger to anyone and was outside our purpose. Now, if it's an anomoly (I assumed that's defined as something that could be CWM material/ordnance) we need to investigate as we desire to get all the CWM stuff gone. But this implies then the possibility any investigation of an anomoly could expose CWM material, or otherwise it wouldn't be an anomoly. If an investigated anomoly turns out to be non-CWM we have no difficulty handling with normal processes. BUT, if the investigated anomoly turns out to be CWM, THEN we cover back up and secure indefinitely or as someone suggested to me we don't tell anyone and hope no one discovers USACE knows there is CWM in the ground at a recently dug site?

This last scenario (and we need to be ready for it to happen or this has all been a shadow game) then trips chemical surety storage of an unknown duration on the USVI which I believe is outside the stated intent in Mr. Jones last draft paragraph. It also will be very hard to sell to the local residents and USVI Government. Unknown/possible things in the ground are easier to accept than a known item in the ground with no definite plan on how to handle. The days of telling locals "trust me" are no longer accepted.

This is coupled with the local's perception that we have yet to complete our recent tasks where we've left hazardous (yes, used oil, batteries, etc.) materials behind after working and become similar to others who just leave trash behind. They expect more from the Corps.

Jax-040901-008 Jax8

I suggest we do excavations to investigate anomolies when we're ready to handle discovered CWM material, not prior. Thus the review of plans can focus on this activity, not another interim step fraught with problems.

FILE
FT. SEGARR.

Project Background

The following is a brief Site History and Description:

a. The FFS is located on Water Island which is located in the St. Thomas Bay, between the East and West Gregerie Channels, south of the city Charlotte Amalie, St. Thomas, US Virgin Islands (see Appendix A). The FFS site has historically been stated as being approximately 500 acres which was acquired from the East Asiatic Company/West Indies Company through condemnation in June 1944. Water Island was acquired for a coastal defense installation known as Fort Segarra. The Department of the Army (DA) was constructing the coastal defense installation when World War II ended and construction was halted.

b. The Army's Chemical Corps moved its San Jose Project (tropical test site) from Panama to the Virgin Islands in 1948. Between 1948 and 1949, the Chemical Corps upgraded the previously constructed facilities. A review of lists of approved test plans shows that early tests on Water Island focused primarily on blister (mustard) and choking (chlorine, phosgene, and cyanogen chloride) agents, and that later tests were planned to shift to captured German munitions and nerve agents. In 1949, the TEU brought unidentified chemical munitions to the Virgin Islands. By late 1949, the Chemical Corps was dissatisfied with the Virgin Islands location and decided to shift operations to Dugway Proving Ground, UT even though chemical testing was ongoing. In 1950, the Virgin Islands project was terminated and chemical munitions removed by TEU. The items removed were E46 chemical bombs (modified 115 lb. M70 bombs filled with nerve agent GA) and E52 bombs (modified T3E1 125 lb. bombs filled with GA).

In June 1950, the U.S. Army initiated a program to dispose of (excess) U.S. Government property no longer being used for defense related purposes by the Department of Defense. Recipient of the FFS site and the property at Water Island was the U.S. Department of Interior (DOI).

Even though DOD no longer has title to the property, CERCLA and SARA define the US Government as a potential responsible party, provided that the U.S. Army was determined to be at least partially the source of the contamination.

A total of eight sites on Water Island were known or thought to have been used for ordnance and chemical weapons testing activities: However, Records and personnel interviews with individuals involved in the testing indicate testing occurred only at Area 4,5,6, and 8). These areas were selected for non-intrusive investigations

(4) Test Area 4. This area is located to the south and southwest of the Flamingo Bay Harbor. The site straddles the road from the deep-water dock. The area north of the road is relatively clear of debris. However, the area south of the road is the island junk yard with about 50 abandoned vehicles.

(5) Test Area 5. This area is located south and southeast of the Flamingo Bay Harbor and is south of the road from the deep-water dock. This area was used to accumulate and burn debris from Hurricane Hugo in 1989. There is a substantial amount of metallic debris on the ground.

(8) Test Area 8. This area is now covered by the Water Island Hotel. The hotel has not been repaired or occupied since its destruction by Hurricane Hugo.

(9) Flamingo Bay Landfill and Warehouse Area. A metal warehouse was constructed by the Water Island Hotel near the deep-water dock for storage of vehicles and materials. The warehouse was constructed on an area filled in for this purpose. The area south of the warehouse was the site where chemical bombs were discovered in 1966. The bombs were discovered while a dragline was removing unsuitable "Elephant Muck" material. After this discovery, the site was filled in and covered with borrowed soil to a depth of about three feet. Debris, abandoned vehicles, and scrap now cover the site.

d. The Army turned over Water Island to the Department of the Interior (DOI) by an indefinite revocable permit. The DOI assigned the permit to the St. Thomas Development Authority (STDA) in 1951. The STDA then leased Water Island to Water Island, Inc., a local development corporation. On 11 Jul 1952, Public Law 511 (82nd Congress) authorized the transfer of Water Island from the DA to the DOI. On 10 Dec 1952, the DOI executed a new lease to the Water Island, Inc., which proceeded to develop the Island into a resort with many subleases. This lease expired on 31 December 1992. The Island is currently the site of a large tourist resort hotel (destroyed by Hurricane Hugo in 1989) and is also inhabited by about 300 people during the winter season. Many cruise ships call in St. Thomas with many docking near Water Island.

e. In 1966, during the construction of the Flamingo Bay warehouse, a crew employed by the lessee, Water Island, Inc., uncovered several large objects that resembled bombs. An Explosive Ordnance Disposal (EOD) team from Roosevelt Roads Naval Base (Ceiba, Puerto Rico) identified the objects as M-70/M-78 series chemical ordnance bombs. The EOD team indicated that this site had been used by the Army as a chemical ordnance disposal area. The EOD team vented the bombs and warned the construction crew not to excavate in this area again. The lessee notified the

DOI of the problem but no further investigations have been performed. No known injuries or other problems have occurred at this site. The site is on the southwest part of the Island near Flamingo Bay along the seashore and is known locally as the Flamingo Bay Landfill. It is an unstable area subject to storms and high tides.

Status Update.

a. In October 1985, the DOI sent a memo to Mr. Lewis D. Walker (DA Deputy Assistant Secretary for Environment, Safety and Occupational Health) requesting that the Army determine if Water Island was ever used for chemical warfare testing or similar activities. No correspondence can be found of Mr. Walker's reply, but subsequent to this DOI memo, Fort Segarra was added to the FUDS Inventory for a future Preliminary Assessment (PA).

b. In the spring of 1989, Congressional Delegate Ron de Lugo of the Virgin Islands and Chairman of the House Interior Subcommittee on Insular and International Affairs, introduced legislation (HR 1345) which would authorize the Secretary of the Interior to transfer title of Water Island to the Government of the Virgin Islands. Status of this legislation is unknown in December 1993.

c. In the summer of 1989, Jacksonville District (CESAJ) commenced work on the Fort Segarra Inventory Project Report (INPR). The final INPR was completed in June 1990, and forwarded by CEHND to HQUSACE for approval. On 20 Aug 1990, HQUSACE approved the INPR and authorized CEHND to proceed (subject to availability of funds) with the investigations and any removal actions required. On 24 Oct 90, CESAJ informed DOI of the approval of the INPR and the fact that the Corps would be commencing cleanup operations in the near future.

d. CEHND personnel met with TEU and Department of the Army (DA) on 19-20 Dec 90, concerning their need for TEU assistance at Fort Segarra. LTC Doc Bishop, Director of the CWM Program at the DA, indicated that the TEU was unable, at that time, to provide transport and storage services for any CWM recovered at FFS. (TEU has now indicated it will provide support). Recently within DA and the Army Materiel Command (AMC), the policy seems to have shifted to calling recovered CWM a hazardous and toxic waste (HTW) under EPA regulations. This policy shift creates many complex problems:

(1) Since CWM is a hazardous waste, it must be transported by a licensed HTW transporter. This transporter must also have an EPA ID number. TEU is not licensed to transport hazardous

waste. Further difficulties arise from the fact that commercial carriers cannot transport CWM.

(2) There are only seven installations in the Continental United States (CONUS) that are authorized to store CWM. However, the commanders of these seven installations are unable to accept any CWM manifested as HTW as this would violate Part B of their installation RCRA permits concerning the storage of HTW.

(3) The DOD would be the lead agency for the control of the CWM but all actions would be subject to EPA, State, and local regulations.

(4) The above seven installations have nearly reached their physical capacity to store recovered CWM even though AR-50-6 says they must accept the CWM. These installations will remain at or near capacity until such time as the Chemical Demilitarization Program reduces the CONUS military stockpile.

(5) Finally, Johnston Island (JI) can no longer accept CWM for storage and demilitarization from any areas of the world other than the Pacific Basin. This is a result of the "Venatu Agreement" where President Bush agreed with the Government of the Solomon Islands not to accept at JI any CWM found outside the Pacific Basin.

On 9 Jan, 1991, CEHND formally requested in writing, Commander Army Materiel Command (AMC) and TEU support to cleanup at FFS. AMC was provided all of the pertinent background information and the reasons for the urgency.

CEHND and CESAJ briefed Governor of the U.S. Virgin Islands, Alexander Farrelly, on 21 Mar 91, concerning the status of the FFS (Water Island) project and the U.S. Government's plans for eventual remediation of the site, as necessary. An overview of the CEHND Ordnance and Explosive Waste (OEW) Program was also presented. Governor Farrelly requested that a search of military records be performed on all Formerly Used Defense Sites in the U.S. Virgin Islands.

g. On 12 April 1991, CEHND, contracted with Ebasco, Inc. to perform an Archives Search of Fort Segarra and all other FUDS located within the U.S. Virgin Islands. The Archives Search Report was completed on 3 Jul 91. The history of Fort Segarra and the nature of the testing conducted there are contained in the Archives Search Report. The report provided a Risk Assessment Code (RAC) of 1 for the Flamingo Bay landfill area. Based on the RAC 1 scoring, CEHND determined that an Interim Remedial Action project to install a fence around the Flamingo Bay landfill site was necessary.

h. On 18 Jul 91, CEHND and HQUSACE, briefed Congressional Delegate Ron de Lugo on the status of the Water Island project. The findings of the recently completed Archives Search of the FFS and other FUDS in the U,S. Virgin Islands were discussed. The

primary concern emphasized by CEHND was the RAC 1 (Flamingo Bay Landfill) site on Water Island.

i. On 14 Aug 91, the Governor was briefed by CEHND and CESAJ on the results of the Archives Search. A press release was issued to the public advising of the issuance of the Archives Report. Later that day representatives from CEHND and CESAJ held a public meeting on Water Island and briefed the residents on the report. They were also informed of the plans to fence the Flamingo Bay Landfill area and to complete topographic surveying of Water Island.

j. A contract to fence the Flamingo Bay landfill site and to perform topographic surveying was awarded Ebasco, Inc., on 14 Aug 91. Installation of the fence was completed on 4 Oct 91, and topographic surveys were completed on 14 Nov 91. The Flamingo Bay Landfill site and test areas 2, 4, 5, 6, and 7 were mapped at a scale of one inch equals 30 feet (1"=30'). In addition, the entire Water Island was planimetrically mapped at a scale of one inch equals 200 feet (1"=200').

k. Another contract was awarded to Ebasco, Inc. on 27 Sep 91, to prepare concept ordnance remediation work plans. The final concept work plans were completed on 16 Mar 92. These plans will be provided to the remediation contractor for incorporation into the final plans for the FFS project.

l. The Governor's Press Secretary, Mr. James O'Bryan, was briefed by CEHND and CESAJ on 4 Dec 91 regarding the status of Water Island project. On the same day a meeting was held with the residents of Water Island. For the benefit of the island residents that were not at the 14 Aug 91 meeting, the Archives Search Report was discussed. The status of CEHND remediation contracting action was also discussed. The residents were given an opportunity to obtain copies of the recently completed topographic and planimetric maps.

m. On 3 Feb 92, CEHND briefed the CESAJ Commander, COL Salt, on the history and status of the Water Island project.

n. On 1 June 1992 a memorandum from General D. Reimer, Vice Chief of Staff of the Army, to the Chief of Engineers and others, declared the Fort Segarra and the Raritan Arsenal projects as CWM pilot projects with high priority in the DA.

o. In June 1992, CESAJ, CEHND and MTA, Inc. visited Water Island for the contractor's pre-proposal site visit. Brief meetings were held with Mr. James O'Bryan, Mr. Bob Bunn, DOI territorial representative, and several local officials.

p. In August 1992, the new Non-Stockpile Program Manager from USACMDA visited all former CWM test areas on Water Island. Again brief meetings were held with the Governor's staff (Mr. O'Bryan), DOI representative, and DPNR. Staff personnel from CEHND, USACMDA, CESAJ, CESAD, and HQUSACE accompanied the new Non -Stockpile Program Manager.

q. On 26 August 1992 Project Management for the FFS project was assigned to CESAJ by the Commander, CESAD.

r. In September and October 1992, the National Park Service conducted cultural resources field investigations on Water Island. Twelve historic and archeological sites were identified during this extensive study. Some of the 12 identified sites are located in or near areas that may be investigated for the presence of chemical warfare material (CWM) as part of this project.

s. On 30 October 1992, the first FFS project coordination meeting was held at the Jacksonville District office. Representatives from CEHND, USACMDA, CESAD and CESAJ briefed Col Salt on status of project and roles and responsibilities of each organization.

t. A follow-up project scoping meeting was held in Atlanta, GA on 11-12 Nov 92. Representatives from CEHND, USACMDA, and TEU provided a forum for the CESAJ Project Manager to initiate the development of the PMP.

u. On 14-15 January 1993, a meeting was held in Huntsville, AL with all parties to discuss comments on the DRAFT plans for non-intrusive site characterization activities by the CEHND contractor, MTA, Inc..

v. April 1993, USACMDA Report to Congress includes the FFS location as a site containing potential CWM. This information is briefed to the Governor, USVI by the Deputy District Commander for the Antilles, LTC Benton.

w. 10 August 1993, project coordination meeting held in Jacksonville, FL. Purpose of meeting was to identify actions necessary to initiate intrusive activities in Sep 94 as directed by AEC, BG Brown.

x. 9 September 1993. Workplan revised and distributed by CEHND to USACE, CMDA, and TEU. Plan identifies non-intrusive site characterization activities to be conducted in early 1994.

5. Project Description The proposed project activities will concentrate on the areas where chemical warfare material (CWM) testing exercises are suspected to have been conducted in

the late 1940's and early 1950's. These areas have been identified through initial archives searches. Other areas suspected of containing conventional OEW will also be investigated. Interim Removal Actions for OEW have been initiated to address areas which present an imminent and substantial danger to the public. The CEHND approach to the OEW problem is based on removing the imminent and substantial danger to the public. An Interim Removal (Remedial) Action (IRA) was performed at the Flamingo Bay landfill site by fencing the one acre (approx.) area. This action was initiated at this area since it was given a Risk Assessment Code (RAC) 1, based on the finding of ordnance during the 1966 construction in the area.

8. Scope of Work

a. The current strategy will include the non-intrusive site characterization activities at selected areas where CWM testing is suspected to have been conducted. This non-intrusive work will include a combination of the following types of activities:

(1) shallow soil samples
(2) magnetometer surveys
(3) ground penetrating radar surveys
(4) vegetation surveys
(5) shallow groundwater samples

b. The removal/relocation of significant non-Department of Defense (DOD) debris will be required prior to conducting the site characterization activities. Since much of the debris is abandoned motor vehicles it will be necessary to address hazardous and toxic waste (HTW) issues.

c. Complete details of these plans will be provided by the CEHND contractor, MTA, Inc., in Draft and Final form prior to start of any on-site activity. After the plans are approved by CEHND, CESAJ, USACMDA, and TEU, they will be fully coordinated with all interested Federal and local agencies as well as the general public.

d. Full compliance with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA), as amended, will be completed prior to start of any non-intrusive or intrusive activity on a particular site. All field investigations, including, but not limited to soil samples (shallow or deep), water samples (shallow or deep), and clearing of vegetation, will be fully evaluated by CESAJ and CEHND to determine the impacts of the proposed actions on the environmental or cultural resources of any particular area to be investigated. This information will then be coordinated by CESAJ with appropriate Federal and territorial agencies.

e. The results of this non-intrusive activity will determine the need for additional site characterization studies to include more intrusive work to verify subsurface anomalies that

could be CWM or OEW. No intrusive activity will be allowed until all required plans have been reviewed by the appropriate Federal, territorial agencies and authorities.

f. Environmental Mitigation: The proposed actions during the site characterization phases should not require any mitigation plan. However, future remediation plans, if necessary, will be closely evaluated and will provide for environmental mitigation where necessary.

g. Cultural Resource Work: Given the potential for adverse effects to the significant cultural resources on Water Island, a cultural resources mitigation plan will be required for site investigations in areas that have been identified as containing significant cultural or archeological resources. Each area to be investigated for CWM will be evaluated regarding the identification of cultural resources and the need for a mitigation plan will be determined before starting any non-intrusive (or intrusive) site characterization activities or required remedial actions.

h. The following work plans will require approval by CEHND and CESAJ prior to start of any work by the CEHND contractor, MTA, Inc.:

(1) Site Specific Work Plan (SSWP)
(2) Site Safety Health Plan (SSHP)
(3) Quality Control (QC) Plan
(4) Chemical Data Acquisition Plan (CDAP)
(5) Sampling, Analyzing, and Relocating of Non-DOD Debris Plan
(6) Property Management Plan
(7) Defense Reutilization Marketing Office (DRMO) Turn-in Plan
(8) Hurricane Preparedness, Standard Operating Procedure (SOP) #4
(9) Emergency Response Plan

i. USACMDA, TEU, and the Center for Disease Control (CDC), National Environmental Health Center (NEHC), will monitor the development of the work plans and provide recommendations to CEHND regarding the approval of such plans.

j. CESAJ will assume the lead in developing the environmental documentation and agency coordination necessary to meet NEPA and cultural resources requirements. Depending on the findings of the site characterization activities, additional environmental coordination and documentation may be required if any OEW or CWM material is located.

k. USACE, on behalf of DOD, shall be designated as the generator, and shall be responsible for the manifesting of the CWM. USACMDA shall be responsible for the storage, transportation, and/or treatment/disposal of any CWM material recovered.

9. <u>REAL ESTATE REQUIREMENTS</u>

No permanent real estate interest will be required. On 3 Jan 91, CEHND received from CESAJ the Rights-of-Entry (ROE) to enter DOI and lessee property to perform site investigation and clean-up work. The ROE has been renewed and the expiration date extended again until February 1996 in order to complete the investigations and required remedial actions where necessary. The Interim Holding Facility as well as any treatment/disposal may necessitate the leasing or rental of property in order to establish these facilities.

10. PROJECT IMPLEMENTATION

The environmental restoration process is normally a four step process. The first step is a research into past operations. This is accomplished through a Preliminary Assessment (PA) which involves a records search and inspection to identify areas/sites of potential CWM contamination. The second step in the process is a RI/FS leading to the documentation of decisions reached during these investigations/studies. This step involves a field investigation to determine the extent and nature of contamination and an evaluation of remedial alternatives leading to the selection of an alternative in the Record of Decision (ROD). The third step in this process consists of RD and RA. These activities address the remediation of the CWM areas. They can include removing CWM from the site for treatment or disposal; containing the CWM on site; or treating the CWM on site. Remedial actions are the final cleanup actions taken after the documented decision is issued. The final phase is the site closeout phase. During this phase which may be accomplished after any of the other three phases if appropriate, the decision is documented, Federal, State and local authorities are informed of the decision, and public notice of the closeout is accomplished.

11. ASSUMPTIONS

a. Prior to any restoration activity being conducted at an actual or suspected CWM location, preliminary assessments and remedial investigations of the suspected site are required to determine the nature of contamination. The remedial investigations along with the associated survey and sampling work and documentation is the responsibility of the USACE. The characterization efforts will provide information for the development of the overall plan for the remediation of the site.

b. The activities associated with the physical removal of CWM from the site, or temporarily storing the CWM on site, are referred to as site operations/remedial activities. The TEU and USACE are responsible for the excavation/removal of the CWM from the excavation site and placing the CWM into specialized containers procured by USACMDA. If the CWM is to be kept in a temporary holding facility, TEU and USACE will transport the items to the interim holding facility and turn them over to USACMDA who, in conjunction with CESAJ, will maintain and provide security for the interim holding facility site. If the decision is made to destroy the CWM on-site USACMDA will be responsible for all destruction activities.

c. If the excavated CWM cannot or should not be treated on-site, transportation of the material to a selected location will become necessary. Prior to transportation, the proper NEPA documentation must be prepared and completed, with a record of decision that identifies transportation as the selected option. Additionally, as recovered CWM are to be treated as hazardous waste, environmental documentation must be received for transportation, storage and destruction of the CWM. USACMDA, with the support of TEU, is responsible for all aspects of the off-site transportation of CWM. USACE will obtain the necessary environmental documentation for transporting the CWM as hazardous waste including manifesting on behalf of DOD. All transportation activities will be completed in accordance with Public Laws 99-121 and 91-441.

d. USACMDA and CBDCOM/TEU are involved at FFS because there is known or suspected CWM.

e. At FFS, CESAJ has responsibility for overall management of CWM contaminated site remediation. CESAJ and CEHND are accountable to ensure security, emergency response, chemical and explosive safety, environmental compliance, medical support, chemical surety, quality assurance, public affairs, and other activities necessary for the safe and efficient destruction of CWM are effectively coordinated and properly executed. The USACE shall attempt to secure some of these services through agreements with local agencies. However, as the USACE does not have staff to provide all of the necessary technical support, USACMDA and CBDCOM/TEU will provide specialized CWM related technical support, as required.

f. USACE and USACMDA, through their respective site contractors, will establish a comprehensive Occupational Health Program (OHP) in compliance with applicable Occupational Safety and Health Administration (OSHA) and DA standards to prevent, diagnose, and treat occupational illnesses and injuries sustained in the performance of official duties. The contractor will incorporate all personnel directly supervising, supporting, or conducting NSCM operations into the OHP.

g. Contingency Army Medical Department response capability for chemical accidents or incidents will be provided on a resource available basis. The scope and extent of such back-up medical support will be established in a Memorandum of Agreement (MOA) between USACE, USACMDA, and the U.S. Army Health Services Command.

h. USACE and USACMDA shall assure that a formal safety and health program is developed and implemented for their respective operations involving CWM that identifies, evaluates, and controls safety and health hazards and provides for emergency response.

i. USACMDA will develop a Quality Assurance (QA) Program and establish and maintain the QA Program for operation and maintenance procedures for the treatment, temporary holding, and off-site transportation and the manifesting of CWM. USACMDA will provide QA related contract support. As applicable, USACE and CBDCOM, if in a

supporting role to USACMDA will develop a Participant Quality Assurance Program Plan (PQAPP) and associated procedures, in coordination with the USACMDA QA Program Plan. PQAPP's will be submitted to USACMDA for review and acceptance prior to implementation.

j. USACMDA will ensure that all chemical treaty compliance activities are conducted in consonance with the Chemical Treaty Convention provisions.

k. USACMDA will develop and approve all plans and procedures required for the treatment, temporary holding, and transportation of CWM. Plans will include as a minimum, medical support, safety, industrial hygiene, surety, emergency response, security, and environmental compliance. Plans and procedures will be coordinated with USACE and CBDCOM, as applicable, to ensure compliance with federal, state, and local policies and regulations.

a. **SPECIFIC USACE RESPONSIBILITIES.**

(1) Develop site characterization/remediation plans and submit them to both USACMDA and Chemical and Biological Defense Agency (CBDCOM) for coordination and comment/concurrence as applicable.

(2) Develop the statement of work for the site characterization contract soliciting input and concurrence from USACMDA and input from CBDCOM.

(3) Award the site characterization contract, solicit suggested sources from USACMDA.

(4) Assume responsibility for conducting public meetings, meeting with regulators, and meeting with local officials, as required. Coordinate public affairs activities with USACMDA on matters associated with CWM.

(5) Execute site characterization work at FUDS locations.

(6) Locate a satisfactory site for chemical warfare material storage structures as requested by USACMDA.

(7) Conduct archival searches for site specific information and reports on suspected CWM FUDS locations and provide reports to USACMDA and CBDCOM.

(8) Develop the risk assessment, with USACMDA support, for recovery of the CWM at the suspected FUDS locations.

(9) Provide support for the physical security at FUDS locations.

(10) After coordination and approval of USACMDA, prepare the on-site environmental monitoring plan for site investigation and recovery of CWM. This includes monitoring for agents as well as other chemicals necessary to safely execute those phases at the site. Support USACMDA in developing the environmental requirements during the treatment phase of the operation on-site.

(11) Develop on-site laboratory requirements and provide the laboratory and necessary equipment for the recovery of the CWM at the suspected FUDS location.

(12) Prepare the Remedial Investigation/Feasibility Study soliciting input from USACMDA and CBDCOM.

(13) Develop the medical support, emergency response and safety plans to ensure compliance with the Federal, state and local requirements for recovery and site investigation phases until CWM is turned over to USACMDA.

(14) Manage the acquisition of real estate requirements of both USACMDA and CBDCOM.

(15) Excavate the site in order to remove the CWM (if selected).

(16) Package the CWM into protective containers furnished by USACMDA.

(17) Remove the CWM containers from the excavation or recovery site and turn them over to USACMDA for destruction or move them to the interim holding facility.

(18) Treat any chemical agent contaminated soil or groundwater.

(19) Restore the excavation site after removal of the contaminated material.

(20) Initiate actions necessary for the approval of a separate HTW project under the DERP-FUDS program. The new project will complete any soil or groundwater remediation necessary. Additional testing, and the completion of an RI/FS, a Record of Decision (ROD), followed by RD/RA may be necessary to accomplish the total remediation of the contaminated area.

(21) Document all activities and prepare a written close-out report and Lessons Learned document applicable to other DERP-FUDS sites.

b. <u>USACE Support Responsibilities.</u>

RCB ✓

Level One and Level Two Site Survey
Environmental Site Assessment

Water Island,
U.S. Virgin Islands

Prepared for:
U.S. Department of Interior
Office of Territorial and International Affairs
Washington, D.C.

Jacksonville District
Project Management Branch
SFO office
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EXECUTIVE SUMMARY

Dynamac Corporation performed a Level 1 and Level 2 Site Survey and Environmental Assessment on Water Island during a two week site reconnaissance from October 26 and to November 5, 1993. Prior to conducting the site reconnaissance Dynamac performed a background literature search and records review to gain insight on former land owners and land uses. The site reconnaissance entailed an investigation of the entire island to determine the presence of, or potential for, hazardous substances and/or contamination from hazardous substances. A daily field log was maintained to chronicle the events of the investigation and a photojournal was compiled documenting site conditions and obvious signs of hazardous substances and/or contamination.

Efforts were concentrated during the site reconnaissance on areas with the greatest potential to contain hazardous substances and/or contamination. Specifically, particular attention was centered on the former Fort Segarra, water catchment system, chemical munitions test areas, and master lease holdings (i.e., Sea Cliff Resort complex). This rationale was based on the information gathered during the background literature search and records review. In addition, all sublease and sub-sublease holdings were examined during the site reconnaissance to determine the potential for the existence of hazardous substances and/or contamination.

Several potential RCRA hazardous wastes were documented on Water Island during the site reconnaissance. The wastes included used motor oil (suspected), PCB containing transformers (suspected), hydraulic fluids, automotive and marine batteries, asbestos containing materials, polymer resins, and mineral oil petroleum distillates. In several cases the wastes had discharged or currently are being discharged to the ground surface. Specifically, obvious signs of soil contamination had resulted from the leakage and/or spillage of used motor oil (suspected) from 55-gallon drums, paint and polymer resins from a small scale manufacturing enterprise, and PCBs from a damaged pole transformer. In addition, the illegal dumping of household and construction refuse is widespread on Water Island.

The physical hazards on Water Island were also documented. A chronicle of the physical hazards was not required by the original Scope of Work, but was included as an appropriate concern. The majority of physical hazards on the island are the direct result of Hurricane Hugo. These hazards are evident by the structural damage sustained by the majority of buildings at the Sea Cliff Resort and by individual residences. Fort Segarra also presents several physical hazards. The potential hazards include falls into unsealed hatchways and injuries that could result from gaining access to the underground bunker and tunnel system.

1.0 INTRODUCTION

Under the direction of the U.S. Department of Interior, Bureau of Land Management (BLM) Dynamac Corporation (Dynamac) performed a Level 1 and Level 2 Site Survey on Water Island, U.S. Virgin Islands Site. The investigation was conducted for the Office of Territorial and International Affairs (OTIA) under the BLM Technical Assistance Contract, Number 1422-N651-C2-3075, Task Order 93-31 OY1. The services were provided through an interagency agreement between OTIA and the BLM, which was signed on September 21, 1993. OTIA maintains administrative jurisdiction over Water Island.

The sale of Water Island by OTIA is currently pending. To maintain compliance with regulations set forth in 40 CFR 373 and Departmental Manual, Part 602 DM 2 the presence, or potential presence, of hazardous substances on property under review must be determined prior to final disposition. Subsequently, Dynamac performed a Level 1 and Level 2 Site Survey to satisfy these requirements. The site survey was completed in accordance with the guidance established in "Interim Guidance on Land Acquisition". This report presents the findings of the background records search and site survey, and provides documentation of the presence of both hazardous substances and physical hazards that currently exist on the island. However, it is impossible to determine with certainty that the documented materials disclosed in this report represent the entirety of hazardous substances that exist on the island.

1.1 SCOPE OF WORK

The Scope of Work for this investigation was governed by the guidance presented in the Departmental Manual Part 602 DM 2. To complete this task and comply with

departmental policy in a satisfactory manner, the following guidance criteria were established:

Conduct a historical review of ownership, land uses, and improvements made to the site over the past fifty years, at a minimum;

Review historical photograph(s) of the subject site to assess the potential for former disposal sites (e.g., landfills, burial pits) and verify the location of test areas (i.e., associated with DOD control), determine the destruction or construction of buildings and roads, and determine land use changes;

Conduct a record review on the subject site of all applicable local and federal health, environmental, and natural resource agencies;

Determine through literature searches and telephone interviews the potential for the storage, creation, or discharge of hazardous substances in the past or present;

Conduct an onsite investigation of the subject site to visually identify the presence of any obvious signs of contamination or hazardous substances, including the inspection for asbestos-containing materials (ACMs) and other hazardous materials used in the construction of any structure(s) or used in operating equipment located onsite (e.g., transformers, heavy machinery); and

Prepare a written report presenting the findings of the site survey and assessment with recommendations, if appropriate. The report would provide details on the types of hazardous substances present onsite,

potential problems associated with each substance, potential for the existence of undisclosed hazardous substances, and provide recommendations, including whether future action is necessary. In addition, the document should provide details on the presence of physical hazards recorded during the onsite investigation.

1.2 OBJECTIVES

The primary objective of the project was to determine the potential or actual existence of hazardous substances on Water Island. A secondary objective was to render an assessment of the potential threat to human health and the environment that such hazards may pose. In addition, during the course of the site reconnaissance a decision was reached to include an assessment of the inherent physical hazards present on Water Island.

2.5 SUBJECT SITE DESCRIPTIONS

2.5.1 Fort Segarra

Fort Segarra is located on Flamingo Point on the southwestern portion of the island. The former fort consists of a series of bunkers and tunnels, an observation platform, and two gun emplacements. The gun emplacements are on the southwestern slope of Flamingo Point overlooking the Caribbean. The emplacements are circular concrete turrets that are approximately 18 feet in diameter and 11.5 feet deep. Both turrets are heavily overgrown with vegetation, as is the surrounding area.

Access to the former fort can be gained through three entrances, which are symmetrically located around the fort. The entrances are fitted with double steel doors that are approximately 8 feet high and 3 feet wide. These doors were found rusted open during the site reconnaissance. Currently, the fort is used by the island residents as a hurricane bunker. The location of Fort Segarra is shown in Figure 3.

2.5.1.1 Catchment

The catchment is located on the western side of the central ridge, east of Druif Bay. The catchment has a surface area of slightly less than 2 acres and has a corrugated transite surface (asbestos containing material - ACM). Water collected off the catchment surface was stored in a cistern, which is located at the base of the catchment basin. The storage capacity is approximately 350,000 gallons. The catchment is raised approximately 2.5 feet above the ground surface on a wooden frame constructed of 2 inch by 4 inch timbers. A stone wall completely surrounds the catchment. Several areas within the catchment have either collapsed or have holes in the surface material. Where the larger holes are located, bushes and shrubs have taken hold. The location of the catchment is provided in Figure 3.

2.5.2 San Jose Project Test Areas

The San Jose Chemical Munitions Project consisted of 8 test areas. Records on file with the U.S. Army Edgewood Research Development and Engineering Center (ERDEC) revealed that Test Areas 1, 2, 3, and 7 were not used during the San Jose Project, although several tests had been planned (Bridges, 1993). The 5 documented chemical munitions tests conducted on Water Island took place in test areas 4, 5, 6, and 8. Figure 4 provides the locations of the former test areas.

Test Areas 1 and 7 were located, respectively, in the northwest and northeast portion of the island. The test sites were in relatively level low lying areas. Both sites are densely wooded and overgrown with a lower canopy of vines and shrubs. Test Area 1 extended from the shoreline at Ruyter Cove to approximately 600 feet inland and included the north igloo and a service building. Test Area 7 extended from the shoreline at West Gregerie Channel through a saddle on Sprat Point and included the beach area at Sprat Bay. Very little development has occurred in these former test areas.

The remaining six test areas were located on the southern half of the island. Test Areas 2 and 3 were located in low lying areas on the western side of the island. Test Area 2 was located adjacent to Phillips Dock on Providence Point and was the smallest of the test sites. The access to the former test area is by a dirt service road. The area is otherwise densely vegetated, with little development. Test Area 3 extended from the shoreline at Druif Bay to approximately 500 feet inland. This area was converted into a beach by Water Island, Inc. and is known as Honeymoon Beach. Several buildings (e.g., bath house, snack bar) were constructed just off the beach to service hotel and resident patrons. These buildings were heavily damaged by Hugo and have not been repaired. The area behind the beach is heavily vegetated except for a rock strewn clearing, which has an area of approximately 0.25 acre. Originally, the clearing was a salt pond which Water Island, Inc. subsequently filled in with rock during the construction of Honeymoon Beach.

Test Area 4 was located in the southwest end of Water Island, straddling the road that leads to the hotel warehouse. A large portion of Test Area 4 was excavated when Water Island, Inc. opened the canal that leads to Flamingo Bay Marina. Presently, the southern portion of the test area is used as an open dump. The dump contains various types of household refuse, construction debris, and several abandoned vehicles. The dump site is heavily overgrown, as is the remainder of the southern portion of the test area. The northern portion of the former test area, between the road and the canal, is cleared and also contains open dump sites.

Test Area 5 was located east and adjacent to Test Area 4. The site appeared to have been excavated and graded. The site was predominantly vegetated with grasses, with only a few isolated bushes and shrubs. Several portions of the site, however, were bare. The subject site also contained a burn pit that measured approximately 20 feet wide by 100 feet long. The excavation was enclosed by dense vegetation and contained standing water. The site was littered with various types of construction debris, such as corrugated metal, drums, and wood products. The remnants of a concrete mixer (i.e., building foundation) were also observed at the former test site.

Test Area 6 was located on the southeastern portion of the island. The site extended from the shoreline to the ridgeline. The area is moderately vegetated on the hillside, which terminates at a rocky shoreline. Development has occurred along the ridgeline.

Test Area 8 was located in the vicinity where the hotel bar, dining area, and several support buildings were constructed. The area was heavily disturbed during the construction of the hotel, which occurred after the San Jose Project was terminated. Analysis of an aerial photograph dated April, 1954 suggests that the entire test area has either been covered with asphalt or buildings (Pond, 1993).

2.5.3 Master Lease Holdings

For this report, the master lease Holdings are described as the Sea Cliff Resort and associated grounds. This includes the hotel and support buildings, villas, and resort grounds. The hotel consisted of 119 rooms in 13 buildings. In addition, the Sea Cliff Resort provided accommodations in 18 villas, which are located east and adjacent to the hotel. The resort also maintained a marina and pier for the patrons enjoyment.

The hotel was heavily damaged by Hurricane Hugo in September, 1989 and has been closed for business since that time. Several portions of the remaining hotel are of suspect structural integrity. Many portions of the hotel do not have a roof and there are areas that have cracked roofing beams and exposed reinforcing bars. The structural integrity of the Sea Cliff Resort is covered in greater detail in the Pritchett, Ball, and Wise report. The marina, adjoining buildings, and pier sustained similar damage by Hurricane Hugo and present an apparent physical hazard. The hotel and surrounding grounds have become densely overgrown with vegetation, since the grounds are no longer maintained.

2.5.3.1 Warehouse

The hotel warehouse and former landfill are located in the southwestern portion of Water Island, west and adjacent to Test Area 4. The warehouse is flanked on the west by Flamingo Bay and on the east by the former hotel landfill. At its nearest point, Flamingo Bay is approximately 60 feet from the warehouse. While the warehouse roof was heavily damaged during Hurricane Hugo, the roof support beams sustained only moderate structural damage. The interior of the warehouse is completely cluttered with abandoned appliances, furniture, electrical equipment, and general debris. In addition, a small cistern manufacturing enterprise was observed inside the warehouse. A concrete pad maintenance area is attached to the eastern side of the warehouse. This area contained numerous automotive parts and general debris.

The former landfill is currently enclosed with an eight foot high chain link fence that appears to be in good condition. Access is normally gained through a gate, which was locked during the site reconnaissance. However, a breech in the fence line was observed at the far eastern corner. The surface of the landfill is densely vegetated with grasses. A large number of automobiles had been abandoned at the site, as well as miscellaneous debris. The landfill was a trench and fill operation that did not include engineering controls (liners, leachate collection system, etc.) (Phillips, 1993). Records did not indicate if the landfill was ever permitted by a regulatory agency (Smith, 1993).

2.5.4 Sublease and Sub-sublease Holdings

Sprat Bay is the largest subleased area, which has been further subdivided by Sprat Bay Corporation. The sublease encompasses 156.65 acres on the northern portion of the island. Sprat Bay Corporation maintains nine lots and has sub-subleased an additional 65 lots. Included in Sprat Bay are a 40 acre lot which serves as a green belt, a 4.1 acre lot which has been developed as a beach recreation area, and a 5.46 acre lot which surrounds the dock at Ruyter Cove. The beach and recreation area is located along Sprat Bay, where test area 7 was located. There have been 18 residences constructed on the sub-subleased lots (Pritchett, Ball & Wise, 1991).

Approximately two-thirds of the southern end of the island is held by individual subleases. The master lease holder has subdivided the island, not including the Sprat Bay area, into 128 lots ranging in size from 0.13 to 3.88 acres (Pritchett, Ball & Wise, 1991). There are a total of 91 single-family houses, plus six apartments and one duplex that contain 38 additional residential units. There are also several tracts of land that have not been subdivided. The majority of sublease residences did not contain hazardous substances, other than car batteries, or exhibit obvious signs of contamination. It should be anticipated, however, that each residence maintains small quantities of common household hazardous chemicals, as well as pesticides (e.g., for termite control).

Several houses that were demolished during Hurricane Hugo have yet to be repaired and appear to have been abandoned. For many of these houses, the remnants of the structures are of very questionable structural integrity and potentially represent a physical hazard to anyone entering the premises.

2.6 POWER, SEWAGE, AND WATER

Power is supplied to Water Island by the Virgin Island Water and Power Authority (WAPA). A power line runs under East Gregerie Channel from St. Thomas to Water Island supplying power to all the residences. Approximately 57 active and 6 inactive pole transformers were documented on the island during the site reconnaissance. Currently, the island uses single-phase power, although WAPA is currently in the process of completing a study to determine the feasibility of changing to multi-phase power. As part of the study, WAPA intends to complete an inventory of existing pole transformers currently on the island (Brown, 1991).

All of the subleased residences located on Water Island use a septic system to dispose of sewage. Generally, the septic systems consist of a tank for settling and bacterial decomposition and a flow field. The former hotel and most of the villas used a package wastewater treatment plant that had a capacity to treat 20,000 gallons per day. The plant has not been operational since Hurricane Hugo struck the island in September 1989. Neither the villas that used the package water treatment plant nor the hotel have any other means to treat sewage. Currently, sewage from the villas reportedly flows directly into Flamingo Bay (Pritchett, Ball & Wise, 1991).

Water Island does not currently maintain a municipal drinking water treatment system. Residents on the island obtain their drinking water by collecting rainwater, which is stored in cisterns. Water may also be obtained by truck from St. Thomas if a cistern runs dry. The hotel utilized the catchment basin and a cistern system that held a total capacity

of approximately 1,000,000 gallons. There are three different storage tanks for the former hotel's water system. The first reservoir is the original catchment cistern constructed by the DOD and has a capacity of 350,000 gallons; the second reservoir has a capacity of 300,000 gallons and was constructed by sealing off several rooms of the former Fort Segarra; and the third reservoir has a capacity of 350,000 gallons and is located beneath the dining and convention area of the former hotel. A desalination system was purchased between 1978 and 1979, and was stored in the warehouse. The desalination system has never been used and is still located in the former warehouse (Pritchett, Ball & Wise, 1991).

4.0 SITE INSPECTION

Dynamac conducted a site reconnaissance on Water Island during a two week period that took place October 26 through November 5, 1993. The inspection entailed a visual reconnaissance of the entire island. Specifically, particular attention was afforded to several areas, including:

Fort Segarra and the Catchment;

San Jose Project Test Areas; and

Water Isle Hotel and Beach Club master lease holdings (i.e., Sea Cliff Beach Resort grounds and all structures).

In addition, visual inspections of all subleased and sub-subleased lots and parcels were performed. The inspections were performed to determine the potential for, or the existence of, hazardous substances and/or physical hazards located at each subject site. Prior to performing the site inspections, Dynamac conducted a historical background review and records search to assist in the identification of areas of potential concern where inspection efforts should be concentrated. Dynamac maintained a field log to chronicle all observations made during the site reconnaissance, as well as a photojournal to record obvious signs of hazardous substances and/or contamination.

The field inspection team qualified obvious signs of hazardous substances by the presence (e.g., 55-gallon drum of waste oil) of a known RCRA and/or CERCLA hazardous

waste. The presence of unidentified drummed or containerized substances were qualified as a potential hazardous substance. Spills, stains, stressed vegetation, or barren ground in otherwise vegetated areas were qualified as obvious signs of contamination. In addition, anomalies (e.g., mounds, depressions, cracked ground surfaces, etc.) in the natural environment were recorded and identified as potential areas of concern.

4.1 FORT SEGARRA

Fort Segarra is located on Flamingo Point, which is the extreme southwestern point of Water Island. The former fort is composed of a system of tunnels and bunkers that were hollowed out of the ridgeline at an elevation of approximately 235 feet above msl. Access to the underground fort is gained through a combination of three large double steel doorways, two of which open onto gun turrets, and vertical hatchways.

Information concerning the history and operations of the former fort and the San Jose Project were reviewed to determine the potential for the existence of hazardous substances at Fort Segarra. Specifically, records were reviewed to determine the potential for the presence of stockpiled munitions and/or existence of residual contamination resulting from the San Jose Project. The records search revealed that the potential for the abandonment of explosive munitions at the former fort was nonexistent. According to available records, the artillery pieces intended to defend Roosevelt Roads were never installed. Consequently, explosive munitions for the guns were also never brought to the island. Furthermore, a review of maps and archive material obtained from the U.S. Army Corps of Engineers (USACE) determined that the former fort was not used to stockpile chemical munitions test materials, nor was it located within a test area established during the San Jose Project.

A site reconnaissance was conducted at the former fort and surrounding grounds in order to chronicle any obvious signs of contamination and/or the presence of hazardous

substances. In addition, potential physical hazards were duly noted and recorded. Figure 3 provides the location of the fort, catchment, and igloos and associated photographs.

Photographs 1 and 2 portray the area overlying the former fort. As evident, the area is densely vegetated with only a half-bench dirt road providing access to the lookout platform atop the ridge. Stressed vegetation was not evident and bare spots (potential burial sites, contaminated areas) were not observed. In addition, obvious signs of hazardous substances (drums, containers, cylinders) were not observed.

The most prominent hazards at the former fort pertain to the physical hazards. Primary hazards include falls into unsealed hatchways and the existing gun turrets. Photograph 3 depicts one such hazard. The photograph portrays an unsealed vertical shaft leading to the underground bunker and tunnel system. This shaft was located adjacent to the lookout platform. The vertical drop was estimated at approximately 20 feet. Photograph 4 portrays another unsealed hatchway located at the southeastern-most gun turret. The hatchway was located on the concrete apron midway between the entrance and the turret. The vertical drop was estimated at approximately 6 feet. Photograph 5 is an entrance to the former fort, which provides access to the bunker and tunnel system. The PVC piping leading into the former fort are water lines to the rooms that were walled off to create a cistern for the hotel. Access to the bunker and tunnel system create additional hazards, which include falling concrete and falls into open power conduits.

4.1.1 Catchment

The water catchment was originally constructed by the Department of Defense to collect drinking water for Fort Segarra. The catchment consists of a corrugated transite surface raised on 2 inch by 4 inch timbers, which covers approximately 2 acres. Photograph 6 portrays the 350,000 gallon cistern located at the base of the catchment used to store water. Photographs 7 and 8 portray the surface of the water catchment. Available

information indicates that the corrugated transite could contain as much asbestos as 20 - 40 percent by volume. Observations were made to determine the condition of the corrugated transite. Specifically, the material was examined to determine physical integrity, friability, and containment factors.

In general, the physical integrity of the surface material was found to be in fairly good repair. However, in several locations the surface panels either had broken corners, holes, or collapsed completely under a failed framework. Notwithstanding, the surface material did not exhibit any of the characteristics that define friable. This includes the areas that had been compromised in some manner. Furthermore, it appears that the bonding matrix encapsulating the asbestos fibers is a fairly stable and resilient containment parameter.

4.2 SAN JOSE PROJECT TEST AREAS

Eight test areas were established on Water Island during the San Jose Project (See Figure 4). Of the eight test areas, chemical munitions were discharged at only three test sites. The chemical munitions included distilled mustard, sesquimustard, and tabun. These agents are fairly persistent in the environment, depending on pH and moisture, but generally stabilize after 3 years of exposure (Appendix D provides the chemical characteristics data for each agent). Nevertheless, efforts were concentrated in test areas 4, 5, 6, and 8 since these areas were reportedly the only subject sites where chemical munitions were discharged. In addition, these areas could contain remnant munitions that were reportedly buried after the completion of a test. Specifically, these former test sites potentially could contain the remnants of twenty-three E-23 smoke pots, two CK-filled M78 bombs, and/or 4.2 inch agent or explosive filled mortar rounds. The disposition of these items was described in Section 3.2. Figure 4 provides the locations of the test areas and associated photographs.

Generally, Test Area 4 was heavily overgrown with a low canopy of bushes and

shrubs, with the only open areas occupied by the two open dump sites and the road leading to the warehouse area. Observations made at the former test area did not reveal any physical anomalies associated with burial sites (i.e., depressions, mounds, etc.), signs of stressed vegetation, or barren ground surfaces. Instead, the obvious problem areas are associated with the open dump sites. Photographs 9 and 10 provide some detail as to the volume of refuse deposited at the larger of the two dump sites. Some of the items observed included abandoned cars, a tanker trailer, household appliances, paint cans, gas cans, car batteries, and solvent containers. A reasonable worst-case assumption is that small quantities of hazardous household chemical substances have been deposited at some of these open dump sites. The battery portrayed in Photograph 11 provides evidence that RCRA hazardous waste has been deposited at this location. However, due to the unregulated deposal of refuse at these sites and the dense vegetation, it is impossible to determine with certainty the extent of hazardous substances that exist at these sites.

Test Area 5 appears to have undergone extensive excavation and grading. A review of the aerial photograph taken in 1954 revealed that the area was clear of vegetation at that time. However, the photograph was not detailed enough to determine if the site had been graded or excavated. Test Area 5 also contained the burn pit excavated by the hotel to dispose of debris generated from Hurricane Hugo. The dimensions of the burn pit measured approximately 20 feet wide by 100 feet long. The pit is surrounded by dense vegetation and appears to contain standing water. Access to the bottom of the pit could not be gained and, consequently, the appearance and condition of the water could not be assessed.

Currently, the subject site is predominantly vegetated by grasses, with isolated patches of bushes, shrubs, and barren ground. Photograph 12 provides an overview of the site. The patches of barren ground exposed outcrops of bedrock and did not appear to be caused by contamination. It is suspected that the absence of vegetation is due to the lack of an adequate soil horizon. The site contains several scattered piles of construction debris

including corrugated boards (potential ACMs), corrugated metal roofing material, and several empty rusted and compromised 55-gallon drums. Other debris included a car battery and a gas tank from an automobile. The debris piles are shown in Photographs 13 and 14. In addition, the site contained a large concrete structure that reportedly was erected and used by the hotel to make concrete. The structure is shown in Photograph 15. The only indication of a potentially hazardous substance at Test Area 5 was the car battery. There were no obvious signs of contamination (i.e., stressed vegetation, barren spots, or stains) or environmental anomalies.

Test Area 6 consists of steeply sloping terrain that is moderately vegetated by bushes and shrubs. The slope terminates at the shoreline, which is extremely rocky. The former test site is located on the leeward side of the island, which contributes to the large volume of debris that was observed scattered along the shoreline. The debris included wood products, gas cans, tires, batteries, netting, and food containers. The batteries were the only obvious signs of potentially hazardous substances recorded at this subject site. There were no obvious signs of contamination (i.e., stressed vegetation, barren spots, or stains) or environmental anomalies.

Test Area 8 was situated in the vicinity where the hotel bar, dining room, and several hotel support buildings are currently located. A review of the April, 1954 aerial photograph revealed that the land features in this particular area have undergone considerable change. The aerial photograph revealed the presence of several buildings, which were surrounded by dense vegetation. According to records on file with ERDEC, these buildings were identified as the maintenance and livestock pens for the San Jose Project. Since 1951, when the first lease was issued, the entire area has undergone considerable reworking including clearing, excavation, and construction activities. Consequently, very little remains from the original DOD arrangement. There were no obvious signs of hazardous substances or contamination that could be attributed to DOD activities observed during the site reconnaissance. However, this area does contain numerous sources of hazardous wastes and

obvious signs of contamination that can be attributed to the hotel operations. These sources will be discussed in greater detail in Section 4.3.

In general, Test Areas 1, 2, 3, and 7 were densely vegetated low lying areas, that included sections of the shoreline. To date, very little development has occurred in these former test areas. Furthermore, a review of the aerial photograph revealed that the terrain and ecosystem (i.e., vegetation) have changed very little. The north and south igloos were the only remnants of DOD activities observed in test area 1 during the site reconnaissance. There were no obvious signs of contamination (i.e., stressed vegetation, barren ground, or stains) or environmental anomalies that could be attributed to DOD activities. Notwithstanding, the entire shoreline within the subject site contained some type of marine debris. Of the items observed, several could be classified as potentially hazardous RCRA wastes. The items included solvent containers (e.g., acetone), batteries, methyl ethyl ketone (MEK) peroxide (0.6 fluid ounce bottle), used motor oil (suspected), and paint containers.

The shoreline along test area 1 (Ruyter Cove) contained the largest amount of marine debris observed on Water Island. It is suspected that these materials have been deposited either through illegal trespass or were washed ashore. Photographs 16 and 17 portray the refuse observed along the shoreline. Material Safety Data Sheets are presented in Appendix D.

Test Area 2 was located adjacent to Phillips dock on Providence Point. The area was densely vegetated and did not exhibit any obvious signs of contamination or environmental anomalies. Several bags of household refuse were observed at this location, however, which could potentially contain household hazardous waste(s).

Test Area 3 was heavily overgrown with cane grass and steel acacias. In the center of the site was a 0.25 acre rock strewn clearing that qualified as an environmental anomaly; that is the rocks appeared to be a fill cover. The clearing was not discernible in the April,

including corrugated boards (potential ACMs), corrugated metal roofing material, and several empty rusted and compromised 55-gallon drums. Other debris included a car battery and a gas tank from an automobile. The debris piles are shown in Photographs 13 and 14. In addition, the site contained a large concrete structure that reportedly was erected and used by the hotel to make concrete. The structure is shown in Photograph 15. The only indication of a potentially hazardous substance at Test Area 5 was the car battery. There were no obvious signs of contamination (i.e., stressed vegetation, barren spots, or stains) or environmental anomalies.

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1954 aerial photograph, but was reportedly a saltwater pond. It was subsequently determined that the rocks were placed there by Water Island, Inc. during the construction of Honeymoon Beach. (Mr. Couter, 1993) The clearing is shown in Photograph 18. Although there were no obvious signs of hazardous substances observed, several rocks in the clearing were covered by a clear substance that exhibited an oily sheen and texture. The origin and identity could not be determined and could represent potential contamination.

Test Area 7 is densely vegetated and has undergone very little development. A portion of Test Area 7 located along Sprat Bay was converted by Sprat Bay, Inc. into a beach and picnic area. Immediately behind the picnic area, Sprat Bay Inc. constructed a tennis court. A dirt road provides the only access to this area. There were no obvious signs of hazardous substances or contamination observed at this location. The shoreline within Test Area 7 and along East Gregerie Channel contained a variety of marine debris, including a grounded ship (Amalie Queen). The ship is shown in Photographs 19 and 20. The stern of the ship was submerged in the salt pond while the bow rested on the rocky shoreline. A heavy diesel odor was detected and a diesel sheen was observed floating in the hold of the ship. Other marine debris included beverage and food containers, oil cans, aerosol cans, and biomedical waste (1 syringe). There were no obvious signs of contamination observed that could be attributed to DOD activities. Obvious signs of contamination were restricted to the diesel sheen contained in the hold of the beached ship.

4.3 MASTER LEASE HOLDINGS

The Sea Cliff Beach Resort complex is located on the southwestern portion of the island on a point straddled by Druif and Flamingo Bays. As mentioned previously, the majority of buildings at the resort were heavily damaged by Hurricane Hugo and have yet to be repaired. Structural and cosmetic damage are evident and are portrayed in Photographs 21 through 24. Dense vegetation has overgrown many of the buildings and has encroached upon the roadways and paths.

The structural damage presents numerous physical hazards. As evident in the photographs, the hazards include injuries caused by unstable structures, falling debris, punctures from exposed nails and broken glass, and trips and falls over general debris. Furthermore, the majority of potentially hazardous substances documented on Water Island were located on hotel grounds; specifically, potentially hazardous substances were observed at the marina, warehouse, and in the vicinity of the electric and plumbing departments. Obvious signs of contamination were also observed at all three locations.

The buildings that housed the plumbing and electrical departments are located behind the hotel kitchen. The buildings were wooden frame structures that sustained heavy damage during Hurricane Hugo. Although the electrical department was heavily damaged access could not be gained because the door was locked. The immediate area is littered with debris including refrigerators, air conditioners, plumbing supplies, and lighting fixtures.

Obvious signs of potential contamination were observed at this subject site during the site reconnaissance. The potential contamination consisted of a spill of suspected paint products, that was located on a concrete pad. The spilled material had solidified and did not appear to be mobile. The spill is shown in Photographs 25 and 26. The spill originated from badly weathered 5-gallon PVC containers and rusted 1-gallon metal containers. It was estimated that approximately 100 paint containers were located at this subject site. The paint cans were stacked against a wall and exposed to the elements, which contributed to their poor condition. The majority of paint containers contained some product. Product identification could not positively be established, however, since the labels were either missing or badly faded.

A full 55-gallon bunghole drum was situated adjacent to the paint cans. The integrity of the drum was in good repair and did not exhibit signs of fatigue. The drum was fitted with a valve that did not appear to be completely closed, as a strong solvent-like odor could be detected. It was evident that the contents were being volatilized and released to the air.

Although the contents of the drum could not positively be identified (due to a badly faded label), the drum did bear a "flammable liquid" label. The presence of the paint containers and the 55-gallon drum represent potential RCRA and/or CERCLIS hazardous substances. The drum is shown in Photograph 27.

Several potential sources of hazardous substances were observed directly behind the hotel kitchen, including four 55-gallon bunghole drums, four above-ground storage tanks (ASTs), a gas cylinder, and a battery. Three of the drums were full of liquid, but only one was labelled. The label identified the contents as Chevron Tractor Hydraulic Fluid. The remaining two drums appeared to contain used motor oil, although this could not be verified. The drums are situated on a asphalt apron but are exposed to the elements and in poor condition. The ground around the drums was heavily stained black by the suspected petroleum product. The drums and stained area are shown in Photograph 28.

Two of the ASTs located immediately behind the kitchen were in fair condition and did not exhibit any signs of leakage. It could not be determined if the ASTs contained any product. A fuel line from the one AST (shown in Photograph 28) led to a generator that was housed in a shed just behind the tank. A battery was observed lying on the floor of the generator shed. It is suspected that the AST was used to store diesel fuel for the generator. The second AST was used to store propane. Adjacent to the propane AST was a 310 cubic foot gas cylinder that contained propane (suspected). It could not be determined how much product was contained in the cylinder. The propane AST and gas cylinder are shown in Photograph 29. The third AST was observed on the service road leading to the kitchen area. The tank was used to store propane and exhibited some signs of weathering. It could not be determined if the tank contained any product. The tank is shown in Photograph 30.

The fourth AST was located along the kitchen service road and adjacent to the generator shed. The tank appeared to be empty and in fair condition. A fuel line that led to the generator shed had been cut, which apparently had caused the remaining product to

leak. A heavy black stain was observed on the service road that extended from the tank for approximately 30 feet downgradient. Furthermore, a distinctive diesel smell was noticed in this area. Based on the observations made at this subject site, it is suspected that the tank was used to store diesel fuel for the generator. Photograph 31 depicts the stained area and the AST.

The grounds surrounding the service areas and the main hotel buildings were littered with miscellaneous debris including furniture, air conditioning units, abandoned cars and trucks, household refuse, automobile batteries, gas cylinders, and mechanical equipment (e.g., bulldozer). Some of these items are portrayed in Photographs 32 and 33. In addition, several pole transformers were observed on the hotel grounds, which appeared to be out of service. However, there were no signs that the integrity of the pole transformers had been compromised or that leakage had occurred. The pole transformers were similar in design to the pole transformer located adjacent to the warehouse. The potential exists that the pole transformers could contain PCBs (See Section 4.3.1).

The marina area contained several potential sources of hazardous substances, as well as obvious signs of contamination. Three 55-gallon bunghole drums were observed adjacent to a concrete walkway and approximately 10 feet from the waters edge. The drums were exposed to the elements and exhibited obvious signs of advanced fatigue. Only one drum was labelled; identifying the product as Chevron Delo 100 motor oil SAE 40. The drum was bulging noticeably. A second drum was breached and was discharging suspected used motor oil to the ground, where it was forming a pool. The drums are shown in Photograph 34.

A fourth drum was observed at the entrance to the marina service building. Adjacent to the drum was an automobile battery. The drum was full and the label identified the contents as Chevron Delo 400 motor oil SAE (indecipherable). The drum was exposed to the elements and badly rusted. There were, however, no obvious signs that the drum had leaked. A heavy black stain was observed on the floor of the service building. The building

contained two gas cylinders (one of which was labelled oxygen), various engine parts, a marine gas can, several full cans of two-cycle oil, batteries, and welding supplies. The 55-gallon drum, battery, and stained floor are portrayed in Photograph 35.

Currently, there are three ASTs located at the marina. One is situated adjacent to the canal, which leads to the marina, while the remaining two are located between the marina access road and Flamingo Bay. The tank located adjacent to the canal is one of two that were originally installed atop a standard. The tanks were used to store gasoline and diesel fuel, which were dispensed through a pump located approximately 65 feet from the ASTs. It could not be determined if the remaining tank contained any product. According to the WIH&BC the missing tank had developed a leak and was subsequently taken out of service (Couter, 1993). The leak occurred some time after Hurricane Hugo hit the islands. Records were not available to document the amount of fuel that had potentially leaked out. The pump and AST are shown in Photograph 36.

The probability that this area has gross fuel contamination due to spills or leakage is minimal. A sufficient amount of time has passed since the tank was last operatable to allow for any floating product to volatilize and/or migrate through the sandy soils. Nevertheless, it is probable that low concentrations of hydrocarbon constituents are present in the surface soils.

The two ASTs located between the access road and Flamingo Bay were used to store propane, which was initially brought by boat from St. Thomas. This practice was discontinued at some point by order of the U.S. Coast Guard (Couter, 1993). The ASTs appeared to be in fairly good repair. It could not be determined if the tanks contained any product. The immediate area did not exhibit any obvious signs of contamination. The ASTs are shown in Photograph 37.

The grounds surrounding the marina were littered with various debris, automobiles,

and mechanical equipment. In addition, the marina buildings were heavily damaged and bore a sign warning against entry. Furthermore, a UST believed to have been part of the hotel septic system was observed adjacent to the access road.

4.3.1 Warehouse

The warehouse was heavily damaged by Hurricane Hugo. The damage was restricted to the roofing panels, rafters, and perlins, which were bent and twisted. The structural damage presents a potential physical hazard. Debris litters the interior of the warehouse, as well as the surrounding area. The contents of the warehouse include furniture, appliances, building materials, drums, and mechanical equipment (i.e., desalination unit). In addition, a small cistern manufacturing operation was observed in the warehouse. Gas cylinders, batteries, mechanical equipment, automotive parts (suspected ACMs), a pole transformer, and drums were observed in the surrounding area. Finally, a locked tractor trailer was parked adjacent to the warehouse, which could potentially contain hazardous materials. Photograph 38 shows the southwestern entrance to the warehouse.

Several potential sources of hazardous substances were observed in the warehouse, automotive service area, and surrounding grounds. Three empty and one half full 55-gallon drums were observed in the warehouse. With the exception of an empty drum identified as Aropol 7241-TP, the drums were not labelled. The drum is pictured in Photograph 39. Aropol is an unsaturated polyester resin that is believed to have been used in the cistern manufacturing process. Obvious signs of contamination were also evident inside the warehouse. Photograph 40 pictures a stain of suspected green paint next to a cistern under construction.

The drum containing product was not labelled and badly compromised. There were no obvious signs that the drum had leaked, although it is suspected. The drum was lying

perched on its side, which would have facilitated the contents to leak. The drum contained a clear liquid and emitted a slight chemical odor. Photograph 41 pictures the compromised drum.

The service area adjacent to the warehouse was littered with automotive parts, batteries, an abandoned jeep, and two open-ended 35-gallon drums, which contained some product. The service area had a concrete pad which was visibly stained by ferrous oxide and suspected petroleum products. It is suspected that some of the automotive parts are potential ACM materials (e.g., brake pads). Photograph 42 pictures several badly compromised batteries and a potential ACM automotive part. One of the open-ended drums was labelled Chevron Polyurea EP Grease-2. The drum is pictured in Photograph 43. The other drum was not labelled, but contained a similar product.

Several potentially hazardous substances were observed in the area surrounding the warehouse. The greatest potential hazardous substance was a pole transformer, which was located adjacent to the deep water dock. A records search determined that the transformer potentially contains PCBs (Berglund, 1993). The transformer was in good repair and there were no obvious signs that leakage had occurred. The transformer is shown in Photograph 44. Six empty gas cylinders were observed. Two of the six cylinders were identified as oxygen tanks, while the remaining four were not labelled. The cylinders are depicted in Photographs 45 through 47. Photograph 48 shows two empty 55-gallon drums and a large marine battery that were located at the deep water dock. Photograph 49 pictures a decommissioned bomb that was washed up on the beach adjacent to the warehouse. The bomb had been filled with concrete and used by the hotel as a mooring anchor (Phillips, 1993).

The dump located on the warehouse access road in former Test Area 4 is the largest illegal dump site that was uncovered during the site reconnaissance. Several potential RCRA hazardous wastes (car batteries) were observed at this subject site. It is suspected

that this area could potentially contain additional small quantities of hazardous substances, but because the area was so densely overgrown it was impossible to determine the extent of the waste piles or the contents.

4.4 SUBLEASE AND SUB-SUBLEASE HOLDINGS

In general, the sublease and sub-sublease holdings did not exhibit obvious signs of contamination or contain potential sources of hazardous substances, other than suspected small quantities of common household hazardous chemicals and pesticides (e.g., for termite control). Collectively, the largest potential source of hazardous substances is represented by the volume of used batteries that were observed on the island and along the shoreline. Photographs 50 and 51 depict compromised batteries that were observed on Water Island. In addition, illegal dumping of household refuse has occurred across the island. These illegal dump sites could potentially contain hazardous household chemicals, albeit in relatively small quantities.

The greatest potential threat to human health and the environment was a badly compromised pole transformer located on Lot 13. The transformer was struck by lightning on September 24, 1993 (Pond, 1993). The transformer contained liquid, which had leaked onto the ground surface and killed the surrounding vegetation. The area was qualified as observed contamination. The transformer did not contain legible identification markings. However, the transformer was similar in design and age as one found adjacent to the former warehouse, which was determined to potentially contain PCBs. The transformer, which is shown in Photograph 52, represents a potential RCRA and CERCLIS hazardous substance and an immediate threat to human health and the environment.

5.0 REGULATORY REVIEW

Dynamac contacted several government agencies to determine the regulatory history of Water Island. Agencies contacted include the U.S. Army Corps of Engineers, Jacksonville District, the U.S. Army Chemical Material Destruction Agency, the U.S. Environmental Protection Agency (EPA), and the Virgin Islands Department of Environmental Health.

Prior to the field inspection portion of the Level I/Level II Site Survey, Dynamac conducted a background study to determine potential hazards that may be associated with the DOD use of Water Island in the late 1940s. Dynamac contacted the U.S. Army Corps of Engineers, Jacksonville District, and the U.S. Army Chemical Material Destruction Agency, Non-Stockpile Division. Through these agencies, Dynamac obtained reports that detailed the history of the former Fort Segarra and the San Jose Project on Water Island.

The U.S. EPA, Region II office in New York City was contacted to determined if Water Island was listed on CERCLIS or had at any time been the focus of an EPA investigation (Davila, Golumbek & Rodriguez, 1993). According to the U.S. EPA Region II Office for Federal Facilities, Water Island has not been listed on CERCLIS or been the focus of an EPA investigation. In addition, the Virgin Islands Department of Health (VIDH) was contacted to determine if there have been any unusual health problems that have been documented on Water Island. According to the VIDH there have been no documented health problems on Water Island (Smith, 1993).

The field investigation revealed several instances where federal regulations have potentially been violated on Water Island. Specifically, potential violations of the Clean Water Act, the Resource Conservation and Recovery Act (RCRA) and the Comprehensive

Environmental Response, Compensation and Liability Act (CERCLA) where observed, respectively, at the marina, open dump sites, and the former hotel service areas (i.e., electrical and plumbing departments).

The Clean Water Act stipulates that it is illegal for any person to discharge toxic or non-toxic pollutants from a point source into waters of the United States without a permit. An example of a potential violation of this regulation is the 55-gallon drum of suspected used oil that is leaking in close proximity to surface water at the former Flamingo Bay Marina. A storm surge or rainwater runoff could easily discharge the suspected used motor oil into Flamingo Bay, resulting in a point source discharge. Furthermore, what appeared to be a sewage outfall was documented leading into Flamingo Bay. The outfall was located behind the warehouse. It did not appear, however, that the outfall was actively discharging sewage at the time the site reconnaissance was conducted.

Subtitle D of RCRA establishes guidelines for the operation of solid waste landfills. In 40 CFR Part 257, guidelines are established for "sanitary landfills," and facilities that fail to meet those guidelines are classified as "open dumps," which are prohibited. Dumping of household and construction refuse is widespread on Water Island and there are several areas on Water Island that could be classified as open dumps, which is in violation of 40 CFR Part 257. In addition, the dump sites are not in compliance with the guidance criteria established in 40 CFR Part 258 for Municipal Solid Waste Landfills. The continuance of dumping at these sites would violate Part 258. The removal of the abandoned transformers could potentially be conducted under both RCRA and CERCLA. If the transformers are found to contain PCBs, then it is certain that their disposal would have to be at a RCRA Subtitle C facility.

CERCLA was established to provide a mechanism to clean up the historically reckless disposal of hazardous wastes. The former service area of the hotel contains several paint and resins cans that have leaked a black substance. Currently, the composition of

these cans is unknown. However, if this substance were sampled and found to contain a constituent that is considered CERCLIS hazardous, then CERCLA could potentially be enforced to remediate the problem.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Several potential RCRA and CERCLIS hazardous wastes were documented on Water Island during the site investigation. The wastes included used motor oil (suspected), PCB containing transformers (suspected), hydraulic fluids, automotive and marine batteries, asbestos containing materials, polymer resins, and mineral oil petroleum distillates. In several cases the wastes had discharged or currently are being discharged to the ground surface. Specifically, obvious signs of soil contamination had resulted from the leakage and/or spillage of used motor oil (suspected) from the compromised 55-gallon drum observed at the marina, paint and polymer resins from the small scale cistern manufacturing enterprise operating in the warehouse, paint products from compromised containers located at the plumbing and electrical departments, and PCBs from the damaged pole transformer located on Lot 13. In addition, the illegal dumping of household and construction refuse is widespread on Water Island, which could potentially contain small quantities of household hazardous chemicals. Table 1 provides a list of the potentially hazardous substances observed on Water Island.

There were no apparent signs of hazardous substances or contamination observed at the former Fort Segarra. As mentioned in Section 4.1, the area is densely vegetated with no apparent environmental anomalies. The greatest potential hazards that exist at the former fort are physical in nature. The documented hazards include falls into open hatchways, gun turrets, and power conduits, and injuries caused by falling concrete or other structural components. There were no warning signs posted documenting the potential dangers at the former fort. It is recommended that, at a minimum, OTIA request that the USACE post the area with signs warning of these potential hazards. In addition, it is recommended that OTIA request that the USACE seal the open hatchways and entrances to the former fort. It should be noted that the island residents use the fort as a hurricane

shelter. However, upon inspection and certification by a structural engineer, the munitions igloos located in the northwestern part of the island could be substituted and potentially better serve this purpose.

The catchment surface was tentatively identified through a records review and during the site reconnaissance as an ACM material. Observations made during the site inspection, however, determined that the material did not exhibit signs characteristic of a friable substance. Subsequently, the catchment presents a minimal threat as an inhalation hazard. The catchment does, however, potentially present a threat to the drinking water supply. The magnitude of this potential threat can only be determined through sampling and analysis. It is recommended that OTIA request that the USACE collect sediment and water samples from the cisterns located at the base of the catchment, the hotel, and the former fort. Sample collection and analysis would be subjugated to the authority and direction of the USACE under the Formerly Used Defense Site Program (FUDS). It is recommended that OTIA request that these samples be included in any future investigative work conducted by the USACE.

There were no apparent signs of hazardous substances or contamination observed at the former San Jose Project test areas. In general, Test Areas 4, 5, 6, and 8 possessed the greatest potential to contain hazardous substances and/or contamination, since these were the only reported sites of actual testing. It is suspected that the absence of obvious signs of contamination can be attributed to the decontamination practices that were employed by DOD personnel after each experiment and the length of time elapsed since the termination of the project (i.e., agent decomposition). The chemical and physical characteristics of the chemical agents that were stockpiled and tested on Water Island are provided in Appendix D.

It is the recommendation of the Bureau of Land Management (BLM) that Test Area 3 be considered for sample collection and analyses. BLM recognizes that DOD testing

activities were reportedly precluded from Test Area 3 during the San Jose Project, but is nevertheless concerned about the apparent lack of vegetation in the rock strewn clearing. It is BLM's opinion that the absence of vegetation is potentially caused by something other than the total lack of a soil horizon. BLM concludes that it would be up to the Office of Territorial and International Affairs to assign responsibility for the cost of sample analyses.

There is the potential that remnant chemical munitions were buried on the island. Specifically, there is the possibility that the remnants from tests 136, 166, 176, and 179 have been buried at an unknown location on Water Island. In addition, the probability exists that the four bombs rejected from surveillance test 135 were buried as well. The remnants from the E-23 smoke pot (i.e., 166, 176, and 179) and surveillance tests (i.e., 135) pose the greatest potential for the existence of hazardous substances on the island. Available records indicate that a small percentage of agent may still remain in the smoke pots. The agents used in the smoke pots include distilled mustard, sesquimustard, and tabun. The agent involved in the surveillance test was unstabilized cyanogen chloride, which can polymerize to form cyanuric chloride (USACE, 1993). Cyanuric chloride can have explosive properties. Further investigation should be conducted to ascertain the probability that remnant munitions are still present on Water Island and their location(s). As mentioned above, this work would be subjugated to the authority and direction of the USACE under the FUDS program.

Obvious signs of potential hazardous substances and contamination were observed on the hotel grounds; specifically at the electrical and plumbing departments, marina, and former warehouse. The potentially hazardous substances and contamination present a potential threat to both human health and the environment. Further investigation is required to determine if the substances are RCRA/CERCLIS hazardous and to determine the extent of contamination. Additional investigative work should be conducted to confirm the following:

Constituents of the paint spill and the 55-gallon drum located at the former electrical and plumbing departments;

Contents of the drums located at the marina (i.e., suspected used motor oil) and the extent of contamination;

Contents of all drums, the transformer, and the constituents of the stained soils located at the former warehouse; and

Contents and the volumes (if any) of all ASTs located on the hotel grounds and the constituents of the stain located adjacent to the kitchen area.

The spills observed at the electrical and plumbing departments, marina, and warehouse should be investigated further to determine the exact nature of the contamination. This would require, at a minimum, that samples be collected from the spilled material to identify the waste constituents. A further characterization could be completed by collecting soil samples to define the aerial extent of contamination. It is recommended that the contents of all containers, drums, ASTs, and the transformers be profiled (analyzed) to determine the contents.

The greatest threat to the environment is contributed by the drums located at the marina. The contents of the drums were tentatively identified as used motor oil based on the appearance and texture of the liquid. Used motor oil is a RCRA hazardous waste and can potentially be a CERCLIS hazardous waste (e.g., based on metal concentrations). The proximity of the drums to the waters edge could eventually lead to a release to the surface water, causing the degradation of water quality. It could not be determined how the drums came to be located at the marina. However, it is the responsibility of the WIH&BC to have them properly disposed, which should be effected immediately. Should the WIH&BC

Table

Potential Hazardous Substances on Water Island, U.S. Virgin Islands

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Deep Water Dock adjacent to the former warehouse.	Texaco URSA Super Plus SAE40 Motor Oil.	X	A label that read, "Texaco URSA Super Plus SAE40 Motor Oil," was found on an empty 55-gallon drum that was in good repair.
On the deep water dock adjacent to the warehouse.	Diesel Tank.		An empty diesel tank was found in good repair.
Near the deep water dock adjacent to the warehouse.	Oxygen cylinder.		An oxygen cylinder that was rusted but not breached was found with markings that read: 51801, 2-86, EO, 4 89 91.
Along the dirt road that leads to the warehouse area adjacent to the RAC 1 area.	Aropol 7241 T-15 FDA.		A 55-gallon bung-holed drum that was in good condition was found with no apparent spills in the area. The label on the drum read, "Aropol 7241 T-15 FDA."
In a grassy area at the end of the road that leads to the former warehouse.	Pole transformer.	X	A transformer was found in a grassy area near Flamingo Bay. When tipped, it was discovered that the transformer contained a liquid material inside of it.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Along Flamingo Bay.	Partially buried metal objects.		There were 3 rusted metal objects that appeared to be rusted cylinders located along the shore line of Flamingo Bay. There was also an additional unidentified metal object that had a valve.
Along Flamingo Bay.	Various paint supplies.	X	Along the shoreline of Flamingo Bay there is an assortment of painting supplies such as paint cans, resin containers and a 128 fluid ounce empty container with a label that says acetone. It appears as if some of the resins have spilled onto the ground.
Inside the former warehouse.	Aropol 7241-T-15-FDA.		Inside the former warehouse, there was an empty 55-gallon bung-holed drum is in good condition. The label on the drum reads, "Aropol, 7241-T-15-FDA."

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Inside the former warehouse.	Miscellaneous auto parts.		One portion of the warehouse contained many scattered auto parts. There were also large amounts of scattered auto parts located outside of the former warehouse in the southeast corner.
Inside the former warehouse.	Green paint.	X	On the ground in the former warehouse, the dirt was stained green by what appeared to be paint.
Inside the former warehouse.	A clear unknown liquid.	?	The metal top of a 55-gallon drum was rusted and partially missing. The integrity of the plastic liner was breached and a clear unknown liquid was spilling out.
Inside the former warehouse.	Mechanical equipment.		A large piece of mechanical equipment is labelled, "Reverse osmosis system." The intended use of the equipment is believed to be water purification.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	~~Suspected~~ RCRA/CERCLA Hazardous Waste	Observations
Inside the former warehouse.	Hydraulic fluid.	X	A metal cylinder was present that contained a liquid suspected of being hydraulic fluid. Fluid with a sheen was dripping out of the casing. Three metal buckets were adjacent to the cylinder and one of the buckets was filled with an unknown liquid.
Outside the southeast corner of the former warehouse.	4 batteries.	X	There are 3 car batteries and 1 truck battery located in what appears to be a former automobile service area. Also present in the area is a shell of a jeep, asbestos brake pads, and various auto parts.
Inside the former warehouse in the southeast corner.	A holding tank that contained an unknown liquid.	X	There was a holding tank built into the floor of the former warehouse. There was a large amount of an unknown liquid in the tank.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
A former service area located immediately next to the former warehouse.	Chevron Polyurea EP Grease 2.		An open ended 35-gallon drum was found that was 2/3 full of grease. A label on the drum reads, "Chevron Polyurea EP Grease 2."
The concrete pad adjacent to the former warehouse on the southeast corner.	Two fire extinguishers.		There are rust spots on the tanks of 2 fire extinguishers, although the integrity of neither tank has been compromised. One of the extinguishers is labelled, "Carbon Dioxide Hand Fire Extinguishers."
The Risk Assessment Code (RAC) 1 area located adjacent to the road to the former warehouse.	A marine gas tank.		There is a fenced area that contains large amounts of debris including an aluminum can collection area, and a marine gas tank. Contents of the gas tank are unknown due to inaccessibility.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
The former hotel dump site located adjacent to the road to the former warehouse.	Miscellaneous debris.	X	There is a clearing adjacent to the road to the former warehouse that was used as a dump site for the former hotel. Located in this area are household debris, several abandoned cars, and an abandoned tanker truck that is empty. Hazards present are paint cans, gas cans, multiple car batteries, marine gas tanks, and bottles of solvent.
Adjacent to the water at the Flamingo Bay Marina.	Chevron Delo 100 Motor Oil SAE 40.	X	There were 3 55-gallon drums located together. There was one that was noticeably bulging and was labelled, "Chevron Delo 100 Motor Oil." The integrity of one of the other drums was breached and there was an oil substance leaking out of it. The third drum had a closed bung hole, was laying on its side, and contained an unknown liquid.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Adjacent to the water at the Flamingo Bay Marina.	Above ground storage tank.	X	There is an empty Above Ground Storage Tank (AST) adjacent to a fuel pump at the Flamingo Bay Marina. It appears as if two additional ASTs were located at the marina at one time.
The former Flamingo Bay Marina Service Area.	Several batteries.	X	The building that is adjacent to the Flamingo Bay Marina was apparently demolished in Hurricane Hugo. The service area has scattered debris that appears to have been present since the hurricane.
The former Flamingo Bay Marina Service Area.	Chevron Delo 400 Motor Oil.	X	A label that reads, "Chevron Delo 400 Motor Oil," was found on a 55-gallon drum with a closed bung hole and a slightly bulging top. The drum was in good condition.
Marina.	Propane.	X	Two propane tanks are present adjacent to the water. One has a line that goes into Flamingo Bay.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	RCRA/CERCLA Hazardous Waste Suspected Known	Observations
Test Area 5.	Battery.	X	This area was used as a burn pit after Hurricane Hugo. There is corrugated metal debris, 3 empty 55-gallon drums, 2 of which have been compromised, corrugated board that could possibly contain asbestos, a car battery and an empty gasoline tank from an automobile.
Lot 3.	Paint cans and batteries.	X	There is a debris pile, several rusted paint cans, and 2 batteries located on this lot.
Lot 1.	Exxmar 12P30.		There are 3 unlabelled 55-gallon drums and a 4th drum with a label that reads, "Exxmar 12P30." All 4 drums are turned upside down and are empty. There is an additional drum that appeared to be used as a burn drum. Staining from this drum was present on the ground.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Fort Segarra.	Physical hazards.		There are no apparent chemical hazards at the former Fort Segarra. However, there are several physical hazards such as a vertical shaft used to access the underground bunker and a hole (approximate depth is 4 feet) in a poorly lit area.
Lot 13.	Potential for PCBs.	X	A badly compromised pole transformer is resting on the ground. It appears as if fluid has leaked out and there is dead vegetation surrounding it.
Lot 88.	Acrylate Monomer.	X	This lot contains an empty 55-gallon drum with a faded label that reads, "Acrylate Monomer."
Phillip's Dock.	Household refuse.		There is a pile of household refuse at the end of a dirt road adjacent to Phillip's Dock.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Lot 75.	Former gun emplacements.		This lot contains what appear to be 2 former gun emplacements (without guns) that contain household refuse.
Lot 77.	Battery.	X	This lot contains an abandoned car and car battery.
Hotel	Jerry cans.		There is an abandoned Jeep that is filled with jerry cans.
Lot 54.	Batteries.	X	This lot contains a battery. In addition, there are 3 submerged objects adjacent to the shoreline that are believed to be batteries.
Lot 57.	Former gun emplacement and building debris.		There is what appears to be a gun emplacement similar to the one found in lot 75 (no guns are present). There is also a roof located in the brush with no apparent house nearby.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Hotel.	Abandoned air conditioners.		There are several abandoned window-type air conditioners located in the former hotel area.
Hotel.	Batteries.	X	In a former service area of the hotel there are batteries, oil stained pavement, freon-22 tanks, and a tank that is empty with the following markings: 310 cu. ft. DOT 8AL JW 131-12 464724
Hotel.	Unknown liquid.		Inside the former generator building was a 5-gallon bucket filled with an unknown liquid.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Hotel.	Paint cans.	X	There are several 5-gallon buckets some of which are full with an unknown liquid. There is also a full 55-gallon drum with a valve in one of its bung holes. The drum has a label that reads: "flammable liquid." There are also several paint cans in this area. A black substance that appears to have leaked from the paint cans is present on the ground.
Hotel.	Miscellaneous plumbing and electrical equipment.		The former electrical and plumbing department contains abandoned equipment including refrigerators and air conditioners. There is also miscellaneous litter in this area.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Hotel.	Chevron Tractor Hydraulic Fluid.		In a portion of the hotel service area, adjacent to the plumbing and electrical department is an area that contains 2 propane tanks, one propane AST, 2 additional ASTs of unknown contents and 4 55-gallon drums. There is a petroleum odor surrounding one of the ASTs and heavy staining on the ground. 3 of the 55-gallon drums are full including one laying on its side. The one laying on its side has a label that reads, "Chevron Tractor Hydraulic Fluid." There is staining on the ground surrounding the 4 drums.
Hotel.	Propane.	X	Adjacent to the access road to the former hotel kitchen is an AST that contained propane, although it is unknown if the AST is presently full.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
North Igloo.	Household refuse.		In the middle of the access road to the north igloo is a dump truck that is now filled with household trash.
Sprat Point.	Abandoned ship.		Along the eastern shoreline of Sprat Point, a ship called the "Amalie Queen" has washed on shore. The hull is flooded and there is a diesel sheen on the water in the hull.
Limestone Bay.	Battery.	X	A compromised battery and a compromised gas can are located approximately 25 feet from the water.
Lot 87.	Suspected asbestos containing material.		A 2.5' x 3' corrugated piece of tar paper that is suspected of containing asbestos is present.
Lot 86.	Wastewater.	X	There is a white outflow pipe with a foamy effluent believed to be "white water."
Lot 229.	Paint cans.	X	There are several paint cans located in a shed, the integrity of some of the cans has been breached.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Lot 227.	Paint cans.	X	Several paint cans, an empty gas can, and several plastic containers that are full of an unknown liquid are present on this property.
Lot 242.	Several paint cans.	X	There are several propane tanks, an oxygen tank, and several paint cans present on this property.
Lot 278.	General household debris.		There is a pile of general household debris on this property.
Elephant Bay.	Unknown object and unknown liquid.		There is an unknown metal object located along the shoreline that contains an unknown liquid.

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[redacted]

lub ıd, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Elephant Bay.	MEK Peroxide.	X	There is a large amount of debris along the shoreline of Elephant Bay including destroyed inflatable boats, outboard motors, a jet ski, paint cans, gasoline cans, a 55-gallon drum with a label that reads, "Exxmar 12TP30," and a 4 ounce bottle with a label that reads, "MEK Peroxide."
Lot 108.	Paints.	X	A shed adjacent to the house contains 8 marine engines, weed killer, bleach, gas cans, paints, and resins.
Plot A.	Paint.	X	The garage adjacent to the house contains paint, power steering fluid, enamel, acrylic polymer sealant and a gas can.
Lot 102.	A battery.	X	This lot contains a battery and an empty 55-gallon drum with a label that reads, "Aropol 7241T-15 FDA Resin Solution."

Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Lot that is labelled by a question mark in a triangle.	Gasoline.		There are 4 (3 full and 1 empty) gasoline cans present adjacent to the driveway.
Lot 110.	Paint.	X	Herbicides, various paints and paint thinners are present in a storage area adjacent to the house.
Lot that is labelled by an "X" inside a circle.	Paint cans.	X	Paint cans, 2 rusted fire extinguishers and roofing shingles that may contain asbestos are located adjacent to the house.
Lot 111.	Material suspected of containing asbestos.	X	There are 3 3' x 4' corrugated panels and roofing shingles present. Both the panels and the shingles are suspected of containing asbestos.
Lot 247.	Batteries.	X	Several batteries, several gas cans, paint, varnish thinner, and an abandoned outboard motor are present.
Lot 235.	55-gallon drums.		A rusted refrigerator, 2 empty 55-gallon drums, an abandoned backhoe and a small cement mixer are present.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Lot 252.	DELVAC 1230 SAE-30 Motor Oil.	X	Various construction material and an empty 55-gallon drum with a label that reads, "DELVAC 1230 SAE-30 Motor Oil," are present on this site.
Lot 269.	Propane.	X	A propane tank with a line running into the house on the property is present.
Lot 267.	ThoroSeal Cementious Water Seal Coating.		A 5-gallon bucket with a label that reads, "ThoroSeal Cementious Water Seal Coating," is located on the site.
Lot 82.	An AST.		An AST that is rusted but not breached is present. The contents are unknown.
Lot 36.	Gas cans.		Several gas cans, an oxygen cylinder, a marine outboard engine, a compressor, and a can with the label, "HAV. ATF Mercon DEXRON-II MP," are present in a garage area adjacent to the house.

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Table 1: Potential Hazardous Substances on Water Island, U.S. Virgin Islands (Continued)

Location	Material	Suspected RCRA/CERCLA Hazardous Waste	Observations
Hotel.	An AST.		At the base of the elevator adjacent to the water is an AST of unknown contents.

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REFERENCES

Chris Berglund, Program Director, General Electric Information Center, telephone conversation with David Marshall, Staff Engineer, Dynamac Corporation, November 12, 1993. Subject: Contents of General Electric Transformer D422577 59P.

James Brown, Line Department, Virgin Island Water and Power Authority, telephone conversation with David Marshall, Staff Engineer, Dynamac Corporation, November 30, 1993. Subject: Power Supply on Water Island.

Block, Frank and George T. Davis, Survey of Decontamination Methods Related to Field Decontamination of Vehicles and Materiel (Abridged), U.S. Armament Research and Development Command, Chemical System Laboratory, Aberdeen Proving Ground, Maryland. October, 1978.

Robert Bridges, Project Manager, U.S. Army Corps of Engineers, Jacksonville District, telephone conversation with Phil Werner, Project Manager, Dynamac Corporation, October 20, 1993. Subject: Acquisition of DOD Records on Water Island.

Bill Couter, Representative, Water Island, Inc., personal interview with Phil Werner, Project Manager, Dynamac Corporation, November 2, 1993. Subject: Water Island.

Juan Davila, Program Manager, U.S. Environmental Protection Agency, Region II, telephone conversation with David Marshall, Staff Engineer, Dynamac Corporation, December 12, 1993. Subject: CERCLIS on Water Island.

Donnelly, Thomas, Geology of St. Thomas and St. John, Virgin Islands, Dissertation presented to the faculty of Princeton University in candidacy for the Degree of Doctor of Philosophy. May, 1959.

Joel Golumbek, Compliance Section, U.S. Environmental Protection Agency, Region II, telephone conversation with David Marshall, Staff Engineer, Dynamac Corporation, December 3, 1993. Subject: CERCLIS on Water Island.

Walter Phillips, Resident, Water Island, personal interview with Phil Werner, Project Manager, Dynamac Corporation, October 28, 1993. Subject: Water Island.

Warren Pond, Resident, Water Island, personal interview with Phil Werner, Project Manager, Dynamac Corporation, October 25, 1993. Subject: Water Island.

Pritchett, Ball & Wise, Inc., Water Island Appraisals, Volume I and VII. October, 1991

Richardson, Carol A., Water Island History Outline. November 1993.

Carmen Rodriguez, Engineer, U.S. Environmental Protection Agency, Hazardous Waste

Branch, Region II - Puerto Rico, telephone conversation with David Marshall, Staff Engineer, Dynamac Corporation, December 7, 1993. Subject: Hazardous Waste Landfills in the U.S. Virgin Islands and Puerto Rico.

Lorna Smith, Director, Department of Environmental Health, St. Thomas, Virgin Islands, telephone conversation with David Marshall, Staff Engineer, Dynamac Corporation, December 30, 1993. Subject: Health Records for Water Island.

Soil Conservation Service (SCS), U.S. Department of Agriculture. 1969.

U.S. Army, Memorandum from Technical Command. Subject: Plan for Dis-Establishment of the San Jose Project. May 12, 1950.

U.S. Army Chemical Materiel Destruction Agency (USACMDA), Non-Stockpile Chemical Materiel Program, Survey and Analysis Report. November, 1993.

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Suspect may have killed 60 people
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SPORTS
'Easy' win ties LABA title series
Back page

Daily News

THURSDAY, AUGUST 15, 1991

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ratorium backers square off at hearing

...I. Territorial Association ...s, respectively, led off the ...ay in a public hearing ...ay on St. Thomas on two ...ms bills before the Senate ... and Environmental Pro- ...committee.

...ad read from a report pre- economic consultants who "denying building permits ...nstruction would decimate ...truction industry" in the Virgin Islands.

Although neither bill prohibits the construction of single- or two-family housing or of housing under the 1990 Affordable Housing Act, Newland said the bills would mean the end of affordable housing in the Virgin Islands and put the "Virgin Islands into the position of supporting the unemployed."

She said denying developers their development would in the long run hurt the worker and the homeowner.

But Helen Gjessing, speaking on behalf of the Coalition for Planned Development, pointed out that under the bill supported by the coalition, in addition to affordable housing, all Hurricane Hugo reconstruction and renovation, both residential and commercial, would still be allowed.

Newland said the bill would alienate "good corporate citizens." Gjessing said the Coalition would recommend the bill be amended to also allow construction of buildings for new non-polluting industry and expansion of existing commercial structures.

The Coalition, which Gjessing said has collected 800 signatures in favor of a moratorium, is made up of four groups: Downstreet People,

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Daily News Photo by STEVE ROCKSTEIN

the lights: V.I. Water and Power Authority operations ...nage Wednesday's St. Thomas electricity crisis by phone as ...Unit 13 in WAPA's control room. See story, page 3

Bombs on Water Island?

Army Corps of Engineers: Gas threat 'immediate hazard'

By TRICIA CAMBRON
Daily News Staff

A U.S. Army chemical-weapons test site on Water Island has been classified a "substantial and immediate hazard," the U.S. Army Corps of Engineers reported Wednesday.

The corps plans to fence the site to lessen the hazard, said Walter Perro, director of the recent investigation.

The report is the result of a corps probe into whether an undetermined number of mustard-gas and choking-gas bombs used in a 1940s Army project may have been left in the Virgin Islands.

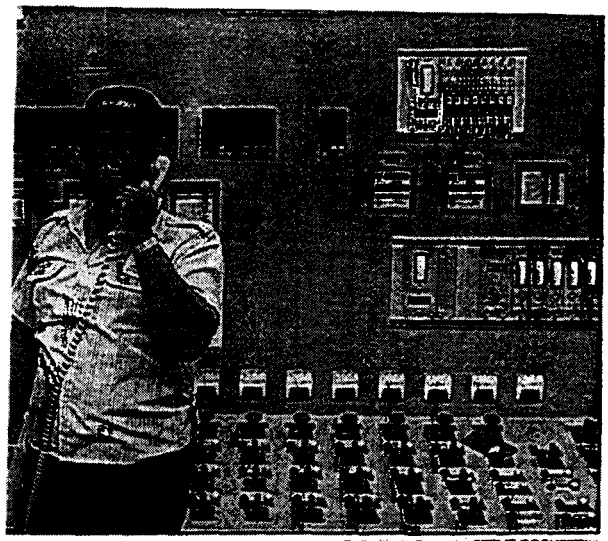
Of 21 testing sites checked by corps officials, the only one showing any signs of potential danger is the south shore of Water Island's Flamingo Bay.

Perro said the U.S. Navy could have buried bombs left

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Daily News Photo by STEVE ROCKSTEIN

the lights: V.I. Water and Power Authority operations anage Wednesday's St. Thomas electricity crisis by phone as Unit 13 in WAPA's control room. See story, page 3.

on Water Island?

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The report is the result of a corps probe into whether an undetermined number of mustard-gas and choking-gas bombs used in a 1940s Army project may have been left in the Virgin Islands.

Of 21 testing sites checked by corps officials, the only one showing any signs of potential danger is the south shore of Water Island's Flamingo Bay.

Perro said the U.S. Navy could have buried bombs left over from testing conducted in a Flamingo Bay pond, which is now a trash dump.

"It was common practice in those days to dump (bombs) in the nearest hole in the ground," Perro said.

In fact, 25 years ago, several bombs — at least one of them live, according to Navy records — were found at the same site.

In the late 1940s, an undetermined number of chemical bombs was shipped to St. Thomas for testing as part of the Army's San Jose Project.

Under the project, the Virgin Islands was a testing ground for chemical explosives to determine the effectiveness of chemical munitions and defenses in jungle terrain and the effects on chemical munitions of storage in tropical climates, the corps report said.

See WATER ISLAND, page 2

ice negotiates plea bargain

d charges of document fraud and mak-g false statements to the government re dropped.

The three charges had been linked for s trial that was to start Wednesday ernoon.

The tentative agreement also stipulates at an investigation into the 1986 death Davis Rice's fourth husband, Jim Rice, not affected.

"This agreement in no way confers immunity (on Davis Rice) with respect to the outcome of that investigation," David Nissman, chief assistant U.S. Attorney for St. Croix, said in an Aug. 12 letter outlining the plea agreement to Thurston McKelvin, the federal public defender representing Davis Rice.

Nissman and McKelvin told visiting U.S. District Judge Anne E.Thompson

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WATER ISLAND: Army may have left poison gas

(Continued from page 1)

U.S. Army records indicate that in 1947 two barges containing unknown quantities and types of munitions were brought to Water Island from San Jose Island in Panama. In September 1949, records indicate "one boxcar" of classified toxic chemical munitions was transferred from Maryland to the San Jose Project in St. Thomas.

Records of shipment of the munitions out of St. Thomas at the end of the project are sketchy. One shipment of materials took place in May 1950 aboard the USNT Col. William J. O'Brien. The quantities and types of munitions shipped are not recorded.

The bombs for which there are no disposal records include an undetermined number of 125-pound chemical bombs containing blister or mustard gas shipped to Water Island by barge on May 21, 1948; 34 500-pound and seven 1,000-pound and an undetermined number of 115-pound bombs, containing choking gas, or cyanogen chloride, also tested on Water Island.

Since April, the Huntsville, Ala.-based Corps of Engineers has been trying to find out what happened to those bombs.

Perro said the discovery of an undetermined number of bombs in 1966 at Flamingo Pond coupled with the fact that it was a convenient hole in the ground is the reason for the corps' determination of imminent danger there.

The area is referred to as the Flamingo Bay warehouse and trash dump in the corps' report on its investigation.

Perro said corps officials researched territorial police records, Federal Bureau of Investigation records and years of newspaper files looking for reports of any bombs being uncovered in the Virgin Islands. Perro said no other reports of a chemical-weapons find was discovered.

The lack of any report of finding bombs over the years at any other Water Island location is the primary reason for determining that those sites are safe, Perro said.

After extensive study of local and federal archives and visits to the three testing sites — Water Island, Sub Base and the West End of St. Thomas, the director of the investigation gave his report Wednesday:

The corps report classified the Flamingo Bay site, south of the metal warehouse, as a "substantial and immediate hazard" and further stated that "there is a reasonable possibility that severe hazards do exist on Water Island."

However, Perro said, fencing the area would lessen the hazard.

The site will eventually be excavated, Perro said.

The corps' investigation is part of the Defense Environmental Restoration Program begun in 1986 at 7,100 sites across the United States where weapons testing is known to have been conducted. Of those 7,100 sites, about 1,100 have been classified as potentially dangerous.

Perro refused to speculate on how dangerous the bombs would be if any are still on Water Island and if they were detonated.

He said the corps assumes a "worst-case scenario" —that all bombs are "live" — in relation to any munitions debris, but added the bombs would have to be "disturbed," lifted, dropped or dug up, for example.

He advised if anyone comes across anything that looks like a bomb to "back away immediately" and notify the police.

Reports of how many bombs were found at Flamingo Bay in 1966 and what was done with them are conflicting, Perro said.

Navy records say "several" bombs were found, all but one had been vented (was empty of chemical explosives), and that one was blown up without "noticeable release of any chemical."

Eyewitnesses, on the other hand, have described finding two bombs, 18 to 24 inches in diameter, and about 5 feet long, including fins, the corps report says.

The eyewitnesses said Navy personnel did not detonate the bombs on site but took the two bombs with them and advised that no further excavation would be performed at the site, the report says.

Perro said his investigation of Water Island is unrelated to the expiration of the lease in 1992 between the federal government and a private master leaseholder.

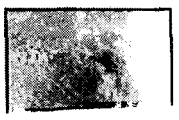
V.I. Delegate to Congress Ron de Lugo has a bill in the U.S. House of Representatives seeking to transfer the 500-acre Water Island to the Virgin Islands when that lease expires.

DAVIS RICE: Cops a plea

(Continued from page 1)

that the tentative ...

Astarte Davis Rice's plea bargain AT A GLANCE



MORATORIUM: Hearing series

VI Daily News
Friday Sept 13/96

Water Island transfers will begin

Daily News Staff

The federal government and the V.I. government have reached an agreement to ease transfer of Water Island to the territory, Interior Secretary Bruce Babbitt announced Thursday.

In a ceremony at the Interior Department in Washington, D.C., Babbitt and Gov. Roy L. Schneider signed an agreement that will transfer ownership to the V.I. government of certain parcels of the small island in St. Thomas Harbor.

"After several years of delay, this agreement begins the process for the transfer of Water Island," Babbitt said.

Phase I of the agreement will transfer about 50 acres, designated as the hotel site, and associated properties, including a catchment basin, deep-water dock, public ferry dock, a beach and public roads.

The final two phases of the agreement, yet to be completed, will settle up land deals made with residents and businesses on the island.

Under the agreement announced Thursday, Interior will fund up to $3.3 million for demolition and cleanup of the hotel facilities, removal of hazardous materials and repair of the deep-water dock damaged during Hurricane Hugo.

The V.I. government will repair the ferry dock, remove storm debris and the remains from the demolition and cleanup of the hotel.

Virgin Islands

Jacksonville District
Project Management
Fort Segarra's Files
R. Bridges Office

page 1 of 1

JA4,12

JAX-040901-012

I OBTAINED THIS ARTICLE ON RECENT TRIP TO VI. RCB

R. Ducke
R. Bandow
COL SMCT
Thanks
&
→ DP

The Daily News, Wednesday, April 15, 1992

The Daily News of the Virgin Islands

Founded Aug. 1, 1930, by J. Antonio Jarvis and Ariel Melchior Sr.

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RONALD E. DILLMAN
General Manager & CEO

PENNY FEUERZEIG
Executive Editor

Water Island boost

Negotiations for the integration of Water Island with the local government has taken a more positive turn with the cooperative efforts of chairmen of the congressional committees who will handle the matter.

V.I. Delegate to Congress Ron de Lugo and Sen. J. Bennett Johnston have urged Secretary of Interior Manuel Lujan Jr. to negotiate agreements for the sale of lots to the existing tenants on the approximately 500-acre island and to submit recommendations to them by the end of this year.

The island, in 1952, was leased by the Interior Department to a private firm for the purpose of developing tourism. But instead, the lease, which has been criticized as poorly drawn and administered, has been a source of controversy for some time. And within the last decade, negotiations have been taking place to remove federal ownership from the island.

Johnston, the Senate Energy and Natural Resources Committee chairman, and de Lugo, the House Subcommittee on Insular and International Affairs chairman, have been at odds on how best to resolve the situation. In the meantime, renewal of the lease between Interior and the current leaseholder is due in December.

Even though the master leaseholder has expressed a lack of interest in renewing the lease, scores of sub-lessees who owned their homes but leased the land on which they were built would be affected by the final determination of the future of the island.

Also there were financial considerations built into the original lease that have been a matter of contention between the local and the federal governments as to whom would stand the burden. Consequently, Johnston introduced a bill which would have placed the island on the auction block with the federal government as sole arbiter. At the same time de Lugo sought to have the local government be a part of any negotiations affecting the ultimate transfer of the island to the territorial government.

Neither bill received full congressional approval. And maybe that was for the better since conflicting legislation would exacerbate a situation that already had been creating unnecessary ill-will among residents.

The leeway given to Lujan by both lawmakers to develop procedural matters in consultation with the governor may be just what is needed to effect a smooth transfer of the island.

Hopefully, it is the first step in obtaining a mutually agreeable document that will be fair and equitable to all parties concerned, especially residents of the territory.

Jacksonville District
Project Mgmt Office
Fort Segana files
R. Budgen's Office

Jay 13

Jax-040901-013

Former
FORT SEGARRA

PROJECT MANAGEMENT PLAN

FINAL

VERSION 2.0

8 DECEMBER 1993



JACKSONVILLE DISTRICT

U. S. ARMY CORPS OF ENGINEERS

Jax-040901-014

Jax14

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
for
FORMERLY USED DEFENSE SITES

Ordnance and Explosive Waste (OEW) Program

Former Ft. Segarra Project
Water Island, St. Thomas, US Virgin Islands
Project No. I02VI097701

SUBMITTED: Robert C. Bridgers
Project Manager
CESAJ-DP-I

REVIEWED: CESAJ-DS
CESAJ-DP
CESAJ-PD
CESAJ-EN
CESAJ-CO
CESAJ-SO
CESAJ-OC
CESAJ-RE
CESAJ-CT
CESAD
USACE

APPROVED: Deputy District Engineer, Project Manager

Concur:

U.S. Army Corps of Engineers, South Atlantic Division

U.S. Army Corps of Engineers, Huntsville Division

U.S. Army Chemical Materiel Destruction Agency

U.S. Army Technical Escort Unit

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SECTION I - INTRODUCTION

1. Purpose This Project Management Plan (PMP) was developed for the Ordnance and Explosive Waste (OEW) project at the Former Fort Segarra (FFS) site on Water Island, St. Thomas, U.S. Virgin Islands. This PMP will address the Site Investigation (SI), Remedial Investigation/Feasibility Study (RI/FS), Remedial Design (RD), and Remedial Action (RA) (OEW Removal) phases of the approved project. The PMP will identify the responsibilities of the Jacksonville District (CESAJ), Huntsville Division (CEHND), U.S. Army Technical Escort Unit (TEU), and the U.S. Army Chemical Material Destruction Agency (USACMDA). The USACMDA Program Manager for Non-Stockpile Chemical Materiel was assigned the Fort Segarra project, with TEU in execution support, as the result of the Chemical Warfare Materiel (CWM) considerations at the project site.

On 26 August 1992 the South Atlantic Division Commander assigned the Former Fort Segarra - Formerly Used Defense (FUD) site to the Jacksonville District. The District Engineer assigned the project to the Deputy District Engineer for Project Management. The Project Management Branch is responsible to manage the project in accordance with the Life Cycle Project Management principles and regulations.

The Jacksonville District Project Manager (CESAJ-DP-I) will organize and oversee the activities of the elements involved from the Jacksonville District. He will also coordinate with CEHND, USACMDA, and TEU on their activities to ensure all efforts are directed at accomplishing the site investigation and any remediation required in an expedient manner. The project manager will serve as the primary point of contact with local officials and for interagency coordination.

The PMP is not intended to be all inclusive nor to anticipate or include all possible changes to the project during its continuing development. Rather, it is a dynamic document that will require change and updating as the project progresses through to its completion.

The Jacksonville District is preparing a revised Inventory Project Report (INPR) addressing Hazardous and Toxic Waste (HTW) issues for the FFS site. The PMP may be revised to include project activities in support of any HTW project that may develop.

2. Project Authorization Authorization of this project is contained in the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS). As the result of the DERP-FUDS legislation, USACE was tasked with the management of the environmental cleanup of all FUDS locations, to include overall program responsibility for Hazardous and Toxic Waste (HTW) management. Within the USACE, the Huntsville Division (CEHND) is tasked to support the responsible USACE Geographical District at all

sites where ordnance and explosive waste are involved. This also includes sites where chemical warfare material (CWM) was utilized. Specialized HTW Districts are given the responsibility of conventional hazardous waste cleanup for these sites.

Under the DERP program the FFS has been identified as a site requiring OEW investigation and clean-up support. Huntsville Division (CEHND) was assigned the Mandatory Center of Expertise (MCX) and Design Center for Explosive Ordnance (EXO) on 5 Apr 90. EXO has now been labeled as Ordnance and Explosive Waste (OEW). All work at the FFS will be performed in accordance with the Management Plan for Ordnance and Explosive Waste (OEW) Mandatory Center of Expertise and Design Center (CEHND 1105-3-9) and the Life Cycle Project Management (LCPM) regulations for DERP-FUDS contained in ER-5 dated 30 September 1992.

The Department of Defense (DOD), in a letter signed by the Deputy Secretary of Defense on 13 March 1991, designated the Secretary of the Army as the Defense Executive Agent for the destruction of all DOD chemical warfare-related material. Within the Department of the Army (DA), the Assistant Secretary of the Army (Installation, Logistics and Environment) (ASA (I,L&E)) is responsible for chemical material destruction.

The USACMDA was established to carry out that mission for the ASA (I,L&E). Within USACMDA, the Program Manager for Non-Stockpile Chemical Material (PM-NSCM) is responsible for identifying recovered chemical munitions, assessing sites with possible buried chemical weapons; coordinating the transportation of recovered weapons to sites where they can be destroyed; and destruction of all non-stockpile materials contaminated with chemical agents. Currently, non-stockpile materials include chemical agent contaminated containers, chemical warfare production plants, chemical warfare wastes from past disposal operations, buried and range recovered munitions, reclamation and destruction of chemically contaminated structures and associated equipment. Currently this PMP, only addresses buried/recovered munitions and CWM wastes from past disposal operations at the FFS site. The PMP for the FFS project will be revised as necessary to incorporate the findings of the updated INPR which will address the HTW considerations resulting from the DOD activity at the FFS.

Within the U.S. Army Chemical Biological Defense Command (CBDCOM), the Technical Escort Unit (TEU) is responsible for emergency destruction of chemical ammunition, and support for transportation of chemical warfare material, as required by USACMDA.

3. Project Background In June 1950, the U.S. Army initiated a program to dispose of (excess) U.S. Government property no longer being used for defense related purposes by the Department of Defense. Recipient of the FFS site and the property at Water Island was the U.S. Department of Interior (DOI).

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), originally enacted in 1980, was amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and mandated that property containing hazardous and toxic wastes or ordnance was the responsibility of the entity contributing to the contamination. Even though DOD no longer has title to the property, CERCLA and SARA define the US Government as a potential responsible party, provided that the U.S. Army was determined to be at least partially the source of the contamination.

The following is a brief Site History and Description:

a. The FFS is located on Water Island which is located in the St. Thomas Bay, between the East and West Gregerie Channels, south of the city Charlotte Amalie, St. Thomas, US Virgin Islands (see Appendix A). The FFS site has historically been stated as being approximately 500 acres which was acquired from the East Asiatic Company/West Indies Company through condemnation in June 1944. Water Island was acquired for a coastal defense installation known as Fort Segarra. The Department of the Army (DA) was constructing the coastal defense installation when World War II ended and construction was halted.

b. The Army's Chemical Corps moved its San Jose Project (tropical test site) from Panama to the Virgin Islands in 1948. Between 1948 and 1949, the Chemical Corps upgraded the previously constructed facilities. A review of lists of approved test plans shows that early tests on Water Island focused primarily on blister (mustard) and choking (chlorine, phosgene, and cyanogen chloride) agents, and that later tests were planned to shift to captured German munitions and nerve agents. In 1949, the TEU brought unidentified chemical munitions to the Virgin Islands. By late 1949, the Chemical Corps was dissatisfied with the Virgin Islands location and decided to shift operations to Dugway Proving Ground, UT even though chemical testing was ongoing. In 1950, the Virgin Islands project was terminated and chemical munitions removed by TEU. The items removed were E46 chemical bombs (modified 115 lb. M70 bombs filled with nerve agent GA) and E52 bombs (modified T3E1 125 lb. bombs filled with GA).

c. The following sites are known or thought to have been used for ordnance and chemical weapons testing activities: (Note: Records and personnel interviews with individuals involved in the testing indicate testing occurred only at Area 4,5,6, and 8).

(1) Test Area 1. This area is located on the northwest shore of Water Island on Ruyter Bay, just north of Carolina Point. The area is currently occupied by a home and small parking garage. Two ammunition bunkers are located nearby.

(2) Test Area 2. This area is located on the north side of Providence Point adjacent to Phillips Landing. The Test Area was dredged out several years ago in preparation for a small harbor, but was subsequently filled in again.

(3) Test Area 3. This area is located at the point of Druif Bay, and is just east of the Water Island Hotel beach area. It has been reported that this area was excavated for fill in 1981 and subsequently refilled with soil from another location on the island.

(4) Test Area 4. This area is located to the south and southwest of the Flamingo Bay Harbor. The site straddles the road from the deep-water dock. The area north of the road is relatively clear of debris. However, the area south of the road is the island junk yard with about 50 abandoned vehicles.

(5) Test Area 5. This area is located south and southeast of the Flamingo Bay Harbor and is south of the road from the deep-water dock. This area was used to accumulate and burn debris from Hurricane Hugo in 1989. There is a substantial amount of metallic debris on the ground.

(6) Test Area 6. This area is located on the eastern shore of the southern part of the island, due east of Flamingo Bay. This site has been extensively developed along the ridge line, and the lower parts of the site are along a rocky shore.

(7) Test Area 7. This area is located on the north part of the island and extends from the point of Sprat Bay northeast to East Gregerie Channel. The northern part of the Test Area is covered with a pond of red-colored water.

(8) Test Area 8. This area is now covered by the Water Island Hotel. The hotel has not been repaired or occupied since its destruction by Hurricane Hugo.

(9) Flamingo Bay Landfill and Warehouse Area. A metal warehouse was constructed by the Water Island Hotel near the deep-water dock for storage of vehicles and

materials. The warehouse was constructed on an area filled in for this purpose. The area south of the warehouse was the site where chemical bombs were discovered in 1966. The bombs were discovered while a dragline was removing unsuitable "Elephant Muck" material. After this discovery, the site was filled in and covered with borrowed soil to a depth of about three feet. Debris, abandoned vehicles, and scrap now cover the site.

(10) In addition to the Test Areas and the landfill site, salt water tidal pools around Water Island are a primary potential target for dumping of OEW and chemical agent filled ordnance.

d. The Army turned over Water Island to the Department of the Interior (DOI) by an indefinite revocable permit. The DOI assigned the permit to the St. Thomas Development Authority (STDA) in 1951. The STDA then leased Water Island to Water Island, Inc., a local development corporation. On 11 Jul 1952, Public Law 511 (82nd Congress) authorized the transfer of Water Island from the DA to the DOI. On 10 Dec 1952, the DOI executed a new lease to the Water Island, Inc., which proceeded to develop the Island into a resort with many subleases. This lease expired on 31 December 1992. The Island is currently the site of a large tourist resort hotel (destroyed by Hurricane Hugo in 1989) and is also inhabited by about 300 people during the winter season. Many cruise ships call in St. Thomas with many docking near Water Island.

e. In 1966, during the construction of the Flamingo Bay warehouse, a crew employed by the lessee, Water Island, Inc., uncovered several large objects that resembled bombs. An Explosive Ordnance Disposal (EOD) team from Roosevelt Roads Naval Base (Ceiba, Puerto Rico) identified the objects as M-70/M-78 series chemical ordnance bombs. The EOD team indicated that this site had been used by the Army as a chemical ordnance disposal area. The EOD team vented the bombs and warned the construction crew not to excavate in this area again. The lessee notified the DOI of the problem but no further investigations have been performed. No known injuries or other problems have occurred at this site. The site is on the southwest part of the Island near Flamingo Bay along the seashore and is known locally as the Flamingo Bay Landfill. It is an unstable area subject to storms and high tides.

4. Status Update.

a. In October 1985, the DOI sent a memo to Mr. Lewis D. Walker (DA Deputy Assistant Secretary for Environment, Safety and Occupational Health) requesting that the Army determine if Water Island was ever used for chemical warfare testing or similar activities. No correspondence can be found of Mr. Walker's reply, but subsequent to this

DOI memo, Fort Segarra was added to the FUDS Inventory for a future Preliminary Assessment (PA).

b. In the spring of 1989, Congressional Delegate Ron de Lugo of the Virgin Islands and Chairman of the House Interior Subcommittee on Insular and International Affairs, introduced legislation (HR 1345) which would authorize the Secretary of the Interior to transfer title of Water Island to the Government of the Virgin Islands. Status of this legislation is unknown in December 1993.

c. In the summer of 1989, Jacksonville District (CESAJ) commenced work on the Fort Segarra Inventory Project Report (INPR). The final INPR was completed in June 1990, and forwarded by CEHND to HQUSACE for approval. On 20 Aug 1990, HQUSACE approved the INPR and authorized CEHND to proceed (subject to availability of funds) with the investigations and any removal actions required. On 24 Oct 90, CESAJ informed DOI of the approval of the INPR and the fact that the Corps would be commencing cleanup operations in the near future.

d. CEHND personnel met with TEU and Department of the Army (DA) on 19-20 Dec 90, concerning their need for TEU assistance at Fort Segarra. LTC Doc Bishop, Director of the CWM Program at the DA, indicated that the TEU was unable, at that time, to provide transport and storage services for any CWM recovered at FFS. (TEU has now indicated it will provide support). Recently within DA and the Army Materiel Command (AMC), the policy seems to have shifted to calling recovered CWM a hazardous and toxic waste (HTW) under EPA regulations. This policy shift creates many complex problems:

(1) Since CWM is a hazardous waste, it must be transported by a licensed HTW transporter. This transporter must also have an EPA ID number. TEU is not licensed to transport hazardous waste. Further difficulties arise from the fact that commercial carriers cannot transport CWM.

(2) There are only seven installations in the Continental United States (CONUS) that are authorized to store CWM. However, the commanders of these seven installations are unable to accept any CWM manifested as HTW as this would violate Part B of their installation RCRA permits concerning the storage of HTW.

(3) The DOD would be the lead agency for the control of the CWM but all actions would be subject to EPA, State, and local regulations.

(4) The above seven installations have nearly reached their physical capacity to store recovered CWM even though AR-50-6 says they must accept the CWM. These installations will remain at or near capacity until such time as the Chemical Demilitarization Program reduces the CONUS military stockpile.

(5) Finally, Johnston Island (JI) can no longer accept CWM for storage and demilitarization from any areas of the world other than the Pacific Basin. This is a result of

the "Venatu Agreement" where President Bush agreed with the Government of the Solomon Islands not to accept at JI any CWM found outside the Pacific Basin.

e. On 9 Jan, 1991, CEHND formally requested in writing, Commander Army Materiel Command (AMC) and TEU support to cleanup at FFS. AMC was provided all of the pertinent background information and the reasons for the urgency.

f. CEHND and CESAJ briefed Governor of the U.S. Virgin Islands, Alexander Farrelly, on 21 Mar 91, concerning the status of the FFS (Water Island) project and the U.S. Government's plans for eventual remediation of the site, as necessary. An overview of the CEHND Ordnance and Explosive Waste (OEW) Program was also presented. Governor Farrelly requested that a search of military records be performed on all Formerly Used Defense Sites in the U.S. Virgin Islands.

g. On 12 April 1991, CEHND, contracted with Ebasco, Inc. to perform an Archives Search of Fort Segarra and all other FUDS located within the U.S. Virgin Islands. The Archives Search Report was completed on 3 Jul 91. The history of Fort Segarra and the nature of the testing conducted there are contained in the Archives Search Report. The report provided a Risk Assessment Code (RAC) of 1 for the Flamingo Bay landfill area. Based on the RAC 1 scoring, CEHND determined that an Interim Remedial Action project to install a fence around the Flamingo Bay landfill site was necessary.

h. On 18 Jul 91, CEHND and HQUSACE, briefed Congressional Delegate Ron de Lugo on the status of the Water Island project. The findings of the recently completed Archives Search of the FFS and other FUDS in the U,S. Virgin Islands were discussed. The primary concern emphasized by CEHND was the RAC 1 (Flamingo Bay Landfill) site on Water Island.

i. On 14 Aug 91, the Governor was briefed by CEHND and CESAJ on the results of the Archives Search. A press release was issued to the public advising of the issuance of the Archives Report. Later that day representatives from CEHND and CESAJ held a public meeting on Water Island and briefed the residents on the report. They were also informed of the plans to fence the Flamingo Bay Landfill area and to complete topographic surveying of Water Island.

j. A contract to fence the Flamingo Bay landfill site and to perform topographic surveying was awarded Ebasco, Inc., on 14 Aug 91. Installation of the fence was completed on 4 Oct 91, and topographic surveys were completed on 14 Nov 91. The Flamingo Bay Landfill site and test areas 2, 4, 5, 6, and 7 were mapped at a scale of one inch equals 30

feet (1"=30'). In addition, the entire Water Island was planimetrically mapped at a scale of one inch equals 200 feet (1"=200').

k. Another contract was awarded to Ebasco, Inc. on 27 Sep 91, to prepare concept ordnance remediation work plans. The final concept work plans were completed on 16 Mar 92. These plans will be provided to the remediation contractor for incorporation into the final plans for the FFS project.

l. The Governor's Press Secretary, Mr. James O'Bryan, was briefed by CEHND and CESAJ on 4 Dec 91 regarding the status of Water Island project. On the same day a meeting was held with the residents of Water Island. For the benefit of the island residents that were not at the 14 Aug 91 meeting, the Archives Search Report was discussed. The status of CEHND remediation contracting action was also discussed. The residents were given an opportunity to obtain copies of the recently completed topographic and planimetric maps.

m. On 3 Feb 92, CEHND briefed the CESAJ Commander, COL Salt, on the history and status of the Water Island project.

n. On 1 June 1992 a memorandum from General D. Reimer, Vice Chief of Staff of the Army, to the Chief of Engineers and others, declared the Fort Segarra and the Raritan Arsenal projects as CWM pilot projects with high priority in the DA.

o. In June 1992, CESAJ, CEHND and MTA, Inc. visited Water Island for the contractor's pre-proposal site visit. Brief meetings were held with Mr. James O'Bryan, Mr. Bob Bunn, DOI territorial representative, and several local officials.

p. In August 1992, the new Non-Stockpile Program Manager from USACMDA visited all former CWM test areas on Water Island. Again brief meetings were held with the Governor's staff (Mr. O'Bryan), DOI representative, and DPNR. Staff personnel from CEHND, USACMDA, CESAJ, CESAD, and HQUSACE accompanied the new Non - Stockpile Program Manager.

q. On 26 August 1992 Project Management for the FFS project was assigned to CESAJ by the Commander, CESAD.

r. In September and October 1992, the National Park Service conducted cultural resources field investigations on Water Island. Twelve historic and archeological sites were identified during this extensive study. Some of the 12 identified sites are located in or near

areas that may be investigated for the presence of chemical warfare material (CWM) as part of this project.

s. On 30 October 1992, the first FFS project coordination meeting was held at the Jacksonville District office. Representatives from CEHND, USACMDA, CESAD and CESAJ briefed Col Salt on status of project and roles and responsibilities of each organization.

t. A follow-up project scoping meeting was held in Atlanta, GA on 11-12 Nov 92. Representatives from CEHND, USACMDA, and TEU provided a forum for the CESAJ Project Manager to initiate the development of the PMP.

u. On 14-15 January 1993, a meeting was held in Huntsville, AL with all parties to discuss comments on the DRAFT plans for non-intrusive site characterization activities by the CEHND contractor, MTA, Inc..

v. April 1993, USACMDA Report to Congress includes the FFS location as a site containing potential CWM. This information is briefed to the Governor, USVI by the Deputy District Commander for the Antilles, LTC Benton.

w. 10 August 1993, project coordination meeting held in Jacksonville, FL. Purpose of meeting was to identify actions necessary to initiate intrusive activities in Sep 94 as directed by AEC, BG Brown.

x. 9 September 1993. Workplan revised and distributed by CEHND to USACE, CMDA, and TEU. Plan identifies non-intrusive site characterization activities to be conducted in early 1994.

5. Project Description The proposed project activities will concentrate on the areas where chemical warfare material (CWM) testing exercises are suspected to have been conducted in the late 1940's and early 1950's. These areas have been identified through initial archives searches. Other areas suspected of containing conventional OEW will also be investigated. Interim Removal Actions for OEW have been initiated to address areas which present an imminent and substantial danger to the public. The CEHND approach to the OEW problem is based on removing the imminent and substantial danger to the public. An Interim Removal (Remedial) Action (IRA) was performed at the Flamingo Bay landfill site by fencing the one acre (approx.) area. This action was initiated at this area since it was given a Risk Assessment Code (RAC) 1, based on the finding of ordnance during the 1966 construction in the area.

6. Project Management The Commander, South Atlantic Division (CESAD) has tasked the Jacksonville District (CESAJ) with the responsibility of Project Management for the project. In this regard, CESAJ will correlate the requirements of all responsible organizations and develop the FFS Project Management Plan (PMP). A comprehensive network of all program activities to be performed by CEHND, USACMDA, CESAJ, TEU, and others has been developed by CESAJ and is included as an Appendix C to the PMP. Primary responsibility for matters relating to Public Affairs will be CESAJ. In addition, the CESAJ Antilles Office in San Juan, Puerto Rico will be the primary point of contact for any matters involving the coordination and input of the local and federal governmental agencies in St. Thomas, U.S. Virgin Islands (USVI).

The Corps of Engineers will act as the lead agency for the project initiating such actions as necessary in coordination with the supporting agencies to carry the project through remedial action (RA) (removal). As such, the Corps of Engineers is primarily responsible for the completion of the (RI/FS), the preparation of design documents, and the advertisement, award, and supervision and administration of the RA contracts for all items except those designated as the responsibility of supporting agency. The responsible Authorized Contracting Officer (ACO) and their contractor will be responsible for obtaining all permits required for any phase of the project. The supporting agencies may negotiate with the Corps of Engineers and provide funding for any actions required as a part of other contractual arrangements. These items of work will be within the terms and conditions of the Memorandum of Understanding between USACMDA, USACE, and USACBDCOM.

7. Individual Project Manager Within the Corps of Engineers, project planning, engineering, design, and implementation is being managed under the Life Cycle Project Management concept. An Individual Project Manager (IPM) oversees the project through completion of Remedial Action (Removal). The IPM's role in the project implementation is to:

a. Develop project schedules, budget, and funding requests based on inputs from other Corps of Engineers elements and the supporting agencies.

b. Serve as primary point of contact between the supporting agencies and the Corps of Engineers.

c. Ensure that project development continues on schedule within available funding.

d. Ensure that changes or refinements to the proposed plan or schedules are fully coordinated with higher headquarters within the Corps of Engineers and with the supporting agencies.

e. Ensure that various project products meet the specified objectives and needs of both the Corps of Engineers and the supporting agencies.

f. Ensure that project funding for subsequent stages is requested and programmed in accordance with the overall project schedule.

g. Report to the Deputy District Engineer for Project Management (DDE(PM)), the District's Project Review Board, and the supporting agencies on the status of the project.

h. Make adjustments as necessary to this document to keep it current and reflective of the project as it progresses through the various stages.

SECTION II - SCOPE OF WORK

8. Scope of Work

a. The current strategy will include the non-intrusive site characterization activities at selected areas where CWM testing is suspected to have been conducted. This non-intrusive work will include a combination of the following types of activities:

(1) shallow soil samples
(2) magnetometer surveys
(3) ground penetrating radar surveys
(4) vegetation surveys
(5) shallow groundwater samples

b. The removal/relocation of significant non-Department of Defense (DOD) debris will be required prior to conducting the site characterization activities. Since much of the debris is abandoned motor vehicles it will be necessary to address hazardous and toxic waste (HTW) issues.

c. Complete details of these plans will be provided by the CEHND contractor, MTA, Inc., in Draft and Final form prior to start of any on-site activity. After the plans are approved by CEHND, CESAJ, USACMDA, and TEU, they will be fully coordinated with all interested Federal and local agencies as well as the general public.

d. Full compliance with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA), as amended, will be completed prior to start of any non-intrusive or intrusive activity on a particular site. All field investigations, including, but not limited to soil samples (shallow or deep), water samples (shallow or deep), and clearing of vegetation, will be fully evaluated by CESAJ and CEHND to determine the impacts of the proposed actions on the environmental or cultural resources of any particular area to be investigated. This information will then be coordinated by CESAJ with appropriate Federal and territorial agencies.

e. The results of this non-intrusive activity will determine the need for additional site characterization studies to include more intrusive work to verify subsurface anomalies that could be CWM or OEW. No intrusive activity will be allowed until all required plans have been reviewed by the appropriate Federal, territorial agencies and authorities.

f. Environmental Mitigation: The proposed actions during the site characterization phases should not require any mitigation plan. However, future remediation plans, if necessary, will be closely evaluated and will provide for environmental mitigation where necessary.

g. Cultural Resource Work: Given the potential for adverse effects to the significant cultural resources on Water Island, a cultural resources mitigation plan will be required for site investigations in areas that have been identified as containing significant cultural or archeological resources. Each area to be investigated for CWM will be evaluated regarding the identification of cultural resources and the need for a mitigation plan will be determined before starting any non-intrusive (or intrusive) site characterization activities or required remedial actions.

h. The following work plans will require approval by CEHND and CESAJ prior to start of any work by the CEHND contractor, MTA, Inc.:

(1) Site Specific Work Plan (SSWP)
(2) Site Safety Health Plan (SSHP)
(3) Quality Control (QC) Plan
(4) Chemical Data Acquisition Plan (CDAP)
(5) Sampling, Analyzing, and Relocating of Non-DOD Debris Plan
(6) Property Management Plan
(7) Defense Reutilization Marketing Office (DRMO) Turn-in Plan
(8) Hurricane Preparedness, Standard Operating Procedure (SOP) #4
(9) Emergency Response Plan

i. USACMDA, TEU, and the Center for Disease Control (CDC), National Environmental Health Center (NEHC), will monitor the development of the work plans and provide recommendations to CEHND regarding the approval of such plans.

j. CESAJ will assume the lead in developing the environmental documentation and agency coordination necessary to meet NEPA and cultural resources requirements. Depending on the findings of the site characterization activities, additional environmental coordination and documentation may be required if any OEW or CWM material is located.

k. USACE, on behalf of DOD, shall be designated as the generator, and shall be responsible for the manifesting of the CWM. USACMDA shall be responsible for the storage, transportation, and/or treatment/disposal of any CWM material recovered.

9. REAL ESTATE REQUIREMENTS

No permanent real estate interest will be required. On 3 Jan 91, CEHND received from CESAJ the Rights-of-Entry (ROE) to enter DOI and lessee property to perform site investigation and clean-up work. The ROE has been renewed and the expiration date extended again until February 1996 in order to complete the investigations and required remedial actions where necessary. The Interim Holding Facility as well as any treatment/disposal may necessitate the leasing or rental of property in order to establish these facilities.

10. PROJECT IMPLEMENTATION

The environmental restoration process is normally a four step process. The first step is a research into past operations. This is accomplished through a Preliminary Assessment (PA) which involves a records search and inspection to identify areas/sites of potential CWM contamination. The second step in the process is a RI/FS leading to the documentation of decisions reached during these investigations/studies. This step involves a field investigation to determine the extent and nature of contamination and an evaluation of remedial alternatives leading to the selection of an alternative in the Record of Decision (ROD). The third step in this process consists of RD and RA. These activities address the remediation of the CWM areas. They can include removing CWM from the site for treatment or disposal; containing the CWM on site; or treating the CWM on site. Remedial actions are the final cleanup actions taken after the documented decision is issued. The final phase is the site closeout phase. During this phase which may be accomplished after any of the other three phases if appropriate, the decision is documented, Federal, State and local authorities are informed of the decision, and public notice of the closeout is accomplished.

11. ASSUMPTIONS

a. Prior to any restoration activity being conducted at an actual or suspected CWM location, preliminary assessments and remedial investigations of the suspected site are required to determine the nature of contamination. The remedial investigations along with the associated survey and sampling work and documentation is the responsibility of the USACE. The characterization efforts will provide information for the development of the overall plan for the remediation of the site.

b. The activities associated with the physical removal of CWM from the site, or temporarily storing the CWM on site, are referred to as site operations/remedial activities. The TEU and USACE are responsible for the excavation/removal of the CWM from the excavation site and placing the CWM into specialized containers procured by USACMDA. If the CWM is to be kept in a temporary holding facility, TEU and USACE will transport the items to the interim holding facility and turn them over to USACMDA who, in conjunction with CESAJ, will maintain and provide security for the interim holding facility site. If the decision is made to destroy the CWM on-site USACMDA will be responsible for all destruction activities.

c. If the excavated CWM cannot or should not be treated on-site, transportation of the material to a selected location will become necessary. Prior to transportation, the proper NEPA documentation must be prepared and completed, with a record of decision that identifies transportation as the selected option. Additionally, as recovered CWM are to be treated as hazardous waste, environmental documentation must be received for transportation, storage and destruction of the CWM. USACMDA, with the support of TEU, is responsible for all aspects of the off-site transportation of CWM. USACE will obtain the necessary environmental documentation for transporting the CWM as hazardous waste including manifesting on behalf of DOD. All transportation activities will be completed in accordance with Public Laws 99-121 and 91-441.

d. USACMDA and CBDCOM/TEU are involved at FFS because there is known or suspected CWM.

e. At FFS, CESAJ has responsibility for overall management of CWM contaminated site remediation. CESAJ and CEHND are accountable to ensure security, emergency response, chemical and explosive safety, environmental compliance, medical support, chemical surety, quality assurance, public affairs, and other activities necessary for the safe and efficient destruction of CWM are effectively coordinated and properly executed. The USACE shall attempt to secure some of these services through agreements with local agencies. However, as the USACE does not have staff to provide all of the necessary

technical support, USACMDA and CBDCOM/TEU will provide specialized CWM related technical support, as required.

f. USACE and USACMDA, through their respective site contractors, will establish a comprehensive Occupational Health Program (OHP) in compliance with applicable Occupational Safety and Health Administration (OSHA) and DA standards to prevent, diagnose, and treat occupational illnesses and injuries sustained in the performance of official duties. The contractor will incorporate all personnel directly supervising, supporting, or conducting NSCM operations into the OHP.

g. Contingency Army Medical Department response capability for chemical accidents or incidents will be provided on a resource available basis. The scope and extent of such back-up medical support will be established in a Memorandum of Agreement (MOA) between USACE, USACMDA, and the U.S. Army Health Services Command.

h. USACE and USACMDA shall assure that a formal safety and health program is developed and implemented for their respective operations involving CWM that identifies, evaluates, and controls safety and health hazards and provides for emergency response.

i. USACMDA will develop a Quality Assurance (QA) Program and establish and maintain the QA Program for operation and maintenance procedures for the treatment, temporary holding, and off-site transportation and the manifesting of CWM. USACMDA will provide QA related contract support. As applicable, USACE and CBDCOM, if in a supporting role to USACMDA will develop a Participant Quality Assurance Program Plan (PQAPP) and associated procedures, in coordination with the USACMDA QA Program Plan. PQAPP's will be submitted to USACMDA for review and acceptance prior to implementation.

j. USACMDA will ensure that all chemical treaty compliance activities are conducted in consonance with the Chemical Treaty Convention provisions.

k. USACMDA will develop and approve all plans and procedures required for the treatment, temporary holding, and transportation of CWM. Plans will include as a minimum, medical support, safety, industrial hygiene, surety, emergency response, security, and environmental compliance. Plans and procedures will be coordinated with USACE and CBDCOM, as applicable, to ensure compliance with federal, state, and local policies and regulations.

SECTION III - WORK BREAKDOWN STRUCTURE

12. General - Work Breakdown Structure The Work Breakdown Structure (WBS) is a listing of the products and sub-products required to implement the RD and Remedial Action (Removal). A copy of the WBS is included in Appendix B. The major activities to be completed prior to the start of the intrusive investigations include the development of the following: Work Plan; Site Secific Safety, Health Emergency Response Plan (SHERP); Community Response (Action) Plan; CWM Transportation Plan; CWM Interim Holding Facility Plan; TEU Operational (Support) Plan. This plans will be incorporated into the Final Safety and Work Plan and submitted to the Office of the Chief of Engineers for approval by the DA Safety Office with concurrence by the Department of Defense Explosive Safety Board (DDESB) prior to start of intrusive actions. The Technical Managers will be responsible for providing the designated sub-products on schedule and within allocated budgets.

SECTION IV

ORGANIZATION, RESPONSIBILITIES, AND AUTHORITY.

13. Organizational Breakdown Structure (OBS): The Organization Breakdown Structure (OBS) identifies the organizations within the Corps of Engineers responsible for performing work required for project implementation. Office titles and symbols of organizations that will participate in the project are listed below:

a. U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE (CESAJ)

PROJECT MANAGEMENT DIVISION

CESAJ-DP	Deputy District Engineer for Programs and Project Management
DP-A	Principal Assistant DDE(PM)
DP-I	Individual Project Manager

CONSTRUCTION DIVISION

CESAJ-CO	Construction Division
CO-C	Construction Branch
CO-CC	Contract Administration

CO-CQ	Quality Assurance Section
CO-CS	Construction Services Section

CONTRACTING DIVISION

CESAJ-CT	Chief, Contracting Division
CT-C	AE and Construction Branch

ENGINEERING DIVISION

CESAJ-EN-C COST ENGINEERING BRANCH

DESIGN BRANCH

CESAJ-EN-DC	Specifications Section
EN-DD	Drafting Section
EN-DL	Levees and Waterways Section
EN-DM	Mechanical Section
EN-DS	Structures Section

GEOTECHNICAL BRANCH

CESAJ-EN-G	Geotechnical Branch
EN-GS	Soils Section
EN-GG	Geology and Exploration Section

PLANNING DIVISION

ENVIRONMENTAL BRANCH

CESAJ-PD-EE	Environmental Quality Section
PD-ER	Environmental Coordination Section
PD-ES	Environmental Studies Section

REAL ESTATE DIVISION

CESAJ-RE-A Acquisition Branch

CESAJ-OC OFFICE OF COUNSEL

SAFETY OFFICE

CESAJ-SO-I Industrial Hygienist

JACKSONVILLE DISTRICT, ANTILLES OFFICE

CESAJ-DS Deputy District Commander for the Antilles
- DS-CO Antilles Construction Office
- DS-CO-S San Juan Resident Office
- DS-CO-V Virgin Islands Resident Office (St. Croix)
- DS-DP Programs and Project Management
- DS-PD Planning Section
- DS-RD Regulatory Section
- DS-SO Safety Office
- DS-RE Real Estate Section
- DS-PA Public Affairs

b. U.S. ARMY ENGINEER DIVISION, HUNTSVILLE (CEHND)

CEHND-DE Huntsville Division Commander
- DC Deputy Commander Programs and Technical Management
- AD-M Assistant Division Commander

CEHND-PM Directorate of Programs and Project Management
- PM-OT Ordnance & Technical Programs Division
- PM-AE A-E Contracts Division

CEHND-SO Safety and Occupational Health Office

CEHND-ED Directorate of Engineering
- ED-CS Civil-Structures Division:
  - Site Development Branch
  - Geotechnical Branch
  - Environmental Protection & Utilities Branch
- ED-SY Systems Engineering Division
  - Analysis Branch
- ED-ME Mechanical- Electrical Division
- ED-ES Cost Engineering Division
  - Cost Engineering Branch
  - Service Branch

CEHND-RM Directorate of Resource Management
- RM-B Program Budget Division
- RM-F Finance and Accounting Division

CEHND-CT	Directorate of Contracting
CT-D	Environmental Acquisition Division
CEHND-OC	Office of Counsel
CEHND-PA	Public Affairs Office

c. U.S. ARMY ENGINEER DIVISION, SOUTH ATLANTIC (CESAD)

CESAD-DE	Commander, South Atlantic Division
CESAD-PM	Directorate of Programs and Project Management
PM-H	Environmental Restoration

d. HEADQUARTERS, U.S. ARMY CORPS OF ENGINEERS (HQUSACE)

CEMP-R	Environmental Restoration Program (CEMP-R)
-RF	Formerly Used Defense Sites (FUDS) Branch

e. U.S. ARMY CHEMICAL MATERIAL DESTRUCTION AGENCY (USACMDA)

USACMDA-PM-NSCM	Program Manager Non-Stockpile Chemical Materiel

f. U.S. ARMY CHEMICAL and BIOLOGICAL DEFENSE COMMAND (CBDCOM):

TEU	U.S. Army Technical Escort Unit

g. U.S. ARMY ENVIRONMENTAL CENTER (AEC):

h. OTHER FEDERAL AGENCIES:

DOI	U.S. Department of the Interior
EPA	Environmental Protection Agency, Region II (New York, NY)
FWS	U.S. Fish and Wildlife Service
NPS	U.S. National Park Service
DHHS	Department of Health and Human Services

i. VIRGIN ISLANDS TERRITORIAL AGENCIES:

DPNR	Department of Natural Resources
VITEMA	VI Territorial Emergency Management Agency

14. Project Team The following individuals comprise the Former Fort Segarra Project Team:

JACKSONVILLE DISTRICT:	FUNCTION	OFFICE
Robert Bridgers	Project Manager	Prog & Project Mgmt
LTC Stephen Benton	Deputy District Engineer	Antilles Office
Jim McAdams	Study Manager	Planning Division
Ivan Acosta	Environmental Quality	Planning Division
Elmar Kurzbach	Environmental Studies	Planning Division
Bill Porter	Environmental Studies	Planning Division
Rona Mazer	Environmental Coordination	Planning Division
Janice Adams	Environmental Coordination	Planning Division
Elsa Jimenez	Public Affairs	Antilles Office
John Hess	Geotechnical	Engineering Division
Robert Dulaney	Geotechnical	Engineering Division
Carl Overstreet	Safety	Safety Office
Cindy Turner	Real Estate	Real Estate Division
John Brady	Counsel	Office of Counsel
Bill Hottinger	Construction	Con-Ops Division
Yamil Castillo	Field Operations	Antilles Office
John Rodriguez	Safety	Antilles Office
HUNTSVILLE DIVISION:		
Roger Fitzpatrick	Project Manager	Prog. & Project Mngt.
Bob Britton	Program Manager	Prog. & Project Mngt.
Bob Nore	Technical Manager	
Chuck Twing	Safety Specialist	Safety Office
USACMDA:		
Chuck Heyman	Program Manager	Non-Stockpile
Louise Dyson	Public Affairs	Public Affairs Office
Leslie Kline	Safety	Risk Surety Managmt Div
MAJ DeWitt	Environmental	Envir. Monoitoring Div.
CESAD:		
Sharon Ernst	Project Manager	Prog.& Project Mngt.
Janice Gelhaus	Safety	Safety Office
Gary Mauldin	Environmental	Planning Division
HQUSACE:		
Jim Coppola	Program Manager	FUDS Branch

SECTION V - RESPONSIBILITY ASSIGNMENT MATRIX

15. Project Responsibilities The purpose of this section is to describe the organizational responsibility for performance of the work activities for the project. It is the intersection of the Organizational Breakdown Structure and the Work Breakdown Structure.

a. **SPECIFIC USACE RESPONSIBILITIES.**

(1) Develop site characterization/remediation plans and submit them to both USACMDA and Chemical and Biological Defense Agency (CBDCOM) for coordination and comment/concurrence as applicable.

(2) Develop the statement of work for the site characterization contract soliciting input and concurrence from USACMDA and input from CBDCOM.

(3) Award the site characterization contract, solicit suggested sources from USACMDA.

(4) Assume responsibility for conducting public meetings, meeting with regulators, and meeting with local officials, as required. Coordinate public affairs activities with USACMDA on matters associated with CWM.

(5) Execute site characterization work at FUDS locations.

(6) Locate a satisfactory site for chemical warfare material storage structures as requested by USACMDA.

(7) Conduct archival searches for site specific information and reports on suspected CWM FUDS locations and provide reports to USACMDA and CBDCOM.

(8) Develop the risk assessment, with USACMDA support, for recovery of the CWM at the suspected FUDS locations.

(9) Provide support for the physical security at FUDS locations.

(10) After coordination and approval of USACMDA, prepare the on-site environmental monitoring plan for site investigation and recovery of CWM. This includes monitoring for agents as well as other chemicals necessary to safely execute those phases at

the site. Support USACMDA in developing the environmental requirements during the treatment phase of the operation on-site.

(11) Develop on-site laboratory requirements and provide the laboratory and necessary equipment for the recovery of the CWM at the suspected FUDS location.

(12) Prepare the Remedial Investigation/Feasibility Study soliciting input from USACMDA and CBDCOM.

(13) Develop the medical support, emergency response and safety plans to ensure compliance with the Federal, state and local requirements for recovery and site investigation phases until CWM is turned over to USACMDA.

(14) Manage the acquisition of real estate requirements of both USACMDA and CBDCOM.

(15) Excavate the site in order to remove the CWM (if selected).

(16) Package the CWM into protective containers furnished by USACMDA.

(17) Remove the CWM containers from the excavation or recovery site and turn them over to USACMDA for destruction or move them to the interim holding facility.

(18) Treat any chemical agent contaminated soil or groundwater.

(19) Restore the excavation site after removal of the contaminated material.

(20) Initiate actions necessary for the approval of a separate HTW project under the DERP-FUDS program. The new project will complete any soil or groundwater remediation necessary. Additional testing, and the completion of an RI/FS, a Record of Decision (ROD), followed by RD/RA may be necessary to accomplish the total remediation of the contaminated area.

(21) Document all activities and prepare a written close-out report and Lessons Learned document applicable to other DERP-FUDS sites.

b. USACE Support Responsibilities.

(1) Participate in pre-operational surveys.

(2) Assist USACMDA in designing/procuring/installing the protective containers in which to pack excavated CWM.

(3) Provide support as requested for transporting the CWM to an off-site location.

(4) Assist USACMDA, as requested, in developing the risk assessment for the treatment phase of the project.

(5) Support USACMDA in developing on-site laboratory requirements.

c. **SPECIFIC USACMDA RESPONSIBILITIES.**

(1) Identify and develop requirements for an on-site temporary holding facility for recovered CWM. Obtain the necessary Federal/State/Local approval for temporarily holding CWM on-site; and procure and install the necessary structures at the designated site.

(2) Develop the on-site environmental monitoring and treatment requirements for operations that involve CWM. Monitor for those chemical agents known or suspected at the site during treatment, temporary holding and, if required, transportation of CWM, assuring compliance with federal, state, and local regulations and policies.

(3) Develop on-site laboratory requirements to support treatment and/or storage of CWM. Provide the laboratory needed to support these activities.

(4) Provide real estate requirements to the USACE.

(5) Design and procure protective containers in which to place/overpack CWM after excavated or recovery for treatment and/or storage activities.

(6) Design and procure equipment to be used to treat (destroy) the excavated/recovered CWM on-site.

(7) Oversee and approve the activities to remove the CWM containers from the excavation/recovery site to the interim storage/holding area.

(8) Oversee approved USACE activities to treat agent contaminated soil and groundwater on the site.

(9) Assume responsibility for maintenance and security efforts at on-site interim storage/holding area.

(10) Conduct pre-operational surveys prior to site characterization, excavation, transportation or destruction of CWM on-site. Invite both USACE and CBDCOM to participate.

(11) If off-site transportation is selected, support the development of required NEPA documentation for the method of transportation and destination of the CWM including manifesting requirements. Solicit support as required from CBDCOM.

(12) Develop procedures for overpacking the CWM containers for off-site transportation; overpack CWM for shipping to selected off-site location.

(13) Transport the overpacked CWM to a selected location for storage and ultimate destruction.

(14) Develop and coordinate with the DHHS all plans and documentation relating to storage, treatment, and off-site transportation of CWM.

(15) Develop medical support requirements and emergency response plans for on-site movement and treatment (destruction) of CWM, or if selected, off-site transportation of CWM.

(16) Develop the risk assessment for the treatment and off-site transportation, if required, of CWM.

(17) Responsible for public affairs support associated with the interim holding, disposal and off-site transport of CWM.

d. USACMDA Support Responsibilities.

(1) Assist the USACE in locating a satisfactory site for CWM temporary holding facilities at FUDS locations.

(2) Review and concur on USACE developed site plans for the suspected area.

(3) Review and concur on the USACE developed statement of work to execute the site characterization contract, prior to submission through procurement channels. Review

and concur on USACE and contractor safety and contingency procedures for agent hazards which could be encountered during site characterization.

(4) Assist and support USACE in meeting with local regulators and community leaders.

(5) Assist and support USACE efforts for retrieving archival information and reports on suspected CWM.

(6) Provide public affairs support to the USACE as required for site characterization and recovery of CWM.

(7) Support and assist the USACE in developing the risk assessment for intrusive site characterization activities and recovery of CWM.

(8) Provide technical input to USACE's Remedial Investigation/Feasibility Study (RI/FS).

(9) Review and concur on USACE developed medical support, emergency response, and safety plans to ensure compliance with regulatory requirements during site investigation, CWM recovery and packing into containers.

(10) Coordinate and provide technical guidance to USACE on activities to excavate CWM from the suspected site.

(11) Coordinate with and support USACE activities to package the excavated CWM into the protective containers. Approve the configuration of all overpacks.

(12) Support CBDCOM efforts to obtain a permit for off-site transportation of recovered CWM as hazardous waste including all manifest requirements.

(13) If transportation is selected, assist the selected storage location in obtaining Federal, state, and local permits for storing the CWM as hazardous waste.

(14) Support the USACE in developing environmental and associated laboratory requirements for the site characterization and recovery phases of on-site operations.

e. SPECIFIC U.S. ARMY CHEMICAL BIOLOGICAL DEFENSE COMMAND (CBDCOM) RESPONSIBILITIES.

(1) Review and comment on USACE's site plans.

(2) Review and comment on USACE's Statement of Work for the site characterization effort.

(3) Support the efforts of the USACE in meetings with local regulators and leaders.

(4) Support USACE's effort, as requested, to manage the site characterization work.

(5) Assist in archival documentation searches for information on suspected site.

(6) Provide support USACE and USACMDA for disposal or off-site transportation of CWM as required.

(7) Support USACMDA and USACE in the development of on-site environmental monitoring and treatment requirements. Provide monitoring support as required.

(8) Provide technical input to USACE's Remedial Investigation/Feasibility Study (RI/FS).

(9) Coordinate with and assist the USACE to ensure necessary medical support is available.

(10) Assist and support the USACE in developing emergency preparedness plans and execution as required. Participate in emergency response exercises.

(11) Provide the USACE with real estate requirements.

(12) Support USACE's efforts at the excavation/recovery site as required.

(13) Support USACE and USACMDA in maintaining security at the on-site storage area, as requested.

(14) Participate in pre-operational surveys.

(15) Support the overpacking of the CWM in preparation for transportation.

(16) Review and comment on USACMDA's medical support plan for off-site transportation of CWM.

(17) Provide public affairs support to USACE and USACMDA as required.

16. Project Team Responsibilities

a. Project Manager The Project Manager is responsible for managing the project parameters (cost, budget, schedule, scope, and quality), as well as dealings and relationships with those involved in the project process (customers, functional elements, government and non-government entities). The PM manages the delivery of the project in accordance with the PMP through final remedial action. Although the technical elements, through the technical managers, are responsible for the content and quality of technical products, the PM has the responsibility and the authority to participate in the development and review of technical issues, when appropriate.

b. Technical Manager Each functional element is represented by a technical manager (TM). The TM's, working under the supervision of the functional chiefs, are responsible for the content and quality of the technical products. While the TM serves on the project management team, the majority of his or her time is spent on technical product management. Specifically, the TM's are responsible for the following:

(1) development of technical products;
(2) interface with PM;
(3) coordination with technical disciplines;
(4) coordination with technical functions;
(5) point of contact for function's supporting contractors;
(6) coordination of function's PMP input;
(7) communication with the supporting agencies technical representatives;
(8) representation of technical issues at PRB.

c. Project Team Members In coordination with the PM and TM, the project team members are responsible for development of schedules and execution of technical products within budget and on schedule. Each team member will serve as the primary contact for

activities assigned to their office. Team members are responsible for providing information to the PM and TM that has been coordinated and approved by their respective supervisors.

17. Responsibility Assignment Each activity, the office responsible for its execution, and the budgeted cost is defined in Appendix C.

SECTION VI - PROJECT SCHEDULE

18. Project Schedule The project schedule is divided into three parts for ease of use as a management tool. The overall project management schedule identifies all tasks required to implement the project and their associated costs. Two complex tasks, the non-intrusive site characterization and the intrusive site work required to identify any OEW or CWM are difficult to schedule. The semi-time scaled networks will be included as Appendix C. Time analysis is based on receiving appropriate funding for the site characterization activities.

19. Project Milestones A list of the critical milestones for this project will be included as Appendix D.

SECTION VII - BUDGETS AND COST ESTIMATES

20. Project Cost Estimate A detailed project cost estimate will be prepared for this project by USACE. The detailed cost summary sheets will be provided in Appendix E.

21. Cost Estimate Changes Changes to the project baseline estimate will be processed and documented in accordance with Engineer Regulation 5-7-1, Life Cycle Project Management System. The supporting agencies will be kept advised of changes in the project estimate, The project contingency will likewise be managed in accordance with ER 5-7-1. Changes in the project estimate will normally be reflected in adjustments to the project contingency estimate. At such time as insufficient contingency funds remain, a project cost increase request will be prepared by the Project Manager and forwarded to higher headquarters for review and approval.

22. Project Funding The presently estimated funding requirements for further development and implementation of the project are shown by Federal Fiscal year (FY) in Appendix F. Supporting agency (USACMDA, TEU, etc.) funding requirements have been broken down to show the required funds to provide security, transportation, on-site temporary storage container, etc. Non-Federal funds are not required for the project.

SECTION VIII - IMPLEMENTATION PLANS

23. Resource Allocation Plan The current schedule assumes no limitations on the human resources required for project implementation including design, supervision and administration, and management. Computers, CADD equipment, and other materials and supplies are also available in sufficient supply to accomplish the project without limitations.

24. Project Cooperation Plan

a. Requirements of Local Cooperation Local cooperative agreements will be required with several local agencies and medical support facilities. These agreements will be developed as specific requirements are identified.

b. Community Relations Plan CESAJ has developed a Community Relations Plan (CRP) and is incorporated as Appendix G. This CRP was based upon the existing public relations structure that has been in place since the project has been approved. This plan will be introduced to the public at a formal meeting when the non-intrusive site characterization work plans are also released for comments. Coordination meetings will be conducted as needed to identify and resolve project issues. The primary points of contact for communication with the public and the media will be the CESAJ Project Management Branch, Programs and Project Management Division, and the Antilles Office, Public Affairs Office, San Juan, PR.

c. Timing of Supporting Agency's Funding Requirements Prior to start of any activities, the funding requirements for any supporting agency must be identified and available. All funds required by supporting agencies to perform the detailed activities identified for the project features will be budgeted by CESAJ in the Annual Fiscal Year and Five Year DERP-FUDS Workplans. One exception is USACMDA in-house funding requirements which will be separately budgeted and funded by USACMDA. (USACMDA support contract funding requirements will be budgeted by CESAJ).

25. Acquisition Plan This project will require the utilization of architect/engineer (A-E) firms and the services of construction firms. A-E contracts will be provided through the use of ongoing contracts for the required services. Construction contracts will be provided through the competitive bidding process with the contract award going to the lowest capable bidder. All acquisitions will be conducted in accordance with the Federal Acquisition Regulations. Also, all contracts will be reviewed for applicability of the small and disadvantaged business program.

26. Real Estate Plan The only real estate activities anticipated are the right-of-entry requirements for government contractors to work on certain sites. If additional real estate information or investigations are necessary (such as for the location of the interim holding facility or other storage/disposal systems for CWM), they will be identified and requirements prepared after the non-intrusive portion of the site characterization activities.

27. Total Quality Plan This project will be implemented in accordance with the standard Huntsville Division and Jacksonville District quality assurance procedures. During the RI/FS phases, quality assurance will be maintained through extensive reviews within the CEHND and CESAJ, followed by reviews by USACMDA, TEU, and Corps' higher authority. Prior to awarding any contracts, all applicable quality related codes, standards, and regulations will be identified. Technical processes and procedures necessary to ensure conformance to quality requirements will also be identified and implemented.

28. Value Engineering Plan The VE program will be administered by the Huntsville Division VE Office (CEHND-VE). This will be an organized effort to analyze functions of construction, equipment, and/or supplies for the purpose of achieving these functions at the lowest overall cost including life cycle cost without sacrificing quality, function, or operation and maintenance capability. The VE program will also include an evaluation of the efficiency of any removal actions.

29. Safety Plan Site Safety and Health Plans (SSHP) are developed for this project by the contractors performing the work. CEHND Safety Office (CEHND-SO or CEHND-ED-SY) approval of the safety plans is necessary before plans can be submitted to the Department of Defense Explosive Safety Board (DDESB) for approval. This plan will be forwarded through HQUSACE, Army Environmental Center, DA and then to DDESB. DDESB approval is required prior to commencement of intrusive investigations or removal activities. Contractor and Corps personnel must follow the requirements of Corps of Engineers manual EM 385-1-1. CESAJ personnel from the Antilles Office will be responsible to monitor the contractor's compliance with the approved SSHP.

30. SECURITY PLAN Since this project contains properties owned or leased by various entities, security (safety related) will be provided as called for in the approved work plans with CESAJ providing coordination. Security requirements for this project are limited to those required to prevent damage to existing property and equipment owned by others and to prevent risks associated with unauthorized access onto a site that may present a health hazard. Areas determined to be extremely hazardous will be fenced and appropriate warning signs posted. USACMDA, in conjunction with CESAJ, will be responsible for site security when any CWM is located and identified. CEHND contractor personnel and TEU will be responsible for security when conventional OEW is located.

31. CULTURAL RESOURCE PLAN Twelve historic and archeological sites have been identified during field investigations on Water Island by the National Park Service. Several of the significant sites are located in or near identified CWM test areas. Additional field investigations will be required and a mitigation plan will be required for work in any areas containing historical and archeological sites that will be affected as a result of project implementation. CESAJ will develop the required mitigation plan in consultation with the U.S. Virgin Islands State Historic Preservation Office (SHPO) and the National Park Service (NPS). Mitigation for impacts to cultural resources will be completed prior to initiation of any site characterization activities.

32. ENVIRONMENTAL PLAN

A. Environmental Assessments (EA).

The EA will be prepared by CESAJ and coordinated with CEHND. The results of the non-intrusive site characterization investigations activities will serve as the basis for further environmental coordination. USACMDA will be responsible to determine the best method to treat, dispose, or transport any CWM found at FFS. Significant cultural resources are located on Water Island and these resources will be addressed in the EA prepared for this project. Also the suspected existence on Water Island of two endangered species (the leatherback turtle and the brown tree boa) must be further investigated. An endangered tree species has also been found on Water Island. An Environmental Assessment of the non-intrusive site characterization activities will be completed and coordinated with appropriate agencies prior to start of any work on site by the CEHND contractor.

B. Environmental Permits.

Environmental Permits are not necessary for CERCLA actions. CESAJ will be responsible for resolving any permit issues with the Virgin Island Territorial and Federal regulators.

33. Operation and Maintenance Plan If USACMDA's plan is approved, to provide an on-site interim holding facility prior to start of more detailed (intrusive) site characterization activities, a Operations and Maintenance (O&M) Plan will be provided by USACMDA. This plan will identify the O&M requirements of such interim holding facility to keep it fully operational and provide a closely monitored, climate controlled environment inside the facility 24 hours a day seven days a week. CESAJ will oversee the contractor's execution of the O&M plan prescribed.

34. MANAGEMENT CONTROL PLAN The Corps of Engineers will act as the lead agency for implementation of the project. The project will be implemented in coordination with USACMDA, and TEU, throughout the RI/FS phases, remedial design, remedial action (removal) actions. The supporting agencies will be funded directly by CEMP-RF for the specific project related costs. Within the Corps, the project is being managed under the Life Cycle Project Management (LCPM) system. The Project Manager will oversee the project through completion of remedial action with support from the Construction-Operations Division and the Antilles Office.

CEHND is the Mandatory Center of Expertise (MCX) for OEW and thus is responsible for planning, design, and removal of OEW. CESAJ will serve as the Project Manager for the overall project execution and will provide Contracting Officer Representative (COR) support for on-site control of site investigations and OEW removal contracts. CEHND is responsible for monitoring ordnance removal efforts. TEU is responsible for CWM removal and safety. USACMDA is responsible for the ultimate destruction of any CWM found during the project.

35. REPORTING REQUIREMENTS The primary reporting system is the Monthly reports describing the current status of the project schedule. Cost estimates will be prepared by the CESAJ, IPM in accordance with ER 5-7-1. In conjunction with this PMP, the reports represent a summation of the data necessary to: assess the status of the project schedule and cost, and monitor the accomplishment of project objectives. The reports are provided monthly to the Jacksonville District Project Review Board (PRB) and to the South Atlantic Division, Directorate of Programs and Project Management. The CESAD Project Review Board meets every other month and will likewise report this project to the HQUSACE PRB on a bi-monthly basis. CEHND, USACMDA and TEU will also be provided copies of the reports.

Other reports that will be utilitized for project control during the execution of the FFS project include: Quality Assurance Report (QAR) - Daily Log of OEW Removal (CEHND),

Project Fact Sheets (CEHND and CESAJ), Weekly Progress Reports (Contractor), Weekly/ Monthly Cost Reports (Contractor).

36. CHANGE CONTROL PLAN This document will serve as the baseline for identification of changes in project scope, schedule, and cost. Progress will be monitored through the use of the reporting forms with the goal of identifying changes as soon as possible and forecasting new schedules and/or costs. If changes are identified, the documentation and approval process prescribed by ER 5-7-1 will be utilized. A Project Schedule and Cost Change Request (SACCR) Form will be the instrument for documenting and obtaining approval for changes. Work will be performed in accordance with Approved Work Plans with any deviation to be approved by CEHND, CESAJ, USACMDA and TEU.

37. PROPERTY MANAGEMENT PLAN For Cost Plus Fixed Fee (CPFF) and Time and Material (T&M) contracts, the Contractor will be required to prepared a detailed property plan describing the equipment to be employed to perform all necessary operations. The plan shall describe and quantify both field equipment (such as site trailer, backhoes, trucks, bulldozers, front-end loaders, chainsaws, manometers, etc.) and office equipment (such as computer, printer, FAX, copier, 2-way radios, camcorder, telephones, etc.) and consumable supplies (both office and field) intended to be used. The Contractor will be required to describe in the PMP the source and rental/acquisition costs for all field and office equipment and consumable supplies. Three quotes must be obtained and provided in the Plan for each piece of field and office equipment and the plan must indicate that the vendor with the lowest price quote was used for rental/acquisition. The Contractor will indicate in the property management plan when rental costs exceed acquisition costs for a particular piece of equipment over the life of the project. In these instances, the Contracting Officer may direct the Contractor to purchase that equipment. After Contracting Officer approval of the Work Plans/Property Management Plan, additional field/office equipment and consumable supplies in excess of $100 (aggregate total) may not be rented/acquired without Contracting Officer approval.

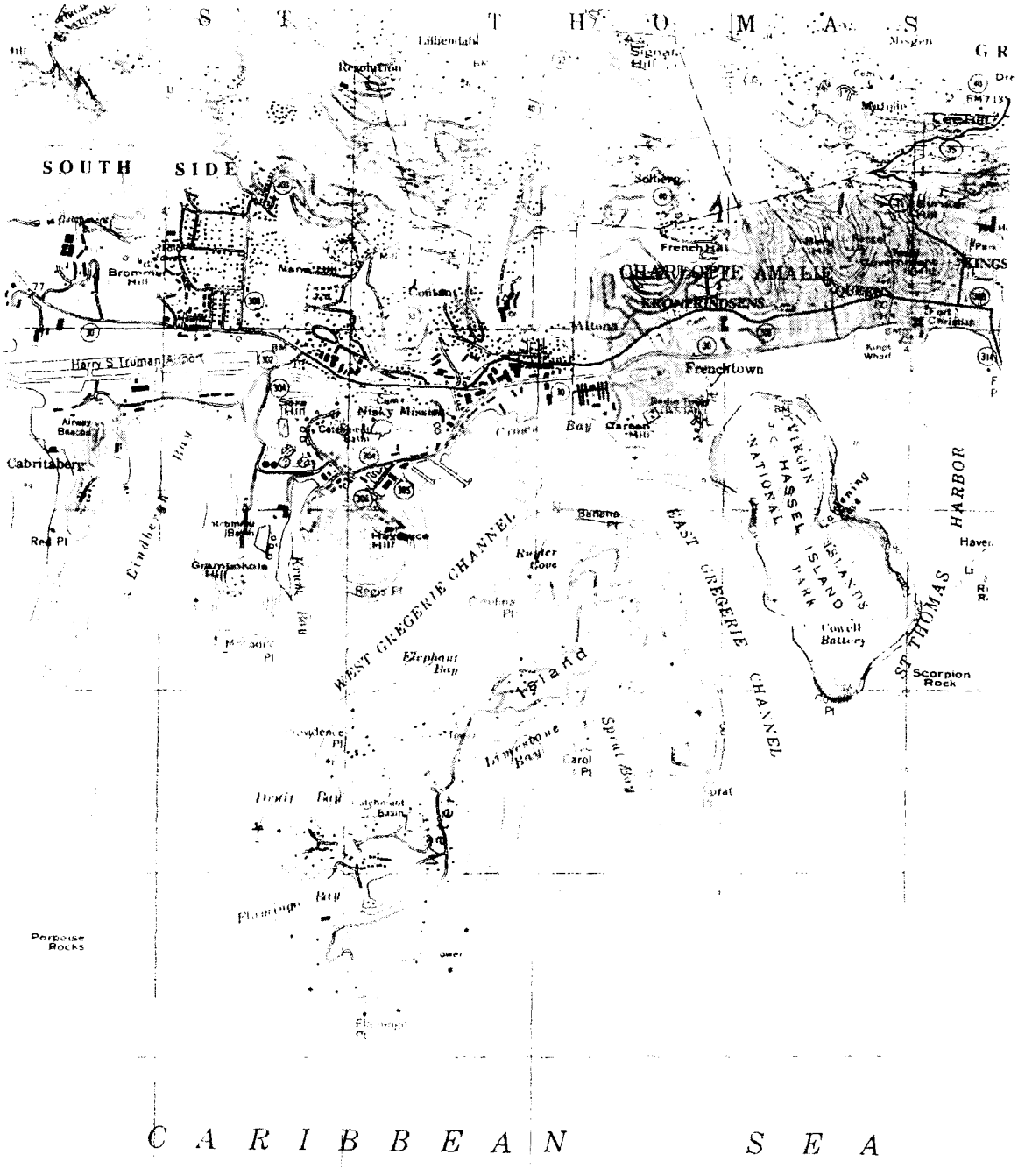
All property acquired is the property of the U.S. Government and will be disposed or transferred in accordance with existing DA regulations. At the conclusion of all work at Fort Segarra, all consumable supplies (such as shovels, chainsaws, trimmers, chains, lumber, office supplies, etc.) will be turned over to the nearest Defense Reutilization and Marketing Office (DRMO) for ultimate disposal.

38. Project Issues Issues that require long term action to resolve and that significantly affect the project, its implementation schedule, or costs as they arise will be included as part of this document as Appendix I.

APPENDIX A

PROJECT MAP

TEST AREA #2
TEST AREA #8
TEST AREA #1
TEST AREA #3
FLAMINGO BAY LANDFILL
TEST AREA #4
TEST AREA #6
TEST AREA #5
TEST AREA #7
WATER ISLAND (FT. SEGARRA), USVI


S T T H O M A S
SOUTH SIDE
CHARLOTTE AMALIE
KRONPRINDSENS
Frenchtown
Harry S Truman Airport
Cabritaberg
Red Pt
WEST GREGERIE CHANNEL
EAST GREGERIE CHANNEL
HASSEL ISLAND
ST THOMAS HARBOR
Scorpion Rock
Elephant Bay
Porpoise Rocks
C A R I B B E A N S E A

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APPENDIX B

RESPONSIBILITY ASSIGNMENT MATRIX

APPENDIX B

RESPONSIBILITIES ASSIGNMENT MATRIX

	DA	HQUSACE	CEHND	CMDA	CESAJ	TEU	CESAD	Local
POLICY	A	AC	C	CX	CX	CX	C	C
PROGRAMMING	A	AX	CX	CX	ACX	CX	A	C
ARCHIVES SEARCHES	N	R	AX	R	R	R	R	C
REAL ESTATE/ RIGHTS OF ENTRY	N	N	C	C	ACX	C	C	N
SCOPING ASSESSMENTS/ INVESTIGATIONS	N	R	AXM	AXM	AC	R	R	C
EA/EIS	N	S	R	R	SX	R	R	C
SCHEDULES	N	C	AX	AX	AC	CX	R	C
WORK PLANS	A	R	AXC	AXC	AC	CX	R	C
SAFETY PLANS	A	R	AXC	AXC	AC	CX	R	S
REMOVAL ACTIONS	A	A	ACX	AXC	AC	CX	M	C
DESIGN	N	M	ACX	AXC	R	CX	M	N
OTHER STUDIES/PLANS	N	S	R	R	RS	C	C	C
OEW REPORT	R	R	XA	CS	AC	CX	R	R

SYMBOL	EXPLANATION
A = Approval	An approval of programmatic material, concepts, or other program requirements
C = Coordination	A requirement to participate more or less continuously in the ongoing development activities, such that input and advice would have been included in the programmatic materials.
M = Monitor	A requirement to advise and participate in those functions which will increase the value of the program/ project.
N = Not Applicable	Not Applicable.
R = Review	A requirement to review the work of others and provide comment, generally without continuous involvement in the development process for the material being reviewed.
S = Support	A requirement to provide manpower, technical data, or other active participation in the development process upon request.
X = Execution	An assignment of responsibility to carry out necessary actions required to achieve assigned goals for that function.

APPENDIX C

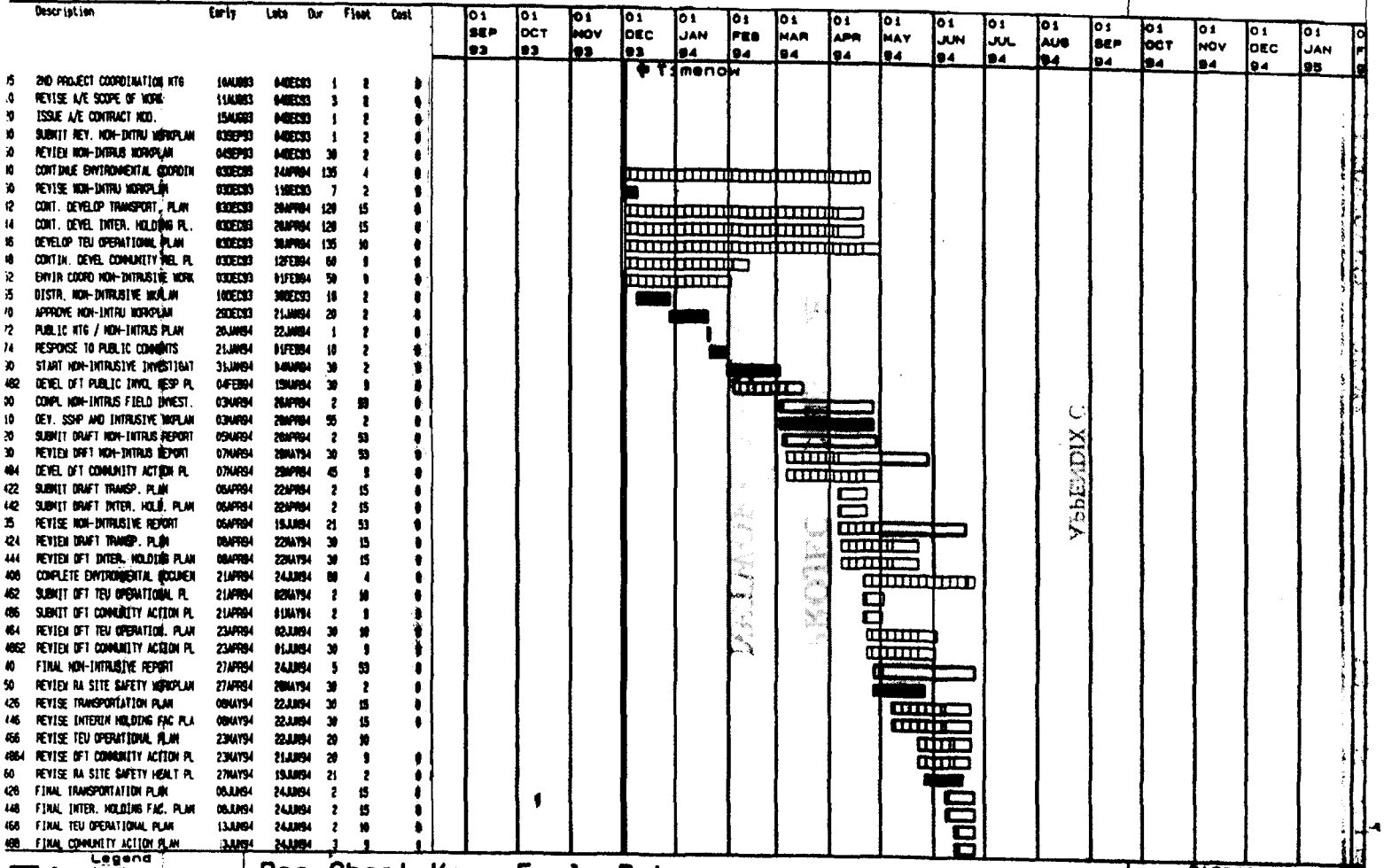
PROJECT SCHEDULE
&
NETWORK DIAGRAM

OPEN PLAN

Report: GRAFBARS
Project: FTSEGNO3
Time Now: 03DEC93
Date: 03DEC93
Time: 07:40:48
Page: 1

Ft. Segarra CWM Remediation

	Description	Early	Late	Dur	Float	Cost
15	2ND PROJECT COORDINATION MTG	16AUG93	04DEC93	1	8	0
20	REVISE A/E SCOPE OF WORK	11AUG93	04DEC93	3	8	0
30	ISSUE A/E CONTRACT MOD.	15AUG93	04DEC93	1	8	0
40	SUBMIT REV. NON-INTRU WORKPLAN	03SEP93	04DEC93	1	2	0
50	REVIEW NON-INTRUS WORKPLAN	04SEP93	04DEC93	30	2	0
60	CONTINUE ENVIRONMENTAL COORDIN	03DEC93	24APR94	135	4	0
70	REVISE NON-INTRU WORKPLAN	03DEC93	11DEC93	7	2	0
72	CONT. DEVELOP TRANSPORT. PLAN	03DEC93	28APR94	120	15	0
74	CONT. DEVEL INTER. HOLDING FL.	03DEC93	28APR94	120	15	0
76	DEVELOP TEU OPERATIONAL PLAN	03DEC93	30APR94	135	10	0
78	CONTIN. DEVEL COMMUNITY REL PL	03DEC93	12FEB94	60	9	0
82	ENVIR COORD NON-INTRUSIVE WORK	03DEC93	01FEB94	59	9	0
85	DISTR. NON-INTRUSIVE WKPLAN	10DEC93	30DEC93	16	2	0
90	APPROVE NON-INTRU WORKPLAN	29DEC93	21JAN94	20	2	0
92	PUBLIC MTG / NON-INTRUS PLAN	26JAN94	22JAN94	1	2	0
94	RESPONSE TO PUBLIC COMMENTS	21JAN94	01FEB94	10	2	0
90	START NON-INTRUSIVE INVESTIGAT	31JAN94	04MAR94	30	2	10
482	DEVEL DFT PUBLIC INVOL RESP PL	04FEB94	15MAR94	30	9	0
90	COMPL NON-INTRUS FIELD INVEST.	03MAR94	28APR94	2	88	0
10	DEV. SSHP AND INTRUSIVE WKPLAN	03MAR94	28APR94	55	2	0
20	SUBMIT DRAFT NON-INTRUS REPORT	05MAR94	28APR94	2	53	0
30	REVIEW DRFT NON-INTRUS REPORT	07MAR94	20MAY94	30	53	0
484	DEVEL DFT COMMUNITY ACTION PL	07MAR94	29APR94	45	8	0
422	SUBMIT DRAFT TRANSP. PLAN	05APR94	22APR94	2	15	0
442	SUBMIT DRAFT INTER. HOLD. PLAN	05APR94	22APR94	2	15	0
35	REVISE NON-INTRUSIVE REPORT	05APR94	15JUN94	21	53	0
424	REVIEW DRAFT TRANSP. PLAN	08APR94	22MAY94	30	15	0
444	REVIEW DFT INTER. HOLDING PLAN	08APR94	22MAY94	30	15	0
406	COMPLETE ENVIRONMENTAL DOCUMEN	21APR94	24JUN94	80	4	0
462	SUBMIT DFT TEU OPERATIONAL PL	21APR94	02MAY94	2	10	0
486	SUBMIT DFT COMMUNITY ACTION PL	21APR94	01JUN94	2	8	0
464	REVIEW DFT TEU OPERATION. PLAN	23APR94	02JUN94	30	10	0
4862	REVIEW DFT COMMUNITY ACTION PL	23APR94	01JUN94	30	9	0
40	FINAL NON-INTRUSIVE REPORT	27APR94	24JUN94	5	53	0
50	REVIEW RA SITE SAFETY WORKPLAN	27APR94	20MAY94	30	2	0
426	REVISE TRANSPORTATION PLAN	09MAY94	22JUN94	30	15	0
446	REVISE INTERIM HOLDING FAC PLA	09MAY94	22JUN94	30	15	0
466	REVISE TEU OPERATIONAL PLAN	23MAY94	22JUN94	20	10	
4864	REVISE DFT COMMUNITY ACTION PL	23MAY94	21JUN94	20	9	0
60	REVISE RA SITE SAFETY HEALT PL	27MAY94	15JUN94	21	2	0
428	FINAL TRANSPORTATION PLAN	06JUN94	24JUN94	2	15	0
448	FINAL INTER. HOLDING FAC. PLAN	06JUN94	24JUN94	2	15	0
468	FINAL TEU OPERATIONAL PLAN	13JUN94	24JUN94	2	10	0
488	FINAL COMMUNITY ACTION PLAN	13JUN94	24JUN94	2	9	0



Legend
- In progress
- Planned
- Float
- Critical

Bar Chart Key: Early Dates

Signatures
Prep: _____
Appv: _____

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OPEN PLA.

Report: GRAFBAR7
Project: FTSEGNO3
Time Now: 03DEC93
Date: 06DEC93
Time: 07:40:49
TABLE

Ft. Segarra CWM Remediation

	Description	Early	Late	Dur	Float	Cost
162	FINAL SITE SAFETY HEALTH PLAN	16JUN94	24JUN94	5	2	0
165	SUBMIT INTRUSIVE RA WORKPLAN	23JUN94	26JUN94	2	2	0
167	REVIEW INTRUSIVE RA WORKPLAN	25JUN94	21SEP94	85	2	0
170	APPROVE RA INTRUSIVE WORKPLAN	20SEP94	26SEP94	5	2	0
180	START INTRUSIVE REMEDIATION	25SEP94	29DEC94	90	2	0

01 SEP 93 | 01 OCT 93 | 01 NOV 93 | 01 DEC 93 | 01 JAN 94 | 01 FEB 94 | 01 MAR 94 | 01 APR 94 | 01 MAY 94 | 01 JUN 94 | 01 JUL 94 | 01 AUG 94 | 01 SEP 94 | 01 OCT 94 | 01 NOV 94 | 01 DEC 94 | 01 JAN 95 | 01 F 9

Timenow

Legend
=In progress
=Planned
=Float
=Critical

Bar Chart Key: Early Dates

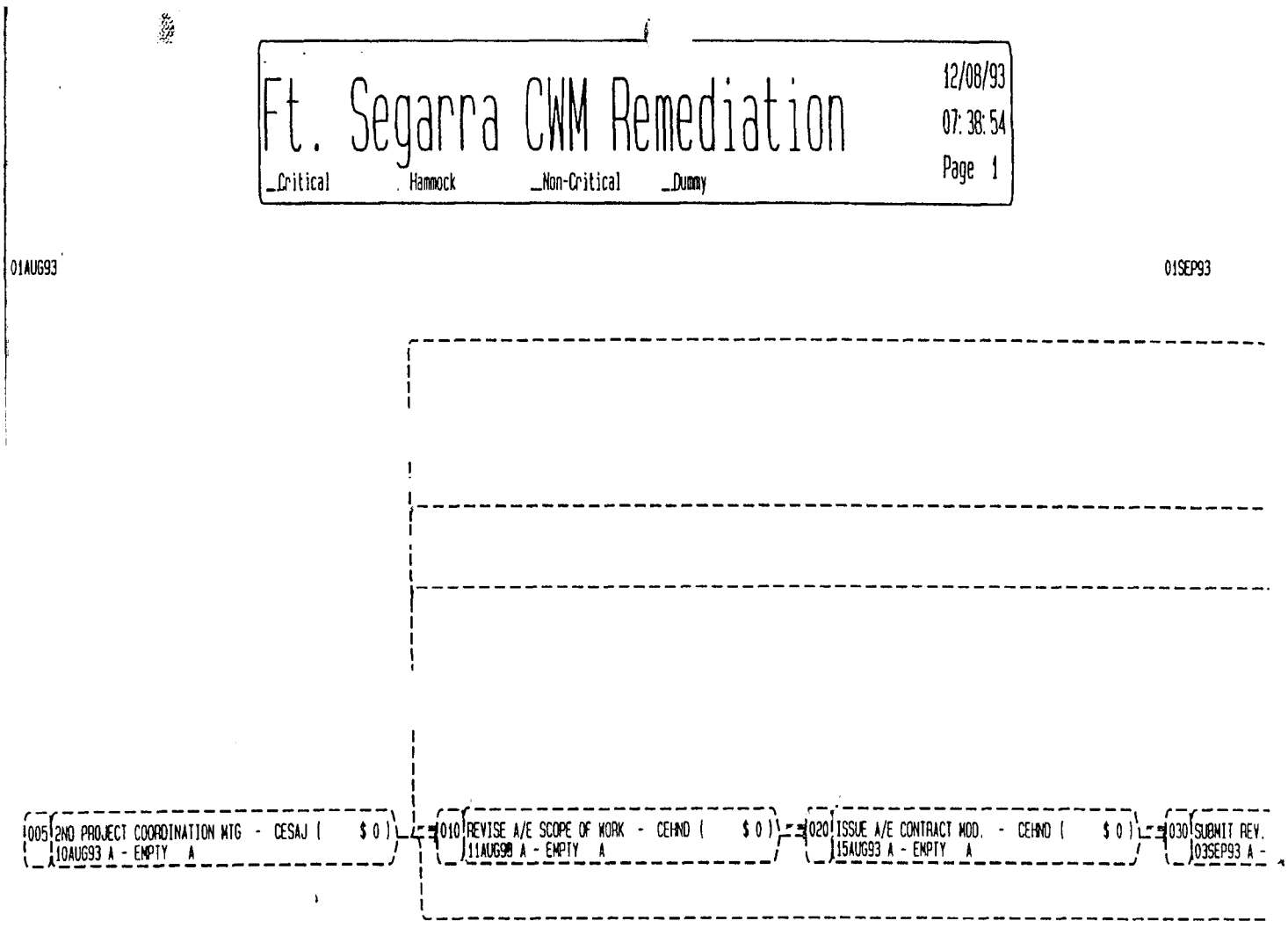
Signatures
Prep: _____
Aprv: _____

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Ft. Segarra CWM Remediation

12/08/93
07:38:54
Page 1

_Critical _Hammock _Non-Critical _Dummy



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01DEC93
042 CONT. DEVELOP TRANSPORT. PLAN - CWDA ($ 0)
030DEC93 - 05APR94 (120 CD)
044 CONT. DEVEL INTER. HOLDING PL. - CWDA ($ 0)
030DEC93 - 05APR94 (120 CD)
048 CONTIN. DEVEL COMMUNITY REL PL - CESAJ ($ 0)
030DEC93 - 03FEB94 (60 CD)
040 CONTINUE ENVIRONMENTAL COORDIN - CESAJ ($ 0)
030DEC93 - 20APR94 (135 CD)
052 ENVIR COORD NON-INTRUSIVE WORK - CESAJ ($ 0)
030DEC93 - 24JAN94 (50 CD)
030 SUBMIT REV. NON-INTRU WORKPLAN - CEHND ($ 0)
03SEP93 A - EMPTY A
050 REVIEW NON-INTRUS WORKPLAN - CEHND ($ 0)
04SEP93 A - EMPTY A
060 REVISE NON-INTRU WORKPLAN - CEHND ($ 0)
030DEC93 - 09DEC93 (7 CD)
065
046 DEVELOP TEU OPERATIONAL PLAN - TEU ($ 0)
030DEC93 - 20APR94 (135 CD)

01JAN94

065 DISTR. NON-INTRUSIVE WKPLAN - CEHND ($ 0)
10DEC93 - 28DEC93 (18 CD)

070 APPROVE NON-INTRU WORKPLAN - CEHND ($ 0)
29DEC93 - 19JAN94 (20 CD)

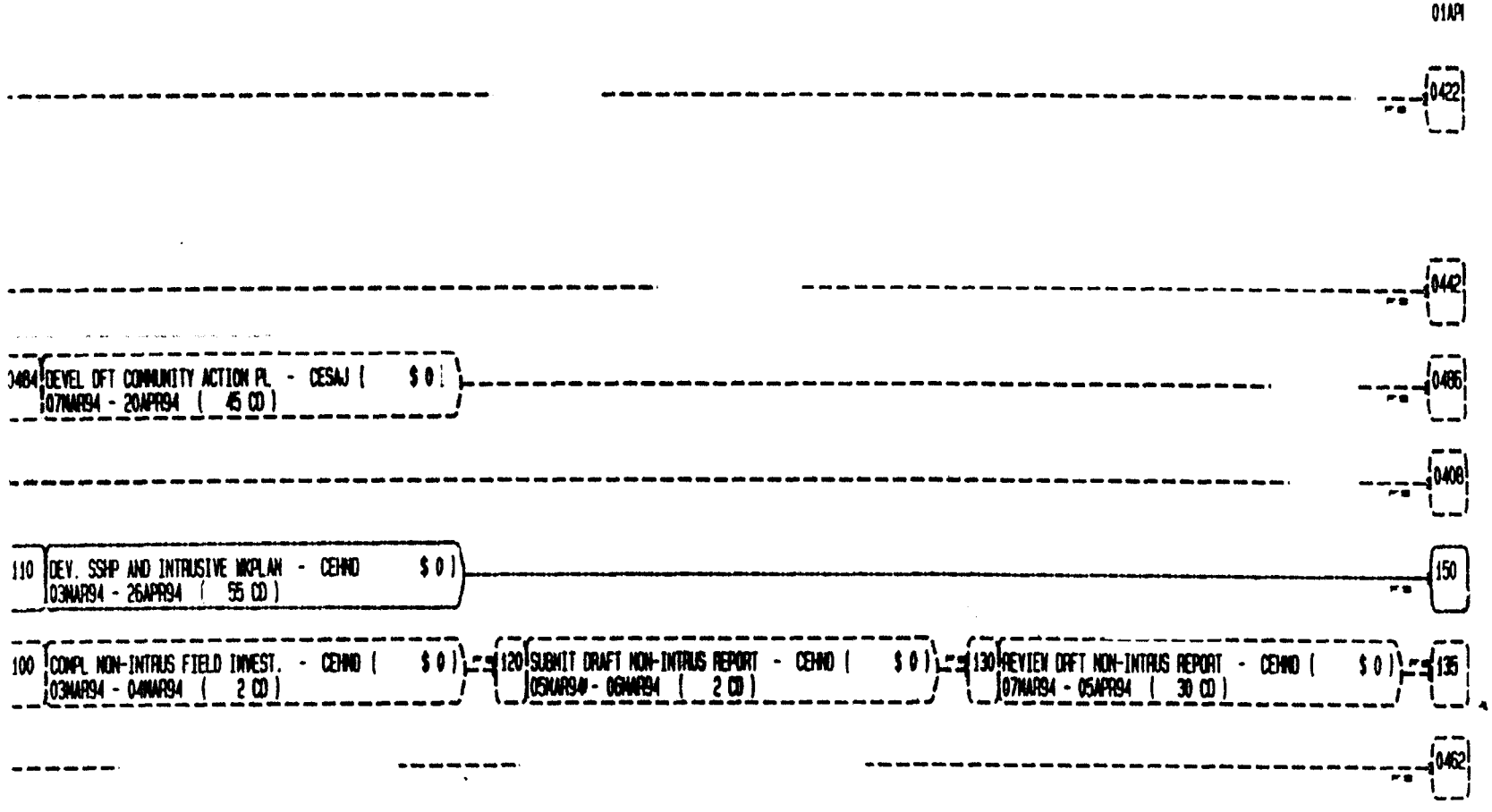
072 PUBLIC MTG / NON-INTRUS PLAN - CESAJ ($ 0)
20JAN94 - 20JAN94 (1 CD)

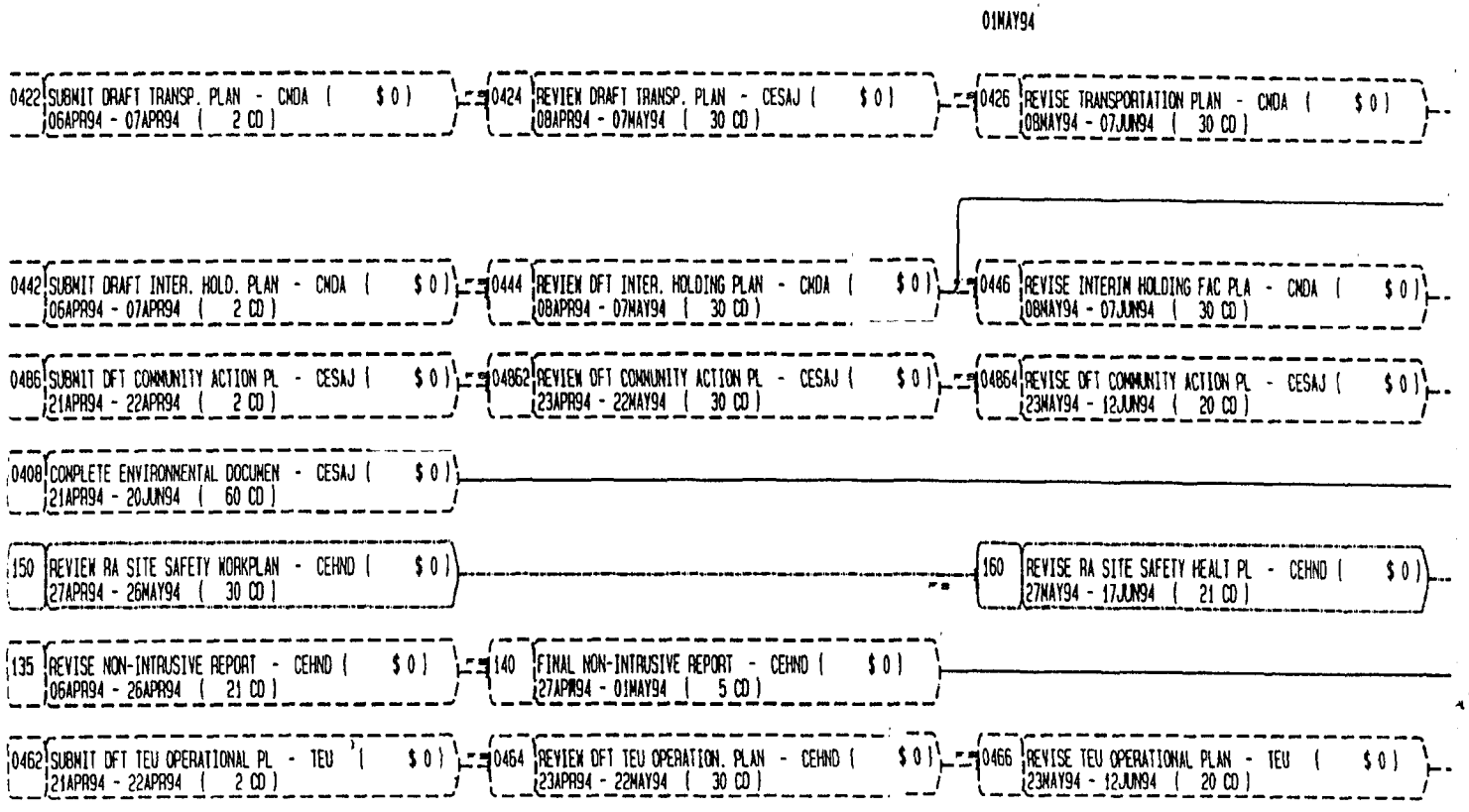
074 RESPONSE T
21JAN94 -

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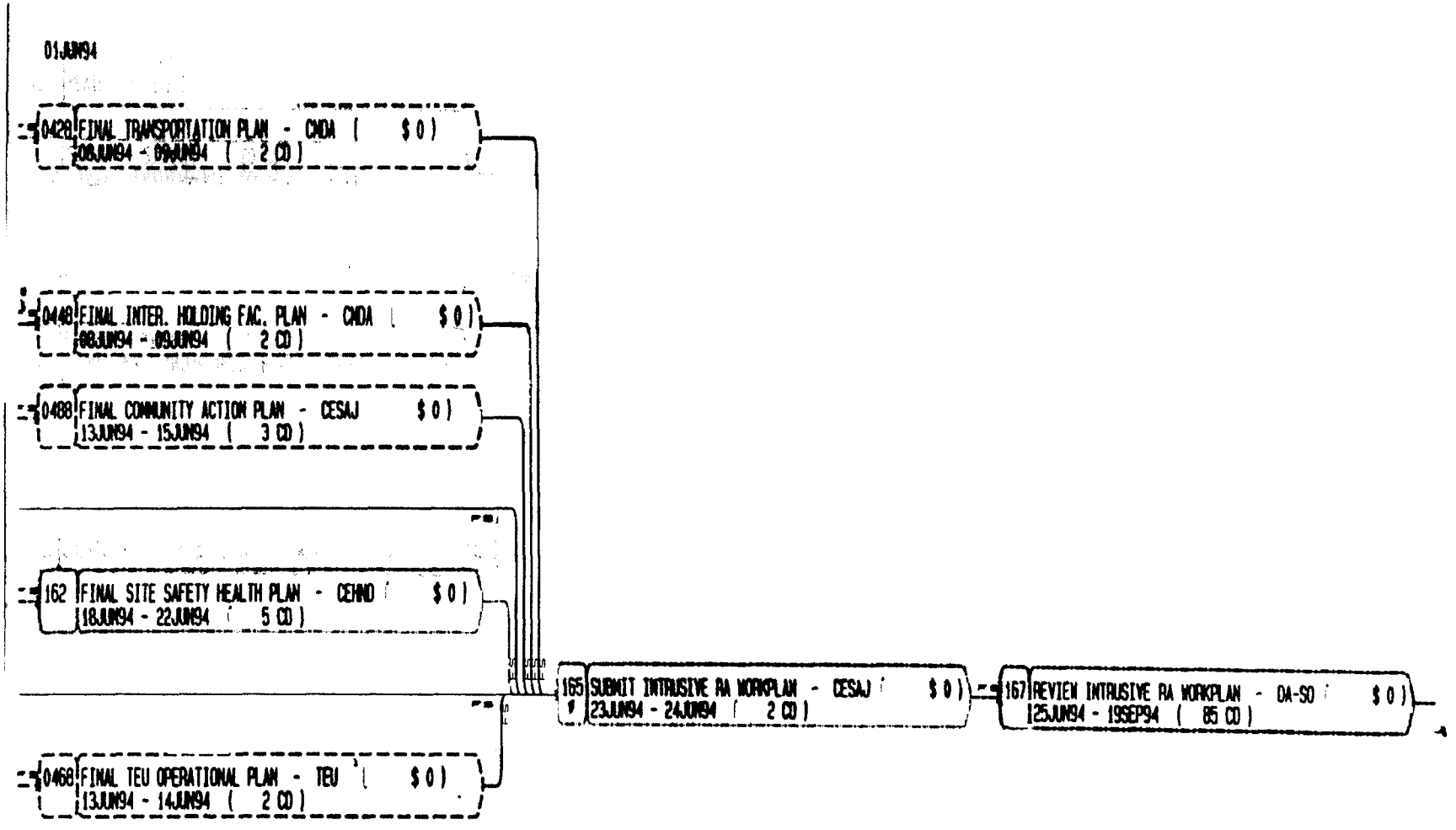
01FEB94
01MAI
0482 DEVEL DFT PUBLIC INVOL RESP PL - CESAJ ($ 0)
04FEB94 - 06MAR94 (30 CD)
0484
110
074 RESPONSE TO PUBLIC COMMENTS - CEHND ($ 0)
21JAN94 - 30JAN94 (10 CD)
090 START NON-INTRUSIVE INVESTIGAT - CEHND ($ 0)
31JAN94 - 02MAR94 (30 CD)
100

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0422
0442
0484
DEVEL DFT COMMUNITY ACTION PL - CESAJ ($ 0)
07MAR94 - 20APR94 (45 CD)
0486
0408
110
DEV. SSHP AND INTRUSIVE WKPLAN - CEHND $ 0)
03MAR94 - 26APR94 (55 CD)
150
100
COMPL NON-INTRUS FIELD INVEST. - CEHND ($ 0)
03MAR94 - 04MAR94 (2 CD)
120
SUBMIT DRAFT NON-INTRUS REPORT - CEHND ($ 0)
05MAR94 - 06MAR94 (2 CD)
130
REVIEW DFT NON-INTRUS REPORT - CEHND ($ 0)
07MAR94 - 05APR94 (30 CD)
135
0462


01MAY94
0422 SUBMIT DRAFT TRANSP. PLAN - CNDA ($ 0)
06APR94 - 07APR94 (2 CD)
0424 REVIEW DRAFT TRANSP. PLAN - CESAJ ($ 0)
08APR94 - 07MAY94 (30 CD)
0426 REVISE TRANSPORTATION PLAN - CNDA ($ 0)
08MAY94 - 07JUN94 (30 CD)
0442 SUBMIT DRAFT INTER. HOLD. PLAN - CNDA ($ 0)
06APR94 - 07APR94 (2 CD)
0444 REVIEW DFT INTER. HOLDING PLAN - CNDA ($ 0)
08APR94 - 07MAY94 (30 CD)
0446 REVISE INTERIM HOLDING FAC PLA - CNDA ($ 0)
08MAY94 - 07JUN94 (30 CD)
0486 SUBMIT DFT COMMUNITY ACTION PL - CESAJ ($ 0)
21APR94 - 22APR94 (2 CD)
04862 REVIEW DFT COMMUNITY ACTION PL - CESAJ ($ 0)
23APR94 - 22MAY94 (30 CD)
04864 REVISE DFT COMMUNITY ACTION PL - CESAJ ($ 0)
23MAY94 - 12JUN94 (20 CD)
0408 COMPLETE ENVIRONMENTAL DOCUMEN - CESAJ ($ 0)
21APR94 - 20JUN94 (60 CD)
150 REVIEW RA SITE SAFETY WORKPLAN - CEHND ($ 0)
27APR94 - 26MAY94 (30 CD)
160 REVISE RA SITE SAFETY HEALT PL - CEHND ($ 0)
27MAY94 - 17JUN94 (21 CD)
135 REVISE NON-INTRUSIVE REPORT - CEHND ($ 0)
06APR94 - 26APR94 (21 CD)
140 FINAL NON-INTRUSIVE REPORT - CEHND ($ 0)
27APR94 - 01MAY94 (5 CD)
0462 SUBMIT DFT TEU OPERATIONAL PL - TEU ($ 0)
21APR94 - 22APR94 (2 CD)
0464 REVIEW DFT TEU OPERATION. PLAN - CEHND ($ 0)
23APR94 - 22MAY94 (30 CD)
0466 REVISE TEU OPERATIONAL PLAN - TEU ($ 0)
23MAY94 - 12JUN94 (20 CD)

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01JUN94
0428 FINAL TRANSPORTATION PLAN - CNDA ($0)
06JUN94 - 09JUN94 (2 CD)
0440 FINAL INTER. HOLDING FAC. PLAN - CNDA ($0)
08JUN94 - 09JUN94 (2 CD)
0488 FINAL COMMUNITY ACTION PLAN - CESAJ $0)
13JUN94 - 15JUN94 (3 CD)
162 FINAL SITE SAFETY HEALTH PLAN - CEHND ($0)
16JUN94 - 22JUN94 (5 CD)
0468 FINAL TEU OPERATIONAL PLAN - TEU ($0)
13JUN94 - 14JUN94 (2 CD)
165 SUBMIT INTRUSIVE PA WORKPLAN - CESAJ ($0)
23JUN94 - 24JUN94 (2 CD)
167 REVIEW INTRUSIVE PA WORKPLAN - OA-SO ($0)
25JUN94 - 19SEP94 (85 CD)

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01SEP94

APPENDIX D

LIST OF MILESTONES

ACTIVITY	REM DUR	ORIG DUR	CAL	TYP	PROG	DESCRIPTION	CODE 1	CODE 2	START	FINISH	TOTAL /FREE FLOAT
005	0	1	2	C	100	2ND PROJECT COORDINATION MTG	CESAJ		A:10AUG93	**COMPLETE**	
010	0	3	2	C	100	REVISE A/E SCOPE OF WORK	CEHND		A:11AUG93	**COMPLETE**	
020	0	1	2	C	100	ISSUE A/E CONTRACT MOD.	CEHND		A:15AUG93	**COMPLETE**	
030	0	1	2	C	100	SUBMIT REV. NON-INTRU WORKPLAN	CEHND		A:03SEP93	**COMPLETE**	
050	0	30	2	C	100	REVIEW NON-INTRUS WORKPLAN	CEHND	CESAJ	A:04SEP93	**COMPLETE**	
040	135	135	2		0	CONTINUE ENVIRONMENTAL COORDIN	CESAJ		E:03DEC93 L:07DEC93	E:20APR94 L:24APR94	4 0
060	7	7	2		0	REVISE NON-INTRU WORKPLAN	CEHND		E:03DEC93 L:05DEC93	E:09DEC93 L:11DEC93	2 0
042	120	120	2		0	CONT. DEVELOP TRANSPORT. PLAN	CMDA		E:03DEC93 L:18DEC93	E:05APR94 L:20APR94	15 0
044	120	120	2		0	CONT. DEVEL INTER. HOLDING PL.	CMDA		E:03DEC93 L:18DEC93	E:05APR94 L:20APR94	15 0
046	135	135	2		0	DEVELOP TEU OPERATIONAL PLAN	TEU		E:03DEC93 L:13DEC93	E:20APR94 L:30APR94	10 0
048	60	60	2		0	CONTIN. DEVEL COMMUNITY REL PL	CESAJ		E:03DEC93 L:12DEC93	E:03FEB94 L:12FEB94	9 0
052	50	50	2		0	ENVIR COORD NON-INTRUSIVE WORK	CESAJ		E:03DEC93 L:11DEC93	E:24JAN94 L:01FEB94	8 6
065	18	18	2		0	DISTR. NON-INTRUSIVE WKPLAN	CEHND		E:10DEC93 L:12DEC93	E:28DEC93 L:30DEC93	2 0
070	20	20	2		0	APPROVE NON-INTRU WORKPLAN	CEHND		E:29DEC93 L:31DEC93	E:19JAN94 L:21JAN94	2 0
072	1	1	2		0	PUBLIC MTG / NON-INTRUS PLAN	CESAJ	CEHND	E:20JAN94 L:22JAN94	E:20JAN94 L:22JAN94	2 0
074	10	10	2		0	RESPONSE TO PUBLIC COMMENTS	CEHND		E:21JAN94 L:23JAN94	E:30JAN94 L:01FEB94	2 0

Legend: (for Column 1) S = Start activity, F = Finish Activity, I = Independent

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ACTIVITY	REM DUR	ORIG DUR	C A L	T Y P	PROG	DESCRIPTION	CODE 1	CODE 2	START	FINISH	TOTAL /FREE FLOAT
090	30	30	2		0	START NON-INTRUSIVE INVESTIGAT	CEHND	CESAJ	E:31JAN94 L:02FEB94	E:02MAR94 L:04MAR94	2 0
0482	30	30	2		0	DEVEL DFT PUBLIC INVOL RESP PL	CESAJ		E:04FEB94 L:13FEB94	E:06MAR94 L:15MAR94	9 0
100	2	2	2		0	COMPL NON-INTRUS FIELD INVEST.	CEHND		E:03MAR94 L:25APR94	E:04MAR94 L:26APR94	53 0
110	55	55	2		0	DEV. SSHP AND INTRUSIVE WKPLAN	CEHND		E:03MAR94 L:05MAR94	E:26APR94 L:28APR94	2 0
120	2	2	2		0	SUBMIT DRAFT NON-INTRUS REPORT	CEHND		E:05MAR94 L:27APR94	E:06MAR94 L:28APR94	53 0
130	30	30	2		0	REVIEW DRFT NON-INTRUS REPORT	CEHND	CESAJ	E:07MAR94 L:29APR94	E:05APR94 L:28MAY94	53 0
0484	45	45	2		0	DEVEL DFT COMMUNITY ACTION PL	CESAJ		E:07MAR94 L:16MAR94	E:20APR94 L:29APR94	9 0
0422	2	2	2		0	SUBMIT DRAFT TRANSP. PLAN	CMDA		E:06APR94 L:21APR94	E:07APR94 L:22APR94	15 0
0442	2	2	2		0	SUBMIT DRAFT INTER. HOLD. PLAN	CMDA		E:06APR94 L:21APR94	E:07APR94 L:22APR94	15 0
135	21	21	2		0	REVISE NON-INTRUSIVE REPORT	CEHND		E:06APR94 L:29MAY94	E:26APR94 L:19JUN94	53 0
0424	30	30	2		0	REVIEW DRAFT TRANSP. PLAN	CESAJ	CEHND	E:08APR94 L:23APR94	E:07MAY94 L:22MAY94	15 0
0444	30	30	2		0	REVIEW DFT INTER. HOLDING PLAN	CMDA	CESAJ	E:08APR94 L:23APR94	E:07MAY94 L:22MAY94	15 0
0408	60	60	2		0	COMPLETE ENVIRONMENTAL DOCUMEN	CESAJ		E:21APR94 L:25APR94	E:20JUN94 L:24JUN94	4 2
0462	2	2	2		0	SUBMIT DFT TEU OPERATIONAL PL	TEU		E:21APR94 L:01MAY94	E:22APR94 L:02MAY94	10 0

Legend: (for Column 1) S = Start activity, F = Finish Activity, I = Independent

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ACTIVITY	REM DUR	ORIG DUR	CAL	TYP	PROG	DESCRIPTION	CODE 1	CODE 2	START	FINISH	TOTAL /FREE FLOAT
0486	2	2	2		0	SUBMIT DFT COMMUNITY ACTION PL	CESAJ		E:21APR94 L:30APR94	E:22APR94 L:01MAY94	9 0
0464	30	30	2		0	REVIEW DFT TEU OPERATION. PLAN	CEHND	CESAJ	E:23APR94 L:03MAY94	E:22MAY94 L:02JUN94	10 0
04862	30	30	2		0	REVIEW DFT COMMUNITY ACTION PL	CESAJ	CEHND	E:23APR94 L:02MAY94	E:22MAY94 L:01JUN94	9 0
140	5	5	2		0	FINAL NON-INTRUSIVE REPORT	CEHND		E:27APR94 L:20JUN94	E:01MAY94 L:24JUN94	53 51
150	30	30	2		0	REVIEW RA SITE SAFETY WORKPLAN	CEHND		E:27APR94 L:29APR94	E:26MAY94 L:28MAY94	2 0
0426	30	30	2		0	REVISE TRANSPORTATION PLAN	CMDA		E:08MAY94 L:23MAY94	E:07JUN94 L:22JUN94	15 0
0446	30	30	2		0	REVISE INTERIM HOLDING FAC PLA	CMDA		E:08MAY94 L:23MAY94	E:07JUN94 L:22JUN94	15 0
0466	20	20	2		0	REVISE TEU OPERATIONAL PLAN	TEU		E:23MAY94 L:03JUN94	E:12JUN94 L:22JUN94	10 0
04864	20	20	2		0	REVISE DFT COMMUNITY ACTION PL	CESAJ		E:23MAY94 L:02JUN94	E:12JUN94 L:21JUN94	9 0
160	21	21	2		0	REVISE RA SITE SAFETY HEALT PL	CEHND		E:27MAY94 L:29MAY94	E:17JUN94 L:19JUN94	2 0
0428	2	2	2		0	FINAL TRANSPORTATION PLAN	CMDA	CESAJ	E:08JUN94 L:23JUN94	E:09JUN94 L:24JUN94	15 13
0448	2	2	2		0	FINAL INTER. HOLDING FAC. PLAN	CMDA		E:08JUN94 L:23JUN94	E:09JUN94 L:24JUN94	15 13
0468	2	2	2		0	FINAL TEU OPERATIONAL PLAN	TEU		E:13JUN94 L:23JUN94	E:14JUN94 L:24JUN94	10 8
0488	3	3	2		0	FINAL COMMUNITY ACTION PLAN	CESAJ		E:13JUN94 L:22JUN94	E:15JUN94 L:24JUN94	9 7

Legend: (for Column 1) S = Start activity, F = Finish Activity, I = Independent

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ACTIVITY	REM DUR	ORIG DUR	C L	T A Y P	PROG	DESCRIPTION	CODE 1	CODE 2	START	FINISH	TOTAL /FREE FLOAT
162	5	5	2		0	FINAL SITE SAFETY HEALTH PLAN	CEHND		E:18JUN94 L:20JUN94	E:22JUN94 L:24JUN94	2 0
165	2	2	2		0	SUBMIT INTRUSIVE RA WORKPLAN	CESAJ	CEHND	E:23JUN94 L:25JUN94	E:24JUN94 L:26JUN94	2 0
167	85	85	2		0	REVIEW INTRUSIVE RA WORKPLAN	DA-SO		E:25JUN94 L:27JUN94	E:19SEP94 L:21SEP94	2 0
170	5	5	2		0	APPROVE RA INTRUSIVE WORKPLAN	DA-SO		E:20SEP94 L:22SEP94	E:24SEP94 L:26SEP94	2 0
180	90	90	2		0	START INTRUSIVE REMEDIATION	CEHND	CESAJ	E:25SEP94 L:27SEP94 T:27SEP94	E:27DEC94 L:29DEC94	2 0

Legend: (for Column 1) S = Start activity, F = Finish Activity, I = Independent

APPENDIX E

PROJECT COST ESTIMATE

APPENDIX E

PROJECT COST ESTIMATE.

A. Program Budget. The Program Budget is generated through funding Work Plans that are established for the overall DERP-FUDS program related to OEW. Funds of $ are expected to be dedicated to Fort Segarra for the remainder of FY-93. These funds will be used for site investigations.

(1) CEHND.

(a) FUDS Contract Funds (To Date Jun 93) ($855,240)

(b) FUDS Contract Funds (Remainder of FY 93 - $ 20,000)

(c) FUDS Contract Funds (FY 94 - $ 2,810,000)

(d) FUDS Contract Funds (FY 95 - $_____)

(B) Organizational Cost Estimates.

(1) CEHND.

(a) FUDS In-House Labor (To Date $_____)

(b) FUDS In-House Labor (Remainder of FY-93 - $ 30,000)

(c) FUDS In-House Labor (FY 94 - $ 120,000)

(d) FUDS In-House Labor (FY 95 - $_____)

(2) CESAD/CESAJ:

(a) FUDS In-House Labor (To Date $ 20,000)

(b) FUDS In-House Labor (Remainder of FY 94 - $ 75,000)

(c) FUDS In-House Labor (FY 94 - $_____)
(d) FUDS In-House Labor (FY 95 - $_____)

(3) USACMDA:

(a) In-House Assistance (To Date $_____)

(b) In-House Assistance (Remainder of FY 93 - $_____)

(c) In-House Assistance (FY 94 - $_____)

(d) In-House Assistance (FY 95 - $_____)

(4) TEU.

(a) FUDS In-House Assistance (To Date $_____)

(b) FUDS In-House Assistance (Remainder of FY 93 - $_____)

(c) In-House Assistance (FY 94 - $_____)

(d) In-House Assistance (FY 95 - $_____)

APPENDIX F

FUNDING REQUIREMENTS

Water Island population is comprised mostly of adults (90%) and a few children (10%). Of the adult population approximately half are over 50 years old.

Employment is virtually non-existent in Water Island, with the exception of some persons involved in small construction. Most working adults work in St. Thomas. Approximately 50% of the adults living on the island are retired.

Economic activity is limited to rental of rooms and cottages at two sites and rental of homes mostly during the summer. Prior to 1989, the Water Isle Hotel and Beach Club was operating on the island. Destroyed by the hurricane, it was closed down and the VI Government denied them permission to rebuild.

B. Chronology of Community Involvement

The Water Island community learned about the project in the summer of 1991, around the time they received copies of the draft Archives Search Report prepared by Ebasco Environmental Co., from Huntsville, Alabama.

The first public information meeting with Water Island residents was held on August 14, 1991 at Water Island Terrace. Approximately 45 concerned residents attended the evening meeting. Corps of Engineers officials explained to residents the status of the project including findings of the recently completed Archives Search Report. Huntsville representatives explained the immediate steps to be taken and answered questions from the public. Copies of the final report were made available to residents. The audience expressed their appreciation for the meeting and efforts to clarify doubts. A commitment was made to keep Water Island Civic Association representatives briefed on the progress of the work.

On August 15, Water Island residents read in the local papers about the Corps plans for work at Water Island. A media briefing had been held on August 14 at Government House. The briefing was also covered by the local TV station on the evening of August 14.

A second public information meeting was held in Water Island on December 4, 1991. Nearly 48 concerned residents attended this meeting. Corps of Engineers representatives explained the status of the project, the recently completed topographic mapping future steps to be taken and answered questions from the public. Copies of the maps were made available to the public. Several winter residents, unable to attend the previous meeting participated in this one.

C. Community Issues and Concerns

The Water Island Ordnance and Explosive Waste Removal Project is a source of concern among residents for several reasons:

(a) the nature of the materials that could be buried, (b) the disposal alternatives, (c) the potential impact of these activities on land sales from the Department of Interior and/or on their land values, (d) potential disruption from contractors activities on their secluded and private lifestyle.

To meet some of these concerns, Corps of Engineers officials have kept the community representatives informed of visits prior to any person going to Water Island on project related work. Local representatives accompany the groups or meet them at the Flamingo Bay landfill site and are kept abreast on the status of work.

The residents concerns for outside workers coming regularly to the island at a later date will be addressed prior to the contractor commencing work in the areas.

4. COMMUNITY RELATIONS PROGRAM

A. Goals and Objectives

As stated in Section 1, the overall goal of the Community Relations Program (CRP) is to provide an effective mechanism for communication and the exchange of information among the Army agencies; the contractors; the local community; Federal and Territorial agencies. Attachment G-E presents a list of public affairs contacts for further information of the activities at Former Fort Segarra. The CRP has been developed to fulfill the requirements of the following:

a. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (Public Law 96-510), as amended, including Section 117 of the Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499, October 17, 1986).

b. Headquarters, Department of the Army (HQDA) Public Affairs Plan 10-1-87: Installation Restoration Program, October 1987.

c. AR 200-1, Environmental Protection and Enhancement, and U.S. Army Materiel Command (AMC) and AMCCOM Supplements to the regulation.

d. EPA guidance and publications, including Public Involvement in the Superfund Program (WH-FS-86-004) and CERCLA Compliance with Other Environmental Statutes (Federal Register 50(29): 5928-5932).

e. The publication Community Relations in Superfund: A Handbook {Office of Solid Waste and Emergency Response (OSWER_ Directive Number 9230.0-3A, March 1986}.

This CRP has the following specific objectives:

(1) Ensure the public is aware of the nature of the Former Fort Segarra Ordnance and Explosive Waste Project.

(2) Ensure the public knows its health and interests are of primary concern to the Army Corps of Engineers.

(3) Keep Water Island residents; Federal and Territorial officials and the contractor informed in a timely manner of major findings, recommendations, status of project activities, possible actions and the reason for these actions.

(4) Provide local residents, Federal and Territorial officials an opportunity to review and comment on studies, remedial action alternatives and critical decisions.

(5) Keep Corps officials sensitive to and informed about changes in community concerns, attitudes, information needs and activities related to Water Island and use these concerns as factors in evaluating modifications of the CRP as necessary to address the changes.

(6) Effectively serve the community's information needs and address citizens inquiries through prompt release of factual information through the media and other information dissemination techniques.

(7) Effectively respond to the needs of the media by providing timely response to inquiries and requests for interviews and briefings, thereby resulting in fair and accurate reporting of the findings and recommendations resulting from the environmental studies and project activities.

(8) Create and maintain a climate of understanding through an active public affairs program. Provide opportunities for comment and discussion.

(9) Identify issues and potential areas of concern and develop and implement objective means to avoid or resolve conflicts.

These objectives will be met using the techniques described in Section 4-C.

B. Responsibilities

The primary points of contact for the Former Fort Segarra Community Relations Plan are the Public Affairs Officers in the U.S. Army Corps of Engineers. However, representatives from other levels of the Army are involved. The following responsibilities are established for the implementation of the CRP.

1. From the Washington Level: Public Affairs Chiefs

   a. Department of the Army
   b. U.S. Army Corps of Engineers
   c. U.S. Army Chemical Materiel Destruction Agency (USACMDA)
   d. U.S. Department of the Interior

   Responsibilities are:

   - To coordinate media statements or visits to Water Island that have national significance with appropriate elements.

   - To coordinate release of any information at the national level.

   - Act as a point of contact for responding to and providing guidance for all national and policy type information questions.

   - Coordinate notifications to the Territorial representative in Congress prior to national release of information.

- Coordinate with Division and District levels in advance of Congressional and gubernatorial notifications.

2. From the District and Division Levels: Public Affairs Chiefs

   a. U.S. Army Corps of Engineers - South Atlantic Division
   b. U.S. Army Corps of Engineers - Huntsville Division
   c. U.S. Army Corps of Engineers - Jacksonville District
   d. U.S. Army Chemical Materiel Destruction Agency - Program Manager for Chemical Demilitarization

Responsibilities are:

- Coordinate release of Fort Segarra information with project manager and the Corps Antilles Public Affairs Specialist.

  Provide additional public affairs guidance and assistance in support of this plan, as required.

- Develop and implement a system to convey timely and accurate information throughout all stages of the project to Antilles Public Affairs Specialist.

- Refers to Antilles level for coordination and/or clearance materials intended for public release that have not been previously cleared or specifically authorized for release.

- Inform others of any queries, releases or proposed mainland media visits to Water Island concerning this program.

  Assist in the preparation of news releases for use at major milestone achievements during progress of site investigations and remedial activities.

- Assist in coordinating Congressional or gubernatorial queries and responses received with other Army elements and other agencies, as required.

- Support implementation of the Community Relations Plan.

3. From the local level: Public Affairs

a. Antilles Office - Public Affairs Specialist

Responsibilities are:

- Prepares and updates Community Relations Plan (CRP)

- Implementation at the local level of the CRP.

- Reviews and approves news releases, fact sheets

- Prepares Public Information Bulletins

Coordinates meetings with local official and residents to explain the status of the program.

- Provides approval of contents of materials being presented in coordination with higher headquarters or as provided in cleared statements or plans.

Responds to media queries using statements prepared in coordination with higher headquarters or as provided in cleared statements or plans.

- Coordinates distribution of fact sheets, reports, project updates and other pertinent material to information repositories and Water Island Civic Association representatives.

- Secures and disseminates to interested parties copies of newspaper clippings related to the Water Island Project.

- Coordinates through appropriate channels Freedom of Information Act Requests relating to Fort Segarra.

- Maintains and updates mailing lists of interested parties.

- Supports visitors, meetings, tours or site visits, as necessary.

C. Communications Activities and Techniques

The principal elements of success in a public involvement program are to present information to the community and to develop a constructive mechanism for public participation. To develop, maintain and enhance public involvement, the Former Fort Segarra CRP presents an active approach to addressing public concerns about the project.

Paramount to developing public trust is a functioning communications system by which relevant and accurate information can be made available to local citizens, government officials, regulators and the media in a timely and responsible manner. This plan is designed to provide a functional and effective communication and information exchange within the different Army offices, other Federal and Territorial agencies, Water Island residents, the public and the media. The following sections address the methods and techniques for implementing such a system. Attachment G-F gives a recommended schedule for some of these activities.

(1) Agency Communications Techniques

Effective interagency communications is essential for a coordinated campaign in addressing community concerns. The U.S. Army Corps of Engineers Jacksonville District and Huntsville Division will meet as needed with U.S. Army Chemical Materiel Destruction Agency (USACMDA) and other elements to review previous and ongoing studies, develop program schedule and monitor ongoing activities. In addition, they will produce timely information and will provide the information to Federal and Territorial agencies. Public affairs channels will be involved as necessary.

Agency interactions and communications techniques will include but not be limited to:

° Project Status Meetings - Meetings will be held at appropriate times with public affairs personnel involved to learn about project status, concerns, accomplishments, upcoming activities and schedules.

° Telephone Conference Calls - Conference calls will be held as needed to keep all agencies informed of program activities.

° News and Fact Sheet Releases - Copies of news releases, fact sheets and other pertinent information related to Former Fort Segarra will be provided to the federal agencies involved, for informational purposes and so the agencies can respond adequately to any media or public inquiries regarding the releases.

° Prior Notice of Community Meetings - When community meetings are scheduled as part of the CRP, advance notice will be provided to other agencies involved, both Federal and Territorial. Also provide adequate notice to Water Island residents and the public to allow for maximum participation.

(2) Local Community and Media Communications Techniques

To date, communications with Water Island residents regarding past and ongoing environmental assessment studies and activities have consisted of:

° Two public information meetings held at Water Island on August 14 and December 4, 1991.

° Distribution of five Water Island Information bulletins. The bulletin is a one- or two-page document distributed to residents, the media, local officials and other interested parties. The purpose is to help ensure the public is informed of the status of the removal actions and has an understanding of the program.

Media briefing held on August 14, 1991 to explain ongoing work, the Archives Search Report and future actions.

° Compilation of concerned citizens list.

To expand communications and ensure effective two way interaction between the Corps of Engineers and the local community, the following public involvement techniques are recommended:

° Continue the Information Bulletin - It will address the concerns of the residents and include status of studies, remedial actions, schedule updates and special interest items.

° News Releases - To be prepared and distributed as needed to media, Federal and Territorial officials, and individuals on the mailing list.

° Community Meetings - Locations are identified where additional meetings can be held with Water Island residents. Such meetings would be coordinated with Huntsville, USACMDA, Department of Interior and local officials. The need for such meetings should be determined by the Corps of Engineers representatives.

° On Site Briefings and Tours - These should be limited because of residents expressed interest in not having large groups constantly on the island. They can be held on an as needed basis with government officials, Congressional representatives and the media. The tours will be coordinated by the public affairs representatives.

° Audio Visual Materials - Set up visual displays of maps, charts, diagrams and photos. These may be accompanied by a brief test explaining the displays and the purpose. They may be set up at the project site.

° Introduce Contractors to Local Residents - Water Island residents want to know who is the person(s) responsible for any group which visits the area. The team supervisor must contact, with Public Affairs assistance, the President of the Water Island Civic Association prior to commencing work. There is no substitute for personal contacts so residents will know who to call for any matter related to work in their vicinity.

Attachment G-A

SITE MAP

Project maps prepared by Project Management and other technical units to be utilized.

See Project Management Plan, Appendix A

Attachment G-B

NEWS ARTICLES/RELEASES

To be prepared and issued as needed in coordination with Territorial and other Federal officials.

Note: As a sample, a news article published in the VI Daily on August 15, 1991 enclosed.

Attachment G-C

INFORMATION BULLETINS

To address local concerns and to involve and communicate with the public several information bulletins have been prepared and distributed for Water Island residents. The bulletins, utilized to update residents on the Fort Segarra restoration program, have been prepared as follows:

Bulletin One - September 6, 1991

Topics: Status of U.S. Army Corps of Engineers work for Water Island; Archives Search Report, Public Meeting, Visitors to Water Island

Bulletin Two - December 4, 1991

Topics: Residents Representative, Fencing, Mapping Work, Remediation Work Plans, Remediation Contracting Actions

Bulletin Three - May 5, 1992

Topics: New Agency Created, Status, Visits to VI

Bulletin Five - January 22, 1993

Topics: Summary, Visitors to Water Island, Ongoing and Future Activities

Note: As sample, Bulletin Five is attached.

Attachment G-D

MEDIA LIST

TELEVISION	TELEPHONE	FAX
WTJX TV Channel 12 VI - Public Television Station P. O. Box 7879 St. Thomas, USVI 00801	(809) 774-6255	(809) 774-7092
WSVI Channel 8 Box BABC Sunny Isle St. Croix, USVI 00823	(809) 778-5508	(809) 778-5011
Caribbean Communication St. Thomas Cable TV 1 Beitjen Place St. Thomas, USVI 00802	(809) 776-2150	(809) 774-5029

PRINT

VI Daily News P.O. Box 7760 St. Thomas, USVI 00801	(809) 774-8772	(809 (776-0740)

Island Trader (Weekly) (809) 775-7084 (809) 775-4091
44 Estate Frydenhoj
St. Thomas, USVI 00802

Also: Island Nautical Scene (twice monthly)

VI Business Journal (809) 776-2874 (809) 774-3636
Box 1208 Emancipation Gardens
St. Thomas, USVI 00804 (twice monthly)

Catholic Islander (809) 774-3166 (809) 774-5816
(monthly)
Box 1825
St. Thomas, USVI 00803

VI GO-Tel (monthly) (809) 775-5985 (809) 775-5985
Box 4543
St. Thomas, USVI 00803

VI Pride Magazine (809) 777-7VIP (809 (775-6051)
P.O. Box 7908
St. Thomas, USVI 00803

St. Croix Avis (809) 773-2300 (809) 775-5511
Daily-St. Croix
Box 750
St. Croix, USVI 00801

Water Island News (809) 774-2148 None
(monthly)
C/O Limestone Reef Terrace
Randy Bauster
Water Island, USVI 00802

RADIO

The Heat - 94.3 FM (809) 774-9497 (809) 775-6867
Box 5647
St. Thomas, USVI 00803

Z Gold 0 91.7 FM (809) 774-9497 (809) 775-6867
Box 5647
St. Thomas, USVI 00803

WGOD - 98 FM/1090 AM (809) 774-4498 (809) 778-0877
Box 5012
St. Thomas, USVI 00803

WIYC - Paradise 104/104.3 FM (809) 775-2104 (809) 776-4226
Box 5234
St. Thomas, USVI 00803

WTBN - The Breeze 102.1 FM (809) 776-2610 (809) 776-2601
19 Estate Thomas
STE 103
St. Thomas, USVI 00802

WVGN - Power 105 105.3FM (809) 776-1556 (809) 773-3435
Box 10772
St. Thomas, USVI 00801

WVWI - Radio One - 1000 AM (809) 776-1000 (809) 776-5357
Box 5678
St. Thomas, USVI 00803

WSTA - Luck 13 /1340 AM (809) 774-4500 (809) 776-1316
Box 1340
St. Thomas, USVI 00804

WIVI /96.1 FM (809) 774-1972 (809) 774-9788
Box 4383
St. Thomas, USVI 00803-4383

Attachment G-E

PROGRAM POINTS OF CONTACT

Public Affairs Contacts

Department of the Army
Office of the Chief of Public Affairs (703) 697-4462
Washington, DC 20310-1509

US Army Corps of Engineers
Chief, Public Affairs (703) 272-0010
Headquarters USACE
Washington, DC 20314-1000 FAX 272-1803

USACE South Atlantic Division
Mr. Robert Holland (404) 332-6715
Chief, Public Affairs
77 Forsyth St. N.W. FAX 331-4837
Atlanta, GA 230335-6801

USACE Jacksonville District
Ms. Jacqueline Griffin (904) 232-2235
Chief, Public Affairs
P. O. Box 4970 FAX 232-2237
Jacksonville, FL 32232-0019

U.S. Army Chemical Materiel Destruction Agency
Program Manager for Non-Stockpile Chemical Materiel
Ms. Louise Dyson
Public Affairs Office
Aberdeen Proving Ground, MD 21010-5401

U.S. Army Chemical & Biological Defense Command
U.S. Army Technical Escort Unit (TEU)
Mr. Jim Allingham
Bldg E-5101
Aberdeen Proving Ground, MD 21010

U.S. Army Corps of Engineers
Huntsville Division
Mr. Ken Crawford (205) 955-5740
Chief, Public Affairs
P.O. Box 1600 FAX 895-3089
Huntsville, AL 358-4301

U.S. Department of Interior
Public Affairs Office (202) 208-3003
1849 C Street N.W.
Mailstop 4328
Washington, DC 20240

VI Government
Mr. James O'Bryan Jr. (809) 774-0294
Press Secretary to the Governor
Government House FAX 774-4988
St. Thomas, USVI 00802

USACE, Jacksonville District
Antilles Office
Mrs. Elsa Jiménez (809) 729-6832
Public Affairs Specialist
400 Fernández Juncos Avenue FAX 729-6879
San Juan, Puerto Rico 00901

TECHNICAL CONTACTS

List available from Project Management Plan

Attachment G-G

LOCATION OF INFORMATION REPOSITORIES

	Telephone
Office of the Governor Public Affairs Office Government Hill St. Thomas, USVI 00801	(809) 774-0001
U.S. Department of Interior Mr. Robert Bunn Territorial Representative Room 206 Federal Building St. Thomas, USVI 00801	(809) 774-1190
Enid M. Baa Library 20 Dronningh Gade St Thomas, USVI 00802	(809) 774-0630

Attachment G-H

LOCATION FOR COMMUNITY MEETINGS

ON WATER ISLAND

Water Island Terrace
Water Island

Contact: President Water Island Association
Mr. Bill Bates
Tel. (809) 774-1288
Capacity: 50-60 persons
Lead Time: One week or less
Fee: None

ON ST. THOMAS

VI Legislature
Veterans Drive
St. Thomas, USVI

Contact: Office of the President
Tel. (809) 774-0880
Capacity: 150 persons
Lead Time: one-two weeks
Fee: None

Attachment G-I

ELECTED OFFICIALS

FEDERAL	TELEPHONE	FAX
Hon. Ron de Lugo USVI Delegate to Congress Rayburn Building, Room 2927 Washington, DC 20515	(202) 225-1790	(202) 225-9392
St. Thomas Office	(809) 774-4408	

TERRITORIAL

Hon. Alexander Farrelly Governor of the USVI Government House P.O. Box 599 St. Thomas, USVI 00801	(809) 774-0001	
Senator Bingley Richardson President, VI Legislature P. O. Box 477 St. Thomas, USVI 00801	(809) 774-0880	

Attachment G-J

CONCERNED CITIZENS GROUP MEMBERS

	Telephone
Mr. Bill Bates, President Water Island Residents Association Water Island St. Thomas, USVI 00802	(809) 774-1288
Mrs. Elsie Keller, Past President Water Island Residents Association Water Island St. Thomas, USVI 00802	(809) 774-4127
Mr. Chet Kwiecien Board Member Water Island Residents Association 19 Water Island St. Thomas, USVI 00802	(809) 774-2919
Mr. David McCardle Main Lease Holder Repr. Water Island St. Thomas, USVI 00802	
Mr. John Coleman Water Island Residents Association 16 Water Island St. Thomas, USVI 00802	(809) 774-9849

Attachment G-K

MAILING LIST

Mailing lists are maintained at the Jacksonville District, Antilles Public Affairs Office for use as needed.

- Lease holders on Water Island
- USVI Government officials
- Other interested parties

APPENDIX H

DA LETTER OF SUPPORT



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
WASHINGTON, D.C. 20310

1 JUN 1992

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY FOR
INSTALLATIONS, LOGISTICS, AND
ENVIRONMENT
COMMANDER, U.S. ARMY MATERIEL COMMAND
CHIEF OF ENGINEERS

SUBJECT: Restoration of Formerly Used Defense Sites (FUDS)
Contaminated with Suspect Chemical Weapons (CW) Materiel

1. High level public and governmental attention to the restoration of Raritan Arsenal, NJ and Fort Segarra, VT make it mandatory that we accelerate actions for the recovery of suspect chemical warfare materiel from them. The U.S. Army Chemical Material Destruction Agency (USACMDA) is being formed to accomplish overall programmatic planning and prioritization of effort to clear the estimated 200 formerly used defense sites (FUDS) which also may have suspect CW materiel contamination. USACMDA is designated as the lead agency for recovery of CW materiel from Raritan Arsenal and Fort Segarra. Corps of Engineers and AMC will provide support in the execution of operations to clear these specific sites.

2. Due to the urgency, Raritan Arsenal and Fort Segarra will be pilot projects and planning will proceed as rapidly as possible. Raritan Arsenal will have first priority. On-site activity at Raritan Arsenal will begin as soon as it can be arranged. AMC will provide five borrowed civilian/military personnel as augmentation for USACMDA to facilitate start of planning, pending the hire of permanent personnel. Target job description and grade structure are shown at Enclosure. Specific skills and grade will be worked out between USACMDA and AMC.

3. The restoration of Raritan Arsenal and Fort Segarra will be carried out under ASA(IL&E) policy guidance. USACE retains on-site management responsibility. Director Space and Special Weapons,

SUBJECT: Restoration of Formerly Used Defense Sites (FUDS) Contaminated with Suspect Chemical Weapons (CW) Materiel

ODCSOPS will be focal point for integration of chemical surety, safety, and security policy as it applies to this unique operation.

4. USACMDA will provide overall direction to include resource programming, environmental documentation for transport mode and storage site selection, and the development of equipment and procedures. USACE and AMC support responsibility for Raritan Arsenal and Fort Segarra are assigned as outlined below. Working relationships with USACMDA on a broader scale to address the total restoration mission will be established when the agency becomes fully operational.

a. Corps of Engineers: Responsible for all aspects of site restoration operations to include site investigation, site safety documentation, environmental documentation, remediation actions and unearthing of suspect chemical warfare materiels. Responsibility for CW materiel ends when materiel is unearthed.

b. Army Materiel Command: Responsible in accordance with USACMDA planning for execution of recovery of suspect chemical warfare materiel once unearthed.

5. Funding requirements directly attributable to planning, preparation, and execution of restoration and recovery operations will be resourced from Defense Environmental Restoration Program (DERP) funding. Technical Escort Unit support to USACMDA will be on a reimbursable basis. Storage costs will be executed from AMC normal operating accounts.

Enclosure

DENNIS J. REIMER
General, United States Army
Vice Chief of Staff

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

20 AUG 1992

CEMP-RF (200-1a)

MEMORANDUM FOR

COMMANDER, HUNTSVILLE DIVISION, ATTN: CEHND-PM-OT
COMMANDER, NORTH ATLANTIC DIVISION, ATTN: CENAD-PP-PM
COMMANDER, SOUTH ATLANTIC DIVISION, ATTN: CESAD-PD-R

SUBJECT: Chemical Warfare Material Investigation and Remediation at Former Raritan Arsenal, N.J., and Water Island, U.S. Virgin Islands

1. Reference memorandum, Army Vice Chief of Staff, 1 June 92, subject: Restoration of Formerly Used Defense Sites (FUDS) Contaminated with Suspect Chemical Weapons (CW) Materiel (enclosed).

2. The purpose of this memorandum is to reiterate the priority for investigation and remediation of potential CWM at the subject sites.

3. The referenced memorandum directed the U.S. Army Chemical Material Destruction Agency, and the Corps of Engineers to plan and initiate remedial action at the subject sites as rapidly as possible.

4. The referenced memorandum established a new activity within USACMDA to accomplish non-Corps activities incidental to the remediation at the subject sites. The new USACMDA activity - recently staffed up to 5 action officers dedicated to accomplishing the subject projects. Considering USACMDA has two projects to concentrate on, and the Corps has many, it may be challenging to keep pace with USACMDA initiatives. However, considering the scrutiny these projects will experience, it is imperative that we are never guilty of delaying project progress for lack of emphasis.

5. CENAD and CESAD must ensure their project managers (PMs), in conjunction with CEHND, develop and track project milestones to ensure each step is executed as quickly as possible. The schedule for accomplishing the projects must be ambitious yet achievable. Parallel actions and other schedule efficiencies will be maximized. The schedule must be based strictly on technical feasibility, and will not consider funding or manpower constraints unless acknowledged by HQ.

CEMP-RF
SUBJECT: Chemical Warfare Material Investigation and Remediation at Former Raritan Arsenal, N.J., and Water Island, U.S. Virgin Islands

6. CEHND must coordinate closely with the respective PMs to ensure they are fully informed and provided opportunity to comment on all activities and schedules concerning their sites.

7. CENAD, and CESAD must ensure their PMs provide CEMP-RF respective project milestones (only regarding "area 5" at Raritan) NLT 30 Sept 92. Thereafter, the PMs must immediately notify CEMP-RF, in writing, of any deviation from the project schedule and corroborating explanation. It is CEHND's responsibility to program sufficient funds to sustain the project schedules.

8. POC: Mr. Jim Coppola, (202) 504-4992.

FOR THE DIRECTOR OF MILITARY PROGRAMS:

Encl

MICHAEL H. FELLOWS
Colonel, Corps of Engineers
Chief, Environmental Restoration Division
Directorate of Military Programs

CF:
CENAN (Maj. Harris)
CESAJ (Mr. Bridgers)

DEPARTMENT OF THE ARMY

SOUTH ATLANTIC DIVISION, CORPS OF ENGINEERS

ROOM 313, 77 FORSYTH ST. S.W.

ATLANTA, GEORGIA 30303-8801

REPLY TO ATTENTION OF:
CESAD-PM-H

26 August 1992

MEMORANDUM FOR COMMANDER, JACKSONVILLE DISTRICT, ATTN: CESAJ-DP-I

SUBJECT: Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS), Project Number I02VI097701, Former Fort Segarra, Water Island, U.S. Virgin Islands

1. Reference CESAD-PM-H memorandum, dated 10 February 1992, subject: Defense Environmental Restoration Program (DERP) - Projects Management Responsibility (copy enclosed).

2. In accordance with the above referenced memorandum, project management responsibilities for the subject ordnance and explosive waste (OEW) restoration project are assigned to Jacksonville District. The Jacksonville District must work in close coordination with the executing agencies, U.S. Army Corps of Engineers, Huntsville Division (CEHND) and U.S. Army Chemical Material Destruction Agency (USACMDA). The district must keep the South Atlantic Division informed of activities on the project.

3. Jacksonville District should ensure that the appropriate project information and funding is included in the FUDS project database and work plans. As in all DERP - FUDS projects, the Jacksonville District will execute the remedial action (RA) for this project. In conjunction with the executing agencies Jacksonville District is responsible for providing input to a formal memorandum of agreement between the Corps of Engineers and USACMDA and for assisting in the development of a formal community relations plan.

4. If you have any questions concerning this matter, please call Sharon Ernst, CESAD-PM-H, (404) 331-2495.

FOR THE COMMANDER:

JOHN W. RUSHING, P.E.
Director of Programs & Project Management

Encl
as

CF:
CEMP-R
USACMDA
CEHND

APPENDIX I

PROJECT ISSUES

APPENDIX I

PROJECT ISSUES

1. The presence of significant cultural resourses on Water Island will require close coordination of project activities with appropriate Federal (National Park Service, State (State Historic Preservation Office), and local government agencies.

2. Endangered species of plants and animals may be encountered on Water Island and thus will require close coordination with Fish and Wildlife Service (FWS).

3.

APPENDIX J

ACRONYMS

ACO	Authorized Contracting Officer
AEHA	Army Environmental Hygiene Agency
AMC	U.S. Army Materiel Command
AR	Army Regulation
ASA	Assistant Secretary of the Army
ASA(IL&E)	Assistant Secretary of the Army (Installation, Logistics, and Environment)
CA	Chemical Agent
CBDCOM	Chemical and Biological Defense Command
CD	Chemical Demilitarization
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (1980)
CEHND	Huntsville Division, USACE Technical Center of Expertise for Ordnance
CESAD	South Atlantic Division, USACE
CESAJ	Jacksonville District, USACE
CON/HTW	Containerized Hazardous & Toxic Waste
CONUS	Continental United States
COR	Contracting Officer's Representative
CRP	Community Relations Plan
CWM	Chemical Warfare Materiel
CW	Chemical Weapons/Chemical Warfare
DA	Department of the Army
DDESB	Department of Defense, Explosive Safety Board
DERP	Defense Environmental Restoration Program
DHHS	Department of Health and Human Services
DOD	Department of Defense
DOT	Department of Transportation
DPNR	Department of Planning and Natural Resources
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
FFS	Former Fort Segarra
FS	Feasibility Study
FUDS	Formerly Used Defense Site(s)
HD	Distilled Mustard
HSO	Health and Safety Officer

APPENDIX J

ACRONYMS

HTW	Hazardous and Toxic Waste
HTRW	Hazardous, Toxic, and Radiological Waste
INPR	Inventory Project Report
LCPM	Life Cycle Project Management
MCX	Mandatory Center of Expertise
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
OEW	Ordnance and Explosive Waste
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Act
PA	Preliminary Assessment
PQAPP	Participants Quality Assurance Program Plan
PM	Project Manager
PMP	Project Management Plan
QA	Quality Assurance
QC	Quality Control
QAPP	Quality Assurance Project Plan
RA	Remedial Action (Construction)
RAC	Risk Assessment Code RAC 1 (Imminent Hazard) RAC 5 (NO Action)
RAM	Responsibility Assignment Matrix
RD	Remedial Design
RCRA	Resource Conservation Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RWZ	Restricted Work Zone
SARA	Superfund Admendents and Reauthorization Act Compensation and Liability Act of 1980
SHERP	Safety, Health and Emergency Response Plan
SI	Site Investigation
SOP	Standard Operating Procedures
SOW	Scope of Work
SSHP	Site Safety and Health Plan
TEU	Technical Escort Unit
USACMDA	U.S. Army Chemical Materiel Destruction Agency
USATHMA	U.S. Army Toxic and Hazardous Material Agency

APPENDIX J

ACRONYMS

HTW	Hazardous and Toxic Waste
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SOW	Scope of Work
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USACMDA	U.S. Army Chemical Materiel Destruction Agency
USATHMA	U.S. Army Toxic and Hazardous Material Agency

APPENDIX J

ACRONYMS

USACE	U.S. Army Corps of Engineers
UXO	Unexploded Ordnance
VITEMA	Virgin Islands, Territorial Emergency Management Agency
WBS	Work Breakdown Structure

US ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT
SAN JUAN AREA OFFICE



SAINT THOMAS - U.S.V.I.

INFORMATION BULLETIN : "WATER ISLAND"

NUMBER : ONE DATE : 6 SEPTEMBER 1991

1. The purpose of this bulletin is to update Water Island residents and VI Territorial officials on the status of the Corps of Engineers work at Water Island. This document is prepared in response to local requests, specifically from the Water Island Civic Association.

2. A public meeting was held on the evening of 14 August with Water Island residents to brief them on the status of work, particularly the Archives Report.

3. Copies of the Archives Search Report were made available to Water Island residents, VI and Federal Government officials and the media on 14 August 1991.

4. The Corps of Engineers' contractor will commence fencing the Flamingo Bay landfill site around 9 September and work should be completed in approximately two weeks.

5. During the period of 4-12 September several Corps officials from Huntsville will be in the U.S. Virgin Islands to oversee work under way and to meet Territorial and Federal officials. They will participate in meetings in coordination with Jacksonville District representatives from the San Juan office.

6. The Corps' contractor began this week topographic and planimetric surveying work to produce up to date maps of Water Island. The contract also includes aerial photography and photogrammetric mapping. All work should be completed and delivered to the Corps of Engineers by the end of November.

7. The Corps of Engineers needs to identify the representatives of the Water Island residents for future contacts and coordination. We need the residents' Association to notify the Corps by providing the name, address and telephone number of a principal contact and an alternate. Please forward the information in writing to: Mr. Walt Perro, Coordinator, Water Island Project, Army Corps of Engineers, San Juan Area Office, 400 Fernández Juncos, San Juan, PR 00901-3299.

PREPARED BY USACE, JACKSONVILLE DISTRICT, SAN JUAN AREA OFFICE
IN COORDINATION WITH THE HUNTSVILLE DIVISION.
SAN JUAN AREA OFFICE, 400 FERNANDEZ JUNCOS AVE
SAN JUAN PUERTO RICO 00901-3296

Jax-040901-015

US ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT
SAN JUAN AREA OFFICE

SAINT THOMAS - U.S.V.I.

INFORMATION BULLETIN : "WATER ISLAND"

VOLUME : TWO DATE : 4 December 1991

1. Residents Representative. Mr. Chet Kwiecien is the designated representative of Water Island residents and Mr. John Coleman serves as alternate. The Corps of Engineers coordinated with him the second public meeting to be held today, Wednesday 4 December at 7:30 p.m. to update residents on the status of the project.

2. Fencing. Installation of fence around the Flamingo Bay Landfill started on Monday, 28 October. Length of the new fence was approximately 1,000 feet and was tied to the existing fence. Mr. Robert Bunn, Department of Interior representative in USVI has a key to the gate and requests to enter the fenced area should be directed to him. The Army Corps of Engineers, San Juan Office has a spare key to the gate.

The fence was installed by H & M Services of St. Thomas as a subcontractor to Ebasco Inc. of Huntsville, Alabama. Ebasco is the contractor who prepared the Archives Search Report.

3. Mapping. All topographic and planimetric mapping work was completed on Thursday, 14 November. Final maps were delivered to the Corps Huntsville Division by the contractor on Wednesday, 27 November. Copies of the planimetric map (surface features) at a scale of 1"=200' of the entire Water Island will be made available to all Water Island residents. Topographic maps at a scale of 1"=30' of the Flamingo Bay Landfill and of Test Areas 2, 4, 5, 6, and 7 will be made available to persons who reside adjacent to those sites.

Since a limited number of planimetric and topographic maps will be available at the public meeting, residents may request

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that maps be provided to them by mail by giving their name and mailing address to a Corps of Engineers representative or writing to the address shown at the bottom page of this bulletin. The mapping was performed by Lowe Engineers of Atlanta, GA as a subcontractor to Ebasco Inc. of Huntsville.

4. Remediation Work Plans. Ebasco Inc. of Huntsville submitted to the Corps conceptual ordnance remediation and safety plans a few weeks ago for internal Department of the Army review. Draft final plans are due mid March 1991 and will then be turned over to the contractor selected to perform the actual remediation work. This contractor will be responsible for finalizing these plans for implementation.

5. Remediation Contracting Action. The Corps of Engineers has selected a minority owned small-business contractor experienced in the ordnance removal field to perform the actual remediation. This selection was submitted to the Small Business Administration for approval which is expected in December. Upon approval of the selection, the contractor will perform a site visit and submit a proposal to the Corps for review describing how he plans to perform the remediation. Actual award of the contract is contingent upon the Corps approval of the contractor's proposal.

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US ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT
SAN JUAN AREA OFFICE



SAINT THOMAS - U.S.V.I.

INFORMATION BULLETIN : "WATER ISLAND"

NUMBER : Three DATE : 5 May 92

1. Remediation Contracting Action Update: In our last bulletin we reported that the Corps of Engineers was submitting to the Small Business Administration (SBA) for approval, the name of a contractor experienced in the ordnance removal field. We have obtained SBA approval and our contracting actions related to the remediation contractor are progressing. The contractor is visiting Water Island this week (5 - 8 May) to observe all the test areas, the salt ponds, and the Flamingo Bay landfil area.

A pre-proposal conference will be held on site between Corps representatives from Huntsville, Jacksonville and San Juan, the representatives from the US Army Technical Escort Unit (TEU), and the contractor representatives.

2. Continuing Coordination: In addition, to the contractors meeting, the Corps of Engineers team from Huntsville and the TEU team will hold coordination meetings with representatives from several Virgin Islands Government agencies. They will meet with territorial officials from VITEMA, the Dept. of Planning and Natural Resources, the Governor's office, and others.

3. Residents Coordination: The designated representative of the Water Island Residents Association, Mr. Chet Kwieceien, will be contacted to inform him on other activities scheduled for the week. We feel there is no need to hold a resident's meeting at the moment. A meeting will be held before commencing any work or any other major development occurs

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JACKSONVILLE DISTRICT
ANTILLES OFFICE



SAINT THOMAS - U.S.V.I.

INFORMATION BULLETIN : "WATER ISLAND"

NUMBER : Four **DATE :** 29 July 1992

1. New Agency Created:

At the direction of Congress, the Deparment of the Army created an organization to deal specifically with non-stockpile chemical ordnance and munitions from both Formerly Used Defense Sites (FUDS) and active installations. Col. Louis M. Jackson is the Program Manager for Non-Stockpile Material, a part of the US Army Chemical Material Destruction Agency (USACMDA).

Status of New Agency:

This new agency was actually formed at the direction of the Assistant Secretary of the Army for Installations, Logistics, and Environment, Ms. Susan Livingstone, on 22 June 1992. Col. Jackson has a staff of temporary detailed employees coming from various Army agencies. With the exception of Col. Jackson's deputy, Mr. Vern Skinner and the administrative staff, the majority of the staff reported for duty between 13 and 17 July 1992.

Visits to USVI:

Col. Jackson and a member of his staff are visiting Water Island in St. Thomas 28 - 31 July 1992. The purpose of this visit is to familiarize Col. Jackson with the layout of Water Island, to meet Virgin Islands Government officials and the spokesperson for the residents' association.

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JACKSONVILLE DISTRICT
ANTILLES OFFICE

SAINT THOMAS - U.S.V.

INFORMATION BULLETIN : "WATER ISLAND"

NUMBER : Five **DATE :** 22 Jan 93

1. Summary of Previous Bulletins

In Bulletins 1 - 4, we have provided information to Water Island residents and local officials on the status of the US Army Corps of Engineers actions related to former Ft. Segarra or Water Island. Last summer we reported the creation of a new organization to deal with non-stockpile chemical ordnance and munitions from both formerly used Defense Sites and active installations and is part of the US Army Chemical Material Destruction Agency (USACMDA).

2. Visits to Water Island in late 1992

Several visitors went to Water Island in late 1992 to become familiar with the area as there are many persons and offices involved in this effort. Fort Segarra is only one of many sites identified in the United States, but it has a high priority for the agency due to interest from both the Department of Interior and the VI Government officials.

3. Current Activities Related to Former Ft. Segarra

Current work efforts are towards the development of required coordination and work plans prior to performing any non-intrusive investigations at the various sites. This portion of the work effort will include the removal of existing surface debris at the Flamingo Bay Landfill site to another temporary location within Water Island.

4. Visitors during January 1993

Personnel from USACMDA, their contractor (Science Applications Internation Corporation of California), and Corps of Engineers staff visited Water Island during the week of January 11, 1993. The purpose of the trip was to familiarize government and contractor staff prior to preparation of action plans. The group also held meetings with several Virgin Islands government officials involved in regulatory oversight and other activities related to Water Island. The agencies visited included the Water and Power Authority, VI Territorial Emergency Management Agency, and the Department of Planning and Natural Resources. Visits were also made to the library and meetings held with various residents of Water Island.

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Jan 15

During the week of January 25, 1993, health service personnel from USACMDA will also be visiting the USVI to include Water Island. They will hold meetings with local officials to obtain information on medical facilities available in St. Thomas.

5. Next Activities

Prior to commencing any work in Water Island there will be adequate notification and discussion of the work to be conducted with residents.

MEMORANDUM OF AGREEMENT
BETWEEN
U.S. ARMY CORPS OF ENGINEERS
AND
THE GOVERNMENT OF THE U.S. VIRGIN ISLANDS

SUBJECT: Virgin Island Territorial Emergency Management Agency (VITEMA), Department of Planning and Natural Resources (DPNR), Police Department, and Fire Service Response to On-Site Emergencies During Phase II Site Characterization at Former Fort Segarra

1. PURPOSE: The purpose of this Memorandum of Agreement (MOA) is to clearly establish the responsibilities and the organizational relationship between the U.S. Army Corps of Engineers and government agencies of the U.S. Virgin Islands. Government agencies applicable to this MOA are the U.S. Virgin Island Territorial Emergency Management Agency (VITEMA), the Departmentof Planning and Natural Resources (DPNR), the Virgin Islands Police Department, and Fire Service. It relates to the unlikely event that an emergency condition arises during Phase II Site Characterization operations which requires police and/or fire department response on-site at Former Fort Segarra. **Phase II Site Characterization involves the intrusive investigation of anomolies detected during Phase I Site Characterization activites to determine if chemical warfare material is present at the Former Fort Segarra.**

2. REFERENCES:

a. Department of the Army Pamphlet (DA PAM) 50-6, 17 May 1991, Chemical Accident or Incident Response and Assistance Operations.

3. RESPONSIBILITIES:

a. The U.S. Army Corps of Engineers agrees to the following provisions:

- To designate at the project office for the Former Fort Segarra (FFS), a Corps of Engineers point of contact (POC) for the VITEMA, DPNR, Police Department and Fire Service.

- To provide VITEMA, DPNR Police Department and Fire Service with a list of the chemical contaminants including chemical warfare materials which may potentially be encountered on-site at FFS during Phase II Site Characterization along with a description of their health effects.

JAX-040901-016

JAX16

SUBJECT: Virgin Island Territory Emergency Management Agency (VITEMA), Department of Planning and Natural Resources (DPNR), Police Department, and Fire Service Response to On-Site Emergencies During Phase II Site Characterization at Former Fort Segarra

Material Safety Data Sheets (MSDS) for site contaminants and for hazardous materials brought on-site will be provided. The list of potential chemicals is attached at the end of this MOA.

- To arrange for the provision of training of police and fire personnel, or their designated representatives, to familiarize them with Phase II operations and with the site specific Safety, Health, and Emergency Response Plan (SHERP) and Protective Action Plan (PAP). Training will be provided by the Site Safety and Health Officer (SSHO).

- To provide the opportunity for the designated POC at VITEMA, DPNR, Police Department and Fire Service to participate in a "Pre-Simulation Table Top" exercise at the FFS Project Office.

- To provide an opportunity for the designated POC at VITEMA, DPNR, Police Department and Fire Service to participate in a simulation exercise of an emergency condition to be conducted on-site at FFS prior to the initiation of Phase II operations.

- To notify the designated POC at VITEMA, DPNR, Police Department and Fire Service whenever an emergency condition arises which results in a suspension of operations until a full evaluation of the hazard is conducted.

- In the event that police or fire response is required at FFS Phase II operations, ensure that emergency response personnel are fully briefed by the site Emergency Coordinator as to the nature of the emergency and any special precautions necessary to safely execute their mission.

- To take responsibility and accountability for any emergency response equipment which becomes contaminated with Chemical Surety Material/Chemical Warfare Material until it is destroyed by authorized methods or released by competent authority.

- To periodically update the designated POC at VITEMA, DPNR, Police Departmentand Fire Service on Phase II operations.

- All costs for personnel, equipment and supplies in response to an emergency event during FFS Phase II operations will be reimbursed on an actual cost basis with bills submitted to Jacksonville District Finance Office.

SUBJECT: Virgin Island Territorial Emergency Management Agency (VITEMA), Department of Planning and Natural Resources (DPNR), Police Department, and Firre Service Response to On-Site Emergencies During Phase II Site Characterization at Former Fort Segarra

b. The U.S. Virgin Island Territorial Emergency Management Agency (VITEMA) agrees to he following provisions:

- To ensure the availability of on call off-site, personnel able to respond to an on-site emergency during Phase II operations at FFS.

- To designate a POC at VITEMA to act as liaison between the police and fire departments and the U.S. Army Corps of Engineers.

- To act as a public resource for information provided to VITEMA by the U.S. Army Corps of Engineers pertaining to Phase II operations at FFS including information on site contaminants and potential health hazards.

- To assess the need for specific training to be provided to police and fire personnel by the U.S. Army Corps of Engineers to familiarize these personnel with FFS and Phase II operations and to coordinate any such requested training through the POC at the FFS project office.

c. The Virgin Islands Police Department agrees to the following provisions:

- To ensure the availability of on call off-site personnel able to respond to an on-site emergency during Phase II operations.

- To provide security of the Phase II operational site in the event of an on-site emergency.

d. The Virgin Islands Fire Service agrees to the following provisions:

- To ensure the availability of on call off-site personnel able to respond to an on-site emergency during Phase II operations.

- To provide fire fighting expertise at the Phase II operational area in the event of an on-site fire emergency.

e. The Department of Planning and Natural Resources agrees to the following provisions:

SUBJECT: Virgin Island Territorial Emergency Management Agency (VITEMA), Department of Planning and Natural Resources (DPNR), Police Department, and Fire Service Response to On-Site Emergencies During Phase II Site Characterization at Former Fort Segarra

- To provide consultation, through VITEMA, on an any on-site emergency occurring during Phase II operations at the Former Fort Segarra.

4. Points of contact concerning this MOA are as follows:

LTC Chester D. Fowler USA
Deputy Commander
Jacksonville District
San Juan, PR
(787) 723-0133

Mr. Robert Bridgers
Project Manager
Jacksonville, District
(904) 232-3085

Mr. James W. Woodey, Jr.
Chief, Safety and Occupational Health
Jacksonville District
(904) 232-2564

Mr. David Stanton
Safety Specialist, Antilles
San Juan, PR
(787) 723-0133

Mr. Roger Fitzpatrick
Technical Manager
Huntsville Technical Center
(205) 895-1555

Ms. Elsa Jimenez
Public Affairs Officer, Antilles
San Juan, PR
(787) 729-6876

SUBJECT: Virgin Island Territorial Emergency Management Agency (VITEMA), Department of Planning and Natural Resources (DPNR), Police Department, and Fire Service Response to On-Site Emergencies During Phase II Site Characterization at Former Fort Segarra

5. This Memorandum of Agreement is effective for planning and coordination action on the date of signing and will remain in effect until revised or rescinded by mutual agreement. Planning meetings will be conducted annually, or more frequently if necessary, to recoordinate the provisions of the memorandum.

Gene J.P. Walker — Date
State Director, VITEMA

Ramon Davila — Date
Commisoner, Virgin Islands Police Department

Carlton Dowe — Date
Director, Virgin Island Fire Service

Beulah Dalmida-Smith — Date
Comissioner, Planning and Natural Resoures (DPNR)

TERRY L. RICE — Date
Colonel, Corps of Engineers
District Engineer

SUBJECT: Virgin Island Territorial Emergency Management Agency (VITEMA), Department of Planning and Natural Resources (DPNR), Police Department, and Fire Service Response to On-Site Emergencies During Phase II Site Characterization at Former Fort Segarra

I, _____, do hereby certify that I am the principal legal officer of the Virgin Island Territory Emergency Management Agency (VITEMA), VITEMA is a legally constituted public body with full authority and legal capability to perform the terms of this Agreement between the Department of the Army and VITEMA and that the person executing this Agreement on behalf of VITEMA has acted within his statutory authority.

IN WITNESS WHEREOF, I have made and excuted this certification this _____ day of _____ 19____

_____
Attorney for Virgin Island Territorial Emergency Management Agency

I, _____, do hereby certify that I am the principal legal officer of the Virgin Island Police Department. The Virgin Islands Police Department is a legally constituted public body with full authority and legal capability to perform the terms of this Agreement between the Department of the Army and Virgin Island Police Department and that the person executing this Agreement on behalf of the Virgin Island Police Department has acted within his statutory authority.

IN WITNESS WHEREOF, I have made and excuted this certification this _____ day of _____ 19

_____
Attorney for Virgin Island Police Department

SUBJECT: Virgin Island Territorial Emergency Management Agency (VITEMA), Department of Planning and Natural Resources (DPNR), Police Department, and Fire Service Response to On-Site Emergencies During Phase II Site Characterization at Former Fort Segarra

LIST OF CHEMICAL AGENTS AT FT. SEGARRA, USVI

NERVE AGENTS
Tabun (GA)
Sarin (GB)

BLOOD AGENTS

Cyanogen Chloride (CK)
Cyanuric Chloride (solidified CK)

BLISTER AGENTS

Levinstein mustard (H)
Distilled mustard (HD)
Sesquimustard (HQ)
Tiodiglycol (a breakdown product of sulfur mustard)

PHOSGENE (CG)

This agent can be considered as either a military or industrial chemical

THE WASHINGTON POST

Army Knew in '86 Of Dump in NW

U.S. Decided Munitions Had Been Removed

By Santiago O'Donnell
Washington Post Staff Writer

Army officials knew as early as 1986 that World War I munitions had been buried at a site in the Spring Valley neighborhood of Northwest Washington but did not inform the developer or the D.C. government, Army officials acknowledged yesterday.

The Army also announced yesterday the end of daily evacuations in the affluent neighborhood, where more than 130 unexploded shells were unearthed by a construction crew on Jan. 5.

An Army spokesman said yesterday a 1986 report conducted by the Army Toxics and Materials Agency on behalf of American University concluded that the buried munitions had been removed and shipped to the Aberdeen Proving Ground in Maryland.

But D.C. government officials, the site's developer and residents who live there said they were suprised that nobody told them the area had been searched for disposed munitions.

"I am disappointed that we were not given a full briefing on the existence and contents of these reports prior to the recent discovery of the munitions site," Mayor Sharon Pratt Kelley said in a statement issued by her office.

Robert Miller, vice president of the W.C. & A.N. Miller Development Co., which bought the property in 1926 and was building houses on the site on 52nd Court NW, said he was unaware of the munitions burial before the construction crew's discovery.

"If the U.S. Army had reason to believe a potential munitions dump site had been discovered in 1986, I think it's appalling that the government would subject U.S. citizens, including my employees, to this type of potential hazard," Miller said.

"It raises some unusual quesions, to say the least, as to who knew what when and how," said Nan Whalen, of the 5100 block of Yuma Street, who is among those within the former evacuation zone.

Maj. Rick Thomas, an Army spokesman, said the Army decided the area was safe in its 1986 report because no munitions had been unearthed despite extensive farming and development there since the land served as a chemical weapon testing site in World War I. Moreover, Thomas said, land survey and aerial photographs taken during the 1986 study showed no evidence that the munitions were still there.

"Hindsight's always 20/20," Thomas said. "Looking back, it's a lot different. But for 70 years we had no indication that there was a problem."

Kelley's spokesman, Vada Manager, said that the mayor received a complete copy of the 1986 report Wednesday evening and that city staff members are still evaluating it. Miller officials and residents who live in the area said they have received parts of the report.

City officials and Miller Co. representatives said they were happy with the cooperation they have received from the Army since the munitions were discovered.

"Since the removal operation begun, the Army has done everthing they said they would and they have done a very thorought job," Miller said. "But the million-dollar question is, why? Why weren't we told about the study? I'd like to think there was a good reason for it, and I'd like to know it."

Also yesterday, Brig. Gen. George E. Friel told about 150 residents at the Army's daily briefing that the munitions removal operation will end this weekend.

Residents of about 70 homes have been affected by the evacuations. For the last three weeks, they have been asked to leave the area from 8 a.m. to 6 p.m. as a precaution.

On Tuesday, Kelly declared an emergency in the area because some residents had failed to comply with the evacuation order. Work had been suspended whenever residents ventured into the evacuation zone.

For your information

cc: Hays Chief and Jim McAdams, EPD-C DO-I (Bradley)

Jax 17

Jax-040901-017

page 1 of 1

Water Island should be ours now

Victor O. Frazer, an attorney on St. Thomas, was a candidate for delegate to Congress.



Victor Frazer

Guest Editorial

When the lease expired on Dec. 27, most of us believed that Water Island would have come under the jurisdiction of the government of the Virgin Islands.

Well, *surprise, surprise!* The Interior Department, the White House, the U.S. Congress and the V.I. delegate to Congress have been *deafeningly* silent on this issue, which is so important to the residents of Water Island, and everyone in the territory.

The terms of the master lease and the subleases are unambiguous. The leases expired on a certain date (Dec. 27, 1992), and nothing additional was required to affect their termination. However, based on what has transpired, or more accurately has not transpired, it is obvious that the future of Water Island is not a priority for the Interior Department or the V.I. delegate to Congress.

This attitude is insulting to the people of the Virgin Islands, and unfair to the residents of Water Island. It is apparent that the residents relied on promises and assurances, as evidenced by the magnitude of the homes that they have constructed and continue to construct.

In fairness to them and respect for the sovereignty of the government of the Virgin Islands, an articulated resolution to this *mystery* should have long been discussed between the U.S. government and the V.I. government, and made known to the people.

The elected V.I. delegate to Congress should be doing what he was elected to do, namely "represent the people of the Virgin Islands." He should have been the vanguard in the effort to make Water Island "truly" a part of the Virgin Islands. Instead, he behaves like "the mouse that did not roar."

I implore the people of the Virgin Islands to *demand* an explanation of the delegate as to why he did not introduce legislation, in the Congress, to affect th transition of jurisdiction of Wate: Island from the federal government to the V.I. government, in light of the fact that he has known for many years the expiration date of the master lease.

The failure of this congressional representative of the people of the Virgin Islands, to formulate an intelligent plan for the transfer of jurisdiction of Water Island, is either ignorant of the ramifications of transfer, or criminal neglect of his duties and responsibilities.

This state of limbo is a clear example of the dilemma that we face, when our representation can be more accurately described as misrepresentation, and our status or lack of real status prohibits us from making "real decisions" that have finality.

The future of Water Island is important to everyone in the territory, however, like most decisions that affect our lives, it seems as though the federal government will once again determine, "without our input," what is best for us!

I trust that if there is an issue on which we can all agree, it is that the current political status of the Virgin Islands has to change.

The Daily News, Friday, March 26, 1993

Jacksonville District
Project Management
Fort Segarra files
R. Bridges Office

Jax 18

Jax-040901-018
page 1 of 1

The San Juan Star — Friday, August 9, 1991.

Corps of Engineers to probe if arms are still buried at former V.I. battery

WASHINGTON (AP) — The U.S. Army Corps of Engineers will try to determine if weapons were abandoned at a former World War II coastal defense battery located in the U.S. Virgin Islands, it was announced Wednesday.

Del. Ron De Lugo, the territory's non-voting representative in Congress, said the Corps of Engineers will investigate to determine if any buried arms remain around the Fort Segarra site on Water Island, as has been rumored.

Defense Department records confirms that conventional weapons as well as mustard agents were once tested at Fort Segarra during the war years.

However, the records do not indicate whether the ordinance was removed or otherwise disposed — when the fort was closed.

The investigation assumes "a somewhat higher priority with the possible transfer of Water Island to the Virgin Islands government when the 40-year lease of the Interior Department expires next year," De Lugo noted.

VIRGIN ISLANDS

The Daily News, Saturday, August 10, 1991

Water Island briefing: Army Corps of Engineers officials will meet with Water Island residents Wednesday to brief them on plans for a search for ammunition on the island, Delegate to Congress Ron de Lugo said Friday. The time and place of the meeting will be announced Monday.

The search is a legal requirement for any property transferred from federal ownership and the agency currently overseeing the island, the Interior Department, knows of no ordinance there, Interior Assistant Secretary Stella Guerra said Friday.



Ron de Lugo

A search is necessary when a records search does not prove that ordinance was removed from a former military dump site. Fort Segarra on Water Island was used as a test site for conventional weapons and mustard agent from 1948 to 1950.

An archival search of 22 sites on St. Croix and St. Thomas shows that all were cleared of ammunition except Fort Segarra, de Lugo said Friday.

The Corps officials will hold the V.I. briefings at de Lugo's request. He asked for the briefings after learning that a Corps report on Water Island was circulating in the Virgin Islands.

A final report has just been completed; a draft report has been distributed in the territory, the Corps [illegible] de Lugo.

Jax 19

JAX-040901-019

page 1 of 7

DEPARTMENT OF THE ARMY
SAN JUAN AREA OFFICE, JACKSONVILLE DISTRICT CORPS OF ENGINEERS
400 FERNANDEZ JUNCOS AVENUE
SAN JUAN, PUERTO RICO 00901-3299

REPLY TO ATTENTION OF

August 12, 1991

Mr. James O'Brien
Director Public Relations
USVI Government House

Dear Mr. O'Brien:

I have just been informed by our Huntsville Public Affairs Office that last Friday, 9 August, the Department of Interior delivered a copy of the Archives Report to Congressman De Lugo in Washington. Our Huntsville Office wanted to brief the Governor and the Congressman simultaneously or on the same day this week, but the Congressman indicated he was going on vacation and asked to be briefed by phone later on Friday afternoon.

Concerning the Public Meeting, the Corps informed the Congressman the briefing the Governor and the meeting would be either Wednesday or Thursday, and that we were coordinating the activity with the Governor's office.

As I told you on Friday, we will wait for your response on the Governor's preferred date, either Wednesday of Thursday, to hold his briefing, the media briefing and evening Public Meeting at Water Island.

Thank you for your support and understanding.

Cordially,

Elsa Jimenez
Public Affairs Specialist

RECORD OF CONVERSATIONS (Internal to Corps) 9 Aug 91

1. Conversation between Cong. DeLugo, USVI, and Huntsville Division (Ken Crawford, PAO; Walt Perro, Project Manager; Chuck Twing, Safety Specialist):

Cong. DeLugo was again upset that the Corps was not going public with the Water Island project. He said we had been dealing unfairly with him because information was not getting to him or the public. He again threatened a Congressional hearing.

During the conversation, he eased considerably when we agreed with him to hold a public meeting next week. This would center on the Archives Search and the information it contains (many on Water Island have the draft report, which was disseminated by an unknown party on the island). Because of time constraints, he agreed to receive his briefing on the Archives Search by phone, which we then presented.

The Department of Interior PAO had a copy of the report handcarried to ~~his~~ the Congressman's office, and we sent copies via overnight delivery to Gov. Farrelly, USVI.

2. Conversation between Mr. James O'Brien, Press Secretary to the Governor of the USVI and Ms. Elsa Jimenez, PAO, San Juan Area Office, Corps of Engineers (reported here for coordination purposes).

The Governor and his staff also were upset that we had neither briefed him nor gone public on the Water Island project. Ms. Jimenez told Mr. O'Brien of the Congressman's desire and our agreement to hold a public meeting on Water Island. We requested that we brief the Governor before that meeting. Following is the schedule of events agreed upon (subject to approval by the Governor):

-- 14 Aug, 0930: Meeting with the Governor and staff
-- 14 Aug, 1400: News Conference
-- 14 Aug, 1930: Public Meeting on Water Island

Again, the Corps will speak on the Archives Search at all meetings. We will discuss the next part of the project, fencing, but will not commit the Corps to any firm plan of action involving ordnance removal.

Ken Crawford
Chief, Public Affairs
Huntsville Division
(205) 955-5742

CONVERSATION MEMORANDUM: 6 AUG 91

CONVERSATION BETWEEN CONG. DELUGO, US VIRGIN ISLANDS (AND MEMBERS OF HIS STAFF) AND WALT PERRO AND KEN CRAWFORD, HUNTSVILLE DIVISION

Cong. DeLugo's staffer, Ms. Shiela Ross, called to complain about copies of the Draft Archives Report which were appearing "on the doorsteps" of local residents of Water Island. She wanted to know how they got the copies. I said I did not know. She asked whom on the island we had provided copies. I told her the only copy in the Virgin Islands was given to Mr. Bob Bunn, Dept. of the Interior, as the representative of the property owner, the DOI. I insisted that I could not make a connection between Bunn and the residents, though. She then said that Cong. DeLugo wanted to talk directly with Walt Perro.

Walt called Mr. DeLugo immediately. The Congressman complained about the document and indicated that he would immediately put out a news release because the information was already in the public and was "scaring" the people. He said he was unhappy with both DOI and the Corps. Most of his anger was directed at DOI, but he was upset with us because he thought we weren't coordinating enough with DOI. (We have coordinated constantly. It turned out that the DOI PAO tried to call us on Thursday and Friday, when our power was off. He couldn't reach us, so he decided to put out information in a letter to the residents.)

He also said that one of our contractors (we explained it was actually a potential subcontractor from whom we had gotten a quote) was telling all he knew about the project at cocktail parties. He suggested we fire that contractor and get another.

Mr. DeLugo was angry and let us know it, threatening Congressional he*p+30Xon the subject. I don't believe he was receptive to information we were providing him at that time. He was particularly angry with Mr. Bunn, whom he said has a conflict of interest on Water Island. He also called Mr. Bunn a particularly unsavory name and said we could quote him.

The Congressman's office let us make suggestions about factual errors we saw in the proposed news release, which we did. (Attached).

In a subsequent conversation, Ms. Ross complained that I had not notified the Congressman that three of his constituents had contacted me directly today for information. In the same conversation, a conference call with Larry Morgan, PAO for DOI, Mr. Morgan suggested that perhaps one of our Corps employees from the San Juan area office was responsible for releasing the draft. Ms. Ross and I agreed that that was reaching a bit far.

Ken Crawford
Chief, Public Affairs
Huntsville Division

CF: COL HALL/ USACE PAO/ SAD PAO/ JACKSONVILLE DIST PAO/ SAN JUAN PAO/ ROB WILCOX/ WALT PERRO

06 AUG 91 09:58 DE HNC DIV

Corps of Engineers Works at Water Island

San Juan...The site of former Ft. Segarra, a World War II coastal defense battery built in 1942 on Water Island to defend the Virgin Islands, will be investigated for possible ordnance contamination by the Army Corps of Engineers.

The Huntsville Division, which is responsible for the removal of ordnance from sites formerly used by the Department of Defense, is coordinating the remedial investigation in conjunction with the Jacksonville District Corps of Engineers and the San Juan Area Office.

Under the auspices of the project, parts of Water Island will be mapped topographically. "People should not be surprised to see us putting out aerial photography target points," said Walter Perro, project manager for the Hunstville Division. "As part of the ongoing operation, we also plan to put up a fence around the landfill late in August of this year."

An archive search of old records is currently under way. In the meantime, the Corps is working with Governor Farrelly's office, Delegate Ron de Lugo, and local government officials to ensure close coordination on the project.

ATTENDEES
18 JULY BRIEFING
SUBJECT: WATER ISLAND, US VIRGIN ISLANDS

ongressman Ron de Lugo, Representative from the Virgin Islands, id chairman of the House Interior Sub-committee on Insular and ternational Affairs

:. Jeff Farrow, Staff Director for the House Interior ib-committee on Insular and International Affairs

Larry Morgan, Department of the Interior

Pat Krause, Congressional Professional Staff

Page Stull, Press Secretary for Congressman de Lugo

:C Slawson, Legislative Liaison

Jim Coppola, Environmental Engineer, CEMP-RF

. Walter Parro, Project Manager, CEHND-ED-PM

JUL.31 '91 11:05 US ARMY ENGY DIV, HUNTSVILLE P.04

29 July 91

MEMORANDUM FOR RECORD

SUBJECT: 18 July briefing for Congressman de Lugo regarding investigation of a FUDS site (Water Island, U.S. Virgin Islands) for potential remediation by Corps of Engineers

1. The subject briefing was provided to Congressman de Lugo and staff by Mr. Walter Perro, CEHND, and the undersigned, CEMP-RF. (NOTE: Congressman de Lugo is the Virgin Island representative to Congress, and is the chairman of the House Interior Sub-committee on Insular and International Affairs.) The briefing was provided at the request of Congressman de Lugo for an update on progress since his 17 May briefing. The briefing was coordinated with Mr. Rick Newsome, OASA (I,L&E), Mr. Michael Cain, Army Environmental Office, and LTC Slawson, Legislative Liaison Office. A list of attendees is attached.

2. Congressman de Lugo prefaced the briefing by reiterating that he believes the project has considerable bearing on his pending legislation to return Water Island to the Virgin Island Government.

3. The following information was provided:

a. The archives search report on FUDS sites in the Virgin Islands was recently completed, and reported no further action is required at 21 of 22 FUDS sites identified in the Virgin Islands. However, the report recommended further investigation at Water Island, and immediate action (fencing) to prevent access to a 3-5 acre potential disposal area.

b. Huntsville Division is currently scheduling the fencing action to occur in late Aug 91. Additionally, HND is currently developing and coordinating a plan of action for remediating the site.

c. The plan of action is scheduled for completion by 31 Aug. Congressman de Lugo will be briefed again as soon as the plan of action is complete.

4. After the briefing, Congressman de Lugo stated the following concerns:

a. He wants the site to be cleaned up within the next 12 months to ensure there are no ramifications to his pending legislation to return the island to the Virgin Islands Government.

b. Congressman de Lugo stated he would give us as much "help" as we needed to ensure the job gets done expeditiously.

c. He requested to be briefed on our plan of action and proposed remediation schedule as soon as it is developed.

Jim Coppola
FUDS Br

JUL.31 '91 11:04 US ARMY ENGY DIV, HUNTSVILLE P.02

RANDY BAUSTERT
774-2148



WATER ISLAND

The Last Virgin

Settled by Walter and Florida Phillips 1951

All visitors are welcome!

Please respect private property & privacy!
Please take your litter home with you.
The beaches are open to everyone.
Public fishing docks are available.
Avoid the dangerous ruins at the hotel.
Enjoy our wildlife & wildflowers, but please leave them all here.

Here are the Sights:

1 - Phillips' Landing - Downtown
2 - Fort Segarra: Best Walk, Best View
3 - Honeymoon Beach Great Swimming
4 - Sprat Bay Beach Best Swimming
5 - Buried Treasure found here in 1895
6 - Phillips' Botanical Gardens
7 - Hotel Ruins - Dangerous
8 - Recycling Center
9 - Deep Water Dock
10 - Honeymoon Beach Pavillion
Sunday at 10 AM
Water Island Christian Assembley

Gourmet Gallery

The Best Food - The Best Wine
The Best Deli - The Best Service
All the Best - Just for *YOU.*

Where everything is the best for you.

774-5555 - Crown Bay Marina

Jax-040901-020

Jax20

NICOLAS VAN HEURCK-DO
SCHEDULER/COORD.
TINA ^ BRYAN-STT
DEAN SHEPPARD-STT
DON - DIR. OF MAINT.
STEVE LENTZ-STT-CONTRACTS
SUITE 204
BOB LEWIS-CONTRACTING OFFICER

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ROD TINNEY, President & Chief Pilot

page 2 of 2

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

OCT 2 7 1995

All Interested and Concerned Parties:

As you are aware, when this Administration took office in January 1993, it stated that it was going to conduct a thorough review of the Water Island situation before undertaking any further actions towards the disposition of the island. We appreciate your patience during what has become a lengthy and unsettling period. We have, over the past two and one-half years, received many inquiries about the Department's policy towards Water Island. These inquiries have focused upon the 36 outstanding sales contracts for the sale of subleased tracts executed at the close of the prior Administration and upon the treatment to be accorded to those sublessees who did not accept the offer to purchase tendered at that time. These inquiries intensified after Hurricane Marilyn as many sublessees expressed an understandable reluctance to make the substantial expenditures needed to repair their houses without having some knowledge of the policy the Department intends to pursue with respect to the disposition of Water Island.

By way of brief background, the government has recently concluded a lengthy arbitration with the former master lessee, Water Isle Hotel and Beach Club Ltd. The litigation between Water Isle and ourselves, however, remains pending in the Court of Federal Claims. In August 1995, the Bureau of Reclamation released a draft environmental assessment and invited your comments. In addition, the Department has exchanged letters with Governor Schneider which, in general, look towards the transfer of jurisdiction and unencumbered property to the Virgin Islands, subject to protection of the rights of the parties with interests in Water Island.

On October 2, 1995, the Bureau of Reclamation informed you that the comment period on the Draft Environmental Assessment was extended to November 17, 1995. The environmental assessment describes various alternatives for accomplishing our goal of transferring title from the Department of the Interior to other entities or individuals, but it does not present a proposed action.

Based on the comments we have received to date, and in order to expedite the decision process, the Department has a proposed action. Your review and comment on this proposal is requested by November 17, 1995, to coincide with the Bureau of Reclamation's extension of the comment period. This will allow us to complete the environmental assessment and facilitate the speedy resolution of the uncertainty Water Island residents have lived with for many years. In addition, we propose to have a public meeting in December 1995, to discuss the proposed action.

Jacksonville District
Project Management
Fort Segana Files
R. Bridges office

Jax 21

page 1 of 3

Jax-040901-021

Proposed Action

Consistent with the draft environmental assessment, "Elements Common to All Action Alternatives" (pp12-18), the action includes the following threshold components: a) the outstanding sales contracts will be honored; b) endangered species will be protected as provided by the "no jeopardy" opinion of the Fish and Wildlife Service; c) cultural resources will be addressed in consultation with the State Historic Preservation Officer; and, d) the hazardous waste study at the dump site will be completed and any cleanup action found required will be performed. In addition, under the proposed action the Department stands ready to allow all sublessees on Water Island to acquire fee title to their respective tracts.

1. We will honor the outstanding signed purchase contracts for any sublessee with a contract who wishes to proceed. We are also prepared to extend the offers to sell made by the prior Administration to those sublessees who did not accept the offer at that time. We are prepared to renegotiate the price to the extent necessary to account for changed conditions resulting from hurricane Marilyn; any restrictions imposed by the biological, hazardous waste, or cultural resources findings of the environmental assessment; and issues concerning the 1991 appraisal such as the passage of time.

2. The Federal Government will continue to be responsible for the dump until it is cleaned up or declared by the Corps of Engineers to be free of chemical ordnance. At that time it will be turned over to the Virgin Islands Government.

3. The former hotel tract and related properties will be turned over to the Virgin Islands Government which, in consideration for receiving the tracts, would be responsible for cleaning them up. Properties not subleased and not required for conservation or preservation purposes will also be turned over to the Virgin Islands Government. The net proceeds, less hotel clean-up costs, resulting from any subsequent sale or lease of these hotel-related or non-subleased properties by the Virgin Islands would be placed in a trust fund to provide services to Water Island, including ferry service. If such a fund is adequately capitalized, then any additional net proceeds would be returned to the Federal treasury. The various green areas identified in the draft EA will be subject to a conservation easement to be negotiated between the Department and the Virgin Islands Government.

We are prepared to establish an administrative negotiation process to deal with each sublessee on a tract by tract basis as set forth above. However, we strongly recommend that the sublessees, other than Sprat Bay, organize themselves to present a proposal for the purchase of the subleases exclusive of Sprat Bay. We are prepared to negotiate a sale on such a basis for these sublessees at a price to be determined between the sublessees and ourselves. We would entertain a proposal from the sublessees which would provide that the Federal Government receive reasonable and defensible compensation for its land. In order to negotiate the sale of the subleased property as a unit, we would like to see a proposal covering at least 95 percent, and preferably all, of the outstanding subleases exclusive of Sprat Bay. This approach, providing for a block sale of these subleases would, we believe, be advantageous to all parties; but it will require cooperative action

among the sublessees. Such cooperation would, in any event, be desirable for the future of Water Island. If we successfully negotiate with the sublessees as a group, the money the Department currently is holding in escrow will, of course, be returned to the individuals with outstanding contracts.

In adopting the above proposed alternative, our goal would be to proceed by offering the sublessees the opportunity to acquire title to their tracts at a reasonable price in order to resolve the entire Water Island situation promptly and without the delays and uncertainties that would result from litigation. Although a small number of sublessees are currently pursuing litigation with the object of requiring the government to purchase their improvements, we advise that the Department recognizes no legal or equitable entitlement in the sublessees to have the United States purchase their alleged possessory interest in the improvements on their tracts. As an alternative to litigation we wish to encourage all the sublessees to work with us and use this opportunity to acquire legal title to their properties.

We propose meeting in the Virgin Islands on December 12 and 13, 1995, with all the parties affected by this proposal (the Virgin Islands Government, the sublessees, other Federal agencies, and other interested parties) to discuss the issues further and to work towards putting this matter to rest.

Our aim in the above proposal is to work with you and to reach a disposition of this matter which is fair to all concerned. We look forward to hearing from you and to meeting with you. Please forward your comments to: Roberta Ries; Activity Manager; Bureau of Reclamation, D-8650; P.O. Box 25007; Denver, CO 80225; (509) 575-5848, ext. 265.

Sincerely,

Allen Stayman
Director
Office of Insular Affairs

Comments on the Safety Submission for the Former Fort Segarra, USVI, dated June 15, 1998

Kellie Williams, CEHNC-ED-SY-S
(256) 895-1584

Comments on the IHF Plan

1. Pg. I Executive Summary. Paragraph 2. Revise the areas of investigation to match the areas that need further investigation. Areas 6 and 8 require no further investigation. See the work plan for more details.

2. general This plan requires the CESAJ Program Manager (PM) to do many tasks and it appears to assume that the PM will be onsite during all operations. While this was true at Spring Valley, it is probably not the case at FFS. This plan is written like we are at Spring Valley or on an installation that has a full support staff onsite. In reality, we are on a fairly remote island, far from CESAJ office in Jacksonville Florida. I know that this is standard but PMCD might try to be more site specific and flexible instead of dictating responsibilities and requirements that Jax can not complete. Has PMCD discussed or formally tasked Jacksonville with all of the requirements in this plan? Specific example of requirements in the plan include:

- Provide barriers, spill pans and lighting for the IHF,
- The PM will be notified in an emergency, who will in-turn, notify emergency response standby personnel,
- Inspect fire extinguishers,
  The PM will be notified when the IHF is to be opened,
- The PM will be notified of unusual circumstances by the IHF Security Guard,
- Maintain the IHF,
- The CESAJ PM is responsible for the area where the incident occurred and will be contacted. As conditions dictate, the PM will declare an emergency, initiate remediation, request assistance and make off-site notifications. This is a lot to do if the PM is not onsite.,
- All injuries and illnesses are to be reported to the CESAJ PM.

3. Pg. 3-10 PPE. Be specific on the type of Level B and the respirator to be used. Identify who will provide this equipment.

4. Pg. 3-11 First Aid Supplies. Identify the supplier of these supplies. TEU?

5. Pg. 4-1 Section 4.1.2. The USACE contractor will not perform any surveillance monitoring on the IHF. It was not a task in their SOW. This section discusses monthly surveillance monitoring. The intent is not to store the items on site for a long period of time, is it?

6. Pg. 4-5 Section 4.2. What standard will be used for HQ?

7. Pg. 4-12 Section 4.5. Please identify the location and the set-up for the PINS. Discuss the requirements involved since it has a radioactive source.

Jax-040901-022

Jax 22

page 1 of 2

8. Pg. 5-4 Will PMCD verify that all potential emergency respnse personnel have 1910.120 training?

9. Pg. 5-5 Fire Truck Vehicle. This section states that a fire truch shall be available onsite during the onsite transportation and storage of the IHF. Will PMCD be coordinating this effort?

10. Pg. 5-12 The St Thomas hospital should only be used for non CWM injuries. Signed MOAs are in the plan. Revise the document accordingly.

11. Pg. 8-1 Define the MCE or refer to the section that defines the MCE for FFS.

Comment on the Transportation Plan

12. Pg. 7-13 The signed MOAs are in the plan. Revise the plan accordingly. The HNC plan is a SSHP not a SHERP. Revise throughout the plans.

Roberts copy
(cy was handcarried to Carl Overstreet 6/17/98) ah

U.S. Army Corps of Engineers
Engineering and Support Center, Huntsville

EXPLOSIVE ORDNANCE ENGINEERING
MCX AND DESIGN CENTER

REGULAR MAIL:
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TO: UASED Jacksonville		Carl Overstreet Safety Office	904-232-2019	DATE: 17 JUN 98	TIME: 10:10 CDT
CLASS: uncl	PAGES: 17	PRECEDENCE: routine	RECEIVING FAX MACHINE NUMBER: 904-232-3920		

1. Attached are proposed mark-ups on your PAP. Basically, they update nomenclature and organization names as well as cut down on repetition of data covered elsewhere in the SSS.

a. Annex B becomes Annex A, since site maps are already in Annex P.

b. MCE and determination of NOSE is discussed in the SSHP (excerpt encl). There has never been any reason to suspect any items were explosively configured.

2. We are poised to reproduce and distribute. If you have any problems with these, don't delay calling.

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Project Mgmt. Office
Fort Segawa Files
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FAX COVER

TO: ROGER FITZPATRICK DATE: 16 Jun 98

FIRM/AGENCY: CEHNC

FAX NUMBER: 895-1378 TELEPHONE NO: 895-1555

FROM: MIKE MORAN

NO. OF PAGES (INCLUDING HEADER): 16

SUBJECT: PAP

COMMENTS/INSTRUCTIONS:

(1) See PAGE C5-8 OF SSHP (ATTACHMENT C OF THE SSS. (1 PAGE)

(2) SEE CORRECTED PAP. (14 PAGES)

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C-5.4 MAXIMUM CREDIBLE EVENT (MCE). The MCE is the worst case chemical release scenario for a site. The MCE's for this project are as follows:

a. FB-2: Bomb, 500#, M78, CK filled, (non explosive)

b. TA4-2: Bomb, 115#, M70, HD filled (non explosive)

c. TA5: Bomb, 115#, M70, HD filled, (non explosive)

C-5.4.1 DOWNWIND HAZARD NO SIGNIFICANT EFFECTS (NOSE) ZONE
The commander of the U.S. Army Technical Escort Unit (TEU) supporting detachment will identify the Downwind Hazard No Significant Effects (NOSE) zone for the site daily. The NOSE zone will be determined based upon several factors associated with the site, including: the type and amount of CWM agents that may be encountered; the effect that prevailing weather conditions could have on operations; the physical properties of the CWM agents that might be buried on site; the potential and risk of encountering CWM storage or delivery systems on site; and any conventional UXO hazards. The NOSE will describe the agent of concern, the expected volume of agent and the area which could be affected if the MCE occurred. TEU personnel will calculate the NOSE prior to initiation of site activities and whenever prevailing weather conditions change which could alter the outcome of the NOSE zone. The TEU detachment commander will advise the MTA PM and SSO as to what the NOSE zone will be for the day.

C-5.4.2 USE OF THE MCE/NOSE ZONE
The MCE will be used by MTA, TEU and CEHNC personnel to identify what areas off site, if any, may be effected by a possible CWM release, or high order explosion. The MCE allows for the design of contingency plans and will determine what areas will require evacuation prior to site operations or in the event that a CWM release or high order explosion actually occurs.

C-5.5 POSSIBLE EXPLOSIVE SCENARIO
Explosive items involved in the tests conducted on Water Island were limited to explosive bursters for aerial bombs and the explosives used to initiate detonation of test items. None of the munitions were fuzed, and no tests were conducted below the surface. There are no records which to indicate that munition fuzes were stored on Water Island. The most likely scenarios for encountering explosives on site are the discovery of an aerial bomb with an intact burster; discovery of priming and/or initiating explosives used during testing; or discovery of commercial explosives used during development activities of the hotel corporation (No records indicate presence/absence of commercial explosives). The use of heavy machinery and hand tools (i.e., shovels and picks) around an unknown burster or primary explosive device (e.g., blasting cap) is the most likely scenario for an explosive event.

C-5.5.1 EXPLOSIVE RISK ASSESSMENT
The explosive risk associated with these operations is minimal. The amount of explosive materials present during the San Jose Project and the degree of their control makes encounter with military explosives highly unlikely. Any risk associated with commercial activities is speculative.

PROTECTIVE ACTION PLAN

FORMER FORT SEGARRA

ST. THOMAS, USVI

PHASE II SITE CHARACTERIZATION

INTRUSIVE ACTIVITIES

U.S. ARMY CORPS OF ENGINEERS

JACKSONVILLE DISTRICT

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Annex A Memorandums of Agreement

~~Annex B Maximum Credible Event Calculation~~

SECTION 1.0 INTRODUCTION

Introduction

The former Fort Segarra is located on Water Island and was once part of the San Jose Project. Water Island is located in St. Thomas Bay between East and West Gregerie Channels, south of the city of Charlotte Amalie, St. Thomas, USVI. Water Island consists of approximately 500 acres. Water Island is owned by the U.S. Department of Interior. Maps of the island are located in Attachment P A.

Phase I Site Characterization investigation of Water Island was performed via geophysical mapping to identify areas which will require further investigation and possible excavation. This phase is complete and areas identified as requiring further investigation are Test Areas 4-2 and 5 and the Flamingo Bay Landfill Area.

The purpose of the Protective Action Plan (PAP) is to describe the potential public safety and health hazards, the procedures to be used in controlling those hazards, and emergency response measures arising from intrusive site characterization and CWM removal activities at Former Fort Segarra in Test Areas 4-2 and 5 and the Flamingo Bay Landfill Area.

The planned operations for Phase II Site Characterization include excavation of suspected burial pits and discreet anomalies (suspect objects) located via geophysical mapping during Phase I Site Characterization non-intrusive investigation of Areas 4 and 5 and the Flamingo Bay Landfill area completed June 1994. The contractor and supporting government agencies will excavate to identify, characterize, and mark chemical contamination, munitions, and associated debris encountered in these locations. Chemical contamination and munitions will be removed at a later date. Soil, scrap metal and debris removed from excavations will be monitored for low levels of chemical agent. Contaminated materials will be decontaminated using approved processes until chemical agent is no longer detected, then containerized and moved to the on site decontamination debris storage area and prepared for shipment.

The U.S. Army Corps of Engineers (USACE), Jacksonville District, with support of the U. S. Army Engineering and Support Center (CEHNC), the contractor, MTA, Inc., and the U. S. Army Technical Escort Unit (TEU) will manage, oversee, and direct Phase II Site Characterization operations and CWM remediation activities. TEU will support MTA, Inc. and is responsible for exposing any anomalies and in CWM monitoring, recovery, packaging, security, transportation, escort-in-route, and emergency response. TEU will assume control of the exclusion zone upon discovery of CWM or in the event of a CWM emergency. *The U.S. Army Chemical and Biological Defense Command (CBDCOM)* is responsible for CWM storage, transpiration and disposal activities.

SECTION 2.0 KEY AGENCY RESPONSIBILITIES

Agency Responsibilities

There are primarily six agencies which have key roles throughout Site Characterization, Phase II operations.

– *U.S. Army Engineer District, Jacksonville (CESAJ):* CESAJ is in charge of the overall site characterization and remediation activities. CESAJ is responsible for all planning, and project execution. Additionally, CESAJ is responsible for the coordinating activities of the various support agencies. In an emergency situation, the appropriate emergency response will be initiated in accordance with the Site Safety and Health Plan (SSHP) and the Protective Action Plan (PAP). CESAJ in conjunction with CEHNC, MTA, Inc., and TEU will ensure the safety of all personnel supporting Phase II Site Characterization and CWM removal activities as well as the local community. CESAJ will make management decisions based upon recommendations from CEHNC, TEU, and MTA, Inc.

– *U.S. Army Engineering and Support Center (CEHNC):* CEHNC is the Corps' OE technical manager for planning and execution of all on-site operations in support of Phase II Site Characterization and OE removal.

– *U.S. Army* Technical Escort Unit (TEU): The TEU is responsible for hazard containment and abatement within the exclusion zone during Phase II Site Characterization and removal operations. If a "ring off" occurs while air monitoring is being conducted, or if a chemical munitions is identified or an unknown object or material is encountered, TEU will assume control of the exclusion zone. In addition, TEU will assume control of the exclusion zone during excavation activities when excavation is suspected to be within 1 foot of an anomaly. TEU will execute containment, abatement and/or recovery operations and provide a recommended course of action to the CESAJ Resident Engineer.

– The U.S. Virgin Islands Territory Government (USVI): CESAJ Resident Engineer will coordinate with the designated USVI points of contact (POC) to provide information on activities and events, occurring during removal operations of Phase II Site Characterization through the Virgin Islands Territory Emergency Management Agency (VITEMA). Additionally, the USVI will provide police and fire department support for on-site activities. In the event of emergencies during these operations, the VITEMA, police, and fire departments POC will be notified and regularly updated on changes and activities associated with the emergency. In addition, any additional support required from VITEMA will be coordinated with the VITEMA POC.

– U.S. Naval Hospital, Roosevelt Roads, PR (USNH): The USNH has entered into an agreement to provide on-site medical support and stabilization and transport of any traumatic or chemical injury/illness. The Memorandum of Agreement (MOA) between the CESAJ and USNH defining responsibilities for the above support is contained in ANNEX A B.

– U.S. Army Chemical and Biological *Defense* Command (CBDCOM): CBDCOM is responsible for the storage, transportation, and disposal of any CWM recovered during remediation activities.

SECTION 3.0 DEFINITION OF TERMS

Definitions

Exclusion Zone: Operational safety zone of the work area to which only qualified personnel may enter.

Geophysical Mapping: A non-intrusive technique employed by the Corps of Engineers to identify buried explosive or chemical warfare material debris. For this project, geophysical mapping was conducted with state-of-the-art ordnance detectors. Resulting data includes maps of areas investigated and site specific logs describing locations of subsurface anomalies.

Intrusive Work: Includes excavation and removal of soil, chemical munitions, and debris from chemical munitions test pits and discreet anomalies (suspect objects) located via geophysical mapping performed during Site Characterization, Phase I investigations.

Maximum Credible Event (MCE): The worst single event that could occur at any time with maximal release of chemical agent from a munition, bulk container, or process as a result of an unintended, unplanned, or accidental occurrence. (The MCE's for the Fort Sequoia sites are described in Section 5.0 of this document)

No Significant Effects (NOSE) Zone: The area beyond which public safety and health of personnel within the area would experience no adverse health effects in association with the chemical release.

Ring Off: The detection of the presence of a chemical substance at a monitoring site. A ring off is followed by confirmatory testing to determine if it was caused by chemical warfare material.

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SECTION 4.0 TECHNICAL OVERVIEW

– History of Water Island Activities: A complete history of testing activities on Water Island is found in the Basic Work Plan, contained in the first section of the Site Safety Submission.

– Preliminary Visits: Various site visits to Water Island have been conducted to observe potentially contaminated areas and to establish the need for further investigation. A planimetric survey of former Fort Segarra was performed in September 1991. These visits and an analysis of archival information produced a number of candidate sites for investigation during the actual site characterization.

Phase I Site Characterization: Six potentially contaminated sites were selected by the U.S. Army Corps of Engineers to be topographically surveyed. These areas were subjected to geophysical survey and soil sampling as Phase I of a Site Characterization conducted by MTA, Inc. in early 1994. Three areas were determined to warrant further, intrusive investigation Site Characterization, Phase II: Test Area 4-2 (TA 4-2), Test Area 5, and the Flamingo Bay Landfill Area 2 (FB-2). These areas will be subjected to excavation and sampling of geophysical anomalies found during Phase I Site Characterization.

Historical documentation and results of previous sampling indicate the following chemical agents were present during conduct of the San Jose Project:

I. BLISTER AGENTS
Distilled Mustard (HD)
Levinstein Mustard (H)
Sesquimustard (HQ)
Thiodiglycol (a breakdown product of sulfur mustard)

II. PHOSGENE (CG) This agent can be considered as either a military or industrial chemical

III. BLOOD AGENTS
Cyanogen Chloride (CK)
Cyanuric Chloride (solidified CK)

IV. NERVE AGENTS
Tabun (GA)
Sarin (GB)

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These agents were used for testing of dispersion rates in a tropical climate. The chemicals were configured in bombs and 1 ton containers. The bombs were non-explosively configured and were detonated statically.

—Phase II Site Characterization: Phase II Site Characterization investigation will consist of identification of subsurface anomalies to determine if the anomaly is chemical warfare material, explosive material, or non-DOD material; and excavation of areas characteristic of military dump sites.

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SECTION 5.0 PROTECTIVE ACTIONS AND PROCEDURES

The U.S. Army Engineering and Support Center (CEHNC) and the Technical Escort Unit (TEU) determine the maximum credible events (MCE) for non-intrusive and intrusive operations. The MCE is the most serious case public safety hazard that is reasonably possible as a result of an accidental occurrence or uncovering of chemical warfare material during non-intrusive and intrusive operations. The magnitude of the potential hazards depend upon the type and quantity of chemical warfare material uncovered and the meteorological conditions. Based upon the MCE, a computer model is used to predict the no effects distance from the point of soil penetration. This computer model considers such things as the type(s) of chemical or high explosive hazards most likely to be encountered, meteorological data, and the nature of the work (non-intrusive vice intrusive).

The maximum credible event for Site Characterization, Phase II, Test Areas 4 and 5 is an M70 115 pound bomb containing 60 pounds of mustard agent (HD) that is *(released)* ~~explosively configured during~~ optimum ~~(for release)~~ meteorological conditions. The maximum credible event for Flamingo Bay Landfill is an M78 500 pound bomb containing 330 pounds of cyanic chloride (CK) that is *(released)* ~~explosively configured~~ during optimum meteorological conditions. Hazard Analysis for these determinations are contained in the SSHP.

~~The Department of the Army,~~ *(The)* U.S. Army Corps of Engineers, has determined, based upon the maximum credible event (MCE) for Test Area 4 and 5, a no-effects distance calculation of 300 meters from the point of release. The nearest public area which is a residence is located approximately 50 meters from the Test Areas 4 and 5 where it is suspected that M47 mustard filled bombs were buried. Based upon the MCE for the Flamingo Bay landfill area, a no-effects distance calculation of 300 meters from the point of release has been determined. The nearest public area which is a residence is approximately 25 meters from the Flamingo Bay Landfill area where it is suspected that M78 cyanic chloride bombs were buried. The Corps of Engineers has determined that the safety precautions described in the SSHP are adequate to protect site workers, support personnel, and the public without the need of additional emergency or evacuation planning.

Protective actions and procedures to be taken during Site Characterization, Phase II include but are not limited to the following:

- **Implementation of the Site Safety and Health Plan (SSHP):** This plan addresses the safety and health concerns of all work to be conducted during Site Characterization, Phase II operations and includes a activity hazard analysis for all site tasks and operations. The SSHP contains specific requirements for employee training, personnel protective equipment, engineering controls, decontamination, and emergency response.

- **Air Monitoring:** An extensive air monitoring program has been developed and will be conducted by MTA, Inc. and TEU during all intrusive operations. Real-time air monitoring utilizing direct reading instruments will be conducted downwind and at the source during all excavation, sampling, identification, and removal activities. The SSHP for Site Characterization, Phase II details the type of monitoring equipment, contaminant or hazard to be monitored, monitoring responsibilities, methods, and frequency that will be utilized, and the specific actions taken should a positive monitoring result occur. Meteorological monitoring will also be conducted. Data obtained from meteorological monitoring will be used to establish the boundaries of the exclusion zone for test Areas 4 and 5 and the Flamingo Bay Landfill area and to determine if increased precautionary measures are necessary.

- **U.S. Army Technical Escort Unit (TEU):** This unit, which is unique to the Department of Defense, has worldwide expertise in neutralizing hazards associated with CWM. TEU will be on site during all Site Characterization, Phase II operations. The actual intrusive work effort will involve the contractor, MTA, Inc., digging a hole in the ground to within 12 inches of the suspect object. TEU will take charge of the work site at that point. TEU personnel will perform an "archaeological dig" to remove the 12 inches of soil to reveal the object in question. Should chemical agent be detected through the extensive air monitoring program, or if the suspect object is identified as a chemical munitions or as an unknown, TEU will safeguard the excavation and identify the object.

TEU is also responsible for initiating the spill response control plan for containerized materials stored at the interim storage facility and transported between the interim holding facility and the site where the objects are to be removed from Water Island.

- **Interim Holding Facility:** CWM liquids, solids and/or munitions (OE/CWM) removed during the intrusive digging process shall be overpacked at the site by TEU. Scrap metal which tests positive for chemical agent will be decontaminated using approved processes until chemical agent is no longer detected and then containerized for storage and disposal. These items shall be transported by TEU according to the Transportation and Interim Storage Plan submitted by ~~the U.S. Army Chemical and Biological Destruction Command~~ (CBDCOM). Recovered CWM munitions are over-packed in single round containers and maintained in a safe interim storage facility to await transportation off-site. The interim storage area minimizes risks to workers, the public, and the environment. Materials stored in this area are considered OE/CWM hazardous waste and/or suspect agent materials and therefore must be treated as hazardous waste. The identification listing of material entering the facility must be completed and serves as the inventory of items held in the interim storage facility. Maximum capacity for stored items will not exceed design capacity and are expected to be stored no longer than 90 days. The Interim Holding Facility will be designed and constructed according to U.S. Army chemical munitions safety and security standards.

The intent is to remove the recovered material from the Interim Holding Facility in a timely and efficient manner as weather and other factors permit to minimize the risk to workers and public from a safety and health standpoint.

During the storage of materials in the interim holding facility, CBDCOM will collect duplicate weekly air samples from within the facility and analyze them for potential release of airborne contaminants.

- Generator Hazardous Waste Identification Listing: The identification listing (manifest) will be completed by (CESAJ) ~~COE, Jacksonville District~~ prior to admission of the material to the interim holding facility, and is maintained at the site until shipment occurs at which time it is turned over to the waste transporter.

- Security: In the event that an Interim Holding Facility (IHF) is established and employed, security for the IHF shall be provided in accordance with the IHF Plan (CBDCOM). Specifications regarding such items as fencing, (including clear zones), lighting for the area, locks, hasps, etc. and posting of restricted area signs are outlined in the Interim Holding Facility Plan. Continuous security will be provided for the IHF at all times.

Fences and/or contract guard services will be established as needed to preclude access to work sites presenting safety hazards to the general public.

Access to active work sites will be restricted by contractor and/or government personnel at all times, in accordance with OSHA, NIOSH and Corps of Engineers requirements.

- Training: U.S. Naval Hospital, Roosevelt Roads Personnel shall be trained in physical description, routes of exposure, symptoms, target organs, and first aid for potential site contaminants. Emergency Medical technicians (EMT's) and medical personnel will be trained by the U.S. Army Surgeon General Office and ~~USA~~CBDCOM. (ANNEX A/B).

- Weather Provisions: The contractor will conduct continuous on-site weather monitoring while investigative activities are being conducted. Operations will temporarily cease when, in the opinion of the CEHNC on-site representative, the dominant wind direction changes (thus placing civilian personnel and activities inside the NOSE zone; when tropical storm or hurricane conditions exist or are imminent; or other unsafe weather conditions become apparent.

SECTION 6.0 EMERGENCY PROCEDURES

Phase II Site Characterization work is to be conducted by MTA, Inc. with support from the Technical Escort Unit (TEU). In the event of an emergency condition (ring-off of monitoring equipment, CWM/OB indication), the contractor will take immediate protective measures as outlined in the SSHP. TEU will then assume responsibility and control of the exclusion zone, evaluate the conditions and determine the required course of action including possible evacuation of the site, if warranted. Based upon the recommendations of TEU, the Corps of Engineers may continue with Phase II Site Characterization operations or suspend operations until a full evaluation of the hazard is conducted. Local emergency authorities (VITEMA) will be informed of the incident and updated as to the future operations on-site. Specific local support requirements and issues will be requested and coordinated as required between CESAJ and VITEMA.

In the case of an emergency involving exposure of a site worker to chemical agent, the casualty will be fully decontaminated by TEU at the decontamination line prior to transport for emergency medical treatment. During Phase II Site Characterization operations the USNH will provide treatment and transportation of casualties to the designated treatment facility. Hospital staff will receive specialized training from the Department of the Army in the diagnosis and treatment of chemical agent casualties. ALS and hospital treatment will be provided on an as needed basis in accordance with the Memorandum of Agreement (MOA) between the Corps of Engineers and the U.S. Naval Hospital, Roosevelt Roads (ANNEX A B).

- **Emergency Preparedness Simulation Drill:** Prior to the start of intrusive operations all emergency response personnel shall conduct a simulation exercise of several emergency to test the efficiency of the Protective Action Plan (PAP). The simulation drill will be coordinated by (CESAJ) ~~the Corps of Engineers, Jacksonville District~~.

A "Pre-Simulation Table Top" exercise will be scheduled prior to on-site activities at the project office and will include several scenarios for the Site Characterization, Phase II operations.

SECTION 7.0 KEY CONTACT PERSONNEL

Key Contact Personnel

The following personnel are designated as "key contact personnel" in the initiation of the Protective Action Plan.

1. LTC Chester D. Fowler, USA (787) 723-0133
   Deputy District Engineer for the Antilles
   San Juan, Puerto Rico 00934

2. Robert Bridgers (904) 232-3085
   Project Manager
   USAED
   Jacksonville, Florida 32232-0019

3. James W. Woodey, Jr. (904) 232-2564
   Chief, Safety and Occupational Health Office
   USAED
   Jacksonville

4. Alfonso O'Neill (809) 729-6876
   Project Engineer
   San Juan, Puerto Rico 00934

5. Chuck Twing (256) 955-5785
   U.S. Army Engineering and Support Center (CEHNC)
   Huntsville, AL 35807-4301

6. Roger Fitzpatrick (256) 955-1297
   Project Manager, CEHNC
   Huntsville, AL 35807-4301

PROJECT MANAGEMENT PLAN
Ordnance and Explosive Waste (OEW) Program
Former Fort Segarra Project
Water Island, St. Thomas, US Virgin Islands
Project No. I02VI097701

DRAFT
MAY 1992

1. WORK SCOPE.

A. Background.

In 1963, the U.S. Army initiated a program with the express purpose of excessing U.S. Government property (no longer being used for defense related purposes) owned by the Department of Defense. Recipient of the property at the former Fort Segarra is the US Department of Interior. The Comprehensive Environmental Response, Conpensation and Liability Act (CERCLA), originally enacted in 1980, was amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and mandated that property containing hazardous and toxic wastes or ordnance was the responsibility of the entity contributing to the contamination. Even though DOD no longer has title to the property, CERCLA and SARA define the U.S. Government as a potential responsible party, provided that the U.S. Army was determined to be at least partially the source of the contamination.

Under the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS), the former Fort Segarra has been identified as a site requiring OEW clean-up support. USAEDH was assigned the Mandatory Center of Expertise (MCX) and Design Center for Explosive Ordnance (EXO) on 5 Apr 90. EXO has now been designated as Ordnance and Explosive Waste (OEW). All work at the former Fort Segarra will be performed in accordance with the Management Plan for Ordnance and Explosive Waste (OEW) Mandatory Center of Expertise and Design Center (CEHND 1105-3-9).

B. Site History and Description.

(1) The former Fort Segarra is located on Water Island. Water Island is located in the St. Thomas Bay, between the East and West Greggerie Channels, south of the city of Charlotte Amalie, St Thomas, U.S. Virgin Islands. The former Fort Segarra site has historically been stated as being approximately 500 acres which was acquired from the East Asiatic Company/West Indian Company through condemnation in June 1944. Water Island was acquired for a coastal defense installation known as Fort Segarra. The Department of the Army (DA) was constructing the coastal defense installation when World War II ended and construction was halted.

(2) The Army's Chemical Corps moved its San Jose Project (tropical test site) from Panama to the Virgin Islands in 1948. Between 1948 and 1949, the Chemical Corps upgraded the previously constructed facilities. A review of lists of approved test plans shows that early tests on Water Island focused primarily on blister (mustard) and choking (chlorine, phosgene, and cyanogen chloride) agents, and that later tests were planned to shift to

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captured Ge[illegible] munitions and nerve agents. In 1949, a US Army Technical Escort Unit (TEU) brought unidentified chemical munitions to the Virgin Islands. By late 1949, the Chemical Corps was dissatisfied with the Virgin Islands and decided to shift operations to Dugway Proving Ground, UT even though chemical testing was ongoing. In 1950, the Virgin Islands project was terminated and chemical munitions removed by TEU. The items removed were E46 chemical bombs (modified 115 lb. M70 bombs filled with nerve agent GA or possibly GB) and E52 bombs (modified T3E1 125 lb. bombs filled with GA or possibly GB).

(3) The following sites are known or thought to have been used for ordnance and chemical weapons testing activities:

(a) Test Area 1. This area is located on the northwest shore of Water Island on Ruyter Bay, just north of Carolina Point. The area is currently occupied by a home and small parking garage. Two ammunition bunkers are located nearby.

(b) Test Area 2. This area is located on the north side of Providence Point adjacent to Phillips Landing. The Test Area was dredged out several years ago in preparation for a small harbor, but was subsequently filled in again.

(c) Test Area 3. This area is located at the point of Druif Bay, and is just east of the Water Island Hotel beach area. It has been reported that this area was excavated for fill in 1981 and subsequently refilled with soil from another location on the island.

(d) Test Area 4. This area is located to the south and southwest of the Flamingo Bay Harbor. The site straddles the road from the deep-water dock. The area north of the road is relatively clear of debris; however, the area south of the road is the island junk yard with about 50 abandoned vehicles.

(e) Test Area 5. This area is located south and southeast of the Flamingo Bay Harbor and is south of the road from the deep-water dock. This area was used to accumulate and burn debris from Hurricane Hugo. There is a substantial amount of metallic debris on the ground.

(f) Test Area 6. This area is located on the eastern shore of the southern part of the island, due east of Flamingo Bay. This site has been extensively developed along the ridge line, and the lower parts of the site are along a rocky shore.

(g) Test Area 7. This area is located on the north part of the island and extends from the point of Sprat Bay northeast to East Greggerie Channel. The northern part of the Test Area is covered with a pond of red-colored water.

(h) Test Area 8. This area is now covered by the Water Island Hotel. The hotel has not been repaired or occupied since its destruction by Hurricane Hugo.

Flamingo Bay Landfill and Warehou. Area. A metal warehouse was constructed by the Water Island Hotel near the deep-water dock for storage of vehicles and materials. The warehouse was constructed on an area filled in for this purpose. The area south of the warehouse was the site where bombs were discovered in 1966. The bombs were discovered while a dragline was removing "Elephant Muck." After this discovery, the site was filled in and covered with borrowed soil to a depth of about three feet. Debris, abandoned vehicles, and scrap now cover the site. The DOI, as owner, may be liable for the costs of removing the scrap and debris from this site prior to commencing OEW remediation. USAEDH provided DOI with an estimate of $145,000 to remove this debris.

(j) In addition to the Test Areas and the landfill, salt water tidal pools around Water Island are a primary potential target for dumping of OEW and chemical agent filled ordnance.

(4) The Army turned over Water Island to the Department of the Interior (DOI) by an indefinite revocable permit. The DOI assigned the permit to the St. Thomas Development Authority (STDA) in 1951. The STDA then leased Water Island to Water Island Inc., a local development corporation. On 11 Jul 1952, Public Law 511 (82nd Congress) authorized the transfer of Water Island from the DA to the DOI. On 10 Dec 1952, the DOI executed a new lease to the Water Island, Inc. which proceeded to develop the Island into a resort with many subleases. This lease expires at the end of December 1992. The Island is currently the site of a large tourist resort hotel and is also inhabited by about 300 people during the winter season. Many cruise ships call in St. Thomas with many docking near Water Island.

(5) In 1966, during the construction of the Flamingo Bay warehouse, a crew employed by the lessee, Water Island Inc., uncovered several large objects that resembled bombs. An EOD team from Roosevelt Roads Naval Base (San Juan, Puerto Rico) identified the objects as M-70/M-78 series chemical ordnance bombs. The EOD team indicated that this site had been used by the Army as a chemical ordnance disposal area. The EOD team vented the bombs and warned the construction crew not to excavate in this area again. The lessee notified the DOI of the problem but no further investigations have been performed. No known injuries or other problems have occurred at this site. The site is on the southwest part of the Island near Flamingo Bay along the seashore and is known locally as the Flamingo Bay Landfill. It is an unstable area subject to storms and high tides.

C. Status Update.

(1) In October 1985, the DOI sent a memo to Mr. Lewis D. Walker (DA Deputy Assistant Secretary for Environment, Safety & Occupational Health) requesting that the Army determine if Water Island was ever used for chemical warfare testing or similar activities. No correspondence can be found of Mr. Walker's reply, but subsequent to this DOI memo, Fort Segarra was added to the FUDS Inventory for a future Preliminary Assessment (PA).

(2) In the spring of 1989, Congressional Delegate Ron de Lugo of the Virgin Islands and Chairman of the House Interior Subcommittee on Insular and International Affairs, introduced legislation (HR 1345) which would authorize the Secretary of the Interior to transfer title of Water Island to the Government of the Virgin Islands. Status of this legislation is unknown in April 1992. If this legislation were not to pass, the DOI, at the expiration of the lease in Dec 1992, will be required under current law to declare Water Island excess to its needs and turn over the Island to GSA for disposal pursuant to the Federal Property and Administrative Services Act (40 USC 471).

(3) In the summer of 1989, Jacksonville District (USAEDJ) commenced work on the Fort Segarra FUDS Inventory Project Report (INPR). The draft INPR was completed by USAEDJ in Dec 1989. The final INPR was completed by USAEDJ in June 1990 and forwarded by USAEDH to HQUSACE for approval. On 20 Aug 1990, HQUSACE approved the INPR and authorized USAEDH to proceed (subject to availability of funds) with the removal action. On 24 Oct 90, USAEDJ informed DOI of the approval of the INPR and the fact that the Corps would be commencing cleanup operations in the near future.

(4) USAEDH personnel met with TEU and Department of the Army (DA) on 19/20 Dec 90 concerning our need for TEU assistance at Fort Segarra. LTC Doc Bishop, Director of the CSM Program at the DA, indicated that the TEU is unable, at this time, to provide transport and storage services for any CSM we recover at Fort Segarra. The reasons for this are very complex. Recently within DA and AMC, the policy seems to have shifted to calling recovered CSM a hazardous and toxic waste (HTW) under EPA regulations. This policy shift creates many complex problems. First, by calling CSM an HTW item, CSM must be transported by an EPA licensed transporter and manifested as HTW. The TEU is not an EPA licensed HTW transporter and private contractors are not allowed by Army regulations to transport CSM. Simply put, this means that any CSM recovered in the future must remain on-site where discovered. Second, there are only seven installations in CONUS that are authorized to store CSM. However, the commanders of these seven installations refuse to accept any CSM manifested as HTW as this would violate their EPA Part B permits concerning the storage of HTW generated from off their installations. Third, the EPA would be the lead agency, not DOD, concerning the statutes governing transport and storage of CSM-HTW. DOD would no longer control the CSM which is contrary to Army regulations. Fourth, LTC Bishop stated that the above seven installations have nearly reached their physical capacity to store recovered CSM even though AR 50-6 says they must accept the CSM. These installations will remain at or near capacity until such time as the Chem Demil Program reduces the CONUS unitary stockpile. And fifth, Johnston Island (JI) can no longer except CSM for storage and demil from any areas of the world other than the Pacific Basin. This is a result of the "Venatu Agreement" where President Bush agreed with the Government of the Solomon Islands not to accept at JI any CSM found outside the Pacific Basin. The

first thre ssues create "administrative gridloc since the requirement_ of the Army's CSM program and the EPA's HTW statutes cannot be met concurrently.

(5) On 9 Jan 1991, USAEDH formally requested in writing, with a 28 Feb 91 suspense date, AMCCOM and TEU support to cleanup Fort Segarra. AMCCOM was provided all of the pertinent background information and the reasons for the urgency.

(6) On 21 Mar 91, USAEDH and USAEDJ briefed Governor Alexander Farrelly on the status of Water Island and what the Governments' plans were for eventual remediation. The Governor was also briefed on the USAEDH Ordnance and Explosive Waste (OEW) Program. Governor Farrelly requested that a search of military records be performed on all FUDS in the US Virgin Islands.

(7) On 12 April 1991, USAEDH contracted with Ebasco, Inc. to perform an Archives Search of Fort Segarra and all other FUDS located within the US Virgin Islands. The Archives Search Report was completed on 3 Jul 1991. The history of Fort Segarra and the nature of the testing described above are as a result of the Archives Search Report. The report provided a Risk Assessment Code (RAC) of 1 for Water Island (actually the Flamingo Bay Landfill). Based on the RAC 1, USAEDH commenced contracting action to install a fence around the Flamingo Bay Landfill.

(8) On 18 Jul 91, USAEDH and HQUSACE briefed Congressional Delegate Ron DeLugo on the status of the Water Island project. USAEDH provided him with the results of the recently completed Archives Search of the Former Fort Segarra and and other US Virgin Islands FUDS, and our concerns on the RAC 1 site.

(9) On 14 Aug 91, the Governor and the public (press release and public meeting) were informed of the results of the Archives Search. USAEDH and USAEDJ briefed the Governor and then held a public meeting on Water Island and briefed the public. They were also briefed on the plans to fence the Flamingo Bay Landfill and to perform topographic surveying of Water Island.

(10) The contract to fence the Flamingo Bay Landfill and to perform topographic surveying was awarded on 14 Aug 91. The contract was awarded to Ebasco, Inc., the same firm that performed the Archives Search. Installation of the fence was completed on 4 Oct 91 and topographic surveys were completed on 14 Nov 91. The Flamingo Bay Landfill and Test Areas 2, 4, 5, 6, and 7 were mapped at a scale of one inch = 30 feet. In addition, the entire Water Island was planimetrically mapped at a scale of one inch = 200 feet.

(11) A contract was awarded to Ebasco, Inc. on 27 Sep 91 to prepare concept ordnance remediation work plans. The final concept work plans were completed on 16 Mar 92. Ultimately, these work plans will be provided to the remediation contractor to finalize.

3) On 4 Dec 91, USAEDH and USAEDJ briefed the Governor's Press Secretary, Mr. James O'Bryan, and held a public meeting on Water Island to discuss the status of Water Island. For the benefit of those island residents that were not at the 14 Aug public meeting, the Archives Search Report was discussed. Status of USAEDH remediation contracting action was discussed. The public was given an opportunity to obtain copies of the recently completed topo and planimetric maps.

(14) On 3 Feb 92, USAEDH briefed the USAEDJ Commander, COL Salt, on the history and status of the Water Island project.

D. Strategy.

Areas suspected of containing OEW and chemical surety material (CSM) have been identified through archive searches. Interim Removal Actions for OEW have been initiated to address areas which present an imminent and substantial danger to the public. The USAEDH approach to the OEW problem is based on removing the imminent and substantial danger to the public. USAEDH will respond to special requests from USAEDN and ARCOM where OEW is suspected.

An Interim Removal Action (IRA) was performed at the Flamingo Bay Landfill by fencing the landfill.

Remaining strategy TBD.

2. WORK BREAKDOWN STRUCTURE (WBS). The WBS is furnished at Annex A.

3. ORGANIZATION, RESPONSIBILITIES, AND AUTHORITY.

A. Organizational Breakdown Structure (OBS):

10 Department of the Army (DA)
20 U.S. Army Corps of Engineers Headquarters (HQUSACE)
30 U.S. Army Engineering Division, Huntsville (USAEDH)
- 310 Commander (CEHND-DE)
- 320 Deputy Commander Programs and Technical Management (CEHND-DC)
- 330 Assistant Division Commander (CEHND-AD-M)
- 340 Directorate of Programs and Project Management (CEHND-PM)
  - 341 Ordnance and Technical Programs Division (CEHND-PM-OT)
- 350 Directorate of Engineering (CEHND-ED)
  - 351 Systems Engineering Division (CEHND-ED-SY)
  - 352 Design Engineering Division (CEHND-ED-CS/ CEHND-ED-ME)
  - 353 Cost Engineering Division (CEHND-ED-ES)
- 360 Directorate of Resource Management (CEHND-RM)
- 370 Directorate of Contracting (CEHND-CT)
- 380 Office of Counsel (CEHND-OC)
- 390 Public Affairs Office (CEHND-PA)

U Army Engineering Division, South Atlan (USAEDSA)
410 U.S. Army Engineering District, Jacksonville (USAEDJ)
411 Public Affairs Office (CESAD-PA)
U.S. Army Technical Escort Unit (TEU)

B. Responsibilities:

DA	Definition of required work
HQUSACE	Top-level funding and scheduling for DERP-FUDS
USAEDH	Detailed scheduling, budgeting, and cost control
	Progress and financial reporting
	Execution and review of required work
	CO and COR designation
	Contractor selection/award
	Work plans and field work
	Ordnance QA
	Assist in project QA oversight
	OEW report
	Coordinate with HTW plans
USAEDSA	Coordination and review of required work and coordination of HTW interface
USAEDJ	Coordination and review of required work
	On-site participation in execution (COR)
	Project QA oversight
	Budget and cost control
	Progress and financial reporting
	Historical data
	Obtaining Rights-of-Entry
	Media interaction
	Environmental review
	Coordinate with HTW plans
TEU	On-site participation in execution
	Coordination and review of required work
Regulators	Coordination

C. Authorities:

DA	Approve/provide funding
HQUSACE	Approve/provide funding for FUDS
USAEDH	Define scope of work
	Approve work, budget, and schedule
	Allocate resources to perform work
	Contracting Officer
USAEDJ	On-site project management
TEU	CSM regulations

4. RESPONSIBILITY ASSIGNMENT MATRIX. The Responsibility Assignment Matrix is furnished at Annex B.

5. SCHEDULE.

A. Period of Performance. TBD.

B. Current Project Schedule. Current Project Schedule is furnished at Annex C.

6. **BUDGET AND COST ESTIMATE.**

A. Program Budget. The Program Budget is generated through funding Work Plans that are established for the overall DERP-FUDS program related to OEW. Funds of $_____ are expected to be dedicated to Fort Segarra for the remainder of FY92. These funds will be used for site investigations.

(1). USAEDH:

FUDS Contract Funds (To Date $379,000)

(b) FUDS Contract Funds (Remainder of FY92 - $_____)

FUDS Contract Funds (FY93 - $_____)

FUDS Contract Funds (FY94 - $_____

B. Organizational Cost Estimates.

(1). USAEDH:

(a) FUDS In-House Labor (To Date $)

FUDS In-House Labor (Remainder of FY92 - $_____)

FUDS In-House Labor (FY93 - $)

FUDS In-House Labor (FY94 - $)

(2). USAEDSA/USAEDJ:

(a) FUDS In-House Labor (To Date $)

FUDS In-House Labor (Remainder of FY92 - $)

(c) FUDS In-House Labor (FY93 - $)

(3). TEU:

(a) FUDS In-House Assistance (To Date $)

(b) FUDS In-House Assistance (Remainder of FY92 $_____)

7. **RESOURCE ALLOCATION PLAN.** The following in-house resources will be required to support this project:

Engineering Directorate:
Civil/Structures Division:
Site Development Branch
Geotechnical Branch
Environmental Protection & Utilities Branch

Co[illegible]ngineering Division:
[illegible]ost Engineering Branch
Service Branch
Systems Engineering Division:
Analysis Branch
System Safety Section

Program & Project Management Directorate:
Ordnance & Technical Programs Division
A-E Contracts Division

Resource Management Directorate:
Program Budget Division
Finance and Accounting Division

Contracting Directorate:
Environmental Acquisition Division

Public Affairs Office

8. LOCAL COOPERATION PLAN.

Rights-of-Entry and site clearance activities will be coordinated through USAEDSA/USAEDJ with property owner and federal, state, and local regulators. USAEDSA/USAEDJ will develop necessary plans and coordinate with USAEDH for approval. Plans may include Local Cooperation requirements (see EC 1105-2-180) and a Local Cooperation Agreement (LCA) package in accordance with ER 1165-2-131.

9. ACQUISITION PLAN.

A. Project Definition.

The project has been adequately definitized by the previous Archives Search.

B. Interim Removal Actions. Contracting action is underway to obtain a remediation contractor. This contractor will perform sweeps of areas with the lowest potential for chemical contamination. As part of the sweeps, the contractor will obtain and analyze soil, sediment, and water samples for HTW and chemical agent.

C. Studies. An Environmental Assessment (EA) may be required prior to commencing full-scale remediation on Water Island.

D. Removal Actions. TBD.

page 9 of 15

REAL ESTATE PLAN.

No real estate will be acquired. On 3 Jan 1991, USAEDH received from USAEDJ the Rights-of-Entry (ROE) to enter DOI and lessee property to perform site investigation and cleanup work. The ROE was to expire on 14 Sep 1991. The ROE was re-executed by USAEDJ on 20 Aug 91 with a new expiration date of August 1993.

TOTAL QUALITY PLAN.

Quality Assurance (QA) and Quality Control (QC) plans have been developed and will continue to be developed in site work plans. USAEDH is responsible for OEW QA. The contractor is responsible for QC.

12. VALUE ENGINEERING (VE) PLAN.

The VE program will be administered by USAEDH VE Office (CEHND-ED-SY). For the most part, this will consist of evaluation of removal action efficiency.

13. SAFETY PLAN.

Site Specific Health and Safety Plans (SSHSP) are developed for this project by the contractors performing the work. USAEDH Safety Office (CEHND-ED-SY) approval of the plans is necessary before commencement of investigation or removal activities. Contractor and Corps personnel must follow the requirements of Corps of Engineers manual EM 385-1-1.

SECURITY PLAN.

Since this project contains properties owned or leased by various entities, security (safety related) will be provided as called for in work plans with USAEDSA/USAEDJ providing coordination.

CULTURAL RESOURCE PLAN.

At some point, a Cultural Resource Plan may be required. If so, USAEDJ will be responsible for preparing the plan. This plan may be required due to the existence of two pre-Columbian sites, the ruins of two plantations dating from the 17th century (one on Carolina Point and one on Sprat Bay), at least two 19th century shipwrecks, and World War II military fortifications. None of the sites have been nominated to the National Register of Historic Places. However, the Territorial Archaeologist points out that three sites have not yet been systematically excavated, and that the Elephant Bay site may be of considerable importance.

ENVIRONMENTAL PLAN.

A. Environmental Assessments (EA).

EA's, if necessary, will be performed by USAEDH and coordinated with USAEDSA with resulting Environmental Impact Statements (EIS), if any, also being coordinated through USAEDSA.

The rumored existence on Water Island of two endangered species (the leatherback turtle and the brown tree boa) must be further investigated.

B. Environmental Permits.

Environmental Permits are not necessary for CERCLA actions. USAEDH is responsible for resolving any permit issues with the Territorial and Federal regulators.

17. MANAGEMENT CONTROL PLAN.

Life Cycle Project Management (LCPM) procedures will be used in the management of this OEW project. They will be integrated into and used for OEW where imminent safety hazards exist. USAEDH is the LCPM for OEW. USAEDH is responsible for planning, design, and removal. USAEDJ will provide Contracting Officer Representative (COR) support with on-site control of removal contracts. USAEDH is responsible for monitoring ordnance efforts.

REPORTING REQUIREMENTS.

Quality Assurance Report (QAR) - Daily Log of OEW Removal (USAEDH), Fact Sheets (USAEDH and USAEDSA/USAEDJ), Weekly Progress Reports (Contractor), Weekly/ Monthly Cost Reports (Contractor), and the LCPM Reporting System (LRS), ER 5-2-1, will be used for project control.

CHANGE CONTROL PLAN.

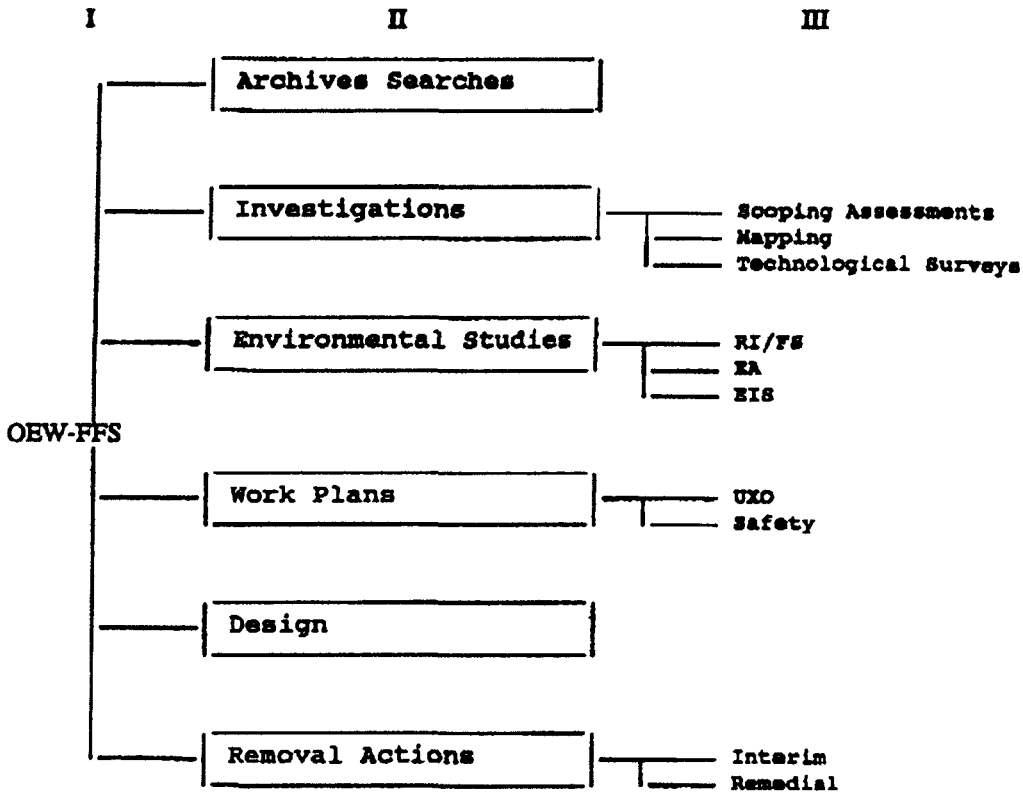
Work will be performed in accordance with Approved Work Plans with any deviation to be approved by USAEDH.

20. PROPERTY MANAGEMENT PLAN (PMP).

For CPFF and T&M contracts, the Contractor will be required to prepare a detailed PMP describing the equipment to be employed to perform all necessary operations. The PMP shall describe and quantify both field equipment (such as site trailer, track hoes, back hoes, trucks, bulldozers, front-end loaders, chainsaws, magnetometers, etc.) and office equipment (such as computer, printer, FAX, copier, 2-way radios, camcorder, telephones, etc.) and consumable supplies (both office and field) intended to be used. The Contractor will be required to describe in the PMP the source and rental/acquisition costs for all field and office equipment and consumable supplies. Three quotes must be obtained and provided in the PMP for each piece of field and office equipment and the PMP must indicate that the vendor with the lowest price quote was used for rental/acquisition. The Contractor will indicate in the PMP when rental costs exceed acquisition costs for a particular piece of equipment over the life of the project. In these instances, the Contracting Officer may direct the Contractor to purchase that equipment. After Contracting Officer approval of the Work Plans/Property Management Plan, additional field/office equipment and consumable supplies in excess of $100 (aggregate total) may not be rented/acquired without Contracting Officer approval.

At the conclusion of all work at Fort Segarra, all consumable supplies (such as shovels, chainsaws, trimmers, chains, lumber, office supplies, etc.) will be turned over to the nearest Defense Reutilization and Marketing Office (DRMO) for ultimate disposal.

ANNEX A
WORK BREAKDOWN STRUCTURE

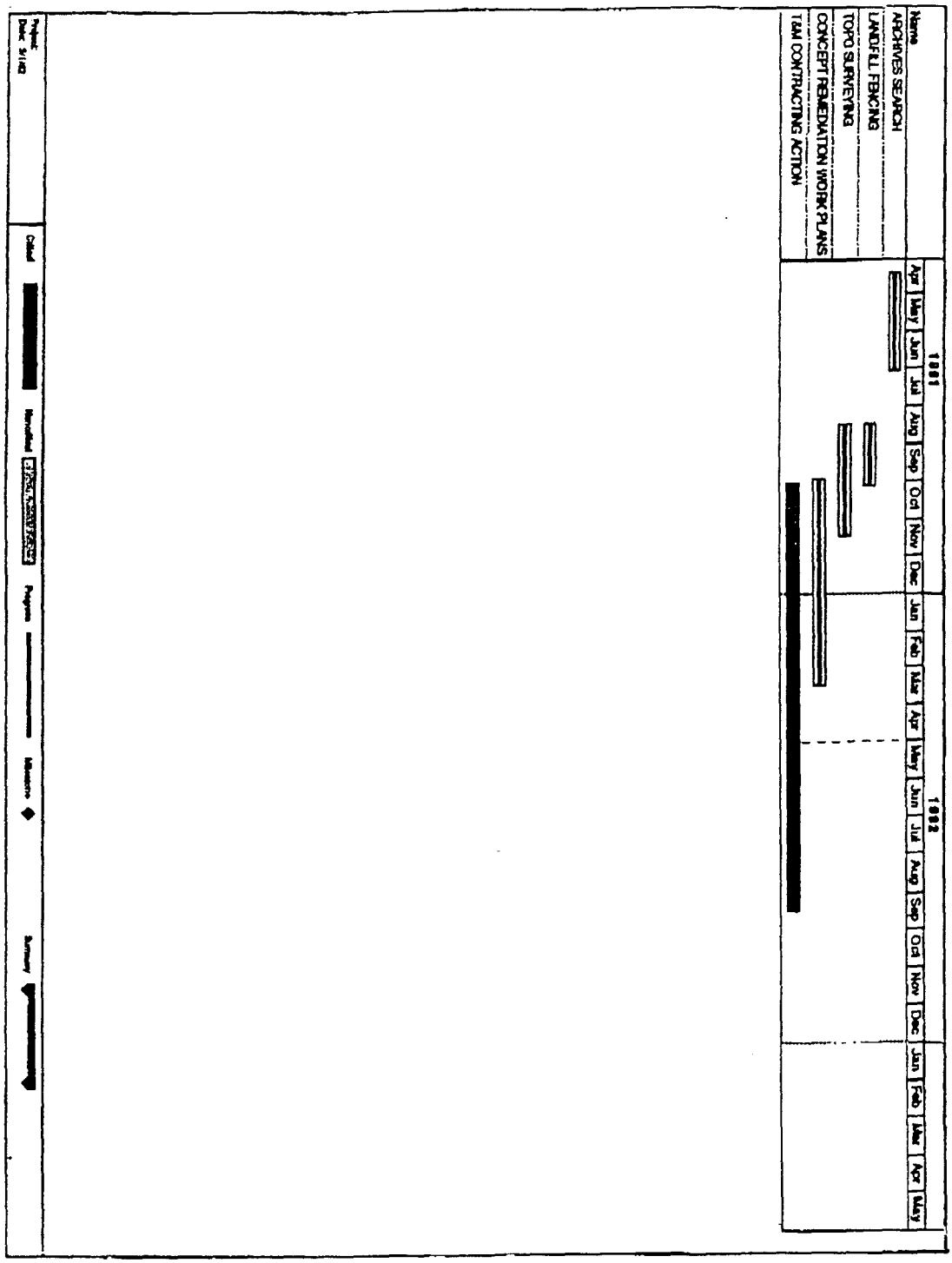


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ANNEX B
RESPONSIBILITIES ASSIGNMENT MATRIX

	DA	HQUSACE	USAEDH	USAEDSA	USAEDJ	TEU	EPA	Local
POLICY	A	R A C	A X	S	S	X	C	C
PROGRAMMING	A	A X	C X	S	S	N	C	C
ARCHIVES SEARCHES	N	S	A X	R	R	R	C	C
REAL ESTATE/ RIGHTS OF ENTRY	N	N	C	C	C X	N	N	N
SCOPING ASSESSMENTS/ INVESTIGATIONS	N	S	A X M	R	S	R	C	C
EA/EIS	N	S	R	A	S	R	C	C
SCHEDULES	N	C	A X	C	C R	C	C	C
WORK PLANS	N	S	A X M R	C	C R	R	C	C
SAFETY PLANS	N	S	A X M R	N	C R	R	C	C
REMOVAL ACTIONS	A	S	X M	C	S	S	C	C
DESIGN	A	S	A X M	C	N	N	N	N
OTHER STUDIES/PLANS	N	S	R	R	R	C	C	C
OEW REPORT	R	R	X M A	R	R	R	R	R

SYMBOL	EXPLANATION
A = Approval	An approval of programmatic material, concepts, or other program requirements.
C = Coordination	A requirement to participate more or less continuously in the ongoing development activities, such that input and advice would have been included in the programmatic materials.
M = Monitor	A requirement to advise and participate in those functions which will increase the value of the program/project.
N = Not Applicable	Not Applicable.
R = Review	A requirement to review the work of others and provide comment, generally without continuous involvement in the development process for the material being reviewed.
S = Support	A requirement to provide manpower, technical data, or other active participation in the development process upon request.
X = Execution	An assignment of responsibility to carry out necessary actions required to achieve assigned goals for that function.


Name
ARCHIVES SEARCH
LANDFILL FENCING
TOPO SURVEYING
CONCEPT REMEDIATION WORK PLANS
T&M CONTRACTING ACTION
1991
Apr May Jun Jul Aug Sep Oct Nov Dec
1992
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Jan Feb Mar Apr May
Project Date: 5/1/92
Critical
Progress
Milestone
Summary

page 15 of 15

Jacksonville District
Project Mgmt. Office
Fort Segarra Files
R. Bridger's Office

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
WASHINGTON, D.C. 20310

1 JUN 1992

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY FOR
INSTALLATIONS, LOGISTICS, AND
ENVIRONMENT
COMMANDER, U.S. ARMY MATERIEL COMMAND
CHIEF OF ENGINEERS

SUBJECT: Restoration of Formerly Used Defense Sites (FUDS)
Contaminated with Suspect Chemical Weapons (CW) Materiel

1. High level public and governmental attention to the restoration of Raritan Arsenal, NJ and Fort Segarra, VT make it mandatory that we accelerate actions for the recovery of suspect chemical warfare materiel from them. The U.S. Army Chemical Material Destruction Agency (USACMDA) is being formed to accomplish overall programmatic planning and prioritization of effort to clear the estimated 200 formerly used defense sites (FUDS) which also may have suspect CW materiel contamination. USACMDA is designated as the lead agency for recovery of CW materiel from Raritan Arsenal and Fort Segarra. Corps of Engineers and AMC will provide support in the execution of operations to clear these specific sites.

2. Due to the urgency, Raritan Arsenal and Fort Segarra will be pilot projects and planning will proceed as rapidly as possible. Raritan Arsenal will have first priority. On-site activity at Raritan Arsenal will begin as soon as it can be arranged. AMC will provide five borrowed civilian/military personnel as augmentation for USACMDA to facilitate start of planning, pending the hire of permanent personnel. Target job description and grade structure are shown at Enclosure. Specific skills and grade will be worked out between USACMDA and AMC.

3. The restoration of Raritan Arsenal and Fort Segarra will be carried out under ASA(IL&E) policy guidance. USACE retains on-site management responsibility. Director Space and Special Weapons,

Jax-040901-025 Jay25

page 1 of 5

SUBJECT: Restoration of Formerly Used Defense Sites (FUDS) Contaminated with Suspect Chemical Weapons (CW) Materiel

ODCSOPS will be focal point for integration of chemical surety, safety, and security policy as it applies to this unique operation.

4. USACMDA will provide overall direction to include resource programming, environmental documentation for transport mode and storage site selection, and the development of equipment and procedures. USACE and AMC support responsibility for Raritan Arsenal and Fort Segarra are assigned as outlined below. Working relationships with USACMDA on a broader scale to address the total restoration mission will be established when the agency becomes fully operational.

a. Corps of Engineers: Responsible for all aspects of site restoration operations to include site investigation, site safety documentation, environmental documentation, remediation actions and unearthing of suspect chemical warfare materiels. Responsibility for CW materiel ends when materiel is unearthed.

b. Army Materiel Command: Responsible in accordance with USACMDA planning for execution of recovery of suspect chemical warfare materiel once unearthed.

5. Funding requirements directly attributable to planning, preparation, and execution of restoration and recovery operations will be resourced from Defense Environmental Restoration Program (DERP) funding. Technical Escort Unit support to USACMDA will be on a reimbursable basis. Storage costs will be executed from AMC normal operating accounts.

Enclosure

DENNIS J. REIMER
General, United States Army
Vice Chief of Staff

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

REPLY TO ATTENTION OF:

20 AUG 1992

CEMP-RF (200-1a)

MEMORANDUM FOR

COMMANDER, HUNTSVILLE DIVISION, ATTN: CEHND-PM-OT
COMMANDER, NORTH ATLANTIC DIVISION, ATTN: CENAD-PP-PM
COMMANDER, SOUTH ATLANTIC DIVISION, ATTN: CESAD-PD-R

SUBJECT: Chemical Warfare Material Investigation and Remediation at Former Raritan Arsenal, N.J., and Water Island, U.S. Virgin Islands

1. Reference memorandum, Army Vice Chief of Staff, 1 June 92 subject: Restoration of Formerly Used Defense Sites (FUDS) Contaminated with Suspect Chemical Weapons (CW) Materiel (enclosed).

2. The purpose of this memorandum is to reiterate the priority for investigation and remediation of potential CWM at the subject sites.

3. The referenced memorandum directed the U.S. Army Chemical Material Destruction Agency, and the Corps of Engineers to plan and initiate remedial action at the subject sites as rapidly as possible.

4. The referenced memorandum established a new activity within USACMDA to accomplish non-Corps activities incidental to the remediation at the subject sites. The new USACMDA activity recently staffed up to 5 action officers dedicated to accomplishing the subject projects. Considering USACMDA has two projects to concentrate on, and the Corps has many, it may be challenging to keep pace with USACMDA initiatives. However, considering the scrutiny these projects will experience, it is imperative that we are never guilty of delaying project progress for lack of emphasis.

5. CENAD and CESAD must ensure their project managers (PMs), in conjunction with CEHND, develop and track project milestones to ensure each step is executed as quickly as possible. The schedule for accomplishing the projects must be ambitious yet achievable. Parallel actions and other schedule efficiencies will be maximized. The schedule must be based strictly on technical feasibility, and will not consider funding or manpower constraints unless acknowledged by HQ.

CEMP-RF
SUBJECT: Chemical Warfare Material Investigation and Remediation at Former Raritan Arsenal, N.J., and Water Island, U.S. Virgin Islands

6. CEHND must coordinate closely with the respective PMs to ensure they are fully informed and provided opportunity to comment on all activities and schedules concerning their sites

7. CENAD, and CESAD must ensure their PMs provide CEMP-RF respective project milestones (only regarding "area 5" at Raritan) NLT 30 Sept 92. Thereafter, the PMs must immediately notify CEMP-RF, in writing, of any deviation from the project schedule and corroborating explanation. It is CEHND's responsibility to program sufficient funds to sustain the project schedules.

8. POC: Mr. Jim Coppola, (202) 504-4992

FOR THE DIRECTOR OF MILITARY PROGRAMS:

Michael H. Fellows

Encl

MICHAEL H. FELLOWS
Colonel, Corps of Engineers
Chief, Environmental Restoration Division
Directorate of Military Programs

CF:
CENAN (Maj. Harris)
CESAJ (Mr. Bridgers)

DEPARTMENT OF THE ARMY

SOUTH ATLANTIC DIVISION, CORPS OF ENGINEERS

ROOM 313, 77 FORSYTH ST. S.W.

ATLANTA, GEORGIA 30303-8801

REPLY TO ATTENTION OF:
CESAD-PM-H

26 August 1992

MEMORANDUM FOR COMMANDER, JACKSONVILLE DISTRICT, ATTN: CESAJ-DP-I

SUBJECT: Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS), Project Number I02VI097701, Former Fort Segarra, Water Island, U.S. Virgin Islands

1. Reference CESAD-PM-H memorandum, dated 10 February 1992 subject: Defense Environmental Restoration Program (DERP) Projects Management Responsibility (copy enclosed).

2. In accordance with the above referenced memorandum, project management responsibilities for the subject ordnance and explosive waste (OEW) restoration project are assigned to Jacksonville District. The Jacksonville District must work in close coordination with the executing agencies, U.S. Army Corps of Engineers, Huntsville Division (CEHND) and U.S. Army Chemical Material Destruction Agency (USACMDA). The district must keep the South Atlantic Division informed of activities on the project.

3. Jacksonville District should ensure that the appropriate project information and funding is included in the FUDS project database and work plans. As in all DERP - FUDS projects, the Jacksonville District will execute the remedial action (RA) for this project. In conjunction with the executing agencies Jacksonville District is responsible for providing input to a formal memorandum of agreement between the Corps of Engineers and USACMDA and for assisting in the development of a formal community relations plan.

4. If you have any questions concerning this matter, please call Sharon Ernst, CESAD-PM-H, (404) 331-2495.

FOR THE COMMANDER:

JOHN W. RUSHING, P.E.
Director of Programs & Project Management

Encl
as

CF:
CEMP-R
USACMDA
CEHND

Jacksonville District
Project Mgmt. office
Fort Segarra Files
R. Budgis office

CONTRACT NO. DACA87-92-D-0018
DELIVERY ORDER 0024

EXCLUSION LETTER

FORMER FORT SEGARRA
WATER ISLAND, VIRGIN ISLANDS
OF THE UNITED STATES

Prepared for:

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE DIVISION

Prepared by:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
Gainesville, Florida

November 1994

Jax-040901-026 Ja426

CONTRACT NO. DACA87-92-D-0018
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EXCLUSION LETTER

FORMER FORT SEGARRA
WATER ISLAND, VIRGIN ISLANDS
OF THE UNITED STATES

Prepared for:

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE DIVISION

Prepared by:

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Gainesville, Florida

November 1994

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5	Flamingo Bay Landfill Area, Water Island, U.S. Virgin Islands	14

1.0 INTRODUCTION

1.1 Environmental Science & Engineering, Inc. (ESE) was contracted by Huntsville Division, U.S. Army Corps of Engineers (CEHND) to perform an Engineering Evaluation/Cost Analysis (EE/CA) for the development and evaluation of final removal alternatives for Ordnance & Explosive Waste (OEW) and Chemical Warfare Material (CWM) at the Former Fort Segarra on Water Island (the term Former Fort Segarra includes all suspected contaminated areas on Water Island and St. Thomas Island) in the U.S. Virgin Islands.

1.2 ESE performed a records review to obtain the history of Former Fort Segarra. This review included the review and evaluation of numerous historical documents and previous site investigation reports. ESE's understanding of the background of the project is presented in detail in Appendix A and is intended to serve as a comprehensive overview of the project history; existing reports are summarized in Appendix B. ESE also conducted a site visit September 19 through September 23, 1994, to perform a visual inspection of the project site for preparation of the EE/CA.

1.3 The first task in the development of the EE/CA for Former Fort Segarra is the preparation of this exclusion letter. This letter identifies the areas that have not been sufficiently investigated for characterization and inclusion in the EE/CA as determined by ESE. Of the 11 areas investigated as part of this EE/CA, 4 of them are being recommended for exclusion from the EE/CA. They are Test Areas 4 and 5, Flamingo Bay Landfill area, and Tamarind Tree Bay area. The methodologies used to determine that these areas should be excluded are explained in detail in Section 2.0 of this letter. ESE will make recommendations which will demonstrate that all areas could be included in the EE/CA, with minimal additional effort to those areas that have been recommended for exclusion.

1.4 As indicated in the records review and the findings of ESE's site visit, the Former Fort Segarra project has been studied extensively and, to date, there is no evidence of contamination from CWM. Therefore, it is very likely that ESE will recommend a no-further action alternative for those areas recommended for inclusion in the EE/CA, and possibly for those areas recommended for exclusion, if further investigation is permitted. The areas recommended for exclusion could then be included in the EE/CA.

2.0 FINDINGS

2.0.1 Based upon review of the previous investigations and the site visit conducted by ESE, the following recommendations are presented for each area of potential contamination (see Figure 1). A summary of the reasons for either including or excluding areas from the EE/CA is presented in Table 1.

2.1 TEST AREAS 1, 2, 3, AND 7

No tests were performed in these areas in accordance with the Former Fort Segarra Scoping Study [U.S. Army Chemical Munitions Destruction Agency (USACMDA), 1993]. This information was based on a review of progress reports and test reports, a site visit, and interviews with personnel assigned to the San Jose Project. Test Areas 1, 2, and 3 were disturbed during extensive construction activities on the island, and no incidents were reported.

2.1.1 ESE did not find any evidence of suspected CWM, UXO, debris, or other potential contamination during the site visit of these areas. Therefore, it is ESE's determination that Test Areas 1, 2, 3, and 7 have been sufficiently investigated for inclusion in the EE/CA.

2.2 TEST AREA 4

Test Area 4 is located on the southwest end of Water Island and encompasses both sides of the road leading to the Flamingo Bay area (see Figure 2). Records indicate that two distilled mustard agent (HD)-filled M70 bombs, 13 HD-filled smoke pots, and Tabun (GA) smoke pots were tested in this area, as well as detonation of burster charges. MTA only found suspicious anomalies south of the dirt road with magnetometer readings giving a continuous response in an 8-foot (ft) diameter area devoid of vegetation.

2.2.1 ESE recommends that intrusive sampling be conducted in the 8-ft diameter area that is devoid of vegetation. This sampling will require a minimal effort

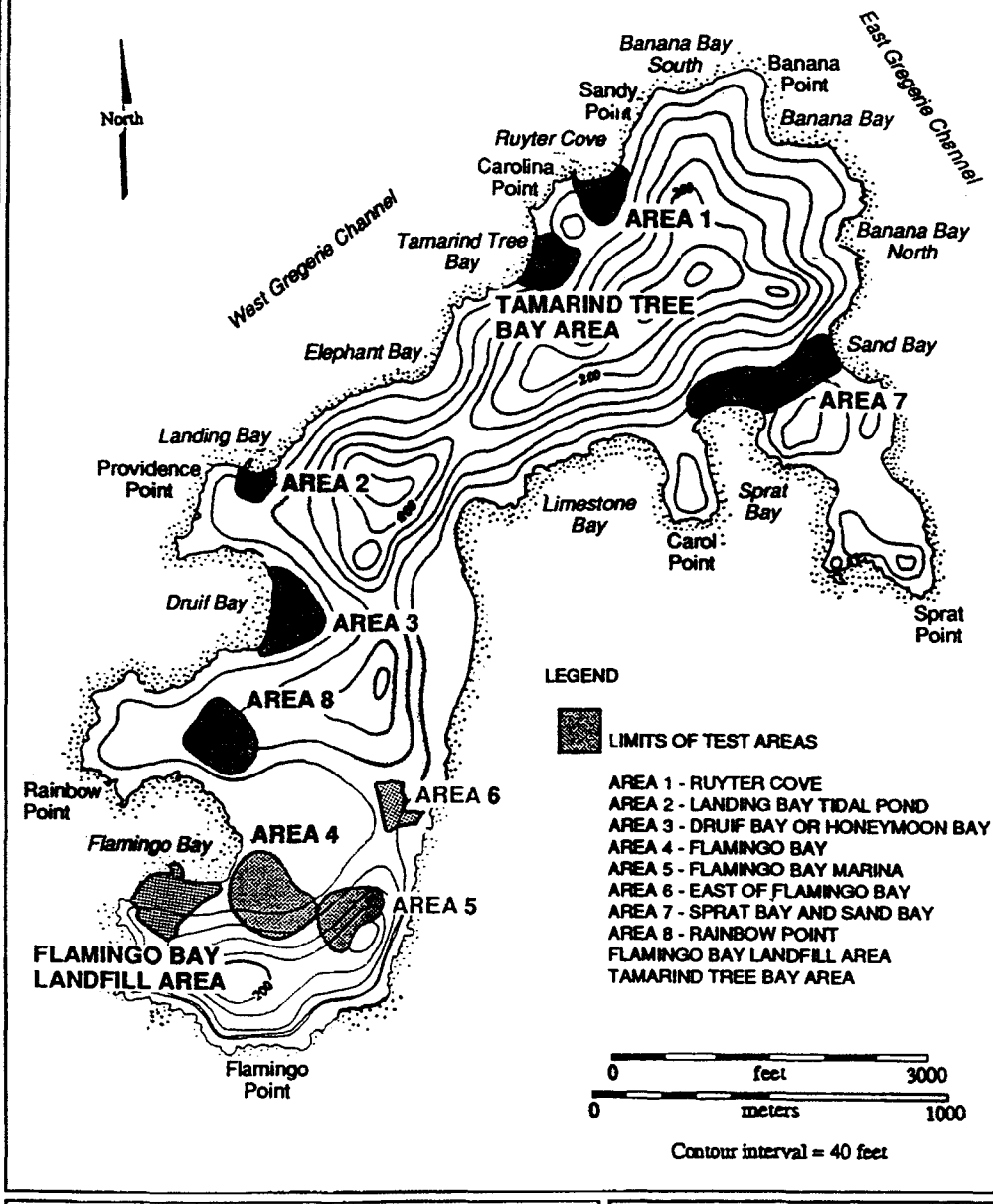


Figure 1
TEST AREA MAP
WATER ISLAND, U.S. VIRGIN ISLANDS

SOURCES: EBASCO ENVIRONMENTAL, INC., 1991; ESE.

FORMER FORT SEGARRA
WATER ISLAND, U.S. VIRGIN ISLANDS

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE DIVISION

TABLE 1
REASONS FOR INCLUSION/EXCLUSION IN THE EE/CA
for Former Fort Segarra,
Water Island, U.S. Virgin Islands
(Page 1 of 3)

TEST AREA	REASONS TO INCLUDE IN EE/CA	REASONS TO EXCLUDE FROM EE/CA
TEST AREA 1 - RUYTER COVE	No record of any tests. Although there was a test plan for M70 bomb for Test Areas 1 & 7, records indicate that these tests instead were performed at Test Areas 4, 5, 6, and 8. Interviews with personnel stationed on Water Island confirmed no tests conducted at this site; during ESE's site visit no visual indications of ordnance or related debris or unexplainable barren land was noted; subsequent construction in the area causing considerable disturbance uncovered no evidence of suspicious material. Records show all tests conducted on southern portion of Island.	
TEST AREA 2 - LANDING BAY TIDAL POND	No record of any tests.	
TEST AREA 3 - DRUIF BAY OR HONEYMOON BAY	No record of any tests. Construction of the Water Isle Hotel and Beach Club required extensive disturbance of the area and no evidence was uncovered of any suspicious material.	
TEST AREA 4 - FLAMINGO BAY		Records show Phase I and II of the static HD-filled M70 bomb tested in the open; near side of hill disposal burster charges were detonated; records show mustard gas smoke pots were tested here; surface investigation indicated large number of anomalies. MTA found 8-ft diameter circular area which was sunken and had no vegetation--rest of area covered with vegetation. Magnetometer readings indicate almost continuous response in circular area. *RECOMMEND: Intrusive sampling in circular area.*

TABLE 1
REASONS FOR INCLUSION/EXCLUSION IN THE EE/CA
for Former Fort Segarra,
Water Island, U.S. Virgin Islands

TEST AREA	REASONS TO INCLUDE IN EE/CA	REASONS TO EXCLUDE FROM EE/CA
TEST AREA 5 - FLAMINGO BAY MARINA		Records indicate only tests done here were Phase III and IV static, HD-filled M70 bomb test; aerial photos show unnatural depressed area; MTA report numerous "hits"; significant magnetic anomalies exist; random sampling in area, including depressed area. *RECOMMEND: Some intrusive sampling.*
TEST AREA 6 - EAST OF FLAMINGO BAY	Two static-fire tests were reported to have been conducted here; however, MTA tests report no magnetic anomalies. ESE's visual inspection did not identify any evidence to support excluding area from EE/CA.	
TEST AREA 7 - SPRAT BAY AND SAND BAY	No record of any tests. Area accessible only by boat.	
TEST AREA 8 - RAINBOW BAY	1954 aerial photo reveals building within test area; area significantly disturbed since and no incidents reported; MTA found no suspected anomalies; ESE's visual inspection revealed no evidence of suspicious areas; administrative and storage area (former headquarters and toxic storage area).	
FLAMINGO BAY LANDFILL AREA		Interviews with early residents saw "empties" left and buried in covered ditch area; 1966 Navy recovered 2 chemical bombs from area that were dug up during construction; MTA located a 1-ton chemical container and a 50-lb concrete-filled bomb on shoreline; in portions of area, MTA got continuous "hits". *RECOMMEND: Sampling plan and intrusive sampling.*

TABLE 1
REASONS FOR INCLUSION/EXCLUSION IN THE EE/CA
for Former Fort Segarra,
Water Island, U.S. Virgin Islands
(Page 3 of 3)

TEST AREA	REASONS TO INCLUDE IN EE/CA	REASONS TO EXCLUDE FROM EE/CA
TAMARIND TREE BAY AREA		No tests have been reported here. MTA surface indicated no UXO. However, ESE's visual inspection revealed an unvegetated area, and a report by an archaeologist noted a strong acetone odor which forced them to leave the area. *RECOMMEND: Soil samples and analysis in unvegetated area, and reconfirm MTA's findings by doing a magnetometer sweep.*

Source: ESE.

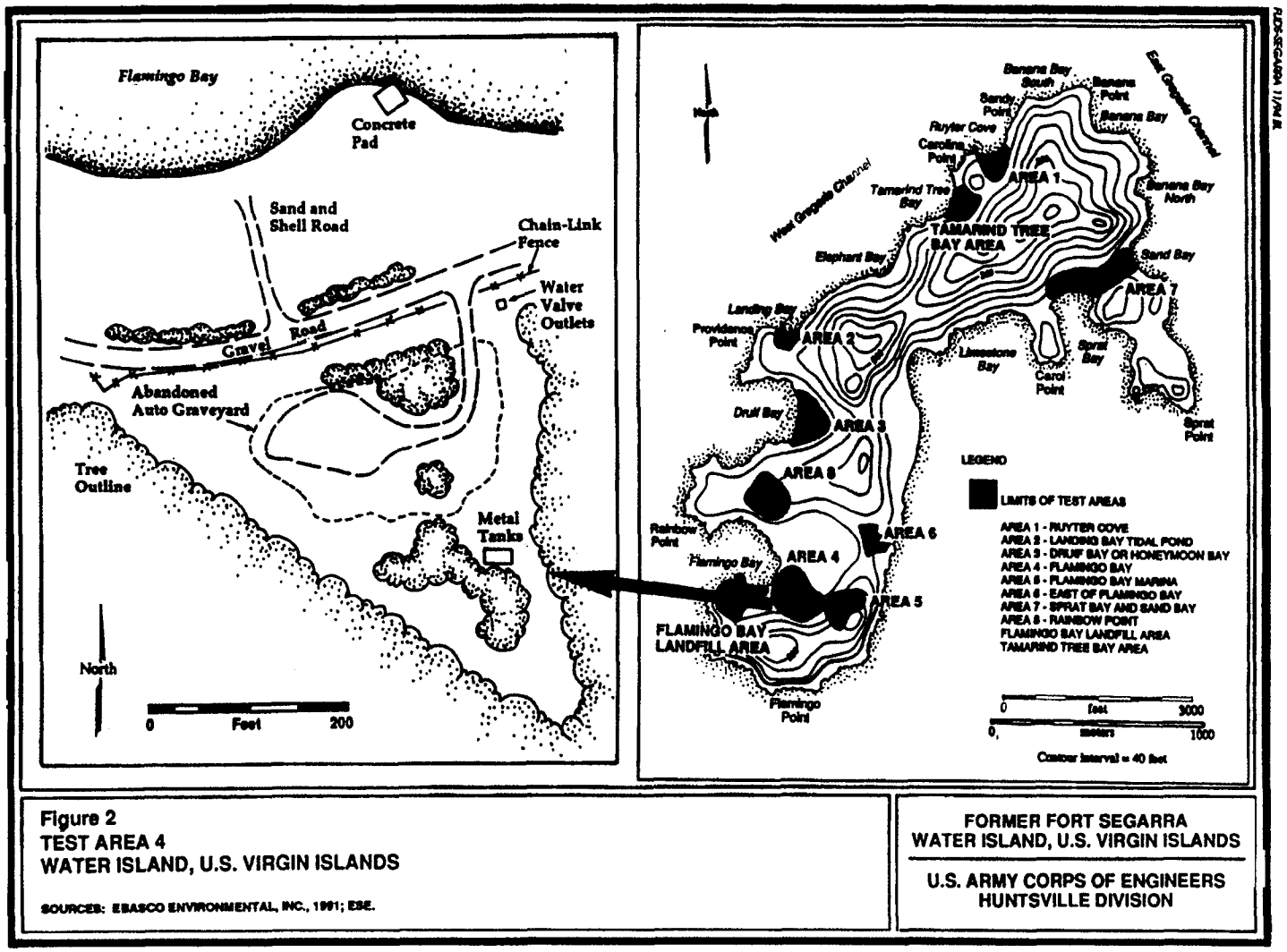


Figure 2
TEST AREA 4
WATER ISLAND, U.S. VIRGIN ISLANDS

SOURCES: EBASCO ENVIRONMENTAL, INC., 1991; ESE.

FORMER FORT SEGARRA
WATER ISLAND, U.S. VIRGIN ISLANDS

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and, based on predicted results, can easily be included in the EE/CA. Until such testing is conducted, however, it is ESE's recommendation that Test Area 4 should be excluded from the EE/CA.

2.3 TEST AREA 5

Test Area 5 is located on the southern end of Water Island adjacent and east of Test Area 4 (see Figure 3). Based on a 1954 aerial photograph, this area was covered with vegetation with a depressed area located within the area. Based on ESE's September 1994 site visit, Test Area 5 is still covered with vegetation, and the depressed area still exists.

2.3.1 Two HD-filled M70 bombs were statically fired in this test area. MTA found a large number of anomalies during their investigation. ESE recommends that an intrusive investigation be conducted in this area to identify CWM, UXO, or other related material. Test Area 5 should therefore be excluded from the EE/CA.

2.4 TEST AREA 6

Test Area 6 is located on the eastern shore in the southern part of Water Island. The only documented tests conducted in this area consisted of the static firing of two HD-filled M70 bombs. The surface investigations conducted by MTA showed no anomalies that would indicate the presence of UXO or UXO materials.

2.4.1 ESE's site inspection did not identify any evidence to exclude this area from the EE/CA.

2.5 TEST AREA 8

Test Area 8 is located in the vicinity of the existing shell of the Water Isle Hotel. Aerial photographs from 1954 indicate that there were buildings within this test area at that time. The only documented tests conducted in this area consisted of the static firing of two HD-filled M70 bombs. This area was significantly

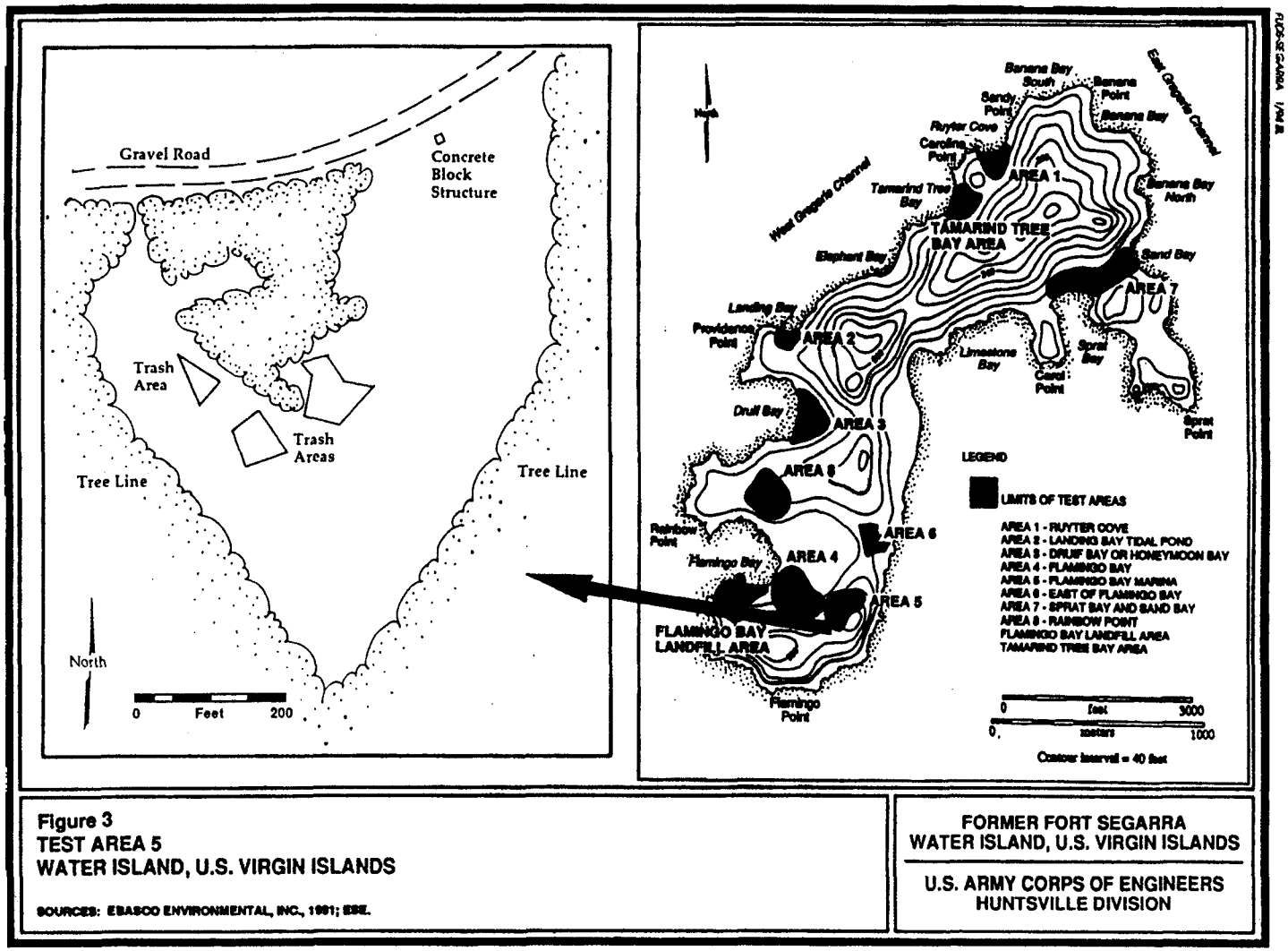


Figure 3
TEST AREA 5
WATER ISLAND, U.S. VIRGIN ISLANDS

SOURCES: EBASCO ENVIRONMENTAL, INC., 1991; ESE.

FORMER FORT SEGARRA
WATER ISLAND, U.S. VIRGIN ISLANDS

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disturbed during the construction of the Water Isle Hotel and Beach Club (WIHBC); no suspicious material was uncovered. MTA found no suspect anomalies during their investigation.

2.5.1 The site visit conducted by ESE did not reveal any suspicious material or areas; therefore, ESE recommends that Test Area 8 be included in the EE/CA.

2.6 TAMARIND TREE BAY

The Tamarind Tree Bay area is located on the northwest side of the island just below Test Area 1 (see Figure 4). This area was included as a possible area of contamination, based on the report of a strong smell of acetone detected in a shovel sample collected during the archaeological survey (National Park Service, 1992) of the area, the presence of a large area devoid of vegetation, and the disposal of large amounts of trash at the site during the 1940s. ESE's site visit confirmed the unvegetated area, which is located just off of one of the island's main roads that was built and operational during the period that testing was performed on the island.

2.6.1 Historical research indicates that during the time this project was ongoing, acetone was used in some toxic chemical agent neutralization processes. Whether the odor at the Tamarind Tree Bay area is related to buried acetone containers or its use as a neutralizing agent in a CWM activity is unknown. With the indications that acetone was buried there, CWM could also possibly be buried there. ESE therefore recommends a minimal amount of soil sample testing to determine whether the lack of vegetation and the odor release is related to a contaminant. Since testing will already be occurring at other areas on Water Island, this additional testing would be justified and should be a minimal cost. The Draft Site Characterization, Former Fort Segarra (MTA, 1994) report does not recommended any additional investigation of this area. This report does not contain enough information, however, for ESE to state that the area has been sufficiently investigated.

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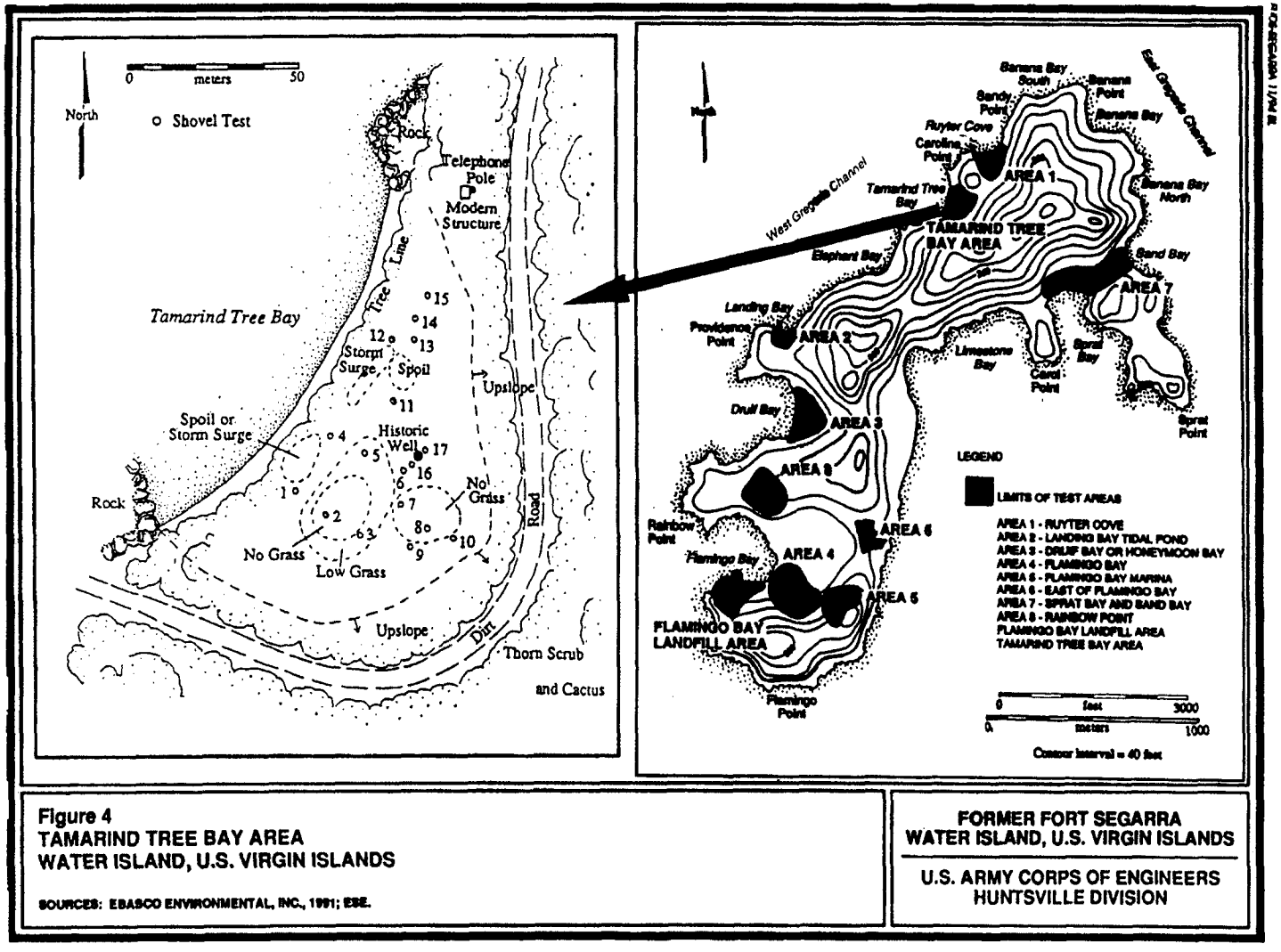


Figure 4
TAMARIND TREE BAY AREA
WATER ISLAND, U.S. VIRGIN ISLANDS

SOURCES: EBASCO ENVIRONMENTAL, INC., 1991; ESE.

FORMER FORT SEGARRA
WATER ISLAND, U.S. VIRGIN ISLANDS

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE DIVISION

2.6.2 ESE therefore recommends that a magnetometer sweep be conducted to confirm MTA's findings and that soil samples be collected and analyzed. The Tamarind Tree Bay area should be excluded from the EE/CA.

2.7 FLAMINGO BAY LANDFILL AREA

The Flamingo Bay Landfill area is located in the southwest corner of Water Island (see Figure 5). This area of Water Island has been identified as the most likely to contain munitions due to its location to the loading dock for the San Jose Project and the following items that were found in the area:

1. M70 and M78 bombs unearthed during the construction of the WIHBC,
2. An empty 1,000-pound (lb) AN M-79 bomb filled with concrete used as a mooring and still onsite (according to interviews with residents, this bomb surfaced along the shoreline during Hurricane Hugo), and
3. A 1-ton container located by MTA during the site investigation.

2.7.1 MTA's magnetometer sweeps identified numerous anomalies in a portion of this area that gave a continuous ring-off; a few other anomalies were also identified in the remainder of the area.

2.7.2 ESE recommends that a sampling plan be developed for this area and intrusive sampling be conducted. This plan should also include the shoreline area since it is a likely location where CWM may have been disposed of. The Flamingo Bay Landfill area should therefore be excluded from the EE/CA.

2.8 ST. THOMAS ISLAND

Based on the records search conducted by USACMDA, the only tests conducted on St. Thomas Island consisted of evaluating gas-proof shelters using phosgene (CG) which is a non-persistent choking agent, and surveillance tests of E-1 bombs filled with non-toxic agent. This area should therefore be included in the EE/CA.

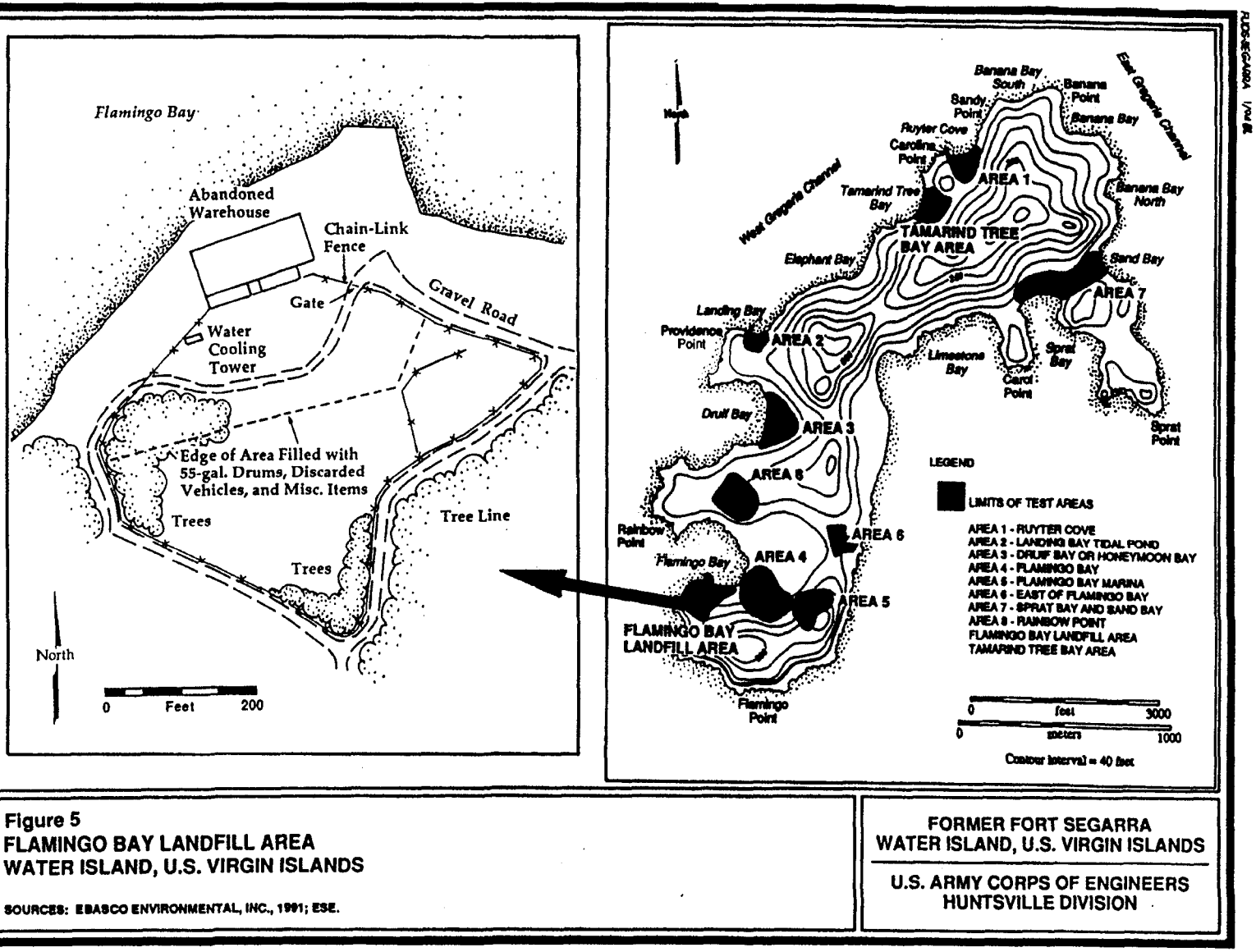


Figure 5
FLAMINGO BAY LANDFILL AREA
WATER ISLAND, U.S. VIRGIN ISLANDS

SOURCES: EBASCO ENVIRONMENTAL, INC., 1991; ESE.

FORMER FORT SEGARRA
WATER ISLAND, U.S. VIRGIN ISLANDS

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE DIVISION

3.0 RECOMMENDATIONS AND CONCLUSIONS

3.1 ESE recommends that the following areas on Water Island be excluded from the EE/CA and investigated further for contamination, based on the information contained in previous investigations of the project area and the site visit conducted by ESE.

1. Test Area 4,
2. Test Area 5,
3. Flamingo Bay Warehouse and Landfill Area, and
4. Tamarind Tree Bay Area.

3.2 ESE is prepared to proceed with the preparation of the EE/CA following concurrence from CEHND of the areas to be excluded from the EE/CA.

3.3 To resolve the final removal alternatives for OEW and CWM at Former Fort Segarra, ESE recommends that additional, minimal efforts be performed at the areas recommended for exclusion in the EE/CA. These tasks should require minimal time to complete, approximately 5 to 7 weeks, and the results could provide the complete information necessary for inclusion of all sites in the EE/CA.

3.4 This additional effort now would benefit CEHND, and would assure the residents of Water Island that the potential dangers of Former Fort Segarra are finally removed.

3.5 Based on the results of the extensive studies performed and reviewed and the site visit conducted by ESE, it is likely that a no-further action alternative will be recommended for all of the areas presently included in the EE/CA. A public meeting should be scheduled as soon as possible following this recommendation, to fully explain how this recommendation was reached, and to assure the public that there is no risk of contamination from CWM. To date, no

evidence exists to indicate that there is any contamination from CWM; therefore, there is no need for cleanup activities. The test results of the areas recommended in this letter for further investigation (excluded from the EE/CA) will determine the final outcome of the development and evaluation of final removal alternatives for OEW and CWM at Former Fort Segarra on Water Island.

4.0 REFERENCES

Ebasco Services Inc. 1992. Final - Draft Work Plan for OEW Remediation at Former Fort Segarra, Water Island, U.S.V.I.

MTA. 1994. Draft Site Characterization, Former Fort Segarra, U.S. Virgin Islands.

U.S. Army Chemical Material Destruction Agency (USACMDA). 1993. Former Fort Segarra Scoping Study.

U.S. Fish and Wildlife Service. n.d. Water Island Preliminary Resource Survey.

Wild, K.S. and Anderson, D.G. 1992. An Archaeological Inventory and Assessment of Cultural Resources on Water Island, U.S. Virgin Islands. National Park Service, Interagency Archaeological Services Division.

APPENDIX A
HISTORY AND BACKGROUND

A.0.1 This section will provide the historical background of Former Fort Segarra and the San Jose Project in the U.S. Virgin Islands along with a physical description of each of the potential contamination sites on Water Island.

A.0.2 The name Fort Segarra refers to the World War II gun emplacements and structures built on Water Island in the early 1940s. These facilities were declared excess in 1946. In 1948, following World War II, the San Jose Project was moved to the U.S. Virgin Islands from Panama. The purpose of the San Jose project was to test chemical munitions to determine their effectiveness under jungle conditions.

A.1 HISTORICAL INFORMATION

Water Island and the western end of St. Thomas Island in the U.S. Virgin Islands was the site of the U.S. Army's San Jose Project from May 1948 until the project was canceled in May 1950. At the close of the San Jose Project, testing requirements were transferred to Dugway Proving Grounds in Utah. The San Jose Project was relocated from San Jose, Panama, to Water Island and St. Thomas Island when an extension of the lease from Panama could not be obtained. The purpose of the San Jose Project was to test the effectiveness of chemical weapons systems in tropical climates, and to evaluate the effects of storing chemical munitions in tropical climates.

A.1.1 Existing U.S. military facilities at Former Fort Segarra and administration buildings including the laboratory at the former submarine base on St. Thomas Island were used for the project. Eight test areas (Test Areas 1 through 8) were designated on Water Island and approximately 2,095 acres on the western end of St. Thomas Island were condemned and seized for test sites. Limited chemical weapons testing was performed on Water Island. The following list presents a summary of the tests:

1. Surveillance testing of mustard agent (H), distilled mustard agent (HD), and cyanogen chloride (CK) filled bombs;
2. Static testing of bombs filled with HD;
3. Static testing of smoke pots filled with HD, Tabun (GA), and sesquimustard agent (HQ).

A.1.2 The only chemical munitions tests conducted on St. Thomas Island consisted of evaluating the best location of entrances for gas-proof shelters using phosgene (CG), a non-persistent choking agent.

A.1.3 In 1952, control of Water Island was transferred to the U.S. Department of the Interior (DOI) which then leased Water Island to Water Island Incorporated. In 1965, Water Island Incorporated sold the lease rights to Water Isle Hotel and Beach Club (WIHBC). WIHBC built a 100-room hotel on Rainbow point which was extensively damaged by Hurricane Hugo in 1982. During the construction of the hotel in 1966, M70 and M78 bombs were uncovered in the Flamingo Bay Landfill area. WIHBC has subdivided and sublet property on Water Island and numerous homes have been built on Water Island. The current lease with WIHBC was terminated on December 28, 1992. DOI and WIHBC are in litigation to resolve the lease agreement and the subleases.

A.2 AREAS OF SUSPECTED CONTAMINATION ON WATER ISLAND

This section provides a physical description of the suspected areas of contamination on Water Island as identified by CEHND.

A.2.1 TEST AREA 1

Test Area 1 consists of approximately 2.0 acres and is located at Ruyter Cove on the northern portion of the island. This area has been disturbed as the result of clearing and filling activities. No incidents were reported during the clearing and filling activities.

A.2.2 TEST AREA 2

Test Area 2 is located on the west central side of Water Island at Landing Bay and consists of approximately 2 acres. Dredging occurred in this area several years ago for the construction of a harbor; however, the dredged area has since been filled in.

A.2.3 TEST AREA 3

Test Area 3 is located on the west central side of Water Island at Druif Bay. This area was significantly disturbed during construction of facilities for WIHBC; however, no incidents were reported during the construction activities.

A.2.4 TEST AREA 4

Test Area 4, which consists of approximately 4 acres, is located on the southeast of Flamingo Bay and includes the area of the bay and salt pond that existed at the time of the San Jose Project. The northern portion of the test area was dredged from the salt pond to the bay to create a marina. This area is relatively free of debris and is covered with sparse vegetation. No incidents were reported during the excavation and construction of the marina. The portion of the test area below the dirt road has been used as a junkyard and contains items such as automobiles, household appliances, and unlabeled containers.

A.2.5 TEST AREA 5

Test Area 5 is located southeast of Flamingo Bay and Test Area 4 and consists of approximately 4 acres. This area was the site of a mix plant during the paving of the roads during 1954 and for borrow to construct the WIHBC. This area was used to dump debris from Hurricane Hugo and contains a large number of metallic objects on the ground.

A.2.6 TEST AREA 6

Test Area 6 is located on the southeastern portion of Water Island and consists of approximately 4 acres. Considerable development has occurred along the coastline since the San Jose Project.

A.2.7 TEST AREA 7

Test Area 7 is located on the northern portion of Water Island and this area was only accessible by boat during the San Jose Project. The test area covers approximately 7 acres.

A.2.8 TEST AREA 8

Test Area 8 is located on the southwestern portion of Water Island at Rainbow Point and consists of approximately 4 acres. This area was considerably disturbed during the construction of the WIHBC.

A.2.9 FLAMINGO BAY LANDFILL AREA

This area is located south of Flamingo Bay and consists of approximately 5 acres. Interviews with the first civilian residents of the island reported that demilitarized munition casings were left in this area. A salt pond was located in the center of this area and was used as a landfill which contains vehicles and other trash. Trash was also burned in this area until 1982 when U.S. Environmental Protection Agency (EPA) regulations prohibited open burning. During construction of the WIHBC and support facilities, M70 and M78 bombs were unearthed while excavating the salt pond area. A warehouse and package sewage treatment plant were constructed in this area by WIHBC. In 1991, this area was fenced-off by Ebasco Services, Inc. under contract to CEHND.

A.2.10 TAMARIND TREE BAY

Tamarind Tree Bay is located on the northwest portion of the island and consists of approximately 1 acre. This area contains a large amount of trash from the 1940s and a large area devoid of vegetation. This area is located in close

proximity to a major road that existed during the San Jose Project and provided a convenient location for the disposal of waste materials.

APPENDIX B
PREVIOUS INVESTIGATIONS

Several investigations were performed for CEHND to characterize the presence of OEW/UXO on Water Island. An archaeological assessment for Water Island was also completed by the National Park Service and a wildlife survey for Water Island was performed by the U.S. Fish and Wildlife Service. To determine the areas that have not been sufficiently investigated for inclusion in the EE/CA, ESE reviewed the following reports that were provided by CEHND.

B.1 FINAL - DRAFT WORK PLAN FOR OEW REMEDIATION AT FORMER FORT SEGARRA

This report (Ebasco Services, Inc., 1992) describes the activities to be performed by a contractor for the remediation of OEW at six sites on Water Island as identified by the U.S. Army Corps of Engineers (USACE). The sites addressed in the report include Test Areas 2, 4, 5, 6, and 7 and the Flamingo Bay Landfill area. The records reviewed for the report indicate that the following tests were performed for the San Jose Project at Former Fort Segarra:

1. Static tests of HD-filled M70 bombs conducted in Test Areas 1, 6 and 7.
2. Static tests of HD-filled smoke pots conducted in Test Area 4.
3. Static test of a GA-filled smoke pot performed on open water.
4. Surveillance tests of CK-filled bombs involving 34 M78 bombs, 7 M79 bombs, and an undetermined number of M70 bombs. Records regarding the disposition of the bombs were not found.
5. Surveillance test of at least four HD-filled and H-filled T-3 bombs. Records regarding the disposition of the bombs were not found.
6. Reports for surveillance tests of vegetation killing liquid (VKL) and bomb particulate, 4lb, E-1 distributed when the project was located in the Virgin Islands; tests were probably completed on San Jose Island in Panama.

This report stated that the following additional munitions tests were conducted at Former Ft. Segarra; however, specifics regarding the tests and the locations were not provided:

1. E23 smoke pot tests with Sarin (GB), mustard agents HT and HN3;
2. 4.2-inch mortars filled with GA or GB;
3. M33A1 filled with GA;
4. E45 bombs filled with GA;
5. German DC 250III GR bombs filled with GA; and
6. 125-pound T-3 bomb filled with GA.

DISPOSITION OF MUNITIONS

Records were not found that documented the munitions shipped to and from Water Island. The only records found regarding the materials shipped from Water Island are the escort officer's safety records from May 1950 for a shipment of materials aboard the USNT Colonel J. O'Brien, delivered to the Eastern Army Chemical Depot at the Army Chemical Center, Maryland. These records referred to 117-ton containers of butane and packaging for E46 and E52 bombs.

As previously mentioned, records were not found that documented the disposal of munitions from surveillance tests.

Ebasco Services, Inc. also conducted an archive search and project site visit to determine whether the sites used by the San Jose Project on Water Island and St. Thomas Island are potentially contaminated by conventional or chemical ordnance, or explosive waste.

B.2 WATER ISLAND PRELIMINARY RESOURCE SURVEY

This report (U.S. Fish and Wildlife, n.d.) presents the results of the surveys to determine the presence of endangered species and the general biological surveys conducted on Water Island and the surrounding waters. Three federally and two territorially endangered species were confirmed.

B.3 AN ARCHAEOLOGICAL INVENTORY AND ASSESSMENT OF CULTURAL RESOURCES ON WATER ISLAND, U.S. VIRGIN ISLANDS

This report (Wild and Anderson, 1992) presents the results of the archaeological survey conducted on Water Island from September 1 through 4, 1992, and September 15, through October 13, 1992. Twelve archaeological sites were found; nine of these sites were recommended for inclusion in the National Register of Historic Places. None of the archaeological sites are located where CWM tests were conducted based on the previous investigations.

During one of the shovel tests conducted for the archaeological survey for Tamarind Tree Bay, a strong chemical odor similar to acetone was noted by the excavators. This report also documented an open area devoid of vegetation and that a large amount of trash from the 1940's was dumped at this site. The information on Tamarind Tree Bay indicates that there is the potential for CWM contamination in this area; therefore, this area was included by CEHND as a potential contamination site.

B.4 FORMER FORT SEGARRA SCOPING STUDY

This report [U.S. Army Chemical Material Destruction Agency, (USACMDA), 1993] provides information concerning historical CWM activities which includes the San Jose Project tests conducted on Water Island and St. Thomas Island. The report also includes the following information:

1. Addresses risks associated with buried CWM;
2. Reviews potentially applicable regulatory requirements for CWM recovery activities;
3. Addresses excavation, storage, transportation, and treatment of CWM; and
4. Presents a summary of cleanup actions considered appropriate for CWM remediation.

To determine whether the sites used by the San Jose Project on Water Island and St. Thomas Island are potentially contaminated by conventional or chemical ordnance, or explosive waste, the USACMDA performed the following tasks:

1. Reviewed progress and test reports from the U.S. Army Edgewood Research Development Engineering Center;
2. Reviewed newspaper articles from the era;
3. Interviewed two military and two civilians from the San Jose Project;
4. Interviewed three current residents of Water Island; and
5. Conducted a site visit to test areas on Water Island and the western end of St. Thomas Island.

The USACMDA reported that progress test reports for all periods of testing on the U.S. Virgin Islands were reviewed. The progress test reports described the type of testing conducted during each period along with the number of tests performed. The results of the USACMDA investigation is presented in the following paragraphs.

TEST AREAS 1 AND 7

USACMDA did not find any records that tests were ever performed in these two areas. The San Jose Project test plan identified Test Areas 1 and 7 for M70 bomb tests. The final test report for the M70, which included the contamination contours for the each test area, showed that these tests were performed in Test Areas 4, 5, 6, and 8. San Jose Project personnel interviewed by USACMDA indicated that no tests were conducted on the northern portion of Water Island and Test Area 7 was only accessible by boat.

TEST AREAS 2 AND 3

USACMDA did not find any records to document tests were ever performed in these two areas.

TEST AREA 4

According to test records, two phases of HD-filled M70 bomb tests were conducted. During each phase, an M70 bomb was statically fired.

Five phases of HD-filled smoke pot tests were conducted. During the first four phases, a single smoke pot was statically fired while nine smoke pots were burned during the fifth phase. Records indicate that a considerable amount of agent was left in several of the smoke pots at the completion of the tests.

GA smoke pot tests were also conducted in this area, in addition to burster charges that were detonated and destroyed in this area. There is very little information on the GA tests conducted because it is believed that final test reports were not prepared and final reports were delayed pending further information and materials required to complete the reports. An interview with Mr. Jimmie Mains, assigned full time to the San Jose Project, believed all GA smoke pot tests were conducted in a cleared area north of the dirt road.

Record photographs showed that the tests were conducted north of the road in an area free of debris and covered with light vegetation. It was also standard practice to decontaminate the area so that residuals would not interfere with other tests; therefore, it is unlikely that remnants remain from the tests.

TEST AREA 5

According to the records review, two phases of HD-filled M70 bomb tests were conducted in this area. During each phase, an M70 bomb was statically fired. Based on 1954 aerial photographs, there is a depression located in this area that may have provided a convenient place to dispose of remnants of these tests.

TEST AREA 6

According to the records review, two phases of HD-filled M70 bomb tests were conducted in this area. During each phase, an M70 bomb was statically fired in an open area.

TEST AREA 8

According to the records review, two phases of HD-filled M70 bomb tests were conducted in this area. During each phase, an M70 bomb was statically fired in a wooded area.

TOXIC STORAGE AREA

Surveillance of unstabilized CK in M70, M78, and M79 bombs was conducted in this area. Surveillance tests were performed on 15 M70 bombs, 33 M78 bombs, and 7 M79 bombs. The disposition of four M78 bombs involved in these tests is not known. Surveillance testing of two T-3 bombs filled with H and two T-3 bombs filled with HD was also conducted.

UNKNOWN TEST AREA

Two phases of HQ-filled smoke pot tests were conducted; however, the progress reports for the tests did not document the location of the tests.

FLAMINGO BAY LANDFILL AREA

During the San Jose Project, a dock at Flamingo Bay was used to deliver equipment and munitions. This area was identified as a likely location for chemical munitions that may have been disposed of during the San Jose Project.

ST. THOMAS ISLAND

Based on the records review, two tests were performed on St. Thomas Island during the San Jose Project. The first test involved a surveillance test of 50 E-1 particulate bombs filled with a non-toxic simulant agent. At the completion of

the tests, the bombs were shipped back to Camp Detrick. The location of these tests was not documented in the records.

The second test was conducted on the western end of St. Thomas Island within an area beginning at the isthmus between Santa Maria Bay and Perseverance Bay. CG (a non-persistent choking agent) was emitted from 1-ton containers to determine the penetration characteristics of gas-proof shelters.

The submarine base on St. Thomas Island was used for administrative facilities and a laboratory where chemical agents were stored. The laboratory has since been torn down.

DISPOSITION OF CHEMICAL AGENT MUNITIONS

The disposition of munitions following the cancellation of the San Jose Project is well documented in the records. Munitions were either dumped at sea at the Naval Ammunition Dumping Ground in the Caribbean Sea south of Vieques Island, or shipped to one of the following installations:

1. Army Chemical Center, Maryland;
2. Midwest Chemical Depot, Arkansas; or
3. Dugway Proving Ground, Utah.

The following is a summary of the disposition of munitions based on the records and interviews with San Jose Project personnel:

1. The disposition of all bombs used in the surveillance tests is accounted for with the exception of four M78 bombs as previously mentioned.
2. The disposition of smoke pots filled with GA, HD, and HQ is not accounted for.
3. Based on the records, 124 CK-filled M70 bombs and 8 CK-filled M79 bombs were oceaned dumped.

4. GA-filled spray tanks and Sarin (GB) munitions were included in the test plans. Progress reports indicate that material was needed for the tests and disposition of these items is not documented.
5. Burster charges were detonated at the close of the San Jose Project in Test Area 4 between the road and the marina.
6. Motor rounds configured with chemical agent and high explosives were removed from Water Island at the close of the project and the possibility exists that 4.2-inch mortars may be present on Water Island.

In the report, Former Fort Segarra Scoping Study, USACMDA reviewed the largest number of documents regarding munitions tests conducted for the San Jose Project in the U.S. Virgin Islands, in addition to conducting interviews with personnel involved with the San Jose Project. This report therefore provides the most accurate documentation of the San Jose Project.

B.5 DRAFT SITE CHARACTERIZATION, FORMER FORT SEGARRA

This report (MTA, 1994) presents a description of the remedial investigation conducted on Water Island to characterize the potential presence of CWM, and recommendations for further investigations at the individual test sites. Surface investigations were conducted at Test Areas 4, 5, 6, 8, Tamarind Tree Bay, and the Flamingo Bay Landfill area. MTA also conducted nine sampling operations in accordance with the sampling plan for the project. A summary of the results and the recommendations presented in the report is provided in the following paragraphs.

TEST AREA 4

Test Area 4 was divided into Test Area 4-1, which is located between the dirt road and the shoreline, and Test Area 4-2. Magnetometer sweeps of Test Area 4-1 indicated some anomalies. MTA concluded that the anomalies did not

give indications of being buried UXO or UXO-related materials. Intrusive investigations were not recommended in Test Area 4-1.

Surface investigations of Test Area 4-2 indicated a large number of anomalies which could be buried UXO or UXO materials. An 8-ft area devoid of vegetation gave a continuous response to magnetometer sweeps in this circular area. MTA recommended that this area be intrusively investigated.

TEST AREA 5

Surface sweeps in this area indicated a large number of anomalies; a portion of which can be classified as suspect buried UXO or UXO material. MTA recommended an intrusive investigation of this area.

TEST AREA 6

Surface investigations of this area yielded no anomalies which would indicate buried UXO or UXO material. MTA did not recommend an intrusive investigation for this area.

TEST AREA 8

Surface investigation of this area yielded no anomalies which would indicate buried UXO or UXO material. MTA did not recommend an intrusive investigation for this area.

FLAMINGO BAY LANDFILL AREA

This area was subdivided into three areas, FB-1, FB-2, and FB-3. Magnetometer sweeps of Test Areas FB-1 and FB-3 indicated a few anomalies that did not indicate buried UXO or UXO material. MTA did not recommend further investigation of these areas.

Magnetometer sweeps of FB-2 yielded a continuous ring off which indicated a large number of anomalies. MTA did not provide any recommendations regarding additional investigations in Test Area FB-2.

MTA personnel also found a vented 1-ton container which has been sampled. The results of the sampling were not available prior to publishing the report.

TAMARIND TREE BAY

Surface investigations of Tamarind Tree Bay did not yield any suspected UXO or UXO materials. MTA did not recommend further investigations for this area.

Jacksonville District
Project Mgmt Office
Fort Segarra Files
R. Bridger's Office

PUBLIC INVOLVEMENT

AND

RESPONSE PLAN
(PIRP)

FOR

FORMER FORT SEGARRA PROJECT
WATER ISLAND, ST. THOMAS
U.S. VIRGIN ISLANDS

DERP-FUDS SITE NO. I02VI097701

DRAFT
VER 1.0
2 MARCH 1994

U.S. ARMY
CORPS OF ENGINEERS
JACKSONVILLE DISTRICT

TABLE OF CONTENTS
FOR
PUBLIC INVOLVEMENT AND RESPONSE PLAN
FOR
DERP-FUDS SITE NO. I02VI097701
FORMER FORT SEGARRA PROJECT
WATER ISLAND, ST. THOMAS
U.S. VIRGIN ISLANDS

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1.0 INTRODUCTION AND BACKGROUND

The Public Involvement and Response Plan (PIRP) sets forth a program to establish communication and information exchange among the Jacksonville District of the U.S. Army Corps of Engineers; various federal, state, city and local officials and agencies; property owners; the general public; and the news media. Effective communication and timely information exchange with all publics are essential for maintaining community understanding and for implementing a successful Department of Defense (DOD) Environmental Restoration Program (DERP).

The plan requires the involvement of the Corps of Engineers, property owners, elected officials and representatives from federal, state, city and local agencies who are active in policy and decision-making processes. This plan is a dynamic and flexible plan which can be modified as events, public concerns and situations change.

Section 1.0 of this PIRP presents the history and background of the study area and Section 2.0 presents information about current area residents. The details of the public involvement program are presented in Section 3.0. The following appendices are included:

Appendix A - Elected Local, City, State and Federal Representatives
Appendix B - Local, City, State and Federal Agencies
Appendix C - News Media List
Appendix D - Project Document Repositories
Appendix E - Jacksonville District Officials
Appendix F - Neighborhood and Community Organizations
Appendix G - Project Work Zones and Zone Map

The point of contact for PIRP-related information is Jacquelyn Griffin, Chief, Public Affairs, Jacksonville District, U.S. Army Corps of Engineers, (904) 232-2235/1650, FAX (904) 232-2237. Overall project and technical information point of contact is Robert Bridgers, Project Management Division, Jacksonville District, U.S. Army Corps of Engineers, (904) 232-3085.

A toll-free number has been set up in the Jacksonville District Public Affairs Office. This number is 1-800-???. Also, an on-site residents' hotline has been set up. This number is ???. The toll-free line and residents' line are staffed from 8 a.m. to 4:30 p.m., Monday through Friday. An answering machine will take calls during non-duty hours. These calls will be responded to the next working day.

The Jacksonville District, U.S. Army Corps of Engineers, is responsible for the overall project management, investigative, design and construction phases of the project. The Huntsville Division, U.S. Army Corps of Engineers, will provide technical and public affairs support.

The goal of the PIRP is to inform and to promote efficient and effective communication among the Jacksonville District of the Army Corps of Engineers, property owners, elected and other local, city, state and federal officials concerning investigations and studies being conducted in the study area as part of the Army's DERP.

The primary objectives of the PIRP are to keep the property owners, the elected and other local, city, state and federal officials and the news media knowledgeable of planned and ongoing activities at the study area and to provide a means whereby residents, elected officials, other agencies, the general public and the news media can interact with the U.S. Army Corps of Engineers and supporting agencies and assist in resolving issues of public interest and concern.

The specific purposes of the PIRP are to:

1. Provide for the clear and open exchange of information regarding the Remedial Investigation/Feasibility Study (RI/FS).

2. Ensure local concerns are addressed by soliciting input, comments and active involvement from the residents, the public and concerned agencies and elected officials;

3. Ensure that community concerns and values are integrated at the earliest possible time into planning and decision-making processes of all agencies associated with this project;

4. Provide a centralized point of contact for the varied publics and obtain information regarding the project; and

5. Provide a visible, on-site professional presence of the Corps of Engineers and effectively integrate Corps activities into that of the community.

This plan outlines public involvement objectives, prescribes specific policies and procedures governing public involvement activities, assigns responsibility for planning and implementing the program and presents suggested communication activities and techniques to be used in meeting PIRP goals.

1.1 SITE LOCATION

Water Island is located in St. Thomas Bay, between East and West Gregerie channels, south of the city of Charlotte Amalie, St. Thomas. It is 1 and 3/4 miles long and 1/2 mile wide, approximately 500 acres in size. Several locations throughout the island are under consideration as potential former test or storage sites.

Fort Segarra refers to the World War II gun emplacements and structures built on Water Island in the early 1940s.

1.2 SITE HISTORY

The Army's Chemical Corps moved its San Jose Project from Panama to the Virgin Islands in 1948. The purpose of the project was to determine the effectiveness of chemical munitions under jungle conditions. Approved test plans show that early tests on Water Island focused primarily on blister (mustard) and choking (chlorine, phosgene and cyanogen chloride) agents, and that later tests were planned to shift to captured German munitions and nerve agents.

Ten areas have been identified as potential chemical test or storage sites. The Army turned over Water Island to the Department of the Interior by an indefinite revocable permit.

In 1966, during the construction of the Flamingo Bay warehouse, a crew employed by Water Island, Inc. (a local development company), uncovered several large objects that resembles bombs. An Explosive Ordnance Disposal team from Roosevelt Roads Naval Base (San Juan, Puerto Rico) identified the objects as M-70/M-78 series chemical ordnance bombs. The EOD team indicated that this site had been used by the Army as a chemical ordnance disposal area. The EOD team vented the bombs and warned the construction crew not to excavate in the area again.

The proposed project will concentrate on areas where chemical warfare materiel testing exercises are suspected to have been conducted in the late 1940s and 1950s. These areas have been identified through initial archives searches.

2.0 COMMUNITY BACKGROUND

2.1 COMMUNITY DEMOGRAPHICS AND EMPLOYMENT

The residential population of St. Thomas is approximately 48,000. The annual tourist population on St. Thomas and nearby St. John is approximately 1.7 million.

During peak times, Water Island has a population of approximately 200 residents. About half of these people stay year round. About two-thirds of the island at the southern end is owned by individual subleases. The remaining area at the northern has been developed into a residential housing community with 90 one-acre lots.

2.2 COMMUNITY INVOLVEMENT HISTORY

Interviews were conducted with residents of Water Island. These resulted in information about the test areas and the testing which occurred.

2.3 COMMUNITY ISSUES AND CONCERNS

Tourism is the primary industry of the U.S. Virgin Islands. The potential economic impact on the U.S. Virgin Islands should be considered when evaluating potential alternatives for the possible recovery and treatment of chemical warfare materiel (CWM).

The residents' primary concern is the lease issue. They want the Army to expedite its action because they are concerned it may delay turnover of the land to the residents.

3.0 PUBLIC INVOLVEMENT AND RESPONSE PROGRAM

3.1 GOALS AND OBJECTIVES

The goal of the PIRP for the site is to provide and effective mechanism for two-way communication and the exchange of information among the U.S. Army Corps Of Engineers; local residents; the diverse federal, state, city, county and local officials and agencies and the news media.

This PIRP has the following specific objectives:

1. Ensure that the public understands that safety, personal and community health, and the interests of affected residents are of paramount concern to the U.S. Army Corps of Engineers.
2. Keep local residents; the development corporation; federal, city, county and local officials; and news media informed in a timely manner of major findings and recommendations.
3. Provide local community residents; property owners; and federal, state, city and local officials an opportunity to review and comment on the work being conducted and on any suggested additional studies, remedial action alternatives and decisions.
4. Keep the Corps of Engineers sensitive to and informed about changes in community concerns, attitudes, information needs and activities regarding the study area and use these as factors in evaluating modifications of the PIRP, as necessary, to address these changes;
5. Effectively serve the study area's residents' information needs and address citizen inquiries by promptly releasing factual information through the news media and by other information dissemination techniques;
6. Effectively respond to the needs of the news media by providing timely responses to inquiries and requests for interviews and briefings, thereby resulting in fair and accurate reporting of the findings and recommendations resulting from the DERP studies;
7. Create and maintain,, through an active public affairs program, a climate of understanding and trust aimed at providing information and opportunities for comments and discussion;
8. Ensure that appropriate federal, state, city, county and local officials are informed of results of the investigations and any recommended additional studies or remedial actions;
9. Provide a single entity for dissemination of information for matters regarding progress; and
10. Identify issues and potential areas of concern and develop and implement objective means to avoid or resolve conflict.

3.2 RESPONSIBILITIES

The following responsibilities are established for the PIRP at the site:

1. Chief of Public Affairs, Headquarters, U.S. Army Corps of Engineers:

a. Approves press statements or visits concerning the study area DERP program that have national significance and coordinates notification of appropriate Congressional delegations.

b. Coordinates with the Army's Office of the Chief of Public Affairs and the Jacksonville District of the Corps of Engineers on the release of any study area DERP program information which must be released at the nation level.

2. Chief, Public Affairs Office, Jacksonville District, U.S. Army Corps of Engineers:

a. Provides public affairs guidance and expertise to support the public affairs program for the study area DERP.

b. Prepares public statements and media releases for use at major milestone achievements and during the progress of the DERP program.

c. Refers all material of national significance to HQ, USACE for release to national news media, if appropriate.

d. Serves as the spokesperson and community point of contact and responds to local, regional and national queries using statements provided by the project manager or as provided in subsequent cleared statements or plans.

e. Informs the project manager and resident engineer of all queries, releases, requests for public briefings, tours or site visits pertaining to the program.

f. Coordinates with the project manager all responses to queries concerning program matters that require release of information not previously cleared for release.

g. Refers queries pertaining to supporting agencies to the appropriate public affairs office.

h. Provides the project manager and resident engineer with information copies of all released material and copies of newspaper clippings.

i. Distributes fact sheets, reports and other pertinent information to the public information repositories. Also performs regular inspections of repositories to ensure materials are available and updated for public use.

j. With assistance from the project manager and resident engineer, plans, schedules and coordinates all necessary requirements for implementation of community meetings.

k. Working with the project manager and resident engineer, plans and coordinates on-site tours of study sites and special briefings to elected Congressional, city, community leaders and residents.

l. Plans, coordinates, or presents informative programs relating to studies and remediation to area civic groups.

3. Project Manager, Study Area, Jacksonville District, U.S. Army Corps of Engineers:

a. Responsible for funding of the project.
b. Responsible for project schedules.
c. Responsible for reporting on project.
d. Responsible for ensuring all PIRP activities are carried out.
e. Responsible for overall management of the project.

3.3 COMMUNICATION ACTIVITIES AND TECHNIQUES

The primary elements of success in a public involvement program are to develop an information network for relevant communications and a constructive mechanism for public participation in the program. To develop, maintain, and enhance public involvement and to respond to changes in community and elected officials' concerns, the PIRP presents an active approach for identifying and addressing public concerns. The PIRP will also allow continued public involvement during all phases of the investigation, study and cleanup process.

For the PIRP, the following agency communication techniques will be used:

1. Project Status Meetings -- Held with representatives from appropriate local, city, state and federal agencies and officials to review overall project status, accomplishments, upcoming activities and schedule.

2. Specific Milestone Meetings -- Held with appropriate local, city, state and federal agencies and officials as jointly determined to be needed to review specific study element results, discuss and resolve concerns, and provide a forum for discussion of unanticipated problems or changes in program.

3. Telephone Conference Calls -- Held as needed to keep agencies informed of program activities.

4. News and Fact Sheet Releases -- Copies of all news releases, fact sheets and other information releases will be provided to appropriate local, city, state and federal agencies and elected officials for informational purposes so they can adequately respond to any public inquiries regarding the releases.

5. Prior Notice of Scheduled Community Meetings -- When community or zone meetings are scheduled as part of the PIRP, advance notice will be provided to all agencies and elected officials to allow maximum agency and public participation and facilitate scheduling of required agency coordination meetings. The community or zone meetings will be announced either through the mail or by delivery of fliers to homeowners' residences or through the neighborhood associations' newsletters.

3.3.1 LOCAL COMMUNITY AND MEDIA COMMUNICATION TECHNIQUES

To expand communications and ensure effective two-way interactions between the U.S. Army Corps of Engineers and the local community, the following community relations communications techniques will be used:

1. Establish a Community Advisory Committee -- This committee would be comprised of zone captains and residents of the study area and the local neighborhood association. Members would be nominated by their fellow residents and/or the neighborhood association. The purpose of this committee is (1) to act as a liaison between the Corps of Engineers and other residents of the area to ensure their needs and concerns are addressed by the Corps of and (2) to inform the Army Corps of Engineers of any concerns or needs not being addressed.

2. Community Information Line -- To provide local citizens a direct means to obtain information or express concerns relating to the study area, a community information "800" line will be established by the Jacksonville District of the Army Corps of Engineers. Additionally, an on-site residents' hotline will also be set up.

3. Establish an on-site PAO Staff at the Corps of Engineers resident engineer office to provide a network for residents and Corps officials and to answer site questions.

4. Fact Sheets/News Releases -- These releases will be distributed to local residents, neighborhood groups, local, city and Congressional elected officials, and local news media on a periodic basis. the fact sheets/news releases will be specifically directed to address the concerns of the adjacent property owners/residents and the development corporation and include information on the status of the investigations and studies, updates on the schedule and information on public health- and safety-related matters. Copies will be sent to other agencies, elected officials and news media. The fact sheet and copies of the releases will also be placed in the information repositories.

A fact sheet relating to the RI/FS process will describe the alternates considered and offer the Corps of Engineers' preferred alternative for public comment. An updated fact sheet will be prepared after the agency selects a remedial alternative. Coupons will be included in fact sheets for those who wish to be placed on the mailing list. Also, news releases, letters and public notices will advertise the community information "800" line as a number to call if someone wants to add his/her name to the mailing list. Designated control persons, Jacksonville District Public Affairs Office, will be identified on all fact sheets, news releases and letters to the community, and public documents.

5. On-Site Discussions and Briefings of Local, City, State and Federal Elected Officials--Discussions will be held on an as-needed basis with local citizens, local and city officials, Congressional representatives and other interested parties. Timing of discussions and briefings will be based on the interest of the community and significance of project reports and activities.

6. Information Repository/Project File -- Repositories accessible to the public for review of all program-related reports, fact sheets and other information on the program will be established at the Corps' on-site office and at sites in the local community. (See Appendix D for locations of community repositories.)

7. Zone-based Public Consultations/Community Meetings -- Jacksonville District personnel will hold informal weekly zone captain meetings and community zone meetings as required by the work schedule of zone residents. Other meetings will be conducted on an as-needed basis, in agreement with the Community Advisory Committee. The community meetings will present study findings, discuss alternatives, respond to questions and receive public comments.

8. Site Visits -- Visits may be held on an as-needed basis with local residents, city and local officials, Congressional representatives and the news media. Visits can be arranged through the Jacksonville District Public Affairs Office or Projects Management Office.

9. Public Review and Comment Period -- Throughout the duration of the program the public will have the opportunity to review program-related reports, fact sheets and major technical documents provided by the government at the information repository and comment informally through the Jacksonville District's Public Affairs Office or Projects Management Office. Formal public comment periods will be announced through display advertisements published in local newspapers, news releases, general mailings and public notices. Formal public meetings will be conducted in conjunction with the issuance of the draft Remedial Investigation and Feasibility Study reports. Notice of the meetings will include announcement of the time and place of the meetings, a brief description of the investigation or study results and proposed actions and identification of contact persons. Advertisement of the public meetings will be done in the same manner as the announcement of the public comment periods.

10. Summary of Concerns and Responses -- A responsiveness summary will be prepared after public comment periods. The summary will document for the public record community concerns and issues and the responses to these issues.

11. Information Briefings -- Interested city and local officials, Congressional representatives and key community leaders will be kept informed of plans and progress on a continuing basis. The Jacksonville District Public Affairs Office and Projects Management Office will be responsible for maintaining liaison with public officials.

12. Programs for Civic Groups -- Slide and informational programs may be presented to regional civic groups upon request. The mission, history and significance of the study area should be reviewed, with emphasis on the specific RI/FS environmental actions. Appropriate speakers to review the objectives, studies, findings and actions of the RI/FS will be identified by the Jacksonville District Public Affairs Office. A news release will be distributed to regional media announcing the availability of speakers to make the presentations to civic groups. All speaking engagements will be coordinated by the Jacksonville District PAO.

In addition to these communication techniques, Jacksonville District will notify all affected parties of project events according to a predetermined schedule. If any potential health- or safety-related problems arise, the Jacksonville District will notify elected local, city, state and Congressional representatives as well as residents in the affected area. Additionally, a representative of the Jacksonville District Project Management Division will explain any findings to these groups.

Appendix A Elected Local, City, State and Federal Representatives

Local
councilmen

City
mayor

State
Office of the Governor
Public Affairs Office
Government Hill
St. Thomas, USVI 00801
809-744-0001

Territorial
Hon. Alexander Farrelly
Governor of the USVI
Government House
Box 599
St. Thomas, USVI 00801
809-774-0001

Senator Bingley Richardson
President, VI Legislature
Box 477
St. Thomas, USVI 00801

Federal
Hon. Ron de Lugo
USVI Delegate to Congress
Rayburn Building, Room 2927
Washington, DC 20515

Appendix B Local/City, State and Federal Agencies

Local/City

State

Federal

66th Explosive Ordnance Disposal Detachment??
Cape Canaveral Air Force Station
Patrick Air Force Base, FL 32925-7478
407-853-9951; FAX 407-853-9940

Environmental Protection Agency
McAdams?

U.S. Army Corps of Engineers

Lt. Gen. Arthur Williams
Chief of Engineers
Headquarters, U.S. Army Corps of Engineers
20 Massachusetts Ave., N.W.
Washington, D.C. 20314-1000

Brig. Gen. Roger Yankoupe
Commander, South Atlantic Division
Room 313
77 Forsyth St., S.W.
Atlanta, GA 30335-6801

Col. Terrence C. Salt
District Engineer
Jacksonville District, U.S. Army Corps of Engineers
400 W. Bay St.
Jacksonville, FL 32332-0019

Antilles Area Office??
U.S. Army Corps of Engineers
Tampa, FL

Appendix C News Media List

Newspapers
VI Daily News
Box 7760
St. Thomas, USVI 00801
809-774-8772, FAX 776-0740

Radio

Television
WTJX TV 12
VI Public Television
Box 7879
St. Thomas, USVI 00801
809-774-6255, FAX 774-7092

WSVI TV 8
Box BABC
Sunny Isle
St. Croix, USVI 00823
809-778-5508, FAX 778-5011

Caribbean Communication
St. Thomas Cable TV
1 Beitjen Place
St. Thomas, USVI 00802
809-776-2150, FAX 774-5029

Appendix D Project Document Repositories

Office of the Governor
Public Affairs Office
Government Hill
St. Thomas, USVI 00801
809-774-0001

U.S. Department of Interior
Mr. Robert Bunn
Territorial Representative
Room 206 Federal Building
St. Thomas, USVI 00801
809-744-1190

Enid M. Baa Library
20 Dronningh Gade
St. Thomas, USVI 00802
809-774-0630

Appendix E Jacksonville District Officials

District Engineer	Col. Terrence C. Salt
Deputy District Engineer	Maj. Hal K. Alguire
Deputy District Engineer for Project Management	Richard Bonner
Project Manager	Robert Bridgers
Resident? (Area?) Engineer	?
Technical Manager for Ordnance and Explosive Waste, Huntsville Division	?
Liaison Officer for Site Activities	?
Chief, Public Affairs	Jacquelyn Griffin

Appendix F Neighborhood and Community Organizations

Water Island Association
Water Island Terrace
Water Island, USVI
Mr. Bill Bates, Pres.
809-774-1288

VI Legislature
Veterans Drive
St. Thomas, USVI
809-774-0880

Appendix G Project Work Zones and Zone Map

Figure 1 Site Location Map,

Figure 2 Site Layout Map,

Jacksonville District
Project Mgmt Office
Fort Stegana Files
R. Bridges Office

4 DEC 1991
GOVERNOR FARRELLY
BRIEFING CHARTS

NOV.27 '91 11:43 US ARMY ENGY DIV. HUNTSVILLE Jax28 P.02

Jax-040901-028
page 1 of 22

FENCING

- FENCING AROUND FLAMINGO BAY TRASH DUMP COMPLETED ON OCTOBER 28TH.
- LENGTH OF NEW FENCE APPROX. 1,000 FEET AND TIED INTO AN EXISTING FENCE.
- FENCE INSTALLED BY H&M SERVICES OF ST. THOMAS AT AN APPROX. COST OF $30,000.
- MR. ROBERT BUNN OF DOI HAS A KEY TO THE GATE. THE SAN JUAN AREA OFFICE HAS A SPARE KEY.

4 Dec 1991

NOV.27 '91 11:43 US ARMY ENGY DIV, HUNTSVILLE P.03

TOPOGRAPHIC SURVEYS

- ALL TOPOGRAPHIC AND PLANIMETRIC MAPPING COMPLETED ON NOVEMBER 14TH.
- FINAL MAPS DELIVERED TO HUNTSVILLE BY CONTRACTOR ON NOVEMBER 27TH.
- COPIES OF PLANIMETRIC MAPS (SURFACE FEATURES) WILL BE GIVEN TO ANY WATER ISLAND RESIDENT AND TO DOI. MAPS (3) ARE AT A SCALE OF 1" = 200'
- TOPOGRAPHIC MAPS AT A SCALE OF 1" = 30' OF THE FLAMINGO BAY TRASH DUMP, AND TEST AREAS 2, 4, 5, 6, AND 7 WILL BE MADE AVAILABLE TO WATER ISLAND RESIDENTS WHO RESIDE ADJACENT TO THESE AREAS.
- COSTS OF MAPPING WAS $202,000.

4 Dec 1991

NOV.27 '91 11:44 US ARMY ENGY DIV, HUNTSVILLE P.04

REMEDIATION WORK PLANS

- DRAFT "STRAWMAN" ORDNANCE REMEDIATION WORK & SAFETY PLANS SUBMITTED ON SCHEDULE ON NOVEMBER 22ND FOR INTERNAL ARMY REVIEW.

- DRAFT-FINAL "STRAWMAN" PLANS DUE ON MARCH 16, 1992.

- THESE PLANS WILL THEN BE TURNED OVER TO THE REMEDIATION CONTRACTOR TO FINALIZE FOR IMPLEMENTATION.

- COSTS OF WORK PLANS = $48,000

REMEDIATION CONTRACTING ACTION

- SMALL-BUSINESS MINORITY-OWNED CONTRACTOR EXPERIENCED IN ORDNANCE FIELD SELECTED.
- SELECTION SUBMITTED TO SMALL BUSINESS ADMINISTRATION FOR APPROVAL.
- APPROVAL EXPECTED IN EARLY DECEMBER.
- AFTER APPROVAL, CONTRACTOR PERFORMS SITE VISIT (PROBABLY IN JANUARY 1992) AND PREPARES PROPOSAL FOR CORPS OF ENGINEERS REVIEW DESCRIBING HOW THE CONTRACTOR PLANS TO PERFORM THE ACTUAL REMEDIATION.
- ACTUAL AWARD OF CONTRACT IS CONTINGENT UPON APPROVAL OF CONTRACTOR'S PROPOSAL.

4 Dec 1991

NOV.27 '91 11:45 US ARMY ENGY DIV, HUNTSVILLE P.06

REMEDIATION SCHEDULE

- AWARD OF REMEDIATION CONTRACT IS PLANNED FOR MID-FEBRUARY 1992.
- SCHEDULE FOR FIELD ACTIVITIES HAS NOT BEEN ESTABLISHED.
- HEADQUARTERS - DEPARTMENT OF THE ARMY (HQDA) HAS NOT YET APPROVED COMMENCEMENT OF PROJECT. POLICY ON CLEAN-UP OF POTENTIAL CHEMICAL MUNITIONS CONTAMINATION HAS NOT BEEN AGREED UPON.
- POC AT HQDA IS MICHAEL CAIN, 703-693-5032/4635, FOR ADDITIONAL INFORMATION.

4 Dec 1991

NOV.27 '91 11:46 US ARMY ENGY DIV SVILLE P.07

4 DEC 1991
PUBLIC MEETING
BRIEFING CHARTS

ARCHIVES SEARCH REPORT

FORMER MILITARY PROPERTIES IN THE US VIRGIN ISLANDS

UNEXPLODED ORDNANCE POTENTIAL

4 Dec 1991

NOV.27 '91 11:48 US ARMY ENGY DIV, HUNTSVILLE P.10

REASONS FOR ARCHIVES SEARCH

1. REQUESTED BY GOVERNOR FARRELLY

2. DETERMINE WHERE POTENTIAL ORDNANCE CONTAMINATION EXISTS, IF ANY, IN THE U.S. VIRGIN ISLANDS AS A RESULT OF FORMER MILITARY ACTIVITIES

4 Dec 1991

NOV.27 '91 11:48 US ARMY ENGY DIV, HUNTSVILLE P.11

ARCHIVES SEARCH REPORT
CONTRACT STATUS

- 21 MAR 91 - GOVERNOR REQUEST ARCHIVES SEARCH
- 9 APR 91 - ARCHIVES SEARCH CONTRACT AWARDED
- 6-10 MAY 91 - CONTRACTOR ON-SITE IN VI
- 20 MAY 91 - DRAFT REPORT SUBMITTED TO COE
- 8 JUL 91 - DRAFT FINAL REPORT SUBMITTED TO COE AND OWNER (DOI)
- 9 AUG 91 - FINAL REPORT PROVIDED TO GOVERNOR FARRELLY AND CONGRESSMAN DELUGO
- 14 AUG 91 - GOVERNOR FARRELLY BRIEFED ON CONTENTS OF REPORT. REPORT RELEASED TO PUBLIC AT PUBLIC MEETING ON WATER ISLAND.

4 Dec 1991

NOV.27 '91 11:49 US ARMY ENGY DIV, HUNTSVILLE P.12

SOURCES OF DATA

- US ARMY CORPS OF ENGINEERS, JACKSONVILLE AND HUNTSVILLE
- NATIONAL ARCHIVES
- NATIONAL RECORDS CENTER
- US ARMY CENTER OF MILITARY HISTORY
- US ARMY TECHNICAL ESCORT UNIT
- US ARMY CHEMICAL RESEARCH DEVELOPMENT AND ENGINEERING CENTER
- US ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
- US ARMY DUGWAY PROVING GROUND
- US DEPARTMENT OF INTERIOR (IN THE VIRGIN ISLANDS AND WASHINGTON, DC)
- COLLEGE OF THE VIRGIN ISLANDS, ST. THOMAS
- US NAVY EOD DETACHMENT, ROOSEVELT ROADS PR
- US NAVAL FACILITIES COMMAND
- US NAVAL HISTORICAL CENTER
- US ARMY INST TUTE OF MILITARY HISTORY

4 Dec 1991

NOV.27 '91 11:50 US ARMY ENGY DIV, HUNTSVILLE P.13

SOURCES OF DATA
(continued)

- GOVERNMENT OF THE VIRGIN ISLANDS LIBRARIES:
  A. ENID M. BAA PUBLIC LIBRARY
  B. TERRITORIAL ARCHIVES
- ALEXANDER HAMILTON AIRPORT, ST. CROIX
- OFFICE OF THE LIEUTENANT GOVERNOR:
  A. RECORDER OF DEEDS (ST. CROIX & ST. THOMAS)
  B. TAX ASSESSOR
  C. CADASTRAL BRANCH
- WATER ISLAND HOTEL AUTHORITY
- MR. OSBOURNE HARVEY (Former Employee of the San Jose Project)

4 Dec 1991

NOV.27 '91 11:50 US ARMY ENGY DIV, HUNTSVILLE P.14

SUMMARY OF FORMER MILITARY PROPERTIES IN VIRGIN ISLANDS

- BENNER HILL (Base End Station)
- BORDEAUX HILL (Base End Station)
- BOURNE FIELD (Naval Air Station)
- CAMP HARWOOD (Troop Depot)
- COLLEGE OF THE VIRGIN ISLANDS (part of Bourne Field)
- CROWN MOUNTAIN (Air Warning Station)
- FORTUNA HILL (Gun Emplacement)
- HAVENSIGHT POINT (Gun Battery)
- HILL 870 (Base End Station)
- LONG POINT (Military Housing)
- MUHLENFELS POINT (Battery & Light Station)
- NANA HILL (Gun Emplacement)
- SIGNAL HILL (Military Housing)

4 Dec 1991

NOV.27 '91 11:51 US ARMY ENGY DIV, HUNTSVILLE P.15

SUMMARY OF FORMER MILITARY PROPERTIES IN VIRGIN ISLANDS

- US ARMY RESERVE CENTER
  (Part of Bourne Field)
- US MARINE CORPS BARRACKS AT
  FORT CHRISTIAN
- US NAVAL SECTION BASE & IN-SHORE
  PATROL (maitenance/training/communication)
- US NAVAL SUBMARINE BASE (maintenance &
  repair of submarines/surface vessels)
- WILLIAMS HEAD (part of subbase activities)
- BENEDICT FIELD (Army Airfield)
- US MARINE BARRACKS AT CHRISTIANSTED
- US NAVY DEGAUSSING STATION ON HASSEL ISLAND
- UNDERWATER DEMOLITION TEAM TRAINING CENTER
  ON BUCK ISLAND
- SAN JOSE PROJECT
  A. WATER ISLAND (FORT SEGARRA)
  B. WEST END OF ST. THOMAS ISLAND
  C. SUBMARINE BASE

4 Dec 1991

NOV.27 '91 11:52 US ARMY ENGY DIV, HUNTSVILLE P.16

ARCHIVES REPORT CONCLUSIONS

- OF THE 23 FORMER SITES IDENTIFIED, ONLY 3 HAD ANY POTENTIAL ORDNANCE CONTAMINATION. THEY WERE:
  1. BENEDICT AIRFIELD
  2. UNDERWATER DEMOLITION TEAM TRAINING
  3. SAN JOSE PROJECT:
     A. WEST END OF ST. THOMAS
     B. WATER ISLAND

- BENEDICT AIRFIELD HAS BEEN EXTREMELY DISTURBED FOR CONSTRUCTION OF THE VIALCO FACILITY AND THE AIRPORT. NO EVIDENCE OF ORDNANCE WAS FOUND.

- SAN JOSE PROJECT - WEST END OF ST. THOMAS: THE ARMY TOOK 2,095 ACRES FOR THE SAN JOSE PROJECT. NO DOCUMENTATION WAS FOUND THAT INDICATES THE ARMY EVER USED THE SITE FOR MUNITIONS TESTING. HOWEVER, RECORDS DO INDICATE ATMOSPHERIC TESTING OF NON-PERSISTENT CHOKING AGENT (PHOSGENE) OCCURED, WHOSE EFFECTS WOULD HAVE SINCE DISSIPATED.

- SAN JOSE PROJECT - WATER ISLAND: THIS IS THE ONLY SITE OUT OF THE 23 FORMER SITES THAT HAS ANY POTENTIAL FOR ORDNANCE CONTAMINATION.

4 Dec 1991

NOV.27 '91 11:52 US ARMY ENGY DIV. HUNTSVILLE P.17

WATER ISLAND
(FORMER FORT SEGARRA)

- THE US ARMY CHEMICAL CORPS MOVED TO THE VIRGIN ISLANDS FROM PANAMA ON MARCH 30, 1948
- THE CHEMICAL CORPS PERFORMED TESTS ON WATER ISLAND UNTIL SEPTEMBER 1950.
- WATER ISLAND CONSISTED OF 8 TEST AREAS, THE FLAMINGO POINT GUN EMPLACEMENT, AND AN AREA NOW CALLED THE "FLAMINGO BAY WAREHOUSE AND TRASH DUMP."
- RECORDS SEEM TO INDICATE MUNITIONS TESTING WAS PERFORMED IN TEST AREAS 1, 4, 6, AND 7.
- NO RECORDS CAN BE FOUND THAT DOCUMENT WHERE ORDNANCE MIGHT HAVE BEEN DISPOSED OF OR BURIED, IF IN FACT ANY WAS.
- IN THE 40 YEARS SINCE THE SAN JOSE PROJECT, ORDNANCE HAS ONLY BEEN FOUND ONCE. IN 1966, BOMBS WERE UNCOVERED IN THE "FLAMINGO BAY TRASH DUMP" THAT WERE LATER IDENTIFIED BY THE NAVY AS "ARMY M70 AND M78 (CHEMICAL BOMBS)."
- THERE IS NO MAJOR HEALTH THREAT EVIDENT TO THE GENERAL PUBLIC ON WATER ISLAND.

4 Dec 1991

NOV.27 '91 11:53 US ARMY ENGY DIV HUNTSVILLE P.18

WATER ISLAND
TEST AREAS

- TEST AREA 1 - CURRENTLY OCCUPIED BY HOME AND PARKING AREA. NO ORDNANCE WAS FOUND DURING CONSTRUCTION.
- TEST AREA 2 - AREA WAS DREDGED AND THEN REFILLED. NO ORDNANCE WAS FOUND.
- TEST AREA 3 - AREA WAS EXCAVATED IN 1981 AND THEN REFILLED FROM ANOTHER SOURCE. NO ORDNANCE WAS FOUND.
- TEST AREA 4 - CANNOT PROVE OR DISPROVE ORDNANCE CONTAMINATION EXISTS.
- TEST AREA 5 - THIS AREA MAY NOT HAVE BEEN USED FOR TESTING.
- TEST AREA 6 - AREA EXTENSIVELY DEVELOPED ALONG RIDGELINE. NO ORDNANCE WAS FOUND. ON LOWER SLOPES, CANNOT PROVE OR DISPROVE ORDNANCE CONTAMINATION EXISTS.
- TEST AREA 7 - CANNOT PROVE OR DISPROVE ORDNANCE CONTAMINATION EXISTS.
- TEST AREA 8 - WATER ISLAND HOTEL IS ON THIS SITE. NO ORDNANCE WAS FOUND DURING CONSTRUCTION. THIS AREA NOT USED FOR TESTING
- GUN EMPLACEMENT - GUNS WERE NEVER INSTALLED, NO EVIDENCE OF ORDNANCE CONTAMINATION.
- FLAMINGO BAY TRASH DUMP - AREA WHERE BOMBS WERE FOUND IN 1966. BECAUSE OF THIS DISCOVERY, A RISK ASSESSMENT CODE (RAC) OF 1 WAS DEVELOPED.

4 Dec 1991

NOV.27 '91 11:54 US ARMY ENGY DIV HUNTSVILLE P.19

FLAMINGO BAY
TRASH DUMP

- RISK ASSESSMENT CODE (RAC) SCORING IS BASICALLY "COOK-BOOK" ATTEMPT TO PRIORITIZE SITES AND IS VERY SUBJECTIVE IN NATURE.
- WATER ISLAND WAS SCORED AS A RAC 1.
- USING COMMON SENSE, THE RAC 1 SCORE ONLY PERTAINS TO THE TRASH DUMP (BECAUSE OF THE FOUND ORDNANCE). THE REMAINDER OF WATER ISLAND IS MORE TRUTHFULLY A RAC 2.
- WITH THE TRASH DUMP A RAC 1, THE SITE WAS FENCED TO LIMIT ACCESSIBILITY TO THE GENERAL PUBLIC.
- MR. ROBERT BUNN OF THE DEPARTMENT OF THE INTERIOR HAS A KEY TO THE GATE. THE SAN JUAN AREA OFFICE OF THE CORPS OF ENGINEERS HAS A SPARE KEY.

4 Dec 1991

NOV.27 '91 11:55 US ARMY ENGY DIV, HUNTSVILLE P.20

WATER ISLAND
TOPOGRAPHIC SURVEYS

- NO RECENT MAPS OR SURVEYS EXIST TO ASSIST IN ORDNANCE CONTAMINATION DISCOVERY EFFORTS.
- TOPOGRAPHIC SURVEYS COMMENCED ON WATER ISLAND ON SEPTEMBER 2ND AND COMPLETED ON NOVEMBER 14TH.
- TEST AREAS 2, 4, 5, 6, AND 7 AND THE FLAMINGO BAY TRASH DUMP MAPPED AT A SCALE OF 1" = 30FT USING AERIAL PHOTOGRAPHY SUPPLEMENTED BY GROUND SURVEYS.
- THE ENTIRE WATER ISLAND MAPPED BY PLANIMETRIC MEANS TO A SCALE OF 1" = 200FT USING AERIAL PHOTOGRAPHY.

4 Dec 1991

NOV.27 '91 11:55 US ARMY ENGY DIV, HUNTSVILLE P.21

REMEDIATION WORK PLANS

- DRAFT "STRAWMAN" ORDNANCE REMEDIATION WORK & SAFETY PLANS SUBMITTED ON SCHEDULE ON NOVEMBER 22ND FOR INTERNAL ARMY REVIEW.

- DRAFT-FINAL "STRAWMAN" PLANS DUE ON MARCH 16, 1992.

- THESE PLANS WILL THEN BE TURNED OVER TO THE REMEDIATION CONTRACTOR TO FINALIZE FOR IMPLEMENTATION.

4 Dec 1991

NOV.27 '91 11:56 US ARMY ENGY DIV, HUNTSVILLE P.22

REMEDIATION CONTRACTING ACTION

- SMALL-BUSINESS MINORITY-OWNED CONTRACTOR EXPERIENCED IN ORDNANCE FIELD SELECTED.
- SELECTION SUBMITTED TO SMALL BUSINESS ADMINISTRATION FOR APPROVAL.
- APPROVAL EXPECTED IN EARLY DECEMBER.
- AFTER APPROVAL, CONTRACTOR PERFORMS SITE VISIT AND PREPARES PROPOSAL FOR CORPS OF ENGINEERS REVIEW DESCRIBING HOW THE CONTRACTOR PLANS TO PERFORM THE REMEDIATION.
- ACTUAL AWARD OF CONTRACT IS CONTINGENT UPON APPROVAL OF CONTRACTOR'S PROPOSAL.

4 Dec 1991

NOV.27 '91 11:57 US ARMY ENGY DIV, HUNTSVILLE P.23

Author / Office Unknown

Jacksonville District
Project Mgmt. Office
Fort Segura Files
R. Budger's Office

August 13, 1991

Memorandum:

Subject: Ordnance removal on Water Island

1948-1950 San Jose Project. Project was common knowledge. Army went out of it's way to explain project to local people and establish good relations with the community. Hired local people for project.

Ordnance found in hotel dump site on Water Island by Hotel employees. Roosevelt Roads contacted and responded and advised the halting of any more digging. This event was common knowledge among Water Island residents.

Bob Bunn first made aware of this incident in casual conversation with hotel manager. Promptly informed Washington.

1988 or 89 pre hugo: Army Corp sent person down to check things out.

March 21 1st meeting with Army Corp of Engineers. (The Army had turned this over to the Corp to investigate.) Met with Governor for briefing. Bob stated that press releases should be made in order to prevent people from being upset. It was decided by the Governor and Huntsville to release a statement immediately after Carnival.

May 6 Second team arrived from Army Corp of Engineers, purpose archive research. Meeting held with Bob Bunn in office: given brief history of San Jose Project and types of ordnance used as well as discussion of other military installations in USVI. Draft report due May 17, final report due June 20 at which time would be open to the public. Met with Governor. Visited Water Island. Outbriefing with Gov's press secretary May 10, James O'Brian.

June 7 Received copy of draft report. I was asked for comments.

1st week of July: Received final report. (Corrections sent to Huntsville were not included in final).

2nd week of July: Received copy of area analysis of WI. Cover letter stated that two copies of this analysis had been sent to Government House.

Jax-040901-029a

Jax 29

July 29 — Received call from Art Sherrill concerning wild rumors circulating on WI about toxic waste and attempts to devalue property. Rumors started when companies asked to bid on fencing contracts had been talking to WI residents about ordnance and waste removal. Called Corp and Gov't house (and Washington) to inform them of situation. Stated that they had better get press release out.

o Huntsville promptly responded and sent copies of press release to this office, Washington and Ron deLugo's office.

o I had no comment, Washington had a few changes, Ron deLugo's office wanted a rewrite. Press release was consequently delayed.

August 6 — In the PM: I was informed by Washington that Ron deLugo informed them that copies of San Jose reports were circulating around WI.

August 7 — Ron deLugo issued press release. (Huntsville miffed because he took all the credit.)

August 11 — Ron deLugo issued next press release stating that the Corp would be briefing WI residents, July 14 time and place to be announced.

August 13 — Art Sherrill called: had copy of 1989 letter from Stella Guerra pertaining to ordnance.

Spoke with James O'Brian: Governor annoyed that he did not receive a copy of report and blames Interior because they felt that Interior was in charge, however, this project has always been under the auspices of the Army Corp of Engineers.

Jacksonville District
Project Mgmt. Office
Fort Segarra Files
R. Bridges Office

CESAJ-DP
(Cong)

August 1999

FACT SHEET
DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
for
FORMERLY USED DEFENSE SITES
(DERP-FUDS)
FORMER FORT SEGARRA, WATER ISLAND
ST THOMAS, U.S. VIRGIN ISLANDS

1. **AUTHORIZATION**: Defense Environmental Restoration Account (DERA)

2. **DESCRIPTION.** During World War II, the U.S. Army initiated a project to determine the effectiveness of chemical munitions and defenses in jungle terrain, and the effects on storage of chemical munitions in tropical climates. The project was initiated in 1943 on the Panamanian Island of San Jose and was named the San Jose Project. The project continued until December 1947, and in January 1948, the San Jose Project was completely withdrawn from San Jose Island and moved to the Panama Canal Zone. In May 1948, the facilities on St. Thomas, which were formerly known as the Submarine Base and Fort Segarra, were taken over for use in continuing the tropical testing of chemical weapons systems. The San Jose Project continued to operate until May 1950, when the project was canceled. All leases were terminated and the properties which were owned in fee by the U.S. Army were declared excess and transferred to the Department of the Interior (DOI). The DOI subsequently leased all of Water Island to the Water Island Incorporated for development as a resort area. In 1985, DOI was advised that two suspected chemical warfare bombs were unearthed in 1966 near the Flamingo Landfill site. U.S. Navy, Explosive Ordnance Detachment (EOD) personnel from Roosevelt Roads Naval Station in Puerto Rico responded to the scene and removed the two items.

3. **FUNDING.**

FY 90-94	$1,093.5K	
FY 95	$ 85.0K	
FY 96	$ 81.8K	
FY 97	$1,060.0K	
FY 98	$ 110.0K	
FY 99	$3,500.0k	(RA-C, if necessary)

4. **SPONSOR.**
Department of Defense (DOD), Defense Environmental Restoration Account (DERA).

Jax-040901-029

Jap9

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FORMER FORT SEGARRA, Water Island, U.S. VIRGIN ISLANDS
(continued)

5. **STATUS.** The investigations required at the site are authorized under DERP-FUDS. This location is approved under the Explosive Waste/Chemical Warfare Materiel (OE/CWM) project category which requires a determination if OE contamination by past Department of Defense (DOD) activities remains in the area. The Corps of Engineers will maintain responsibility for all aspects of site restoration operations to include site investigations, site safety documentation, environmental compliance documentation, remediation actions, and unearthing of suspect CWM.

An Archive Search Report was completed in July 1991. Detailed topographic mapping of Water Island and fencing of the landfill site was completed in October 1991. Non-intrusive site characterization work was completed in June 1994 on three areas and located numerous underground metallic objects. The next phase of the site characterization will be to unearth randomly selected underground objects to determine if OE/CWM items remain in these areas of the island. It is the Government's expectation that no OE/CWM items will be encountered, however, it must be prepared to deal with such items if found. As such, before work can start the Site Specific Safety Health Plan must be approved at the highest level of the Department of Army. This action will be performed in accordance with the Comprehensive Environment Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP).

The USACE is the lead federal agency for this action but significant support will be required from other Department of Army (DA) components including the Non-Stockpile Program Manager (NSPM) for Chemical Demilitarization and the Chemical and Biological Defense Command (CBDCOM). The U.S. Army Technical Escort Unit (TEU) will be responsible for the recovery and packaging of any OE/CWM item found during the investigations. Transportation by the Army TEU will be coordinated with NSPM who is also responsible for any interim storage on Water Island and ultimate disposal.

The revised DRAFT Site Safety Submission is under review by USACE. The Final Plans will be coordinated with all Federal and USVI agencies with the final approval by the Department of the Army, Safety Office. This approval should authorize the start of the intrusive action phase in the summer 1999. Final reports will then be completed with recommendations for additional activities or a recommendation to place the project in the "no further action" status. The project is being closely coordinated with the USVI community by the Jacksonville District, Antilles Office, Public Affairs.

Jacksonville District
Project Mgmt Office
Fort Segawa Files
R. Bridgers Office

AP Associated Press

x1462 08 intj sju mia cbnv
^BC-Virgin Islands-Chemical Weapons,0207<
^U.S. Army to probe chemical weapons storage site in Virgin Islands<
¶ CHARLOTTE AMALIE, U.S. Virgin Islands (AP) _ The U.S. military may excavate land on a former chemical weapons storage site in the U.S. Virgin Islands to probe for any chemical traces, the Army Corps of Engineers said Tuesday.
¶ Officials said the weapons were stored on Water Island, an islet off St. Thomas, from 1948 to 1950 as part of a test to see how their containers held up in a tropical environment.
¶ The Corps of Engineers is drawing up plans to excavate parts of the island, including a section of its landfill, as part of a routine checkup on the site, said Robert Bridgers, district project manager for the Corps of Engineer's Defense Environmental Restoration Program.
¶ Inspectors are seeking "enough information to adequately describe the site and the likelihood of whether something else might be found on the island," he said.
¶ The Pentagon must approve the excavation plans before digging begins, he said. No date has been set yet for the project.
¶ None of the islands 200 residents would have to be moved for the excavation, Bridgers said.
¶
¶

JAX-04401-030

JAX 30

R. Bridgers Office

Jacksonville District Project Mgmt. Office Fort Segura Files

PAGE 1 340 774 8033 ID:1 340 774 8033 9 12:32 FROM:DONNA GREEN

Dangers may remain on Water Island

Recently found report casts doubt on military's cleanup of weapons depot

By LAUREL DRULEY
Daily News Washington correspondent

WASHINGTON — The U.S. Army tested and stored potentially hazardous chemical weapons on Water Island 50 years ago and may not have sufficiently disposed of the explosives, according to Puerto Rico's attorney general, who recently found a U.S. Defense Department report detailing the testing while investigating the Navy's target practice on Puerto Rico.

The Army Corps of Engineers said that Water Island, an inhabited bit of land 2.5 miles long just off the coast at Charlotte Amalie, is a low priority for cleanup because, according to their research, humans are not at risk.

"Worst first," said Robert Bridgers, the Army's Water Island project manager. "That's the Department of Defense motto."

V.I. Delegate to Congress Donna Christian Christensen said Friday that although the Army cannot be absolutely certain until it tests the area, Army officials assured her that they feel relatively certain that there is nothing hazardous on the island, which has about 200 residents.

The team of experts formed by Puerto Rico's attorney general, Jose Fuentes-Agostini, came across a document called the Non Stockpile Chemical Warfare Report published by the Department of Defense in 1993 while the team was researching the U.S. Navy's environmental, economic and health impact on Vieques and the surrounding area.

Vieques, which is about 50 miles east of St. Thomas, is the site of a controversial live-firing range that has long been a thorn in the side of Puerto Ricans.

A civilian's accidental death in April spurred demands from Puerto Rico that the Navy cease operations on Vieques and return the land it owns there to the local government. David Sanes Rodriguez, a Vieques resident employed by the Navy as a security guard, was killed and four others were wounded when a Marine jet dropped two bombs on the wrong target.

This is not the first time the military has been asked to relocate. In 1947 when the Panamanian government asked the Army to close its chemical weapons test site in Panama, the Army relocated to Water Island and tested weapons there until 1950. "We're not sure the purpose of the tests," Agostini said. The 1993 report indicated that the unused chemical agents were buried on Water Island and dumped offshore.

> **"There are metal objects underground. We do not know what they are; it could be a hubcap, a coffee can or a bomb."**
>
> – Robert Bridgers, U.S. Army Water Island project manager.

In 1966, the Navy flew in a team from Puerto Rico to dispose of two uncovered bombs after the weapons were revealed by a construction crew. About five years ago the Army Corps of Engineers confirmed in a site analysis the existence of metal buried at the Flamingo Bay landfill, a former chemical weapons testing area.

Bridgers said that he was not sure whether chemical weapons were still buried on the island. "We hope that we do not find anything," Bridgers said. "We cannot report back to Congress that there is nothing left on the island without investigating ... There are metal objects underground. We do not know what they are; it could be a hubcap, a coffee can or a bomb." His project team is waiting for federal approval of its plan.

"The Army is keeping the people of Water Island fully informed every step of the process working with local agencies and coordinating with VITEMA," Christensen said.

Agostini said that the Army should be doing a study of the possible health and environmental threats left by the explosives off St. Thomas.

In addition to the environmental damage to the coral reefs and rare bioluminescent bays on Vieques, uranium and napalm bombs left there have caused disproportionately high cancer and infant mortality rates on the island, he said. Agostini has said that if the Navy did not comply with Puerto Rico's wishes, he would file a lawsuit to force compliance.

No alternative site evaluated by the Navy could "provide the level of flexibility and combat realism" that is available at Vieques, according to a report presented by the Navy Secretary Richard Danzig last month to a Pentagon panel on military operations on Vieques. The Navy has said that its bombing range, which occupies two-thirds of the 51-square-mile island, is the only site where the Atlantic Fleet air, land and sea forces can train simultaneously with live munitions.

On Tuesday, in signing the military construction appropriations bill, President Clinton said he was concerned that, for the second consecutive year, Congress had not provided the administration's requested level of funding for the Chemical Weapons Demilitarization program.

Bridgers explained that two pots of money exist under this program, one for the disposal of chemical weapons required by various treaties and another for formerly used defense sites like Water Island. He indicated that the former has a much bigger pot. "Not a lot of activity has been conducted on Water Island because there's not a lot of funding," Bridgers said.

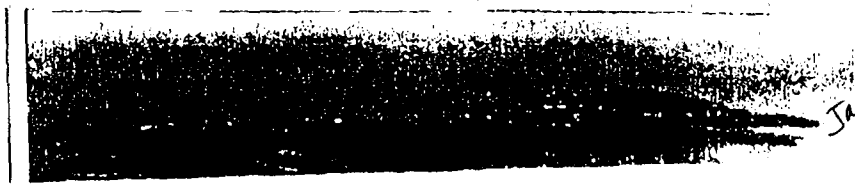
Laurel Druley is a reporter for Medill News Service, which is affiliated with Medill School of Journalism, Northwestern University.

Water Island military history

1944-47 U.S. Army Chemical Corps tested chemical weapons in Panama. Kicked out in 1947 because the Panama government didn't want the Army using chemical weapons on its territory.

1948-50 U.S. Army Chemical Corps moved to Water Island to test and store chemical weapons.

1952 Permanent control of the island was transferred to the U.S. Interior Department.



JAT 31

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VI Daily News
August 23, 1999

Jacksonville District
Project Mgmt Office
Fort Segarra Files
R. Budgeis Office

Jax 32

ID:1 340 774 8033

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Water Island military history

1944-47 U.S. Army Chemical Corps tested chemical weapons in Panama. Kicked out in 1947 because the Panama government didn't want the Army using chemical weapons on its territory.

1948-50 U.S. Army Chemical Corps moved to Water Island to test and store chemical weapons.

1952 Permanent control of the island was transferred to the U.S. Interior Department.

1985 Interior was informed of a 1966 incident in which two chemical bombs were discovered on Water Island by a construction crew. Army explosive specialists from Roosevelt Roads Naval Station, Puerto Rico, removed the bombs.

1991 The Army fenced off Water Islands's Flamingo Bay landfill and an archive search was done.

1992 A draft work plan for emergency removal was prepared.

1994 The Army identified three magnetic areas south of Flamingo Bay.

1995 The Army's plan was deemed incomplete without medical support.

1996 The Navy hospital at Roosevelt Roads agreed to provide medical support, if needed.



Daily News Photo by CRISTIAN SIMES

Water Island, located just offshore of Charlotte Amalie on St. Thomas, was once used by the U.S. Army to test a store chemical weapons. The Army Corps of Engineers has identified metal buried on the island, which could h anything from relatively harmless trash or extremely dangerous chemical weapons.

Jax-040901-032

Water Island tests are negative

Army Corps will keep residents informed

Lt. Col. Chester D. Fowler is deputy district engineer for the Antilles for the Army Corps of Engineers.

This is in reference to the article "Army to dig for gas bombs in Water Island" written by Launce Rake published Nov. 14 in the Virgin Islands Daily News.

I would like to add some comments about safety and public participation in Water Island.

The U.S. Army Corps of Engineers has been involved in this project since 1991.

Work done on these projects originates from a congressional mandate to conduct environmental restoration or cleanup of areas formerly use by the Department of Defense.

As in the past, the Army's policy has been to hold public and community meetings to gather public comments and involvement as we inform residents about the status of projects or work to be performed.

For Water Island we have held three community meetings and will continue this policy of keeping residents informed.



Chester Fowler
Guest editorial

The first effort at Water Island was the Archives Search Report completed in 1991 followed by several other studies.

In 1994 we completed Phase I work of site characterization which involved taking soil samples at several selected sites for evaluation.

All the results for these areas tested negative for contamination. Magnetometer surveys were also conducted in selected areas to map underground metallic objects.

Phase II of work will involve intrusive excavation of selected areas to determine the presence of abandoned DOD material.

The Army is required and responsible to conduct this work with safety as the highest priority. As stated in the article by Roger Fitzpatrick, technical manager from our Huntsville Engineering Support Center, "If we find what we expect there will not be anything there at all."

Prior to beginning work on Phase II, we will hold a community meeting on-site, brief local officials and notify the media on the specific activities and timetable.

We are still coordinating several elements of work including the safety plan and potential medical support from the Navy Hospital at Roosevelt Roads.

I want to reassure V.I. residents that U.S. Army Corps of Engineers technical experts working in this project do not foresee any threats to the health and safety of local residents by the work to be conducted.

Virgin Islanders and particularly Water Island residents have expressed their interest in the environmental restoration of the area. We look forward to receiving the necessary approvals and complete the work in a safe and expeditious manner.

For any questions on the subject, I can be reached at 787-729-6876.

Thank you for the opportunity to provide additional comments on the status of our work.

Jacksonville District
Project Mgmt. Office
Fort Segarra Files
R. Bridges Office

Jax 33

Jax-040901-033

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS, ANTILLES OFFICE
400 FERNANDEZ JUNCOS AVENUE
SAN JUAN, PUERTO RICO 00901-3299

REPLY TO ATTENTION OF

November 19, 1996

Deputy District Engineer
for the Antilles

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL | # of pages ▸ 2
To R. Badger | From E. Dame
Dept./Agency Fenced Letter dated 11-7 | Phone #
Fax # (914) 232-3972 | Fax #
NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Ms. Penny Feuerzeig
Executive Editor
The VI Daily News
P.O. Box 7760
St. Thomas, W.S.V.I. 00801

R. Badger's office
Jacksonville District Project Mgmt Office
Fort Segarra Files

Dear Miss Feuerzeig:

This is in reference to the article "Army to dig for gas bombs in Water Island" written by Launce Rake published in the VI Daily News of Thursday, 14 November. I would like to add some comments about safety and public participation in Water Island.

The U.S. Army Corps of Engineers has been involved in this project since 1991. Work done on these projects originates from a Congressional mandate to conduct environmental restoration or cleanup of areas formerly used by the Department of Defense (DOD). As in the past, the Army's policy has been to hold public and community meetings to gather public comments and involvement as we inform residents about the status of projects or work to be performed. For Water Island we have held three community meetings and will continue this policy of keeping residents informed.

The first effort at Water Island was the Archives Search Report completed in 1991 followed by several other studies. In 1994 we completed Phase I work of site characterization which involved taking soil samples at several selected sites for evaluation. All the results for these areas tested negative for contamination. Magnetometer surveys were also conducted in selected areas to map underground metallic objects.

Phase II of work will involve intrusive excavation of selected areas to determine the presence of abandoned DOD material. The Army is required and responsible to conduct this

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work with safety as the highest priority. As stated in the article by Mr. Roger Fitzpatrick, technical manager from our Huntsville Engineering Support Center, "if we find what we expect there will not be anything there at all".

Prior to beginning work on Phase II we will hold a community meeting on site, brief local officials and notify the media on the specific activities and timetable. We are still coordinating several elements of work including the safety plan and potential medical support from the Navy Hospital at Roosevelt Roads.

I want to reassure VI residents that U.S. Army Corps of Engineers technical experts working in this project do not foresee any threats to the health and safety of local residents by the work to be conducted. Virgin Islanders and particularly Water Island residents have expressed their interest in the environmental restoration of the area. We look forward to receiving the necessary approvals and complete the work in a safe and expeditious manner. For any questions on the subject, I can be reached at 787-729-6876.

Thank you for the opportunity to provide additional comments on the status of our work.

Sincerely,

Chester D. Fowler
Lieutenant Colonel, U.S. Army
Deputy District Engineer
for the Antilles

Jacksonville District R. Bridger's Office
Project Mgmt Office
Fort Segarra Files

O (GRUTTING FORM SEE 7/2 (9-90))

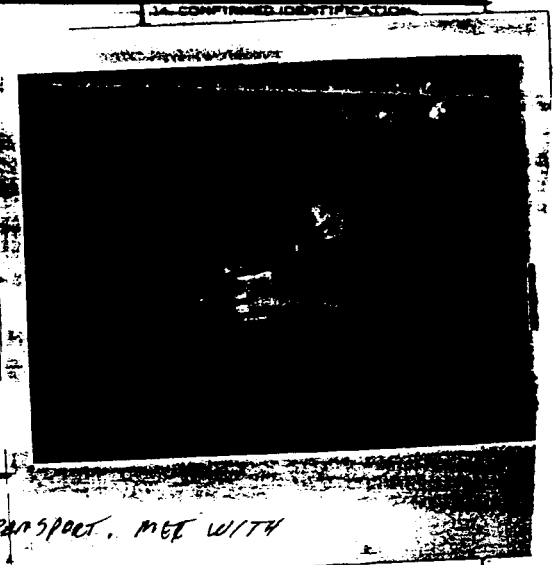
1T NO.	2. CONTROL NO.	3. UNUSUAL ☐
CMT TWO DET ROOSY ROADS C 1008, BOX 3635 D AA 35051		4. ROUTINE ☒

SECTION A: INITIAL INFORMATION

5. TIME/TIME REPORTED	9. INCIDENT LOCATION	11. ITEM(S) REPORTED
1400 / 17SEP96	WATER ISLAND ST THOMAS USVI	BLOCKS OF EXPLOSIVE LINKED TOGETHER WITH DET CORD.
6. REPORTED BY SA HOLFORD, FBI		
7. TELEPHONE NO.	10. POINT JOHN SA HOLFORD 809-774-5393 STT	
8. ADDRESS		

12. PERSONNEL DISPATCHED	13. DATE/TIME	14. CONFIRMED IDENTIFICATION
SHONER CS QUINTON CS BROOKS IC RITACCO IC ROTH XC HASHEM IG1 FISCHER IG1 BAERT)1 MCMURRY 12 ROBERTS 02 REISGIES	1400 17SEP96 A. DPRT 0730 18SEP96 B. ARR 1000 18SEP96 C. COMPL 1330 18SEP96 D. TOTAL MANHOURS 14	

15. DISPOSITION OF ITEMS
TAKEN TO RSL AWAITING DISPOSAL



16. INCIDENT NARRATIVE (Inventory of significant events and processes)

ARRIVED IN ST THOMAS, VIA C-12 TRANSPORT. MET WITH SA HOLFORD. ITEMS HAD BEEN DISCOVERED ON [illegible]. ITEMS WERE FOUND IN A SMALL CAVE IN A ROCK FORMATION. UPON INSPECTION, ITEMS WERE DETERMINED TO BE SAFE FOR TRANSPORT TO ROOSY ROADS. VC-8 SH-3 HELO PROVIDED RETURN TRANSPORTATION. ITEMS WERE PLACED IN RSL AWAITING DISPOSAL.

Jax 35

Jax-040901-035

R. Bridges Jacksonville District
office Project Mgmt Office
Fort Segarra Files

EXECUTIVE SUMMARY
SITE SAFETY SUBMISSION (SSS)
FORMER FORT SEGARRA

Former Fort Segarra (FFS) was used by the U.S. Army Chemical Corps as a tropical test site from 1948 to 1950. Testing of chemical weapons was conducted at FFS under the San Jose Project until 1950. Records indicate that blister agents and choking agents were involved in tests actually conducted at Water Island.

The objective of this site characterization is to locate and identify ordnance explosive waste (OEW) and chemical warfare material (CWM) resultant from these activities. This site characterization is broken into two phases. Phase I (non intrusive investigation) was conducted in early 1994. Results from this phase indicated the need for further investigation in three location. The intrusive investigation of these sites is Phase II of the site characterization. The areas to be investigated in Phase II are:

a. Test Area 5 (TA5). Subsurface anomalies with OEW/CWM characteristics will be subjected to intrusive investigation in this area.

b. Test Area 4-2 (TA4-2). Subsurface anomalies with OEW/CWM characteristics will be subjected to intrusive investigation in this area. In addition, a circular area within TA4-2 suspected of being a burial site will be excavated and investigated.

c. Flamingo Bay Warehouse Area 2 (FB2). Subsurface anomalies with OEW/CWM characteristics will be subjected to intrusive investigation in this area. In addition, a rectangular area within FB2 suspected of being a burial site will be excavated and investigated.

Investigation will consist of selecting anomalies; mechanical and hand excavation; identification of items; disposition of found items; and closure of the site.

This Site Safety Submission (SSS) is a compilation of the work plans and supporting documentation which will be used by government and contractor personnel in the execution of the project. Elements of the SSS are listed in the index immediately following this summary.

Organizations involved in the development and submission of this document include:

a. Corps of Engineers, Jacksonville District (CESAJ): CESAJ is in charge of the overall operations, and is responsible for all planning, policy implementation, and project execution

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b. Corps of Engineers, Huntsville Division (CEHND): CEHND is the technical agent for execution of all on-site operations designed to complete Site Characterization, Phase II.

c. U.S. Army Technical Escort Unit (TEU): TEU is responsible for CWM monitoring and assumes control of the exclusion zone in the event of an emergency.

d. The U.S. Virgin Islands Territory Emergency Management Agency (VITEMA): CESAJ coordinates with VITEMA to provide information on activities and events occurring at the site.

e. U.S. Army Reserve (USAR): The USAR is responsible for providing on-site medical support and stabilization and transport of any traumatic or chemical injury. In addition, the USAR will tasked to provide emergency site security and fire support.

f. Management and Technologies, Incorporated (MTA, Inc.): MTA, Inc. is the contractor responsible for development and implementation of intrusive activities.

PROJECT ORGANIZATIONAL STRUCTURE

SITE SAFETY SUBMISSION

FORMER FORT SEGARRA

The Project Organizational Structure delineates the responsibilities and chain-of-command for the Site Characterization, Phase II of the Former Fort Segarra Project.

The safety and health policy and guidelines for this project are contained in the contractor's Site Safety and Health Plan (SSHP) The SSHP policies and guidelines are designed to ensure protection of site personnel, the environment, and the local community. All site operations will be performed in accordance with the SSHP and all applicable Federal, territorial, and U.S. Army Corps of Engineers laws and regulations.

Organizations involved with the Site Characterization, Phase II of this project and a brief description of their responsibilities and reporting chain-of-command include:

a. Corps of Engineers, Jacksonville District (CESAJ): CESAJ has responsibility for the overall project operations. CESAJ is responsible for the planning, policy implementation, and project execution. CESAJ reports to Headquarters U.S. Army Corps of Engineers through South Atlantic Division.

b. Corps of Engineers, Huntsville Division (CEHND): CEHND is the technical agent for this project with responsibility for the execution of all on-site operations designed to complete Site Characterization, Phase II. CEHND reports to the Jacksonville District for all elements of this project.

c. U.S. Army Technical Escort Unit (TEU): TEU is responsible for the monitoring of the CWM and will assume control of the exclusion zone in the event of an emergency. TEU reports to the Huntsville Division.

d. U.S. Virgin Island Territory Emergency Management Agency (VITEMA): VITEMA will coordinate with CESAJ to provide information to the public on activities and events occurring at the project site.

e. U.S. Army Reserve (USAR): The USAR is responsible for providing on-site medical support, stabilization and transport of any traumatic or chemical injury. In addition the USAR will be tasked to provide emergency site security and fire support.

f. Management and Technologies, Incorporated (MTA, Inc.): MTA, Inc. is the contractor for this project. MTA, Inc. is

responsible for development and implementation of operations to complete Site Characterization, Phase II. MTA, Inc. reports to CEHND.

The description above is outlined on diagrams at the end of this section.

To comply with the requirements for safety and health inspections, safety meetings, and accident investigation and reports the contractor will initiate the following:

a. Daily and Weekly Site Inspections: The Site Safety Officer (SSO) will conduct daily inspections of the project site with results recorded in the Safety Log. Results will also be communicated to the Senior UXO Supervisor. Weekly, the SSO will conduct a compliance audit of the site and record results of the audit. Copies of the inspections will be forwarded to the contractor's Safety and Health manager (SHM) and Certified Industrial Hygienist (CIH).

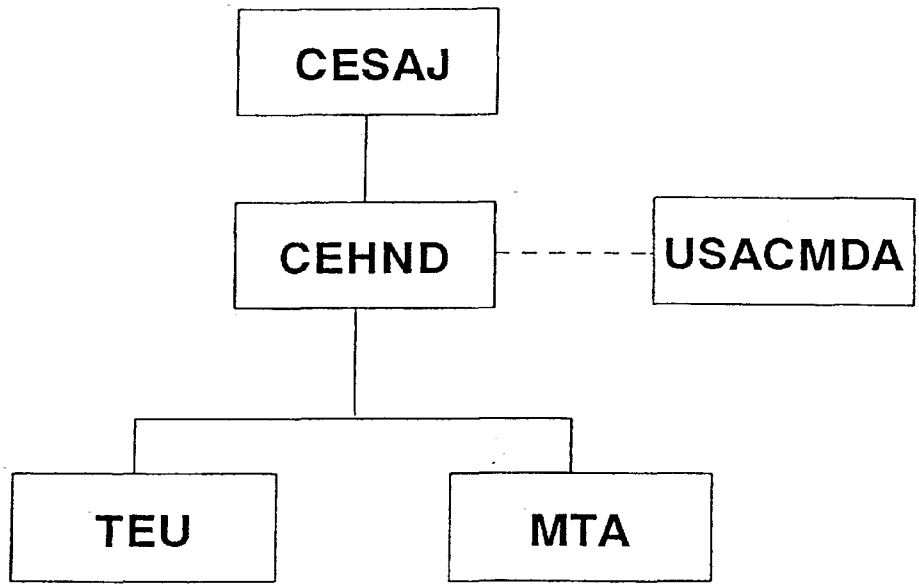
b. Daily Tailgate Safety Meetings: At the start of each work day all on-site personnel (contractor, subcontractor, and government) will be given a safety briefing by the SSO. The briefing will include anticipated hazards that may be encountered during the day's activities and measures taken to address the anticipated hazards. As required, the SSO will address site specific safety topics and discuss these in detail. Attendance is mandatory and documentation of meetings will be kept on the contractor's Training Record.

c. Accident Investigations and Reports: In the event of an accident/injury on the project site, the USACE ENG Form 3394 shall be completed. The form shall be forwarded within two (2) working days to the Contracting Officer or Contracting Officer's Representative (CO/COR). In addition, if the OSHA 200 Form needs to be completed, the contractor shall prepare the form and forwarded to the appropriate agency.

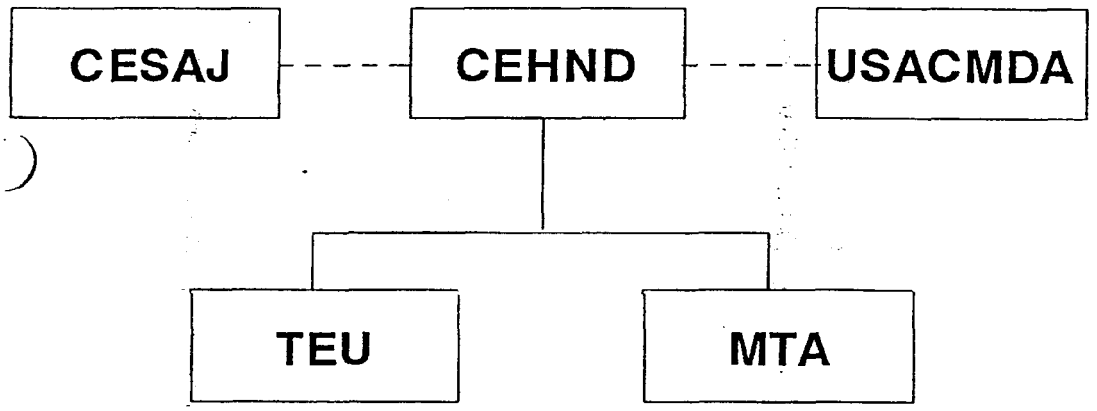
d. Visitor Training: Site visitors are defined as personnel (1) who are not employed at the project site, (2) who do not routinely enter restricted work areas and, (3) whose presence on-site is of short duration, (i.e., 1 or 2 days). Site visitors may include Corps of Engineers personnel, political representatives, auditors and inspectors from various regulatory agencies. The SSO will be responsible for informing visitors of site conditions and protective measures taken to ensure project safety in accordance with the contractor's SSHP for this project.

Inter-Agency Agreements for medical, security, and fire support are contained in Annex B of the Protective Action Plan.

FORMER FORT SEGARRA
OVERALL PROJECT MANAGEMENT



FORMER FORT SEGARRA
PROJECT ORGANIZATION
WITHIN THE EXCLUSION ZONE (EZ)



PMP Draft Fort Segarra Files Jacksonville District 16 April 1993 PM office

SECTION I - INTRODUCTION

1. Purpose This Project Management Plan (PMP) was developed for the Ordnance and Explosive Waste (OEW) project at the Former Fort Segarra (FFS) site on Water Island, St. Thomas, U.S. Virgin Islands. This PMP will address the Site Investigation (SI), Remedial Investigation/Feasibility Study (RI/FS), Remedial Design (RD), and Remedial Action (RA) (OEW Removal) phases of the approved project. The PMP will identify the responsibilities of the Jacksonville District (CESAJ), Huntsville Division (CEHND), U.S. Army Technical Escort Unit (TEU), and the U.S. Army Chemical Material Destruction Agency (USACMDA). The USACMDA Program Manager for Non-Stockpile Chemical Materiel was assigned the Fort Segarra project as the result of the Chemical Warfare Materiel (CWM) considerations at the project site.

On 26 August 1992 the South Atlantic Division Commander assigned the Former Fort Segarra - Formerly Used Defense (FUD) site to the Jacksonville District. The District Engineer assigned the project to the Deputy District Engineer for Project Management. The Project Management Branch is responsible to manage the project in accordance with the Life Cycle Project Management principles and regulations.

The Jacksonville District Project Manager (CESAJ-DP-I) will organize and oversee the activities of the elements involved from the Jacksonville District. He will also coordinate with CEHND, USACMDA, and TEU on their activities ensure all efforts are directed at accomplishing the site investigation any any remediation required in an expedient manner. The project manager will serve as the primary point of contact with local officials and for interagency coordination including issues relating to public affairs.

The PMP is not intended to be all inclusive nor to anticipate or include all possible changes to the project during its continuing development. Rather, it is a dynamic document that will require change and updating as the project progresses through its completion.

The Jacksonville District is preparing a revised Inventory Project Report (INPR) addressing Hazardous and Toxic Waste (HTW) issues for the FFS site. The PMP may be revised to include project activities in support of any HTW project that may develop.

2. Project Authorization Authorization of this project is contained in the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS). As the result of the DERP-FUDS legislation, USACE was tasked with the management of the environmental cleanup of all FUDS locations, to include overall program responsibility for Hazardous and Toxic Waste (HTW) management. Within the USACE, the Huntsville

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Division (CEHND) is tasked to support the responsible USACE Geographical District at all sites where ordnance and explosive waste are involved. This also includes sites where chemical warfare material (CWM) was utilized. Specialized HTW Districts are given the responsibility of conventional hazardous waste cleanup for these sites.

Under the DERP program the FFS has been identified as a site requiring OEW investigation and clean-up support. Huntsville Division (CEHND) was assigned the Mandatory Center of Expertise (MCX) and Design Center for Explosive Ordnance (EXO) on 5 Apr 90. EXO has now been labeled as Ordnance and Explosive Waste (OEW). All work at the FFS will be performed in accordance with the Management Plan for Ordnance and Explosive Waste (OEW) Mandatory Center of Expertise and Design Center (CEHND 1105-3-9) and the Life Cycle Project Management (LCPM) regulations for DERP-FUDS contained in ER-5 dated 30 September 1992.

The Department of Defense (DOD), in a letter signed by the Deputy Secretary of Defense on 13 March 1991, designated the Secretary of the Army as the Defense Executive Agent for the destruction of all DOD chemical warfare-related material. Within the Department of the Army (DA), the Assistant Secretary of the Army (Installation, Logistics and Environment) (ASA (I,L&E)) is responsible for chemical material destruction.

The USACMDA was established to carry out that mission for the ASA (I,L&E). Within USACMDA, the Program Manager for Non-Stockpile Chemical Material (PM NSCM) is responsible for identifying recovered chemical munitions, assessing sites with possible buried chemical weapons; coordinating the transportation of recovered weapons to sites where they can be destroyed; and destruction of all non-stockpile materials contaminated with chemical agents. Currently, non-stockpile materials include chemical agent contaminated containers, chemical warfare production plants, chemical warfare wastes from past disposal operations, buried and range recovered munitions, reclamation and destruction of chemically contaminated structures and associated equipment. Currently this PMP, only addresses buried/recovered munitions and CWM wastes from past disposal operations at the FFS site. The PMP for the FFS project will be revised as necessary to incorporate the findings of the updated INPR which will addresss the HTW considerations resulting from the DOD activity at the FFS.

Within the U.S. Army Chemical Biological Defense Agency (CBDA), the Technical Escort Unit (TEU) is responsible for emergency destruction of chemical ammunition, and support for disposal and/or transportation of chemical warfare material, as required by USACMDA. LMPA

3. Project Background In June 1950, the U.S. Army initiated a program to dispose of (excess) U.S. Government property no longer being used for defense related purposes by the Department of Defense. Recipient of the FFS site and the property at Water Island was the US Department of Interior (DOI).

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), originally enacted in 1980, was amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and mandated that property containing hazardous and toxic wastes or ordnance was the responsibility of the entity contributing to the contamination. Even though DOD no longer has title to the property, CERCLA and SARA define the US Government as a potential responsible party, provided that the U.S. Army was determined to be at least partially the source of the contamination.

The following is a brief Site History and Description:

a. The FFS is located on Water Island which is located in the St. Thomas Bay, between the East and West Gregerie Channels, south of the city Charlotte Amalie, St. Thomas, US Virgin Islands (see Appendix A). The FFS site has historically been stated as being approximately 500 acres which was acquired from the East Asiatic Company/West Indian Company through condemnation in June 1944. Water Island was acquired for a coastal defense installation known as Fort Segarra. The Department of the Army (DA) was constructing the coastal defense installation when World War II ended and construction was halted.

b. The Army's Chemical Corps moved its San Jose Project (tropical test site) from Panama to the Virgin Islands in 1948. Between 1948 and 1949, the Chemical Corps upgraded the previously constructed facilities. A review of lists of approved test plans shows that early tests on Water Island focused primarily on blister (mustard) and choking (chlorine, phosgene, and cyanogen chloride) agents, and that later tests were planned to shift to captured German munitions and nerve agents. In 1949, the TEU brought unidentified chemical munitions to the Virgin Islands. By late 1949, the Chemical Corps was dissatisfied with the Virgin Islands location and decided to shift operations to Dugway Proving Ground, UT even though chemical testing was ongoing. In 1950, the Virgin Islands project was terminated and chemical munitions removed by TEU. The items removed were E46 chemical bombs (modified 115 lb. M70 bombs filled with nerve agent GA ~~or possibly GB~~? and E52 bombs (modified T3E1 125 lb. bombs filled with GA ~~or possibly GB~~). SAIC (comment)

c. The following sites are known or thought to have been used for ordnance and chemical weapons testing activities:

(1) Test Area 1. This area is located on the northwest shore of Water Island on Ruyter Bay, just north of Carolina Point. The area is currently occupied by a home and small parking garage. Two ammunition bunkers are located nearby.

(2) Test Area 2. This area is located on the north side of Providence Point adjacent to Phillips Landing. The Test Area was dredged out several years ago in preparation for a small harbor, but was subsequently filled in again.

(3) Test Area 3. This area is located at the point of Druif Bay, and is just east of the Water Island Hotel beach area. It has been reported that this area was excavated for fill in 1981 and subsequently refilled with soil from another location on the island.

(4) Test Area 4. This area is located to the south and southwest of the Flamingo Bay Harbor. The site straddles the road from the deep-water dock. The area north of the road is relatively clear of debris. However, the area south of the road is the island junk yard with about 50 abandoned vehicles.

(5) Test Area 5. This area is located south and southeast of the Flamingo Bay Harbor and is south of the road from the deep-water dock. This area was used to accumulate and burn debris from Hurricane Hugo in 1989. There is a substantial amount of metallic debris on the ground.

(6) Test Area 6. This area is located on the eastern shore of the southern part of the island, due east of Flamingo Bay. This site has been extensively developed along the ridge line, and the lower parts of the site are along a rocky shore.

(7) Test Area 7. This area is located on the north part of the island and extends from the point of Sprat Bay northeast to East Greggerie Channel. The northern part of the Test Area is covered with a pond of red-colored water.

(8) Test Area 8. This area is now covered by the Water Island Hotel. The hotel has not been repaired or occupied since its destruction by Hurricane Hugo.

(9) Flamingo Bay Landfill and Warehouse Area. A metal warehouse was constructed by the Water Island Hotel near the deep-water dock for storage of vehicles and materials. The warehouse was constructed on an area filled in for this purpose. The area south of the warehouse was the site where chemical bombs were discovered in 1966. The bombs were discovered while a dragline was removing unsuitable "Elephant Muck" material. After this discovery, the site was filled in and covered with borrowed soil to a depth of about three feet. Debris, abandoned vehicles, and scrap now cover the site.

(10) In addition to the Test Areas and the landfill site, salt water tidal pools around Water Island are a primary potential target for dumping of OEW and chemical agent filled ordnance.

d. The Army turned over Water Island to the Department of the Interior (DOI) by an indefinite revocable permit. The DOI assigned the permit to the St. Thomas Development Authority (STDA) in 1951. The STDA then leased Water Island to Water Island, Inc., a local development corporation. On 11 Jul 1952, Public Law 511 (82nd Congress) authorized the transfer of Water Island from the DA to the DOI. On 10 Dec 1952, the DOI executed a new lease to the Water Island, Inc., which proceeded to develop the Island into a resort with many subleases. This lease expired on 31 December 1992. The Island is currently the site of a large tourist resort hotel (destroyed by hurricane "Hugo" in 1989) and is also inhabited by about 300 people during the winter season. Many cruise ships call in St. Thomas with many docking near Water Island.

e. In 1966, during the construction of the Flamingo Bay warehouse, a crew employed by the lessee, Water Island, Inc., uncovered several large objects that resembled bombs. An Explosive Ordnance Disposal (EOD) team from Roosevelt Roads Naval Base (San Juan, Puerto Rico) identified the objects as M-70/M-78 series chemical ordnance bombs. The EOD team indicated that this site had been used by the Army as a chemical ordnance disposal area. The EOD team vented the bombs and warned the construction crew not to excavate in this area again. The lessee notified the DOI of the problem but no further investigations have been performed. No known injuries or other problems have occurred at this site. The site is on the southwest part of the Island near Flamingo Bay along the seashore and is known locally as the Flamingo Bay Landfill. It is an unstable area subject to storms and high tides.

4. Status Update.

a. In October 1985, the DOI sent a memo to Mr. Lewis D. Walker (DA Deputy Assistant Secretary for Environment, Safety and Occupational Health) requesting that the Army determine if Water Island was ever used for chemical warfare testing or similar activities. No correspondence can be found of Mr. Walker's reply, but subsequent to this DOI memo, Fort Segarra was added to the FUDS Inventory for a future Preliminary Assessment (PA).

b. In the spring of 1989, Congressional Delegate Ron de Lugo of the Virgin Islands and Chairman of the House Interior Subcommittee on Insular and International Affairs, introduced legislation (HR 1345) which would authorize the Secretary of the Interior to

transfer title of Water Island to the Government of the Virgin Islands. Status of this legislation is unknown in March 1993.

c. In the summer of 1989, Jacksonville District (CESAJ) commenced work on the Fort Segarra Inventory Project Report (INPR). The final INPR was completed in June 1990, and forwarded by CEHND to HQUSACE for approval. On 20 Aug 1990, HQUSACE approved the INPR and authorized CEHND to proceed (subject to availability of funds) with the investigations and any removal actions required. On 24 Oct 90, CESAJ informed DOI of the approval of the INPR and the fact that the Corps would be commencing cleanup operations in the near future.

d. CEHND personnel met with TEU and Department of the Army (DA) on 19-20 Dec 90, concerning their need for TEU assistance at Fort Segarra. LTC Doc Bishop, Director of the CWM Program at the DA, indicated that the TEU was unable, at that time, to provide transport and storage services for any CWM recovered at FFS. ~~The reasons for this are very complex~~. Recently within DA and the Army Materiel Command (AMC), the policy seems to have shifted to calling recovered CWM a hazardous and toxic waste (HTW) under EPA regulations. This policy shift creates many complex problems:

(1) By calling CWM an HTW item, CWM must be transported by an EPA licensed transporter and manifested as HTW. The TEU is not an EPA licensed transporter and private contractors are not allowed by Army regulations to transport CWM. Simply put, this means that any CWM recovered in the future must remain on-site where discovered.

(2) There are only seven installations in the Continental United States (CONUS) that are authorized to store CWM. However, the commanders of these seven installations ~~refuse~~ to accept any CWM manifested as HTW as this would violate their EPA Part B permits concerning the storage of HTW generated from off their installations.

(3) The ~~EPA~~ DOE would be the lead agency, ~~not DOD, concerning the~~ statutes governing transport and storage of CWM-HTW. DOD would no longer control the CWM which is contrary to Army regulations.

(4) The above seven installations have nearly reached their physical capacity to store recovered CWM even though AR-50-6 says they must accept the CWM. These installations will remain at or near capacity until such time as the Chemical Demilitarization Program reduces the CONUS military stockpile.

(5) Finally, Johnston Island (JI) can no longer accept CWM for storage and demilitarization from any areas of the world other than the Pacific Basin. This is a result of the "Venatu Agreement" where President Bush agreed with the Government of the Solomon Islands not to accept at JI any CWM found outside the Pacific Basin. ~~The first three issues create "administrative gridlock" since the requirements of the Army's CWM program and the EPA's HTW statutes cannot be met concurrently.~~

SEE SAIC COMMENTS

e. On 9 Jan, 1991, CEHND formally requested in writing, Commander Army Material Command (AMC) and TEU support to cleanup at FFS. AMC was provided all of the pertinent background information and the reasons for the urgency.

f. CEHND and CESAJ briefed the Virgin Islands Governor, Alexander Farrelly, on 21 Mar 91, concerning the status of the FFS (Water Island) project and the U.S. Government's plans for eventual remediation of the site, as necessary. An overview of the CEHND Ordnance and Explosive Waste (OEW) Program was also presented. Governor Farrelly requested that a search of military records be performed on all Formerly Used Defense Sites in the U.S. Virgin Islands.

g. On 12 April 1991, CEHND, contracted with Ebasco, Inc. to perform an Archives Search of Fort Segarra and all other FUDS located within the U.S. Virgin Islands. The Archives Search Report was completed on 3 Jul 91. The history of Fort Segarra and the nature of the testing conducted there are contained in the Archives Search Report. The report provided a Risk Assessment Code (RAC) of 1 for the Flamingo Bay landfill area. Based on the RAC 1 scoring, CEHND determined that an Interim Remedial Action project to install a fence around the Flamingo Bay landfill site was necessary.

h. On 18 Jul 91, CEHND and HQUSACE, briefed Congressional Delegate Ron DeLugo on the status of the Water Island project. The findings of the recently completed Archives Search of the FFS and other FUDS in the U,S. Virgin Islands were discussed. The primary concern emphasized by CEHND was the RAC 1 (Flamingo Bay Landfill) site on Water Island.

i. On 14 Aug 91, the Governor was briefed by CEHND and CESAJ on the results of the Archives Search. A press release was issued to the public advising of the issuance of the Archives Report. Later that day representatives from CEHND and CESAJ held a public meeting on Water Island and briefed the residents on the report. They were also informed of the plans to fence the Flamingo Bay Landfill area and to complete topographic surveying of Water Island.

j. A contract to fence the Flamingo Bay landfill site and to perform topographic surveying was awarded Ebasco, Inc., on 14 Aug 91. Installation of the fence was completed on 4 Oct 91, and topographic surveys were completed on 14 Nov 91. The Flamingo Bay Landfill site and test areas 2, 4, 5, 6, and 7 were mapped at a scale of one inch equals 30 feet (1"=30'). In addition, the entire Water Island was planimetrically mapped at a scale of one inch equals 200 feet (1"=200').

k. Another contract was awarded to Ebasco, Inc. on 27 Sep 91, to prepare concept ordnance remediation work plans. The final concept work plans were completed on 16 Mar 92. These plans will be provided to the remediation contractor for incorporation into the final plans for the FFS project.

l. The Governor's Press Secretary, Mr.James O'Bryan, was briefed by CEHND and CESAJ on 4 Dec 91 regarding the status of Water Island project. On the same day a meeting was held with the residents of Water Island. For the benefit of the island residents that were not at the 14 Aug 91 meeting, the Archives Search Report was discussed. The status of CEHND remediation contracting action was also discussed. The residents were given an opportunity to obtain copies of the recently completed topo and planimetric maps.

m. On 3 Feb 92, CEHND briefed the CESAJ Commander, COL Salt, on the history and status of the Water Island project.

n. On 1 Jun 1992 a memorandum from General D. Reimer, Vice Chief of Staff, to the Chief of Engineers and others, declared the Fort Segarra and the Raritan Arnesal projects as CWM pilot projects with high priority in the DA.

o. In June 1992, CESAJ, CEHND and MTA, Inc. visited Water Island for the contractor's pre-proposal site visit. Brief meetings were held with Mr. James O'Brian, Mr. Bob Bunn, DOI territorial representative, and with several local officials.

p. In August 1992, the new Non-Stockpile Program Manager from USACMDA visited all former CWM test areas on Water Island. Again brief meetings were held with Governor's staff (Mr. O'Brian), DOI representative, and DPNR. Staff personnel from CEHND, USACMDA, CESAJ, CESAD, and HQUSACE accompanied the new Non - Stockpile Program Manager.

q. On 26 Aug 92 Project Management for the FFS project was assigned to CESAJ by the Commander, CESAD.

r. In September and October 1992, the National Park Service conducted cultural resources field investigations on Water Island. Twelve historic and archeological sites were identified during this extensive study. Some of the 12 identified sites are located in or near areas that may be investigated for the presence of chemical warfare material (CWM) as part of this project.

s. On 30 Oct 92, the first FFS project coordination meeting was held at the Jacksonville District office. Representatives from CEHND, USACMDA, CESAD and

CESAJ briefed Col Salt on status of project and roles and responsibilities of each organization.

t. A follow-up project scoping meeting was held in Atlanta, GA on 11-12 Nov 92. Representatives from CEHND, USACMDA, and TEU provided a forum for the CESAJ Project Manager to initiate the development of the PMP.

u. On 14-15 January 1993, a meeting was held in Huntsville, AL with all parties to discuss comments on the DRAFT plans for non-intrusive site characterization activities by the CEHND contractor, MTA, Inc..

5. Project Description The proposed project activities will concentrate on the areas where chemical warfare material (CWM) testing exercises are suspected to have been conducted in the late 1940's and early 1950's. These areas have been identified through initial archives searches. Other areas suspected of containing conventional OEW will also be investigated. Interim Removal Actions for OEW have been initiated to address areas which present an imminent and substantial danger to the public. The CEHND approach to the OEW problem is based on removing the imminent and substantial danger to the public. An Interim Removal (Remedial) Action (IRA) was performed at the Flamingo Bay landfill site by fencing the one acre (approx.) area. This action was initiated at this area since it was given a Risk Assessment Code (RAC) 1, based on the finding of ordnance during the 1966 construction in the area.

6. Project Management The Commander, South Atlantic Division (CESAD) has tasked the Jacksonville District (CESAJ) with the responsibility of Project Management for the project. In this regard, CESAJ will correlate the requirements of all responsible organizations and develop the FFS Project Management Plan (PMP). A comprehensive network of all program activities to be performed by CEHND, USACMDA, CESAJ, TEU, and others has been developed by CESAJ and is included as an Appendix C to the PMP. Primary responsibility for matters relating to Public Affairs will be CESAJ. In addition, the CESAJ Antilles Office in San Juan, Puerto Rico will be the primary point of contact for any matters involving the coordination and input of the local and federal governmental agencies in St. Thomas, U.S. Virgin Islands (USVI).

The Corps of Engineers will act as the lead agency for the project initiating such actions as necessary in coordination with the supporting agencies to carry the project through remedial action (RA) (removal). As such, the Corps of Engineers is primarily responsible for the completion of the (RI/FS), the preparation of design documents, and the advertisement, award, and supervision and administration of the RA contracts for all items except those designated as the responsibility of supporting agency. The responsible

Authorized Contractor Officer (ACO) and their contractor will be responsible for obtaining all permits required for any phase of the project. The supporting agencies may negotiate with the Corps of Engineers and provide funding for any actions required as a part of other contractural arrangements. This items of work will be within the terms and conditions of the Memorandum of Understanding between USACMDA, USACE, and USACBDA.

7. Individual Project Manager Within the Corps of Engineers, project planning, engineering, design, and implementation is being managed under the Life Cycle Project Management concept. An Individual Project Manager (IPM) oversees the project through completion of Remedial Action (Removal). The IPM's role in the project implementation is to:

a. Develop project schedules, budget, and funding requests based on inputs from other Corps of Engineers elements and the supporting agencies.

b. Serve as primary point of contact between the supporting agencies and the Corps of Engineers.

c. Ensure that project development continues on schedule within available funding.

d. Ensure that changes or refinements to the proposed plan or schedules are fully coordinated with higher headquarters within the Corps of Engineers and with the supporting agencies.

e. Ensure that various project products meet the specified objectives and needs of both the Corps of Engineers and the supporting agencies.

f. Ensure that project funding for subsequent stages is requested and programmed in accordance with the overall project schedule.

g. Report to the Deputy District Engineer for Project Management (DDE(PM)), the District's Project Review Board, and the supporting agencies on the status of the project; and,

h. Make adjustments as necessary to this document to keep it current and reflective of the project as it progresses through the various stages.

SECTION II - SCOPE OF WORK

8. Scope of Work

a. The current strategy will include the non-intrusive site characterization activities at selected areas where CWM testing is suspected to have been conducted. This non-intrusive work will include a combination of the following types of activities:

(1) shallow soil samples
(2) magnetometer surveys
(3) ground penetrating radar
(4) vegetation surveys
(5) shallow groundwater samples

b. The removal/relocation of significant non-Department of Defense (DOD) debris will be required prior to conducting the site characterization activities. The Department of Interior has indicated that it will cost-share in the expense of disposing of this non-DOD debris. A Memorandum of Understanding (MOU) between the DOI and CEHND will describe the responsibilities, and actions required to complete this mission. Since much of the debris is abandoned motor vehicles it will be necessary to address hazardous and toxic waste (HTW) issues.

c. Complete details of these plans will be provided by the CEHND contractor, MTA, Inc., in Draft and Final form prior to start of any on-site activity. After the plans are approved by CEHND, CESAJ, USACMDA, and TEU, they will be fully coordinated with all Federal and local agencies as well as the general public.

d. Full compliance with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA), as amended, will be completed prior to start of any non-intrusive or intrusive activity on a particular site. All field investigations, including, but not limited to soil samples (shallow or deep), water samples (shallow or deep), and clearing of vegetation, will be fully evaluated by CESAJ and CEHND to determine the impacts of the proposed actions on the environmental or cultural resources of any particular area to be investigated. This information will then be coordinated by CESAJ with appropriate Federal and territorial agencies.

e. The results of this non-intrusive activity will determine the need for additional site characterization studies to include more intrusive work to verify subsurface anomalies that could be CWM or OEW. No intrusive activity will be allowed until all required plans have been approved by the appropriate Federal, territorial agencies and authorities.

Reviewed

f. Environmental Mitigation: The proposed actions during the site characterization phases should not require any mitigation plan. However, future remediation plans, if necessary, will be closely evaluated and will provide for environmental mitigation where necessary.

g. Cultural Resource Work: Given the potential for adverse effects to the significant cultural resources on Water Island, a cultural resources mitigation plan will be required for site investigations in areas that have been identified as containing significant cultural or archeological resources. Each area to be investigated for CWM will evaluated regarding the identification of cultural resources and the need for a mitigation plan will be determined before starting any non-intrusive (or intrusive) site characterization activities or remedial actions required.

h. The following work plans will require approval by CEHND prior to start of any work by the CEHND contractor, MTA, Inc.:

(1) Site Specific Work Plan (SSWP)
(2) Safety, Health and Emergency Response Plan (SHERP) SSHP
(3) Quality Control (QC) Plan
(4) Chemical Data Acquisition Plan (CDAP)
(5) Sampling, Analyzing, and Relocating of Non-DOD Debris
(6) Property Management Plan
(7) Defense Reutilization Marketing Office (DRMO) Turn-in Plan
(8) Hurricane Preparedness, Standard Operating Procedure (SOP) #4

i. USACMDA, TEU, and the Center for Disease Control (CDC), National Environmental Health Center (NEHC).will monitor the development of the work plans and provide recommendations to CEHND regarding the approval of such plans.

j. CESAJ will assume the lead in developing the environmental documentation and agency coordination necessary to meet NEPA and cultural resources requirements. Depending on the findings of the site characterization activities, additional environmental coordination and documentation may be required if any OEW or CWM material is located.

k. USACMDA shall be designated as the generator, on behalf of DOD, and sahll be responsible for the storage, shipping, marking, manifesting, and disposing of any CWM material.

USACE THIS IS A BIG PROB. AREA

9. **REAL ESTATE REQUIREMENTS**

No real estate will be required. On 3 Jan 91, CEHND received from CESAJ the Rights-of-Entry (ROE) to enter DOI and lessee property to perform site investigation and clean-up work. The ROE was to expire on 14 Sep 1991 but was re-executed by CESAJ on 20 Aug 91 with a new expiration date of August 1993. This expiration date will need to be extended again as additional time will be required to complete the investigations and required remedial actions where necessary.

10. **PROJECT IMPLEMENTATION**

The environmental restoration process is normally a four step process. The first step is a research into past operations. This is accomplished through a Preliminary Assessment (PA) which involves a records search and inspection to identify areas/sites of potential CWM contamination. The second step in the process is a RI/FS leading to the documentation of decisions reached during these investigations/studies. This step involves a field investigation to determine the extent and nature of contamination and an evaluation of remedial alternatives leading to the selection of an alternative in the document of decision. The third step in this process consists of RD and RA. These activities address the remediation of the CWM areas. They can include removing CWM from the site for treatment or disposal, containing the CWM on site, and treating the CWM on site. Remedial actions are the final cleanup actions taken after the documented decision is issued. The final phase is the site closeout phase. During this phase which may be accomplished after any of the other three phases if appropriate, the decision is documented, Federal, State and local authorities are informed of the decision, and public notice of the closeout is accomplished.

11. **ASSUMPTIONS**

a. Prior to any restoration activity being conducted at an actual or suspected CWM location, preliminary assessments and remedial investigations of the suspected site are required to determine the nature of contamination. The remedial investigations along with the associated survey and sampling work and documentation is the responsibility of the USACE. The characterization efforts will provide information for the development of the overall plan for the remediation of the site.

b. The activities associated with the physical removal of CWM from the site, or temporarily storing the CWM on site, are referred to as site operations/remedial activities. The TEU and USACE is responsible for the excavation/removal of the CWM from the excavation site and placing the CWM into specialized containers procured by USACMDA. If the CWM is to be kept in a temporary holding facility, TEU and USACE will transport the items to the holding facility and turn them over to USACMDA who will maintain and

(IN CONJUNCTION WITH CESAJ

provide security for the holding facility site. If the decision is made to destroy the CWM on-site, USACMDA will be responsible for all destruction activities.

c. If the excavated CWM cannot or should not be treated on-site, transportation of the material to a selected location will become necessary. Prior to transportation, an EIS must be prepared and completed, with a record of decision that identifies transportation as the selected option. Additionally as recovered CWM are to be treated as hazardous waste, environmental documentation must be received for transportation, storage and destruction of the CWM. USACMDA, with the support of CBDA, is responsible for all aspects of the off-site transportation of CWM. CBDA will obtain the necessary environmental documentation for transporting the CWM as hazardous waste including manifesting on behalf of DOD. All transportation activities will be completed in accordance with Public Laws 99-121 and 91-441.

d. USACMDA and CBDA is involved at FFS because there is known or suspected CWM.

e. At FFS, CESAJ has responsibility for overall management of CWM contaminated site remediation. CESAJ and CEHND is accountable to ensure security, emergency response, chemical and explosive safety, environmental compliance, medical support, chemical surety, quality assurance, public affairs, and other activities necessary for the safe, efficient destruction of CWM are effectively coordinated and properly executed. The USACE shall attempt to secure these services through agreements with local agencies. However, as the USACE does not have staff to provide all of the necessary technical support, USACMDA and CBDA will provide specialized CWM related technical support, as required.

f. USACE and USACMDA, through their respective site contractors, will establish a comprehensive Occupational Health Program (OHP) in compliance with applicable Occupational Safety and Health Administration (OSHA) and DA standards to prevent, diagnose, and treat exceptional illnesses and injuries sustained in the performance of official duties. The contractor will incorporate all personnel directly supervising, supporting, or conducting NSCM operations into the OHP.

g. Contingency Army Medical Department response capability for chemical accidents or incidents will be provided on a resource available basis. The scope and extent of such back-up medical support will be established in a memorandum of agreement between USACE, USACMDA, and the U.S. Army Health Services Command.

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Territory office hit by report

Delegates disagree with study's solution

By DAVID JUDSON
Gannett News Service

Feb 11 94
VI Daily News

WASHINGTON — A scathing new report released Thursday by Congress' watchdog office paints the federal government's territories agency as adrift, mismanaged and possibly in violation of the law.

The report describes territorial policy as all but nonexistent. It suggests widespread financial waste by the government caused by overlapping programs with officials unaware of one another's existence.

"Federal government lacks clear goals and objectives for insular areas," reads the headline over one chapter in the 32-page report by Congress' General Accounting Office.

That chapter then goes on to detail how a law passed by Congress in 1985 specifically required the secretary of the Interior to develop by 1987 a detailed policy plan for non-contiguous U.S. Pacific possessions — including Hawaii and Alaska.

None of that has been done. The GAO study notes that "according to an Interior official, the new administration is looking at relations with the insular areas but

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page 1 of 2

STUDY: Delegates suspicious of study's purpose

(Continued from page 1)

has no plans to report in the near future" as required by law.

Among evidence of waste and mismanagement by OTIA and other federal agencies, the GAO notes that "due to a lack of coordination, Department of Commerce officials involved in trade promotional activities for the Pacific insular areas were unaware of videos promoting tourism and investment in these areas produced with Department of the Interior grant funds."

The report also notes that 20 federal agencies spend grant money in the territories, and no one in the federal government knows the total federal spending in the territories.

"There is no comprehensive listing of all federal program spending on economic development in the insular areas," the study said.

Delegates from the territories generally agreed with the report's assessment of past federal policy and the performance of OTIA. They questioned, however, the GAO's central recommendation for the future.

The cure, GAO suggests, is to create an OTIA-run insular affairs committee as proposed by Interior and run within the White House Domestic Policy Council.

"The report seems to have the design of jump-starting a proposal that had stagnated," said Delegate Robert Underwood of Guam. "That the GAO didn't even consult the delegates, and that they didn't even know about the report, just stinks."

"The only people the GAO talked to for this thing were in OTIA, and they still conclude the OTIA is full of problems," said V.I. Delegate Ron de Lugo. "We are not going to support anything that enhances the role of OTIA — quite the opposite."

Delegates have argued that while some central coordination for territorial matters is sorely needed, enhancing the power and role of the Interior Department agency widely viewed as incompetent is not the answer. Republican Rep. Elton Gallegly of California, the ranking member of the House insular panel, introduced legislation last week that would abolish OTIA altogether. De Lugo said Thursday he may co-sponsor that bill.

Among the hundreds of similar reports produced each year by GAO, the one issued Thursday is unique in that it does not specify who requested it and is labeled as a report to Interior Secretary Bruce Babbitt.

As an arm of Congress, GAO has no mandate to produce reports for members of the executive branch. Such investigations sought by Cabinet secretaries are traditionally carried out by the solicitor general within each department.

The explanation GAO officials offered to delegates Thursday was that the investigation originally was requested last year by Allen Staymen, then the chief territorial staffer to Sen. J. Bennett Johnston of Louisiana. Subsequently, Staymen left Johnston to take a job as deputy assistant interior secretary, the No. 2 job at OTIA.

When Staymen changed branches of government, the congressional researchers followed him. So did the vision of proper territorial policy, which first was part of legislation proposed by Johnston, later was policy proposed by OTIA and on Thursday was the policy being suggested by GAO.

"It's pretty Machiavellian," de Lugo said. "But it's also very transparent."

page 2 of 2

Water Island sale hits roadblock

By PETER EISLER
Gannett News Service

WASHINGTON — The Interior Department's new message to Water Island residents who want to buy the federal land on which they've built their homes is: "No Sale" — at least for now.

The Clinton administration has put on hold efforts to sell off the island property so Interior officials can reconsider whether the V.I. government is getting a fair deal.

The delay comes in response to complaints by V.I. officials that the plan, initiated last year by the Bush administration, does not take into account the territory's interests.

The complaints were raised with Interior Secretary Bruce Babbitt by V.I. Delegate to Congress Ron de Lugo and Sen. Bennett Johnston, D-La., chairmen of the House and Senate subcommittees that oversee territorial matters.

"The new secretary agreed not to finalize any contracts, enforce any deadlines or take any other irrevocable action until further review had been made," said Larry Morgan, Interior's director of legislative and public affairs.

"We will not be taking any actions with regard to Water Island, other than our ongoing environmental studies, until this review is completed," Morgan said.

"It looks like we are still in limbo," said William Bate, president of the Water Island Civic Association. "There is a great deal of uncertainty over here."

Bate said he is certain most Water Island residents want to buy the land

See ISLAND, page 2

The Daily News, Thursday, March 25, 1993

...Shopping Center, 778-6580. with the Senate executive director before 10 John Cable TV.

ISLAND: No one will have to move until issue resolved

(Continued from page 1)

their homes are on and would like to have the matter settled.

The Bush administration would have allowed all those leasing property on the federally owned, 500-acre island in St. Thomas Harbor to buy the land at prices based on appraisals commissioned by the federal government.

V.I. officials want only those people who have built homes or businesses on leased property to be allowed to buy that land, which is sublet through a master lease-holder — Water Island Hotel and Beach Club Ltd.

Undeveloped land then would be auctioned to V.I. citizens, and any unsold property would go to the V.I. government for parks and other public uses.

The delay is the latest in a series of problems associated with the federal government's intention to relinquish ownership of the island, which it has leased out for private use since 1958.

Under pressure from island residents to resolve the matter, the Bush administration had the property appraised last year and planned to sell the leased lots by last Dec. 27, when the master lease expired.

The entire island, with all buildings and other improvements, was valued at about $47 million, and prices were set accordingly for each individual lot.

The Interior Department sent sale offers out to about 140 people leasing property on the island, including Sprat Bay Corp., which holds a sub-lease that includes about 90 lots.

About 95 lease-holders expressed some interest in purchasing their leased property, according to Morgan, and about 30 of those have returned signed contracts.

The Interior Department has not given any timetable for completing its review or any necessary revision of the Water Island sale plans.

However, department officials said those living on leased property at the site will not be required to move until or unless the situation is resolved.

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JAN 13 1949

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 61

1 November 1947 through 31 October 1948

BY San Jose Project Technical Staff

COPY NO. 23

— Jacksonville District
Project Management Office
SFO Branch
Fort Lezana files
R. Bridges office

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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

10 November 1948

SUBJECT: San Jose Project Progress Report No. 61
Period 1 November 1947 through 31 October 1948

TO: Chief, Chemical Corps
Department of the Army
Tempo "K"
Washington 25, D. C.
ATTENTION: Project Coordination Committee

1. INTERIM SUMMARY

a. All work of the Technical Branch was brought to an abrupt halt on 23 December 1947 when the project was notified that San Jose Island would have to be evacuated immediately due to the failure of the United States and Panamanian Governments to agree to a renewal of the lease. Between this date and the 28th day of January 1948, when the island was formally returned to the custody of the Panamanian Government, all efforts were directed toward the evacuation of the island. During this month temporary locations in the Canal Zone were found for the equipment and personnel. The move was completed and exploratory trips were made looking for a new home for the project.

b. From the evacuation date until early in May 1948 the technical activities of the project were concentrated in an area at the mouth of the Chagres River on the Fort Sherman Reservation, Canal Zone. All technical personnel were engaged in guarding and rehabilitating the toxic munitions transferred from San Jose Island. The main body of the San Jose Project troops and the San Jose Project Headquarters were during this time located at Fort Clayton, Canal Zone. The only test carried on was the Surveillance Test for Bomb, Particulate, 4-lb., E-1 for Camp Detrick. This is the subject of Report No. 132 listed in paragraph two below.

c. In the latter part of the stay in the Canal Zone all energies were directed toward the move to the project's present home on St. Thomas, Virgin Islands. The work of evacuating from San Jose Island to the Canal Zone and the reshipping from the Canal Zone to the Virgin Islands was performed by personnel of the project.

d. A small advance party was dispatched to the Virgin Islands on 30 March 1948 and was followed by a larger party on 14 April 1948. The mission of these parties was to make the new station habitable for the main body. The greater portion of the equipment of San Jose Project arrived at St. Thomas aboard the Colonel William J. O'Brien on 4 May 1948. Personnel, military, civilian and dependents was airlifted from Panama to Virgin Isla. in small implements. The toxic chemicals were towed over on two five hundred ton ocean-going barges arriving at St. Thomas on 21 May 1948. The explosives were brought over in the hold of an FS boat arriving on 27 May 1948 and completing the movement from the Canal Zone.

e. San Jose Project moved into a former U. S. Navy Submarine Base just west of the town of Charlotte Amalie on St. Thomas. There there were barracks, administration buildings, and shops adequate for the main post. However, as should be apparent there were no technical facilities of the peculiar nature needed by the San Jose Project. The Technical Branch has spent nearly all it's energies since that time inventorying and rehabilitating it's equipment and preparing and planning for further operations. The requirements for technical facilities of the project have been submitted and are under consideration by the higher echelons of the Department of the Army. Since this project has been transferred to St. Thomas an area of over 2,000 acres comprising the western tip of St. Thomas has been taken over for test areas. The only other test areas are located on Water Island, a small island just across the channel from the main post. Water Island is also the site of the Toxic Storage Yard.

f. A small temporary laboratory has been fitted out, a battery-charging room has been improvised and operations by means of temporary expedients will be undertaken shortly. A program of tests has been received containing fifty-five tests. Tests for outside agencies are also being run.

2. STATUS OF REPORTS

a. San Jose Project Report No. 129, Static Test of Three 7.2 Inch Rocket Heads, HQ Filled, During Rain, performed on 30 October 1947, was distributed during the period covered by this report.

b. San Jose Project Report No. 99, Surveillance of VKL was distributed in October 1948.

c. San Jose Project Report 132, Surveillance Test for Bomb, Particulate, 4-lb., E-1, is in preparation.

d. Interim Report on Test No. 89, Surveillance of Bombs, Chemical, 125 pound, T3, H filled Heresite coated and T3, HD filled not coated, was distributed 2 September 1948.

e. Interim Report on Test No. 99, Surveillance of VKL was distributed 25 August 1948.

3. TEST ON CANISTERS M1 and M2 for COLLECTIVE PROTECTORS UNDER TROPICAL WEATHER CONDITIONS (To be SJPR No. 92 and to be run in connection with Cml C Board Test 744)

a. The equipment for this test has been set up in a small building on the main base. As has always been true before, the principal difficulty has been with the Dickinsen meters. These meters have been worked on by the Instrument Engineer of this project, the head of the Instrument Laboratory of Technical Command and are presently being studied by the Laboratory Officer of this project. No positive results have been obtained as yet but there is some indication that the instrument can be made to function. In case this does not prove to be true shortly this project will turn the instrumentation problem over to the Proving Ground Section for solution.

4. STATUS OF TESTS

a. San Jose Project Plan of Test No. 135, Surveillance of Unstabilized CK in M70, M78, and M79 Bombs, has been concurred in and will be initiated as soon as proper sampling bottles are received from the States.

b. San Jose Project Test No. 89, Surveillance of Bombs, Chemical, 125 pound, T3, H filled Heresite coated and T3, HD filled not coated, will be resumed during the month of November.

c. San Jose Project Test No. 136, Static Test of M70 Bomb, H Filled, which is being run to compare conditions on St. Thomas with those on San Jose and elsewhere will be started about 15 November 1948. There are eight sections to this test and it is hoped that they can be run at the rate of one each week.

5. PROGRAM ON G AGENTS

All tests on G agents will be held in abeyance until Test No. 136, Static Test of M70 Bomb, H Filled, is completed.

6. METEOROLOGY

a. Weather summaries for June, July, August, September, and October 1948 for San Jose Project, St. Thomas, Virgin Islands are included in Appendix A. Also included in Appendix A is a weather summary by months from January 1930 through May 1948. These data were obtained from the local Weather Bureau which is a part of the Harbor Master's Office. Coordination between these data and data obtained later by this project may not be perfected.

b. The 6th Air Weather Squadron has established at San Jose Project a Meteorological Observation Station in charge of an Air Weather Sergeant. This station will be in full operation within the month.

7. PERSONNEL

a. Personnel turn-over at this project has been quite heavy. To illustrate this a list is given here showing the incumbents of the various positions on the 31 October 1947 and on 31 October 1948. Those officers who saw duty on San Jose Island are marked with an asterisk.

Col. Lowell A. Elliott	Commanding Officer	Col. Lowell A. Elliott*
Col. Norman D. Gillet	Technical Director	Col. Paul R. Smith
Col. Raymond T. Beurket	Post Inspector	
Lt. Col. Richard Escude	C & P Officer	Maj. William Kittel
Maj. Rura O. Ball	Post Engineer	Maj. Richard T. Clark
Capt. James N. Granade,Jr.	Asst. Post Engineer	
Capt. Jay S. Stockhardt	Executive Officer, Technical Branch	Capt. Jay S. Stockhardt*
Capt. William Bridges	Post Property Officer	Capt. James N. Granade, Jr.*
Capt. Chester Dombrowski	Munitions Development Officer	
Capt. Harry Fogarty	Asst. Property Officer	
Capt. Luke H. West	Technical Branch	Capt. Luke H. West*
Capt. Robert J. Eder	Club Officer	Capt. Lawrence M. Dellinger
Capt. Alvin H. Bowles	Transportation O.	Capt. Alvin H. Bowles*
Capt. Peter J. Ryan	Commanding Officer, Hq. & Hq. Det.	Capt. Clifton O. Duty*
Capt. Clifton O. Duty	Adjutant	1st Lt. Kasmir R. Czarny
	Chaplain	Capt. Donald W. Helm
	Special Services O.	Capt. Douglas P. Hillhouse
1st Lt. Joseph L. Beals	Communications O.	Capt. Edward P. Conners
1st Lt. Henry M. Cook	Post Surgeon	Capt. Henry M. Cook*
	Technical Branch	Capt. Kenneth W. Copeland

	Post Exchange O.	Capt. John K. Jouett
1st Lt. William G. Greer	Mess Officer	1st Lt. Bruno J. Ja[illegible]
1st Lt. Alois Steinbach	Technical Branch	Capt. Lawrence E. [illegible]
1st Lt. Geoffrey Marshall	Munitions Officer Technical Branch	Capt. Edward G. Hal[illegible]
	Provost Marshal	1st Lt. Ralph S. Tur[illegible]
1st Lt. Stephen D. Noyes	Asst. Procurement Officer	
	Technical Branch	1st Lt. Louis O. Elsaess[illegible]
1st Lt. James W. Startt	Asst. Post Engineer	Capt. Cornelius Schmelzle

b. During the period covered by this report there have been a great many visitors to the project. The more important ones of these are listed below:

2 Jan 48: Lt. Col. Terrell arrived SJP to confer with the Technical Director on the disposition of equipment.

5 Jan 48: Col. Cook arrived SJP for conference regarding evacuation.

8 Jan 48: Maj.Gen. Waitt, Chief, Chemical Corps, arrived for inspection prior to evacuation.

17 Apr 48: Col. Creasy, Army Chemical Center, Md., arrived for official visit at St. Thomas, V. I.

26 Apr 48: Maj. Campbell, Research & Engineering Division, Army Chemical Center, Md., arrived SJP on official visit regarding technical activities on St. Thomas, V.I.

4 May 48: Conference held in CO's office between Col. Rodiak, USAF; Lt. Col. Hartel, G-3 Antilles; and Maj. Kittel, C&P Officer, this project. Subject: Establishment of air flights.

10 May 48: Mr. George B. Wilson, Army Chemical Center, Md., arrived SJP on technical activities.

14 May 48: Lt. Col. Rosenbaum, G-4 Antilles, arrived SJP for conference with CO.

17 May 48: Col. Whelchel, Area Petrolium Officer, USARCARIB, arrived SJP to inspect diesel tank farm here.

21 May 48: Lt. Col. O'Reilly, Antilles Chaplain, arrived SJP for conference with CO.

26 May 48: Maj. Fath, Antilles Exchange Service, arrived for conference regarding Post Exchange this project.

28 May 48: Capt. Maylard, Civilian Personnel Officer, Antilles Dept., arrived SJP to discuss civilian job analysis with CO.

10 Jun 48: Maj. Gen. Waitt arrived for Post Inspection.

11 Jun 48: Capt. Bryan, MC, arrived for Malaria Control; Mr. Patrick, fire commissioner, arrived for fire inspection.

17 Jun 48: Col. Cook, G-2 Antilles, arrived for conference with CO and Security Officer.

20 Jun 48: Maj. Gen. Waitt arrived SJP for conference with CO.

2 Jul 48: Maj. O'Grady, Public Relations Officer, arrived to see CO.

9 Jul 48: General Porter, Commanding General, Antilles, arrived for conference about and tour of project.

14 Jul 48: Lt. Colonels Menard, Silvers, Cowarts, and Major Gay arrived from Army Chemical Center, Md., for inspection of post.

Lt. Colonel Gerrow, G-4, USARCARIB, arrived with Antilles Officers for conference with CO.

6 Aug 48: Lt. Col. Fingerson, Transportation Corps, arrived SJP for conference with CO and Transportation Officer.

11 Aug 48: Dr. Harold Hodge, Army Chemical Center, Md., arrived for activities concerning Technical Branch.

27 Aug 48: Lt. Col. C. Fiscal arrived for conference with CO.

10 Sep 48: Col. Foy arrived to see CO.

14 Sep 48: Col. Tully, Maj. Woods, WO Campbell arrived SJP to conduct IG inspection.

1 Oct 48: Lt. Col. Armstrong, 98th AAA Gun Bn., Ft. Buchanan, Puerto Rico, arrived for conference with CO.

(SJPPR No. 61)

6 Oct 48: Col. Hines, III and Lt. Col, Rosenbaum arrived SJP for conference with CO.

9 Oct 48: Submarine USS Quillback arrived SJP in connection with Naval activities.

J. S. Stockhardt

JAY S. STOCKHARDT
Captain, Cml C
Actg. Technical Director

APPROVED:

LOWELL A. ELLIOTT
Colonel, Cml C
Commanding

page 8 of 8

145-12-C.

MAR 8 1949

SAN JOSE PROJECT PROGRESS REPORT

File:

NUMBER 62

1 November 1948 through 30 November 1948

by

San Jose Project Technical Staff

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SFO Branch
Fort Segarra files
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17 - 18	Chief, Medical Division, CC Cml C, Army Chemical Center, Md.
19 - 21	Major R.A. Klaehn, Canadian Technical Representative, Army Chemical Center, Md. (Thru: Chief, Research and Engineering Division Director of CW & Smoke, Ottawa, Ontario, Canada ATTN: Major Dewar
22 - 23	Project Coordination Committee, CC Cml C, Army Chemical Center, Md.
24	President, Chemical Corps Board, Army Chemical Center, Md
25	Commanding Officer, Edgewood Proving Ground, Army Chemical Center, Md.
26	Chief, Proving Ground Section, Development Branch Research and Engineering Division, CC Cml C Army Chemical Center, Md.
27 - 28	Librarian, Joint Research and Development Board
29 - 33	Commanding Officer, Camp Detrick, Frederick, Md. (for Technical Director)
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35 - 37	SJP Technical Library
38	Military Application Division, U.S. Atomic Energy Commission, 1901 Constitution Ave., N.W., Washington D.C Attn: Cml C

HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

5 December 1948

SUBJECT: San Jose Project Progress Report No. 62
Period 1 November 1948 through 30 November 1948

TO : Chief, Chemical Corps
Department of the Army
Tempo "K"
Washington 25, D. C.
ATTENTION: Project Coordination Committee

1. STATUS OF REPORTS

a. The following reports were distributed during the period covered by this report:

Title	Date of Test	Report Distributed
SJPR No. 132, Surveillance Test for Bomb, Particulate, 4 lb, E-1	9 Feb 48 through 22 Oct 48	1 Nov 48 (approx)
SJPR No. ST-1, Druif Bay Meteorology	5 Oct 48 through 14 Oct 48	16 Nov 48
SJPR No. ST-2, Aluminum Sulfate Water Treatment (By request of Naval Research Laboratory)	3 Nov 48 through 10 Nov 48	19 Nov 48

2. STATUS OF TESTS

a. Surveillance Test for Bomb, Particulate, 4 Lb, E-1, Test No. 132
Bombs used in this test were shipped back to Camp Detrick, Maryland, during the week of 15 Nov 48.

b. Surveillance of T-3 Bombs, Test No. 89

Suggested amendments to test procedure were received from R & E Office, Army Cml Center, Md., and these amendments are being incorporated before proceding with the test.

c. Static Firing of M 70 Bomb, HD Filled, Test No. 136

The first phase of this test was completed on 23 Nov 48. An interim report covering this phase of the test is in preparation. Subsequent phases are scheduledto be run at a rate of one a week.

d. Surveillance of Unstabilized CK in M 70, M 78 & M 79 Bombs, Test No. 135

This test will be started on or about 6 December 1948

e. Test on Canisters M 1 & M 2 for Coll. Prot. under Tropical Weather Conditions, Test No. 92

Study of Dickensen meters to be used in this test is in progress under direction of Lab. Officer.

3. METEOROLOGY

a. Weather summary for the month of November 1948 is included as Appendix A.

4. EQUIPMENT

a. The FS 259 arrived on 24 November carrying 89½ tons of fencing to be used in isolating property held on the western end of the island.

5. VISITORS

a. During the period covered by this report the following persons visited the project:

3 Nov 48: Col. H. I. Cole arrived on TDY and was conducted on a tour of technical installations and test areas.

9 Nov 48: Messrs. Clark and Mendez, Antilles Area Office, Panama Eng. Dist, San Juan, P. R. arrived in connection with engineer activities related to development and building program on western end of the island.

21 Nov 48: Mr. Wendell H. Kayser, Camp Detrick, Md. arrived in connection with technical activities.

26 Nov 48: Major W. E. Williamson arrived in connection with technical activities.

6. CONSTRUCTION

a. A weather station was constructed during the month of November and will be prepared to initiate 24 hour operation on 1 December 1948.

7. PERSONNEL

a. Colonel Paul R. Smith arrived on 9 Nov 48 and assumed duty as Technical Director this station.

b. Colonel Lowell A. Elliott departed for Washington, D.C.

on TDY on 29 November 1948. Colonel Paul R. Smith assumed Command this station for duration of his absence.

c. Miss Margaret B. Thorton arrived 30 November 1948 from Technical Command Library , Army Chemical Center, Md. for TDY of approximately 30 days to organize a Technical Library this station.

JAY S. STOCKMAN
Captain, Cml C
Acting Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Commanding

page 5 of 5

0841

117-1-C

JUN 28 1949

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 63

1 DECEMBER 1948 THROUGH 31 DECEMBER 1948

by

San Jose Project Technical Staff

COPY NO. 1

Jacksonville District
Project Management Office
SFO Branch
Fort Segovia files
R. Bridgers Office

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5 - 6	Commanding Officer, Cml C Technical Command Army Chemical Center, Md.
7 - 8	Chief, Medical Division, Army Chemical Center, Md
9 - 13	Technical Director, Camp Detrick, Frederick, Md.
14	President, Cml C Board, Army Chemical Center, Md.
15	Commanding Officer, Edgewood Proving Ground, Army Chemical Center, Md.
16 - 17	Librarian, Research and Development Board, General Staff, U. S. Army, Research and Development Division, Washington, D. C.
18	Military Applications Division, US Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D.C., Attention: Chemical Officer
19 - 23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W. Washington, D.C. (Thru: Chief, Res & Eng Div, Army Chemical Center, Md.)
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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

5 January 1949

SUBJECT: San Jose Project Progress Report No. 63
Period 1 December 1948 through 31 December 1949

TO: Chief, Chemical Corps
Department of the Army
Tempo "K"
Washington 25, D. C.
ATTENTION: Project Coordination Committee

1. STATUS OF REPORTS

a. The following reports were distributed during the period covered by this report:

Title	Date of Test	Report Distributed
SJPR No. 136, Static Firing of M70 Bomb, HD Filled, Phase 1, Interim Report to Chief, Proving Ground Section, Development Br., R&E Division, OCCMLC, Army Chemical Center, Md.	23 Nov 48	3 Dec 48
SJPR No. 136, Static Firing of M70 Bomb, HD Filled, Phase 2, Interim Report as in Phase 1.	2 Dec 48	7 Dec 48
SJPR No. 136, Static Firing of M70 Bomb, HD Filled, Phase 3, Interim Report as in Phase 1.	9 Dec 48	14 Dec 48
SJPR No. 136, Static Firing of M70 Bomb, HD Filled, Phase 4, Interim Report as in Phase 1.	21 Dec 48	23 Dec 48

2. STATUS OF TESTS

a. Surveillance of Unstabilized CK in M70, M78 and M79 Bombs, SJPPT No. 135.

The first sampling in connection with this test was performed on 1 December 1948. Initial sampling of M78 and M79 bombs has been completed. Sampling of M70 bombs is being delayed pending arrival of tapping and sampling devices.

b. Test on Canisters M1 and M2 for Collective Protectors Under Tropical Weather Conditions, SJPPT No. 92.

This test has been abandoned as directed by letter from the Chief, Research and Engineering Division dated 9 December 1948.

c. Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds, SJPPT No. 102.

Work on this test will be initiated as directed in a letter from the Chief, Research and Engineering Division, dated 9 December 1948.

d. Test of Suit, Protective, One-Piece, Impermeable, E1R1, and Related Items Under Extreme Heat Load, SJPPT No. 180.

Material for use in this test has been received at this site. Actual conduct of the test will begin upon receipt of further instructions from the Chemical Corps Board.

e. Static Firing of M70 Bomb, HD Filled, SJPPT No. 136

The first four of eight phases of this test have been performed and interim reports distributed to Chief, Proving Ground Section, Development Branch, Research and Engineering Division, O-CCmlC, Army Chemical Center, Maryland for comment.

f. Tests at this site in connection with Naval personnel.

Information has been received that the San Jose Project will once again be called upon to cooperate with the Navy in tests to be conducted by Naval personnel at this station. Personnel and equipment are expected to arrive this station during the month of January 1949.

3. METEOROLOGY

a. Weather summary for the month of December 1948 is included as Appendix A.

4. SAN JOSE PROJECT TECHNICAL LIBRARY

a. Miss Margaret B. Thornton, who arrived 30 November 1948 from the Technical Command Library, Army Chemical Center, Md., is making progress in the organization of the Technical Library at this station. Much remains to be accomplished; however, since her arrival, over forty footlockers of material have been examined and filed. Indexing of this material is now under way.

5. VISITORS

a. During the period covered by this report the following persons have visited the project.

11 Dec 48 - General Wedemeyer, Deputy Chief of Staff, arrived for a short tour of inspection this project.

14 Dec 48 - Colonel Haugen, Major Moore, Major Hurt, Major Caldwell, Mr. Wetter and two EM arrived on TDY of approximately two days in connection with Technical activities.

14 Dec 48 - Major General Alden H. Waitt, Chief, Chemical Corps, arrived from Washington, D. C., on approximately four days TDY on command functions.

6. PERSONNEL

a. Colonel Lowell A. Elliott returned from TDY in Washington, D.C., on 8 December 1948.

b. A letter was sent to Civilian Personnel Officer, Fort Brooke, Puerto Rico, requesting that a man be recruited to fill the position of Laboratory Aide, SP-4, for Technical Branch this project.

c. The resignation of Mr. N. R. Warehein, Instrument Engineer this station was received and approved effective 27 December 1948.

d. A letter has been sent to the Office of the Chief, Chemical Corps, requesting the initiation of recruitment of civilian

personnel for work in the Technical Branch this project.

e. TDY orders are pending on an Engineer and a Laboratory Technician to be sent for work with Technical Branch this project.

f. A four-man labor crew has been organized to work for Technical Branch. Such necessary duties as maintenance and repair will be performed by this group.

g. The official holiday period began on 23 December 1948 to run through 6 January 1949. During this period only one third of the personnel assigned this project were required to be present for duty on any given day. Technical activities were, of necessity, held to a minimum during this period.

Paul R. Smith

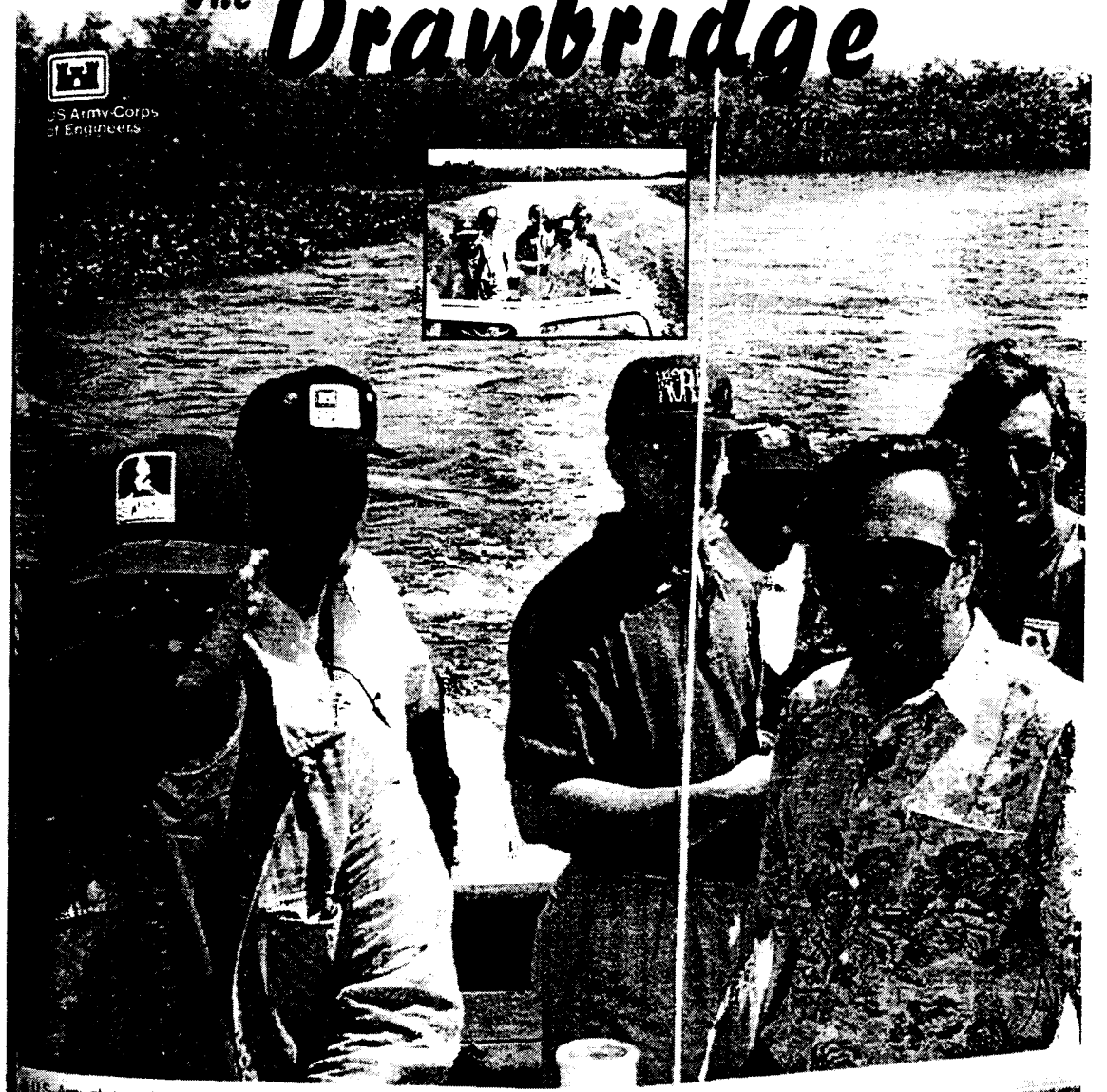
PAUL R. SMITH
Colonel, Cml C
Technical Director

APPROVED:

Lowell A. Elliott

LOWELL A. ELLIOTT
Colonel, Cml C
Commanding

The Drawbridge



U.S. Army photograph by Tony Santana

The Corps and South Florida Water Management District explain restoration plans for the Kissimmee River to ***USA TODAY.***

Front, from left: Danny Nesbitt, South Florida Operations Office; Lewis Hornung, Project Manager; (back row) Mike Ornella, Project Manager; Gene Sloan, USA TODAY; Jacquelyn Griffin, Public Affairs; and Lou Toth South Florida Water Management District. (See Page 6) JAY!



Lt. Col. Stephen Benton discusses the next phase of work for the Water Island Project to the residents of Water Island.

Water Island Update

In August 1991, the Corps of Engineers published the first information bulletin and held the first community meeting with Water Island residents to inform them of the status of the remedial investigation for the Water Island (formerly Fort Segarra) Project. Since that time, two community meetings, one in 1991 and the latest in February 1994, have been held, along with the distribution of six information bulletins.

February's meeting discussed the contractor's (MTA Inc.) current plans for mobilization and start up of noninstrusive field work. Taking place in March and April, site characterization work will look for subsurface metallic objects for the purpose of developing detailed maps. These site investigations will determine if future work is needed for the removal of materials. If no additional work is warranted, the project will be closed out; but if more work is determined necessary, it is tentataivly scheduled for late 1994.



(From left) Lt. Col. Benton, Elsa Jimenez, Capt. Martinez (Huntsville), Vern Skinner (USACAMDA), Robert Bridgers, Roger Fitzpatrick (Huntsville) prepares to brief Virgin Island governor's representative James O'Bryan on scheduled work for Water Island.

The latest public meeting involved representatives from Jacksonville District, Huntsville Division, the Antilles Office, the U.S. Army Chemical Material Destruction Agency and the Water Island Residents Association.

Past work conducted on Water Island includes: an Archive Search Report completed in August 1991; topographic mapping work prepared and made available to Water Island Residents Association in January 1992; a chain link fence installed around the Flamingo Bay Landfill area in November 1991; and inspection visits by technical personnel and coordination meetings with territorial officials held throughout 1992 and 1993.

- Mar 4963

MAR 8

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 64

1 JANUARY 1949 THROUGH 31 JANUARY 1949

by

San Jose Project Technical Staff

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15	Commanding Officer, Edgewood Proving Ground, Army Chemical Center, Md.
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18	Military Applications Division, US Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D.C., Attention: Chemical Officer
19 - 23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W Washington, D.C. (Thru: Chief, Res & Eng Div, Army Chemical Center, Md.)
24 - 26	Canadian Technical Representative, Army Chemical Center, Md. (Thru: Chief, Res & Eng Div., Army Chemical Center, Md.)
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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

4 February 1949

SUBJECT: San Jose Project Progress Report No. 64
Period 1 January 1949 through 31 January 1949

TO: Chief, Chemical Corps
Department of the Army
Tempo "K"
Washington 25, D. C.
ATTENTION: Project Coordination Committee

1. STATUS OF REPORTS

a. The following reports were distributed during the period covered by this report:

Title	Date of Test	Report Distributed
SJPR No. 136, Static Firing of M70 Bomb, HD Filled, Phase 5, Interim Report to Chief, Proving Ground Section, Development Branch, R&E Division CCCmlC, Army Chemical Center, Md.	13 Jan 49	21 Jan 49
SJPR No. 136, Static Firing of M70 Bomb, HD Filled, Phase 6, Interim Report as in Phase 5.	25 Jan 49	31 Jan 49
SJPR No. 120, Test of Mask, Gas, Service, Combat, E48-11-E16, Interim Report to Chief, Prov. Gr. Sec., Dev. Br., R&E Div., Army Chemical Center, Md.	Sept. 47	25 Jan 49

2. STATUS OF TESTS

a. Static Firing of M70 Bomb, HD Filled, SJPPT No. 136.

The fifth phase of this test has been performed and an interim report distributed to Chief, Proving Ground Section, Development Branch, Research & Engineering Division, CCCmlC, Army Chemical Center, Md. The sixth phase has also been performed and an interim report submitted as in Phase 5.

b. Test of Mask, Gas, Service, Combat, E48-11-E16, SJPPT No. 120.

An interim report covering results of this test has been sent to Chief, Proving Ground Section, Development Branch, Research & Engineering Division, CCCmlC, Army Chemical Center, Md. The final report will be distributed early in February.

c. Surveillance of Bombs, Chemical, 125 Pound, T-3, H Filled, Heresite Coated and T-3, HD Filled, Not Coated, SJPPT No. 89.

Results of sampling performed on 12 January 1949 are included as Appendix B.

d. Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds, SJPPT No. 102.

Plan of test has been rewritten and submitted to Chief, Proving Ground Section, Development Branch, Research & Engineering Division, CCCmlC, Army Chemical Center, Md. for approval.

e. Static Test in the Open of Nine 4.2 Inch Chemical Mortar Shells, GA Filled, SJPPT No. 130.

Plan of test prepared in 1947 is being rewritten to fit the conditions and facilities at St. Thomas as directed in a letter dated 10 January 1949, from the Chief, Research and Engineering Division, CCCmlC, Army Chemical Center, Md.

f. Aluminum Sulfate Water Treatment, SJPPT No. ST-2.

Dr. Luther B. Lockhart arrived on or about 22 January 1949 from the Naval Research Laboratory, Washington, D. C. in connection with further work on Aluminum Sulfate Water Treatment tests.

g. Tests in connection with Naval personnel.

A group of Naval officers and enlisted men arrived 25 January 1949, for the purpose of conducting tests at this site

3. METEOROLOGY

a. Weather summary for the month of January 1949 is included as Appendix A.

4. PERSONNEL

a. Mr. Paul Geiger, a chemical engineer, arrived this project on TDY in connection with technical work.

Paul R. Smith

PAUL R. SMITH
Colonel, Cml C
Technical Director

APPROVED:

Lowell A. Elliott

LOWELL A. ELLIOTT
Colonel, Cml C
Commanding

TEST 89

INTERIM REPORT OF H SURVEILLANCE ANALYSIS

Bombs stored on dunnage in a well ventilated building on 21 May 1948:
(San Jose Project, St. Thomas, Virgin Islands)

A. Bombs, T-3, H filled, Heresite coated, Lot No. 3-6-45, EA# 99-10-45
B. Bombs, T-3, HD filled, not coated, Lot No. 3-7-45, EA# 99-12-45

Sampling date 12 January 1949:

	H filled Heresite coated Lot # 3-6-45 EA# 99-10-45		HD filled Not coated Lot # 3-7-45 EA# 99-12-45	
Bomb Number	1	2	3	4
Wgt. bomb plus agent (lbs.)	132.00	132.75	132.75	132.50
Wgt. bomb casing (lbs.)	76.50	76.50	76.50	76.50
Wgt. agent removed (lbs.)	55.50	56.25	56.25	56.00
Wgt. of residue through 16 mesh screen (lbs.)	3.00	2.25	0.125	0.15
Wgt. of liquid agent (lbs.)	52.50	54.00	56.125	55.85
Residue through 16 mesh screen (%)	5.38	4.00	0.22	0.27
Liquid agent (%)	94.62	96.00	99.78	99.73
F.P., agent (°C)	4.5	3.6	11.5	11.3
Distillate (%)	79.7	80.1	93.6	94.8
Residue (%)	17.3	17.0	5.4	4.6
Loss (%)	3.0	2.9	1.0	0.6
M.P. of distillate (°C)	11.3	10.3	12.7	13.1
Purity of distillate (%)	91.58	88.86	95.38	96.1
Purity of agent from bomb (%)	72.07	70.23	89.54	91.56
HCl (total) (%)	0.17	0.18	0.09	0.13
Fe as $FeCl_2$ (agent from bomb) (%)	0.51	0.51	0.50	0.56
Fe as $FeCl_2$ (1st wash water) (%)	0.34	0.04	0.02	0.11
Fe as $FeCl_2$ (2nd wash water) (%)	1.80	1.77	0.10	0.13
Fe as $FeCl_2$, total (%)	2.65	2.32	0.62	0.89

Prior to the sampling performed on 12 January 1949, the bombs were moved from the building in which they had been stored to a new storage location outdoors, the bombs being protected by canvas covers. This change of storage location was effected on 6 December 1948.

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SAN JOSE PROJECT PROGRESS REPORT

NUMBER 65

1 FEBRUARY 1949 THROUGH 28 FEBRUARY 1949

by

San Jose Project Technical Staff

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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

1 February 1949

SUBJECT: San Jose Project Progress Report No. 65
Period 1 February 1949 through 28 February 1949

TO: Chief, Chemical Corps
Department of the Army
Tempo "K"
Washington 25, D. C.
ATTENTION: Project Coordination Committee

1. STATUS OF REPORTS

a. The following reports were distributed during the period covered by this report:

Title	Date of Test	Report Distributed
SJPR No. 136, Static Firing of M70 Bomb, HD Filled, Phase 7, Interim Report to Chief, Proving Ground Section, Development Branch, R&E Division, CCCmlC, Army Chemical Center, Md.	10 Feb 49	15 Feb 49
SJPR No. 136, Static Firing of M70 Bomb, HD Filled, Phase 8, Interim Report as in Phase 7.	23 Feb 49	28 Feb 49

2. STATUS OF TESTS

a. Static Firing of M70 Bomb, HD Filled - SJPPT No. 136.

The seventh and eighth phases of this test have been performed and an interim report on each submitted to the Chief, Proving

Ground Section, Development Branch, R&E Division, CCCmlC, Army Chemical Center, Md. These two phases complete actual field work on this test and the final report is now in preparation.

b. Static Test of Nine 4.2 Inch Chemical Mortar Shells, GA Filled, in the Open, SJPPT No. 130.

Plan of Test has been written and submitted to Chief, Proving Ground Section, Development Branch for approval.

c. Static Test of M70 (E46) Bomb, GA Filled, in the Open, SJPPT No. 137.

Plan of Test has been written and submitted to Chief, Proving Ground Section, Development Branch, for approval.

d. Static Test of Nine German 105 mm Shell, GA Filled, in the Open, SJPPT No. 138.

Plan of Test has been written and submitted to Chief, Proving Ground Section, Development Branch, for approval.

e. Static Test of Single German 15 cm Rocket, GA Filled, and of Nine German 15 cm Rockets in Open, SJPPT No. 140.

Plan of Test has been written and submitted to Chief, Proving Ground Section, Development Branch, for approval.

f. Static Test of Nine German 105 mm Shells, GA Filled, in Area Covered by Vegetation, SJPPT No. 142.

Plan of Test has been written and submitted to Chief, Proving Ground Section, Development Branch, for approval.

g. Static Test of German 15 cm Rocket, GA Filled, in Area Covered by Vegetation, SJPPT No. 144.

Plan of Test has been written and submitted to Chief, Proving Ground Section, Development Branch, for approval.

h. Static Test of Nine 4.2 Inch Chemical Mortar Shells, GA Filled, in Area Covered by Vegetation, SJPPT No. 147.

Plan of Test has been written and submitted to Chief, Proving Ground Section, Development Branch, for approval.

i. Static Test of Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio in Area Covered with Vegetation, SJPPT No. 152.

Plan of Test has been written and changes recommended by Chief, Proving Ground Section, Development Branch.

j. Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds, SJPPT No. 102.

Further changes have been recommended by Lt. Col. Roberts, Lt. Col. Campbell and Mr. Smith, which will necessitate rewriting this Plan of Test, once again. A location for the shelter has been chosen and approved by those mentioned above.

3. TRAINING

a. Gas Identification and Gas Mask Drill was performed by all troops on 2 February 1949.

4. METEOROLOGY

a. Weather summary for the month of February 1949 is included as Appendix A.

5. VISITORS

a. During the period covered by this report, the following persons visited the Project:

6 Feb 49	Major General Alden H. Waitt, Chief, Cml C arrived for official visit.
14 Feb 49	Lt. Col. W. W. Campbell, Lt. Col. Herbert Roberts and Mr. Brooks Smith arrived from Army Chemical Center, Md., on TDY of approximately 10 days in connection with technical activities.
18 Feb 49	Drs. Mass, Solandt, Colonels Curry and Klaehn and Mr. Reed, a group of Canadian technical personnel, arrived this project, in connection with technical activities.

(SJPPR No. 65)

23 Feb 49 Dr. Fell, Asst. Tech. Dir., Camp Detrick, arrived in connection with technical activities.

6. PERSONNEL

a. Mr. Paul Geiger departed this project on approximately 16 February upon completion of TDY.

JAY S. STOCKHARDT
Capt., Cml C
Deputy Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Commanding

137-4-C

AUG 23 1949

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 66

1 MARCH 1949 THROUGH 31 MARCH 1949

by

San Jose Project Technical Staff

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19 - 23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W. Washington, D. C. (Thru: Chief, Res. & Eng. Div., Army Chemical Center, Md.)
24 - 26	Canadian Technical Representative, Army Chemical Center, Md. (Thru: Chief, Res. & Eng. Div., Army Chemical Center, Md.)
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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD 1 April 1949

SUBJECT: San Jose Project Progress Report No. 66
Period 1 March 1949 through 31 March 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.
Attention: Project Coordination Committee

1. STATUS OF REPORTS

a. The following reports were distributed during the period covered by this report:

Title	Date of Test	Report Distributed
SJPR No. 136, Static Test of M70 Bomb, HD Filled	Nov 48 - Feb 49	22 Mar 49
SJPR No. 120, Test of Mask, Gas, Service, Combat, E48-11-E16, (CmlCBd Project No. 748)	September 47	24 Mar 49

2. PROGRESS OF TESTS DURING THE MONTH OF MARCH

a. Static Test of M70 Bomb, HD Filled - SJPPT No. 136

Final report distributed on 22 March 1949.

b. Static Test of Nine 4.2 Inch Chemical Mortar Shells, GA Filled, in the Open - SJPPT No. 130.

Plan of Test has been revised and submitted to Chief,

14

Proving Ground Section, Development Branch, for approval.

c. Static Test of M70 (E46) Bomb, GA Filled, in the Open, SJPPT No. 137.

Plan of Test has been revised and submitted to Chief, Proving Ground Section, Development Branch, for approval.

d. Static Test of Nine German 105 mm Shells, GA Filled, in the Open, SJPPT No. 138.

Plan of Test has been revised and submitted to Chief, Proving Ground Section, Development Branch, for approval.

e. Static Test of Single German 15 cm Rocket, GA Filled, and of Nine German 15 cm Rockets in Open, SJPPT No. 140.

Plan of Test has been revised and submitted to Chief, Proving Ground Section, Development Branch, for approval.

f. Static Test of Nine German 105 mm Shells, GA Filled, in Area Covered by Vegetation, SJPPT No. 142.

Plan of Test has been revised and submitted to Chief, Proving Ground Section, Development Branch, for approval.

g. Static Test of German 15 cm Rocket, GA Filled, in Area Covered by Vegetation, SJPPT No. 144.

Plan of Test has been revised and submitted to Chief, Proving Ground Section, Development Branch, for approval.

h. Static Test of Nine 4.2 Inch Chemical Mortar Shells, GA Filled, in Area Covered by Vegetation, SJPPT No. 147.

Plan of Test has been revised and submitted to Chief, Proving Ground Section, Development Branch, for approval.

i. Single 125 Pound Chemical Bomb T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in Open, SJPPT No. 150.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

j. Static Test in Area Covered by Vegetation of a Single 125 Pound Chemical Bomb T3E2, GA Filled, with a 35:1 Burster Ratio, SJPPT No. 152.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

k. Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in an Area Covered by Vegetation, SJPPT No. 153.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

l. Location of Entrances to Gasproof Shelters in Relation to Prevailing Wind, SJPPT No. 102A.

(1) Plan of Test rewritten and submitted to Chief, Proving Ground Section, Development Branch, for approval.

(2) Plans for the shelter have been drawn and construction will begin early in April.

m. Static Test in the Open of a Single E23 Smoke Pot, GA Filled, SJPPT No. 166.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

n. Static Test in Area Covered by Vegetation of a Single E23 Smoke Pot, Filled GA, SJPPT No. 167.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

o. Static Test in the Open of a Single E23 Smoke Pot, Filled GA, on Water with Onshore Wind, SJPPT No. 168.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

p. Static Test in the Open of a Single E23 Smoke Pot, Filled HD, SJPPT No. 176.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

q. Static Test in the Open of a Single E23 Smoke Pot, Filled HT, SJPPT NO. 177.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

r. S
Filled HQ, SJPPT No. 178.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

s. Static Test in the Open of a Single E23 Smoke Pot, Filled HQ, SJPPT No. 179.

Plan of Test submitted to Chief, Proving Ground Section, Development Branch, for approval.

3. PROGRESS OF TESTS

a. A complete list of tests scheduled for San Jose Project together with current status is included as Appendix B.

4. CONSTRUCTION

a. Necessary construction to accommodate test animals on Water Island is very near completion. Approximately 1050 feet of fencing has been strung to furnish separate corrals for fresh and contaminated goats. Total area for both fresh and contaminaed goats approximates two acres.

b. Sixteen eight by twelve foot pigeon cages, each containing eight roosts are being constructed which when completed will accommodate approximately 2,000 pigeons.

c. An entire building is being rat-proofed to provide feed storage space for the test animals.

5. METEOROLOGY

a. Weather summary for the month of March 1949 is included as Appendix A.

b. There was unusually heavy rainfall on 22 March with 1.35 inches, 28 March with 1.23 inches, 29 March with 1.38 inches, and 30 March with 2.05 inches.

6. PERSONNEL

a. Colonel Lowell A. Elliott departed 4 March 1949 for

page 6 of 14

return to Zone of Interior. A formal farewell ceremony was held in his honor on 2 March 1949, all personnel this project attending.

b. Colonel Paul R. Smith assumed command this project on 4 March 1949.

JAY S. STOCKHARDT
Captain, Cml C
Deputy Technical Director

APPROVED:

PAUL R. SMITH
Colonel, CmlC
Commanding

APPENDIX B

PROGRESS OF TESTS

PROGRESS OF

(SJPPR No. 66, App B)

EST NO.	TITLE	STATUS
89	Surveillance of Bombs, Chemical 125 lb., T-3, H filled, Heresite coated and T-3, HD filled not coated.	Current, long-range sampling
99	Surveillance of VKL.	Test Completed, Report Distributed.
	Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Bd. Test No. 724)	Plan of Test submitted 7 March 1949
	Static Test of Nine 4.2" Chemical Mortar Shells, GA filled, in the Open	Plan of Test submitted 14 March 1949
132	Surveillance of Bomb, Particulate 4 lb., E-1	Test Completed, Report Distributed.
135	Surveillance of CK Stored in Bombs and Ton Containers under Tropical Conditions.	Awaiting Material
136	Test with M70 Bomb, filled HD, in open and in area covered with vegetation, static fired, with onshore and with offshore winds.	Test Completed, Report Distributed.
137	Test of M70 Bomb, filled GA (E46) in open area, static fired.	Test completed, Report Distributed
138	Test of German 105 mm Shell, filled GA, static fired in open (approx. 9 shells fired simultaneously).	Plan of Test submitted 14 March 1949
139	Test of German 105 mm shell, filled GA, fired from gun into open (number of rounds to be determined by results from Test No. 138.	Awaiting completion of Test No. 138
140	Test of German 15 cm rocket, filled GA, static fired in open. (single round and multiple, 9 fired simultaneously)	Plan of Test submitted 14 March 1949

(SJPPR No. 66, App B)

TEST NO.	TITLE	
	Test of German 15 cm rocket, filled GA, fired into open from from launcher (number to be determined from results of No. 140)	Test No. 14[illegible]
142	Test of German 105 mm shell, filled GA, static fired in area covered by vegetation (approx. 9 shells fired simultaneously)	Plan of Test submitted 15 March 1949
	Test of German 105 mm shell, filled GA, fired from gun in area covered by vegetation.	Awaiting material
144	Test of German 15 cm rocket, filled GA, static fired in area covered by vegetation.	Plan of Test submitted 21 March 1949
145	Test of German 15 cm rocket, filled GA, fired in area covered by vegetation (number to be determined from results of No. 140)	Awaiting completion of Test No. 140
146	Test of 4.2" chemical mortar shell, filled GA, fired into open area (number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130
147	Test of 4.2" chemical mortar shell, filled GA, fired statically in covered area (nine to be fired simultaneously).	Plan of Test submitted 21 March 1949
	Test of 4.2" chemical mortar shell, filled GA, fired into area covered by vegetation (number to be determined from results of No. 147).	Awaiting completion of Test No. 147
	Test of M33A1 spray tank, filled unthickened GA in open from low altitude.	Awaiting spray tank
150	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped singly in open.	Plan of Test submitted 28 March 1949
151	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped in multiple into open area (number to be determined from results of No. 150)	Awaiting completion of Test No. 150

(SJPPR No. 66, App B)

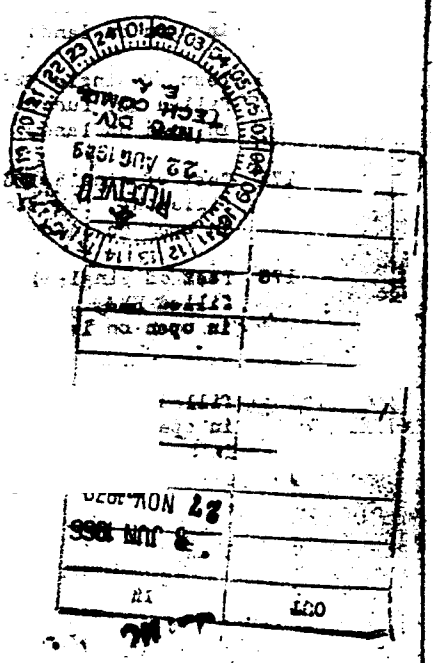
TEST NO.	TITLE[1]	
152	Test of single 125 lb. chemical bomb, T3E2, filled GA, with 35:1 burster ratio, fired statically in area covered by vegetation.	Plan of Test submitted 28 March 1949
153	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped singly in covered area.	Plan of Test submitted 28 March 1949
154	Test of 125 lb chemical bomb, T3E2 filled GA, with 35:1 burster ratio dropped in multiple into covered area. (number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153
155	Test of 125 lb T3 bomb, filled GA, with burster modified as determined by Edgewood tests, dropped singly into the open.	Awaiting completion of Edgewood tests
156	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into open (number to be determined from results of No. 155)	Awaiting completion of Test No. 155
157	Test of single 125 lb. T3 bomb, filled GA with modified burster fired statically in area covered with vegetation.	Awaiting completion of Edgewood tests
158	Test of 125 lb. T3 bomb, filled GA with burster modified as determined by Edgewood tests, dropped singly into covered area.	Awaiting completion of Edgewood tests
159	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into covered area (number to be determined from results of Test No. 158).	Awaiting completion of Test No. 158
160	Test of M15 chemical bomb modified as determined by Edgewood tests, filled GA, dropped in open in small number (number to be determined by Edgewood tests.)	Awaiting completion of Edgewood tests

(SJPPR No. 66, App B)

TEST NO.	TITLE	
	Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into open in large number (number of clusters to be determined from results of Test No. 160)	Awaiting completion of Test No. 160
162	Test of modified E45 chemical bomb fired statically in area covered by vegetation (nine bombs to be fired simultaneously)	Awaiting completion of Edgewood tests
	Test of E45 chemical bomb, modified as determined by Edgewood tests, filled GA, dropped in area covered by vegetation (number to be determined from results of Edgewood tests)	Awaiting completion of Edgewood tests
164	Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into area covered by vegetation (number of clusters to be determined by results of 163)	Awaiting completion of Test No. 163
165	Test of E45 chemical bomb with various shaped charges, filled GA, dropped into open in small number (number to be determined by Edgewood tests).	Awaiting completion of Edgewood tests
166	Test of single E23 smoke pot, filled GA, functioned statically in open on land.	Plan of Test submitted 21 March 1949
167	Test of single E23 smoke pot, filled GA, functioned statically in area covered by vegetation.	Plan of Test submitted 21 March 1949
168	Test of single E23 smoke pot, filled GA, functioned statically on water with onshore wind.	Plan of Test submitted 21 March 1949
169	Multiple test of E23 smoke pot, filled GA, dropped from boat, with onshore wind to simulate smoke (number to be determined from results of Test No. 168)	Awaiting completion of Test No. 168

TEST NO.	TITLE	STATUS
170	Multiple test of E23 smoke pot, filled GA, dropped from airplane, with onshore wind to simulate smoke. (Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168
171	Test of 4.2" chemical mortar shell filled GB, fired statically in the open (nine to be fired simultaneously)	Awaiting material
172	Test of 4.2" chemical mortar shell filled GB fired from mortar into open (number to be determined from results of Test No. 171).	Awaiting completion of Test No. 171
173	Test of 125 lb. T3 bomb, filled GB with modified burster, dropped singly in open.	Awaiting completion of Edgewood tests
174	Test of E45 chemical bomb, filled GB with modified burster, dropped in small quantity in open (number to be determined from Edgewood tests).	Awaiting completion of Edgewood tests
175	Test of single E23 smoke pot, filled GB, functioned statically in open on land.	Awaiting material
176	Test of single E23 smoke pot, filled HD, functioned statically in open on land.	Plan of Test submitted 7 March 1949
177	Test of single E23 smoke pot, filled HT, functioned statically in open on land.	Plan of Test submitted 10 March 1949
178	Test of single E23 smoke pot, filled HN3, functioned statically in open on land.	Plan of Test submitted 10 March 1949
179	Test of single E23 smoke pot, filled HQ, functioned statically in open on land.	Plan of Test submitted 11 March 1949
180	Test of Suit, Protective, One Piece, Impermeable, ZIRI, and related items under extreme heat load (Cml C Bd. Project No. 782).	Awaiting test material

	Test of Gas Casualty Kit, Treatment, Item 9-244-800 (New Revision)	Awaiting test material
	Test of First Aid Kit, Gas, Casualty, Item 9-206-710 (New Revision)	Awaiting test material
	Test of Veterinary Gas Casualty Outfit, Item 9-602-680 (New Revision)	Awaiting test material
	Operational Scale Test with German KC 250 III Gr Bombs, filled with GA. Technical Command Field Test No. 114.	Awaiting material
	Test of single 250 kg German, GA filled bomb fired statically in the open under inversion or zero temperature gradient conditions.	Awaiting material
186	Test of single 250 kg German, GA filled bomb dropped into open and also into covered area under inversion or zero temperature gradient conditions.	Awaiting material



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SAN JOSE PROJECT PROGRESS REPORT

by

San Jose Project Technical Staff

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14	President, Cml C Board, Army Chemical Center, Md.
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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD 2 May 1949

SUBJECT: San Jose Project Progress Report No. 67
Period 1 April 1949 through 30 April 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.
Attention: Project Coordination Committee

1. STATUS OF REPORTS

No reports distributed during the period covered by this report.

2. PROGRESS OF TESTS DURING THE MONTH OF MARCH

a. Single 125 Pound Chemical Bomb T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in Open - SJPPT No. 150.

Plan of test submitted for approval 28 March 1949.

b. Static Test in Area Covered by Vegetation of a Single 125 Pound Chemical Bomb T3E2, GA Filled, with a 35:1 Burster Ratio - SJPPT No. 152.

Plan of test submitted for approval 28 March 1949.

c. Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in an Area Covered by Vegetation - SJPPT No. 153.

Plan of test submitted 28 March 1949.

3. PROGRESS

a. Location of Entrances to Gasproof Shelters in Relation to Prevailing Wind - SJPPT No. 102A.

(1) Work was begun on the shelter to be used in this test on 13 April 1949.

(2) Streamers to be used arrived on 27 April 1949.

(3) Construction completed 29 April 1949.

(4) Preliminary testing will begin on or about 2 May 1949.

b. Work on the tests listed below has been delayed pending the arrival of munitions, test animals, or both:

(1) Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open - SJPPT No. 130.

Plan of test approved with changes 29 April 1949.

(2) Static Test of M70 (E46) Bomb, GA Filled, in the Open SJPPT No. 137.

Plan of test approved, with changes 18 April 1949.

(3) Test of German 105 mm Shell, GA Filled, Static Fired in Open - SJPPT No. 138.

Plan of test approved, with changes 29 April 1949.

(4) Test of German 15 cm Rocket, GA Filled, Static Fired in Open (Single round and multiple, 9 fired simultaneously).

Plan of test approved, with changes 29 April 1949.

(5) Static Test of Nine German 105 mm Shells, GA Filled, in Area Covered by Vegetation - SJPPT No. 142.

Plan of test approved, with changes 25 April 1949

(6) Static Test of German 15 cm Rocket, GA Filled, in Area Covered by Vegetation - SJPPT No. 144.

Plan of test approved, with changes 25 April 1949.

(7) Static Test of Nine 4.2 Inch Chemical Mortar Shells, GA Filled, in Area Covered by Vegetation - SJPPT No. 147.

Plan of test approved, with changes 25 April 1949.

(8) Static Test in Open of Single E23 Smoke Pot, GA Filled - SJPPT No. 166.

Plan of test approved, with changes 22 April 1949.

(9) Static Test in Area Covered by Vegetation of a Single E23 Smoke Pot, GA Filled - SJPPT No. 167.

Plan of test approved, with changes 22 April 1949.

(10) Static Test in the Opne of a Single E23 Smoke Pot, GA Filled - SJPPT No. 168.

Plan of test approved, with changes 22 April 1949.

(11) Static Test in the Open of a Single E23 Smoke Pot, HD Filled - SJPPT No. 176.

Plan of test approved, with changes 25 April 1949.

(12) Static Test in the Open of a Single E23 Smoke Pot, HT Filled - SJPPT No. 177.

Plan of test approved, with changes 25 April 1949.

(13) Static Test in the Open of a Single E23 Smoke Pot, HN3 Filled - SJPPT No. 178.

Plan of test approved, with changes 25 April 1949.

(14) Static Test in the Open of a Single E23 Smoke Pot, HQ Filled - SJPPT No. 179.

Plan of test approved, with changes 25 April 1949

(15) Surveillance of Aged CK in M70, M78 and M79 Bombs - SJPPT No. 135.

Results of sampling performed on this test to date are included as Appendix C. Work on M70 bombs cannot be carried on until after necessary tarring devices have arrived.

4. ARMY DAY

a. Observance of Army Day by the San Jose Project was conducted in two separate phases:

(1) The first phase was held on the base and consisted of a conducted tour of facilities and a demonstration of materiel on Water Island. A group of approximately 35 local dignitaries were in attendance. Among the group were Honorable Morris F. deCastro, Acting Governor; Honorable Herman E. Moore, Judge of the District Court; Honorable Walter I. M. Hodge, Chairman of the Legislative Assembly; members of local legislative bodies and prominent local businessmen.

(2) The second phase consisted of an exhibit in Roosevelt Park, Charlotte Amalie, of Chemical Corps materiel in use at the San Jose Project. Such items as chemical munitions, special vehicles and protective equipment were featured. The exhibit was held from nine in the morning until four in the afternoon and was open to the public. An estimated fifteen hundred persons witnessed the exhibit.

5. PROGRESS OF TESTS

a. A complete list of tests scheduled for San Jose Project, together with current status is included as Appendix B.

6. CONSTRUCTION

a. Necessary construction as outlined in SJPPR No. 66 of accommodations for test animals has been completed.

METEOROLOGY

a. Weather summary for the month of April 1949 is included as Appendix A.

8. TRAINING

a. Gas mask drill and gas chamber exercise was conducted for approximately forty (40) enlisted men on 20 April 1949

9. PERSONNEL

a. Captain Donald D. Dannenberg, Cml C, reported for duty and was assigned duties as Chief of Photographic and Meteorological Sections, vice Captain Luke H. West, who is scheduled for rotation early in May.

10. VISITORS

a. During the period covered by this report, the following persons visited the Project:

27 April 1949	Messrs. Clark and Chapman, from the Panama District Engineer Office, arrived in connection with Technical construction matters.

JAY S. STOCKHARDT
Captain, Cml C
Deputy Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Commanding

APPENDIX B

PROGRESS OF TESTS

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PROGRESS OF TESTS, SAN JOSE PROJECT

TEST NO.	TITLE	STATUS
89	Surveillance of Bombs, Chemical 125 lb., T-3, H filled, Heresite coated and T-3, HD filled not coated.	Current, long-range sampling.
99	Surveillance of VKL.	Test Completed, Report Distributed.
	Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Bd. Test No. 724)	Plan of Test submitted 7 Mar 49.
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA filled, in the Open	Plan of Test approved, with changes, 29 April 49
	Surveillance of Bomb, Particulate 4 lb., E-1	Test Completed, Report Distributed.
135	Surveillance of CK Stored in Bombs and Ton Containers under Tropical Conditions.	In progress - awaiting material
136	Test with M70 Bomb, filled HD, in open and in area covered with vegetation, static fired, with onshore and with offshore winds.	Test Completed, Report Distributed.
137	Test of M70 Bomb, filled GA (E46) in open area, static fired.	Plan of Test approved with changes, 18 April 49
138	Test of German 105 mm Shell, filled GA, static fired in open (approx. 9 shells fired simultaneously).	Plan of Test approved, with changes, 29 April 1949
139	Test of German 105 mm shell, filled GA, fired from gun into open (number of rounds to be determined by results from Test No. 138.	Awaiting completion of Test No. 138
140	Test of German 15 cm rocket, filled GA, static fired in open. (single round and multiple, 9 fired simultaneo	Plan of Test approved, with changes, 29 April 49

TEST NO.	TITLE	
	Test of German 15 cm rocket, filled GA, fired into open from from launcher (number to be determined from results of No. 140)	Awaiting completion of Test No. 140
	Test of German 105 mm shell, filled GA, static fired in area covered by vegetation (approx. 9 shells fired simultaneously)	Plan of Test approved with changes, 25 April 49.
143	Test of German 105 mm shell, filled GA, fired from gun in area covered by vegetation.	Awaiting material.
144	Test of German 15 cm rocket, filled GA, static fired in area covered by vegetation.	Plan of Test approved with changes, 25 April 49
	Test of German 15 cm rocket, filled GA, fired in area covered by vegetation (number to be determined from results of No. 140)	Awaiting completion of Test No. 140
146	Test of 4.2" chemical mortar shell, filled GA, fired into open area (number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130.
147	Test of 4.2" chemical mortar shell, filled GA, fired statically in covered area (nine to be fired simultaneously).	Plan of Test approved with changes, 25 April 49.
148	Test of 4.2" chemical mortar shell, filled GA, fired into area covered by vegetation (number to be determined from results of No. 147).	Awaiting completion of Test No. 147.
149	Test of M33A1 spray tank, filled unthickened GA in open from low altitude.	Awaiting material
150	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped singly in open.	Plan of Test submitted 28 March 49.
151	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burs ratio, dropped in multiple int open area (number to be det mined from results of No. 1	

TEST NO.	TITLE	
152	Test of single 125 lb. chemical bomb, T3E2, filled GA, with 35:1 burster ratio, fired statically in area covered by vegetation.	Plan of Test submitted 28 Mar 49.
	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped singly in covered area.	Plan of Test submitted 28 Mar 49.
154	Test of 125 lb chemical bomb, T3E2 filled GA, with 35:1 burster ratio dropped in multiple into covered area. (number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153.
	Test of 125 lb T3 bomb, filled GA, with burster modified as determined by Edgewood tests, dropped singly into the open.	Awaiting completion of Edgewood tests.
156	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into open (number to be determined from results of No. 155)	Awaiting completion of Test No. 155.
	Test of single 125 lb. T3 bomb, filled GA with modified burster fired statically in area covered with vegetation.	Awaiting completion of Edgewood tests.
158	Test of 125 lb. T3 bomb, filled GA with burster modified as determined by Edgewood tests, dropped singly into covered area.	Awaiting completion of Edgewood tests.
159	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into covered area (number to be determined from results of Test No. 158)	Awaiting completion of Test No. 158.
160	Test of E45 chemical bomb modified as determined by Edgewood tests, filled GA, dropped in open in small number (number to be determined by Edgewood tests.)	Awaiting completion of Edgewood tests.

TEST NO.	TITLE	
	Test of M45 chemical bomb, GA, modified as determined Edgewood tests, dropped in in large number (number of clusters to be determined from results of Test No. 160)	rt No. 160.
162	Test of modified M45 chemical bomb fired statically in area covered by vegetation (nine bombs to be fired simultaneously)	Awaiting completion of Edgewood tests.
	Test of M45 chemical bomb, modified as determined by Edgewood tests, filled GA, dropped in area covered by vegetation (number to be determined from results of Edgewood tests)	Awaiting completion of Edgewood tests.
	Test of M45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into area covered by vegetation (number of clusters to be determined by results of 163)	Awaiting completion of Test No. 163.
	Test of M45 chemical bomb with various shaped charges, filled GA, dropped into open in small number (number to be determined by Edgewood tests).	Awaiting completion of Edgewood tests.
	Test of single M23 smoke pot, filled GA, functioned statically in open on land.	Plan of Test approved with changes, 22 April 49.
167	Test of single M23 smoke pot, filled GA, functioned statically in area covered by vegetation.	Plan of Test approved with changes, 22 April 49.
168	Test of single M23 smoke pot, filled GA, functioned statically on water with onshore wind.	Plan of Test approved with changes, 22 April 49.
169	Multiple test of M23 smoke pot, filled GA, dropped from boat, with onshore wind to simulate (number to be determined results of Test No. 168)	Awaiting completion of Test No. 168

TEST NO.	TITLE	STATUS
	Multiple test of E23 smoke pot, filled GA, dropped from airplane, with onshore wind to simulate smoke. (Number to be determined from results of Test No. 168).	
171	Test of 4.2" chemical mortar shell filled GB, fired statically in the open (nine to be fired simultaneously)	Awaiting material.
172	Test of 4.2" chemical mortar shell filled GB fired from mortar into open (number to be determined from results of Test No. 171).	Awaiting completion of Test No. 171.
173	Test of 125 lb. T3 bomb, filled GB with modified burster, dropped singly in open.	Awaiting completion of Edgewood tests.
	Test of E45 chemical bomb, filled GB with modified burster, dropped in small quantity in open (number to be determined from Edgewood tests).	Awaiting completion of Edgewood tests.
175	Test of single E23 smoke pot, filled GB, functioned statically in open on land.	Awaiting material.
176	Test of single E23 smoke pot, filled HD, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
177	Test of single E23 smoke pot, filled HT, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49
178	Test of single E23 smoke pot, filled HN3, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
179	Test of single E23 smoke pot, filled HQ, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
180	Test of Suit, Protective, Piece, Impermeable, E1R1, related items under extre load (Cml C Bd. Project N	

TEST NO.	TITLE	
	Test of Gas Casualty Kit, ment, Item 9-244-800 (New Revision)	Awaiting test material.
	Test of First Aid Kit, Gas, Casualty, Item 9-206-710 (New Revision)	Awaiting test material.
	Test of Veterinary Gas Casualty Outfit, Item 9-602-680 (New Revision)	Awaiting test material.
	Operational Scale Test with German KC 250 III Gr Bombs, filled with GA. Technical Command Field Test No. 114.	Awaiting material
85	Test of single 250 kg German, GA filled bomb fired statically in the open under inversion or zero temperature gradient conditions.	Awaiting material.
	Test of single 250 kg German, GA filled bomb dropped into open and also into covered area under inversion or zero temperature gradient conditions.	Awaiting material

APPENDIX C

SURVEILLANCE OF AGED CK IN M70, M78 AND M79 BOMBS

TEST NO. 135

RESULTS TO DATE

(SJPPR No. 67, App. C)

Surveillance of Aged CK in M70, M78 and M79 Bombs, Test No. 135

Results To Date

After obtaining a trial sample on 2 December 1948, actual sampling work in connection with this test was begun on 6 December 1948. Results of these and subsequent samplings appear below.

M78 Bombs

On the following bombs, the valve was clogged to the extent that no samples could be obtained and no pressure recorded:

Lot Number	Bomb Number	Date Filled
183	14	Aug-44
183	7	Aug-44
183	17	Aug-44
222	15	Sept-44

The valves in the above bombs were changed and a sample was obtained from Bomb #15, Lot No. 222, the results being shown in the table which follows. However, still no sample or redordable pressure could be obtained from Bombs 14, 7, and 17, Lot No. 183. Tapping these bombs indicated that the contents were largely solids. The bombs were weighed, vented and weighed once again; and the following results were obtained: (Pressure was taken when bombs were tapped)

Date	Lot No.	Bomb No.	Date Filled	Abs. Press.	Total Non-volatile Res.
13 Dec 48	183	14	Aug-44	55 lbs.	99.4%
13 Dec 48	183	7	Aug-44	50 lbs.	98.8%
13 Dec 48	183	17	Aug-44	50 lbs.	99.4%

One other bomb remained in Lot Number 183. This bomb was sampled three times due to its high acidity content and the following results obtained:

Date	Lot No.	Bomb No.	Date Filled	Abs. Pressure	% Acidity	% Soluble Non-volatile Res.
7 Dec 48	183	10	Aug-44	40	.459	6.10
13 Dec 48	183	10	Aug-44	39	.538	9.10
15 Dec 48	183	10	Aug-44	41	.668	8.62

Two additional samples were taken from this bomb on 31 March 1949 with the following results:

Date	Lot No.	Bomb No.	Abs. Pressure	% Acidity	% Soluble Non-volatile Residue
31 Mar 49	183	10	41	.75	19.95
31 Mar 49	183	10	41	.58	19.25

This bomb was vented and found to be 12.9% non-soluble residue, and it was destroyed.

18

Other M78 Bombs

Date	Lot No.	Bomb No.	Date Filled	Abs. Pressure	% Acidity	% Soluble Non-volatile Residue
6 Dec 48	206	29	Aug-44	39	.075	.258
6 Dec 48	206	35	Aug-44	39	.103	.237
6 Dec 49	206	12	Aug-44	39	.099	.225
6 Dec 48	206	27	Sept-44	39	.103	.329
6 Dec 48	206	19	Aug-44	39	.091	.173
6 Dec 48	206	32	Aug-44	37	.108	.263
7 Dec 48	206	5	Aug-44	37	.087	.312
7 Dec 48	206	8	Aug-44	38	.095	.258
7 Dec 48	206	21	Aug-44	41	.107	.220
7 Dec 48	206	22	Aug-44	39	.087	.243
7 Dec 48	206	11	Aug-44	39	.107	.204
7 Dec 48	206	34	Aug-44	40	.092	.183
7 Dec 48	206	13	Aug-44	39	.108	.244
7 Dec 48	206	23	Aug-44	42	.076	.176
2 Dec 48	207	24	Aug-44	42	.146	.269
6 Dec 48	207	31	Aug-44	42	.239	.540
7 Dec 48	207	28	Aug-44	40	.112	.288
7 Dec 48	207	25	Aug-44	39	.122	.251
7 Dec 48	207	2	Aug-44	39	.120	.220
7 Dec 48	207	20	Aug-44	42	.112	.270
7 Dec 48	222	26	Sept-44	37	.057	.233
7 Dec 48	222	9	Sept-44	38	.076	.143
14 Dec 48	222	15	Sept-44	31	.099	.421
7 Dec 48	224	3	Sept-44	36	.109	.246
7 Dec 48	224	1	Sept-44	38	.076	.207
6 Dec 48	None	13A	Aug-44	43	.101	.268
7 Dec 48	None	6	Aug-44	36	.138	.267
7 Dec 48	None	4	Aug-44	37	.073	.275
7 Dec 48	None	18	Aug-44	37	.085	.280

M79 Bombs

On the following bombs, the valve was clogged to the extent that no samples could be obtained and no pressure recorded:

Lot Number	Bomb Number	Date Filled
65	56	June-44
65	60	June-44
456	53	Nov-44

The valves in the above bombs were changed and samples were obtained, the results being shown in the table which follows. It is believed that these bombs may at some time have been stored with the valve down causing solids to settle in the valve. Results obtained follow:

Date	Lot No.	Bomb No.	Date Filled	Abs. Pressure	% Acidity	% Soluble Non-volatile Residue
7 Dec 48	65	53	June-44	41	.103	.308
7 Dec 48	65	59	June-44	41	.083	.172
7 Dec 48	65	57	June-44	38	.096	.225
16 Dec 48	65	60	June-44	35	.087	.203
16 Dec 48	65	56	June-44	37	.084	.279
7 Dec 48	456	55	Nov-44	41	.163	.348
16 Dec 48	456	53	Nov-44	35	.068	.178

Temperature readings were taken at frequent intervals throughout sampling. Temperatures obtained in this manner ranged from 80 to 86°F.

Equipment necessary for sampling of M70 bombs has not yet been received.

Meteorological Data

The following data were obtained inside the surveillance building:

	Maximum Temperature	Minimum Temperature	Mean Maximum Temperature	Mean Minimum Temperature
Dec 48	90°F	70°F	86°F	76°F
Jan 49	87	63	82	65
Feb 49	87	66	84	68
Mar 49	88	65	82	69

JUN 23 1949

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 68

1 MAY 1949 THROUGH 31 MAY 1949

by

San Jose Project Technical Staff

COPY NO. 2

Jacksonville District
Project Management Office
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St. Thomas, Virgin Islands

CMLTD 5 June 1949

SUBJECT: San Jose Project Progress Report No. 68
Period 1 May 1949 through 31 May 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.
Attention: Project Coordination Committee

1. STATUS OF REPORTS

No report distributed during the period covered by this report

2. PROGRESS OF TESTS DURING THE MONTH OF MAY

Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in Open - SJPPT No. 150.

Plan of test approved with changes, 9 May 1949.

b. Static Test in Area Covered by Vegetation of a Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio - SJPPT No. 152.

Plan of test approved with changes, 9 May 1949.

c. Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in an Area Covered by Vegetation - SJPPT No. 153.

Plan of test approved with changes, 9 May 1949.

d. Location

Performance of test delayed for a three-day period due to further amendments to previously approved plan of test. Amendments received on 9 May 1949.

Conduct of test delayed further by arrival of ship with goats, straw and feed. All technical personnel were utilized in unloading on 30 and 31 May 1949. Test cannot be resumed until approximately 6 or 7 June 1949.

(3) Approximately 80% of the work involved in Phase 1 (shelter on upgrade slope in relation to wind) has been completed.

e. Work on tests listed below has been delayed pending the arrival of munitions, test animals, or both:

Static Test of Nine 4.2" Chemical Mortar Shells GA Filled, in the Open - SJPPT No. 130.

Static Test of M70 (M46) Bomb, GA Filled, in the Open - SJPPT No. 133.

Test of German 105 mm Shell, GA Filled, Static Fired in Open - SJPPT No. 138.

Test of German 15 cm Rocket, GA Filled, Static Fired in Open (Single round and multiple, 9 fired simultaneously) - SJPPT No. 140

Static Test of Nine German 105 mm Shells, GA Filled, in Area Covered by Vegetation - SJPPT No. 142.

Static Test of German 15 cm Rocket, GA Filled, in Area Covered by Vegetation - SJPPT No. 144.

Static Test of Nine 4.2 Inch Chemical Mortar Shells, GA Filled, in Area Covered by Vegetation - SJPPT No. 147.

Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in Open - SJPPT No. 150.

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(9) Static Test in Area Covered by Vegetation of a Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio - SJPPT No. 152.

(10) Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in an Area Covered by Vegetation - SJPPT No. 153.

Static Test in Open of Single E23 Smoke Pot, GA Filled - SJPPT No. 166.

Static Test in Area Covered by Vegetation of a Single E23 Smoke Pot, GA Filled - SJPPT No. 167.

Static Test in the Open of a Single E23 Smoke Pot, GA Filled - SJPPT No. 168.

Static Test in the Open of a Single E23 Smoke Pot, HD Filled - SJPPT No. 176.

Static Test in the Open of a Single E23 Smoke Pot, HT Filled - SJPPT No. 177.

Static Test in the Open of a Single E23 Smoke Pot, HN3 Filled - SJPPT No. 178.

Static Test in the Open of a Single E23 Smoke Pot, HQ Filled - SJPPT No. 179.

3. TEST ANIMALS

a. Goats for use in future tests arrived 30 May 1949. The shipment included 196 goats and three kids born enroute. Goats were transferred from ship to barge, hauled to Mater Island and transported by truck from the barge to corrals recently constructed for this purpose.

b. Pigeons for similar use have not yet arrived

4. PROGRESS OF TESTS

a. A complete list of tests scheduled for San Jose Project together with pertinent data is included as Appendix B.

(SJPPR No. 68)

5. METEOROLOGY

a. Weather summary for the month of May 1949 is included as Appendix A.

6 DESIGN OF FACILITIES

a. The Chief of Engineers has allotted $15,000 to the San Jose Project for use in designing future facilities.

PERSONNEL

a. The following personnel departed this Project on 12 May 1949 for rotation to Z of I and reassignment:

Captain James N. Granade
Captain Luke H. West
Captain Robert J. Eder
Captain Alvin H. Bowles

b. Mr. George Van Bibber arrived this Project 2 May 1949, on TDY of approximately 30 days in connection with technical activities. Mr. Van Bibber's duty has recently been extended for a 30-day period by radiogram from Office of the Chief, Cml C.

8. VISITORS

a. During the period covered by this report, the following persons visited the Project:

2 May 1949	Dr. Worthley, Dept. of Army and Mr. Peake, OCCml C arrived in connection with technical activities and departed same day.
9 May 1949	Brigadier General Hart, CG USARFANT, arrived for one day inspection of this Project.

(SJPPR No. 68)

8. VISITORS (cont'd)

18 May 1949	Admiral Barbey, Commandant, Tenth Naval District, arrived for a brief visit to San Jose Project - departed same day.

JAY S. STOCKHARDT
Captain, Cnl C
Deputy Technical Director

APPROVED:

PAUL R. SMITH
Colonel, CmlC
Commanding

(JJPFR No. 66, App. B)

APPENDIX B

PROGRESS OF TESTS

PROGRESS OF TESTS, SAN JOSE PROJECT

TEST NO.	TITLE	STATUS
89	Surveillance of Bombs, Chemical 125 lb., T-3, H filled, Heresite coated and T-3, HD filled not coated.	Current, long-range sampling
99	Surveillance of VKL.	Test Completed, Report Distributed
	Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Bd. Test No. 724)	Plan of test approved with changes, 9 May 1949
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA filled, in the Open	Plan of test approved with changes, 29 April 1949.
	Surveillance of Bomb, Particulate 4 lb., E-1	Test Completed, Report Distributed.
	Surveillance of CK Stored in Bombs and Ton Containers under Tropical Conditions.	In progress, awaiting material.
136	Test with M70 Bomb, filled HD, in open and in area covered with vegetation, static fired, with onshore and with offshore winds.	Test Completed, Report Distributed.
137	Test of M70 Bomb, filled GA (E46) in open area, static fired.	Plan of test approved with changes, 18 April 1949.
138	Test of German 105 mm Shell, filled GA, static fired in open (approx. 9 shells fired simultaneously).	Plan of test approved with changes, 29 April 1949.
	Test of German 105 mm shell, filled GA, fired from gun into open (number of rounds to be determined by results from Test No. 138.	Awaiting completion of Test No. 138.
140	Test of German 15 cm rocket, filled GA, static fired in open. (single round and multiple, 9 fired simultaneously)	Plan of test approved with changes, 29 April 1949.

TEST NO.	TITLE	STATUS
	Test of German 15 cm rocket, filled GA, fired into open from from launcher (number to be determined from results of No. 140)	Awaiting completion of Test No. 140.
	Test of German 105 mm shell, filled GA, static fired in area covered by vegetation (approx. 9 shells fired simultaneously)	Plan of test approved with changes, 25 April 1949.
143	Test of German 105 mm shell, filled GA, fired from gun in area covered by vegetation.	Awaiting material.
	Test of German 15 cm rocket, filled GA, static fired in area covered by vegetation.	Plan of test approved with changes, 25 April 1949.
	Test of German 15 cm rocket, filled GA, fired in area covered by vegetation (number to be determined from results of No. 140)	Awaiting completion of Test No. 140.
146	Test of 4.2" chemical mortar shell, filled GA, fired into open area (number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130.
147	Test of 4.2" chemical mortar shell, filled GA, fired statically in covered area (nine to be fired simultaneously).	Plan of test approved with changes, 25 April 1949.
148	Test of 4.2" chemical mortar shell, filled GA, fired into area covered by vegetation (number to be determined from results of No. 147).	Awaiting completion of Test No. 147.
149	Test of M33A1 spray tank, filled unthickened GA in open from low altitude.	Awaiting material.
150	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped singly in open.	Plan of test approved with changes, 9 May 1949.
151	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped in multiple into open area (number to be determined from results of No. 150)	Awaiting completion of Test No. 150.

TEST NO.	TITLE	STATUS
	Test of single 125 lb. chemical bomb, T3E2, filled GA, with 35:1 burster ratio, fired statically in area covered by vegetation.	Plan of test approved with changes, 9 May 1949.
153	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped singly in covered area.	Plan of test approved with changes, 9 May 1949.
154	Test of 125 lb chemical bomb, T3E2 filled GA, with 35:1 burster ratio dropped in multiple into covered area. (number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153.
	Test of 125 lb T3 bomb, filled GA, with burster modified as determined by Edgewood tests, dropped singly into the open.	Awaiting completion of Edgewood tests.
156	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into open (number to be determined from results of No. 155)	Awaiting completion of Test No. 155.
157	Test of single 125 lb. T3 bomb, filled GA with modified burster fired statically in area covered with vegetation.	Awaiting completion of Edgewood tests.
158	Test of 125 lb. T3 bomb, filled GA with burster modified as determined by Edgewood tests, dropped singly into covered area.	Awaiting completion of Edgewood tests.
159	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into covered area (number to be determined from results of Test No. 158)	Awaiting completion of Test No. 158.
160	Test of E45 chemical bomb modified as determined by Edgewood tests, filled GA, dropped in open in small number (number to be determined by Edgewood tests.)	Awaiting completion of Edgewood tests.

TEST NO.	TITLE	STATUS
170	Multiple test of E23 smoke pot, filled GA, dropped from airplane, with onshore wind to simulate smoke. (Number to be determined from results of Test No. 168).	Awaiting completion of Test No.
171	Test of 4.2" chemical mortar shell filled GB, fired statically in the open (nine to be fired simultaneously)	Awaiting material
172	Test of 4.2" chemical mortar shell filled GB fired from mortar into open (number to be determined from results of Test No. 171).	Awaiting completion of Test No.
173	Test of 125 lb. T3 bomb, filled GB with modified burster, dropped singly in open.	Awaiting completion of Edgewood tests.
174	Test of E45 chemical bomb, filled GB with modified burster, dropped in small quantity in open (number to be determined from Edgewood tests).	Awaiting completion of Edgewood tests.
175	Test of single E23 smoke pot, filled GB, functioned statically in open on land.	Awaiting material.
176	Test of single E23 smoke pot, filled HD, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
177	Test of single E23 smoke pot, filled HT, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
178	Test of single E23 smoke pot, filled HN3, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
179	Test of single E23 smoke pot, filled HQ, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
180	Test of Suit, Protective, One Piece, Impermeable, E1R1, and related items under extreme heat load (Cml C Bd. Project No. 782).	Awaiting material.

TEST NO.	TITLE	STATUS
181	Test of Gas Casualty Kit, Treatment, Item 9-244-800 (New Revision)	Awaiting test material.
182	Test of First Aid Kit, Gas, Casualty, Item 9-206-710 (New Revision)	Awaiting test material.
183	Test of Veterinary Gas Casualty Outfit, Item 9-602-680 (New Revision)	Awaiting test material.
184	Operational Scale Test with German KC 250 III Gr Bombs, filled with GA. Technical Command Field Test No. 114.	Awaiting material
185	Test of single 250 kg German, GA filled bomb fired statically in the open under inversion or zero temperature gradient conditions.	Awaiting material.
186	Test of single 250 kg German, GA filled bomb dropped into open and also into covered area under inversion or zero temperature gradient conditions.	Awaiting material.

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JUL 15 1949

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 69

1 JUNE 1949 THROUGH 30 JUNE 1949

by

San Jose Project Technical Staff

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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

CSLTD 5 July 1949

SUBJECT: San Jose Project Progress Report No. 69
Period 1 June 1949 through 30 June 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.
Attention: Project Coordination Committee

1. STATUS OF REPORTS

a. The following special report was distributed during the period covered by this report:

Title	Date of Test	Report Distributed
SJPR No. ST-3. Aluminum Sulfate Water Treatment (By request of Naval Research Laboratory)	25 May 1949 through 10 June 1949	21 June 1949

2. PROGRESS OF TESTS DURING THE MONTH OF JUNE

a. Location of Entrances to Gasproof Shelters in Relation to Prevailing Wind -- SJPPT No. 102-A

(1) Phase 1 of this test has been completed.

The location for Phase 2 has been selected and cleared and the shelter is at the present time being moved to this new location

b. Surveillance of Aged, CK in M70, M78 and M79 Bombs - SJPPT No. 135.

Results of recent sampling performed in this test are included as Appendix C.

Static Test in the Open of a Single E23 Smoke Pot, HT Filled - SJPPT No. 177.

Static Test in the Open of a Single E23 Smoke Pot, HN3 Filled - SJPPT No. 178.

(17) Static Test in the Open of a Single E23 Smoke Pot, HQ Filled - SJPPT No. 179.

3. TEST ANIMALS

a. Pigeons for test purposes were not shipped to this Project during the month of June due to insufficient funds for procurement in the recent fiscal year. This information was received from the Chief, Proving Ground Section, Development Branch, Army Chemical Center, Maryland, in a letter dated 3 June 1949.

4. PROGRESS OF TESTS

a. A complete list of tests scheduled for San Jose Project, together with pertinent information, is included as Appendix B.

5. FUTURE CONSTRUCTION

a. Messrs. Tatum and Davis from the Panama Engineer District arrived on 17 June 1949 for the purpose of conducting a survey of planned construction at San Jose Project. The survey included detailed study of all planned construction, as well as several conferences with Technical personnel, this Project. Messrs. Tatum and Davis departed 23 June 1949 with sufficient information and drawings to publish these data in a request for contractor bids.

6. METEOROLOGY

a. Weather summary for the month of June 1949 is included as Appendix A.

7. PERSONNEL

a. Captain Henry M. Cook, Post Surgeon, departed this Project on 21 June 1949 for rotation to Z of I.

b. Miss Angela Bornn, Chemist, P-2, arrived on 1 June 49 to work in the Technical Laboratory. Her position number as listed on the Personnel Authorization Table for San Jose Project, Technical Division, is 60.31-5.

c. Mr. Miles Hardenburgh, Chemical Engineer, arrived this Project 2 June 1949, and was assigned to duty with the Field Test Group. His position number as listed on the Personnel Authorization Table for San Jose Project, Technical Division, is 60.32-1.

8. VISITORS

a. During the period covered by this report there were no visitors at the Project.

JAY S. STOCKHARDT
Captain, Cml C
Deputy Technical Director

APPROVED:

PAUL R. SMITH
Colonel, CmlC
Commanding

APPENDIX B

PROGRESS OF TESTS

PROG

TEST NO.	TITLE	STATUS
89	Surveillance of Bombs, Chemical 125 lb., T-3, H filled, Heresite coated and T-3, HD filled not coated.	Current, long-range sampling
99	Surveillance of VKL.	Test Completed, Report Distributed.
	Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Bd. Test No. 724)	Test in progress
	Static Test of Nine 4.2" Chemical Mortar Shells, GA filled, in the Open	Plan of Test approved with changes - 29 April 1949
132	Surveillance of Bomb, Particulate 4 lb., E-1	Test Completed, Report Distributed.
135	Surveillance of CK Stored in Bombs and Ton Containers under Tropical Conditions.	Test in Progress
136	Test with M70 Bomb, filled HD, in open and in area covered with vegetation, static fired, with onshore and with offshore winds.	Test Completed, Report Distributed.
137	Test of M70 Bomb, filled GA (E46) in open area, static fired.	Plan of Test approved with changes - 18 April 1949
138	Test of German 105 mm Shell, filled GA, static fired in open (approx. 9 shells fired simultaneously).	Plan of Test approved with Changes - 29 April 1949
139	Test of German 105 mm shell, filled GA, fired from gun into open (number of rounds to be determined by results from Test No. 138.	Awaiting completion of Test No. 138
140	Test of German 15 cm rocket, filled GA, static fired in open. (single round and multiple, 9 fired simultaneously)	Plan of Test approved with changes - 29 April 1949

TEST NO.	TITLE	
141	Test of German 15 cm rocket, filled GA, fired into open from from launcher (number to be determined from results of No. 140)	Awaiting completion of Test No. 140.
142	Test of German 105 mm shell, filled GA, static fired in area covered by vegetation (approx. 9 shells fired simultaneously)	Plan of test approved with changes, 25 April 1949.
	Test of German 105 mm shell, filled GA, fired from gun in area covered by vegetation.	Awaiting material.
	Test of German 15 cm rocket, filled GA, static fired in area covered by vegetation.	Plan of test approved with changes, 25 April 1949.
	Test of German 15 cm rocket, filled GA, fired in area covered by vegetation (number to be determined from results of No. 140)	Awaiting completion of Test No. 140.
146	Test of 4.2" chemical mortar shell, filled GA, fired into open area (number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130.
147	Test of 4.2" chemical mortar shell, filled GA, fired statically in covered area (nine to be fired simultaneously).	Plan of test approved with changes, 25 April 1949.
148	Test of 4.2" chemical mortar shell, filled GA, fired into area covered by vegetation (number to be determined from results of No. 147).	Awaiting completion of Test No. 147.
149	Test of M33A1 spray tank, filled unthickened GA in open from low altitude.	Awaiting material.
150	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped singly in open.	Plan of test approved with changes, 9 May 1949.
151	Test of 125 lb. chemical bomb, T3E2, filled GA with 3 ratio, dropped in mult open area (number to b mined from results of	Awaiting completion of Test No. 150,

TEST NO.		
152	Test of single 125 lb. chemical bomb, T3E2, filled GA, with 35:1 burster ratio, fired statically in area covered by vegetation.	Plan of test approved with changes, 9 May 1949.
153	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped singly in covered area.	Plan of test approved with changes, 9 May 1949.
154	Test of 125 lb chemical bomb, T3E2 filled GA, with 35:1 burster ratio dropped in multiple into covered area. (number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153.
155	Test of 125 lb T3 bomb, filled GA, with burster modified as determined by Edgewood tests, dropped singly into the open.	Awaiting completion of Edgewood tests.
156	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into open (number to be determined from results of No. 155)	Awaiting completion of Test No. 155
157	Test of single 125 lb. T3 bomb, filled GA with modified burster fired statically in area covered with vegetation.	Awaiting completion of Edgewood tests.
158	Test of 125 lb. T3 bomb, filled GA with burster modified as determined by Edgewood tests, dropped singly into covered area.	Awaiting completion of Edgewood tests.
159	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into covered area (number to be determined from results of Test No. 158)	Awaiting completion of Test No. 158.
160	Test of M15 chemical bomb modified as determined by Edgewood tests, filled GA, dropped in open in small number (number to be determined by Edgewood tests.	Awaiting completion of Edgewood tests.

TEST NO.	TITLE	
	Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into open in large number (number of clusters to be determined from results of Test No. 160)	
	Test of modified E45 chemical bomb fired statically in area covered by vegetation (nine bombs to be fired simultaneously)	Awaiting completion of Edgewood tests.
	Test of E45 chemical bomb, modified as determined by Edgewood tests, filled GA, dropped in area covered by vegetation (number to be determined from results of Edgewood tests)	Awaiting completion of Edgewood tests.
164	Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into area covered by vegetation (number of clusters to be determined by results of 163)	Awaiting completion of Test No. 163.
165	Test of E45 chemical bomb with various shaped charges, filled GA, dropped into open in small number (number to be determined by Edgewood tests).	Awaiting completion of Edgewood tests.
166	Test of single E23 smoke pot, filled GA, functioned statically in open on land.	Plan of Test approved with changes, 22 April 49.
167	Test of single E23 smoke pot, filled GA, functioned statically in area covered by vegetation.	Plan of Test approved with changes, 22 April 49.
168	Test of single E23 smoke pot, filled GA, functioned statically on water with onshore wind.	Plan of Test approved with changes, 22 April 49.
169	Multiple test of E23 smoke pot, filled GA, dropped from boat, with onshore wind to simulate smoke (number to be determined from results of Test No. 168)	Awaiting completion of Test No. 168.

TEST NO.	T	
170	Multiple test filled GA, dr[illegible] with onshore wind to simulate smoke. (Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168.
171	Test of 4.2" chemical mortar shell filled GB, fired statically in the open (nine to be fired simultaneously)	Awaiting material.
172	Test of 4.2" chemical mortar shell filled GB fired from mortar into open (number to be determined from results of Test No. 171).	Awaiting completion of Test No.
173	Test of 125 lb. T3 bomb, filled GB with modified burster, dropped singly in open.	Awaiting completion of Edgewood tests.
174	Test of E45 chemical bomb, filled GB with modified burster, dropped in small quantity in open (number to be determined from Edgewood tests).	Awaiting completion of Edgewood tests.
175	Test of single E23 smoke pot, filled GB, functioned statically in open on land.	Awaiting material.
176	Test of single E23 smoke pot, filled HD, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
177	Test of single E23 smoke pot, filled HT, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
178	Test of single E23 smoke pot, filled HN3, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
179	Test of single E23 smoke pot, filled HQ, functioned statically in open on land.	Plan of Test approved with changes, 25 April 49.
180	Test of Suit, Protective, One Piece, Impermeable, E1R1, and related items under extreme heat load (Cml C Bd. Project No. 782).	Awaiting material.

TEST NO.	TITLE	STATUS
181	Test of Gas Casualty Kit, Treatment, Item 9-244-800 (New Revision)	Awaiting test material.
182	Test of First Aid Kit, Gas, Casualty, Item 9-206-710 (New Revision)	Awaiting test material.
183	Test of Veterinary Gas Casualty Outfit, Item 9-602-680 (New Revision)	Awaiting test material.
	Operational Scale Test with German KC 250 III Gr Bombs, filled with GA. Technical Command Field Test No. 114.	Awaiting material.
185	Test of single 250 kg German, GA filled bomb fired statically in the open under inversion or zero temperature gradient conditions.	Awaiting material
	Test of single 250 kg German, GA filled bomb dropped into open and also into covered area under inversion or zero temperature gradient conditions.	Awaiting material.

APPENDIX C

SURVEILLANCE OF AGED CK IN M70, M78 AND M79 BOMBS

TEST NO. 135

RESULTS OF SAMPLING DURING JUNE 1949

DOWNGRADED AT 3 YEAR INTERVAL
DECLASSIFIED AFTER 12 YEARS
DOD DIR 5200.10

(SJPPR No. 69, App. I

Surveillance of Aged CK in M70, M78 and M79 Bombs, Test No. 135

Results of Sampling During June 1949

Semi-annual sampling in connection with this test was performed during the period 14-16 June 1949. This is the second series of samples taken, results of the first being reported in SJPPR No. 67 which was distributed early in May 1949. Results of recent sampling appear below.

M73 Bombs

ate	Lot No.	Bomb No.	Date Filled	Abs. Press.	% Acidity	% Soluble Residue
14 Ju 49	206	29	Aug-44	39lbs.	0.12	0.220
	206	35	Aug-44	39	0.05	0.247
	206	12	Aug-44	39	0.06	0.392
	206	27	Sept-44	39	0.10	0.263
	206	19	Aug-44	39	0.07	0.283
	206	32	Aug-44	37	0.09	0.216
	206	5	Aug-44	39	0.08	0.247
	206	8	Aug-44	39	0.05	0.204
	206	21	Aug-44	37	0.05	0.966
	206	22	Aug-44	39	0.08	0.280
	206	11	Aug-44	39	0.06	0.222
	206	34	Aug-44	38	0.05	0.337
	206	13	Aug-44	38	0.08	0.413
	206	23	Aug-44	39	0.06	0.306
14 Ju 49	207	24	Aug-44	36	Bad valve - no sample	
	207	31	Aug-44	43	0.02	2.340
	207	28	Aug-44	39	0.10	0.363
	207	25	Aug-44	40.5	0.07	0.320
	207	2	Aug-44	38.5	0.04	0.450
	207	20	Aug-44	39	0.10	0.087
14 Ju 49	222	26	Sept-44	No threads	0.05	0.248
	222	9	Sept-44	37	0.05	0.225
	222	15	Sept-44	34	0.09	0.319
14 Ju 49	224	3	Sept-44	39	0.07	0.274
	224					
14 Ju 49	None	1				
	None					
	None	4	Aug-44	37	0.08	0.295
	None	18	Aug-44	39	0.09	0.325
Resample	207	24	Aug-44	38	0.08	0.435

Bombs

	Lot No.	Bomb No.	Date Filled	Abs. Press.	% Acidity	% Soluble Residue
	65	58	June-44	40	0.12	0.414
	65	59	June-44	41	0.06	0.206
	65	57	June-44	40	0.07	0.276
	65	60	June-44	35	0.05	0.311
	65	56	June-44	37	0.07	0.271
[illegible] 49	456	55	Nov-44	40	0.14	0.112
	456	53	Nov-44	35	0.06	0.213

mbs

Necessary equipment for the sampling of M70 Bombs was received, [illegible] this phase of the test was begun. One bomb from each lot was drilled and needle valves inserted in these bombs to facilitate future sampling. Results obtained appear below.

Date	Lot No.	Bomb No.	Date Filled	Abs. Press.	% Acidity	% Soluble Residue
15 Jun 49	384	1	Oct-44	36	0.10	0.32
	394	2	Oct-44	37	0.07	0.29
	373	3	Oct-44	35	0.04	0.26
	382	4	Oct-44	34	0.14	0.61
	406	5	Nov-44	35	0.06	0.37
	352	6	Oct-44	36	0.09	0.38
	331	7	Oct-44	34	0.14	0.52
	399	8	Nov-44	39	0.07	0.76
	385	9	Nov-44	36	0.11	0.98
	367	10	Oct-44	35	0.06	0.70
	395	11	Oct-44	38	0.09	0.41
	374	12	Oct-44	33	0.07	0.30
	319	13	Oct-44	39	0.05	0.31
	420	14	Nov-44	40	0.05	0.89
	439	15	Nov-44	39	0.13	0.94

Meteorology

	Max. Temp.	Min. Temp.	Mean Max. Temp.	Mean Min. Temp.
June 1949	85°F	69°F	82°F	[illegible]

OC
OCT 25 1949

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 70

1 JULY 1949 THROUGH 31 JULY 1949

by

San Jose Project Technical Staff

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SFO Branch
Sat Segura files
R. Bridges office

DOWNGRADED AT 3 YEAR INTERVALS
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page 1 of 13

2 349

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1	Chief, Chemical Corps
2	Chief, Research and Engineering Division CCCmlC, Army Chemical Center, Md.
3	Chief, Proving Ground Section, Development Branch, Research and Engineering Division, CCCmlC, Army Chemical Center, Md.
4	Secretary, Research Council, CCCmlC, Bldg. 330 Army Chemical Center, Md.
- 6	Commanding Officer, Cml C Technical Command, Army Chemical Center, Md.
8	Chief, Medical Division, Army Chemical Center, Md.
- 13	Technical Director, Camp Detrick, Frederick, Md.
14	President, Cml C Board, Army Chemical Center, Md.
15	Commanding Officer, Edgewood Proving Ground, Army Chemical Center, Md.
16 - 17	Research and Development Board, Technical Reference Branch, Document Section, Room 3D-641, National Military Establishment, Washington 25, D. C.
18	Military Applications Division, U. S. Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D. C., Attention: Chemical Officer
19 - 23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W., Washington, D. C. (Thru: Chief, Res & Eng Div., Army Chemical Center, Md.)
26	Canadian Technical Representative, Army Chemical Center, Md. (Thru: Chief, Res & Eng Div., Army Chemical Center, Md.)
27	British Liaison Officer, Army Chemical Center, Md. (Thru: Chief, Res & Eng Div., Army Chemical Center, Md.)
28	SJP Technical Files
29 - 31	SJP Tec[illegible]

Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD 1 August 1949

SUBJECT: San Jose Project Progress Report No. 70
Period 1 July 1949 through 31 July 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.

1. STATUS OF REPORTS

No reports were distributed during the period covered by this report.

2. PROGRESS OF TESTS DURING THE MONTH OF JULY

a. Location of Entrances to Gasproof Shelters in Relation to Prevailing Wind - SJPPT No. 102

(1) Reconstruction of the shelter in its new location is now in progress.

b. Test of Single E23 Smoke Pot, Filled HD, Functioned Statically in Open on Land - SJPPT No. 176

(1) Preliminary work on this test was conducted on 22 July 1949 at which time a trial run was made in order to establish a procedure to be followed in actual conduct of the test.

(2) The procedure followed on 22 July 1949 was repeated on 27 July 1949 as the first phase of Test No. 176.

c. Work on tests listed below has been delayed pending the arrival of munitions, test animals or both:

(1) Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open - SJPPT No. 178;

(2) Static Test of M70 (E46) Bomb, GA Filled, in the Open - SJPPT No. 137.

(3) Static Test of Nine 4.2 Inch Chemical Mortar Shells, GA Filled, in Area Covered by Vegetation - SJPPT No. 147.

(4) Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in Open - SJPPT No. 150.

(5) Static Test in Area Covered by Vegetation of a Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio - SJPPT No. 152.

(6) Single 125 Pound Chemical Bomb, T3E2, GA Filled, with 35:1 Burster Ratio, Dropped in an Area Covered by Vegetation - SJPPT No. 153.

(7) Static Test in Open of Single E23 Smoke Pot, GA Filled - SJPPT No. 166.

(8) Static Test in Area Covered by Vegetation of a Single E23 Smoke Pot, GA Filled - SJPPT No.167

(9) Static Test in the Open of a Single E23 Smoke Pot, GA Filled - SJPPT No. 168.

3. SUPPLY

a. E23 Smoke Pots arrived in San Juan, Puerto Rico, on 1 July 1949. This shipment reached the Project on 20 July 1949.

b. Pigeons for test purposes are due to arrive early in August.

4. PROGRESS OF TESTS

a. A complete list of tests scheduled for the San Jose Project, together with pertinent information is included as Appendix B.

b. The following tests have been deleted from the San Jose Project Program of Tests in accordance with letter CMLWR-D-4 400.112/249 S.J. from Chief, Research and Engineering Division, CCCmlC, Army Chemical Center, Md., dated 30 June 1949, Subject: Tests of German Ground Munitions, GA Filled.

(1) Test of German 105 mm Shell, Filled GA, Static Fired in Open - SJPPT No. 138.

(2) Test of German 105 mm Shell, Filled GA, Fired from Gun into Open - SJPPT No. 139.

(3) Test of German 15 cm Rocket, Filled GA, Static Fired in Open - SJPPT No. 140.

(4) Test of German 15 cm Rocket, Filled GA, Fired into Open from Launcher - SJPPT No. 141.

(5) Test of German 105 mm Shell, Filled GA, Static Fired in Area Covered by Vegetation - SJPPT No. 142.

(6) Test of German 105 mm Shell, Filled GA, Fired from Gun in Area Covered by Vegetation - SJPPT No. 143.

(7) Test of German 15 cm Rocket, Filled GA, Static Fired in Area Covered by Vegetation - SJPPT No. 144.

(8) Test of German 15 cm Rocket, Filled GA, Fired in Area Covered by Vegetation - SJPPT No. 145.

5. METEOROLOGY

a. Weather summary for the month of July 1949 is included as Appendix A.

6. PERSONNEL

a. 1st Lt. Richard A. Houser arrived from Zone of Interior for assignment this project on 5 July 1949.

b. Major Speers G. Ponder arrived fr
on 13 July 1949 and assumed duty
this stati

c. Captain Lawrence E. Remick departed this station on 25 July 1949 for Zone of Interior.

d. 1st Lt. George W. Cullum arrived from Zone of Interior this station on 26 July 1949 to assume duties as Post Surgeon.

e. Mr. Sanford Ribnik arrived this project on 15 July 1949 to fill position with Technical Division as General Photographer, CAF-4.

f. Mr. Alan R. Cissna arrived this project on 26 July 1949 to fill position as Motion Picture Photographer, CAF-7, with the Technical Division.

7. VISITORS

a. During the period covered by this report, the following persons visited the Project:

1 July 1949	Lt. Col. Charles B. Hines, FA, arrived this project to view and discuss current technical operations. Colonel Hines' visit was made just prior to his reporting for duty with the Armed Forces Special Weapons Project.
22 July 1949	Messrs. Mendez and McBride representing the Panama District Engineers arrived in connection with Technical construction matters.

SPEERS G. PONDER
Major, Cml C
Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Comman

APPENDIX B

PROGRESS OF TESTS

PROGRESS OF TESTS, SAN JOSE PROJECT

TEST NO.	TITLE	STATUS
89	Surveillance of Bomb, Chemical 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled not coated.	Current, long-range sampling.
99	Surveillance of VKL.	Test Completed, Report Distributed.
102A	Location of Entrances to Gas-proof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Bd. Test No. 724)	Test in progress
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open.	Plan of test approved with changes, 29 April 1949
	Surveillance of Bomb, Particulate, 4 lb., E-1	Test Completed, Report Distributed.
135	Surveillance of CK Stored in Bombs and Ton Containers Under Tropical Conditions	Test in progress
	Test of M70 Bomb, Filled HD, in Open and in Area Covered with Vegetation, Static Fired, with Onshore and Offshore Winds	Test Completed, Report Distributed
137	Test of M70 Bomb, Filled GA (E46) in Open Area, Static Fired	Plan of test approved with changes, 18 April 1949
146	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Open Area (number to be determined from results of Test No. 130)	Awaiting completion of Test No. 130
147	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired Statically in Covered Area (nine to be fired simultaneously)	Plan of test approved with changes, 25 April 1949
148	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Area Covered by Vegetation (number to be determined from results of Test No. 147)	Awaiting completion of Test No. 147

TEST NO.	TITLE	
	Test of M33A1 Spray Tank, Filled Unthickened GA in Open From Low Altitude.	Awaiting material
150	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped Singly in Open	Plan of test approved with changes, 9 May 1949
151	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped in Multiple into Open Area (number to be determined from results of Test No. 150)	Awaiting completion of Test No. 150

TEST NO.	TITLE	
152	Test of single 125 lb. chemical bomb, T3E2, filled GA; with 35:1 burster ratio, fired statically in area covered by vegetation.	Plan of test approved with changes, 9 May 1949.
	Test of 125 lb. chemical bomb, T3E2, filled GA with 35:1 burster ratio, dropped singly in covered area.	Plan of test approved with changes, 9 May 1949.
	Test of 125 lb chemical bomb, T3E2 filled GA, with 35:1 burster ratio dropped in multiple into covered area. (number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153.
	Test of 125 lb T3 bomb, filled GA, with burster modified as determined by Edgewood tests, dropped singly into the open.	Awaiting completion of Edgewood tests.
156	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into open (number to be determined from results of No. 155)	Awaiting completion of Test No. 155.
157	Test of single 125 lb. T3 bomb, filled GA with modified burster fired statically in area covered with vegetation.	Awaiting completion of Edgewood tests.
158	Test of 125 lb. T3 bomb, filled GA with burster modified as determined by Edgewood tests, dropped singly into covered area.	Awaiting completion of Edgewood tests.
159	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into covered area (number to be determined from results of Test No. 158)	Awaiting completion of Test No. 158.
160	Test of M45 chemical bomb modified as determined by Edgewood tests, filled GA, dropped in open in small number (number to be determined by Edgewood tests.)	Awaiting completion of Edgewood tests

TEST NO.	TITLE	
	Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into open in large number (number of clusters to be determined from results of Test No. 160)	Awaiting completion of Test No. 160.
	Test of modified E45 chemical bomb fired statically in area covered by vegetation (nine bombs to be fired simultaneously)	Awaiting completion of Edgewood tests.
	Test of E45 chemical bomb, modified as determined by Edgewood tests, filled GA, dropped in area covered by vegetation (number to be determined from results of Edgewood tests)	Awaiting completion of Edgewood tests.
	Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into area covered by vegetation (number of clusters to be determined by results of 163)	Awaiting completion of Test No. 163.
165	Test of E45 chemical bomb with various shaped charges, filled GA, dropped into open in small number (number to be determined by Edgewood tests).	Awaiting completion of Edgewood tests.
166	Test of single E23 smoke pot, filled GA, functioned statically in open on land.	Plan of Test approved with changes, 22 April 49.
167	Test of single E23 smoke pot, filled GA, functioned statically in area covered by vegetation.	Plan of Test approved with changes, 22 April 49.
168	Test of single E23 smoke pot, filled GA, functioned statically on water with onshore wind.	Plan of Test approved with changes, 22 April 49.
169	Multiple test of E23 smoke pot, filled GA, dropped from boat, with onshore wind to simulate smoke. (number to be determined from results of Test No. 168)	Awaiting completion of Test No. 168.

TEST NO.	TITLE	
170	Multiple test of E23 smoke pot, filled GA, dropped from airplane, with onshore wind to simulate smoke. (Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168
171	Test of 4.2" chemical mortar shell filled GB, fired statically in the open (nine to be fired simultaneously)	Awaiting material
	Test of 4.2" chemical mortar shell filled GB fired from mortar into open (number to be determined from results of Test No. 171).	Awaiting completion of Test No. 171
173	Test of 125 lb. T3 bomb, filled GB with modified burster, dropped singly in open.	Awaiting completion of Edgewood tests
174	Test of E45 chemical bomb, filled GB with modified burster, dropped in small quantity in open (number to be determined from Edgewood tests).	Awaiting completion of Edgewood tests
175	Test of single E23 smoke pot, filled GB, functioned statically in open on land.	Awaiting material
	Test of single E23 smoke pot, filled HD, functioned statically in open on land.	Test in progress
177	Test of single E23 smoke pot, filled HT, functioned statically in open on land.	Awaiting completion of Test No. 176
178	Test of single E23 smoke pot, filled HN3, functioned statically in open on land.	Awaiting completion of Test No. 176
179	Test of single E23 smoke pot, filled HQ, functioned statically in open on land.	Awaiting completion of Test No. 176
180	Test of Suit, Protective, One Piece, Impermeable, E1R1, and related items under extreme heat load (Cml C Bd. Project [illegible]	Awaiting material

TEST NO.	TITLE	
181	Test of Gas Casualty Kit, Treatment, Item 9-244-800 (New Revision)	Awaiting test material.
182	Test of First Aid Kit, Gas, Casualty, Item 9-206-710 (New Revision)	Awaiting test material.
183	Test of Veterinary Gas Casualty Outfit, Item 9-602-680 (New Revision)	Awaiting test material.
	Operational Scale Test with German KC 250 III Gr Bombs, filled with GA. Technical Command Field Test No. 114.	Awaiting material.
	Test of single 250 kg German, GA filled bomb fired statically in the open under inversion or zero temperature gradient conditions.	Awaiting material.
186	Test of single 250 kg German, GA filled bomb dropped into open and also into covered area under inversion or zero temperature gradient conditions.	Awaiting material.



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SAN JOSE PROJECT PROGRESS REPORT

NUMBER 71

1 AUGUST 1949 THROUGH 31 AUGUST 1949

by

San Jose Project Technical Staff

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4	Secretary, Research Council, OCCmlC, Bldg. 330, Army Chemical Center, Maryland
	Commanding Officer, Cml C Technical Command, Army Chemical Center, Maryland
	Chief, Medical Division, Army Chemical Center, Maryland
	Technical Director, Camp Detrick, Frederick, Maryland
14	President, Cml C Board, Army Chemical Center, Maryland
15	Commanding Officer, Edgewood Proving Ground, Army Chemical Center, Maryland
16-17	Research and Development Board, Technical Reference Branch, Document Section, Room 3D-641, National Military Establishment, Washington 25, D.C.
18	Military Applications Division, U.S. Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D.C.; Attention: Chemical Officer
19-23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W., Washington, D.C.(Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
24-26	Canadian Technical Representative, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
27	British Liaison Officer, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
28	SJP Files
29-31	SJP Technical

HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD 1 September 1949

SUBJECT: San Jose Project Progress Report No. 71
Period 1 August 1949 through 31 August 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.

1. STATUS OF REPORTS

The following special report was distributed during the period covered by this report:

Title	Date of Test	Report Distributed
SJPR No. 176, Static Test in the Open of a Single E23 Smoke Pot, HD filled	27 July 1949 through 15 August 1949	30 August 1949

2. PROGRESS OF TESTS DURING THE MONTH OF AUGUST

a. Location of Entrances to Gasproof Shelters in Relation to Prevailing Wind - SJPPT No. 102

Phase 2 of this test will begin within the next week.

b. Static Test in the Open of a Single E23 Smoke Pot, HD Filled - SJPPT No. 176

The final phase of this test was conducted on 15 August 1949.

Report of this test was distributed as a special report on 30 August 1949.

c. Surveillance of Bombs, Chemical, 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled, Not Coated - SJPPT No. 89.

(1) Results of recent sampling performed in connection with this

3. SUPPLY

a. Shipment of Pigeons requisitioned in March 1949 arrived this Project on 18 August 1949.

4. TRAINING

a. Technical personnel have received during the period covered by this report intensive training in all aspects of work with Agents of the G series. It is anticipated that work with these agents will begin in the very near future. This training included a three-hour course which covered safety, first aid, symptoms of exposed personnel, etc., followed by an examination in which each man was required to receive a passing mark before being permitted to work with G agents. In addition, technical personnel were given instruction and practice in the use of impermeable clothing.

5. PROGRESS OF TESTS

a. A complete list of tests scheduled for the San Jose Project, together with pertinent information is included as Appendix B.

b. The following tests have been deleted from the San Jose Project Program of Tests in accordance with a letter dated 10 August 1949, from the Office of the Chief, Research and Engineering Division, OCCmlC, Army Chemical Center, Maryland. Items to be tested will not be available until 1950 or 1951 and when available it is planned to test these items in a hot, wet, tropical climate.

Test of Gas Casualty Kit, Treatment, Item 9-244-800 (New Revision) - SJPPT No. 181.

(2) Test of First Aid Kit, Gas Casualty, Item 9-206-710 (New Revision) - SJPPT No. 182.

Test of Veterinary Gas Casualty Outfit, Item 9-602-680 (New Revision) - SJPPT No. 183.

6. METEOROLOGY

a. Weather summary for the month of August 1949 is included as Appendix A.

7. PERSONNEL

a. Captain John F. Neville, MC, arrived 18 August 1949, for temporary duty of approximately thirty days in connection with work on the G series Agents.

b. CWO Jack E. Triden arrived 26 August 1949 on permanent change of station.

c. Lt. Col. R. Beverly Caldwell arrived 30 August 1949 on permanent change of station.

d. Lt. William B. Strough arrived 30 August 1949 on permanent change of station.

8. VISITORS

a. During the period covered by this report no persons arrived at the San Jose Project to visit the Technical Division.

/SPEERS G. POMDER
Major, Cml C
Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Commanding

APPENDIX B

PROGRESS OF TESTS

PROGRESS OF TESTS, SAN JOSE PROJECT

TEST NO.	TITLE	STATUS
29	Surveillance of Bombs, Chemical 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled not coated.	Current, long range sampling
7	Surveillance of VKL.	Test Completed, Report Distributed.
1A	Location of Entrances to Gas-proof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Bd. Test No. 724)	Test in progress
30	Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open.	Material available – occupied on other tests
32	Surveillance of Bomb, Particulate, 4 lb., E-1	Test Completed, Report Distributed.
35	Surveillance of CK Stored in Bombs and Ton Containers Under Tropical Conditions	Test in progress
136	Test of M70 Bomb, Filled HD, in Open and in Area Covered with Vegetation, Static Fired, with Onshore and Offshore Winds	Test Completed, Report Distributed.
137	Test of M70 Bomb, Filled GA (E46) in Open Area, Static Fired	Material available – occupied on other tests
	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Open Area (number to be determined from results of Test No. 130)	Awaiting completion of Test No. 130
	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired Statically in Covered Area (nine to be fired simultaneously)	Material available – occupied on other tests
148	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Area Covered by Vegetation (number to be determined from results of Test No. 147)	Awaiting completion of Test No. 147

TEST NO.		
149	Test of M33A1 Spray Tank, Filled Unthickened GA in Open From Low Altitude.	Awaiting material
150	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped Singly in Open	Material available – occupied on other tests
151	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped in Multiple into Open Area (number to be determined from results of Test No. 150)	Awaiting completion of Test No. 150

TEST NO.	TITLE	
	Test of single 125 lb. chemical bomb, T532, filled GA, with 35:1 burster ratio, fired statically in area covered by vegetation.	Material available - occupied on other tests
	Test of 125 lb. chemical bomb, T532, filled GA with 35:1 burster ratio, dropped singly in covered area.	Material available - occupied on other tests
	Test of 125 lb chemical bomb, T532 filled GA, with 35:1 burster ratio dropped in multiple into covered area. (number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153
	Test of 125 lb T3 bomb, filled GA, with burster modified as determined by Edgewood tests, dropped singly into the open.	Awaiting completion of Edgewood tests
56	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into open (number to be determined from results of No. 155)	Awaiting completion of Test No. 155
157	Test of single 125 lb. T3 bomb, filled GA with modified burster fired statically in area covered with vegetation.	Awaiting completion of Edgewood tests
158	Test of 125 lb. T3 bomb, filled GA with burster modified as determined by Edgewood tests, dropped singly into covered area.	Awaiting completion of Edgewood tests
159	Test of 125 lb. T3 bomb, filled GA with modified burster dropped in multiple into covered area (number to be determined from results of Test No. 158)	Awaiting completion of Test, No. 158
160	Test of M15 chemical bomb modified as determined by Edgewood tests, filled GA, dropped in open in small number (number to be determined by Edgewood tests.)	Awaiting completion of Edgewood tests

TEST NO.	TITLE	
161	Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into open in large number (number of clusters to be determined from results of Test No. 160)	Awaiting completion of Test No. 160
	Test of modified E45 chemical bomb fired statically in area covered by vegetation (nine bombs to be fired simultaneously)	Awaiting completion of Edgewood tests
	Test of E45 chemical bomb, modified as determined by Edgewood tests, filled GA, dropped in area covered by vegetation (number to be determined from results of Edgewood tests)	Awaiting completion of Edgewood tests
6[illegible]	Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into area covered by vegetation (number of clusters to be determined by results of 163)	Awaiting completion of Test No. 163
[illegible]65	Test of E45 chemical bomb with various shaped charges, filled GA, dropped into open in small number (number to be determined by Edgewood tests).	Awaiting completion of Edgewood tests
[illegible]3	Test of single E23 smoke pot, filled GA, functioned statically in open on land.	Material available - occupied on other tests
[illegible]	Test of single E23 smoke pot, filled GA, functioned statically in area covered by vegetation.	Material available - occupied on other tests
[illegible]	Test of single E23 smoke pot, filled GA, functioned statically on water with onshore wind.	Material available - occupied on other tests
1[illegible]8	Multiple test of E23 smoke pot, filled GA, dropped from boat, with onshore wind to simulate smoke (number to be determined from results of Test No. 168)	Awaiting completion of Test No. 168

TEST NO.	T	
170	Multiple test of E23 smoke pot, filled GA, dropped from airplane, with onshore wind to simulate smoke. (Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168
171	Test of 4.2" chemical mortar shell filled GB, fired statically in the open (nine to be fired simultaneously)	Awaiting material
172	Test of 4.2" chemical mortar shell filled GB fired from mortar into open (number to be determined from results of Test No. 171).	Awaiting completion of Test No. 171
	Test of 125 lb. T3 bomb, filled GB with modified burster, dropped singly in open.	Awaiting completion of Edgewood tests
174	Test of E45 chemical bomb, filled GB with modified burster, dropped in small quantity in open (number to be determined from Edgewood tests).	Awaiting completion of Edgewood tests
	Test of single E23 smoke pot, filled GB, functioned statically in open on land.	Awaiting material
	Test of single E23 smoke pot, filled HD, functioned statically in open on land.	Test completed, report distributed
177	Test of single E23 smoke pot, filled HT, functioned statically in open on land.	Material available - occupied on other tests
	Test of single E23 smoke pot, filled HN3, functioned statically in open on land.	Material available - occupied on other tests
	Test of single E23 smoke pot, filled HQ, functioned statically in open on land.	Materail available - occupied on other tests
	Test of Suit, Protective, One Piece, Impermeable, ZIRl, and related items under extreme heat load (Cml C Rd. Project No. YR21.	Awaiting material

TEST NO.		
	Test of Gas Casualty Kit, Treatment, Item 9-244-800 (New Revision)	
182	Test of First Aid Kit, Gas, Casualty, Item 9-206-710 (New Revision)	
	Test of Veterinary Gas Casualty Outfit, Item 9-602-680 (New Revision)	Awaiting material
	Operational Scale Test with German KC 250 III Gr Bombs, filled with GA. Technical Command Field Test No. 114.	
185	Test of single 250 kg German, GA filled bomb fired statically in the open under inversion or zero temperature gradient conditions.	Awaiting material
186	Test of single 250 kg German, GA filled bomb dropped into open and also into covered area under inversion or zero temperature gradient conditions.	Awaiting material

APPENDIX C

TEST NO. 89

Results of Sampling Performed on 5 July 1949

TEST 89

INTERIM REPORT OF H SURVEILLANCE ANALYSIS

Semi-annual sampling in connection with this test was performed on 5 July 1949. Previous sampling was performed on 12 January 1949 and was reported in SJPPR No.64, San Jose Project Progress Report for January 1949. Results of the recent sampling follow:

Sampling date, 5 July 1949		H filled Heresite coated Lot# 3-6-45 EA99-10-45	H filled Heresite coated Lot# 3-6-45 EA99-10-45
Bomb Number		1	2
Weight of bomb plus agent	(lbs.)	135.5	135.25
Weight of bomb casing	(lbs.)	76.5	82.25
Weight of agent removed	(lbs.)	60.5	53.00
Weight of residue through 16 mesh screen	(lbs.)	0.75	0.75
Weight of liquid agent	(lbs.)	59.75	52.25
Residue through 16 mesh screen	(%)	1.24	1.42
Liquid agent	(%)	98.76	98.58
Freezing point of agent	(°C)	4.0	4.3
Distillate	(%)	68.9	60.2
Residue	(%)	25.1	35.3
Loss	(%)	6.0	4.5
Melting point of distillate	(°C)	11.85	11.4
Purity of distillate	(%)	93.1	91.8
Purity of agent from bomb	(%)	64.1	55.3
HCl (total)	(%)	0.15	0.12
Fe as $FeCl_2$ (agent from bomb)	(%)	0.66	0.40
Fe as $FeCl_2$ (1st wash water)	(%)	0.26	1.42
Fe as $FeCl_2$ (2nd wash water)	(%)	0.23	1.68
Fe as $FeCl_2$ (total)	(%)	1.15	3.50

1 of SJP-120

OCT 25 1949

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 72

1 SEPTEMBER 1949 THROUGH 30 SEPTEMBER 1949

by

San Jose Project Technical Staff

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4	Secretary, Research Council, OCCmlC, Bldg. 330, Army Chemical Center, Maryland
5-6	Commanding Officer, Cml C Technical Command, Army Chemical Center, Maryland
	Chief, Medical Division, Army Chemical Center, Maryland
	Technical Director, Camp Detrick, Frederick, Maryland
14	President, Cml C Board, Army Chemical Center, Maryland
15	Commanding Officer, Edgewood Proving Ground, Army Chemical Center, Maryland
16-17	Research and Development Board, Technical Reference Branch, Document Section, Room 3D-641, National Military Establishment, Washington 25, D.C.
18	Military Applications Division, U.S. Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D.C.; Attention: Chemical Officer
19-23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W., Washington, D.C.(Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
24-26	Canadian Technical Representative, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
27	British Liaison Officer, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD 3 October 1949

SUBJECT: San Jose Project Progress Report No. 72
Period 1 September 1949 through 30 September 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.

1. STATUS OF REPORTS

No reports were distributed during the period covered by this report

2. PROGRESS OF TESTS DURING THE MONTH OF SEPTEMBER

a. Static Test in the Open of a Single E23 Smoke Pot, GA Filled - SJPPT No. 166.

(1) Phase 1 of this test was performed on 1 September 1949

b. Location of Entrances to Gasproof Shelter in Relation to Prevailing Wind - SJPPT No. 102.

(1) Phase 2 of this test was completed on 30 September 1949. This completes the test as a whole, and the final report is now in preparation.

3. SUPPLY

a. The U.S.A. Tug Noyes arrived on 7 September 1949 with supplies for the Technical Division. Included in the shipment were T-3 Bombs with tail and nose fuses and tail assemblies, two one-ton containers, empty 4.2 inch mortar shells and photographic paper.

b. Mr. Coy Crouse arrived on 15 September 1949 from Army Chemical Center, Maryland, with a shipment of material for the Technical Division, which included pigeons, 4.2 inch mortar shells and impregnated clothing. The purpose of Mr. Crouse's visit was to offer advice and make recommendations in connection with the care and feeding of test animals now being used by the Project. Mr. Crouse depa

page 3 of 11

4. PROGRESS OF TESTS

a. A complete list of tests scheduled for the San Jose Project, together with pertinent information is included as Appendix B.

5. METEOROLOGY

a. Weather summary for the month of September 1949 is included as Appendix A.

b. A barometric pressure chart for the twelve month period ending with August 1949 is included as Appendix A-1. Pressures are recorded in inches of mercury.

c. Unusually heavy rainfall occurred on 3 September with 3.62 inches reported, and on 16 September with 2.25 inches reported.

6. ORGANIZATION DAY

a. The fifth anniversary of the official establishment of the San Jose Project was observed on 27 September 1949. A full day's activities included the following:

Assembly - Addresses by Captain Jay S. Stockhardt, Deputy Technical Director; Colonel Paul R. Smith, Commanding Officer, San Jose Project; Honorable Morris de Castro, Acting Governor of the Virgin Islands; and Brigadier General Edwin L. Sibert, Commanding General, United States Army Forces Antilles.

Parade - Headquarters Detachment, San Jose Project participated in a street parade on the Project. The 81st Army Band was sent over from San Juan, Puerto Rico to participate in the parade and subsequent events.

(3) Display and Demonstration of Chemical Equipment - A display was set up which included such items as the 4.2 inch chemical mortar, Collective Protector, Decontamination Truck, various bombs, etc. The demonstrations included the burning of colored smoke grenades, firing of the mortar and screening of an area by boat with E23 Floating Smoke Pots.

(4) The day's activities were climaxed with the serving of a picnic supper in the Headquarters Detachment Mess for all military personnel and their dependents.

7. PERSONNEL

a. Captain John F. Neville, MC, returned to Army Chemical Center, Maryland on 6 September 1949 upon completion of approximately thirty days temporary duty at the Project.

b. 1st Lt. Elmer Hensley arrived on permanent change of station from Zone of Interior on 2 September 1949.

8. VISITORS

a. During the perid covered by this report the following visited the Project:

26 September 1949	Brigadier General Edwin L. Sibert, Commanding General, United States Army Forces Antilles arrived in connection with San Jose Project Organization Day Activities.

SPEERS G. POWER
Major, Cml C
Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Commanding

APPENDIX B

PROGRESS OF TESTS

PROGRESS OF TESTS, SAN JOSE PROJECT

TEST NO.	TITLE	STATUS
89	Surveillance of Bombs, Chemical 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled not coated.	Current, long range sampling
99	Surveillance of VKL.	Test Completed, Report Distributed.
	Location of Entrances to Gas-proof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Bd. Test No. 724)	Test Completed, Report in Preparation.
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open.	Material available - occupied on other tests
132	Surveillance of Bomb, Particulate, 4 lb., E-1	Test Completed, Report Distributed.
135	Surveillance of CK Stored in Bombs and Ton Containers Under Tropical Conditions	Test in progress
	Test of M70 Bomb, Filled HD, in Open and in Area Covered with Vegetation, Static Fired, with Onshore and Offshore Winds	Test Completed, Report Distributed.
137	Test of M70 Bomb, Filled GA (E46) in Open Area, Static Fired	Material available - occupied on other tests
	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Open Area (number to be determined from results of Test No. 130)	Awaiting completion of Test No. 130
	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired Statically in Covered Area (nine to be fired simultaneously)	Material available - occupied on other tests
148	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Area Covered by Vegetation (number to be determined from results of Test No. 147)	Awaiting completion of Test No. 147

EST NO.	TITLE	STATUS
149	Test of M33A1 Spray Tank, Filled Unthickened GA in Open From Low Altitude.	Awaiting material
50	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped Singly in Open	Material available – occupied on other tests
1	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped in Multiple into Open Area (number to be determined from results of Test No. 150)	Awaiting completion of Test No. 150

TEST NO.	TITLE	
161	Test of B45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into open in large number (number of clusters to be determined from results of Test No. 160).	Awaiting completion of Test No. 160
	Test of modified B45 chemical bomb fired statically in area covered by vegetation (nine bombs to be fired simultaneously)	Awaiting completion of Edgewood tests
	Test of B45 chemical bomb, modified as determined by Edgewood tests, filled GA, dropped in area covered by vegetation (number to be determined from results of Edgewood tests)	Awaiting completion of Edgewood tests
164	Test of B45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into area covered by vegetation (number of clusters to be determined by results of 163)	Awaiting completion of Test No. 163
165	Test of B45 chemical bomb with various shaped charges, filled GA, dropped into open in small number (number to be determined by Edgewood tests).	Awaiting completion of Edgewood tests
166	Test of single E23 smoke pot, filled GA, functioned statically in open on land.	Test in progress
167	Test of single E23 smoke pot, filled GA, functioned statically in area covered by vegetation.	Material available - occupied on other tests
	Test of single E23 smoke pot, filled GA, functioned statically on water with onshore wind.	Material available - occupied on other tests
169	Multiple test of E23 smoke pot, filled GA, dropped from boat, with onshore wind to simulate smoke (number to be determi results of Test No. 1	Awaiting completion of Test No. 168

TEST NO.	TITLE	STATUS
170	Multiple test of E23 smoke pot, filled GA, dropped from airplane, with onshore wind to simulate smoke. (Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168
171	Test of 4.2" chemical mortar shell filled GB, fired statically in the open (nine to be fired simultaneously)	Awaiting material
172	Test of 4.2" chemical mortar shell filled GB fired from mortar into open (number to be determined from results of Test No. 171).	Awaiting completion of Test No. 171
	Test of 125 lb. T3 bomb, filled GB with modified burster, dropped singly in open.	Awaiting completion of Edgewood tests
	Test of E45 chemical bomb, filled GB with modified burster, dropped in small quantity in open (number to be determined from Edgewood tests).	Awaiting completion of Edgewood tests
	Test of single E23 smoke pot, filled GB, functioned statically in open on land.	Awaiting material
176	Test of single E23 smoke pot, filled HD, functioned statically in open on land.	Test completed, report distributed
177	Test of single E23 smoke pot, filled HT, functioned statically in open on land.	Material available - occupied on other tests
178	Test of single E23 smoke pot, filled HN3, functioned statically in open on land.	Material available - occupied on other tests
179	Test of single E23 smoke pot, filled HQ, functioned statically in open on land.	Materail available - occupied on other tests
180	Test of Suit, Protective, One-Piece, Impermeable, ZIR1, and related items under extreme heat load (Cml C Bd. Proje[illegible]	Awaiting material -

TEST NO.	TITLE	STATUS
181	Test of Gas Casualty Kit, Treatment, Item 9-244-800 (New Revision)	
182	Test of First Aid Kit, Gas, Casualty, Item 9-206-710 (New Revision)	
183	Test of Veterinary Gas Casualty Outfit, Item 9-602-680 (New Revision)	
	Operational Scale Test with German KC 250 III Gr Bombs, filled with GA. Technical Command Field Test No. 114.	Awaiting material
185	Test of single 250 kg German, GA filled bomb fired statically in the open under inversion or zero temperature gradient conditions.	Awaiting material
	Test of single 250 kg German, GA filled bomb dropped into open and also into covered area under inversion or zero temperature gradient conditions.	Awaiting material

NOV. 10 1949

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 73

1 OCTOBER 1949 THROUGH 31 OCTOBER 1949

by

San Jose Project Technical Staff

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Jacksonville District
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	Commanding Officer, Cml C Technical Command, Army Chemical Center, Maryland
	Chief, Medical Division, Army Chemical Center, Maryland
9-13	Technical Director, Camp Detrick, Frederick, Maryland
14	President, Cml C Board, Army Chemical Center, Maryland
15	Commanding Officer, Edgewood Proving Ground, Army Chemical Center, Maryland
16-17	Research and Development Board, Technical Reference Branch, Document Section, Room 3D-641, National Military Establishment, Washington 25, D.C.
18	Military Applications Division, U.S. Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D.C.; Attention: Chemical Officer
19-23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W., Washington, D.C.(Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
24-26	Canadian Technical Representative, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
27	British Liaison Officer, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
28	SJP
29-31	SJP

HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas. Virgin Islands

CMLTD

SUBJECT: San Jose Project Progress Report No. 73
Period 1 October 1949 through 31 October 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.

1. STATUS OF REPORTS

The following special report was distributed during the period covered by this report:

Title	Date of Test	Report Distributed
SJPR No. 102, Location of Entrances to Gasproof Shelters in Relation to Prevailing Wind	17 May 1949 through 30 September 1949	24 October 1949

2. PROGRESS OF TESTS DURING THE MONTH OF OCTOBER

a. Static Test in the Open of a Single E23 Smoke Pot, GA Filled - SJPPT No. 166.

(1) Phases 2 and 3 of this test were performed on 26 October and 28 October 1949 respectively.

3. INSPECTIONS

Lt. Colonel White and Major McCachem from the Planning Division, Research and Development Board arrived on or about 14 October to conduct a brief inspection of facilities at the San Jose Project.

4. PROGRESS OF TESTS

a. A complete list of tests scheduled for the San Jose Project toge[redacted] is included as Appendix B.

4. PROGRESS [illegible]

b. The following tests have been deleted from the San Jose Project Program of Tests in accordance with a letter dated 11 October 1949, from the Office of the Chief, Research and Engineering Division, OCCmlC, Army Chemical Center, Maryland.

(1) Test of 125-lb. T3 bomb, filled GA, with burster modified as determined by Edgewood tests, dropped singly into the open - SJPPT No. 155

(2) Test of 125-lb. T3 bomb, filled GA with modified burster dropped in multiple into open (number to be determined from results of No. 155) - SJPPT No. 156

(3) Test of single 125-lb. T3 bomb, filled GA with modified burster fired statically in area covered with vegetation - SJPPT No. 157

(4) Test of 125-lb. T3 bomb, filled GA with burster modified as determined by Edgewood tests, dropped singly into covered area - SJPPT No. 158

(5) Test of 125-lb. T3 bomb, filled GA with modified burster dropped in multiple into covered area (number to be determined from results of Test No. 158) - SJPPT No. 159

(6) Test of E45 chemical bomb modified as determined by Edgewood tests, filled GA, dropped in open in small number (number to be determined by Edgewood tests.) - SJPPT No. 160

(7) Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into open in large number (number of clusters to be determined from results of Test No. 160) - SJPPT No. 161

(8) Test of modified E45 chemical bomb fired statically in area covered by vegetation (nine bombs to be fired simultaneously) - SJPPT No. 162

(9) Test of E45 chemical bomb, modified as determined by Edgewood tests, filled GA, dropped in area covered by vegetation (number to be determined

4. PROGRESS OF TESTS (Cont'd)

(10) Test of E45 chemical bomb, filled GA, modified as determined by Edgewood tests, dropped into area covered by vegetation (number of clusters to be determined by results of 163). - SJPPT No. 164

(11) Test of E45 chemical bomb with various shaped charges, filled GA, dropped into open in small number (number to be determined by Edgewood tests) - SJPPT No. 165

(12) Test of 125-lb. T3 bomb, filled GB, with modified burster, dropped singly in open - SJPPT No. 173.

c. Test No. 174, "Test of E45 Chemical Bomb, filled GB with modified burster, dropped in small quantity in open," will be held in abeyance pending results of comparative tests between the E45 and E54 bombs, to be conducted by Technical Command.

5. METEOROLOGY

a. Weather summary for the month of October 1949 is included as Appendix A.

6. PERSONNEL

a. Captain Jay S. Stockhardt departed this station on 10 October 1949 for Zone of Interior on permanent change of station.

b. Captain Alton K. Smith arrived from Zone of Interior on 12 October 1949 on permanent change of station.

c. Mr. Lucius C. Andrews, P-4, Chemist arrived on 12 October 1949 for duty with the Technical Division.

7. VISITORS

a. During the period covered by this report no persons visited the Project.

APPROVED: Paul R. Smith — Technical Director

PAUL R. SMITH
Colonel, Cml C
Commanding

APPENDIX B

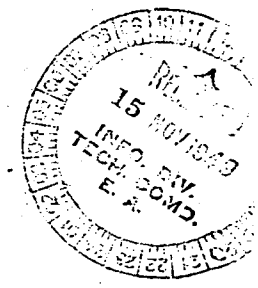
PROGRESS OF TESTS

TEST NO.	TITLE	STATUS
89	Surveillance of Bombs, Chemical, 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled, not coated.	Current, long range sampling
99	Surveillance of VKL	Test Completed, Report Distributed
102	Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Board Test No. 724)	Test Completed, Report Distributed
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open.	Material available - occupied on other tests
132	Surveillance of Bomb, Particulate, 4 lb., E-1.	Test Completed, Report Distributed
135	Surveillance of CK Stored in Bombs and Ton Containers Under Tropical Conditions.	Test in progress
136	Test of M70 Bomb, Filled HD, in Open and in Area Covered with Vegetation, Static Fired, with Onshore and Offshore Winds.	Test Completed, Report Distributed
137	Test of M70 Bomb, Filled GA (E46) in Open Area, Static Fired.	Material available - occupied on other tests
146	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Open Area (Number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130
147	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired Statically in Covered Area (Mine to be fired simultaneously)	Material available - occupied on other tests
148	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Area Covered By Vegetation (Number to be determined from results of Test No. 147).	Awaiting completion of Test No. 147

TEST NO.	TITLE	STATUS
149	Test of M33A1 Spray Tank, Filled Unthickened GA in Open From Low Altitude.	Awaiting material
150	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Dropped Singly in Open.	Material available – occupied on other tests
151	Test of 125 lb. Chemical Bomb, T3E2, Filled Ga, with 35:1 Burster Ratio, Dropped in Multiple into Open Area (Number to be determined from results of Test No. 150).	Awaiting completion of Test No. 150
152	Test of Single 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Fired Statically in Area Covered by Vegetation.	Material available – occupied on other tests
153	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped Singly in Covered Area.	Material available – occupied on other tests
154	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio Dropped in Multiple into Covered Area (Number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153
166	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Open on Land.	Test in progress
167	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Area Covered by Vegetation.	Material available – occupied on other tests
168	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically on Water with Onshore Wind.	Material available – occupied on other tests
169	Multiple Test of E23 Smoke Pot, Filled GA, Dropped from Boat, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168

TEST NO.		
170	Multiple test of E23 Smoke Pot, Filled GA, Dropped from Airplane, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168
171	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired Statically in the Open(Nine to be fired simultaneously).	Awaiting material
172	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired from Mortar into Open(Number to be determined from results of Test No. 171).	Awaiting completion of Test No. 171
174	Test of E45 Chemical Bomb, Filled GB, with Modified Burster, Dropped in Small Quantity in Open(Number to be determined from Edgewood tests).	Awaiting completion of Edgewood Tests
175	Test of Single E23 Smoke Pot, Filled GB, Functioned Statically in Open on Land.	Awaiting material
176	Test of Single E23 Smoke Pot, Filled HD, Functioned Statically in Open on Land.	Test Completed, Report Distributed
177	Test of Single E23 Smoke Pot, Filled HT, Functioned statically in Open on Land.	Material available - occupied on other tests
178	Test of Single E23 Smoke Pot, Filled HN3, Functioned Statically in Open on Land.	Material available - occupied on other tests
179	Test of Single E23 Smoke Pot, Filled HQ, Functioned Statically in Open on Land.	Material available - occupied on other tests
180	Test of Suit, Protective, One Piece, Impermeable, ElR1, and Related Items Under Extreme Heat Load(Cml C Board Project No. 782).	Awaiting material

TEST NO.	TITLE	STATUS
184	Operational Scale Test with German KC 250 III Gr Bombs, Filled GA. Technical Command Field Test No. 114.	Awaiting material
185	Test of Single 250 kg German, GA Filled Bomb Fired Statically in the Open Under Inversion or Zero Temperature Gradient Conditi ns.	Awaiting material
186	Test of Single 250 kg German, GA Filled Bomb Dropped into Open and also into Covered Area Under Inversion or Zero Temperature Gradient Conditions.	Awaiting material



DEC 15 1949

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 74

1 November 1949 THROUGH 30 NOVEMBER 1949

by

San Jose Project Technical Staff

COPY NO. 4

Jacksonville District
Project Management
SPD Branch
Fort Negarra files
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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD 1 December 1949

SUBJECT: San Jose Project Progress Report No. 74
Period 1 November 1949 through 30 November 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.

1. STATUS OF REPORTS

No reports were distributed during the period covered by this report.

2. PROGRESS OF TESTS DURING THE MONTH OF NOVEMBER

a. Static Test in the Open of a Single E23 Smoke Pot, GA Filled - SJPPT No. 166.

(1) Phase 4 of this test was performed on 9 November 1949. This phase completed field work in connection with this particular test.

(2) The final reporting of this test is being delayed pending further information and materials required in preparation of the report.

b. Static Test of Single E23 Smoke Pot, GA Filled, on Water with Onshore Wind - SJPPT No. 168.

(1) An attempt was made to run Phase 1 of this test on 16 November 1949. The actual run was made, but no agent was dispersed by the smoke pot.

(2) Phase 1 of this test was performed successfully on 18 November 1949.

(3) Phases 2 and 3 were performed on 23 and 30 November 1949 respectively.

3. PROGRESS OF TESTS

a. A complete list of tests scheduled for the San Jose Project together with pertinent information is included as Appendix B.

4. METEOROLOGY

a. Weather summary for the month of November 1949 is included as Appendix A.

5. SUPPLY

Great strides have been made in speeding up the supply of impregnated clothing as required by the San Jose Project with the institution of new supply channels for this particular item. It has been the policy to utilize impregnated clothing in lieu of impermeable suits wherever possible due to the discomfort caused by the latter item. Up to the present time the necessity for ordering impregnated clothing from the Zone of Interior has on occasion caused undue delay in the conduct of tests. An impregnating plant has now been established in Panama with the express purpose of supplying this clothing to the Antilles Command. It is now possible for the San Jose Project to order clothing from this plant through agencies in Puerto Rico thereby expediting continuous supply and removing the possibility of future delays in test work due to lack of impregnated clothing. The first such shipment of clothing is expected on or about 3 December 1949. The Chemical Officer of the Antilles has been extremely cooperative in instituting this new channel of supply.

6. INSTRUMENT REPAIR

With the arrival of an Instrument Repairman for permanent duty with the San Jose Project, the setting up of an instrument repair section has been instituted. This new section should aid greatly in maintenance and repair of such field equipment as total dosage pumps, rotary samplers, sampling apparatus, racks, etc.

7. CHANGE HOUSE

Work is nearing completion on the remodeling of the change house on Water Island. The new arrangement will contribute much to the safety in dressing and undressing of personnel working in or around contaminated areas.

(SJPPR No. 74)

8. PERSONNEL

a. Major Arnold C. Breuning arrived on 16 November 1949, from Zone of Interior on permanent change of station.

b. Mr. Donald R. Schiebel, Instrument Repairman, arrived on ? November 1949 for duty with the Technical Division.

9. VISITORS

a. During the period covered by this report, the following persons visited the San Jose Project:

12 November 1949	Major General Feldman, Quartermaster General, arrived San Jose Project for a one day visit.
16 November 1949	Lt. General William H. H. Morris, Commander-in-Chief, Caribbean Command, arrived for a one day inspection of the San Jose Project. General Morris was accompanied by Brigadier General Edwin L. Sibert, Commanding General, U. S. Army Forces, Antilles.

SPEERS G. PONDER
Major, Cml C
Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Commanding

PROGRESS OF TESTS, SAN JOSE PROJECT

TEST NO.	TIT	
89	Surveillance of 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled, not coated.	Current, long range sampling
99	Surveillance of VKL	Test Completed, Report Distributed
102	location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Board Test No. 724)	Test Completed, Report Distributed
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open.	Material available -- occupied on other tests
132	Surveillance of Bomb, Particulate, 4 lb., E-1.	Test Completed, Report Distributed
135	Surveillance of CK Stored in Bombs and Ton Containers Under Tropical Conditions.	Test in progress
136	Test of M70 Bomb, Filled HD, in Open and in Area Covered with Vegetation, Static Fired, with Onshore and Offshore Winds.	Test Completed, Report Distributed
137	Test of M70 Bomb, Filled GA (E46) in Open Area, Static Fired.	Material available -- occupied on other tests
146	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Open Area (Number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130
147	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired Statically in Covered Area (Nine to be fired simultaneously)	Material available - occupied on other tests
148	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Area Covered by Vegetation (Number to be determined from results of Test No. 147).	Awaiting completion of Test No. 147

TEST NO.	TITLE	STATUS
149	Test of M33A1 Spray Tank, Filled Unthickened GA in Open From Low Altitude.	Awaiting material
150	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Dropped Singly in Open.	Material available – occupied on other tests
151	Test of 125 lb. Chemical Bomb, T3E2, Filled Ga, with 35:1 Burster Ratio, Dropped in Multiple into Open Area (Number to be determined from results of Test No. 150).	Awaiting completion of Test No. 150
152	Test of Single 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Fired Statically in Area Covered by Vegetation.	Material available – occupied on other tests
153	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped Singly in Covered Area.	Material available – occupied on other tests
	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio Dropped in Multiple into Covered Area (Number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153
166	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Open on Land.	Test completed – report in preparation
167	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Area Covered by Vegetation.	Material available – occupied on other tests
168	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically on Water with Onshore Wind.	Test in progress
169	Multiple Test of E23 Smoke Pot, Filled GA, Dropped from Boat, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168

TEST NO.	TITLE	STATUS
170	Multiple test of E23 Smoke Pot, Filled GA, Dropped from Airplane, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168
	ally in the Open(Nine to be fired simultaneously).	Awaiting material
172	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired from Mortar into Open(Number to be determined from results of Test No. 171).	Awaiting completion of Test No. 171
	Test of E45 Chemical Bomb, Filled GB, with Modified Burster, Dropped in Small Quantity in Open(Number to be determined from Edgewood tests).	Awaiting completion of Edgewood Tests
175	Test of Single E23 Smoke Pot, Filled GB, Functioned Statically in Open on Land.	Awaiting material
176	Test of Single E23 Smoke Pot, Filled HD, Functioned Statically in Open on Land.	Test Completed, Report Distributed
177	Test of Single E23 Smoke Pot, Filled HT, Functioned statically in Open on Land.	Material available - occupied on other tests
178	Test of Single E23 Smoke Pot, Filled HN3, Functioned Statically in Open on Land.	Material available - occupied on other tests
	Test of Single E23 Smoke Pot, Filled HQ, Functioned Statically in Open on Land.	Material available - occupied on other tests
180	Test of Suit, Protective, One Piece, Impermeable, E1R1, and Related Items Under Extreme Heat Load(Cml C Board Project No. 782).	Awaiting material

TEST NO.	TITLE	STATUS
184	Operational Scale Test with German KC 250 III Gr Bombs, Filled GA. Technical Command Field Test No. 114.	Awaiting material
185	Test of Single 250 kg German, GA Filled Bomb Fired Statically in the Open Under Inversion or Zero Temperature Gradient Conditions.	Awaiting material
186	Test of Single 250 kg German, GA Filled Bomb Dropped into Open and also into Covered Area Under Inversion or Zero Temperature Gradient Conditions.	Awaiting material



JAN 18 1950

SAN JOSE PROJECT PROGRESS REPORT

NUMBER 75

1 DECEMBER 1949 THROUGH 31 DECEMBER 1949

by

San Jose Project Technical Staff

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16-17	Research and Development Board, Technical Reference Branch, Document Section, Room 3D-641, National Military Establishment, Washington 25, D.C.
18	Military Applications Division, U.S. Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D.C.; Attention: Chemical Officer
19-23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W., Washington, D.C. (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD 1 January 1949

SUBJECT: San Jose Project Progress Report No. 75
Period 1 December 1949 through 31 December 1949

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.

1. STATUS OF REPORTS

No reports were distributed during the period covered by this report.

2. PROGRESS OF TESTS DURING THE MONTH OF DECEMBER

a. Static Test of Single E23 Smoke Pot, GA Filled, on Water with Onshore Wind - SJPPT No. 168

(1) Phase 4 of this test was performed on 9 December 1949. This phase completed field work in connection with this particular test.

(2) The final reporting of this test is being delayed pending further information and materials required in preparation of the report.

3. PROGRESS OF TESTS

a. A complete list of tests scheduled for the San Jose Project together with pertinent information is included as Appendix B.

4. METEOROLOGY

Weather summary for the month of December 1949 is included as Appendix A.

5. INSPECTION

Majors Harvey E. Sheppard, Frank V. Williams, and John G. Appel, Research and Engineering Division, Army Chemical Center, Maryland, arrived on 6 December 1949 in connection with a three-day inspection of

5. INSPECTION (Cont'd)

technical facilities. They departed on 8 December 1949.

6. TRAINING

Mr. Joseph Mandelson from the Inspection Division, Office of the Chief, Chemical Corps, Army Chemical Center, Maryland, arrived on 6 December 1949 in connection with technical activities. During his stay at the Project, Mr. Mandelson oriented technical personnel in methods of evaluation of field data. In addition, he presented a course in statistical analysis of experimental data and generally outlined the methods of analysis and evaluation of test results. Mr. Mandelson returned to Army Chemical Center, Maryland on 18 December 1949.

7. HOLIDAY

During the period 23 December 1949 through 3 January 1950, enlisted personnel of the Project were given as much free time as possible in observance of the holiday season.

8. VISITORS

During the period covered by this report the following persons visited the San Jose Project:

21 December 1949 - Brigadier General Edwin F. Sibert, Commanding General, U. S. Army Forces, Antilles, and party arrived for a one-day visit to the Project. General Sibert and party departed on 22 December 1949.

SPEERS G. PONDER
Major, Cml C
Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Commanding

PROGRESS OF TESTS, SAN JOSE PROJECT

TEST NO.	TIT	
89	Surveillance of 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled, not coated.	~~Current, long range sampling~~
99	Surveillance of VKL	Test Completed, Report Distributed
102	Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Board Test No. 724)	Test Completed, Report Distributed
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open.	Material available - occupied on other tests
132	Surveillance of Bomb, Particulate, 4 lb., E-1.	Test Completed, Report Distributed
135	Surveillance of CK Stored in Bombs and Ton Containers Under Tropical Conditions.	Test in progress
136	Test of M70 Bomb, Filled HD, in Open and in Area Covered with Vegetation, Static Fired, with Onshore and Offshore Winds.	Test Completed, Report Distributed
137	Test of M70 Bomb, Filled GA (E46) in Open Area, Static Fired.	Material available - occupied on other tests
146	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Open Area (Number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130
147	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired Statically in Covered Area (Nine to be fired simultaneously)	Material available - occupied on other tests
148	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Area Covered by Vegetation (Number to be determined from results of Test No. 147).	Awaiting completion of Test No. 147

TEST NO.		STATUS
149	Test of M33A1 Spray Tank, Filled Unthickened GA in Open From Low Altitude.	Awaiting material
150	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Dropped Singly in Open.	Material available - occupied on other tests
151	Test of 125 lb. Chemical Bomb, T3E2, Filled Ga, with 35:1 Burster Ratio, Dropped in Multiple into Open Area (Number to be determined from results of Test No. 150).	Awaiting completion of Test No. 150
152	Test of Single 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Fired Statically in Area Covered by Vegetation.	Material available - occupied on other tests
153	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped Singly in Covered Area.	Material available - occupied on other tests
154	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio Dropped in Multiple into Covered Area (Number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153
166	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Open on Land.	Test completed, report in preparation
167	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Area Covered by Vegetation.	Material available - occupied on other tests
168	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically on Water with Onshore Wind.	Test completed, report in preparation
169	Multiple Test of E23 Smoke Pot, Filled GA, Dropped from Boat, with Onshore Wind to Simulate Smoke (Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168

TEST NO.		
170	Multiple test of E23 Smoke Pot, Filled GA, Dropped from Airplane, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	st No.
171	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired Statically in the Open(Nine to be fired simultaneously).	Awaiting material
172	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired from Mortar into Open(Number to be determined from results of Test No. 171).	Awaiting completion of Test No.
174	Test of E45 Chemical Bomb, Filled GB, with Modified Burster, Dropped in Small Quantity in Open(Number to be determined from Edgewood tests).	Awaiting completion of Edgewood Tes
175	Test of Single E23 Smoke Pot, Filled GB, Functioned Statically in Open on Land.	Awaiting material
176	Test of Single E23 Smoke Pot, Filled HD, Functioned Statically in Open on Land.	Test Completed, Report Distributed
177	Test of Single E23 Smoke Pot, Filled HT, Functioned statically in Open on Land.	Material available - occupied on other tests
178	Test of Single E23 Smoke Pot, Filled HN3, Functioned Statically in Open on Land.	Material available - occupied on other tests
179	Test of Single E23 Smoke Pot, Filled HQ, Functioned Statically in Open on Land.	Material available - occupied on other tests
180	Test of Suit, Protective, One Piece, Impermeable, ElR1, and Related Items Under Extreme Heat Load(Cml C Board Project No. 782).	Awaiting material

		STATUS
	man KC-250 III Gr Bombs, Filled GA. Technical Command Field Test No. 114.	Awaiting material
185	Test of Single 250 kg German, GA Filled Bomb Fired Statically in the Open Under Inversion or Zero Temperature Gradient Conditi ns.	Awaiting material
186	Test of Single 250 kg German, GA Filled Bomb Dropped into Open and also into Covered Area Under Inversion or Zero Temperature Gradient Conditions.	Awaiting material

(SJPPR No. 75,

APPENDIX C

TEST NO. 135

Results of Sampling Performed on 13 December 1949

Surveillance of Aged CK in M70, M78 and M79 Bombs, Test No. 135

Results of Sampling Performed on 13 December 1949

Semi-annual sampling in connection with this test was performed on 13 December 1949. This is the third series of samples taken, results of the first and second being reported in SJPPR No. 67 and SJPPR No. 69 respectively. Results of recent sampling appear below:

M78 Bombs

Date	Lot No.	Bomb No.	Date Filled	Abs. Press.	% Acidity	% Soluble Residue
13 Dec 49	206	29	Aug 44	34lbs.	0.11	0.253
	206	35	Aug 44	34	0.11	0.245
	206	12	Aug 44	34	0.13	0.260
	206	27	Sept 44	34	0.16	0.275
	206	19	Aug 44	34	0.08	0.175
	206	32	Aug 44	33	0.13	0.216
	206	5	Aug 44	35	0.15	0.291
	206	8	Aug 44	35	0.09	0.265
	206	21	Aug 44	33	0.14	0.344
	206	22	Aug 44	34	0.15	0.307
	206	11	Aug 44	35	0.13	0.231
	206	34	Aug 44	35	0.10	0.270
	206	13	Aug 44	35	0.11	0.338
	206	23	Aug 44	36	0.08	0.215
13 Dec 49	207	24	Aug 44	35	0.12	0.343
	207	31	Aug 44	No sample		
	207	28	Aug 44	35	0.11	0.411
	207	25	Aug 44	35	0.12	0.296
	207	2	Aug 44	35	0.09	0.459
	207	20	Aug 44	36	0.13	0.464
13 Dec 49	222	26	Sept 44	No threads	0.09	0.244
	222	9	Sept 44	35	0.10	0.268
	222	15	Sept 44	32	0.14	0.356
13 Dec 49	224	3	Sept 44	34	0.13	0.302
	224	1	Sept 44	31	0.07	Plugged
13 Dec 44	None	13A	Aug 44	34	0.13	0.313
	None	6	Aug 44	35	0.11	0.436
	None	4	Aug 44	34	0.10	0.223
	None	18	Aug 44	35	0.04	0.305

M79 Bombs

Date	Lot No.	Bomb No.	Date Filled	Abs. Press.	% Acidity	% Soluble Residue
13 Dec 49	65	58	June 44	36 lbs.	0.13	0.130
	65	59	June 44	35	0.13	0.257
	65	57	June 44	35	0.10	0.267
	65	60	June 44	34	0.12	0.299
	65	56	June 44	34	0.10	0.324
13 Dec 49	456	55	Nov 44	No sample taken		
	456	53	Nov 44	34	0.10	0.185

M70 Bombs

Date	Lot No.	Bomb No.	Date Filled	Abs. Press.	% Acidity	% Soluble Residue
13 Dec 49	384	1	Oct 44	34	0.10	0.257
	394	2	Oct 44	35	0.09	0.207
	373	3	Oct 44	34	0.10	0.463
	382	4	Oct 44	34	0.18	0.436
	406	5	Nov 44	34	0.09	0.313
	352	6	Oct 44	35	0.11	0.400
	331	7	Oct 44	34	0.12	0.339
	399	8	Nov 44	23	0.14	0.480
	385	9	Nov 44	25	0.18	0.637
	367	10	Oct 44	35	0.18	0.599
	395	11	Oct 44	35	0.09	0.153
	374	12	Oct 44	23	0.09	0.154
	319	13	Oct 44	35	0.09	0.381
	410	14	Nov 44	36	0.06	0.427
	439	15	Nov 44	37	0.16	0.650

Meteorology

	Max. Temp.	Min. Temp.	Mean Max. Temp.	Mean Min. Temp.
July 49	86°F	65°F	83°F	70°F
Aug. 49	90°F	65°F	84°F	73°F
Sept. 49	88°F	63°F	84°F	72°F
Oct. 49	88°F	65°F	85°F	72°F
Nov. 49	91°F	71°F	88°F	75°F
Dec. 49	92°F	[illegible]°F	85°F	70°F

page 11 of 11

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SAN JOSE PROJECT PROGRESS REPORT

NUMBER 76

1 JANUARY 1950 THROUGH 31 JANUARY 1950

by

SAN JOSE PROJECT TECHNICAL STAFF

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7-8	Chief, Medical Division, Army Chemical Center, Maryland
9-13	Technical Director, Camp Detrick, Frederick, Maryland
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18	Military Applications Division, U.S. Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D.C.; Attention: Chemical Officer
19-23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W., Washington, D.C.(Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
24-26	Canadian Technical Representative, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
27	British Liaison Officer, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
28	SJP I
29-31	SJP 1

Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD 1 February 1950

SUBJECT: San Jose Project Progress Report No. 76
Period 1 January 1950 through 31 January 1950

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.

1. STATUS OF REPORTS

No reports were distributed during the period covered by this report.

2. PROGRESS OF TESTS DURING THE MONTH OF JANUARY

a. Surveillance of Bombs, Chemical 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled, not coated - SJPPT No. 69

(1) Semi-annual sampling in connection with this test was performed on 12 January 1950. Results are included as Appendix C.

b. No additional tests were scheduled during the month of January for the following reasons:

(1) All available facilities were put at the disposal of a group of personnel from Camp Detrick during the performance of tests by this group at the San Jose Project.

(2) Sampling bubblers were not available in sufficient quantity to sustain test operations.

(3) A priority task of removing steel torpedo racks from the laboratory building was begun during the month of January.

3. PROGRESS OF TESTS

a. A compl t
toget e B.

4. METEOROLOGY

Weather summary for the month of January 1950 is included as Appendix A.

5. SUPPLY

a. Equipment necessary in operation of instrument repair shop arrived this project and has been temporarily installed for current operations.

b. A shipment of 1000 impinger bubblers was received on 20 January 1950, thus relieving a critical shortage of this item at the San Jose Project.

6. PERSONNEL

a. Major Harold F. Shartle arrived from Z of I on permanent change of station on 11 January 1950.

b. Major Spears G. Ponder, Technical Director, departed for Washington, D. C., on 30 January 1950 for approximately thirty days (30) TDY in connection with Technical activities.

7. VISITORS

During the period covered by this report, no significant persons visited the San Jose Project.

Kenneth W Copeland
KENNETH W. COPELAND
Major, Cml C
Deputy Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Commanding

PROGRESS OF TESTS, SAN JOSE PROJECT

TEST NO.	T	
89	Surveillance 125 lb., T-3, Coated and T-coated.	
99	Surveillance of VKL	Test Completed, Report Distributed
102	Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Board Test No. 724)	Test Completed, Report Distributed
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open.	Material available - occupied on other tests
132	Surveillance of Bomb, Particulate, 4 lb., E-1.	Test Completed, Report Distributed
135	Surveillance of CK Stored in Bombs and Ton Containers Under Tropical Conditions.	Test in progress
136	Test of M70 Bomb, Filled HD, in Open and in Area Covered with Vegetation, Static Fired, with Onshore and Offshore Winds.	Test Completed, Report Distributed
137	Test of M70 Bomb, Filled GA (E46) in Open Area, Static Fired.	Material available - occupied on other tests
146	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Open Area (Number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130
147	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired Statically in Covered Area (Nine to be fired simultaneously)	Material available - occupied on other tests
148	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Area Covered by Vegetation (Number to be determined from results of Test No. 147).	Awaiting completion of Test No. 147

TEST	
149 Test of M33A1 Spray Tank, Filled Unthickened GA in Open From Low Altitude.	Awaiting material
150 Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Dropped Singly in Open.	Material available - occupied on other tests
151 Test of 125 lb. Chemical Bomb, T3E2, Filled Ga, with 35:1 Burster Ratio, Dropped in Multiple into Open Area (Number to be determined from results of Test No. 150).	Awaiting completion of Test No. 150
152 Test of Single 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Fired Statically in Area Covered by Vegetation.	Material available - occupied on other tests
153 Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped Singly in Covered Area.	Material available - occupied on other tests
154 Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio Dropped in Multiple into Covered Area (Number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153
166 Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Open on Land.	Test completed, report in preparation
167 Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Area Covered by Vegetation.	Material available - occupied on other tests
168 Test of Single E23 Smoke Pot, Filled GA, Functioned Statically on Water with Onshore Wind.	Test completed, report in preparation
169 Multiple Test of E23 Smoke Pot, Filled GA, Dropped from Boat, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168

TEST NO.		STATUS
170	Multiple test of E23 Smoke Pot, Filled GA, Dropped from Airplane, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168
171	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired Statically in the Open(Nine to be fired simultaneously).	Awaiting material
172	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired from Mortar into Open.(Number to be determined from results of Test No. 171).	Awaiting completion of Test No. 171
174	Test of E45 Chemical Bomb, Filled GB, with Modified Burster, Dropped in Small Quantity in Open(Number to be determined from Edgewood tests).	Awaiting completion of Edgewood
175	Test of Single E23 Smoke Pot, Filled GB, Functioned Statically in Open on Land.	Awaiting material
176	Test of Single E23 Smoke Pot, Filled HD, Functioned Statically in Open on Land.	Test Completed, Report Distributed
177	Test of Single E23 Smoke Pot, Filled HT, Functioned statically in Open on Land.	Material available - occupied on other tests
178	Test of Single E23 Smoke Pot, Filled HN3, Functioned Statically in Open on Land.	Material available - occupied on other tests
179	Test of Single E23 Smoke Pot, Filled HQ, Functioned Statically in Open on Land.	Material available - occupied on other tests
180	Test of Suit, Protective, One Piece, Impermeable, ElR1, and Related Items Under Extreme Heat Load(Cml C Board Project No. 782).	Awaiting material

TEST NO.		STATUS
	man KC 250 III Gr Bombs, Filled GA. Technical Command Field Test No. 114.	Awaiting material
185	Test of Single 250 kg German, GA Filled Bomb Fired Statically in the Open Under Inversion or Zero Temperature Gradient Conditions.	Awaiting material
186	Test of Single 250 kg German, GA Filled Bomb Dropped into Open and also into Covered Area Under Inversion or Zero Temperature Gradient Conditions.	Awaiting material

APPENDIX .

TEST NO. 89

Results of Sampling Performed on 12 January 1950

M79 Bombs

Date	Lot No.	Bomb No.	Date Filled	Press.	Acidity	Soluble Residue
13 Dec 49	65	58	June 44	36 lbs.	0.13	0.130
	65	59	June 44	35	0.13	0.257
	65	57	June 44	35	0.10	0.267
	65	60	June 44	34	0.12	0.299
	65	56	June 44	34	0.10	0.324
13 Dec 49	456	55	Nov 44	No sample taken		
	456	53	Nov 44	34	0.10	0.185

M70 Bombs

Date	Lot No.	Bomb No.	Date Filled	Abs. Press.	% Acidity	% Soluble Residue
13 Dec 49	384	1	Oct 44	34	0.10	0.257
	394	2	Oct 44	35	0.09	0.207
	373	3	Oct 44	34	0.10	0.463
	382	4	Oct 44	34	0.18	0.436
	406	5	Nov 44	34	0.09	0.313
	352	6	Oct 44	35	0.11	0.400
	331	7	Oct 44	34	0.12	0.339
	399	8	Nov 44	23	0.14	0.480
	385	9	Nov 44	25	0.18	0.637
	367	10	Oct 44	35	0.18	0.599
	395	11	Oct 44	35	0.09	0.153
	374	12	Oct 44	23	0.09	0.154
	319	13	Oct 44	35	0.09	0.381
	410	14	Nov 44	36	0.06	0.427
	439	15	Nov 44	37	0.16	0.650

Meteorology

	Max. Temp.	Min. Temp.	Mean Max. Temp.	Mean Min. Temp.
July 49	86°F	65°F	83°F	70°F
Aug. 49	90°F	65°F	84°F	73°F
Sept. 49	88°F	63°F	84°F	72°F
Oct. 49	88°F	65°F	85°F	72°F
Nov. 49	91°F	71°F	88°F	75°F
Dec. 49	92°F	61°F	85°F	70°F

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SAN JOSE PROJECT PROGRESS REPORT

NUMBER 78

1 March 1950 through 31 March 1950

by

SAN JOSE PROJECT TECHNICAL STAFF

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	Commanding Officer, Cml C Technical Command, Army Chemical Center, Maryland
7-8	Chief, Medical Division, Army Chemical Cemter, Maryland
9-13	Technical Director, Camp Detrick, Frederick, Maryland
14	President, Cml C Board, Army Chemical Center, Maryland
15	Commanding Officer, Edgewood Proving Ground, Army Chemical Center, Maryland
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18	Military Applications Division, U.S. Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D.C.; Attention: Chemical Officer
19-23	Mr. R. Kingan, British CW Representative, British Joint Services Mission, Room 475, 1785 Massachusetts Ave., N.W., Washington, D.C. (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
24-26	Canadian Technical Representative, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
27	British Liaison Officer, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD

SUBJECT: San Jose Project Progress Report No. 78
Period 1 March 1950 through 31 March 1950

TO: Chief, Chemical Corps
Department of the Army
Washington 25, D. C.

1. STATUS OF REPORTS

No reports were distributed during the period covered by this report.

2. PROGRESS OF TESTS DURING THE MONTH OF MARCH

No tests were conducted during the period covered by this report.

3. PROGRESS OF TESTS

a. A complete list of tests scheduled for the San Jose Project together with pertinent information is included as Appendix B.

4. METEOROLOGY

Weather summary for the month of March 1950 is included as Appendix A.

5. LABORATORY

A comprehensive laboratory research program is now in progress, the purpose of which is to establish more accurate analytical methods in the laboratory phase of testing G agents.

6. PERSONNEI

a. A platoon of twenty-three men under the command of 1st Lt. William B. Strough, participated in the Cp. Portex Vieques maneuvers as a 4.2 inch mortar platoon.

b. 1st Lt. Louis C. Elsaesser was relieved from duty with the Technical Division on 13 March 1950, and assigned as Asst. Post Signal Officer.

c. Captain Lawrence M. Dellinger was relieved from duty with the Technical Division on 15 March 1950, and assigned as Asst. Supply and Evacuation Staff Officer.

7. VISITORS

During the period covered by this report the following significant persons visited the San Jose Project:

15 March 1950	Captain Roy C. Kackley, MSC, Sanitation Officer from Antilles, arrived San Jose Project to inspect all local eating and drinking places.
13 March 1950	Dr. Rodenhiser, Department of Agriculture and Dr. Ian W. Tervet from Camp Detrick, arrived San Jose Project in connection with Technical Activities.
20 March 1950	Capt. Wilson and Lt. Iver arrived San Jose Project from Antilles, to assist local authorities with the Governor's inaugural parade.
23 March 1950	81st Army Band and one hundred and twenty-eight troops from Antilles arrived San Jose Project for Governor's inaugural parade.
23 March 1950	Lt. General William H. Morris, Commander-in-Chief, Caribbean Command; Brig. General R. Bean, Commanding General, Caribbean Air Command; Rear Admiral L. W. Hanson, Commanding Officer, 15th Naval District; and party arrived San Jose for a five-day visit to review the Governor's inaugural parade.

(SJPPR No. 78)

23 March 1950 — Colonel C. R. Gildart, Chief of Staff Antilles, and party arrived San Jose Project for a five-day visit to review the Governor's inaugural parade.

8. INAUGURAL PARADE

a. Colonel Paul R. Smith, Commanding Officer, San Jose Project participated in the inauguration parade of the Governor of the Virgin Islands on 24 March 1950. Major Kenneth W. Copeland was Commander of the eighty troops.

Speers G. Ponder

SPEERS G. PONDER
Major, Cml C
Technical Director

APPROVED:

Paul R. Smith

PAUL R. SMITH
Colonel, Cml C
Commanding

TEST NO.		
89	Surveillance of Bombs, Chemical, 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled, not coated.	Current, long range sampling
99	Surveillance of VKL	Test Completed, Report Distributed
102	Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Board Test No. 724)	Test Completed, Report Distributed
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open.	Material available - occupied on other tests
132	Surveillance of Bomb, Particulate, 4 lb., E-1.	Test Completed, Report Distributed
135	Surveillance of CK Stored in Bombs and Ton Containers Under Tropical Conditions.	Test in progress
136	Test of M70 Bomb, Filled HD, in Open and in Area Covered with Vegetation, Static Fired, with Onshore and Offshore Winds.	Test Completed, Report Distributed
137	Test of M70 Bomb, Filled GA (E46) in Open Area, Static Fired.	Material available - occupied on other tests
146	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Open Area (Number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130
147	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired Statically in Covered Area (Nine to be fired simultaneously)	Material available - occupied on other tests
148	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Area Covered by Vegetation (Number to be determined from results of Test No. 147).	Awaiting completion of Test No. 147

TEST NO.	TITLE	STATUS
149	Test of M33A1 Spray Tank, Filled Unthickened GA in Open From Low Altitude.	Awaiting material
150	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Dropped Singly in Open.	Material available-occupied on other tests
151	Test of 125 lb. Chemical Bomb, T3E2, Filled Ga, with 35:1 Burster Ratio, Dropped in Multiple into Open Area (Number to be determined from results of Test No. 150).	Awaiting completion of Test No. 150
152	Test of Single 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Fired Statically in Area Covered by Vegetation.	Material available-occupied on other tests
153	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped Singly in Covered Area.	Material available-occupied on other tests
154	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio Dropped in Multiple into Covered Area (Number to be determined from results of Test No. 153)	Awaiting completion of Test No.
166	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Open on Land.	Test completed-report in preparation
167	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Area Covered by Vegetation.	Material available-occupied on other tests
168	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically on Water with Onshore Wind.	Test completed-report in preparation
169	Multiple Test of E23 Smoke Pot, Filled GA, Dropped from Boat, with Onshore Wind to Simulate Smoke (Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168

TEST NO.	TITLE	
170	Multiple test of E23 Smoke Pot, Filled GA, Dropped from Airplane, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168
171	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired Statically in the Open(Nine to be fired simultaneously).	Awaiting material
172	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired from Mortar into Open(Number to be determined from results of Test No. 171).	Awaiting completion of Test No. 170
174	Test of E45 Chemical Bomb, Filled GB, with Modified Burster, Dropped in Small Quantity in Open(Number to be determined from Edgewood tests).	Awaiting completion of Edgewood tests
175	Test of Single E23 Smoke Pot, Filled GB, Functioned Statically in Open on Land.	Awaiting material
176	Test of Single E23 Smoke Pot, Filled HD, Functioned Statically in Open on Land.	Test Completed, Report Distributed
177	Test of Single E23 Smoke Pot, Filled HT, Functioned statically in Open on Land.	Material available occupied on other tests
178	Test of Single E23 Smoke Pot, Filled HN3, Functioned Statically in Open on Land.	Material available occupied on other tests
179	Test of Single E23 Smoke Pot, Filled HQ, Functioned Statically in Open on Land.	Test in progress
180	Test of Suit, Protective, One Piece, Impermeable, ElR1, and Related Items Under Extreme Heat Load(Cml C Board Project No. 782).	Awaiting material

TEST NO.		
184	Operational Scale Test with German KC 250 III Gr Bombs, Filled GA. Technical Command Field Test No. 114.	Awaiting material
185	Test of Single 250 kg German, GA Filled Bomb Fired Statically in the Open Under Inversion or Zero Temperature Gradiant Conditions.	Awaiting material
186	Test of Single 250 kg German, GA Filled Bomb Dropped into Open and also into Covered Area Under Inversion or Zero Temperature Gradient Conditions.	Awaiting material



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SAN JOSE PROJECT PROGRESS REPORT

NUMBER 77

1 FEBRUARY 1950 THROUGH 28 FEBRUARY 1950

by

SAN JOSE PROJECT TECHNICAL STAFF

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	Commanding Officer, Cml C Technical Command, Army Chemical Center, Maryland
	Chief, Medical Division, Army Chemical Center, Maryland
9-13	Technical Director, Camp Detrick, Frederick, Maryland
14	President, Cml C Board, Army Chemical Center, Maryland
15	Commanding Officer, Edgewood Proving Ground, Army Chemical Center, Maryland
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18	Military Applications Division, U.S. Atomic Energy Commission, 1901 Constitution Avenue, N.W., Washington, D.C.; Attention: Chemical Officer
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24-26	Canadian Technical Representative, Army Chemical Center, Maryland (Thru: Chief, Res & Eng Div., Army Chemical Center, Maryland)
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HEADQUARTERS, SAN JOSE PROJECT
Office of the Technical Director
St. Thomas, Virgin Islands

CMLTD

SUBJECT: San Jose Project Progress Report No. 77
Period 1 February 1950 through 28 February 1950

Chief, Chemical Corps
Department of the Army
Washington 25, D. C.

1. STATUS OF REPORTS

No reports were distributed during the period covered by report.

2. PROGRESS OF TESTS DURING THE MONTH OF FEBRUARY

a. Test of Single E23 Smoke Pot, Filled HQ, Functioned Statically in Open on Land - SJPPT No. 179.

(1) Phases 1 and 2 of this test were performed on 15 and 17 February respectively.

3. PROGRESS OF TESTS

a. A complete list of tests scheduled for the San Jose Project together with pertinent information is included as Appendix B.

4. METEOROLOGY

Weather summary for the month of February 1950 is included as Appendix A.

5. CONSTRUCTION

Removal of torpedo racks from Building 16, Laboratory Building, was completed on or about 15 February 1950. This task was undertaken in preparation for future remodeling of Building 16.

(SJPPR No. 77)

6. LABORATORY

A comprehensive laboratory research program is now in progress, the purpose of which is to establish more accurate analytical methods in the laboratory phase of testing G agents.

7. PERSONNEL

Major Speers G. Ponder, Technical Director, returned to the San Jose Project after approximately 20 days TDY in and around Washington, D. C.

8. VISITORS

During the period covered by this report no siginificant persons visited the San Jose Project.

SPEERS G. PONDER
Major, Cml C
Technical Director

APPROVED:

PAUL R. SMITH
Colonel, Cml C
Commanding

PROGRESS OF TESTS, SAN JOSE PROJECT

TEST NO.	TITLE	
89	Surveillance of Bombs, Chemical, 125 lb., T-3, H Filled, Heresite Coated and T-3, HD Filled, not coated.	Current, long range sampling
99	Surveillance of VKL	Test Completed, Report Distributed
102	Location of Entrances to Gasproof Shelters in Relation to Prevailing Winds (Wooded Phase of Cml C Board Test No. 724).	Test Completed, Report Distributed
130	Static Test of Nine 4.2" Chemical Mortar Shells, GA Filled, in the Open.	Material available - occupied on other tests
132	Surveillance of Bomb, Particulate, 4 lb., E-1.	Test Completed, Report Distributed
135	Surveillance of CK Stored in Bombs and Ton Containers Under Tropical Conditions.	Test in progress
136	Test of M70 Bomb, Filled HD, in Open and in Area Covered with Vegetation, Static Fired, with Onshore and Offshore Winds.	Test Completed, Report Distributed
137	Test of M70 Bomb, Filled GA (E46) in Open Area, Static Fired.	Material available - occupied on other tests
146	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Open Area (Number to be determined from results of Test No. 130).	Awaiting completion of Test No. 130
147	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired Statically in Covered Area (Nine to be fired simultaneously)	Material available - occupied on other tests
148	Test of 4.2" Chemical Mortar Shell, Filled GA, Fired into Area Covered by Vegetation (Number to be determined from results of Test No. 147).	Awaiting completion of Test No. 147

TEST NO.	TITLE	STATUS
149	Test of M33A1 Spray Tank, Filled Unthickened GA in Open From Low Altitude.	Awaiting material
150	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Dropped Singly in Open.	Material available–occupied on other tests
151	Test of 125 lb. Chemical Bomb, T3E2, Filled Ga, with 35:1 Burster Ratio, Dropped in Multiple into Open Area (Number to be determined from results of Test No. 150).	Awaiting completion of Test No. 150
152	Test of Single 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio, Fired Statically in Area Covered by Vegetation.	Material available–occupied on other tests
153	Test of 125 lb. Chemical Bomb, T3E2, Filled GA with 35:1 Burster Ratio, Dropped Singly in Covered Area.	Material available–occupied on other tests
154	Test of 125 lb. Chemical Bomb, T3E2, Filled GA, with 35:1 Burster Ratio Dropped in Multiple into Covered Area (Number to be determined from results of Test No. 153)	Awaiting completion of Test No. 153
166	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Open on Land.	Test completed–report in preparation
167	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically in Area Covered by Vegetation.	Material available–occupied on other tests
168	Test of Single E23 Smoke Pot, Filled GA, Functioned Statically on Water with Onshore Wind.	Test completed–report in preparation
169	Multiple Test of E23 Smoke Pot, Filled GA, Dropped from Boat, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168

TEST NO.	TI	
170	Multiple test of E23 Smoke Pot, Filled GA, Dropped from Airplane, with Onshore Wind to Simulate Smoke(Number to be determined from results of Test No. 168).	Awaiting completion of Test No. 168
171	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired Statically in the Open(Nine to be fired simultaneously).	Awaiting material
	Test of 4.2" Chemical Mortar Shell, Filled GB, Fired from Mortar into Open(Number to be determined from results of Test No. 171).	Awaiting completion of Test No. 170
	Test of E45 Chemical Bomb, Filled GB, with Modified Burster, Dropped in Small Quantity in Open(Number to be determined from Edgewood tests).	Awaiting completion of Edgewood tests
175	Test of Single E23 Smoke Pot, Filled GB, Functioned Statically in Open on Land.	Awaiting material
176	Test of Single E23 Smoke Pot, Filled HD, Functioned Statically in Open on Land.	Test Completed, Report Distributed
177	Test of Single E23 Smoke Pot, Filled HT, Functioned statically in Open on Land.	Material available occupied on other tests
178	Test of Single E23 Smoke Pot, Filled HN3, Functioned Statically in Open on Land.	Material available occupied on other tests
179	Test of Single E23 Smoke Pot, Filled HQ, Functioned Statically in Open on Land.	Test in progress
180	Test of Suit, Protective, One Piece, Impermeable, E1R1, and Related Items Under Extreme Heat Load(Cml C Board Project No. 782).	Awaiting material

TEST NO.	TITLE	
184	Operational Scale Test with German KC 250 III Gr Bombs, Filled GA. Technical Command Field Test No. 114.	Awaiting material
185	Test of Single 250 kg German, GA Filled Bomb Fired Statically in the Open Under Inversion or Zero Temperature Gradient Conditions.	Awaiting material
186	Test of Single 250 kg German, GA Filled Bomb Dropped into Open and also into Covered Area Under Inversion or Zero Temperature Gradient Conditions.	Awaiting material

De Lugo raps Interior office for inaction on Water Island

By ELLYN FERGUSON
Gannett News Service

WASHINGTON — V.I. Delegate to Congress Ron de Lugo flayed the Office of Territorial and International Affairs on Thursday for its handling of Water Island.

De Lugo's comments came just before the House voted 338-85 to approve the fiscal year 1995 appropriations bill for the Interior Department, the parent agency for the embattled OTIA.

In addition to money for OTIA, the bill would provide the Virgin Islands with an additional $2 million for the witness-protection program, the expert witness program, police training, computerization of the Police Department, a law library and a crime lab.

The 1995 Interior Department appropriations bill still has several steps to go through before it becomes law.

The spending bill would provide OTIA with an operating budget of $4.2 million in 1995, down from its $4.5 million budget for fiscal year 1994. The Clinton administration had asked that Congress keep next year's funding at the 1994 level.

"OTIA's performance (on Water Island) and reduced role does not justify the level of funds that have been provided for it," de Lugo said on the House floor.

"OTIA has tied itself in legal and political knots ... A year-and-a-half after the end of the lease, the island still has not integrated into the local community, hundreds of people involved are in limbo, and some of the most precious property under the U.S. flag cannot be put to its best use," he said.

The 500-acre federally owned island, the fourth largest among the U.S. Virgin Islands, has been a point of contention for years. The 40-year lease on the property expired in December 1992, but no decision has been made how to dispose of the island.

In its third annual State of the Islands released this month, OTIA reports that all congressionally mandated surveys on Water Island are finished or under way.

A final decision on the property's future is on hold until a federal lawsuit between the Interior Department and the master leaseholder is resolved. The next court date is set for September.

The Daily News, Friday, June 24, 1994

Jax-040901-058

page 1 of 1

Jax

Water Island homeowners fighting for a fair deal from Interior

BY ARUNA KESHAP
CONTRIBUTING WRITER

The tangled web that is Water Island still contains the debris of unsatisfied ambitions, faltering hope, and bureaucratic conflict. Each side has its own interest, and as always there are those caught in the middle, albeit by a choice they made many years ago. There is a pervasive sense of a loss of control that overlies the statements of the people involved. They are angry.

In 1952, the undeveloped Water Island, which had been most recently used as a U.S. Army foothold to protect its Caribbean access points, was leased to Walter Phillips, head of Water Island, Inc., by the U.S. Department of the Interior, in whose care the island had been transferred.

For the next 20 years, Walter Phillips operated his hotel, thus meeting the basic intention of the DOI, which wanted Water Island to be "developed in such a manner as to contribute effectively to the economy of the Virgin Islands." Perhaps more importantly, especially where current events are involved, he subleased a large number of lots for homes to be built, many of which are currently supporting residents.

According to Phillips, none of Water Island residents own the land on which their houses stand. But they built those houses assuming someday they would also own the land.

Most of these house owners are members of the Water Island Civic Association, an organization that gives them voice and unity where their affairs are concerned. According to Warren Pond, current president of WICA, "A large portion of the original sub-lease cost (approximately $3,500 per acre) was for possessory interest, or, as the hotel called it, 'earnest money.'"

In other words, this money was a one-time charge that "went to building the infrastructure — docks, marina, beach, roads, dredging Flamingo Bay Marina." Other residents on the island are tenants of the sublessees (house builders), or sublessees that are not members of WICA, and they have n organized voice.

In 1973, at the expiration of the fir 20-year lease term, Walter Phillip Water Island, Inc. transferred the lease t the Water Island Hotel and Beach Clu The WIH & BC expanded the hotel an sold very few subleases.

In 1989, Hurricane Hugo rendered th hotel inoperable. A permit to rebuild th hotel was denied to the WIH & BC i 1990, and thus it remains in a state of di repair today. Subsequently, the DOI he an appraisal made of property value and offered the pieces of land for sale.

Most sublessees disputed th appraisal and, in the same year, 199 WIH & BC filed suit against the U.S government. A federal judge ordered t have the case arbitrated, in accordanc with a clause in the original lease, and a of April 14, the arbitration is over.

Now, according to Robin Friedma council for the defense, the "judge gav (the) parties 70 days, through June 23, t file briefs." Warren Pond is taking thi information with a grain of salt, statin "It's my understanding that Geoffre Cook, lawyer for the Justic Department, intends to go to th Supreme Court — no matter." This ma not be the case though because, he add the Washington DC judge, in whos court the suit was originally filed an subsequently ordered the arbitratior "wants to see briefs by 30 days follow ing the end of arbitration."

The government is saying the hote has no possessory interest in Wate Island after the lease expired at the en of 1992 because of the damage to th property by Hurricane Hugo and th subsequent insurance settlement in th amount of approximately $4 millio The hotel disagrees. According to Walt Phillips, who originally signed the lea with the Department of the Interior an subsequently transferred it to the WI & BC, "They've got millions of dolla still in here — like the beaches, th roads, the marina, the docks."

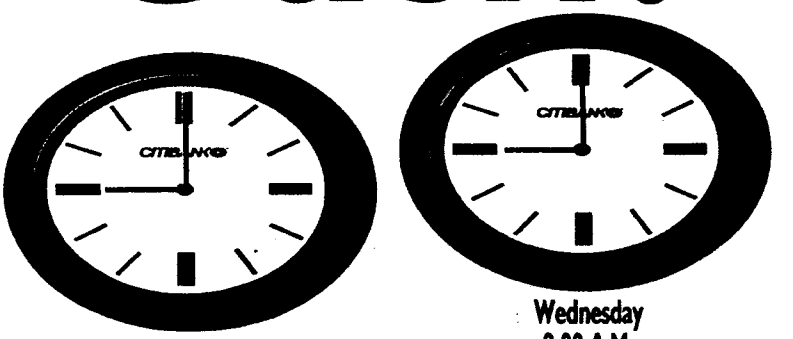
There is a contradiction in the U.S government's position. On the on hand, they are trying not to be declare the successor to the island, as defined i the lease, and therefore not be respons ble for any possessory interest, i.e development. On the other hand, the want to collect from the sublessees th value of the land in its current state development.

As Warren Pond puts it, "The U.S government is reaching their hands i our pockets for money we've alread paid. The infrastructure value should b deducted from the assessment, and w should pay the balance. Who woul have thought the U.S. governmer would try to screw me out of fifty t sixty thousand dollars?"

Meanwhile, many houses sit in a sta of being partially built or not rebui after the hurricane. The situation is te tative at best, at least until the lawsuit over. There is still interest in rebuildin the hotel. Delegate to congress Victo Fraser has had at least one call from a interested party, and Walter Phillip thinks the WIH&BC may try again.

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Look out for our new location.
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Attention turns to Water Island; transfer, debris removal imminent

Debris removal will begin this morning on Water Island, in cooperation between the V.I. Public Works Department and the U.S. Transportation Department.

The agencies also will tackle the long-standing problems of the landfill and docking facilities, Gov. Roy L. Schneider announced Thursday in a press release.

Schneider also directed Public Works Commissioner Ann E. Abramson to oversee a plan to improve roads on Water Island, as well as other infrastructure projects.

Water Island will have full power by the end of next week, he added.

The federal government is to formally transfer title to public roads, docks, and those land and beach parcels associated with the hotel to the Virgin Islands government "as soon as possible," Schneider said.

Residents of this U.S.-owned island heard in person from federal officials Tuesday that the transfer of ownership of the territory's fourth largest island is under way.

Water Island residents are seeking ownership of the land on which their homes sat — until Hurricane Marilyn's devastation. Rebuilding efforts have been thwarted until ownership is established.

Water Island was leased by the U.S. government in 1951 to Water Isle Hotel and Beach Club. The lease expired in 1992. Since then, the U.S. government has been working on finalizing sales to sublease holders.

EPA has guide for clean schools

As buildings become more energy-efficient, indoor air pollution is attracting more attention from health officials who suspect chemicals, fumes and other pollutants that would normally be ventilated out of a building may instead remain trapped inside.

The Environmental Protection Agency announces availability of an easy-to-use kit designed to help schools prevent indoor air problems. The kit, "Indoor Air Quality Tools for Schools," comes with a video showing school officials how to best operate and maintain ventilation systems.

The kit is cosponsored by the Parent Teacher Association, National Education Association, Council for American Private Education, Association of School Business Officials, American Federation of Teachers and the American Lung Association.

▼ **FOR INFORMATION**
Call 800-438-4318 or 202-484-1307.

Climate, weather data from NOAA

The National Oceanic and Atmospheric Administration's National Climactic Data Center has released a guide to those wanting to obtain printed and electronic information from the center's huge library.

NOAA's "Products and Services" guide explains how to access certain weather and climate data through the Internet's World Wide Web, making it a must for teachers and others interested in climate and weather issues.

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Health

V.I. must prevent Water Island becoming rich, white enclave

Dean Luke is executive director of the 21st Legislature of the Virgin Islands.



Dean Luke
Guest editorial

I recently attended a meeting on the status of Water Island with officials from the Department of the Interior, residents of Water Island and other concerned citizens. What I heard was shocking and appalling.

The master leaseholder, whose lease expired in 1992, subleased land to 138 individuals, including the Sprat Bay Corp. Of the 138 subleases, 137 were to be settled by Dec. 31, 1995, due to the asserted and focused efforts of the governor.

The sublease to Sprat Bay Corp., however, which represents a significant portion of the island (at least one-third), is still under negotiation. Reasons for continued negotiations are Sprat Bay's subleasing of 136 acres to an additional 55 individuals (representing 89 lots) and legal challenges to the validity of Sprat Bay's lease, but most significantly the clan that manages Sprat Bay.

I am concerned with the criteria used by Sprat Bay for determining who is eligible to become a property owner under its sublease. Of the 55 sublease holders, only about 18 are members of Sprat Bay and most do not reside on Water Island. It appears that Sprat Bay is looking to establish a white enclave on Water Island. From its inception, the bylaws of Sprat Bay Corp. have included provisions making it difficult for people of color to join.

Over the years, the members deleted sections, but actively recruited only wealthy whites to settle on its 136 acres. In addition, Walter Phillips and Mr. and Mrs. Van Gores attested to the rampant ethnic and economic discrimination associated with Sprat Bay Corp., including the way the subtenants are being handled by the Department of the Interior. Only the controlling members of Sprat Bay Corp. were made part of the negotiation process. No one seems to be making an issue of the "exclusion zone." Why not?

This, in my opinion, is discrimination at its worst. We are living in a society where the majority population is of African decent. Any attempt to set up such a community will be establishing apartheid in the Virgin Islands and further weakens our sense of community. It is time for the press or electronic media to take up this issue of exclusion.

I have no problems with Sprat Bay (the clan) doing business in the Virgin Islands. However, I do have problems with the corporation's history of discrimination; locals are often shot at or asked to leave Water Island when visiting the beaches. Members of the corporation (the clan) say they are skeptical when non-residents visit the island.

Virgin Islanders should ask themselves these questions: Can I take my family for a weekend visit to Water Island without being harassed? Can I walk on the streets of Water Island without being suspected of being a criminal?

Water Island has lush vegetation, a variety of wildlife and beautiful beaches which the Department of the Interior should not simply give away for a selected few to enjoy. These creations of nature should be enjoyed by all Virgin Islanders. If the Department of the Interior settles with the Sprat Bay Corp., we will lose yet another piece of prime real estate to a select few.

Before an agreement is reached between Sprat Bay and the Department of the Interior, we have to address the issue of our relationship with the few residents of Sprat Bay Corp. who will control a significant portion of the island. Additionally, the government of the Virgin Islands should insist that all roads, not just on the West Indian Co. side, be transferred to the local government so that we may move about without restriction.

The Department of the Interior should transfer all 136 acres of the Sprat Bay Corp. to the Virgin Islands government for disposal rather than allowing Sprat Bay Corp. to determine who is eligible to purchase. An independent audit must also be demanded by the Department of the Interior before any transfer with Sprat Bay Corp. can be finalized.

Imagine — an island less than a few hundred yards away, with natural beauty and an abundance of wildlife — which we cannot fully enjoy. If this trend of giving up property to a wealthy few continues without challenge or question, our children may never enjoy the entire Virgin Islands as we should.

I am asking all Virgin Islanders and citizens who are as concerned as I am to contact me by calling 776-2593 or write their congressman and other local elected officials concerning this issue.

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The Virgin Islands
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Water Island environmental meetings se

By LYNDA LOHR
Daily News Correspondent

The yearslong saga of Water Island's fate may finally be coming to an end.

The federal Interior Department's Insular Affairs Office will hold meetings Dec. 12 and 13 to determine if anyone has observed any environmental problems on Water Island.

Allen Stayman, acting director of the Office of Insular Affairs, said such meetings must be held when the federal government disposes of its property. If environmental problems are uncovered, the disposal process could drag on another two or three years.

The Dec. 12 meeting will be held at 1 p.m. at the Honeymoon Bay pavilion on Water Island. The Dec. 13 meeting will be held at 1 p.m. at the V.I. Territorial Emergency Management Agency's headquarters across from Nisky Center on St. Thomas.

If, as anticipated, no environmental problems exist, the process of selling the land to subleaseholders should begin in January.

"Fixing the price is the real stumbling block," said Stayman, noting that Hurricane Marilyn affected real estate values.

Paul Hytonen, a real estate agent at Moran Real Estate, estimated that residents would wind up paying about $25,000 for their half-acre plots.

Most of the land not sold to subleaseholders will be turned over to the local government. While some of the land will probably stay in the V.I. government's hands because it has significant environmental or cultural importance, other parcels can be sold. However, the local government must turn the proceeds over to the federal government after subtracting a 10 percent handling fee.

The 480-acre island off Charlotte Amalie is home to a chemical dump, located at the Former Fort Segarra. Stayman said the federal government would hold on to that parcel of land.

The federal government has been working on disposal of the island since a master lease to Edward McCardle expired Dec. 31, 1992. The situation is complicated by the fact that about 140 people have subleases from McCardle on about 320 of the island's acres. About half of those properties have homes.

McCardle subleased another 160 acres to the private Sprat Bay Club, which in turn leased plots to its members so they could build houses. The number of homes built on the Sprat Bay section is unknown.

Because of hurricane-related telephone outages, residents could not be reached for comment.

Stayman said that the f government also has to decid to do with the hotel, whic badly damaged when Hur Hugo hit in 1989.

"The hotel is a liability," man said.

Stayman urged subleaseh to join forces when negotiatin government. This will simpl paperwork and residents will bly get a better deal.

The issue has been furthe plicated by the fact that Mc has sued the federal governn get back the money he said h on improvements.

However, Stayman said i not appear that lawsuit will in with the disposal process.

Neither Gov. Roy L. Sch nor V.I. Delegate to Congres tor O. Frazer could be reach comment.

EVIDENCE CONTINUED FROM PAGE ONE

Relative had urged victim to sell St. Croix condo

by Hurricane Marilyn, family members said.

She was the president of the

for evidence but later released him.

The Montgomery Journal report-

SHORT REPORTS

Henneman: Cheek on 'official business'

ST. THOMAS — James E. Cheek is still the Virgin Islands' E cation commissioner and has been away for the last few weeks "official Department of Education business," acting Commissio Carol Henneman said Thursday.

Henneman was

US ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT
ANTILLES OFFICE



St. Thomas - U.S.V.I.

INFORMATION BULLETIN: "WATER ISLAND"

NUMBER: Twelve DATE: 8 February 1995

1. Update. The last information news bulletin was issued on September 12, 1994. No action has occurred on site since then.

2. Removal of Remaining Debris. The Corps' contractor will return on February 15-16 to remove the remaining debris first handled last summer. A Corps representative, Mr.Carl Overstreet from our Jacksonville Safety Office, will be on site to monitor the work and sign the required transportation manifest. This will allow us to remove the debris. The material to be removed from the Flamingo Bay area consists of batteries and fluids associated with junked vehicles which all require special handling. The work has been coordinated with the Environmental Protection Agency and local officials. The contractor for the work is MTA Inc. of Huntsville, Alabama and the subcontractor for this task is Vanguard Corp. from Caguas, Puerto Rico.

3. Local Coordination. Our Deputy District Engineer for the Antilles, Lieutenant Colonel Stephen Benton has already briefed the Governor and Lieutenant Governor on our efforts and work in Water Island. Other new U.S. Virgin Islands officials will also be briefed in the near future as they have expressed interest on the subject.

4. Excavation Phase. As indicated previously, our next phase should involve intrusive excavation to characterize the sub-surface magnetic anomalies. Work plans for this stage are (have been) reviewed by technical elements within the Corps of Engineers and the Department of the Army. As soon as a decision is reached on the timetable for work, we plan to hold a community meeting to inform residents of the work schedule.

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IN COORDINATION WITH THE HUNTSVILLE DIVISION
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Jax-040901-063

U.S. agrees to listen to Water Island concerns

By PETER EISLER
Gannett News Service

WASHINGTON — The Interior Department, reconsidering a Bush administration plan to sell off Water Island, has agreed to consider V.I. officials' demands that the island's undeveloped property be given to the territory.

Interior officials said Thursday the Clinton administration has made no decision on whether to reverse the Bush administration's plan for selling off lots on the federally owned island. But they agreed in a meeting with Virgin Islands officials to review the local government's concerns with the policy.

"The administration is proceeding with their review, and they've indicated that they're going to be taking (territorial officials') position into account," said Brian Modeste, an aide to V.I. Delegate to Congress Ron de Lugo, who hosted the meeting with representatives of the Interior Department.

For now, the Interior Department has put a hold on all action related to the sale of lots on Water Island while the Bush administration policy is reviewed.

That policy would have allowed all those leasing property on the 500-acre island in St. Thomas Harbor to buy the land at prices based on appraisals commissioned by the federal government. The administration at one point proposed that remaining land would be auctioned to V.I. citizens, with leftover property going to V.I. government for parks and other public uses.

In the administration's closing days, the Interior Department sent sale offers out to about 140 leaseholders on the island, including Sprat Bay Corp., which holds a sublease that includes about 90 lots. About 30 of those immediately returned signed contracts for the purchase.

Those sales were frozen when the Clinton administration took office, and all further efforts to dispose of the island were halted while officials reviewed complaints that the Virgin Islands was getting a raw deal under the Bush plan.

> "They're going to be taking (territorial officials') position into account."
>
> — Brian Modeste, aide to V.I. Delegate Ron de Lugo

The complaints were raised with new Interior Secretary Bruce Babbitt by de Lugo and Sen. Bennett Johnston, D-La., who respectively chair the House and Senate subcommittees that oversee territorial matters.

The lawmakers and Gov. Alexander A. Farrelly want only those who have built homes or businesses on leased property to be allowed to buy land, which is sublet through a master lease-holder — Water Island Hotel and Beach Club Ltd.

Under that scenario, lease-holders who had not developed their property would have no opportunity to purchase that land, which would be turned over to the V.I. government and disposed of according to its wishes.

Among the issues now being considered by the Interior Department is what to do about contracts already signed for property on the island — including at least some for undeveloped property.

"We've made no decision at this moment as to how we're going to proceed on any of this," said Larry Morgan, who handles legislative and public affairs for Interior's Office of Territorial Affairs.

Morgan noted that it may be some time before the matter is resolved.

Leslie Turner, Clinton's nominee to take over the territorial office, has not yet been confirmed and likely will have to review the matter before a decision is made, he said. And principals of the Water Island Hotel and Beach Club have sued the Interior Department charging that efforts to sell off the island would circumvent payments due to them as master lease-holders.

Until the situation is settled, those living on leased property on the island will be allowed to stay.

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Schneider: Frazer's not doing his job

Governor blasts teachers, praises self

EUNICE BEDMINSTER
Daily News Staff

ST. THOMAS — Gov. Roy L. Schneider d a message Tuesday for V.I. Delegate to ngress Victor O. Frazer: "Get out and do ur work.

"I am tired of doing the delegate's job. He ster get off his you-know-what."

Schneider made his remarks during a 1½- our appearance Tuesday at a meeting of the otary Club of St. Thomas II at L'Escargot.

The governor, who has said that he is inking of establishing a Washington, D.C., ffice to deal with the federal government, aid he had heard that Frazer was upset over is frequent visits.

"If I didn't visit, we wouldn't have a watch company," he said, referring to negotiations with Timex not to close its St. Croix plant.

The closing of the plant was scheduled for Oct. 31. The status of the plant was unclear Wednesday.

For his part, Frazer said Wednesday that a move to end breaks to watch companies was nipped in the bud.

"Things are the same as they always were," said Frazer.

Although the governor urged the community to "tell us where you think we're wrong and we'll try," he took the chance to blast other agencies who dared to question his leadership.

In reference to being taken to court over the casino gambling law, Schneider said "the different segments of the government do not understand their role — senators play governor and judges play senator."

He said the territory lacks the open communications necessary to succeed.

He was disturbed by the lack of outcry from parents about children missing school and called American Federation of Teachers union leaders "jokers sitting back and fighting each other."

The teachers' union is fighting Schneider's administration over how to make up school days missed because of hurricanes Marilyn and Luis. Teachers contend that they worked several of the days — even though students were not in classes — and therefore should not have to make up the days.

"Where is the morality — the ethics that should be there in the role of a teacher — to teach," Schneider said.

"You can't tell me if you're handing out food stamps that you're teaching."

His plea to parents: "You must get up, you must speak out. We as an administration can't do it for you until you join us.

"Insist that this happens. These islands will not succeed without an educated mass of young people."

Schneider said his administration is a virtual renaissance occurring in the Virgin Islands and that he is running government like the chief executive officer runs a big company.

The government should provide a service, he said, but it should also make a profit.

That's the reason he supports casino gambling on St. Croix, he said.

Schneider said he is uncertain the cruiseship business will continue there.

"St. Croix will rise up, but not necessarily with what's been successful on St. Thomas."

Schneider said Water Island will be turned over to the V.I. government in December. He also hopes to establish an industrial development bank by next month.

Daily News correspondent Lynda Lohr contributed to this article.



Daily News Photo by HILLARY HODGE

Gov. Roy L. Schneider addresses the Rotary II Club at a luncheon Wednesday at L'Escargot restaurant.

Letters

Unfair to say Water Island is a 'white enclave'

Dear editor:

My comments on Dean Luke's guest editorial of Jan. 12 (concerning Department of the Interior meetings about the status of Water Island).

I attended both meetings, and I guess Mr. Luke went in the wrong room by mistake, because what he found so "shocking" and "appalling" weren't even brought up. For example, shooting strollers passing to and from the beach at Sprat Bay or wheeling by Banana Beach. The only time anyone was ever shot at in the past 20 years that I know of was when Blue Lightning bungled a cocaine bust and they emptied their Uzis into the bush.

As far as this "white enclave" business goes, Mr. Luke seems to quote both Dr. Phillips and Mrs. Van Gores as making comments about "rampant ethnic and economic discrimination" associated with Sprat Bay. Anyone who likes can take a look at my official copy the transcripts from both days to see what these people actually said. Mrs. Van Gores said that she and her husband had paid Sprat Bay Corp. $19,000 and she wasn't sure what she had got in return. On Day Two, Walter added the personal touch with a couple anecdotes dating from days at the start of the lease when just about all his partners were influential West Indians.

Perhaps more compelling proof of Mr. Luke's peculiar bias in these matters is that two Sprat Bay lot owners, John Fredericks and Charles Pemberton, would be astonished to hear themselves described as "wealthy whites."

What actually was discussed was that the self-appointed "representative from Water Island Civic Association, Warren Pond, represents no one, and is empowered in no way to take part in secret meetings about the disposal of my personal property and that of my neighbors.

Now there seems to be a movement afoot to ensure no casino gambling on Water Island. I can think of no more suitable place in the Virgin Islands for an enterprise of this kind and will go on record as being for it and can produce many other homeowners who are too.

In the future, when we write about Water Island, let us try to get all our facts together, not all our ducks in a row.

Grove B. Richardson
St. Thomas

Mother laments: son's murder results in a police 'cover-up'

Dear editor:

This is an open letter to Police Commissioner Ramon Davila:

What does a mother have to do to get justice done?

On Nov. 18, Thomas Hodge Jr. was shot and killed at Peterborg. His killer has not been caught. I have come to your office seven times but wasn't

I've called everybody by telephone numerous times.

I have been to the Police Department more times than I can count. I am going through a revolving door or I'm in a whirlwind.

Nobody seems to care.

They are letting my son's killer walk free. He is my son,

Jax 66

Jax-040901-066

Robert.

US ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT
ANTILLES OFFICE
St. Thomas - U.S.V.I

INFORMATION BULLETIN: "WATER ISLAND"

NUMBER: Nine DATE: 17 May 1994

1. Completed Work. Site characterization work which began in March 14, has continued as scheduled during the past two months

As of Thursday, May 12 work on the following areas have been completed:

a. Tamarind Bay
b. Flamingo Bay Landfill and warehouse area
c. Test Areas 5, 6, and 8

Preliminary results for all these areas were negative for contamination.

2. Ongoing Work. The contractor continues to work in test area number 4 where most of the debris and discarded vehicles are found.

3. Debris Removal. The Corps of Engineers has directed the contractor to remove the debris from test area number 4. This is necessary prior to conducting all required investigation as stated on the Work Plan. The debris, mostly junked vehicles and discarded household materials, will be shipped to the Bovoni Landfill on St. Thomas for disposal. No hazardous materials will be shipped. All batteries and fluids will be removed from vehicles prior to shipping.

? is this true? Do we have DOI money? Bert me

The contractor, MTA Inc. from Huntsville, coordinated with the subcontractor who will be responsible for the actual removal and transportation of the debris from Water Island to the Bovoni Landfill. Actual removal work began on Monday, 16 May and could take approximately 2-3 weeks.

PREPARED BY USACE, JACKSONVILLE DISTRICT, ANTILLES OFFICE
IN COORDINATION WITH THE HUNTSVILLE DIVISION
ANTILLES OFFICE, 400 FERNANDEZ JUNCOS AVENUE
SAN JUAN, PUERTO RICO 00901

Jax 67

Jax-040901-067

4. **Disposal of Vegetation**. To conduct the site characterization work some vegetation had to be removed from several areas, particularly from area number 4. The Corps and the contractor are evaluating alternatives for the disposal of the vegetation including controlled burning of the material on site. Water Island residents will be kept abreast on the subject.

5. **Coordination with VI Government**. The disposal of debris on the Bovoni Landill has been properly coordinated with the Office of the Governor, the Department of Public Works and Department of Planning and Natural Resources (DPNR). Burning of vegetation is being coordinated with DPNR and the Fire Department.

6. **Visitors**. Corps officials from Huntsville and Jacksonville have visited the project site during the last month to inspect progress of work. Last week visitors included Occupational Health and Safety officials to ensure compliance with all safety and health requirements. Lieutenant Colonel Stephen Benton, Deputy District Engineer for the Antilles, has visited the project site in conjunction with his regular visits to St. Thomas for meetings on other Corps projects and regulatory program meetings.

7. **Outlook of Work**. We anticipate all site characterization work should be completed by early June.

8. **On Site Contact**. Corps of Engineers representative, Eng. Alfonso O'Neill is available on site from Monday thru Thursday to answer any question from interested parties. His telephone number is 809-774-2267. You may also call our Antilles Office Public Affairs Specialist, Elsa Jiménez at 809-723-0133.

Jacksonville District
Project Management Office
STO Branch
Fort Segarra files
R. Bridges office

page 2 of 2

RCB

US ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT
ANTILLES OFFICE



St. Thomas - U.S.V.I.

INFORMATION BULLETIN: "WATER ISLAND"

NUMBER: Ten DATE: 12 July 1994

1. **Phase I Completed**. Most Water Island residents are already aware that surface site characterization work was completed in early June, as scheduled. This work, which began in March 14, involved taking soil samples from previously identified sites for evaluation. Preliminary results for all the areas tested are negative for contamination. The draft report and account of work done in Phase I is being prepared by the contractor for submission to the Corps of Engineers and will incorporate recommendations concerning future work.

2. **Debris Removal: Partially Completed**. The debris accumulated, consisting mostly of 82 junked vehicles and discarded household materials, was removed from Water Island and transported to the Bovoni Landfill in St. Thomas. Several Water Island residents expressed their appreciation to our on-site representative, Eng. Alfonso O'Neill for the removal of this debris. We were happy to learn that this action was applauded by the residents.

The remaining debris removal work involves materials which require special handling and disposal procedures in accordance with the Environmental Protection Agency (EPA) regulations. As explained in the previous bulletin, our contractor will remove the batteries and fluids associated with the junked vehicles. We

are in the process of submitting to EPA the necessary documents to obtain their endorsement for the removal action. Once permits are obtained, the Corps contractor will secure a sub-contractor to remove the above mentioned materials from the work area where they are currently located along the road to Flamingo bay.

3. **Future Work**. Based on the recommendation from the report of Phase I and evaluation by the Corps of Engineers and Army technical staff, a decision will be made on the need for additional investigations, and the nature of such work. As promised, we will keep Water Island residents and Territorial Government officials fully informed of the progress and/or changes in any of the Water Island plans.

Jacksonville District
Project Management Office
SFD Branch
Fort Segarra files
R. Budgers office

US ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT
ANTILLES OFFICE
St. Thomas - U.S.V.I.



INFORMATION BULLETIN: "WATER ISLAND"

NUMBER: Eleven DATE: 12 September 1994

1. Update. Two months have elapsed since we sent our last information bulletin (12 July 1994) on the status of work in Water Island. We are still evaluating the results of the non-intrusive investigations and have no definite date for the initiation of the next phase of work. As promised to you at the time, we will keep Water Island residents and VI Government officials fully informed on the progress and/or changes in any of the Water Island plans.

2. Remaining Debris. We have yet to remove the remaining debris which consists of batteries and fluids associated with the junked vehicles and require special handling and disposal procedures. We are coordinating this phase with the Environmental Protection Agency (EPA). The Corps will then task the contractor to remove the materials from the Flamingo Bay area.

3. Excavation Phase. The subsequent phase of work will likely involve intrusive excavation to characterize the subsurface. The work plan for this phase is being developed, reviewed and coordinated with different elements within the Corps of Engineers and the Department of the Army. At the moment we do not have information of possible dates for this work to begin, but no work is expected to start until 1995. Upon approval of our work plans, a community meeting will be held to discuss the scope of work with interested residents.

4. Visitors to Water Island. On 30 August the Jacksonville District new Commander, Colonel Terry Rice, visited Water Island accompanied by Lieutenant Colonel Stephen Benton, Deputy District Engineer for the Antilles. It was Colonel Rice's first visit to the U.S. Virgin Islands where he met with Lieutenant Governor Derek Hodge and other VI Government officials.
The visit to Water Island was coordinated with Mr. John Auer, President of the Civic Association who was off island and asked Mr. Charles Star, Secretary of the Association, to accompany our visitors.

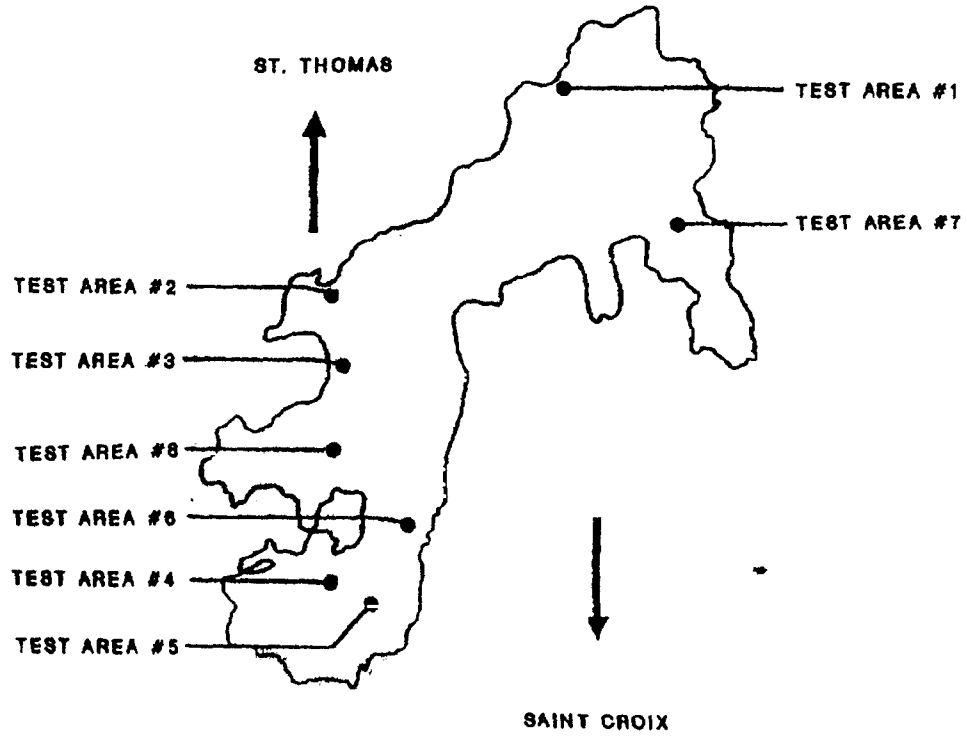
A Technical Review Team from the Corps will visit Water Island on the week of 19 September to inspect the sites where site characterization work was conducted.

PREPARED BY USACE, JACKSONVILLE DISTRICT, ANTILLES OFFICE
IN COORDINATION WITH THE HUNTSVILLE DIVISION
ANTILLES OFFICE, 400 FERNANDEZ JUNCOS AVENUE
SAN JUAN, PUERTO RICO

Jax69

Jax-040901-069

WATER ISLAND (FT. SEGARRA)
VIRGIN ISLANDS



• Location of toxic gas yard and change house are unknown

Jax-040901-070 page 1 of 9

JAN-28-1993 15:27 FROM CELMS-PM-M 8774 TO 6984232213 P.02

U.S. VIRGIN ISLANDS

San Jose Project, St. Thomas

Established by the Chief Chemical Officer, U.S. Army Chemical Warfare Service, in 1944, tests under the San Jose Project came to a halt on December 23, 1947, when the project was notified that San Jose Island would have to be evacuated immediately due to the failure of the United States and Panama to agree to a renewal on the lease.

San Jose Project Headquarters was re-established at Fort Clayton, Canal Zone, while exploratory trips were made around the area looking for a new base for the project. Meanwhile, the technical activities of the project were concentrated in an area at the mouth of the Chagres River on the Fort Sherman Reservation. Activities consisted of guarding and rehabilitating toxic munitions transferred from San Jose Island. The reports did not discuss decontamination or disposal operations or locations of rehabilitation work, decontamination, disposal or clean-up areas.

The San Jose Project moved from the Canal Zone into the former U.S. Navy Submarine Base just west of the town of Charlotte Amalie on St. Thomas, Virgin Islands. The San Jose Project test sites include approximately 2,000 acres comprising the western tip of St. Thomas and all of Water Island, a small island just across the channel from the main post. Water Island contains eight test areas, a toxic gas yard and a change house.

St. Thomas in the Virgin Islands was a tropical proving ground for the San Jose Project. This project was able to gather technical data on performance of chemical munitions and protective materiel in order to ascertain their effectiveness and suitability under tropical conditions in the jungle.

At the beginning of test operations at St. Thomas, 55 tests were scheduled. Of the 55 tests scheduled, 20 were deleted by direction of the Chief, Chemical Corps. The status of all the remaining tests are unknown although some tests are documented and are known to have been conducted. Tests were conducted at Water Island. Chemical agent used or planned to be used in support of the San Jose Project is listed in Table 1.

The San Jose Project, St. Thomas, Virgin Islands, terminated on May 12, 1950, by direction of the Chief, Chemical Corps. Disposition of toxic material remaining at St. Thomas at the end of the project was scheduled for burial at sea or transport back to the continental United States. However, it is not known whether the disposal plan was fully carried out. A shipment from St. Thomas, Virgin Islands was initiated in May, 1950.

Table 1

Agent	Contaminant	
	Bombs	Bulk
GA	250 kg German	
GA	Shell 4.2 CM Mortar	
HD	Shell 4.2 CM Mortar	
HQ	Shell 4.2 CM Mortar	
HT	Shell 4.2 CM Mortar	
CK	M70 115lb CML Bomb	
CK	M78 500lb CML Bomb	
CK	ANM79 1,000lb CML Bomb	
HD	T-3 115lb CML Bomb	
H	T-3 115lb CML Bomb	
GA	E-52 125lb CML Bomb	
GA	E-46 125lb CML Bomb	
GA		1-Ton Container
Butane		1-Ton Container

CW BURIAL HISTORICAL SURVEY
RANGE SITES
VIRGIN ISLANDS

SITE	LOCATION	AREA	DESCRIPTION	ESTIMATED SIZE	CONTENTS	REF./ PAGE NO.	COMMENTS	S/C
St. Thomas	Virgin Islands, TT	Area 4	Water Island. Static test of the M70 mustard bomb w/ .50% yellow Dupont oil (Phase 1 & 2 Test). Decontamination and disposal area for test hardware and test area are undefined.	Unknown	Unknown but potential for buried mustard bombs exists.	124	Refs. 125-126. M70 HD-filled bombs were stationary fired in a vertical position, nose down (see Water Island Test Area Map) Nov-Dec 1948.	S
St. Thomas	Virgin Islands, TT	Area 5	Static test of the M70 mustard-filled bomb (Phase 3 & 4 Test). Decontamination and disposal area for test hardware and test area are undefined. Mustard mixed w/ .50% yellow Dupont oil.	Unknown	Unknown but potential for buried mustard bombs exists.	124	Timeframe: 9 December 1948. Also discussed in Ref. 125, 126.	S
St. Thomas	Virgin Islands, TT	Area 8	Static test of the M70 mustard-filled bomb (Phase 5 & 6 test). Decontamination and disposal area for test hardware and test area are undefined. Mustard mixed w/ .50% yellow Dupont oil.	Unknown	Unknown but potential exists for buried mustard bombs.	124	Timeframe: 13 January (Phase 5), 8-25 January (Phase 6), 1949. Also discussed in Refs. 125, 126.	S
St. Thomas	Virgin Islands, TT	Area 6	Static test of the M70 mustard-filled bomb (Phase 7 test). Decontamination and desposal area for test hardware and test area are undefined. Mustard mixed with .50% yellow Dupont oil.	Unknown	Unknown but potential exists for buried mustard bombs.	124	Timeframe: 10 February 1949. Also discussed in Refs. 125, 126.	S
St. Thomas	Virgin Islands, TT	Area 7	Static test of the M70 mustard-filled bomb. (Phase 8 test). Decontamination and disposal area for test hardware and test area are undefined. Mustard mixed with .50% yellow Dupont oil.	Unknown	Unknown but potential exists for buried mustard bombs.	124	Also discussed in Refs. 125, 126. Timeframe: 23 February 1949.	S
Water Island, St. Thomas	Virgin Islands, TT	Area 4	Test area. Static test of smoke pots filled with mustard. Five seperate test phases were conducted. Mustard mixed with Dupont oil & red dye.	Unknown	Unknown but potential exists for buried mustard-filled smoke pots	125	Also Ref. 126. Mustard-filled smoke pots tested on Water Island in August 1949. Clean-up and decontamination of operations are unknown.	

Site Name: Name by which the site is currently known.

Location: The city or town associated with the site.

Area: Specific area within which the site is located.

Description: A description of the site or event that leads to the potential for contaminated, buried or abandoned munitions.

Estimated Size: The size of the burial site, if known.

Contents: The material buried at the site including weapons nomenclature and identity of the chemical agent if known.

Reference: The reference and page number of the source document.

Comments: Information pertinent to the action described such as bomb recovery dates.

S/C: Whether site is suspected or confirmed site.

DU BURIAL HISTORICAL SURVEY
RANGE SITES
VIRGIN ISLANDS

SITE	LOCATION	DESCRIPTION	ESTIMATED SIZE	CONTENTS	COMMENTS	S/C
Water Island, St. Thomas	Virgin Islands, TT	South shore of Flamingo Bay. Several M70 and M78 bombs were uncovered during excavation operations.	Unknown	Contents of bombs not mentioned.	Also Ref. 126. Excavation of area revealing M70/M78 bombs occurred in 1966. Disposition of the bombs or residual material is unknown.	

Site Name: Name by which the site is currently known.

Location: The city or town associated with the site.

Area: Specific area within which the site is located.

Description: A description of the site or event that leads to the potential for contaminated, buried or abandoned munitions.

Estimated Size: The size of the burial site, if known.

Contents: The material buried at the site including weapons nomenclature and identity of the chemical agent if known.

Reference: The reference and page number of the source document.

Comments: Information pertinent to the action described such as bomb recovery dates.

S/C: Whether site is suspected or confirmed site.

Page 5 of 9

5

CW BURIAL HISTORICAL SURVEY
DISPOSAL SITES
VIRGIN ISLANDS

SITE	LOCATION	AREA	DESCRIPTION	ESTIMATED SIZE	CONTENTS	REF./ PAGE NO.	COMMENTS	S/C
San Jose Project	St. Thomas, Virgin Island, TT	Water Is.	Storage of various chemical munitions. 126 115lb M78; 30 M78 500lb bombs; 1,080 1,000lb M79 bombs; 148 phosgene (CG)-filled ton containers.	Unknown	Unknown but potential exits for buried CG-filled munitions.	127	Also Ref. 128. To be see dumped. It is not known whether the sea dump operation was carried out. Ton containers may have been shipped to PBA.	
St. Thomas	Virgin Islands, TT	Water Is.	During 1950s, used as a toxic gas yard for the San Jose Project. Storage of various chemical-filled munitions. 78 4.2" mustard (HD)-filled mortars, some HT-filled, 225 115lb T-5 mustard bombs.	Unknown	Unknown-potentially 250lb Bermen GA bombs, containers (mustard & nerve-GA)	127	Also Ref. 128. To be see dumped. It is not known whether the sea dump operation was carried out. T-5 bombs may have been shipped to Edgewood.	

Site Name:
Name by which the site is currently known.

Location:
The city or town associated with the site.

Area:
Specific area within which the site is located.

Description:
A description of the site or event that leads to the potential for contaminated, buried or abandoned munitions.

Estimated Size:
The size of the burial site, if known.

Contents:
The material buried at the site including weapons nomenclature and identity of the chemical agent if known.

Reference:
The reference and page number of the source document.

Comments
Information pertinent to the action described such as bomb recovery dates.

S/C:
Whether site is suspected or confirmed site.

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Virgin Islands Refer's

124. San Jose Project Report No. 136. Static Test of M70 Bomb HD-Filled. March 1949.

125. Report No. 176. Static Test in the Open for a Single E-23 Smoke Pot, HD Filled. Technical Staff, San Jose Project. 9 December 1954.

127. San Jose Project Report 61. Period 1 November 1947 thru 31 October 1948. Refer to Paragraph 1e: Water Island is also the Site of the Toxic Storage Yard.

CELMS-PM-M 20 Jan 93

FACT SHEET

Site Number: I02VIT900

Name of Site: ST THOMAS FIELD TEST STATION

Location and Description: ST THOMAS; NOT LISTED, VI.

Facility Type: RANGE

Suspected Munition Type:

Type	Year of Operation	Quantity (if any)
1. CW agents		
2. CW agents		

Finding of Fact:
1. Report to congress on status of chemical warfare research and development board. Also known as San Jose Project. Includes 3 sq miles on western tip of St Thomas and all of Water Island

2. Report to congress on status of chemical warfare research and development board. Also known as San Jose Project. Includes 3 sq miles on western tip of St Thomas and all of Water Island

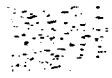
Reference Documents:
1. Chemical Warfare Orientation Material

2. Chemical Warfare Orientation Material

Researcher Information

Name: George Sloan

Office Symbol: CELMS-PM-M (OEW)
Phone Number: (314) 331-8787/8783



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CELMS-PM-M 20 Jan 93

FACT SHEET

Site Number: I02VIT901

Name of Site: RIO HATO/SAN JOSE/UNKNOWN SITE

Location and Description: SAN JOSE ISLAND; UNKNOWN, VI

Facility Type: Range - Test, TESTING AND STORAGE

Suspected Munition Type:

Type	Year of Operation	Quantity (if any)
1. SPRAY TANKS		24
2. CW agents		
3. UNKNOWN		
4. CW agents		
5. BRITISH 500LB BOMBS		36

Finding of Fact:

1. Document discussed multiple spray operations on various targets in target area 11 on San Jose Island, Republic of Panama.

2. Site used by the CWS in WWII.

3. Site used by the CWS in WWII.

4. Appendix U shows listing of toxic ammunitions shipped out of New Orleans as part of the San Jose Project [0864].

5. Bombing was of target area 3c. Document stated that only 20 of the 36 bombs were recovered and lists a request for a repeat of the test due to the poor boombing accuracy of the first test. HTV/MM is a form of thickened mustard agent.

Reference Documents:

1. H-Spray Penetration of Jungle Canopy

2. Prel ASF Postwar Troop Basis Plan N-10849

3. THE CHEMICAL WARFARE SERVICE: FROM LABORATORY TO FIELD IN U.S. ARMY IN WORLD WAR II, THE TECHNICAL

4. History of CWS Activities at Ports of Embarkation p.251 Appendix U

5. Multiple Bombing Assessment of British Bombs, Aircraft, L.C., 500lb Charged with HTV/MM

Researcher Information

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AN ARCHEOLOGICAL INVENTORY AND ASSESSMENT OF CULTURAL RESOURCES ON WATER ISLAND, U. S. VIRGIN ISLANDS

Ken S. Wild and David G. Anderson

1992



NATIONAL PARK SERVICE
INTERAGENCY ARCHEOLOGICAL SERVICES DIVISION, ATLANTA
SOUTHEAST ARCHEOLOGICAL CENTER, TALLAHASSEE

Jax 71

JAX-040901-071

AN ARCHEOLOGICAL INVENTORY AND ASSESSMENT OF CULTURAL RESOURCES ON WATER ISLAND, U. S. VIRGIN ISLANDS

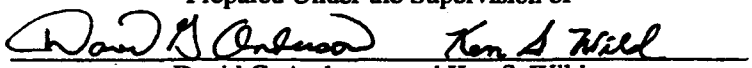
Report Submitted to:

Office of the Secretary
U.S. Department of the Interior
Washington, D.C.

Report Submitted by:

Interagency Archeological Services Division
National Park Service
Richard B.Russell Federal Building
75 Spring Street SW
Atlanta, Georgia 30303

Prepared Under the Supervision of



David G. Anderson and Ken S. Wild
Co-Principal Investigators

Report Authored by: Ken S. Wild and David G. Anderson

With Contributions by:
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George F. Tyson, Jr.

10 December 1992

National Park Service
Interagency Archeological Services Division, Atlanta
Southeast Archeological Center, Tallahassee

ABSTRACT

From September 1-4, 1992, and September 15 through October 13, 1992, an intensive archeological survey was conducted on Water Island, a small island covering approximately 491.5 acres located about a kilometer off the island St. Thomas in the U.S, Virgin Islands. All beaches, bays, undeveloped level areas, and areas of reported historic structures were examined, while steep or rocky areas or areas extensively disturbed by modern development received less attention. A total of eleven archeological sites were found, five of which had been previously recorded. Eight of these sites, as well as an extensive underground World War Two era military complex, Fort Segarra, are considered eligible for inclusion on the National Register of Historic Places. Two major plantation complexes, at Carolina Point and Providence Point, and a smaller historic site complex on Sprat Bay were found and documented. The ruins at Carolina Point and Sprat Bay are in a remarkable state of preservation. Water Island apparently never saw intensive settlement during the prehistoric era, and that it was only sparsely settled through much of the historic era. Most of the prehistoric sites that were found appear to reflect short term camps. A large conch shell midden was found at the north end of the island, in Banana Bay, and radiocarbon dated to from ca A.D. 500 to 1200, is an example of such a special-purpose camp that appears to have formed over several centuries. During the years shortly before and after 1800 fairly large numbers of slaves (>50) were working the island's two plantations. A distinctive feature of the historic occupation of the island is the fact that for much of the later eighteenth and nineteenth centuries the principal land and slave owners were freed blacks.

MANAGEMENT SUMMARY

Project Goals and Objectives

The U.S. Department of the Interior is considering transferring ownership of Water Island, U.S. Virgin Islands from the federal domain to the Government of the U.S. Virgin Islands or to private ownership. This action, if undertaken, could affect cultural resources on the island that are currently under the protection of the U.S. Government. To assist in planning for a possible land transfer and in compliance with the National Historic Preservation Act, as amended, a comprehensive archeological survey and archival inventory of the island's cultural resources were undertaken by the U.S. Department of the Interior in 1992. The goals of the project were to systematically locate and determine the nature and extent of cultural resources on Water Island, and to inventory and document these resources in order to: (1) evaluate their significance and nominate qualified properties for listing in the National Register of Historic Places; (2) identify and evaluate potential adverse effects to these National Register eligible sites and properties; and (3) provide appropriate recommendations and strategies to the Secretary of the Interior for the mitigation of potential adverse effects to these cultural resources should Water Island pass from federal control.

Field and Laboratory Methods

Intensive archeological survey was conducted on Water Island from September 1-4, 1992, and September 15 through October 13, 1992, by personnel from the National Park Service's Interagency Archeological Services Division, Southeast Regional Office (IASD-SERO) and the Southeast Archeological Center (SEAC). Concurrently, a detailed overview of the historic period occupation of the island was prepared by a local historian, and the results were used to guide the fieldwork and the analysis and reporting activity.

The field effort was directed primarily to areas where site probability was considered to be high, including all beaches and bays, level areas, and areas of reported structures. Steep or rocky areas where past occupation or land use was considered unlikely, or areas extensively disturbed by modern development, received less attention. Investigations in high probability areas included surface reconnaissance followed by subsurface testing at 20 meter intervals if warranted by ground conditions (i.e., if undisturbed soil layers were present). If cultural materials were found in subsurface context the testing interval was reduced in order to precisely determine site boundaries. Investigations conducted on historic sites usually required the removal of vegetation in order to properly document the remains. Test units opened on historic sites did not use a systematic pattern, but were placed in relation to architectural features to maximize information return. Subsurface testing was done with either a shovel or a trowel, with all fill screened through 1/4-inch hardware cloth. All artifacts, ecofacts, and other evidence of non-modern human activity found were scientifically collected and documented, and then packed and returned to the Southeast Archeological Center, Tallahassee, Florida for cataloging and analysis.

A total of eleven archeological sites were found during the 1992 field work. Five of the eleven sites investigated in 1992 had been located by earlier investigators and were already listed on the Virgin Islands Site Inventory (12 VAM-3-9, 12-VAM-3-10, 12-VAM-3-21, 12-VAM-3-22, and 12-VAM-3-32). All five of these sites had been previously recommended for additional testing in order to determine their integrity and significance; this testing was done as part of the 1992 survey project. Six new, previously unreported archeological sites were located on Water Island during the 1992 survey (12-VAM-3-208, 12-VAM-3-209, 12-VAM-3-210, 12-VAM-3-211, 12-VAM-3-212, 12-VAM-3-56); these were also assessed for eligibility for inclusion on the National Register of Historic Places. In addition to the traditional archeological sites, the remains of a major World War II era fort are located at the south end of the island, on Flamingo Point. This underground bunker and gun emplacement complex is unusual and in an excellent state of

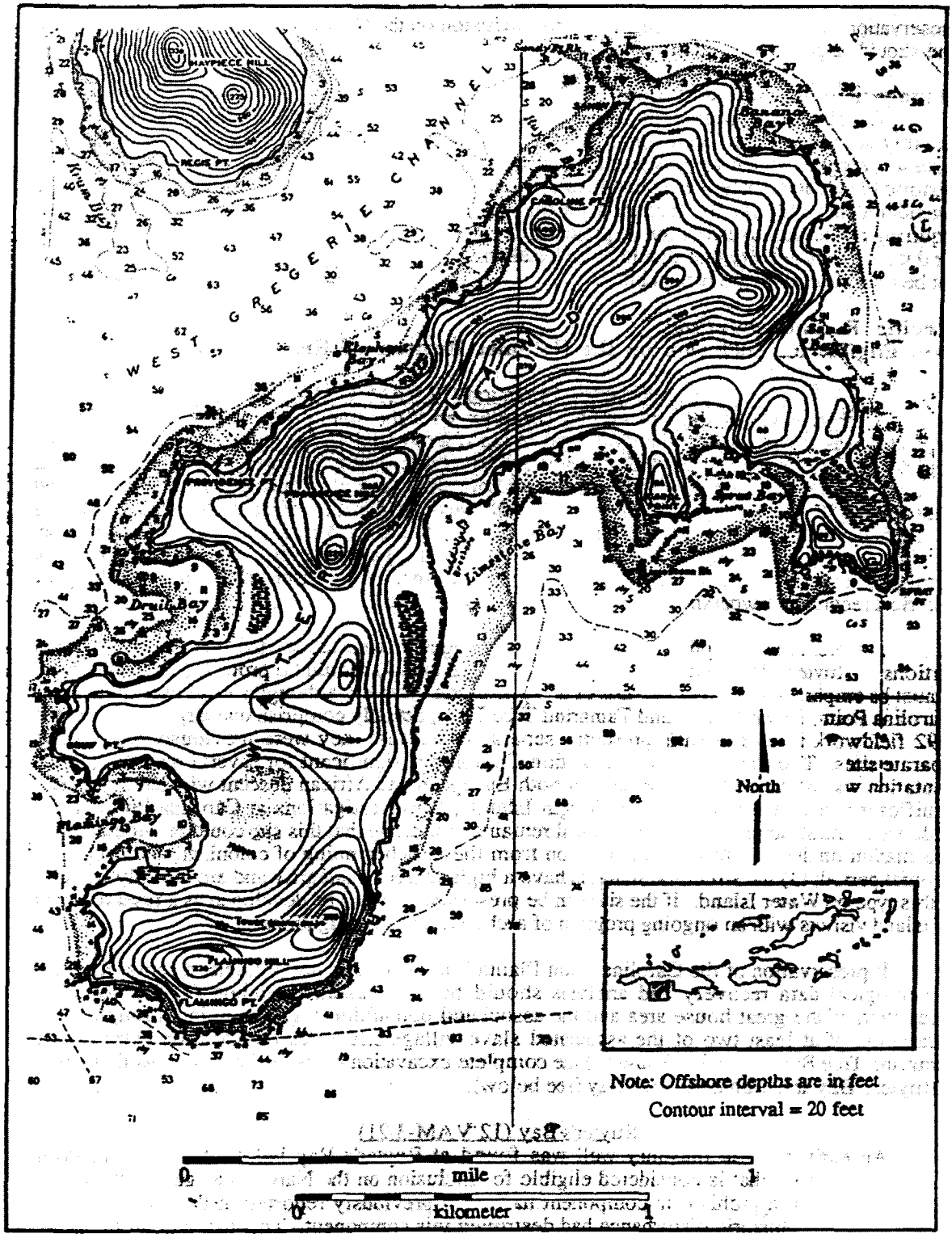


Figure 1. Water Island, U.S. Virgin Islands, Location Map.
1992 Water Island Archeological Survey, U.S. Virgin Islands.

preservation. It is also considered eligible for inclusion on the National Register of Historic Places and should be preserved and protected.

Management Recommendations

The 1992 field program on Water Island examined accessible parts of the island that would feasibly support human occupation. A total of eleven archeological sites were located and assessed, eight of which were determined to be eligible for inclusion on the National Register of Historic Places and hence warranting preservation or data recovery efforts, and three sites that are considered not eligible for inclusion on the National Register of Historic Places and hence requiring no further investigation or preservation (Figure 2, Table 1). Specific recommendations for data recovery activity that should be undertaken at each of the eligible sites, should preservation not be a viable option, are listed below.

Specific Recommendations:
Sites Eligible for Inclusion on the National Register of Historic Places

Carolina Point Plantation (12 VAM-3-209)

A large, early historic plantation complex with the standing remains of five historic structures was found on Carolina Point and is considered eligible for inclusion on the National Register of Historic Places. Historic research indicates this plantation, together with an associated slave village and two historic wells, was run by both white and freed black owners over a period of at least 150 years, from the early eighteenth through the mid-nineteenth century. These buildings have been tentatively identified as: (1) the great house; (2) servant quarters or warehouse; (3) either a stable or servant quarters; (4) the kitchen; and (5) a bake oven. Historic occupation on Carolina Point can be traced back to van Keulen's 1719 map of St. Thomas; detailed year-by-year historical records of ownership and occupation date from 1769.

The plantation remains on Carolina Point, together with associated remains on adjacent portions of Ruyter's Bay and Tamarind Tree Bay (see below) should be protected and preserved. It must be emphasized that the remains of this plantation complex, although spread over three areas (Carolina Point, Ruyter's Bay, and Tamarind Tree Bay), actually comprise one large complex; the 1992 fieldwork in each area is presented separately because they were previously reported as separate sites. The Carolina Point Plantation Complex is significant for several reasons: (1) the plantation was occupied by individuals of both European and African descent who have played a significant role in the history of the Virgin Islands; (2) investigations at Carolina Point found evidence in the structures and archeological remains to indicate that this site could provide detailed information on the evolution of a plantation from the very beginning of colonization through the colonial period; (3) the structural remains have a high degree of integrity and are the only remains of this type on Water Island. If the site can be preserved, it could be developed as a research park for island visitors with an ongoing program of archeological investigations.

If preservation of the Carolina Point Plantation complex is not possible, a comprehensive archeological data recovery and analysis should be undertaken, including (1) the complete excavation of the great house area and the associated outbuildings, (2) sampling through block excavation of at least two of the associated slave village structures on Carolina Point and at Tamarind Tree Bay (see below); and (3) the complete excavation of the early historic wells located at Ruyter's Bay and Tamarind Tree Bay (see below).

Ruyter's Bay (12 VAM-3-21)

An early historic masonry well was found at Ruyter's Bay below the Carolina Point Plantation complex that is considered eligible for inclusion on the National Register of Historic Places. Although a prehistoric component had been previously reported in this bay, the 1992 survey found that historic disturbance had destroyed this component. This bay was probably the location of the fresh water source that gave the island its name and brought Europeans to Water

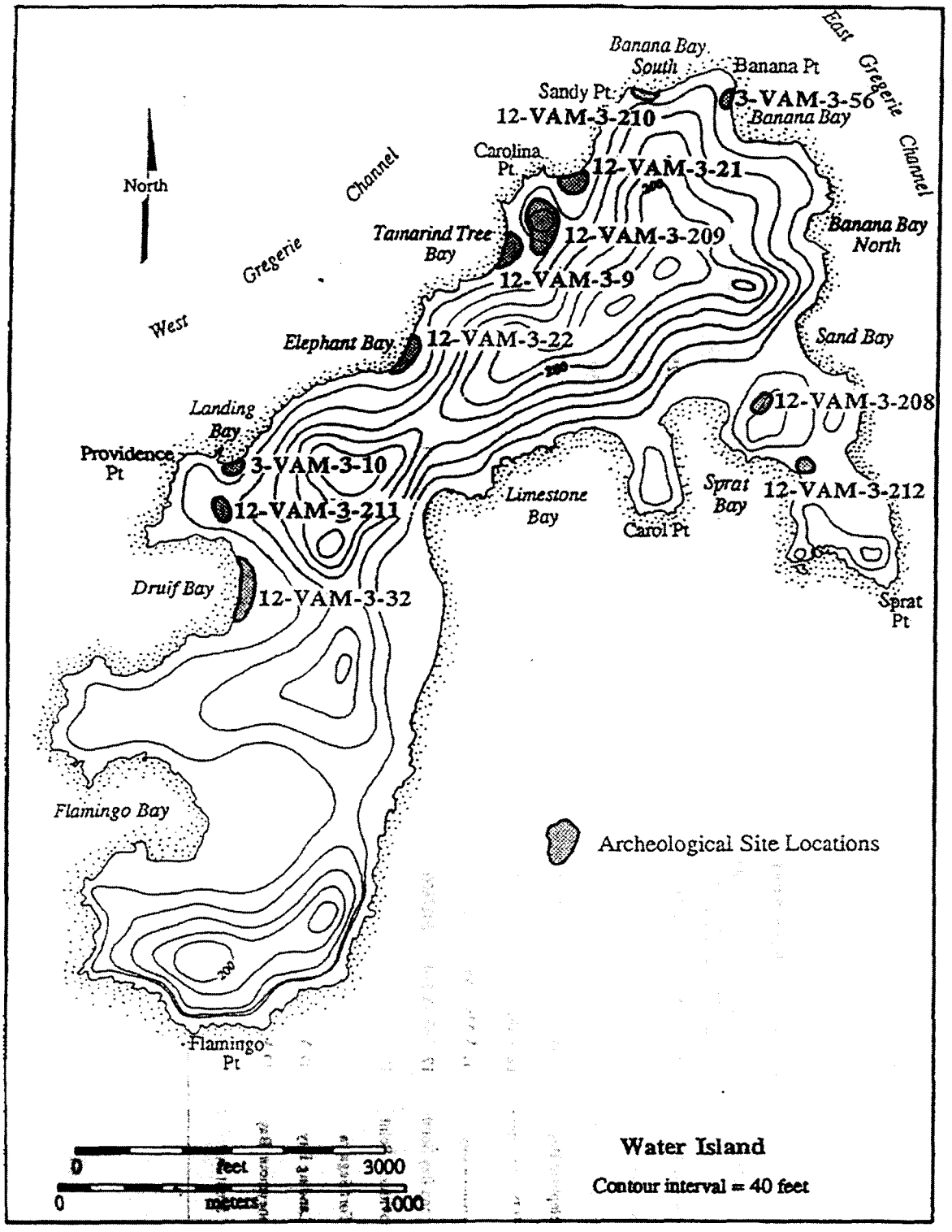


Figure 2. Archeological Site Locations, 1992 Water Island Archeological Survey, U.S. Virgin Islands.

Table 1. Archeological Sites Found During the 1992 Survey Project, Water Island, U.S. Virgin Islands

Site Name	Site Number	UTM Coordinates* Northing	Easting	Elevation	Site Size (N/S)	Site Size (E/W)	Number of Artifacts Prehistoric	Historic	National Register Status	Preservation/ Data Recovery
Carolina Point	**12-VAM-3-209**	**2027460**	**293940**	**125-135'**	**100m**	**100m**	**0**	**225**	**Eligible**	**Yes**
Ruyter's Bay	**12-VAM-3-21**	**2027600**	**294100**	**5-15'**	**150m**	**200m**	**2**	**70**	**Eligible**	**Yes**
Tamarind Tree Bay	**12-VAM-3-9**	**2027380**	**293890**	**5-15'**	**200m**	**160m**	**1**	**92**	**Eligible**	**Yes**
Elephant Bay	**12-VAM-3-22**	**2027060**	**293620**	**5-12.5'**	**240m**	**270m**	**56**	**2**	**Eligible**	**Yes**
Sprat Bay Structure	**12-VAM-3-208**	**2026940**	**294540**	**85-88'**	**120m**	**100m**	**0**	**53**	**Eligible**	**Yes**
Banana Bay	**12-VAM-3-56**	**2027760**	**294490**	**5-15'**	**180m**	**100m**	**3**	**0**	**Eligible**	**Yes**
Banana Bay South	**12-VAM-3-210**	**2027800**	**294300**	**5-15'**	**100m**	**160m**	**0**	**18**	**Eligible**	**Yes**
Providence Point	12-VAM-3-211	2026660	293060	50-60'	30m	50m	0	0	Eligible	Yes
Fort Segarra	n/a	2025440	293140	180-235'	100	100	n/a	n/a	Eligible	Yes
Landing Bay	12-VAM-3-10	2026800	293150	5-15'	160m	140m	0	1	Not Eligible	No
Honeymoon Bay	12-VAM-3-32	2026460	293200	10-20'	230m	190m	0	0	Not Eligible	No
Sprat Bay	12-VAM-3-212	2026760	294670	5-15'	180m	220m	0	7	Not Eligible	No
						Totals:	**62**	**468**		

*** UTM Zone = 20**

Island even prior to the settlement of St. Thomas. A clay layer found in 1992 below modern disturbance may be the remains of a fresh water pond depicted on the historic maps and mentioned in historic documents. The historic well, probably constructed in the late eighteenth century as a means of tapping this fresh water, was found about 75 meters back from the water's edge. The well is apparently associated with the Carolina Point Plantation and may have also been associated with a powder magazine depicted on 1853 and 1873 U.S. Navy harbor maps of St. Thomas. This powder magazine occupied approximately the same location as a present day boat house, and traces of it may have been removed during construction. No evidence for this powder magazine was found.

The historic masonry well in Ruyter's Bay should be protected and preserved. If preservation is not possible, a comprehensive archeological data recovery should be undertaken, including the complete excavation of the historic well to determine the well's age, contents, and construction history. Additionally, systematic shovel testing at 3 meter intervals over an area 20 meters in radius around it should be conducted, to identify other possible historic remains associated with it. A study on the clay deposits located in the well area should also be undertaken to define the nature of the water source, which probably gave the island its name. Because of its close association with Carolina Point Plantation, the well in Ruyter's Bay, although listed as a separate site, should be considered part of the Carolina Point Plantation complex when preparing National Register of Historic Places nominations. The remainder of the Ruyter's Bay area has been heavily disturbed in the recent past, and requires no further investigation.

Tamarind Tree Bay (12 VAM-3-9)

An historic well and traces of a slave village were found at Tamarind Tree Bay that are considered to be eligible for inclusion on the National Register of Historic Places. P. L. Oxholm's 1779 map of Water Island depicts the slave village associated with Carolina Lyst Plantation extending down hill from Carolina Point into Tamarind Tree Bay. Human skeletal remains were excavated in this bay in 1934 and 1935 and were determined to be African in origin and, therefore, probably the remains of slaves from the village. It is likely that human graves are still present in the cove area, although no human bone was found in 1992. Material recovered from the cove area indicate that historic occupation of the cove began early in the period of colonization, in the late 1600s, and continued throughout the colonial period. A prehistoric site also appears to have been present in the area of the historic village and burials, but has been severely damaged by the later activities. Prehistoric pottery was recovered during a previous survey of the bay conducted in 1980, and one prehistoric sherd was found in 1992.

An early historic masonry well was found in the north-central portion of Tamarind Tree Bay. As with Ruyter's Bay, Oxholm depicts a pond in this area, which may have also been a source of fresh water. This well was probably a historic means of tapping this water source, which may have been continuously exploited from the prehistoric through the colonial period. Furthermore, historic archeological remains from the slave village were found intact in two locations in the bay, at the very back of the cove and at the north end of the cove. At the north end of the cove, some of the materials recovered date to the early period of Danish colonization. These remains are probably all that is left of the slave village that extended into this area. Because of its close association with Carolina Point Plantation, the well and slave village areas in Tamarind Tree Bay, although listed as a separate site, should be considered part of the Carolina Point Plantation complex when preparing National Register of Historic Places nominations. The remainder of the Tamarind Tree Bay area has been heavily disturbed in the recent past and requires no further investigation.

The historic masonry well and the areas where the slave village are located in Tamarind Tree Bay should be protected and preserved. If preservation is not possible, a comprehensive archeological data recovery should be undertaken, including the complete excavation of the historic well to determine the well's age, contents, and construction history. Additionally, systematic

period of U.S. military presence during the 1940s and early 1950s, and structures dating to this period were documented when encountered during the survey. The recording of these facilities, however, was not a primary objective of the project.

The Fort Segarra complex includes two gun emplacements located about 30 feet below the crest of Flamingo Point; these were serviced by in an extensive underground bunker complex centered below an observation tower located on the highest part of the hill. Although several modern houses ring the Fort Segarra complex, the gun emplacements and observation tower area are currently undeveloped. During the 1992 survey the project directors were told that portions of the underground bunker complex had been walled off in recent years and serve as a 750,000-gallon fresh water cistern for the island's inhabitants. Consistent with this use, the remaining portions of the Fort Segarra complex should be preserved and protected. If preservation is not an option, then a comprehensive archival study should be made of the installation's construction and use, and HABS-HAER architectural documentation should be prepared for the complex.

Specific Recommendations: Sites Not Eligible for Inclusion on the National Register of Historic Places

Landing Bay (12 VAM-3-10)

A prehistoric site and historic burials, presumably associated with Providence Point Plantation, were previously reported in the Landing Bay area, based on investigations undertaken in 1934 and 1935. The 1992 investigations conducted at Landing Bay indicated that this area had been severely altered by modern borrowing and filling. Any site once present has since apparently been destroyed and, hence, the Landing Bay area is considered not eligible for inclusion on the National Register of Historic Places. No further investigations in this area are recommended.

Druif or Honeymoon Bay (12 VAM-3-32)

A prehistoric site, found during survey work conducted in 1980, was previously reported in the Druif Bay area. In 1992 an extensive testing program was conducted in the cove and found that the site area had apparently been completely destroyed by recent development of the beach. A number of new structures had been built in the cove; a paved road had been put through the reported site area; and, during this construction, extensive filling and bulldozing occurred. Any site once present has since apparently been destroyed and, hence, the Honeymoon Bay area is considered not eligible for inclusion on the National Register of Historic Places. No further investigations in this area are recommended.

Sprat Bay (12 VAM-3-212)

At Sprat Bay an early historic component was documented by the presence of sherds of African-Caribbean ware that were recovered in two shovel tests at the north end of the cove. Extensive additional close-interval testing conducted around these positive tests produced negative results, suggesting the scatter is limited in extent and density. The proximity of the site to the Sprat Bay Structure, which is located upslope and to the west, suggests a possible association. It is possible that the African-Caribbean ware found at Sprat Bay may have been discarded or washed from this site. Due to the absence of appreciable remains or associated features the Sprat Bay site area is considered not eligible for inclusion on the National Register of Historic Places, and no further investigations are recommended.

Conclusions

The 1992 cultural resources investigations on Water Island documented the existence of 11 prehistoric and historic archeological sites, of which eight have been determined to be eligible for inclusion on the National Register of Historic Places. If preservation of these sites is not feasible, specific archeological data recovery programs have been recommended to mitigate the impact of their loss and destruction. In addition, an extensive World War II era bunker and gun emplacement complex, Fort Segarra, is located on Flamingo Point at the southern end of the

island. This complex should be preserved and protected and, if preservation is not an option, then comprehensive HABS-HAER architectural documentation should be made of the complex.

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Chapter I
INTRODUCTION

Ken S. Wild and David G. Anderson

The U.S. Department of the Interior is considering transferring ownership of Water Island, U.S. Virgin Islands from the federal domain to the Government of the U.S. Virgin Islands or to private ownership (Figure 3). This action, if undertaken, could affect cultural resources on the island that are currently under the protection of the U.S. Government. To assist in planning for a possible land transfer and in compliance with the National Historic Preservation Act, as amended, a comprehensive archeological survey and archival inventory of the island's cultural resources was undertaken by the U.S. Department of the Interior in 1992. The goals of the project were to systematically locate and determine the nature and extent of cultural resources on Water Island and to inventory and document these resources in order to: (1) evaluate their significance and nominate qualified properties for listing in the National Register of Historic Places; (2) identify and evaluate potential adverse effects to these National Register eligible sites and properties; and (3) provide appropriate recommendations and strategies to the Secretary of the Interior for the mitigation of potential adverse effects to these cultural resources should Water Island pass from federal control (Ehrenhard and Jameson 1992).

On September 1-4, 1992, and September 15 through October 13, 1992, personnel from the National Park Service's Interagency Archeological Services Division, Southeast Regional Office (IASD-SERO) and the Southeast Archeological Center (SEAC) conducted intensive archeological survey activities on Water Island, U.S. Virgin Islands. This work was done at the request of the Office of the Secretary of the Interior, with all funding coming from the Southeast Regional Office. David G. Anderson of IASD-SERO and Ken S. Wild of SEAC served as co-Principal Investigators and co-field directors throughout the project; Anderson also served as the field photographer. Chief of IASD-SERO John Ehrenhard provided advice and logistic coordination throughout the project and field assistance from September 1-4, 1992. The 1992 field team included Anderson and Wild and archeological technicians Regina Leabo, Kevin Harper, Marc Tieman, Jeff Jones, and Rob McGowen of SEAC.

A total of 147 person days were spent investigating the 491.5 acres of Water Island and an additional 250 person days were spent on the analysis, cataloging and report preparation. Over 500 artifacts and ecofacts were recovered during the field program. The project resulted in the addition of six new sites to the Virgin Islands Inventory and the assessment of five known archeological sites through systematic survey techniques. Eight of the eleven sites examined are considered eligible for inclusion on the National Register of Historic Places, as is the extensive World War II era fortification complex at the south end of the island, Fort Segarra. Preservation is recommended for these sites, and detailed archeological data recovery (mitigation) options are presented if this is not an option. Three of the archeological sites examined are not considered eligible for inclusion on the National Register of Historic Places and, hence, require no further work or preservation. Detailed descriptive information about all these archeological sites is provided in the following text and in the appendices.

Production of the final report was accomplished by Anderson and Wild, with Wild responsible for much of the writing and Anderson responsible for somewhat lesser writing, and for the production of the illustrations and the final assembly and editing of the manuscript. Site record preparation, artifact analysis, and cataloging were conducted by SEAC staff under the direction of Wild and Leabo. The artifact inventory and shovel test log (Appendices I and II) were produced by Leabo. Artifact photographs were prepared by Richard Bryant and the report graphics were drawn by Julie Barnes Smith. Jean Godbee and Virginia Horak of IASD assisted in typing the many tables and appendices, and in the editing of the manuscript, respectively.

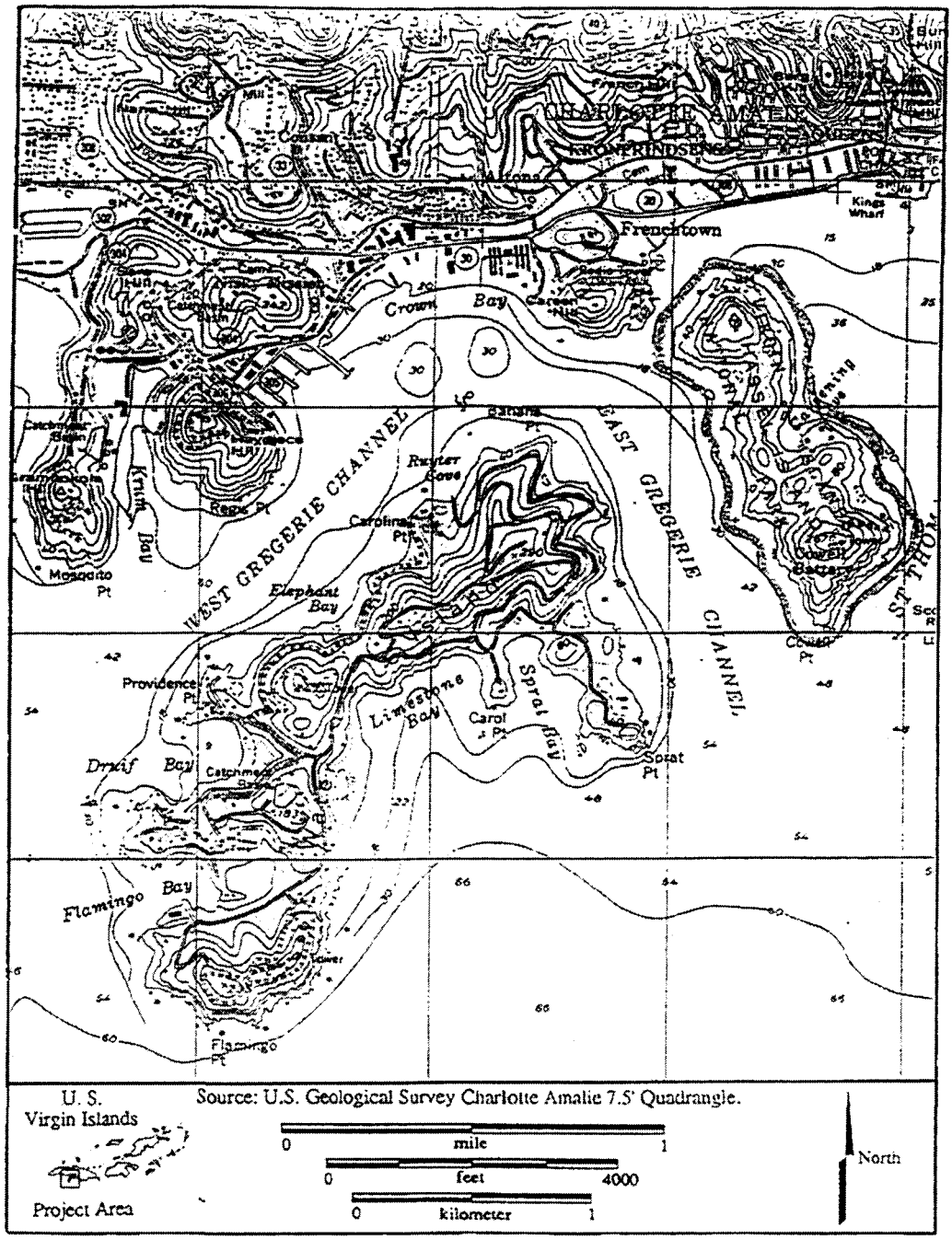


Figure 3. Water Island in Relation to Charlotte Amalie, St. Thomas, U.S. Virgin Islands. (Source: U.S.G.S. St. Thomas Central 7.5' Quadrangle)

Prior to conducting the investigations described here, Territorial Archeologist Elizabeth Righter and former Territorial Archeologist Emily Lundberg were consulted to ensure that the project and subsequent reporting was in accordance with territorial and federal standards. Elizabeth Righter also provided assistance and advice in the field on resource location, site documentation and site investigation, and during the review of the management recommendations. Ms. Claudette Lewis, Director of the Division for Archaeology and Historic Preservation, and Mr. Keith Richards, Director of the Division of Comprehensive and Coastal Zone Planning, agencies within the Department of Planning and Natural Resources in the Government of the U.S. Virgin Islands, made the resources of their offices available for our inspection and use, greatly assisting the present study. Local historian George F. Tyson, Jr. was contracted by IASD-SERO to complete a detailed research of the historic documents and produce a report on the history of Water Island. He met with the project directors in the field and provided guidance to the survey effort. Tyson's report is presented in Chapter IV. Historic Architect Fred Gjessing also visited Water Island while the field investigations were underway and provided valuable information on the historic remains located on Carolina Point. Local residences of Water Island who helped with logistics and provided documentation and information on the island included: Randy Bastaurt, Bill Carter, Holland Van Gores, Chet and Diane Kwiecien, Joan Murry, Walter Phillips, Mickie Pomeranz, and Warren Pond.

Chapter II
ENVIRONMENTAL SETTING

David G. Anderson

Introduction

Water Island is located off the south coast of St. Thomas near the city of Charlotte Amalie in the U.S. Virgin Islands (Figures 1-3). The island, which is volcanic in origin, is irregular in shape, covers 491.5 acres, and extends approximately 1.75 miles (ca. 3 km) from north to south, reaching a maximum width of just under a mile (ca. 1.2 km) near the northern end. Formed by massive outflows during the Cretaceous (Donnelly 1966), the island is characterized by steep rocky slopes and a highly indented coastline with numerous narrow bays and beaches. There are no permanent streams, and fresh water occurs only intermittently in runoff channels. Potable, if not very palatable, water is present (or was reported in the past) in brackish ponds near the coast, and it is from this that the island derives its name. A pronounced central ridgeline runs the length of the island from northeast to southwest, with elevations reaching 290 feet. Steep rocky prominences are present at the north and south ends of the island, at Sprat and Flamingo Points respectively.

Separated from the mainland by about 2000 feet of open water, Water Island is a major feature defining the modern port of St. Thomas. Approaches to the harbor, including to the major docking facilities on Crown Bay, occur on both sides of the island through East Gregarie and West Gregarie channels. In 1862 a channel was cut through Hassel Island linking Crown Bay and St. Thomas Harbor, facilitating movement throughout the harbor area, and reducing siltation in the port (Tyson 1986:22). Contact with the mainland both in the past and at present is accomplished by boat; no airfields are present on the island.

The U.S. Virgin Islands were formed by volcanic action on the northern margin of the Caribbean plate. Specific formations in the Water Island area are illustrated in Figure 4; the island lies within the Cretaceous Water Island formation, among the oldest deposits in the Virgin Islands. Soils on Water Island are thin away from the coastal beaches and belong primarily to the Cramer-Isaac Association, which is described as "very steep to strongly sloping, well-drained soils; clayey in subsoil, shallow and moderately deep over volcanic rock on mountainsides and footslopes" (Rivera et al. 1970:4). The occurrence of specific soils on Water Island is illustrated in Figure 5, and descriptions of these soils, taken from the U.S.D.A. Soil Conservation Service's soil survey for the U.S. Virgin Islands (Rivera et al. 1970), are given in Table 2.

The U.S. Virgin Islands have a maritime tropical climate (Calvesbert 1970:73-75). Conditions are equable, with temperature variation over the course of the year minimal. No more than a few degrees separates the average temperature during the warmest and coldest months. In January and February average daily temperatures are in the low 80's (F), while in August average daily temperatures reach the high 80's (F). Rainfall averages about 44 inches a year, with the first seven months appreciably drier, on the average, than the last five. The driest months of the year are typically February and March, while the wettest are September and October. Evaporation rates are high, and droughts are common; average conditions, in fact, are of mild to moderate drought. The islands lie in the easterly trade winds, with near constant breezes averaging from 5 to 15 miles daily. Hurricanes occur about once every decade with extensive damage, like that caused by Hurricane Hugo, occurring once a century or so. Tidal variation is minimal, averaging about 10-11 inches, with severe tidal flooding/storm surges occurring about once every 30 years (DCCA 1980, cited in Aley et al. 1989:III-10)

Vegetation on Water Island is semi-arid and ranges from dry tropical forests on the hills, thorn scrub and cactus forests on exposed headlands, and a variety of coastal and near-shore

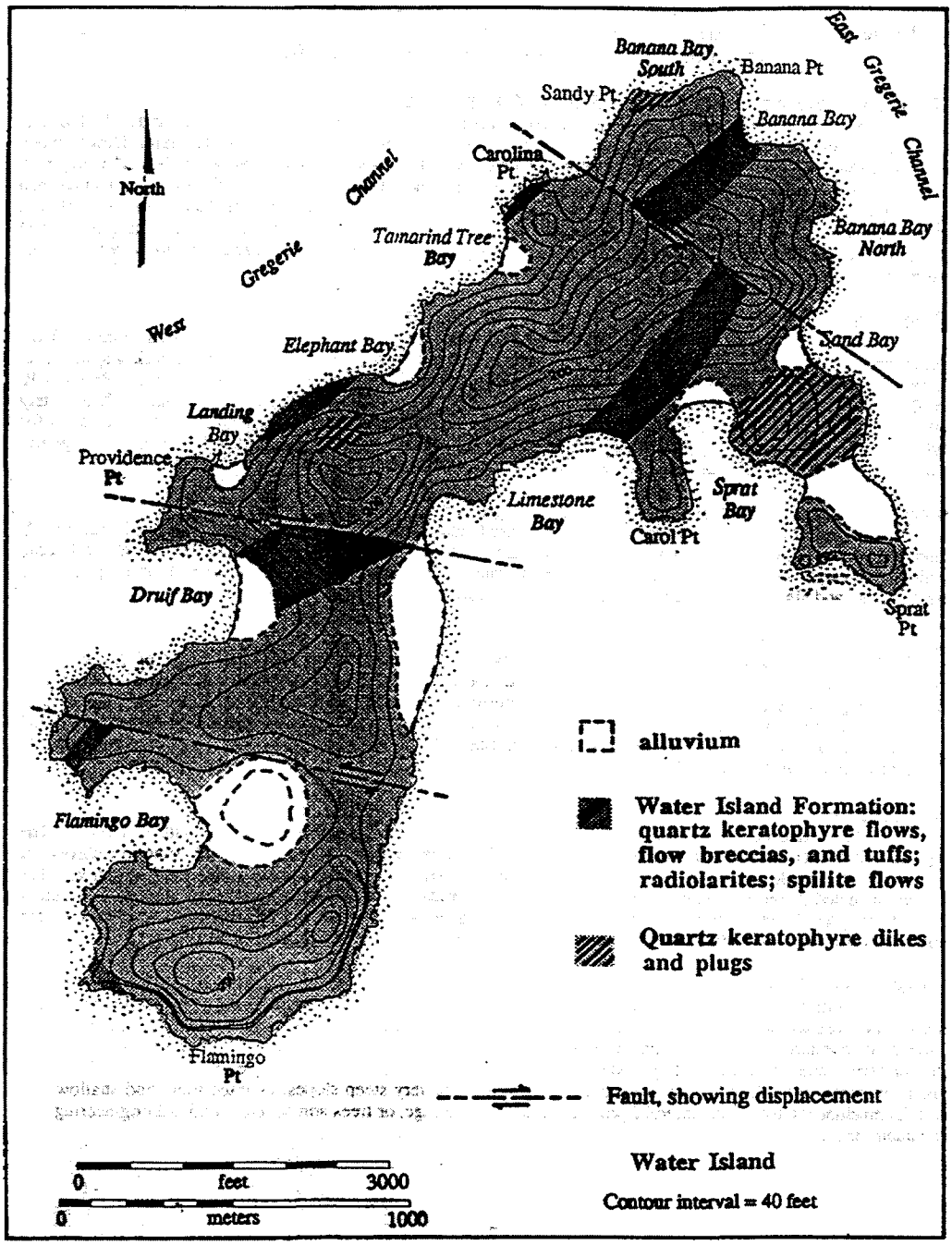


Figure 4. Geologic Map of the Water Island Area, 1992 Water Island Archeological Survey, U.S. Virgin Islands.

Table 2. (continued) Soil Series Found on Water Island, U.S. Virgin Islands (Source: adapted from Rivera et al. 1970:11-32).

Cramer gravelly clay loam, 40 to 60 percent slopes (Crf)

This soil is on the side slopes of dissected volcanic uplands throughout the Virgin Islands. Included in mapping, and making up 10 to 15 percent of the total acreage, were spots of Cramer stony clay loam, Descalabrado clay loam, Dorothea clay loam, Isaac gravelly clay loam, and Volcanic rock land, and areas where the underlying rock is coasted with secondary lime. Small pockets of gravelly colluvium occur on the lower slopes. This Cramer soil has the profile described as representative for the series. The surface layer is 5 to 9 inches thick. The depth to hard rock ranges from 13 to 20 inches. Steep slopes, shallowness over rock, rapid runoff, susceptibility to erosion, and the large number of coarse fragments throughout the profile preclude cultivation and make it difficult to establish and maintain pasture. These limitations also preclude nonfarm uses.

Cramer-Isaac gravelly clay loams, 12 to 40 percent slopes (CvE)

These soils occupy side slopes, foot slopes, and concave colluvial-alluvial positions along drains. They occur throughout the islands of St. Thomas and St. John. Isaac soils make up 30 to 45 percent of each mapped area. Cramer soils have a surface layer of gravelly clay loam and a subsoil of gravelly clay. Hard rock is at a depth of 10 to 20 inches. Isaac soils are thicker than Cramer soils and have hard rock at a depth of 20 to 40 inches. Moderately steep slopes, coarse fragments, and shallowness over rock are limitations that preclude the use of these soils for cultivated crops and make them unsatisfactory for residences, buildings for light industry, trafficways, campsites, intensive play areas, and golf fairways. Isaac soils are more productive of grasses than Cramer soils.

Jaucas Sand, 0 to 5 percent slopes (JuB)

This soil occurs as low, hummocky, sandy coastal areas on all three islands and on some small islands offshore [i.e., Water Island]. Included in mapping were small areas of coral, Tidal flats, and Limestone rock land. Low fertility, a low water-holding capacity, and very rapid permeability are severe limitations for most farm purposes, and the deep sand and high tide are severe limitations for most nonfarm purposes.

Limestone Rock Land

Limestone rock land (Ls) consists of nearly level to steep areas where 70 to 90 percent of the surface is covered with outcrops of hard limestone or where erosion has removed the surface layer of soil material and exposed the underlying soft limestone, marl, or thin-bedded limestone. The slope gradient is 0 to 40 percent. Included in mapping were areas along the seacoast where coral outcrops are covered with as much as 6 inches of clayed sediments. The lack of soil material precludes all farm uses. The rockiness and the coarse fragments are severe to very severe limitations for all nonfarm uses.

Tidal Swamp

Tidal swamp (Ts) occurs along inlets and along the seacoast. It is usually covered with salt water. The vegetation is a thick growth of mangrove trees. The soil material is light colored, saline, and sandy or clayey. It contains a considerable amount of mucky and peaty organic material derived form the decaying mangrove trees. The underlying material consist of coral, shells, limestone, marl, or clay. This land type can be used as habitat for birds and as feeding and breeding areas for oysters and crabs. It has no agricultural value. Flooding precludes its use for most engineering and recreational uses. Some of the mangrove wood is used in making charcoal.

Volcanic Rock Land

Volcanic rock land (Vr) is made up of areas where volcanic rock outcrops cover 50 to 70 percent of the surface. Between the outcrops is very shallow, dark yellowish-brown, gravelly loam soil material. Loose stones and boulders are common. The slope gradient is 60 to 70 percent. The vegetation is brushy forest or brushy pasture. This land type occurs on the three larger islands and on some offshore smaller islands [i.e., Water Island]. This land type is restricted to wildlife habitat and esthetic purposes. The very steep slopes, exposed rock, and shallow soil material preclude its use for commercial production of crops, forage, or trees and severely limit all engineering and recreational uses.

terrestrial and marine ecosystems (Aley et al. 1989:III-3). The low, seasonal rainfall, shallow soils, and evaporation have combined to produce a drought-tolerant vegetation. Beginning in the seventeenth century, herds of grazing animals, primarily sheep and cattle, were maintained on Water Island (see Chapter IV), which undoubtedly had an impact on the native ecosystem. Natural vegetation, particularly larger trees, may have been removed for use in construction or to make charcoal. Local residents, in fact, told the 1992 archeological survey party that the historic structure found at Sprat Bay (12-VAM-3-208; see Chapter VII) was a charcoal maker's residence, although no archeological or documentary evidence for this was found. Major vegetation communities and associated animal populations now present on Water Island, and in near-shore marine environments around the island, are described in Table 3, using material from a recent study entitled Natural and Cultural Resources in the United States Virgin Islands (Aley et al. 1989).

Shore and near-shore marine environments that would have been of value to both prehistoric and historic human populations include coral reefs, sea grass beds, mangrove and salt ponds, sandy bottomed/algal plains, and beaches and rocky shorelines (Aley et al. 1989:IV-3 to IV-8). Coral reefs are extensive in the shallow waters of Water Island, particularly off Limestone Bay on the eastern side of the island and off Sand Bay and Revenge Beach on the northern side. The reef ecosystem supports dense populations of fish and other marine animals, and the coral itself, when broken off in storms, forms a major constituent of local beach deposits. Seagrass beds also occur in shallow waters, usually in close proximity to coral reefs. A major bed was observed off Banana Bay at the northern end of the island, and the dense *Strombus gigas* (conch) shell midden observed on the Banana Bay beach (12-VAM-3-56; see Chapter VII) may reflect shellfish harvesting from this environment.

Mangrove/salt pond ecosystems were observed in several locations on Water Island, including behind Sand and Revenge Beaches near Sprat Point and behind Limestone and Elephant Bays. The mangrove swamps are particularly rich ecosystems, with the trees and particularly the dense root networks providing shelter to a wide array of organisms. Salt ponds, sometimes formed when mangroves or coral reefs isolate portions of bays (Aley 1989:IV-7), are themselves rich ecosytems supporting many types of birds, fish, and other animals. The brackish water in some of these ponds may be potable; a pond is reported to have been present in Ruyter's Bay that appears to have been a major source of drinking water for early seamen and settlers (see Chapter IV). Sandy bottoms and algal plains are common in the deeper offshore waters, and the latter also support dense populations of marine animals. Beaches, formed primarily from coral, mollusc, and calcareous algae fragments, tend to be dynamic landforms, rapidly changing due to wave and storm action (Aley et al. 1989:IV-8). Deep storm surge deposits, mostly of large fragments of coral, were observed over most of the beaches on the northern and eastern side of the island, attesting to this effect. Such storm surge deposits buffer interior areas from extensive wave action, and these more or less sheltered areas support a host of plant and animal populations.

Table 3. Plant and Animal Communities Present on Water Island, and in Near Shore Marine Environments, U.S. Virgin Islands (Source: adapted from Aley et al. 1989:III-12-15, 18-20).

MAJOR TERRESTRIAL VEGETATION COMMUNITIES

Dry Deciduous Forest

These woodlands have a low and open canopy. They receive an average of 30-45 inches of highly seasonal rain, and grow over most of the area. Leaves tend to be small and coriacious with thorns of spines common on the stems. Succulents dominate the ground cover. The trees often have spreading crows, and are wind-pruned. The wood of many of the species tends to have a low moisture content, and to be very hard ("casha makes the best charcoal"). Coppicing is a common means of regeneration among these trees (for instance in *Acadia*, *Bursera*, and *Leucaena*) and therefore the forest tends to have numerous small stems.

Dominant trees of this region include gumbo-limbo (*Bersera simaruba*), *Eugenia* spp., genip (*Melicoccus bijugatus*), fiddlewood (*Cytharexylum fruticosum*), fragipani (*Plumeria rubra*), mampoo (*Pisonia subcordata* and *P. fragrans*), tamarind (*Tamarindus indica*), tan-tan (*Leucaena glauca*), manjack (*Cordia sp.*), casha (*Acacia sp.*) and caper (*Capparis cynophallophora*).

Two forces--disturbance and the introduction of highly competitive exotics--are contributing to a reduction in the species diversity of the hillsides. *Bromelia pinguin*, or wild pineapple, dominates that community. Pinquin establishes itself in disturbed areas, outcompeting other vegetation, and is currently widespread in St. Thomas, severely hindering human passage in forested areas. *Melicoccus bijugatus*, or genip, is an introduced tree that reproduces quickly by both coppicing and seeds, and has taken over many of the dry and transitional forest areas in the islands. It has been suggested by islanders that genip produces allelophathic chemicals, thereby preventing competing vegetation in the understory.

Coastal Thorn Scrub and Cactus

These regions are rocky and exposed, have thin soils, with persistent, often salt-laden breezes, and very high evapotranspiration rates. Xerophytes are the only species that can survive under the poor growing conditions. In most places, plants are succulents or have small leaves. Grasses, cacti, agave, and spurges dominate the vegetation. Species include pipe-organ, prickly pear and Tuck's cap cactus (*Cephalocereus royenii*, *Opuntia dillenii* and *Cactus intortus*), guinea and hurricane grass (*Panicum maximum* and *Bothriochloa pertusa*), maran (*Croton discolor*, *C. flavens* and *C. rigidus*), agave (*Agave missionum*), catch and keep (*Acacia riparia*), gri-gri (*Bucida buceras*) and sea purclane (*Sesuvium portulacastrum*).

Low Coastal Forest

The final vegetation region is in low coastal areas, often on land that is periodically inundated. This category includes both successional mangrove areas and sandy flats, which are often populated with coconut palms. These areas share a sandy substrate and receive drainage from the slopes above. Alluvial lands often have a relatively high water table, so groundwater is less a limiting factor than on hillsides. This water is brackish, however, increasing in salinity with proximity to the coast. Vegetation in this area reflects a progressive adaptation to salts.

Species found in embayments include coconut palms (*Cocos nucifera*), heiti-heiti (*Thespesia populnea*), West Indian almond (*Terminalia catappa*), and sea grape (*Coccoloba uvifera*). Species common to mangrove areas and reflecting a progressive adaptation to salt and inundation are water mampoo (*Pisconia subcordata*), buttonwood (*Conocarpus erectus*), ironwood (*Krugiodendron ferreum*), black mangrove (*Avicennia nitida*), manchineel (*Hippomane mancinella*) and the ultimate salt water pioneer, red mangrove (*Rhizophora mangle*). Genip, heiti-heiti and coconut palms dominate the sand flats.

ANIMAL SPECIES

Lizards are ubiquitous, and commonly observed species include the doctor lizard (*Anolis cristatellus*), wood slave (*Hemidactylus mabouia*), and the ground lizard (*Ameiva exul*). The common iguana (*Iguana iguana*) is considered locally endangered (DCCA, 1976).... The Virgin Islands have six kinds of frogs (DCCA, 1976), the most common of which is the Antillean frog (*Eleutherodactylus spp.*)...

Mammals include rats... and bats.... Bats are the only endemic mammal, and are a significant part of the fauna of the islands. One, the St. John's red fruit bat, is endangered in the Virgin Islands.... Rats arrived in the

Table 3. (continued) Plant and Animal Communities Present on Water Island, and in Near Shore Marine Environments, U.S. Virgin Islands (Source: adapted from Aley et al. 1989:III-12-15, 18-20).

islands with the early traders, and the tree rat (*Rattus rattus*) is a common and destructive pest. Mongoose (*Herpestes javanicus auropenctatus*) were introduced in the late 1800's to control the rats. Whey are highly competitive onmivores, and are severely threatening the survival of ground nesting birds on the islands. [Neither are common on Water Island].

The Virgin Islands are a haven to land and sea birds, including many migratory species. [These likely include, on Water Island]...warblers (*Dendroica spp.*), bananaquits (*Coereba flaveola*), grassquits (*Tiaris spp.*), bridled quail doves (*Geotrygon mystacea*), ground doves (*Columbina passerina*), pearly-eyed thrashers (*Margarops fuscatus*), gray kingbirds (*Tyrannus dominicensis*), Antillean crested hummingbirds (*Orthorhynchus cristatus*), mockingbirds (*Mimus polyglottos*), Caribbean parakeets (*Aratinga pertinax*), and... red-tailed hawk (*Buteo jamaicensis*).... Shore and sea birds [likely] include brown pelicans (*Pelecanus occidentalis*), which are endangered, brown boobies (*Sula leucogaster*), frigatebirds (*Fregata magnificens*), little blue herons (*Florida caerulea*), and terns (*Sterna spp.*). There is a large population of overwintering birds in the Virgin Islands.

NEAR SHORE MARINE ENVIRONMENTS

Coral Reefs

Coral reefs are one of the most important ecological and economic coastal resources to the Virgin Islands and the entire Caribbean region. They act as barriers to storm waves, are an important tourism attraction, are the basis of may coastal fisheries, providing food, shelter, and breeding areas, are the primary source for sand and gravel, and contain examples of almost every animal and plant group, representing up to 3,000 species. There are approximately sixty species of "stony" reef-building corals in the Caribbean (Wilson, 1988). These animals secrete a calcium carbonate skeleton. Reefs are built by accumulated limestone formed by previous generations of corals making up the base, and living corals on the limestone surfaces. This living surface area is responsible for maintenance of the coral reef ecosystem; therefore, a reef environment cannot withstand a stress that is greater than that which can be tolerated by the coral surfaces. Reef building corals require sunlight and warm waters. They depend on a symbiotic relationship with microscopic algae, zooanthella, that live in the corals' inner tissue and require light for photosynthesis. Through the photosynthetic process, the alga produces energy, which in turn becomes food for the host coral (Wilson, et al. 1987). This energy source is in addition to the corals' own feeding mechanism of capturing suspended particles and zooplankton with their tentacles.

Seagrass Beds

Seagrass beds are highly productive ecosystems that occur in close association with coral reefs in shallow waters. Three major species occur in the U.S. Virgin Islands: turtle grass (*Thalassia testudinum*), manatee grass (*Syringodium filiforme*), and shoal grass (*Halodule wrightii*). Seagrasses are true flowering plants with male and female flowers and seed borne in fruits. They spread primarily through growth of roots and rhizomes. It is this extensive root system which stabilizes sediments and reduces erosion of the shoreline area, preventing abrasion or burial of coral reefs during storm conditions. The plants themselves provide food directly to grazing fishes, turtles, and urchins and become a food source as well for a complex community of organisms feeding upon plant detritus. The blades provide attachment surfaces for red calcareous algae, which also supplies food for grazers and micro-herbivores. Seagrass beds are also nursery areas for juveniles of commercially important fish and invertebrates (Godwin and Wilson 1987). Seagrasses are vulnerable to dredging and anchor damage from boats. Once destroyed the grass areas can take years to recover (DCCA 1980).

Mangrove and Salt Ponds

Mangrove ecosystems border low-lying coastal areas which are influenced by riverine or terrestrial run-off of fresh water and become more extensively developed on low-energy environments. These salt-resistant trees are an integral part of the coastal ecosystem with many biotic and abiotic functions. They provide food, shelter, and nursery areas to a high diversity of fish, birds and invertebrates. The release of nutrients from the decomposition of mangrove leaves supports near shore fisheries, while the prop roots provide substrate for larvae to settle. The labyrinth of roots also provide shelter for many organisms. These prop roots trap sediment adding to the development of mangrove swamps, which can extend the shoreline seaward, help to prevent shoreline erosion, and reduce the amount of run-off that reaches nearby seagrass beds and coral reefs. Mangroves in many countries are cleared for shrimp pond aquaculture or for timber. The red mangroves (*Rhizophora mangle*), with their distinctive

Table 3. (continued) Plant and Animal Communities Present on Water Island, and in Near Shore Marine Environments, U.S. Virgin Islands (Source: adapted from Aley et al. 1989:III-12-15, 18-20).

aerial prop roots, grow along the shore, while the black (*Avicenna gerinans*) and white (*Laguncularia racemosa*) grow further away from the sea. In the U.S. Virgin Islands the red mangoves make up fringe forests in protected areas, on sandy shoal areas, or at the edges of salt ponds. Basin forests develop where there is fresh water or flat drainage basin area (Rogers 1988).

Sandy Bottoms, Algal Plains

Sandy bottoms and algal plains sometimes occur in shallow bays and have little or no coral reef or seagrass. While the reasons for these unvegetated areas are not understood, they still support a variety of organisms, including occasional sponges, algae, solitary corals, molluscs, fishes, and numerous kinds of worms. Those sandy bottoms which are dominated by algae are called algal plains. Algal plains occur primarily in deep water, usually at depths greater than fifty feet. Algal plains account for seventy percent of the insular shelf area of the Virgin Islands. Algal plains exhibit high species diversity even if not covering a large area....

Beaches and Rocky Shores

The beaches throughout the U.S. Virgin Islands represent a variety of sediment sizes and origins, but most are calcium carbonate formed from coral fragments, mollusc shell fragments and calcareous algae. Terrigenous materials are eroded from shoreline cliffs or inland soils and transported by run-off. In the U.S. Virgin Islands, many beaches have ledges of bedrock running parallel to the shoreline. These ledges are formed below the beach surface where calcium carbonate precipitates out of seawater and cements together beach sediments. Beaches are dynamic, always changing form and dimensions, with distinct profiles as wave energy changes from season to season. Some of the more dynamic Virgin Islands beaches are experiencing erosion at varying rates, particularly on windward coasts. At the same time that alcareous algae, corals and invertebrates supply most of the sand to the beaches they also buffer wave energy and promote beach accumulation. This allows salt tolerant plants, including sea grape, bay cedar, and coconut palms, to colonize the coast. A number of birds, turtles, crabs, clams, worms, and urchins use the intertidal areas.

Chapter III
PREHISTORIC OVERVIEW

Ken S. Wild

The Caribbean was occupied by Indians moving from the southeast and the northwest. In the Lithic age (4000-2000 B.C.) Cuba, Hispaniola, and western Puerto Rico were first to be inhabited. The first Paleo-Indians, thought to come from Yucatan, developed the Casimiroid ceramic series cultures. During the Archaic Period (2000-400 B.C.), people from the mouth of the Orinoco River in South America expanded into the Lesser Antilles, the Virgin Islands, and Puerto Rico. These Archaic Indians of the Ortoiroid series met the Casimiroid series cultures at the Mona Passage, which separates Puerto Rico and Hispaniola (Rouse 1992:71).

The earliest occupation of the Virgin Islands was found at the preceramic site of Krum Bay on St. Thomas Island, located directly across the bay from Water Island. Krum Bay was dated at 1500 B.C, and has yielded some of the best information on our understanding of the northern expansion of the Ortoiroid Peoples, which took place from ca 2000-400 B.C. The Krum Bay data has been used to differentiate two local cultures of the Ortoiroid peoples, Krum Bay and the Coroso found on Puerto Rico; both are grouped into a Corosan subseries (Lundberg 1989, 1991; Rouse 1992). The Krum Bay site was originally investigated by Theodoor de Booy in 1917, followed by Gudman Hatt in 1924, Bullen and Sleight (1962) and, most recently, Emily R. Lundberg (1989). Artifacts recovered from these investigations have included beads and pendants of stone, bone, and shell. Edge grinders, which are diagnostic of this subseries, were found, as were stone celts that had been chipped or partially ground; this particular artifact has helped to distinguish the two Corosan subseries (Rouse 1992).

The Ortoiroid peoples of Krum Bay and Coroso settled near the shore. The Krum Bay sites are in the open, as were the Coroso, but the Coroso also inhabited caves (Lundberg 1989: 165-171). The sites are small shell middens which indicate that the people moved about, within a short range, to conduct different activities. Rouse suggests that these people were oriented toward the sea and did not take advantage of terrestrial resources because of their long tradition of marine resource exploitation (Rouse 1992). He also points out that the locations these people chose to inhabit have short coastlines that would have supported only small populations. As a result, they would be constantly over-exploiting the available resource and, therefore, their settlements were transient and intermittent, an idea also advanced by David R. Watters (1980) and William F. Keegan (1985).

Evidence of the Archaic Period in the Virgin Islands has also been found at Lameshur Bay on St. John Island (Wild 1989). The Arboretum site, located on St. Thomas Island at the head of Megans Bay, has also been assigned to the Archaic Period (Figuerdo 1974; Gross 1976; Tildon 1975, 1976). Lundberg (1985), however, questions the materials used to date this site and feels the results can not substantiate an assignment to the Archaic Period.

The Ceramic Age in the West Indies originated in the interior of South America in the Orinoco Valley. The Saladoid Indians, identified by their Ronquinan Saladoid ceramic subseries, migrated to the sea coast of the Orinoco River. Reaching the coast, these people developed a new ceramic subseries known as Cedrosan Saladoid (Rouse 1992:71). From the sea coast, the Cedrosan Saladoid migrated to Trinidad and then Tobago. At the Leeward Islands they split into two groups, both of which continued the migration on both the Caribbean and Atlantic sides of the Lesser Antilles and the Virgin Islands, halting where the Ortoiroid peoples had stopped in Puerto Rico. They reached the frontier of the Casimiroid peoples at the Mona Passage about 200 B.C. (Rouse 1992:102), replacing the Ortoiroids throughout the West Indies from about 300 B.C. to A.D. 400 (Rouse 1992:106).

The Cedrosan Saladoids (200 B.C.- A.D. 600) brought with them the cultural, linguistic, and biological heritage that eventually developed into the complex Classic Taino Indian Culture that was present at European contact (Rouse 1992). The Saladoid peoples not only introduced pottery but also agriculture and the exploitation of terrestrial as well as marine resources. The ceramics produced by these people is characterized by white-on-red painted wares with zoned-incised crosshatching. Polychrome designs of black or orange or areas unpainted expanded their color range. The Cedrosan subseries had the widest geographical distribution in the Caribbean. The probable decreased interaction between the groups making these wares has resulted in the proliferation of series and subseries. In the Virgin Islands, four Saladoid sites have been found on St. Thomas; of note are the Megans Bay and Langford sites. Four Saladoid sites have also been identified on St. John Island at Coral Bay, Cruz Bay, Cinnamon and Little Cinnamon Bays.

The Cedrosan Saladoid lasted to A.D. 600 at which point in time it evolved and divided into two Ostionan subseries. One subseries termed Elenan occupied the Lesser Antilles from Guadeloupe through the Virgin Islands into eastern Puerto Rico. The other subseries, the Ostionan occupied western Puerto Rico and the eastern end of Hispaniola (Rouse 1992:107). In the west, the Ostionans moved into parts of Jamaica, Cuba, and the Bahamian Archipelago from A.D. 600 to 900. The Elenans of the Virgin Islands and Puerto Rico persisted until A.D. 1200. During this period the Ostionans of eastern Hispaniola developed the Chican series, while those occupying central Hispaniola evolved into the Meillacans. From A.D. 1200 to 1492, the Chican people expanded east across the Mona Passage and west through Hispaniola. They established outposts on St. Croix Island and Cuba and influenced pottery traditions throughout the Virgin Islands, the northern half of the Leeward Islands, Jamaica, and the central portion of Cuba (Rouse 1992:108). The Chican peoples are identified as the Classic Tainos, the western extension of Taino culture are the Meillacans, and the Elenan people of the Virgin Islands and eastern Puerto Rico represent the Eastern expansion of Taino culture.

Archeologists working in the Virgin Islands support Rouse's general ceramic chronology and have found evidence that indicates a close association between Puerto Rico and the Virgin Islands. In the Virgin Islands, local sites and associated ceramics have been identified chronologically and the associated ceramic types have been used to identify the various post-Saladoid periods (Righter 1992). The chronological chart in Figure 6, taken from a recent paper by Lundberg, Righter and Ceaser (1992), depicts Virgin Islands ceramic phases. The chart is based on data gathered from St. Thomas and St. John. Similar styles in Puerto Rico are in parentheses, and Virgin Island styles used by Rouse (e.g., 1989:Figure 3) are in quotation marks.

Lundberg, Righter, and Ceaser (1992) have found that the Cedrosan Saladoid ceramic series in the northern Virgin Islands developed into a type that is indistinguishable from the Monserrate ceramic style found on Puerto Rico. They feel that the early Megans Bay - Salt River (Elenan Ostionoid) phase probably should be divided to reflect this transition. It has not been determined if this ceramic style should be classified as late Saladoid or early Ostionoid or as an arbitrary continuum as Roe et al. (1990:345) have discussed (Lundberg et al. 1992). In the Virgin Islands, the ceramic changes that occurred leading to the later Elenan Ostionoid types and then to Chican Ostionoid pottery types is vague. Many of these post-Saladoid sites have consisted of plain sherds which have been difficult to classify into any particular temporal range or ceramic period due to the lack of detailed studies and Carbon 14 dates (Lundberg et al. 1992). Ceramic studies conducted on pottery recovered from the Calabash Boom Site, St. John, U.S. Virgin Islands, have begun to suggest a gradual shift from Monserrate to Elenan pottery; but the shift is measured only in proportional change and not by the presence/absence of attributes (Lundberg et al. 1992; Ceaser et al. 1987).

Studies of the post Saladoid periods are ongoing. Excellent post-Saladoid ceramic assemblages have recently been recovered from the Tutu site on St. Thomas Island and from the

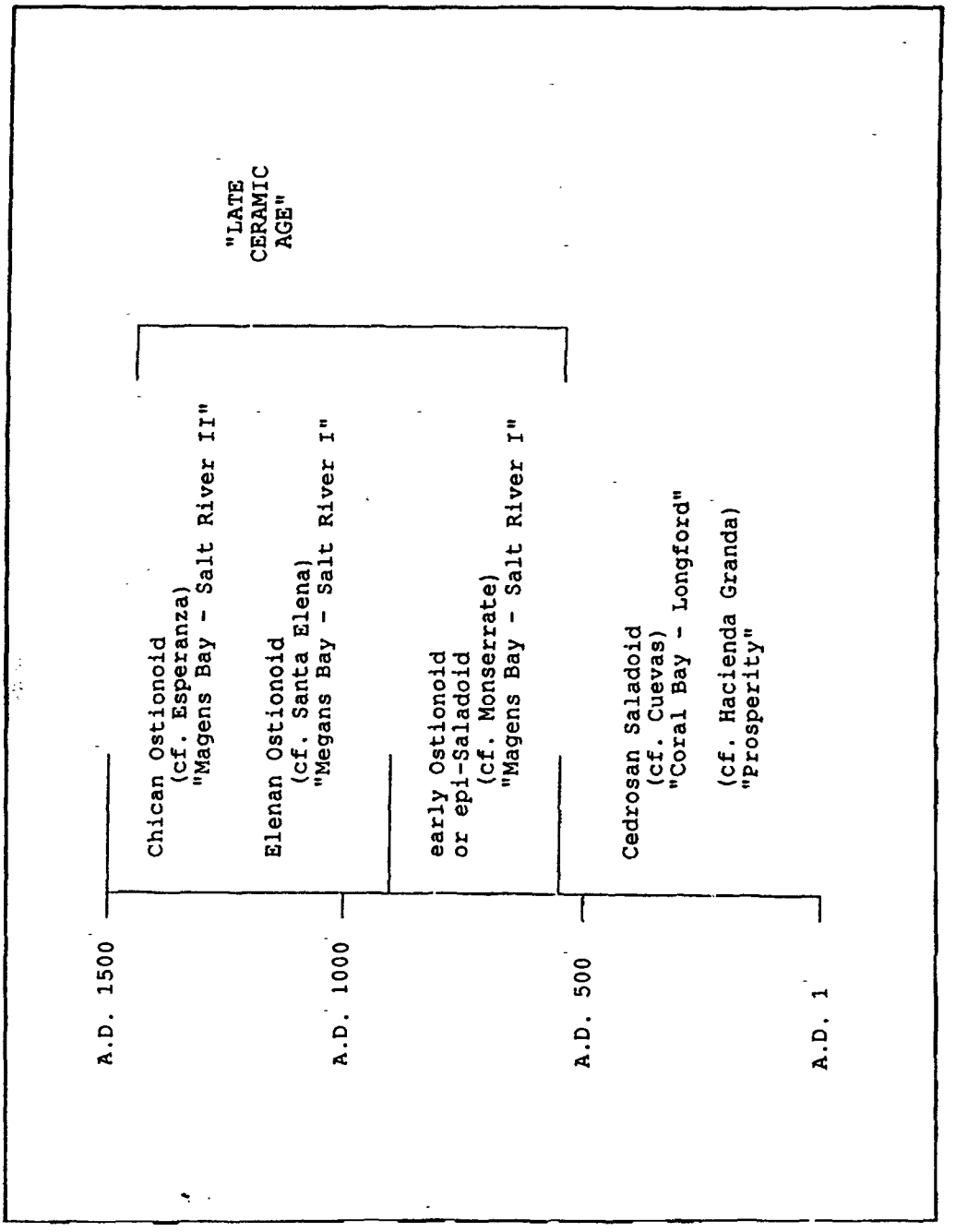


Figure 6. Virgin Islands Ceramic Chronology Chart. (Source: Lundberg, Righter, and Ceasar 1992)

Cinnamon Bay site on St. John Island in contexts yielding good samples for radiocarbon dating. From the Tutu site on St. Thomas information on the type of houses constructed in the late Ceramic Period is also emerging; an estimated 25 structures were found at this site in 1991 and 1992 (Righter 1992; Righter and Lundberg n.d.). Archeological sites providing information on the subsistence patterns of peoples from the late Ceramic Age suggests that settlements used and exploited the nearest and most abundant resource. However, the existence of a large shell midden on Anegada (a small, offshore cay) does indicate that a resource, in this case conch or *Strombus gigas*, plentiful in this particular location was collected and processed for use at other island settlements (e.g., Krieger 1938; Lundberg et al. 1992). Information on settlement patterns in the Virgin Islands is lacking. Very few systematic surveys have been conducted. Lundberg, Righter and Ceaser (1992) presented a predominantly coastal distribution of sites on St. John Island and St. Thomas Island and determined that this reflected past survey methods, Coastal Zone Managements archeological requirements, and coastal development. Their study convincingly illustrates the minimal amount of survey that has been undertaken in the inland areas of the Virgin Islands (see also Righter 1992).

In conclusion, it is probable that the late prehistoric inhabitants of the Virgin Islands were a part of the Taino Culture as expressed by Lundberg, Righter, and Ceaser (1992). Settlements in the Virgin Islands were probably similar in function to smaller towns in Puerto Rico. Lundberg, Righter, and Ceaser support this probability because of the shared cultural traits such as: "stone-lined plaza/ballcourt on Vieques, stone 'ball belts' (Hatt 1924:40), petroglyph clusters (e.g., Reef Bay and Congo Cay, St. John), carved 'swallow sticks' (de Booy 1919: Plate IX), and carved shell ornaments" (Lundberg et al. 1992:11). The recent recovery of a carved stone zemis, an elaborate ritual object, from the Cinnamon Bay site on St. John Island, may also suggest some high-status communities of the Taino were located in the Virgin Islands. Still unresolved is the question of whether depopulation or population replacement occurred in the Virgin Islands as a result of migration and incursion by the Island Caribs from the Lesser Antilles during the late pre-contact period (Lundberg et al. 1992).

Chapter 4
HISTORICAL OVERVIEW OF WATER ISLAND

George F. Tyson, Jr.

Seventeenth- and Eighteenth-Century Background

The history of Water Island, like that of other smaller islands and cays in the Virgin Islands, is poorly documented and shrouded by numerous unverified legends and tales. There are stories of pirates and buried treasure; of grand mansions and luxuriant sugar cane fields; even ownership by a Hohenzollern prince (Cochran 1937: 5, 44-49; Work n.d.:29; Phillips 1965). None of these romantic yarns can be substantiated from the historic record, which reveals a far more prosaic story of small-scale, tropical agriculture and plantation slavery typical of St. Thomas and the northern Virgin Islands generally.

The island took its name from the fresh water it supplied to early settlers. Indeed, the availability of easily accessed potable water in sheltered bays may have attracted seafarers to the island well in advance of the actual settlement of St. Thomas, but there is no hard evidence to support this conjecture. In addition to tapping its water supply, early settlers also used the island as a source of food. One of the first undertakings of the Danish colonizers who arrived on St. Thomas in 1672 was to stock Water Island with cattle and goats in order to insure themselves of an accessible supply of meat. This livestock belonged to the Danish West Indian Company, which not only used it to feed its St. Thomas colonists, but also marketed it to ships and neighboring colonies in exchange for exportable commodities like sugar and tobacco (Westergaard 1917:45).

By 1680, Water Island was reported to be well populated with livestock and, in consequence, much frequented by ships and foraging expeditions from the nascent Danish settlement at nearby Charlotte Amalie. Colonists also fished in the salt ponds, drugging the fish with a mixture of bark from the local stinkwood tree (*Piscidia carthagenensis* Jacq.) and lime mortar (Bronsted, 1966:134).

Members of the local elite made periodic outings to Water Island for both practical and recreational purposes. In 1686, for example, Lieutenant-Governor Christopher Heins led a group of men and women on a hunting and fishing party to the island. Using a seine, they caught plenty of fish but brought back little game even though in the words of one participant, there were "many wild ducks and goats as well as some wild cows, bulls and calves; [and] in the bays there are many pelicans, flamingoes, ducks and other birds" (Bronsted, 1966:134).

The earliest record of human habitation that has been found is provided by Gerard van Keulen's 1719 map of St. Thomas (Figure 7), which depicts the house of Albert de Ruyter on a knoll overlooking "Ruyter's Bay" on the northwest side of the Island. De Ruyter's settlement is also shown at the same location on a slightly later map thought to date from 1740 (Figure 8). The 1719 map as well as the ca. 1740 Stevboe de Montargnes map also show a "Verswater Pan" or "Wasser Pan" — a Fresh Water Pond — directly below de Ruyter's house. Given the close proximity of the settlement to the pond, it is likely that one of de Rutyer's activities was farming water.

Despite these cartographic representations, Albert de Ruyter could not be found in the Danish land tax records for the period 1710-1750, either as an owner of a plantation or of a town lot (Rigsarkivet 1691-1914). Indeed, prior to 1769 Water Island does not appear at all in the land tax records. That no taxes were being paid on the property strongly indicates that it may have belonged to the Danish West Indian Company and subsequently (following the dissolution of the Company in 1755) to the Danish Government. Albert de Ruyter may have been a Company employee; or perhaps he rented land from the Company and paid no taxes on it.

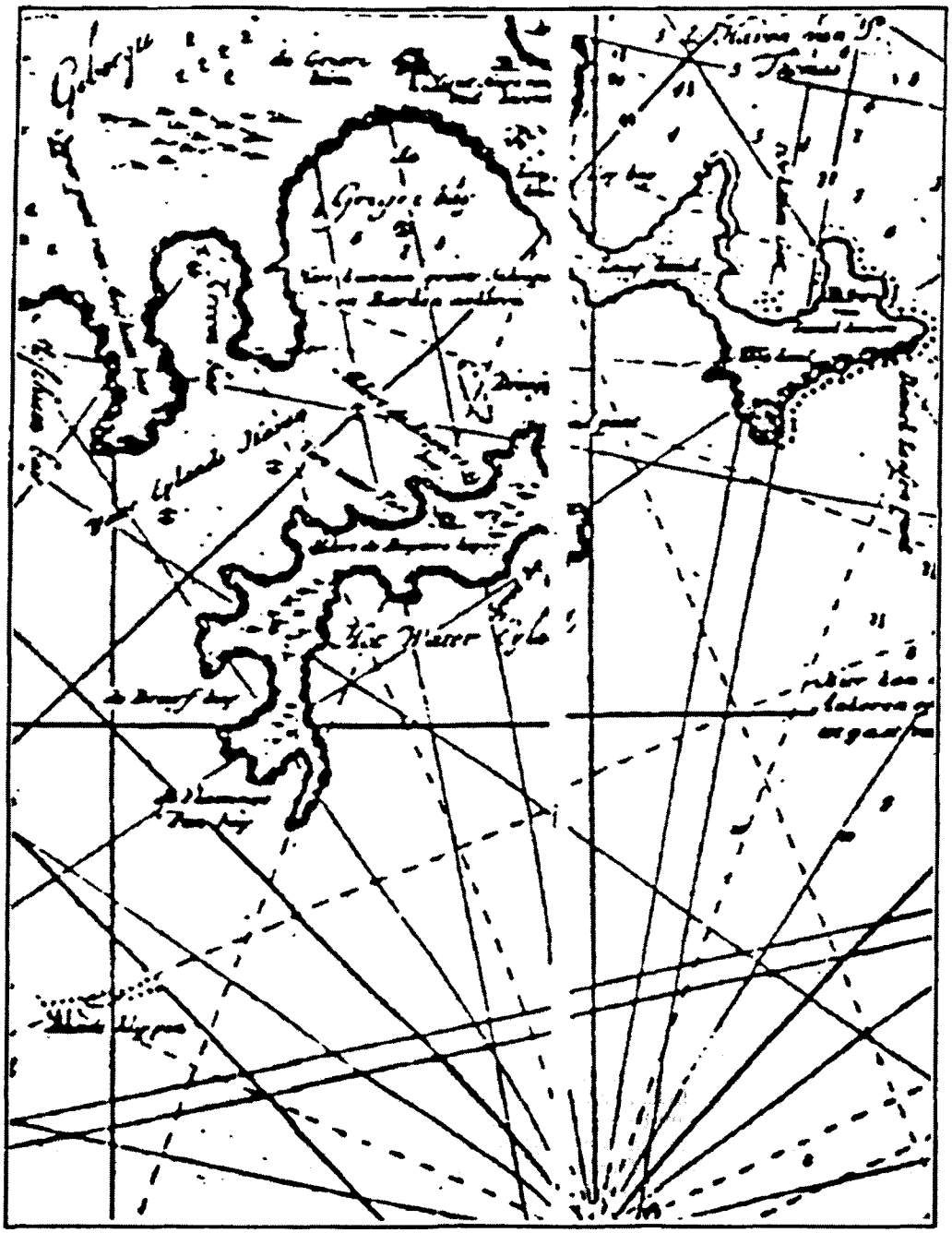


Figure 7. Map of the Water Island Area prepared by Gerard van Keulen and published in 1719

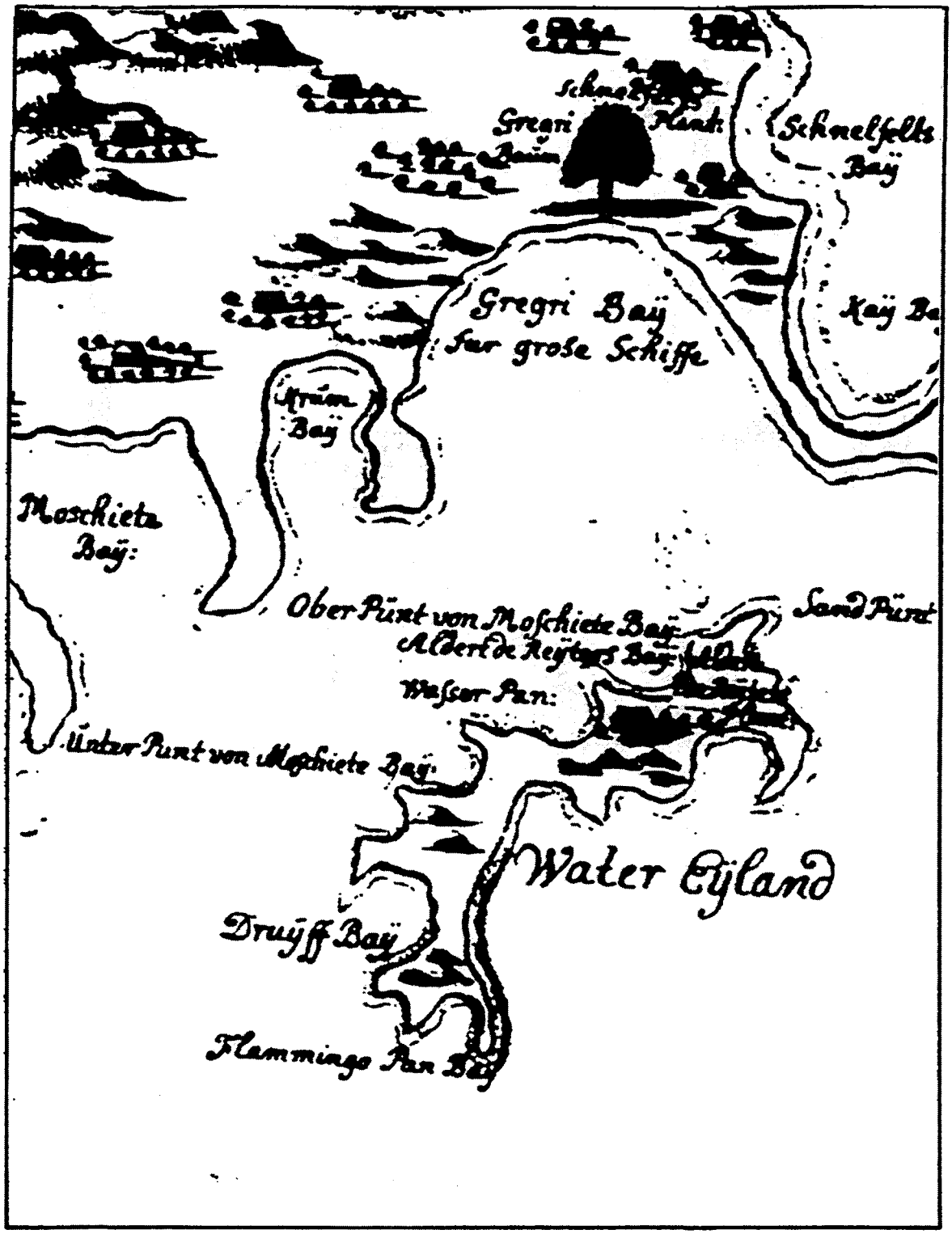


Figure 8. Map of the Water Island Area prepared by Stevboe de Montargnes in ca. 1740 and published in 1772.

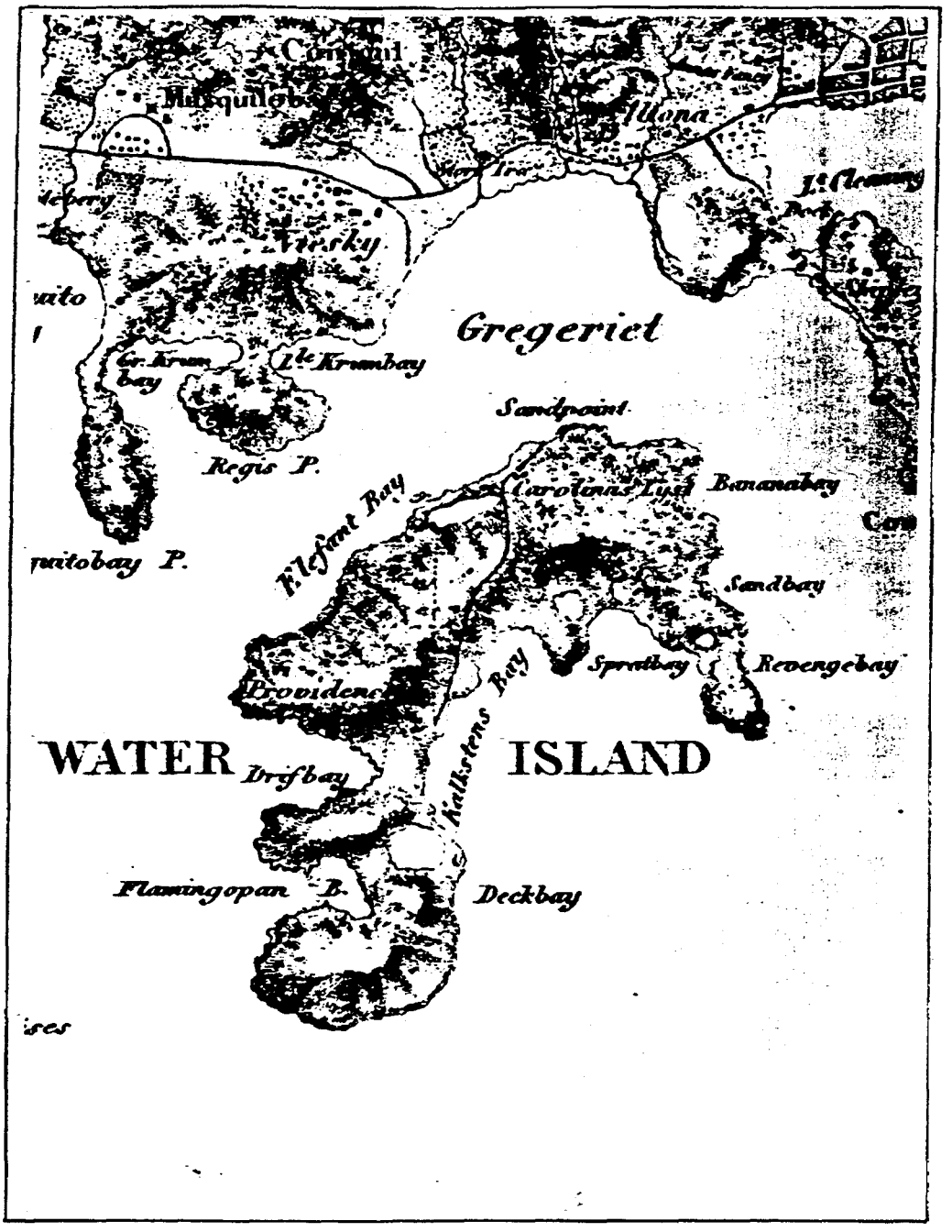


Figure 11. Map of the Water Island Area prepared by H. B. Hornbeck from 1835-1839.

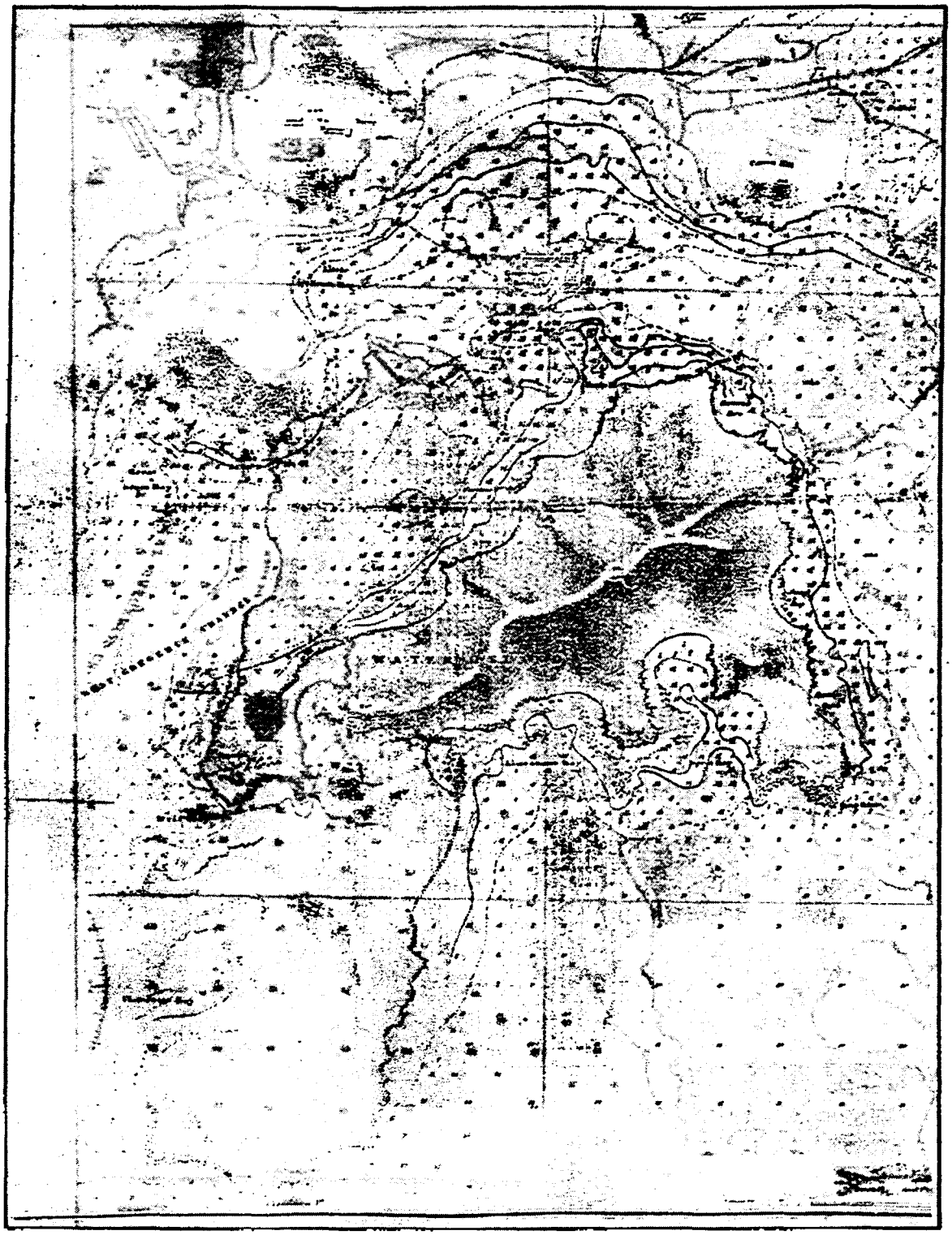


Figure 12. Detail of the Water Island Area from the British Admiralty Hydrographic Office Map of St. Thomas, prepared in 1851.

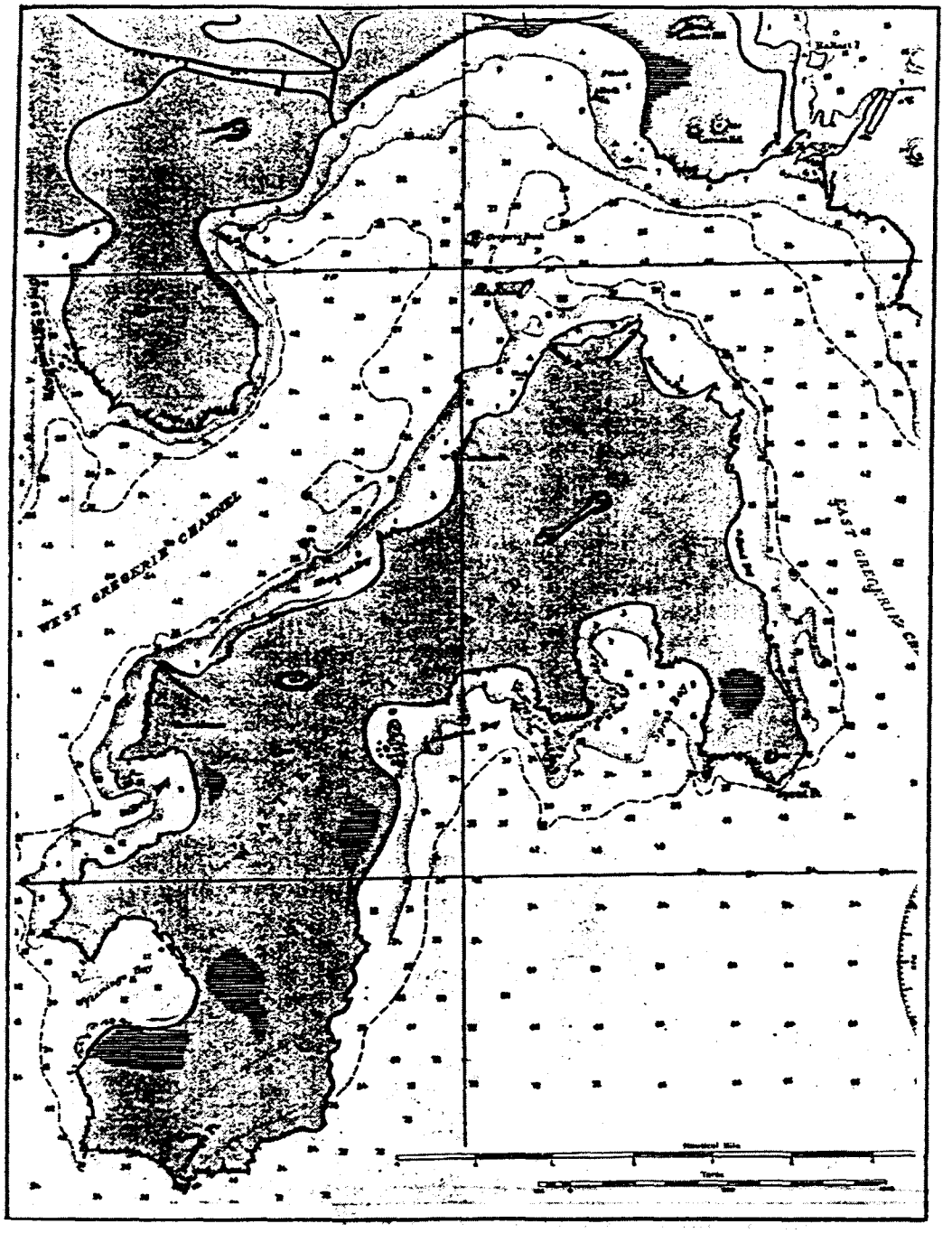


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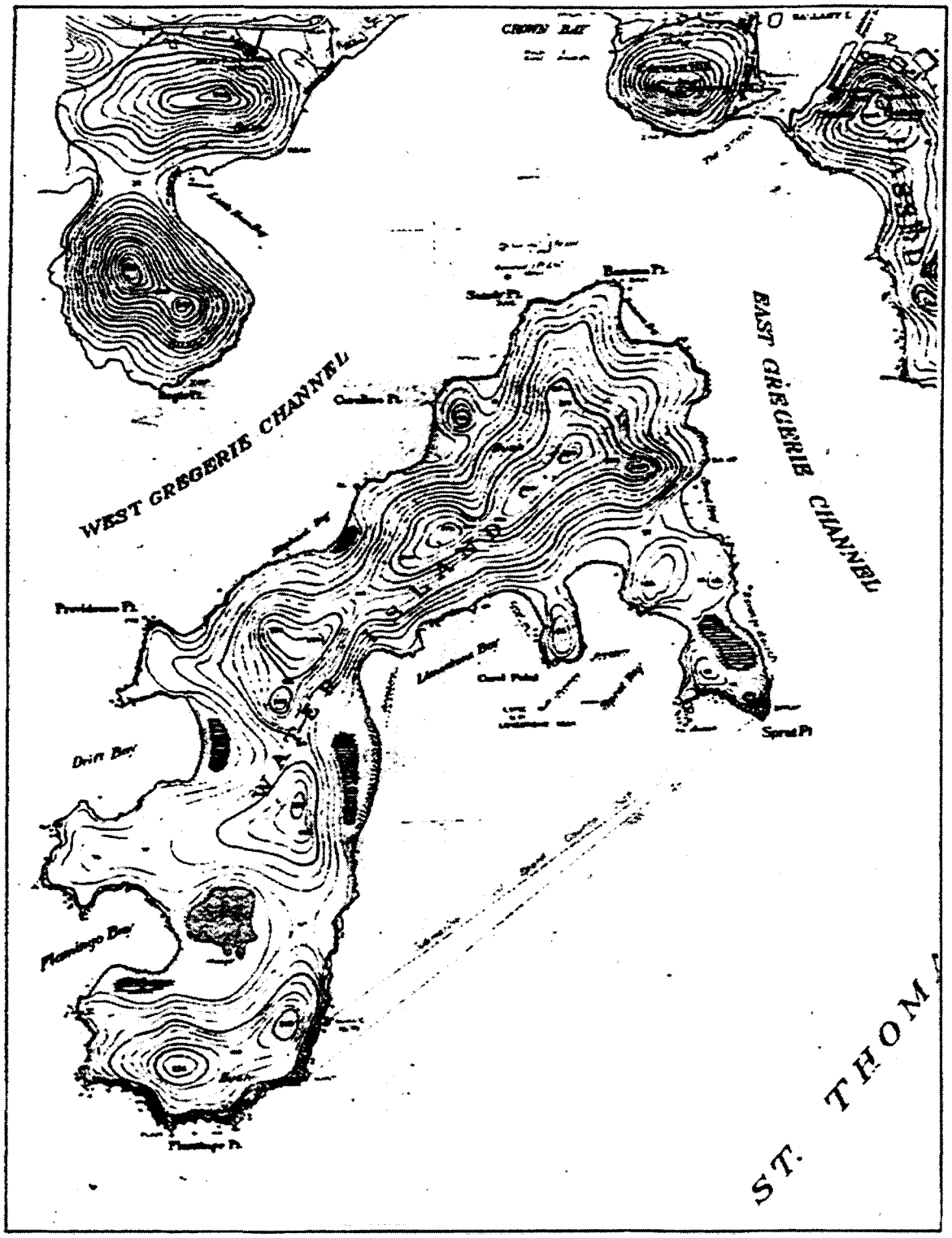


Figure 16. Detail of the Water Island Area from the U.S. Coast and Geodetic Survey Map prepared in 1918.

The U.S. Government seized Water Island in World War II for the purpose of establishing a coastal defence installation. Title was vested with the Department of Defence, which immediately set to work constructing a large military base on the southern part of the island known as Fort Segarra. Some fifty-three structures, including barracks, gun emplacements, watch towers, underground bunkers and other military facilities soon appeared, as did an infrastructure of docks, roads, water, sewage and power systems (see Chapter VII). The total cost of this massive development effort was officially put at $1,583,000.00 (U.S. Comptroller of the Virgin Islands, 1972:8), although local gossip placed it closer to $3,000,000.00 (Thruelsen 1956).

When World War II ended, construction was abruptly halted and the defensive garrison was replaced by a unit of the Army's Chemical Warfare Division, which used the island to conduct secret experiments with poison gasses for several years. Areas where these experiments were conducted on the island are illustrated in Figure 17. After the Chemical Warfare Division abandoned the island in 1950, the Army turned it over to the Department of the Interior by revocable permit for five years. In December 1951 the term of the permit was made indefinite, but it remained subject to revocation by the Army at any time.

The Department of the Interior, in its turn, assigned the permit to the St. Thomas Development Authority, an instrumentality of the territorial government, in the hopes that that body could negotiate a long-term lease with a prospective developer. It as at this point, in 1951, that Walter and Floride Phillips, a New York couple looking for a retirement home, appeared upon the scene.

Water Island Incorporated 1951-1965

The Phillips had heard about the availability of Water Island through Isidor Paiewonski a St. Thomas businessman. After making an on-site inspection in March 1951, they joined forces with two brothers from New York — Raymond and Edward Bill — to form a local corporation called Water Island, Inc., which signed a lease with the St. Thomas Development Authority on August 1, 1951. There were three other corporate officers: Dr. Roy A. Anduze and Mr. and Mrs. Harry Loucks, all residents of St. Thomas.

Copies of the first lease are not locally available and, therefore, have not been examined. Several somewhat conflicting statements regarding the lease have appeared in print. According to one source (Thruelsen 1956), the Department of Interior has stated:

> This lease was for an initial term of 35 years, with an option for the lessee to have an additional 25 years for a total of 60 years. The lease was drafted to accommodate the Water Island, Inc. development plan for the Island. This plan has two phases — short term and long term. The short term phase contemplated the expenditure of $200,000.00 to rehabilitate and convert existing dilapidated Army barracks into a resort hotel with not less than 50 rooms and related facilities. It was anticipated that title to or full control over Water Island would eventually be acquired by the Development Authority and that, whereafter, the occupancy by lessee would be firm and no longer be subject to revocation by the Army. When that event occurred the lessee could then be expected to launch into its long range plan involving substantially increased investment for further hotel and residential development and construction. The initial $200,000.00 was considered to be high risk capital because of the right of revocation by the Army. After that right was extinguished, it was felt that the term of the lease would be readily mortgageable to provide the money for the long range plan.

Professor William M. Boyer, who obtained a copy of the lease from the Department of the Interior in 1979, summarized its contents as follows:

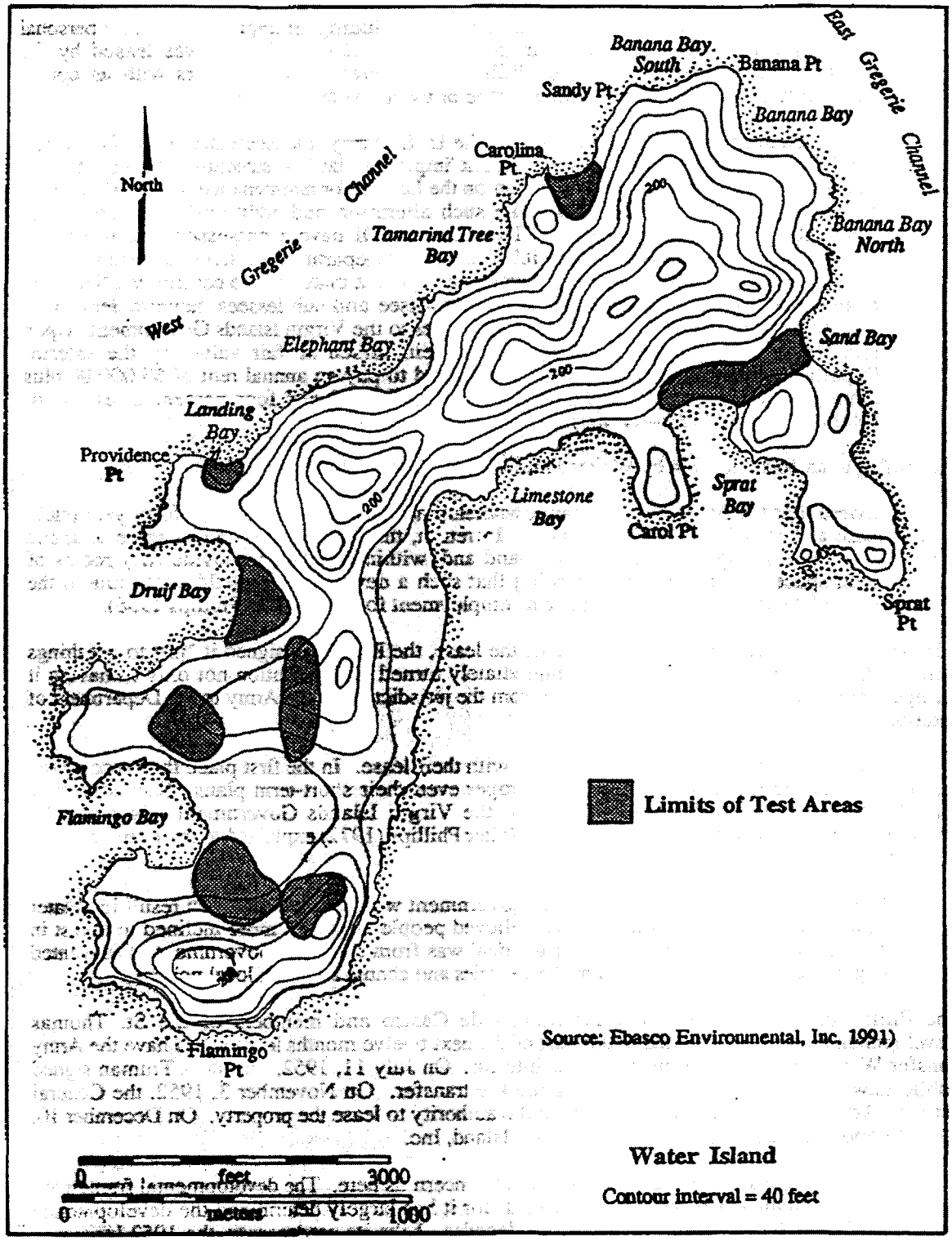


Figure 17. Test Area Map, San Jose Project. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

> The entire Island of five hundred acres, 'including all improvements and personal property located thereon and riparian rights appurtenant thereto,' was leased by the Department of Interior to Walter Phillips for a term of twenty years with an option renewable by Phillips...for a further period of twenty years....
>
> Concerning the facilities left by the U. S. Army, the Secretary not only granted Phillips the right to occupy all government 'improvements' — structures, docks, utilities, etc. — on the Island "without obligation on the Lessee for maintenance or repair', but also he granted Phillips the right 'to make such alteration and additions' or to effect 'the removal' of such improvements. "The Lessee shall have a possessory interest in all improvements made or acquired by it.' The Interior Department's interest, according to the lease, was that the Island 'might be developed in such a manner as to contribute effectively to the economy of the Virgin Islands'. The lessee and sub-lessees, nevertheless, were specifically exempted from paying property taxes to the Virgin Islands Government. Upon termination of the lease, they were to be reimbursed at 'fair value' by the Interior Department. For his part, Phillips was required to pay an annual rent of $3,000.00 plus three percent of 'gross receipts' in excess of $200,000 and four percent in excess of $300,000 (Boyer 1983:404-405).

According to an account given by Walter Phillips in 1956, the terms of the lease:

> ...were that the Army should retain ownership and give the developer a forty year (sic?) lease at a rental of $3,000.00 a year. In return, the lease-holder had to agree to spend $200,000 on improvements to the island and, within five years, provide fifty rooms of hotel space — the general idea being that such a development would contribute to the Virgin Islands tourist trade and provide employment for local labor (Phillips 1956).

Although less than pleased with the terms of the lease, the Phillipses signed it "just to get things going". Once it had been signed, they immediately turned their attention not only to having it changed, but to having the island transferred from the jurisdiction of the Army to the Department of Interior.

The Phillipses had two main problems with their lease. In the first place they recognized that the Army's right of revocation would hamper even their short-term plans. Secondly, they feared that eventual transfer to the Island to the Virgin Islands Government might also be detrimental to their development scheme. As Walter Phillips (1972) explained to the Department of Interior in 1972:

> It was felt that lease from the federal government would be stronger and result in greater development of Water Island.... We believed people would be more inclined to invest in subleases and develop the Island if the deal was from the U. S. Government. We wanted to get Water Island removed from the vagaries and changeability of local politics.

The Phillipses, assisted by Governor Morris de Castro and members of the St. Thomas Development Authority, spent the better part of the next twelve months lobbying to have the Army transfer Water Island to the Department of Interior. On July 11, 1952, President Truman signed Public Law 511 (82nd. Congress) authorizing the transfer. On November 3, 1952, the General Services Administration delegated to Interior the authority to lease the property. On December 10, 1952, Interior executed a new lease with Water Island, Inc.

The provisions of the 1952 lease need not concern us here. The developmental framework which the lease mandates is, however, relevant, for it has largely determined the developmental process on Water Island during the past four decades. Like its predecessor, the 1952 lease was explicitly intended to promote the Virgin Islands' economy. After affirming that the island had

been transferred from the Army to the Interior Department "so that it might be developed in such a manner as to contribute effectively to the economy of the Virgin Islands", the lease goes on to specify that "development of the area as a tourist resort appears to be the most effective use to which it may be put". Section 1 is even more explicit on the nature of the preferred development. "The leased property and improvements," it states, "shall be developed into a resort area." Yet, although the lease seemingly restricts development to the tourist sector, it offers an extremely broad definition of what constitutes a "resort area", to wit:

> Comprising dwelling and recreational facilities and ancillary service facilities and parts thereof may be devoted to residences, whether private or cooperative or otherwise, agriculture, horticulture, the breeding and raising of livestock and poultry and other purposes.

Despite the stated objective of creating a tourist resort complex on Water Island, the only tourist facility actually required by the lease was a fifty room hotel, which Water Island, Inc. agreed to have operational "through conversion of presently existing buildings or otherwise" by January 1, 1958. No investment or capital improvement level was established, although Section 4 obligated Water Island, Inc. to have a minimum paid in capital of $200,000.00 within ninety days from January 1, 1953.

Once the matter of the lease had been resolved to its satisfaction, Water Island, Inc. turned its attention to Phase I of its development strategy — the establishment of a 50 room hotel resort. At this point a major difference of opinion arose between the Phillipses and their partners, the Bills, over the most appropriate development strategy. The Bills wanted to raise a large amount of investment capital in order to build an elaborate resort complex; whereas the Phillipses preferred a low-key, informal and simple operation, with a view to improving the existing facilities "on a sort of pay-as-you-go basis". The disagreement was resolved when the Phillipses bought out the Bills for $25,000.00. They then launched a public stock issue to raise $269,000.00 needed to complete Phase I of their development program.

Water Island, Inc.'s hotel development program was based on converting the facilities left behind by the Army into a medium-size hotel operation that would accommodate one hundred guests. The 1953 stock offer described these facilities as follows:

> There are extensive improvements on Water Island which were built by the United States Army during World War II. There are 33 single storied buildings with concrete foundations, concrete floors and concrete block walls, most of which are 22' 8" in width and of varying lengths ranging up to 168' 8". There is a water supply system, consisting of a water catchment area of 90,000 square feet of concrete reservoir of 250,000 gallon capacity and water distribution mains; a power plant with three diesel-operated generators with total capacity of 45,000 watts and electrical distribution lines; a sewer system; a salt water system for flushing toilets. There are about 7 1/2 miles of roads, partly macadam and the remainder gravel. There are two docks and a telephone cable to the mainland of St. Thomas (Water Island, Inc. 1953).

Reputedly, the estimated market value of the entire installation was only $60,000.00 in 1952.

The Phillipses arrived in September 1953 to oversee the work of remodelling. After reactivating the Army's water, sewer and electric systems, they concentrated on converting a cluster of buildings on the Rainbow Point promontory into hotel rooms, restaurant, bar, kitchen and other facilities. The development program effected consisted of converting the largest building (168'8" x 22'8") into a "Club House" containing a kitchen, dining room, lounge, lobby, bar, office and terraces for outdoor dining and dancing. Several nearby barracks buildings, measuring 96' 8" x 22' 8" were remodelled so that each contained eight hotel rooms. Several other smaller

structures in the vicinity were converted into staff quarters, workrooms, storehouses, and a laundry.

The Water Island Hotel officially opened for business on January 1, 1954. By that time thirty hotel rooms and two guest cottages, capable of accommodating fifty to sixty guests were available for use. A U.S.G.S. map of Water Island in 1955 shows the extent of development that had occurred (Figure 18). A more detailed summary of subsequent developments on the island through the late 1970s is provided elsewhere (Tyson 1980); this information is briefly summarized here.

In 1959, twelve newly converted efficiency apartments, under separate ownership, were added to the hotel's operation, but these were the only new additions made to the hotel between 1954 and 1965. The twelve efficiency apartments added in 1959 actually belonged to the Flamingo Bay Corporation, established by George and Richard Freeman. (George Freeman was a Director of Water Island, Inc. from 1958 through 1974). One major reason that the hotel did not markedly expand after 1953 was the Phillips' dedication to moving ahead with Phase II of their development plan — residential development and construction. They viewed the attraction of permanent settlers to their island home as far more "challenging" and desirable than the operation of a hotel. Certainly by 1956 they saw long-term residents as their primary objective. "We needed the hotel," explained Mrs. Phillips in 1956, "so that the prospective settlers could have someplace to stay while they picked out their site and built their home." And Walter Phillips explained at the same time that with respect to the hotel, their ultimate goal was to have facilities for no more than one hundred guests.

During 1965 Water Island, Inc. spent $178,779 on marina development in Flamingo Bay. A channel was opened up between Flamingo Bay and the Lagoon. The Bay and the Lagoon were dredged and two buildings were constructed, one as a dining room, bar, and kitchen and the other as a maintenance shop for cars and boats.

According to the Comptroller's 1972 Audit Report, between 1952 and 1966 Water Island, Inc. sold 121 sub-leases, comprising 298.02 acres for a total financial consideration of $403,835 and total annual rent of $3,075. The acreage involved ranged from 165 to .50 acres, although the vast majority (101) were about one-acre plots. The bulk of the sub-leases were executed between 1956 and 1961 when 246.25 acres were sold to seventy persons. The sub-lessees or "cottagers" acquired their lots for an "initial payment", which ranged from between $2,500 to $3,000 per unimproved acre in the 1950's to about $3,500 in the 1960's. They also paid a nominal annual rent, usually about $25.00, for the duration of their lease. Lots with old Army buildings on them went for an "initial payment" of about $5,000 per acre.

The sub-leases were sold to individuals, almost all of whom intended them for residential use. Four of the sub-leases had buildings on them that had been remodeled by Water Island, Inc. Five others contained unimproved buildings. The vast majority of the lots were vacant, and many were left undeveloped by the sub-lessees. In 1972 (when the first figures became available), 62 of 121 sub-leased parcels were still vacant. Others were improved into residences or apartments units. In 1972 there were 58 homes, 4 apartment buildings (with a total of 32 rooms) and 1 duplex. In 1972 only 25 of the sub-lessees were permanent residents.

The largest sub-lease, comprising about 156.5 acres (as surveyed by the Department of the Interior in March 1978) in the northeastern part of the island, was executed with Clarence Doheny on July 1, 1956. Two years later this sub-lease was assigned to Warren H. Corning, who in turn assigned it to the Sprat Bay Club, Inc. on May 2, 1960. Sprat Bay Club, Inc. was formed as an exclusive residential housing project which sold sub-leases as shares to its members. By 1972 thirty-five families owned shares approximating 80 acres. The remaining 80 acres of land had been set aside as open space, a natural area (40 acres around Sprat Point) roads, beaches and other

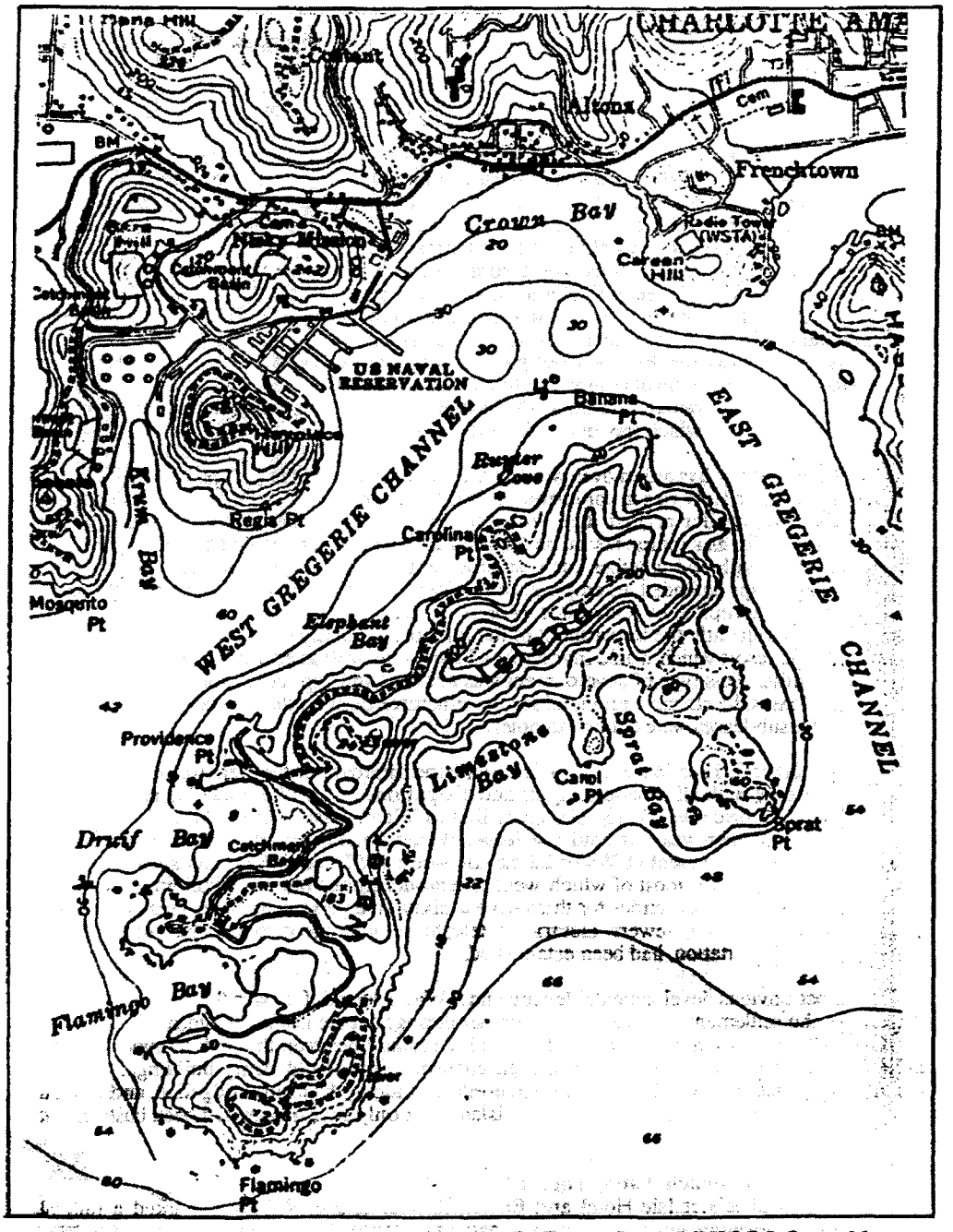


Figure 18. Detail of the Water Island Area from the 1955 St. Thomas Central 7.5' U.S.G.S. Survey Map.

common use facilities. In 1972 only four owners had built residences, the remainder were undeveloped and vacant.

Phillips justified his preference for permanent settlers on the following grounds:

> It was felt that persons living here the year round or for extended stays would provide a much more stable and dependable type of business that transient tourists, who would be here for only a few days. This type of customer would tap an entirely different market than the transient hotel guest. Furthermore, since they would give a substantial investment, their interest would tend to be permanent. Thus, if the subleases paid for the construction of the houses, this would permit a much greater development than would be possible from the sources of the Hotel alone. The construction of these houses provided employment to large number of workers and considerable business to suppliers of materials. The persons occupying them year round or for varying periods not only provided business for the Hotel but gave employment to various types of workers, and business to local merchants supplying food, supplies, furniture, taxicabs and services. But one of the great advantages so far as the local economy is concerned, is that they pay their income taxes here, which stay in the Treasury of the Virgin Islands (Phillips 1972).

Considerable controversy has arisen over whether the residential development program initiated by Water Island, Inc. after 1954 was in conformance with the development objectives of the lease. In 1972 the U.S. Comptroller argued that Water Island was being developed principally as a residential area and not as a tourist resort, as required, and therefore questioned whether the lease had been complied with and whether such development was in the best interest of the Virgin Islands. Walter Phillips defended his emphasis on residential development by pointing out that his original proposal, accepted by Governor Morris de Castro, the St. Thomas Development Authority, and subsequently the Department of the Interior, explicitly called for the establishment of a "cottage" type resort which would involve hotel rooms, as well as privately owned apartments and residential units. This type of development was allowed and explicitly protected by the 1952 lease. The sub-leases, he claimed, provided for the structures built on them to be part of the resort operation and the sub-leases were entitled to hotel services.

On December 3, 1965 Water Island, Inc., with the approval of the Department of Interior, sold its Master Lease with all its assets, rights and obligations to the Water Isle Hotel and Beach Club, Inc. The sale price was $645,160, according to Water Island, Inc.'s Annual Report for 1965. During the fifteen years it held the lease, Water Island, Inc. had made a substantial contribution to the development of Water Island. Between 1952 and 1965 it had spent a total of $465,064 on improvements, most of which went to remodeling the old army buildings as part of the hotel. Employment opportunities for thirty-five to sixty-five persons has been created. A base of services, including water, sewers, electricity, telephone, garbage disposal, mail distribution, roads, and ferry transportation, had been established.

The most obvious developmental legacy under Water Island, Inc. was the spread of private residences and the settlement of some twenty families throughout the island. Residential expansion was heaviest along the ridgeline at the south end of the island between the underground fort and catchment hill, where there was already a high concentration of old Army buildings. By the 1960's the residential units also began to spread northward along the central ridgeline, and several roads were opened up to the northern end of the island, but only four houses had been built in that sector.

Water Isle Hotel & Beach Club, Inc. 1966-1992

The advent of Water Isle Hotel and Beach Club (hereafter WIHBC) marked a radical departure from the development philosophy and pattern of Water Island under Walter and Floride

Phillips. The Phillipses had come to Water Island seeking a retirement home, not an investment. In order to obtain a favorable lease to their own island in the sun they had to obligate themselves to develop it as a tourist resort. Once they had gotten a medium-sized hotel operational — the minimal development required by their lease — they concentrated on establishing a residential community, a goal more in keeping with their personal interest in Water Island. Under the Phillips, development, whether hotel or residential, proceeded at a casual, carefully modulated pace. "After all," Walter Phillips once observed, "the original idea behind this was to take it easy" (quoted in Thruelsen 1956).

Edward J. McCardle was the President and guiding spirit of WIHBC. Whereas the Phillipses emphasized residential development as the basis of a cohesive, relaxed community life style, WIHBC stressed the hotel and expanded facilities for tourists. McCardle's concept of a resort complex, which harkened back to that of the Bills, contrasted sharply with that of the Phillips'. WIHBC's overall development plan called for an investment of $2,000,000 to create three multi-storied hotels capable of housing 800 guests, restaurants, 300 Mediterranean style villas, a shopping center, private yacht and tennis clubs, a boat harbor and marina.

WIHBC initially focused on expanding the existing hotel, which was renamed the Water Island Colony Club. Between 1966 and 1968 WIHAC spent about $2,000,000 on construction of four large hotel buildings (three of which were three stories high), all of which were clustered around the old hotel complex on Rainbow Point, The Flamingo Bay marina was completed and a deep water dock erected in the bay just below the Hotel. A number of private villas were also constructed in the vicinity of the hotel overlooking the lagoon behind Flamingo Bay. Water Island Colony Club officially opened for business in 1967 with sixty-three rooms in operation and more under construction. By 1970, one further building has been added and the Hotel offered 110 rooms, three cottages (with a total of eight bedrooms) and 22 villas (38 bedrooms), making it one of the largest hotels in the Virgin Islands at that time. Between 1965 and 1978 only three new sub-leases, totaling 2.25 acres were sold, for total initial payments of $48,000, plus total annual rent of $300. In the same period, while 24 new villas had been constructed, just 10 were sold to private individuals, only one of whom was a permanent resident.

From the late 1960s onward, some Virgin Island citizens began to question a federal lease which reserved a substantial land mass for the exclusive benefit of a small number of private citizens. In 1972 a citizens committee wrote to President Nixon urging that Water Island be turned over the Virgin Islands Government for living and recreational space. These sentiments were echoed in a letter from Senator Percival H. Reese to Secretary Rogers C. Morton, and a bill was introduced in the V.I. Legislature petitioning the federal government to transfer Water Island to the Virgin Island Government at the expiration of the twenty-year lease in December 1972. In addition, a 1972 Audit Report by the U.S. Comptroller questioned whether the heavy emphasis on residential development that had occurred was in accordance with the intention of the lease and in the best interest of both the territorial and federal governments. In spite of these concerns, the Department of the Interior renewed the Master Lease without any changes for a period of twenty years, starting January 1, 1973.

The hotel continued to operate until Hurricane Hugo devastated it, and many local residences, in September 1989. Since Hugo, commercial development on Water Island has been in something of a holding pattern until the question of the lease is resolved. A number of residences were being built across the island in 1992 when the cultural resources survey was conducted, however, highlighting the rapidity with which development is likely to occur in the future, and the fragility of the surviving historic remains. Most of the discussion surrounding Water Island during the past decade has concentrated on legal (lease) issues. In consequence of the interest in the future of Water Island, the federal government has begun to carry out an extensive study of the legal and economic issues involved in transferring ownership, of which this study is one example.

Chapter V
PREVIOUS INVESTIGATIONS

Ken S. Wild and David G. Anderson

The 1992 survey of Water Island is not without precedence, although no systematic archeological survey of the island had been conducted prior to these investigations. In general very few intensive, systematic surveys encompassing large areas have been conducted in the U.S. Virgin Islands. Lundberg, Righter and Ceaser's (1992) recent analysis of prehistoric site occurrence in the islands showed a predominantly coastal distribution on St. John, St. Thomas and Water Island, and concluded that this reflected past survey methods, Coastal Zone Managements archeological requirements, and coastal development (see also Righter 1992). Their data highlight the minimal amount of survey that has been undertaken in the inland areas of the U.S. Virgin Islands.

Most previous archeological investigation in the U.S. Virgin Islands have been undertaken on the larger islands of St. Thomas, St. Croix and St. John. One of the first surveys was undertaken in 1916-17, when the Museum of the American Indian sent Theodoor de Booy to collect materials useful for depicting the culture of the aboriginal peoples of the region (de Booy 1917, 1919). A second attempt to locate aboriginal sites in the islands was conducted by Gudmund Hatt in 1922 and 1923 (Hatt 1924). In 1937 the Smithsonian Institution conducted a survey and testing program in the Virgin Islands on the islands of Anegada, St. Croix, and St. Thomas (Krieger 1938)

The first reported archeological investigations on Water Island were conducted in 1934-35 by A. H. Julian, who excavated human skeletal remains at Tamarind Tree Bay and Landing Bay. In 1936 J. C. Trevor returned to these two bays and re-excavated the skeletal remains that had been uncovered in 1934-35. The results of these investigations were published by Buxton, Trevor and Julian (1938). Some of the ceramics collected by Trevor and Julian were sent to Gudmund Hatt (1938) for analysis, who concluded that they were pre-Columbian in origin. As a result, Buxton, Trevor, and Julian concluded that the deposits as a whole, including the skeletal remains, were pre-Columbian. Their conclusion on the skeletal remains was rebutted by Stewart the following year, through an analysis demonstrating that the remains were Negroid or African in appearance, and hence likely came from graves of historic inhabitants of the island that had been dug into a prehistoric site area (Stewart 1939).

During 1959-60 Frederick W. Sleight and Ripley P. Bullen conducted investigations on St. Thomas and St. John with funding provided by the National Park Service and the William L. Bryant Foundation. The principle goal of their efforts centered on the location of aboriginal sites, and determining their depth and stratigraphy (Bullen and Sleight 1962). They also conducted extensive excavations at the Krum Bay site, which they believed would soon be lost to development; work that was also funded by the National Park Service. During this same field season Ripley P. and Adelaide K. Bullen also conducted investigations on Water Island as well as on nearby Hassel Island and at Botany Bay on St. Thomas. The results of their efforts were published in 1962 by the William L. Bryant Foundation (Bullen and Sleight 1962). Bullen and Bullen reported that they only located prehistoric remains on the northwestern bays of Ruyter, Tamarind Tree, Elephant and Landing Bay. It is difficult from the surviving records to determine which specific areas of the island were investigated by the Bullen's, or the level of effort that took place. Walter Phillips, in an interview to one of the project directors and Elizabeth Righter in the fall of 1992, said he went with the Bullens as they examined various areas on the island. The effort was apparently directed to the beaches, consisted primarily of surface inspections, and only lasted a few days.

In 1981 the Virgin Islands Government provided additional funding that allowed the Territorial Archaeologist to update the Virgin Island Site Inventory List. Under the direction of then-Territorial Archaeologist Emily Lundberg, Barbara Johnston (1981, 1983) conducted field assessments of archeological sites that had been previously reported. Archeological sites on Water Island that were located, assessed and given formal state/territorial site numbers included: Elephant Bay (12-VAM-3-22), Ruyter Bay (12-VAM-3-21) Tamarind Tree Bay (12-VAM-3-9), Druif Bay (12-VAM-3-32) and Landing Bay (12-VAM-3-10). The results of these investigations, and the earlier investigations conducted on Water Island, are discussed in greater detail for each of these areas in Chapter VII.

Chapter VI
FIELD AND LABORATORY METHODS

Ken S. Wild and David G. Anderson

Field Methods

The methods employed during the 1992 archeological survey project were directed towards accomplishing the principal goal of identifying significant cultural resources on Water Island, in order to determine possible adverse effects should the island pass from federal ownership. Of primary concern during the survey were resources from the prehistoric and colonial periods. During and shortly after World War II an extensive series of structures were built on Water Island by the military, including a massive fortifications complex, Fort Segarra, on Flamingo Point. Limited archival research was undertaken on the period of U.S. military presence during the 1940s and early 1950s, and structures dating to this period were documented when encountered during the survey (e.g., see Chapter VII). The recording of these facilities, however, was not a primary objective of this project.

The 1992 cultural resource investigations were conducted in accordance with Appendix B of 36 CFR 66 (Recovery and Archeological Data: Methods, Standards, and Reporting Requirements). Field investigations conducted on Water Island were first coordinated through the Virgin Islands Territorial State Historic Preservation Office. During the project the Territorial Archaeologist, Elizabeth Righter, provided information, guidance, and assistance during the field and laboratory research; Righter participated in the fieldwork on two separate occasions for a total of five days, providing valuable assistance in their documentation and interpretation.

Prior to the field investigations, background archival research was undertaken to identify cultural resources that would require field investigation. Documents consulted included reports on previous investigations, Virgin Island Site Inventory records, and historic maps and documents. Concurrent with the field investigations, local historian George F. Tyson, Jr. prepared a detailed history of the island (Chapter IV). Tyson met with the project directors while the fieldwork was underway and provided preliminary results of his work, information that helped guide the survey effort. Dr. Emily Lundberg, an expert on Virgin Island archeology, and former Territorial archeologist, was also contacted about her knowledge of the island's resources. From this research it was determined that all of the bays and coves on Water Island as well as any low-lying level areas would require systematic survey and subsurface testing to determine whether prehistoric or historic sites were present. In addition, testing would be required to locate and assess the integrity and significance of sites that had been previously reported. The preliminary archival research, furthermore, identified two potentially significant historic plantation sites on Water Island, one above Landing Bay (Providence Point) and another on Carolina Point (Carolina's Lyst). Other possible historic sites were also identified, including a possible historic well and powder magazine at Ruyter Cove, an historic well at Tamarind Tree Bay, and a single isolated structure near Sand Bay.

During the preliminary research process, certain areas of the island were identified that did not require investigation (Figure 19). Water Island is characterized by steep, rugged terrain and a ridge 200 to 290 feet above sea level runs down much of its length. One of the islands outstanding features are the steep slopes and cliffs on several headlands and extending down the slopes of the central ridge (Figure 20). Past habitation or use of such terrain would be extremely unlikely. Other areas identified that could not or did not require surveying included a toxic waste dump on the south side of Flamingo Bay, and a number of areas where modern development has extensively altered the landscape. Several of the structures associated with Fort Segarra on Flamingo Point, for example, were underground bunkers. The construction of such facilities would have destroyed the context of any earlier historic or prehistoric sites in the immediate area of these facilities. Storm

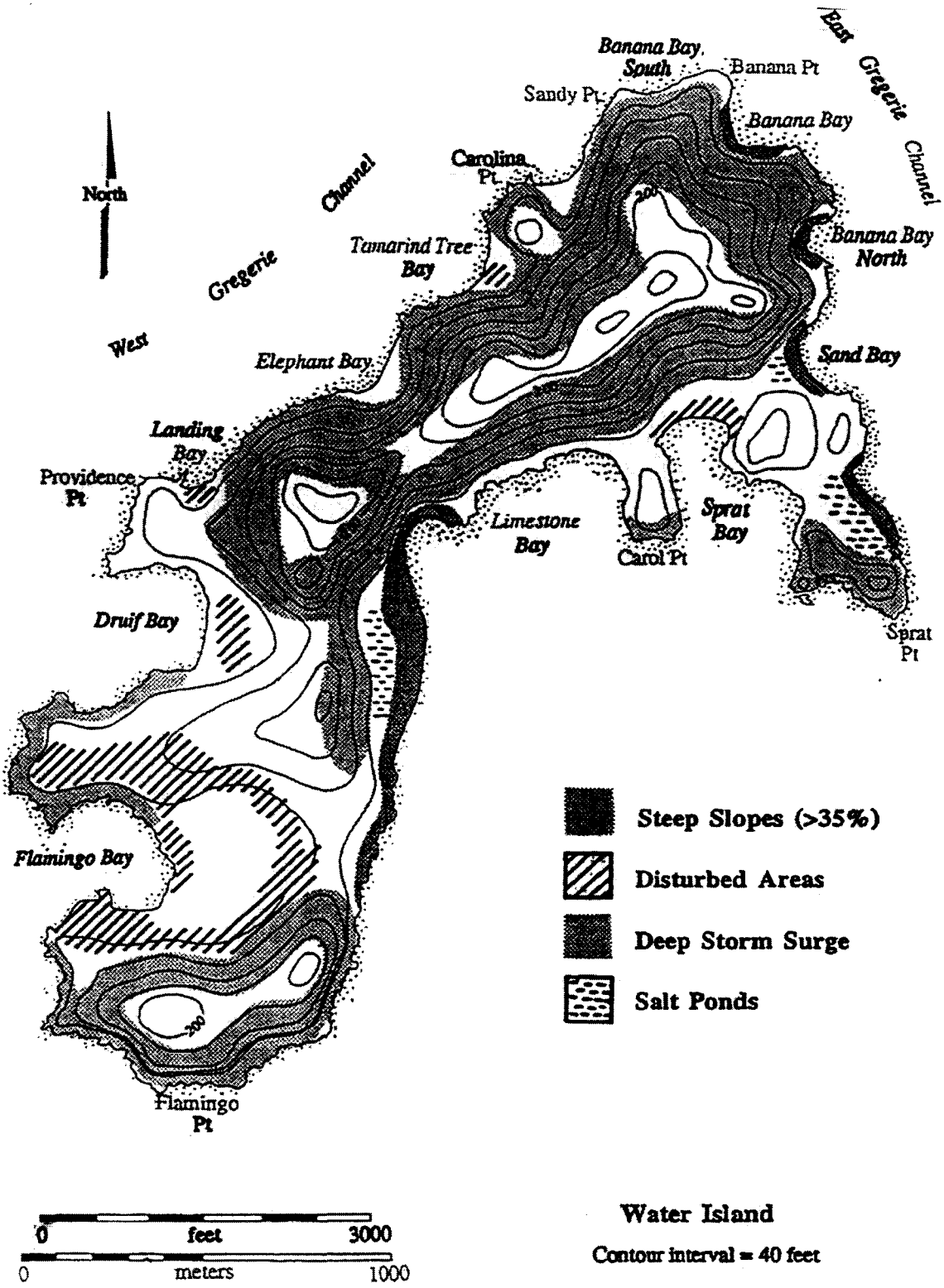
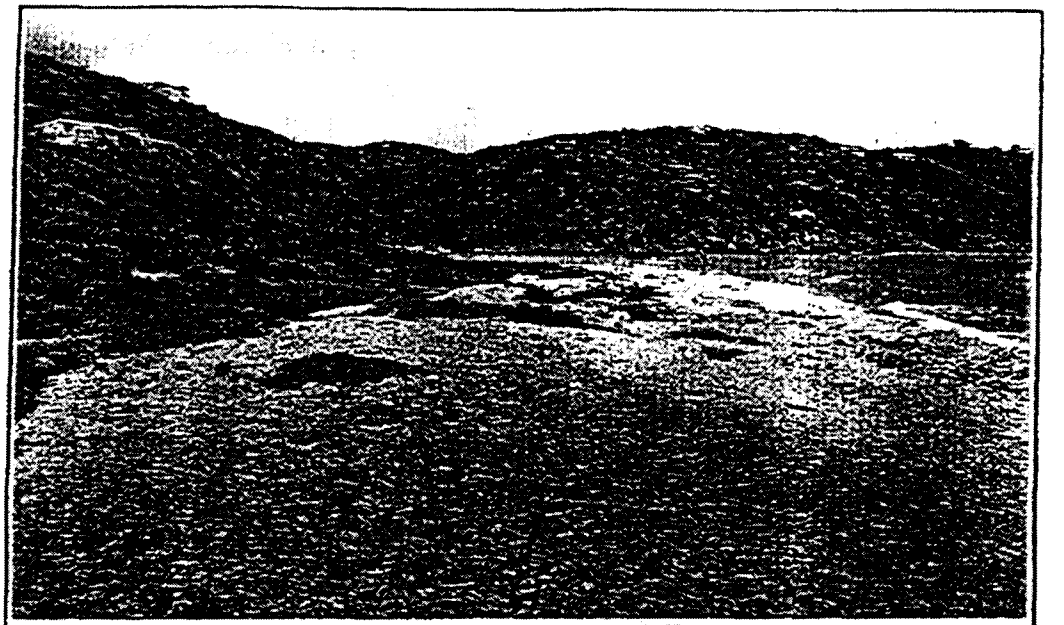
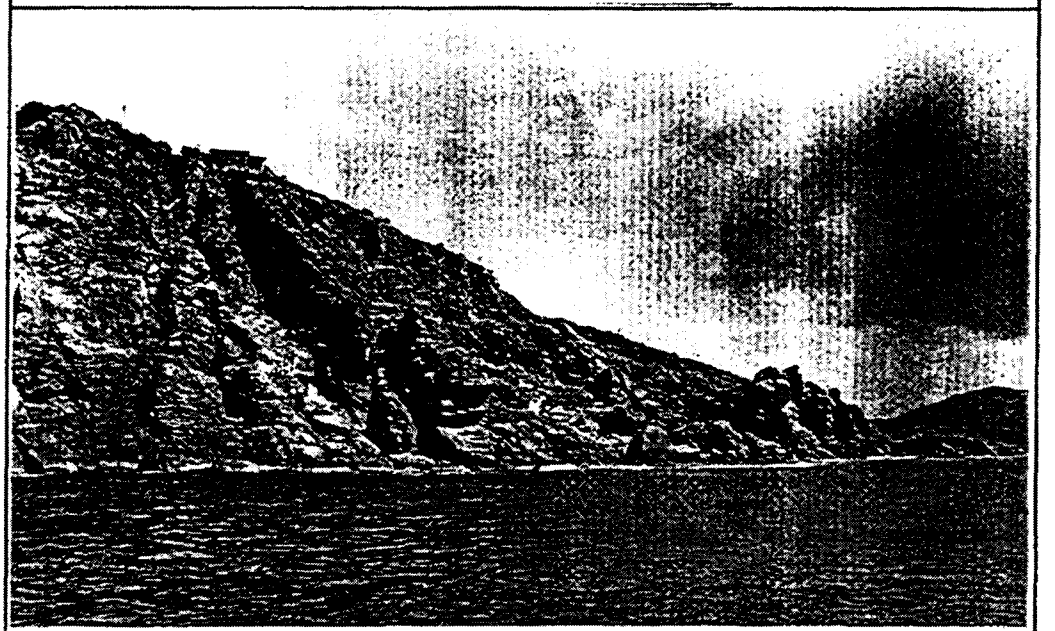


Figure 19. Slope and Disturbance Conditions, 1992 Water Island Archeological Survey, U.S. Virgin Islands.



Limestone Bay Beach, showing storm surge shell and coral deposits.
View to the north.



Southeast side of Segarra Point, showing the steep rocky slopes.

**Figure 20. Slope and Beach Conditions, Segarra Point and Limestone Bay.
1992 Water Island Archeological Survey, U.S. Virgin Islands.**

surge coral and shell deposits were also documented covering the bays on the east and north sides of the island to depths of up to several meters (Figure 20). Testing in these areas invariably failed to penetrate these deposits. Salt ponds were also observed in several locations whose deposits, deep thick mucky soils, could not be explored. Figure 19 thus identifies areas where subsurface investigations were precluded by surface conditions, areas considered too steep for habitation, or areas in which modern disturbance has eliminated the probability of intact cultural remains.

Investigations conducted during this testing program were restricted to terrestrial survey. Submerged cultural resources are located just offshore from the island, such as the 1807 wreck of the merchantman The Henry off of Sand Bay. These resources were repeatedly brought to the attention of the project directors by local divers, and shipwreck sites are common features on historic maps of the island (e.g., see Figures 14-16). These underwater cultural resources, however, are not located on Department of Interior lands, and their documentation was not one of the objectives of the 1992 survey .

Prior to conducting fieldwork, notices were posted at public meeting places on Water Island to inform the residents of the survey. A large portion of the island has been divided into tracts and are leased and used as residences. Prior to conducting investigations on property that had been leased, permission of the tenants was requested. A number of areas could not be surveyed because permission was not granted, usually because the lease holder was off island. Specific areas examined during the project are documented in Chapter VII, and include most accessible parts of the island not already developed.

Each area investigated was surface surveyed prior to subsurface testing. If subsurface testing was warranted by ground conditions (i.e., if undisturbed soil layers were present), the area was mapped with a Brunton compass and test holes were plotted at a minimum interval of 20 meters. If cultural material was recovered the testing interval was reduced in order to more precisely determine the site boundaries. Investigations conducted on historic sites usually required the removal of vegetation in order to properly document the remains. Testing on historic sites did not follow a regular interval testing pattern due to the presence of standing remains, but were placed in relation to architectural features to maximize information return.

Subsurface testing was done with either a shovel or a trowel, with all fill screened through 1/4-inch hardware cloth. All artifacts, ecofacts and other evidence of non-modern human activity found were scientifically collected and documented, and then packed and returned to the Southeast Archeological Center, Tallahassee, Florida for analysis. All fieldwork was documented with maps, notes, photographs, and drawings, and both directors maintained a daily log. In addition an 8mm video camera was carried in the field each day, and some eight hours of film document the work at each site and area.

Consistency in field data recording was enhanced through the use of standardized shovel test, level and related forms printed on archival quality paper. All forms were checked at the end of each work day by Regina Leabo and Ken Wild to insure correctness and completeness. All artifacts were placed in plastic ziplock bags in the field. The following information was recorded on each bag using a permanent marker: project acronym, SEAC accession number, test number, crew member initials, date and field specimen (FS) number. An FS log was maintained during the field project and was updated at the end of each day by Leabo. The FS log contains the following information: provenience information, artifact type, date of recovery, and crew members.

Laboratory Methods

In order to meet Department of Agriculture requirements on the importation of soils, all artifacts recovered during the 1992 survey project were thoroughly cleaned prior to leaving Water Island. The majority of the artifacts were cleaned by lightly hand brushing with water and then air dried. Upon return to the Southeast Archeological Center, any materials or shipment containers

that may have been contaminated by soils were heat sterilized prior to analysis. This process eliminates nematodes and other pest that may cause contamination to domestic plants and soils. To prevent extensive delays in sterilization the Department of Agriculture, under the authority of the Federal Plant Pest Act of May 1957, authorized the National Park Service's Southeast Archeological Center to operate a soils receiving laboratory. After completion of a Compliance Agreement (PPQ Form 519), which initiated the authorization, the facilities were inspected and approved by a Field Plant Protection and Quarantine Officer. The National Park Service's laboratory (which is located in G-19 Bellamy Building on the campus of Florida State University, Tallahassee, Florida), was equipped with a Lab-Line L-C oven and a smaller Thermoline Type 1400 furnace for the soil sterilization.

Artifact analysis was conducted at the Southeast Archeological Center located in Tallahassee, Florida. The ceramic and glass items were subjected to a fairly detailed analysis since chronological dates are more easily obtained with these types of data. The artifacts were labeled in indelible ink with the assigned Virgin Island Site number, the year the project was conducted, and the field specimen number. For tracking purposes the project was assigned SEAC accession number 1058. The data gathered from the analysis were entered into dBase III and Excel programs, and are maintained on MS-DOS and formatted MacIntosh diskettes. Appendix I of this report, by Regina Leabo, provides a summary of the artifact analysis. The information provided includes the site number, provenience, field specimen number, and a brief description of the artifacts. Stratigraphic information for each shovel test excavated during the project is provided in Appendix II, also by Leabo. Carbon-14 dating of three shell samples from a midden found in Banana Bay (12-VAM-3-56) was conducted by Beta Analytic Inc., located in Coral Gables, Florida. One ethnobotanical sample, a post fragment from the Carolina Point great house complex (12-VAM-3-209) was sent to Lee Newsom of the Florida Museum of Natural History, Gainesville, Florida. The results of their work is presented in Chapter VII. Upon completion of the analysis process all of the project collections and records were turned over to the Virgin Islands Territorial Government's Historic Preservation Officer.

Chapter VII
PROJECT RESULTS

Ken S. Wild and David G. Anderson

Introduction

A total of eleven archeological sites were found during the 1992 fieldwork on Water Island. Five of the eleven sites investigated had been located by earlier investigators, and were already listed on the Virgin Islands Site Inventory (12 VAM-3-9, 12-VAM-3-10, 12-VAM-3-21, 12-VAM-3-22, and 12-VAM-3-32). Six new, previously unreported archeological sites were also located during the survey (12-VAM-3-56, 12 VAM-3-208, 12 VAM-3-209, 12 VAM-3-210, 12 VAM-3-211, and 12 VAM-3-212). In addition to the traditional archeological sites, the remains of a major World War II era fortification complex, Fort Segarra, are located at the south end of the island on Flamingo Point. This underground bunker and gun emplacement complex was also briefly examined. The results of the investigations at each site, as well as descriptions of fieldwork carried out in other parts of the island that did not reveal sites, are described in the pages that follow.

Carolina Point Plantation (12-VAM-3-209)

Carolina Point is located at the northwest end of Water Island, on a point of land overlooking both Tamarind Tree Bay and Ruyter's Bay (Figure 2). The flat hill top of the point is approximately 125-135 feet above sea level. Vegetation consists of thorn scrub and dry forest. A large complex of ruins from an eighteenth and nineteenth century era great house, including outbuildings and slave/servants quarters, was found on the point, together with a dense debris scatter on the slopes of the hill (Figure 21). Historic materials found in Ruyter's and Tamarind Tree Bays, to the north and south of the point, respectively, are associated with this plantation complex, and include masonry wells and, in Tamarind Tree, the remains of a slave village and burial area.

The 1992 Investigations

No previous archeological investigations of the historic site complex on top of Carolina Point, of what is known as the de Ruyter/Carolina Lyst Plantation, are known prior to this project. In 1980 George Tyson, in his report on Water Island, identified these ruins from historic maps and documents and reported that an Island Resource foundation survey team had located the remains of the plantation (Tyson 1980). A detailed history of the occupation of the plantation by Tyson is presented in Chapter IV, and year by year ownership records and population/land use figures are provided in Appendix III. The plantation is depicted on a 1719 map (Figure 7), and was apparently established by this time if not well before, when it was owned by Albert de Ruyter. Detailed information about the plantation complex is available from 1769 to 1914, including data on the number of occupants. Besides the great age of this plantation complex, which could date to the end of the seventeenth century, of particular interest is the fact that it was owned by freed blacks or mixed bloods (mulattos) throughout much of its history.

Investigations at Carolina Point were conducted between September 16 through September 21, 1992 by the full seven person survey team. Approximately two weeks prior to this, from September 1-4, John Ehrenhard and David Anderson of the Interagency Archeological Services Division conducted a brief reconnaissance of the cultural resources on Water Island, assisted by Elizabeth Righter, to properly plan and organize the logistics for the project. During this period they located the plantation ruins on the flat hill top of Carolina Point from directions provided by local residents. Due to the dense nature of the vegetation the size and complexity of the complex was not fully appreciated at this time.

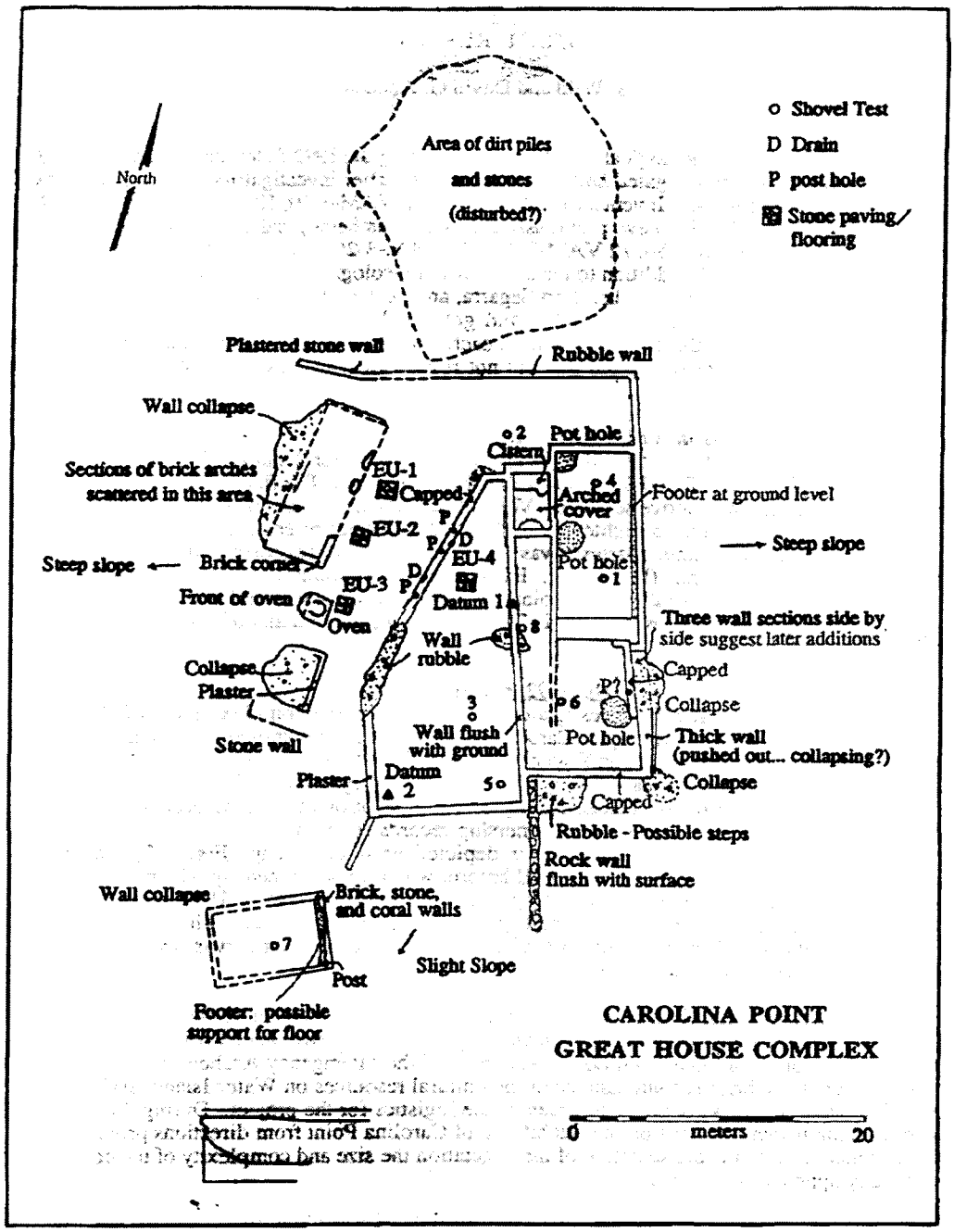


Figure 21. Carolina Point Great House Complex. 1992 Water Island Archeological Survey, U.S. Virgin Islands

Investigations at Carolina Point began on September 16 with a surface reconnaissance to determine the approximate extent of the ruins, followed by the removal of vegetation from around architectural features. Vegetation around the remains was extensive and required four days of field work by the full project team to remove just from in and around the great house (shown in Figure 21). The structures still retain a high degree of integrity, although some deterioration has occurred due to root action, and to some looting activity. Once the undergrowth had been removed, the structural remains were documented. Mapping was completed using a plane table and a Brunton, and a 50 meter tape. All observed structural remains, shovel tests (N=8) and larger 1 x 1 meter excavation units (N=4), potholes, architectural information, and photographic positioning stations were recorded on a base map; major details of this work are presented in Figure 21. The structural ruins consisted of intact masonry foundation walls and wall rubble. A total of five separate structures were located on Carolina Point, and structural remains and debris were found to cover the entire hill top. These consisted of a large main structure located along the east side of the hill, a an oven with two buildings on either side on the western edge of the hill, and a house like structure located off the southwest corner of the main structure.

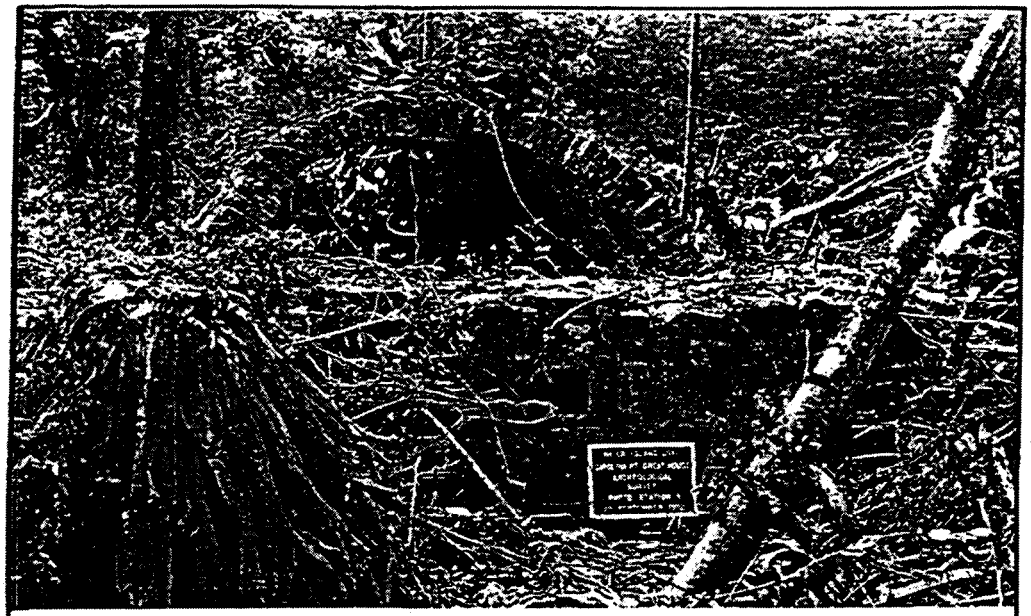
The main structure or great house is oriented slightly off a north/south axis, and is approximately 30 meters long by 20 meters wide at its widest point (Figure 21). The materials used in the masonry construction of the foundation consisted of field stone set in mortar. The walls were plastered on the interior and exterior. A large cistern with an arched cover still partially in place is located at the north end of the complex, and is visually the most dramatic architectural feature on the site (Figure 22). The western half of the great house to the south and west of the cistern appears to be a type of patio addition built later in the occupation of the complex. This conclusion is indicated by the angled west wall, the presence of later period artifacts found in this area, and the discovery of a rough stone paving in Excavation Unit (EU) #4 opened at the north end of this area (Figure 23). The paving found just below the surface in EU4 is not a type used in the interior of a house. Similar rough stone paving was also found just below the surface in EU1, EU2, and EU3, opened between the great house and the outbuildings to the west. The western wall of this possible patio had post hole remains extending into the masonry foundation (mapped in Figure 21), however, indicating that it had some type of superstructure. These post would have had to be placed in the ground and the masonry constructed around the posts. Gutter holes are also spaced along this wall.

In seeking an explanation for this type of post-in-ground masonry construction Elizabeth Righter (1989) suggested that the first settlers had observed the types of houses used by native populations and incorporated some of their construction elements. Planters continued to use this type of construction into the eighteenth and nineteenth century because the:

> combination of wood posts reinforced with low masonry foundation walls provided an expedient solution to a need for inexpensive durable construction which utilized a minimum amount of labor and a maximum amount of local readily available material. The utility of the wood post-in-ground construction is immediately apparent considering the prevalence of hurricanes and earthquakes in the region. The extension of the wood posts into the ground provides resistance along the flexibility. The extra strength of implanted wood posts is especially necessary in hills of limestone and dolomite rock which crack easily along fracture planes. The surrounding low masonry foundation provides a rigid base in which the posts remain fixed; a feature especially relevant to preventing subsidence in sandy soil (Righter 1989:5).

Righter observed that low masonry post-in-ground buildings have survived over 250 years, while the first building constructed of only masonry after 1750 is in bad condition.

The eastern half of the great house building is a rectangle with dividing rooms. The southeastern wall section contains both stone and brick, and appears to have been reconstructed



Northern end of cistern, showing detail of arched roof. Note framed drain/support in wall.



Eastern side of cistern, showing partially collapsed arch.
The remains of a plastered wall are in foreground.

Figure 22. Cistern, Views to South and Southwest, Carolina Point Great House. 1992 Water Island Archeological Survey, U.S. Virgin Islands.



EU1, opened between the main structure and the presumed kitchen complex.



EU4, opened to the south of the cistern. Compare the size of paving stones with those in EU1.

Figure 23. Stone Pavings in EU's 1 and 4, Carolina Point Great House. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

and reinforced several times with footers and wall additions to prevent it from collapsing down the eastern side of the hill (Figure 24). These additions also suggest this half of the building predates the western half of the building (Fred Gjessing: personal communication 1992). No unambiguous post holes were observed in the wall lines making up the eastern half of the great house, indicating somewhat different construction techniques. At a mid section along the easternmost wall, however, a section of the wall, constructed of red brick, was found to extend appreciably above the wall line (Figure 24, top). This raises the possibility that walls may have once been present that were constructed of red brick masonry that has since been scavenged, although minimal brick debris is evident in this part of the site. Alternatively, this elevated construction may be the remains of a chimney.

At the south end of the great house main structure the presumably more recent western half extends further to the south. In the recessed area to the east, rubble remains of possible steps were observed (see Figure 21). The cistern noted previously is located within the main structure at the northern end. It is constructed of yellow brick with an arched cover still partially intact (Figure 22). It is approximately five meters long by 2.5 meters wide and 2.7 meters deep. The eastern wall of the main structure extends for about four meters past the north end of the enclosed portion of the structure and then turns west. This stone rubble wall runs past the outbuildings to the west of the main structure, suggesting the north end of the Carolina Point complex was enclosed within a type of fence. Piles of rock rubble and dirt were observed north of this probable fence/wall line, indicating some kind of disturbance, but no other cultural material was observed in this area.

Surface reconnaissance conducted around the standing ruins on Carolina Point located comparatively few artifacts (many more were located on the side slopes), probably a result of vandalism as several large looters holes were found. Three large potholes were dug within the eastern half of the main structure, and are illustrated in Figure 21. Usually an undisturbed historic site of this nature has great quantities of artifactual material such as glass, ceramics, and nails on the surface. Only five ceramic fragments were found on the surface within the walls of the great house. These included of one creamware fragment (1762-1820), one whiteware sherd (1820-1900), one English porcelain blue-transfer printed fragment (1760-1900), and an unglazed earthenware fragment (Hume 1969; South 1977, 1978; Miller 1992). During the field program two residents of Water Island showed the project directors a collection that they had gathered from the site using a metal detector (Figure 25). They said the large potholes on the site had been there for as long as they could remember (>10 years), and that their own activities were restricted to digging small holes to ascertain the readings from their metal detector. One artifact of particular interest in their collection is a silver medallion engraved with an apparent Maltese-like cross found just outside the southeast end of the great house (Figure 25:m). This artifact probably belonged to one of the owners, and may denote some kind of club/association membership.

Six shovel tests (ST1, ST3, ST4, ST5, ST6,and ST8) and EU4 were opened within the walls of the great house. Shovel tests placed in the eastern half of the building produced historic artifacts that date from the early colonial period into the first half of the nineteenth century (Figure 26). A fragment of Nottingham stoneware was recovered from ST4 which dates from 1683-1810. From ST6 a fragment of white salt-glazed stoneware (1720-1805) was recovered. The materials found in these shovel tests support the inference that the western half of the building was a later addition. Shovel tests #3 and #5 and EU4 all contained artifacts dating primarily to the nineteenth century. Diagnostic materials recovered from the eastern half of the building from shovel tests #1, #4, and #6 included creamware (1762-1820); pearlware of various types dating between 1780-1830; and Albany slip stoneware (1805-1900). Eight pipe fragments were also recovered with bore diameters dating from 1710 to 1800, although this collection is not large enough to allow for accurate dating (Harrington 1978; Binford 1978). Fourteen rose head type nails were recovered from ST6 dating from 1790-1820 (Nelson 1968, Hume 1969). Other materials from these tests include a gun flint, brick fragments, and an iron kettle handle. One fragment of slave related pottery which has been termed African-Caribbean ware was recovered from ST4. Shovel test #8,



East wall of great house, view of interior to southeast.



East wall of great house, view of exterior to south.
Secondary wall lines are present under the brush downslope.

Figure 24. Wall Construction Detail, East Side of Main Complex, Carolina Point Great House. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

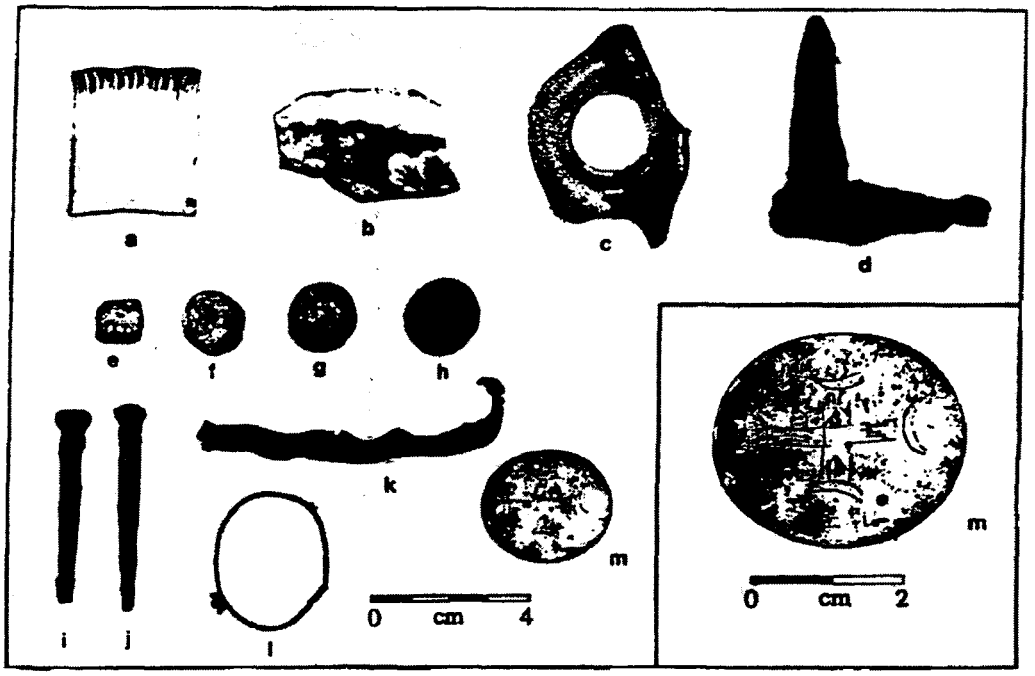


Figure 25. Artifacts Found at Carolina Point Great House by Local Residents. 1992 Water Island Archeological Survey, U.S. Virgin Islands. a Blue shell edge pearlware; b Blue Transfer Printed Pearlware floral pattern; c glass handle; d hatch fragment; e, f lead weights; g lead ball; h copper (?) disk; i-j wrought nails; k-m silver locket pendent pieces; m is enlarged and shows an etched Maltese-like cross pattern.

located at a mid point between the probable old section and addition, produced materials dating from the eighteenth century through the nineteenth century.

Three excavation units, as noted previously, were conducted between the great house and the outbuildings located to the west. These tests uncovered rough stone paving that suggest a court yard or road/walk (Figure 23). All of the datable material recovered from these units was historic pottery (Figure 26). The majority of the diagnostic materials recovered date to the last quarter of the eighteenth century into the second quarter of the nineteenth century. Five whiteware sherds were recovered that suggest occupation through the nineteenth century. Some of the ceramic types recovered included creamware (1762-1820); one sherd of blue transfer-printed pearlware willow pattern (1795-1830) and one sherd with continental pattern (1807-1830); and four sherds of brown transfer-print pearlware (1807-1830) (Miller 1992). Twenty-two sherds of el Morro course earthenware were also recovered, a type dated to the seventeenth century. Recent investigations near the Fort of el Morro in San Juan, Puerto Rico for the Ballaja project, however, have uncovered quantities of this ceramic type in contexts dating from the late eighteenth century through the third quarter of the nineteenth century. One four hole shell button was also found in the fill of EU2 (Figure 26:s).

The two outbuildings located along the western slope to the north and south of the bake oven are constructed of brick with some field stone set in mortar and were plastered on the interior and exterior (Figure 27). The walls are about 43 centimeters thick. The northernmost building

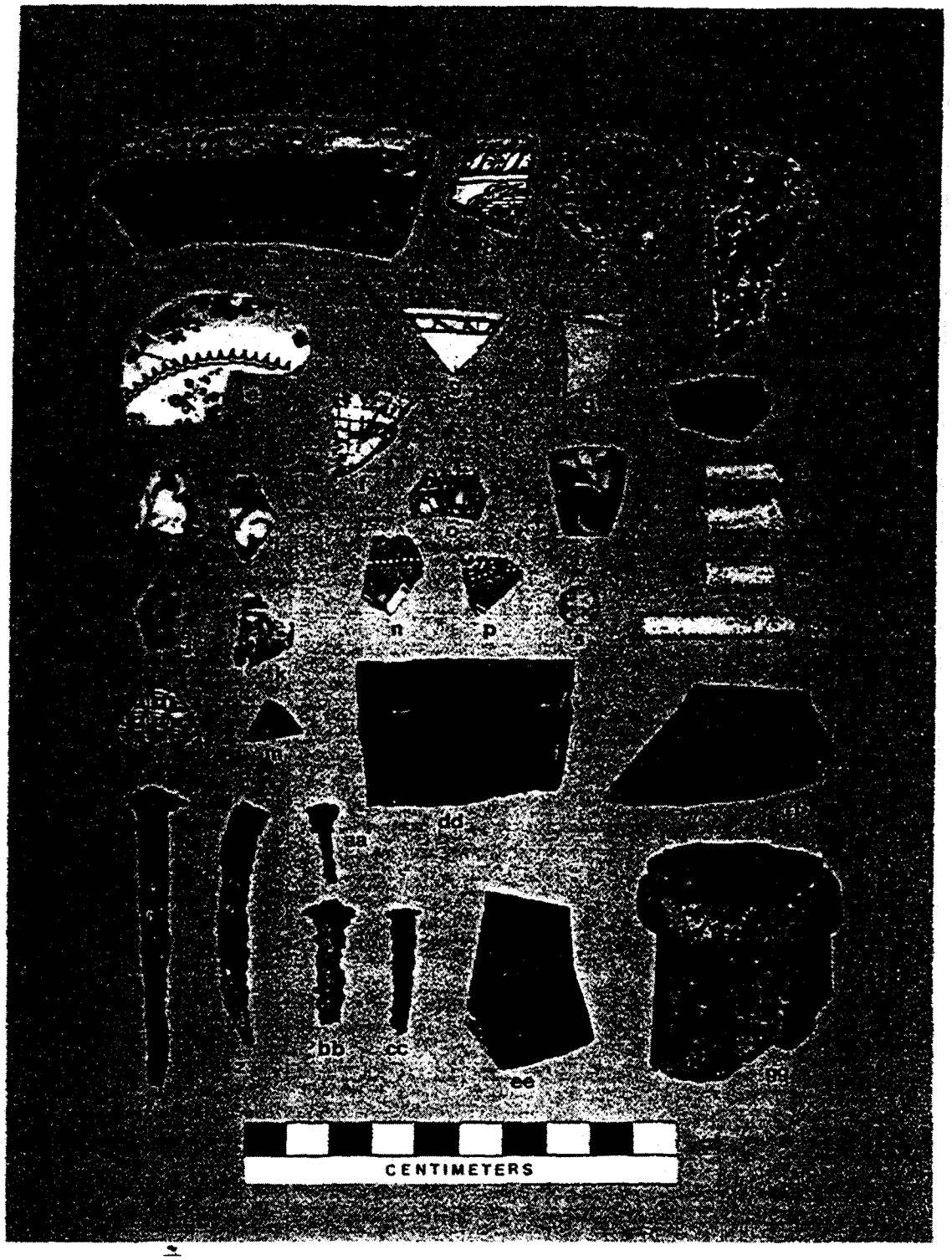


Figure 26. Historic Artifacts Found at Carolina Point in Shovel Tests, Excavation Units and on the Surface, 1992 Water Island Archeological Survey, U.S. Virgin Islands. a lead glazed earthenware; b Black Transfer Printed Whiteware; c-d plaster; e Blue Transfer Printed Pearlware; f Blue Transfer Printed Whiteware; g Blue Hand Painted Banded Rim Pearlware; h-i Blue Transfer Printed Pearlware floral pattern; j-k Blue Transfer Printed Pearlware; l Blue Transfer Printed Whiteware willow pattern; m Blue Transfer Printed Whiteware; o-p Brown Transfer Printed Pearlware; r English Porcelain; s shell button; t English Gun Flint Dover chert; u-x kaolin pipe stems; y-cc rose head nails; dd lead glazed earthenware El Morro; ee Stoneware Ginger Beer Bottle; ff Stoneware Albany Slip interior; gg Light Green Bottle Neck and Lip.

measures approximately 11 meters long by 4.5 meters wide. The walls of this structure have largely collapsed, although the southeast corner still stands 1.5 meters above the ground surface. Masonry debris around the building contained sections of arches constructed of brick and coral. During historic architect Fred Gjessing's visit he stated that this structure could have been either the stable or servant quarters (Fred Gjessing: personal communication 1992).

Gjessing suggested that the building located to the south of the oven was the kitchen. The dimensions of this structure could not be determined due to the collapse of the west and south walls. Gjessing also believed that the pinkish type of brick in the masonry of the north half of this structure may have been brought from Europe in the early stages of colonization. The north half of the structure still stands 1.7 meters above the exterior ground surface (Figure 27). Along the top of this section of the wall a mortar bed with brick impressions was present, indicating the wall may have been higher. The south half of this possible kitchen building, which was much lower, appears to be a later addition as a corner line of the original building was evident and a red brick was more prevalent in the construction. Neither of these structures had post molds impressions left within the masonry walls, suggesting these buildings did not have a superstructure made of wood.

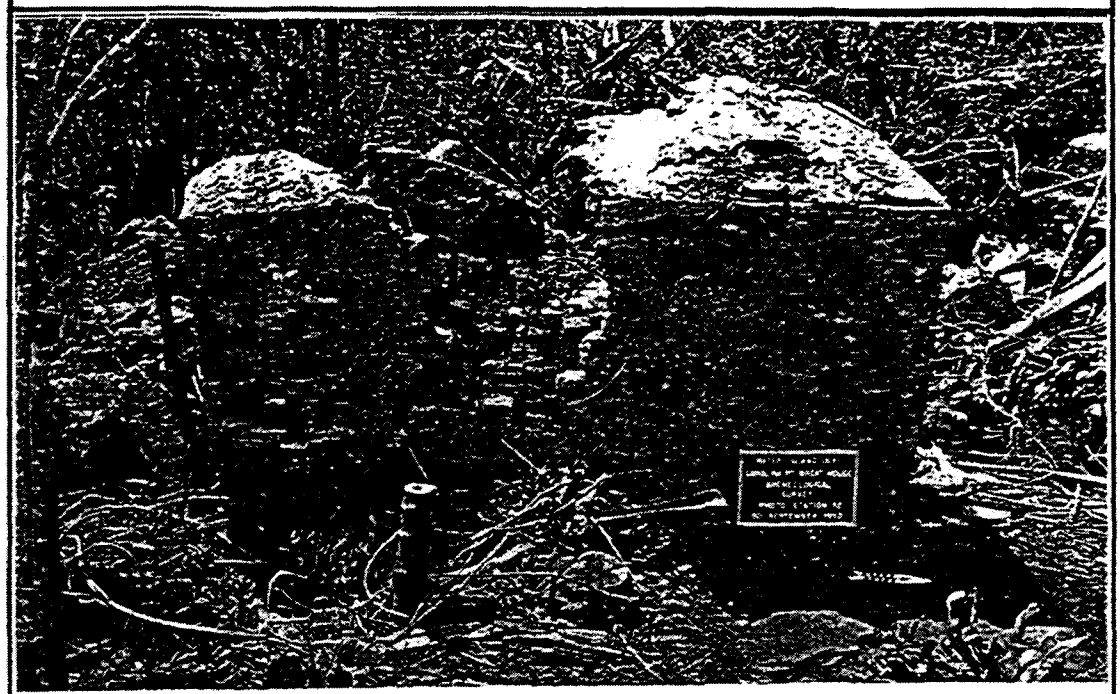
The bake oven located between these structures was constructed of field stone and yellow brick. The width of the oven measures two meters, the length could not be determined due to the collapse of the west wall. The oven still retains portions of the interior arch which is made of yellow brick (Figure 28).

Surface reconnaissance conducted directly down slope from the outbuildings on the western side of the great house complex located a number of diagnostic ceramic fragments (Figures 29, 30). Most of these artifacts date from the fourth quarter of the eighteenth century into the second quarter of the nineteenth century. A few whiteware sherds suggest continued occupation of the plantation through the nineteenth century. This temporal range is almost identical to materials found in EUs 1, 2, and 3. Materials recovered included a fragment of Canton porcelain (1810-1835), seven fragments of creamware (1762-1820), one fragment of diptware creamware (1790-1820), nine fragments of plain pearlware (1779-1820), three blue transfer-printed pearlware sherds with the rose pattern (1787-1830), six fragments of blue transfer-printed pearlwares with the willow pattern (1795-1830), one hand painted fragment of pearlware (1775-1820), 18 fragments of pearlware with unknown pattern design (1795-1840), two fragments of brown transfer-printed pearlware (1795-1840), four plain whiteware sherds (1820-1900+), four blue transfer-printed whiteware (1830-1865) two blue and one green shell-edge whiteware sherds with even scalloped and impressed design (1802-1832) and one black transfer-printed whiteware (1825-1875) (Miller 1992) Hume 1969; South 1977). Also found were fragments of El Morro coarse lead glazed earthenware, green glazed bacin earthenware, stoneware, redware, and terra cotta earthenware (Figure 30).

A small building 6.0 meters wide by 8.5 meters long was located off the southwest end of the great house that may have been a storeroom or an overseer or servant's quarters (Figure 31). The stone rubble remains of a wall or fence runs off the southwest corner of the great house towards the northeast corner of this outbuilding. This wall ends short of the outbuilding, however, suggesting there was a gate in this area. The walls of the outbuilding are approximately 43 to 44 centimeters thick and constructed of field stone and yellow brick. In the southeast corner, the wall appears to be intact to the top of its original construction (Figure 32). In this section, the wall extends 1.05 meters above the outside ground surface. Along the interior base of the east wall runs a footer or possibly a bench used for some special purpose, possibly a flooring support. All the standing walls had post molds left from the deteriorated support posts that were set in the walls (Figure 32).



Western side of bake oven, showing interior arch amid collapsed debris.



Eâstern side of bake oven, with stone paving in EU3 to north.

Figure 28. Bake Oven, Views to West and Southeast, Carolina Point Great House. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

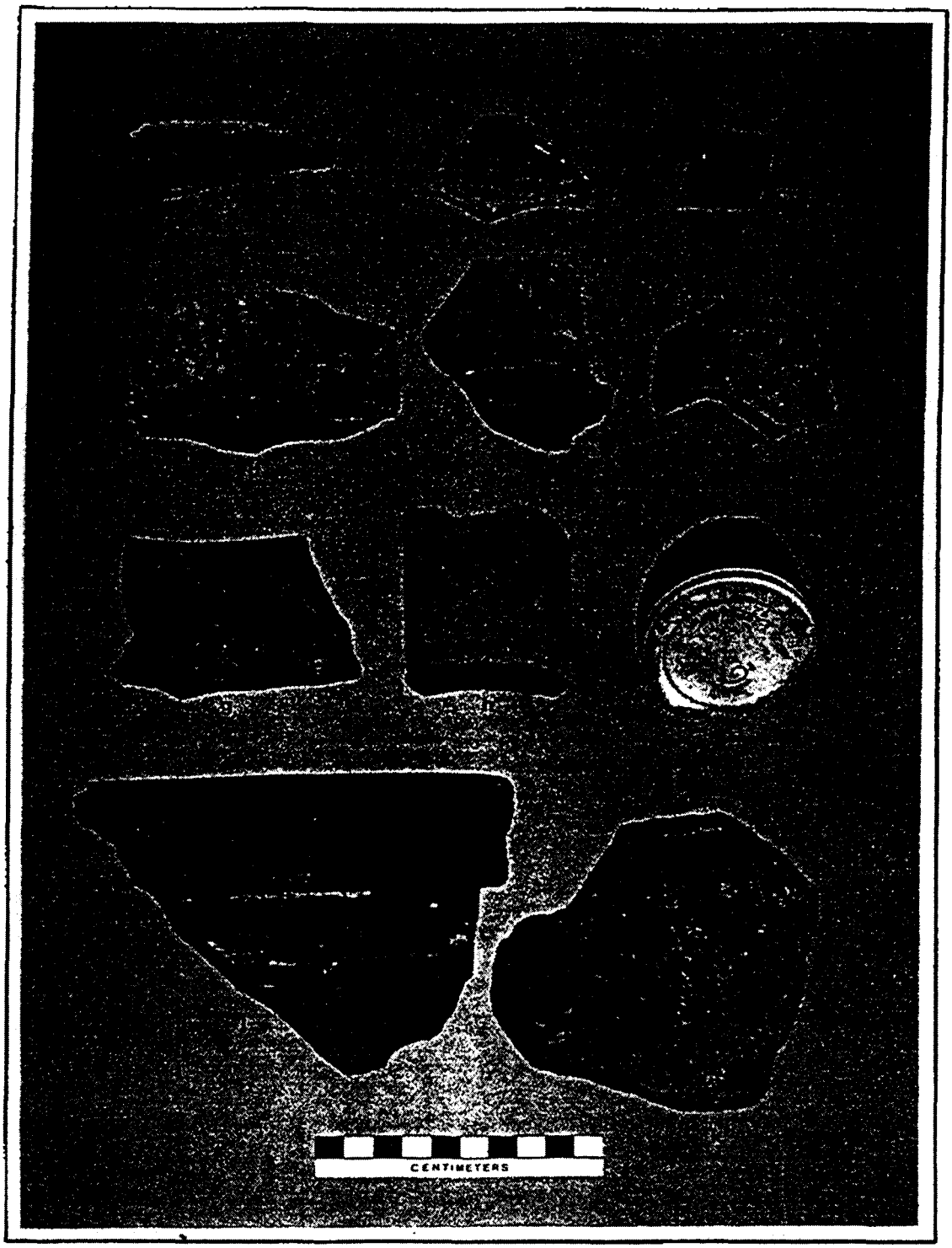


Figure 30. Historic Ceramics Found at Carolina Point Down Hill from the Plantation Outbuildings, 1992 Water Island Archeological Survey, U.S. Virgin Islands. a-b coarse lead glazed earthenware; c lead glazed earthenware El Morro; d-e Green Glazed Bacia Earthenware; f Stoneware; g Redware; h Stoneware Ginger Beer Bottle/Ink Well container; i medicine jar; j terra cotta earthenware; k Olive Jar.



Southwest corner of the Great House complex.
Note plaster and stone masonry construction detail.



View of outbuilding from the southwest corner of the Great House complex.
(l-r) Fred Gjessing, Elizabeth Righter, and Ken Wild.

Figure 31. Southwest Corner of Great House Main Complex, and Outbuilding to South, Carolina Point Great House. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

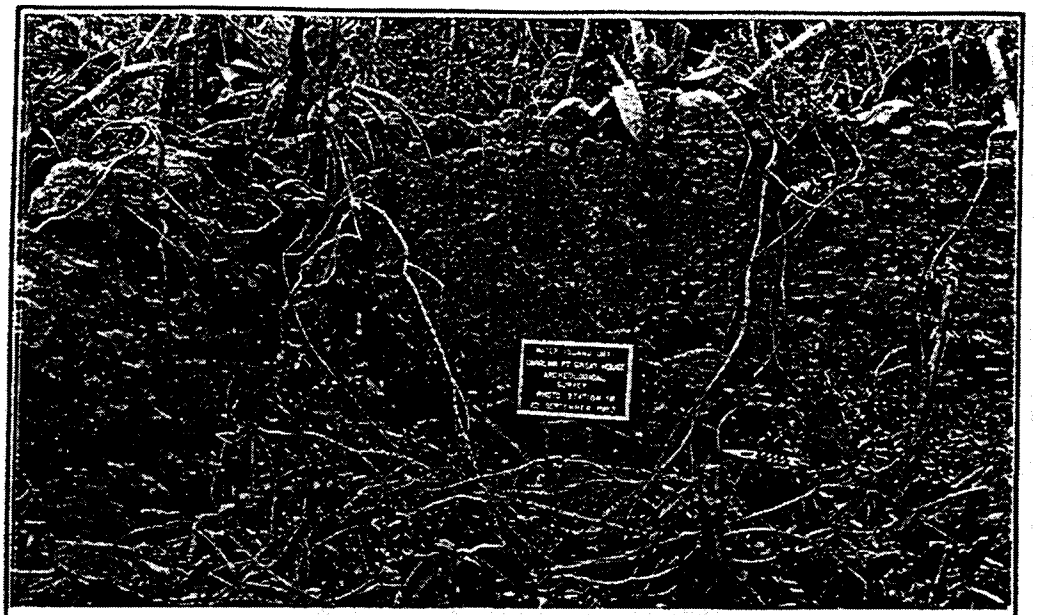
In the southeast corner of the outbuilding a portion of the wooden post that was set into the masonry was still in place. A sample of the wood was recovered and sent to ethnobotanist Lee Newsom at the Florida Museum of Natural History for analysis. She determined that the wood used to support the superstructure of the building was *Pictetia aculeata* of the Legume family *Fadaceala* , commonly called Fustic. The material resembles *lignum vitae* (ironwood) and has a specific gravity of 0.8, which is fairly dense. This wood is used for fence posts in Puerto Rico in areas where most larger trees have been cut down. Historically, it has also been harvested for use as a dye; the oily substance in the wood that is used as dye is also a preservative. Inside of the structure, on the surface, was found a bottle neck fragment that was probably manufactured between 1750-1780 (Figure 26:gg) (Jones and Smith 1985; Jones 1986). Shovel test #7 was conducted within the interior of this building. This test produced only a pipe stem fragment with a bore diameter of 5/64.

On P. L. Oxholm's map of Water Island, dated 1779, a slave village with nine structures is depicted on the hillside to the south of the great house overlooking Tamarind Tree Bay (Figure 9). Surface reconnaissance was conducted in this area, which was in very dense underbrush, in an attempt to locate the slave village. A scatter of artifacts was found along the slope, although no indication of structural remains were observed. Materials collected in this area included two bottle neck fragments similar to styles found in contexts dating between 1766-1788 (Figure 33:e, f) (Jones and Smith 1985; Jones 1986). Another bottle neck fragment was discovered that has been found in contexts dating to as early as 1737 (Figure 33:d), (Jones 1986). An almost complete wine bottle of dating from ca. 1850 to 1870 was also collected (Figure 33:g) (Switzer 1974). Investigations conducted during the 1992 survey program as well as the previous excavations conducted at Tamarind Tree Bay in the 1930s suggest that the village may have been located near this bay.

Surface reconnaissance was also conducted along the base of Carolina Point, and on all of the surrounding slopes . At some distance from the possible slave village area, approximately 50 meters southeast of the southeast corner of the great house along the hillside, a complete case bottle was found (Figure 34). This type bottle usually contained gin, and the shape dates to the second quarter of the nineteenth century. Its preservation is due largely to the fact that it was found in very dense undergrowth. Examination of the dirt road which runs along the base of the west side of Carolina Point towards a house recently built on land overlooking both Tamarind Tree Bay to the north and Elephant Bay to the south (lease lot #100 on island property maps) located what appeared to be plaster flooring along the west side of the road; this plaster was observed approximately 50 meters north of the modern house. It is possible that the plaster is historic, however, it is also likely that this is construction debris from the construction of the new house on lot #100. A number of historic sherds were observed in the road from were the plaster was found north towards Carolina Point. These pottery fragments included nine plain pearlware sherds, two transfer-printed pearlware sherds, and one white salt-glazed sherd. Construction of the road has probably displaced these artifacts southward from the Carolina Lyst Plantation area, most likely from the associated slave village that appears to be located, on Oxholm's 1779 map, in the area of this road where it runs immediately below Carolina Point.

Conclusions and Recommendations

A large, early historic plantation complex with the standing remains of five historic structures was found on Carolina Point and is considered eligible for inclusion on the National Register of Historic Places. Historic research indicates this plantation, together with an associated slave village and two historic wells, was run by both white and freed black owners over a period of at least 150 years, from the early eighteenth through the mid-nineteenth century. These buildings have been tentatively identified as: (1) the great house; (2) servant quarters or a warehouse; (3) either a stable or servant quarters; (4) the kitchen; and (5) a bake oven. Historic occupation on Carolina Point can be traced back to van Keulen's 1719 map of St. Thomas; detailed year-by-year historical records of ownership and occupation date from 1769.



East interior wall and northeast corner of outbuilding,
showing rubble construction behind plaster.



South interior wall of outbuilding, showing post support.
An intact wooden post was found in the wall in the southeast corner.

Figure 32. Construction Detail, Outbuilding to South and Downslope of Main Complex, Carolina Point Great House. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

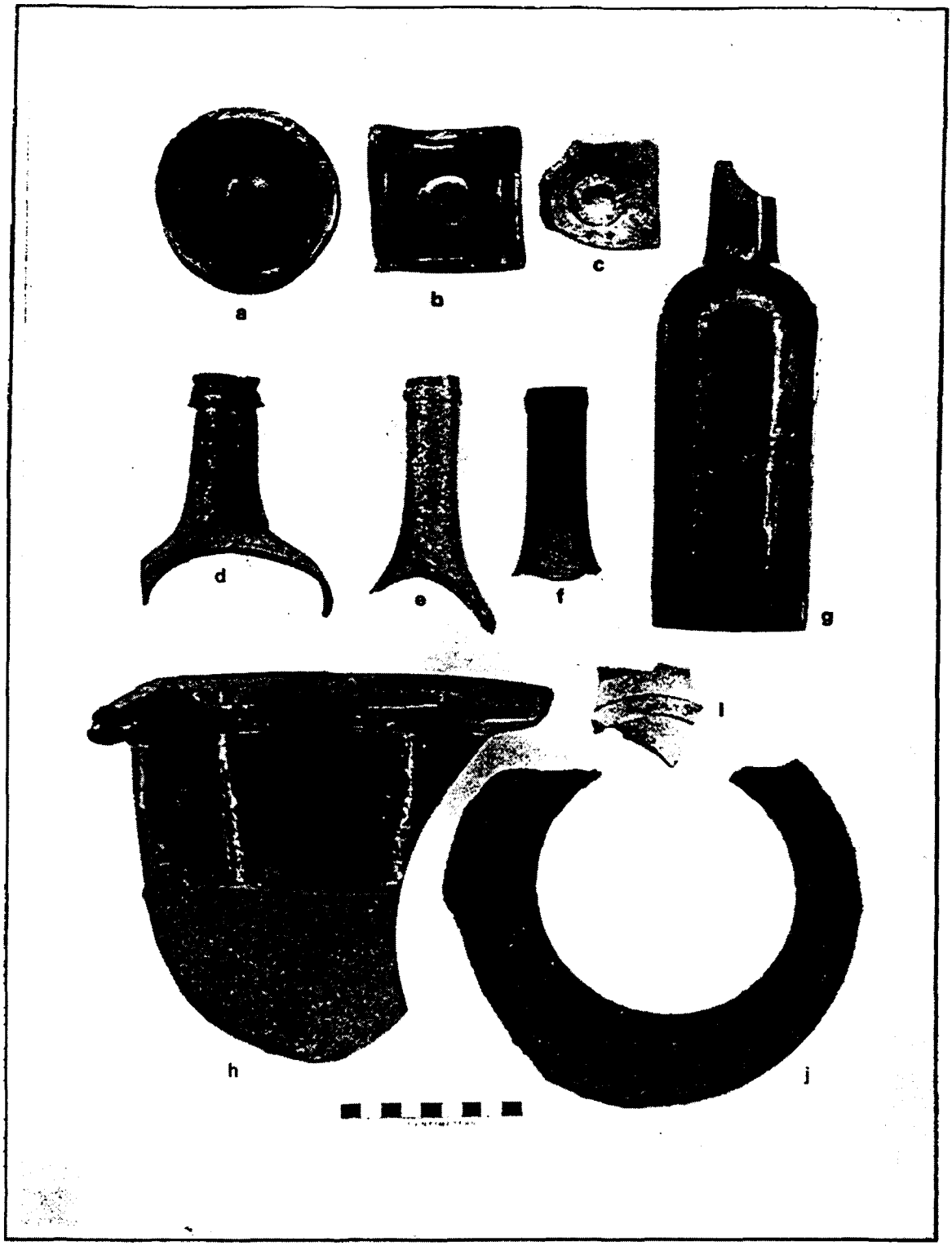


Figure 33. Historic Artifacts Found Along the South Slope of Carolina Point, 1992 Water Island Archeological Survey, U.S. Virgin Islands. a Dark Green Wine Bottle Base; b-c Green Case Gin Bottle Bases; d-f Wine Bottle Neck and Lip fragments; g Dark Green Wine Bottle 3 part mold; i Blue Transfer Printed Pearlware; h lead glazed exterior tin enamel interior earthenware pot; j iron pot rim.

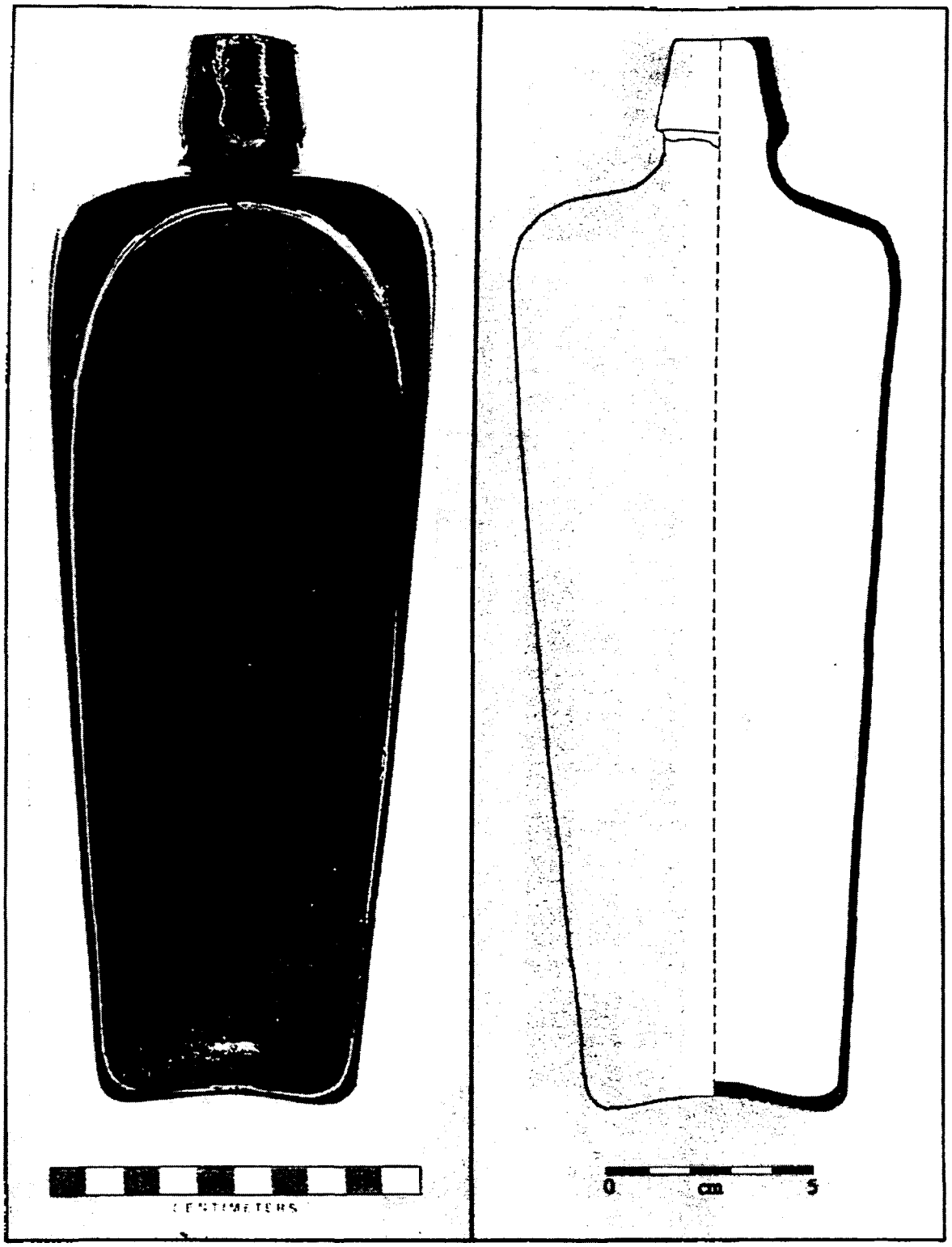


Figure 34. Gin Case Bottle Found 50 Meters from Southeast Corner of Carolina Point Great House, 1992 Water Island Archeological Survey, U.S. Virgin Islands.

The plantation remains on Carolina Point, together with associated remains on adjacent portions of Ruyter's Bay and Tamarind Tree Bay (see below) should be protected and preserved. It must be emphasized that the remains of this plantation complex, although spread over three areas (Carolina Point, Ruyter's Bay, and Tamarind Tree Bay), actually comprise one large site complex; the 1992 fieldwork in each area is presented separately because they were previously reported as separate sites. The Carolina Point Plantation Complex is significant for several reasons: (1) the plantation was occupied by individuals of both European and African descent who have played a significant role in the history of the Virgin Islands; (2) investigations at Carolina Point found evidence in the structures and archeological remains to indicate that this site could provide detailed information on the evolution of a plantation from the very beginning of colonization through the colonial period; (3) the structural remains have a high degree of integrity and are the only remains of this type on Water Island. The site could also be preserved as a research park with an ongoing program of archeological investigations.

If preservation of the Carolina Point Plantation complex is not possible, a comprehensive archeological data recovery and analysis should be undertaken, including (1) the complete excavation of the great house area and the associated outbuildings, (2) sampling through block excavation of at least two of the associated slave village structures on Carolina Point and at Tamarind Tree Bay (see below); and (3) the complete excavation of the early historic wells located at Ruyter's Bay and Tamarind Tree Bay (see below).

Ruyter's Bay (12-VAM-3-21)

Ruyter's Bay is located at the north end of Water Island, below and to the north of Carolina Point (Figures 2, 35, 36). The cove is approximately 128 meters long and extends 130 meters back from the water line. An historic masonry well apparently associated with the plantation complex on Carolina Point was found in the cove in 1992. A modern dock and boat house complex is located on the beach, and the cove behind the beach has been leveled in the recent past. The vegetation away from the cleared and built up beach area is secondary growth consisting primarily of the exotic wild tamarind.

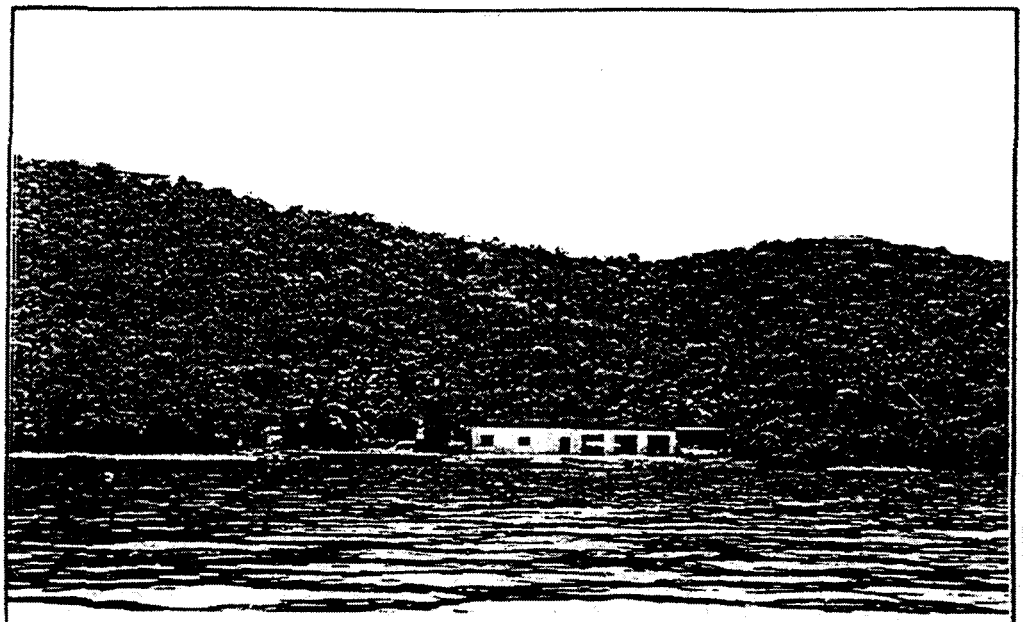
Previous Investigations

The first recorded archeological visit to Ruyter's Bay was by Ripley P. and Adelaide K. Bullen in 1960 during a reconnaissance survey of Water Island. A prehistoric sherd, which they identified as Botany Plain, and a hammerstone were found in the cove area, although the level of field effort is unknown. No evidence for a midden deposit was found, although Ripley Bullen noted that such evidence may have disappeared because the "bay was used as a plantation during Danish time..." (Bullen and Sleight 1962:34). From these findings the area was assigned state site number 12 VAM-3-21.

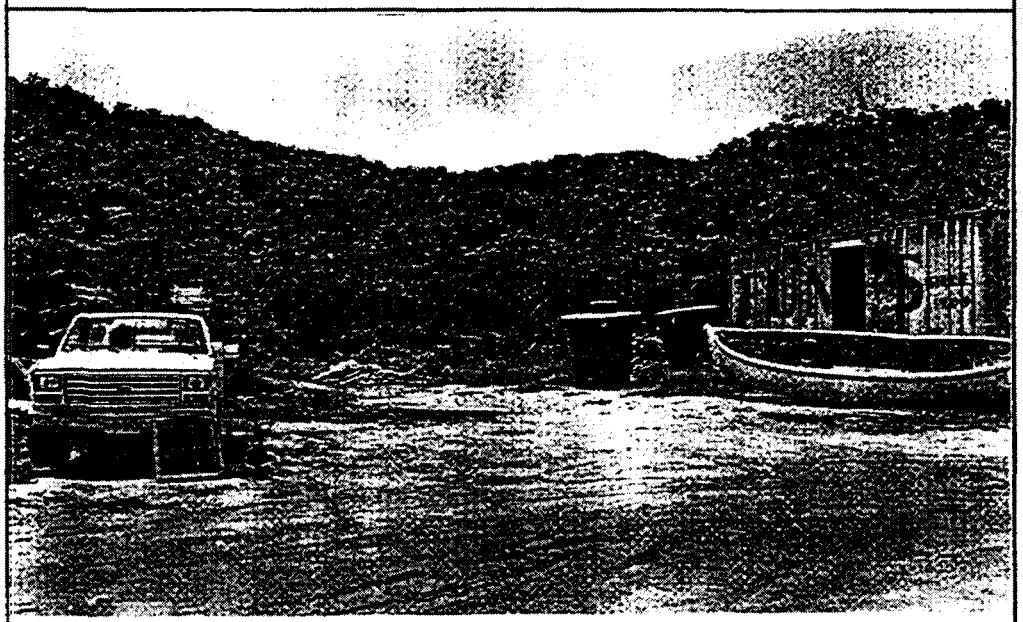
In 1981 Barbara Johnston conducted a brief surface reconnaissance of the beach and cove area. She describe the vegetation at this time as predominantly coastal thorn and cactus scrub and the bay entrance as rocky. The cove area was described as heavily disturbed. The boat house, dock, and parking lots observed in 1992 were in place and a garbage dump was observed just to the west of the boat house. The investigation found no evidence of prehistoric occupation. Since no subsurface testing was conducted they recommended further investigation in order to confirm the existence of a prehistoric site in the area (Johnston 1981, 1983).

The 1992 Investigations

Field investigations at Ruyter's Bay were conducted September 22 and 23, 1992. The investigations consisted of a surface reconnaissance followed by subsurface testing. Approximately two weeks prior to this, from September 1-4, John Ehrenhard and David Anderson of the Interagency Archeological Services Division conducted a brief reconnaissance of the cultural resources on Water Island, assisted by Elizabeth Righter, to properly plan and organize the logistics for the project. During this period they located an historic well south of the boat house



The boathouse and dock at Ruyter's Bay. View to southeast.



Cleared area behind the boathouse at Ruyter's Bay. View to southeast.
The historic well is located about 15 m into the underbrush in the center of the frame.

Figure 35. Views of Ruyter's Bay from Offshore, and from Behind the Modern Boathouse. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

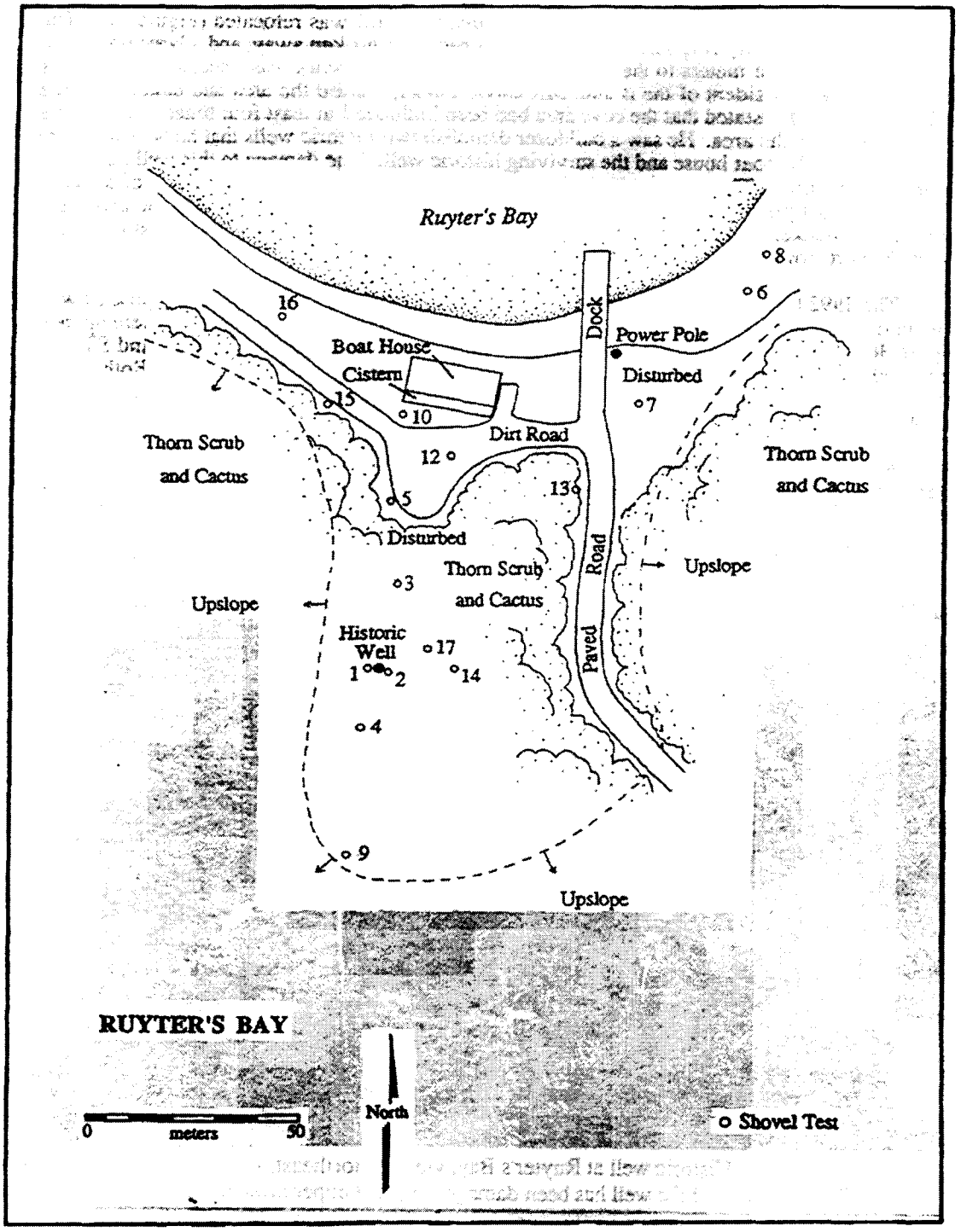
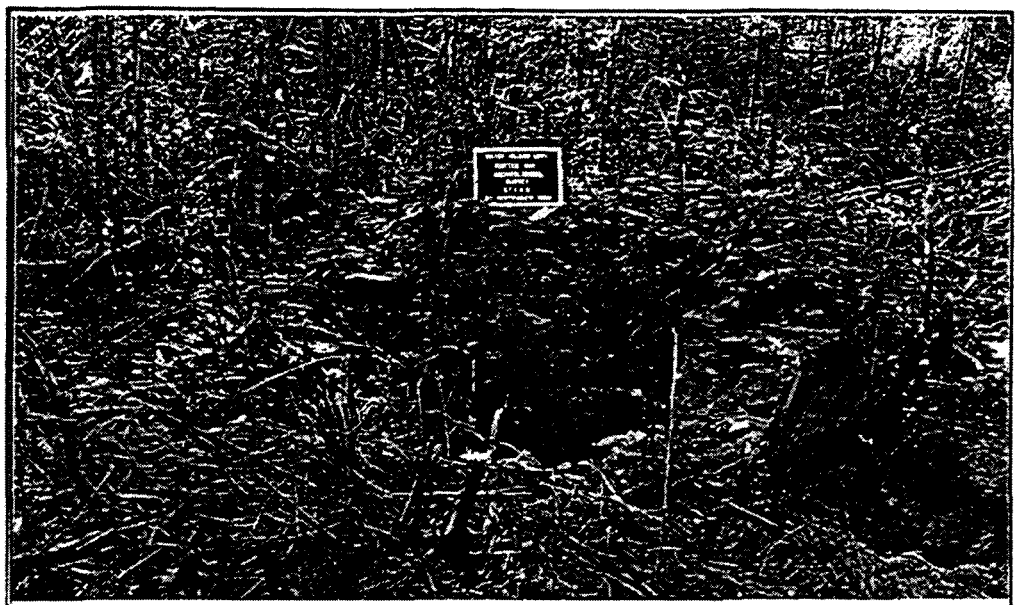


Figure 36. Ruyter's Bay Shovel Testing Program.
1992 Water Island Archeological Survey, U. S. Virgin Islands.

During the surface reconnaissance over the cove area this well was relocated (Figure 37). The north side of the masonry ring surrounding this well had been broken away, and a large portion of it was found some ten meters to the west. While the 1992 fieldwork was underway in Ruyter's Bay a twenty year resident of the island, Mr. David Parsal, visited the area and talked with the project directors. He stated that the cove area had been bulldozed at least four times and that cars had been buried in the area. He saw a bulldozer demolish two historic wells that he believed were located between the boat house and the surviving historic well. The damage to this well may have occurred at this time. The cove area may have also been effected by the construction of the U.S. Army's two underground bunkers or igloos located in the eastern side of Carolina Point, above the cove. These bunkers were associated with Fort Segarra and the U.S. Army's occupation of the island; the northernmost bunker now serves as a storm shelter and racquetball court.

The 1992 testing demonstrated the cove to both the east and west of the boat house as well as up to fifty meters south of it had been disturbed. A total of seventeen shovel tests were opened (Figure 36). Shovel test #s 3, 5, 10, 12, 13, 15, and 16 contained modern debris, and ST #16 confirmed the presence of a large garbage dump on the west side of the boat house. Both ST #3 and ST #16 contained large amounts of paper, modern glass, rubber and plastic to the depth of at least 40 centimeters below the surface (cmbs).

An interesting clay level was located between 50 and 60 cmbs in the disturbed area behind the modern boathouse in ST #'s 5, 10, 12, and 13. Below the disturbed levels in ST #5 and #10 a gray (10YR 6\1) mixed sand and clay stratum appears at 35 cmbs which at about 56 to 58 cmbs becomes clay. In ST #12 and #13 this mixed sand clay stratum was not present. In ST #5 and #13 the clay is dark brown (10YR 4\3) mixed with rock; in shovel test #10 and #12 the clay is dark



Historic well at Ruyter's Bay, view to northeast.
The west side of the well has been damaged and the upper masonry removed.

Figure 37. The Historic Well at Ruyter's Bay. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

olive green (5Y 3\2). This clay continued to the depth the shovel tests were excavated, which ranged from 60 to 73 cmbs, at which point water was encountered.

Questionable evidence for prehistoric occupation of the cove was recovered from the surface of a bulldozer's spoil pile and in ST #7, both of which were located on the east side of the paved road leading to the modern dock (Figure 36). In the spoil pile two possible *Strombus gigas* shell tools known as picks were recovered along with a piece of historic glass and a fragment of brown transfer printed whiteware (Figure 38). In ST #7 a rim sherd was recovered that has the characteristics of prehistoric pottery, although historic brick fragments were also recovered from the test. The sherd is even fired and appears to be slipped with few inclusions on the surface, unlike other fragments of low fired earthenware pottery recovered in historic context. The test also produced two *strombus* shell fragments and a *Cittarium pica* shell, which are food sources used by both historic and prehistoric populations. An historic stoneware sherd with interior Albany slip (ca. 1805-1900) and a cut nail were found in the same general location. Shovel test #s 6 and 8 were located along the beach to the east of the paved road in patches of lillys thought to represent historic graves, approximately 10 to 15 meters from the edge of the bay. No evidence for burials was found, although historic bottle glass was found in both tests, and ST #6 also contained a portion of a wrought iron spike.

The historic well at Ruyter's Bay is made of stone and mortar, and is plastered on the outside and the top 50 centimeters on the inside (Figure 37). The well stands 54 centimeters above the ground; the interior of the well has been filled to 2.5 meters from the top of the well wall. The interior diameter of the well is 113 centimeters and the wall is 44 centimeters thick. The first two shovel tests opened in the cove area were placed on the east and west sides of the well in an attempt to date the structure. Shovel test #1, located along the west side of the well, was excavated to 57 cmbs. The test produced six body fragments of historic dark green bottle glass. Unfortunately, body fragments like this provide very little information on temporal range as glass of this type was used throughout the historic period. Diagnostic artifacts recovered from ST #2 included a lip and neck fragment of a aqua green bottle that dates to 1821 to 1852 (Jones 1986) and a fragment of blue transfer-printed pearlware which has a temporal range of 1787 to 1830 (South 1977, 1978). Also recovered from ST #2 were five fragments of African-Caribbean ware, 14 body fragments of bottle glass, seven unidentifiable metal fragments and one deteriorated nail fragment. Shovel test #s 4, 17 and 14, which were opened within approximately 20 meters of the well, also produced historic materials but the artifacts recovered have a wide temporal range. From ST #14 an English flint gun spall (Figure 38:j) and a fragment of dark green bottle glass were recovered. Evidence for a structure of some kind located to the south of the well was found in ST #4, where 11 deteriorated nail and spike fragments and a brass tack were found (Figure 38:m, n). The test also produced a rim fragment of a very large terra cotta bowl (Figure 38:p). No cultural material was recovered from shovel test #9.

Conclusions and Recommendations

An early historic masonry well was found at Ruyter's Bay below the Carolina Point Plantation complex that is considered eligible for inclusion on the National Register of Historic Places. Although a prehistoric component had been previously reported in this bay, the 1992 survey found that historic disturbance had destroyed this component. This bay was probably the location of the fresh water source that gave the island its name and brought Europeans to Water Island even prior to the settlement of St. Thomas. A clay layer found in 1992 below modern disturbance may be the remains of a fresh water pond depicted on the historic maps and mentioned in historic documents. The historic well, probably constructed in the late eighteenth century as a means of tapping this fresh water, was found about 75 meters back from the water's edge. The well is apparently associated with the Carolina Point Plantation and may have also been associated with a powder magazine depicted on an 1873 U.S. Navy harbor map of St. Thomas (Figure 14). The fact that this magazine is not shown on the nearly identical British Admiralty map of 1851 (c.f., Figures 12, 14) suggests it was built some time after 1851 and before 1873. This powder

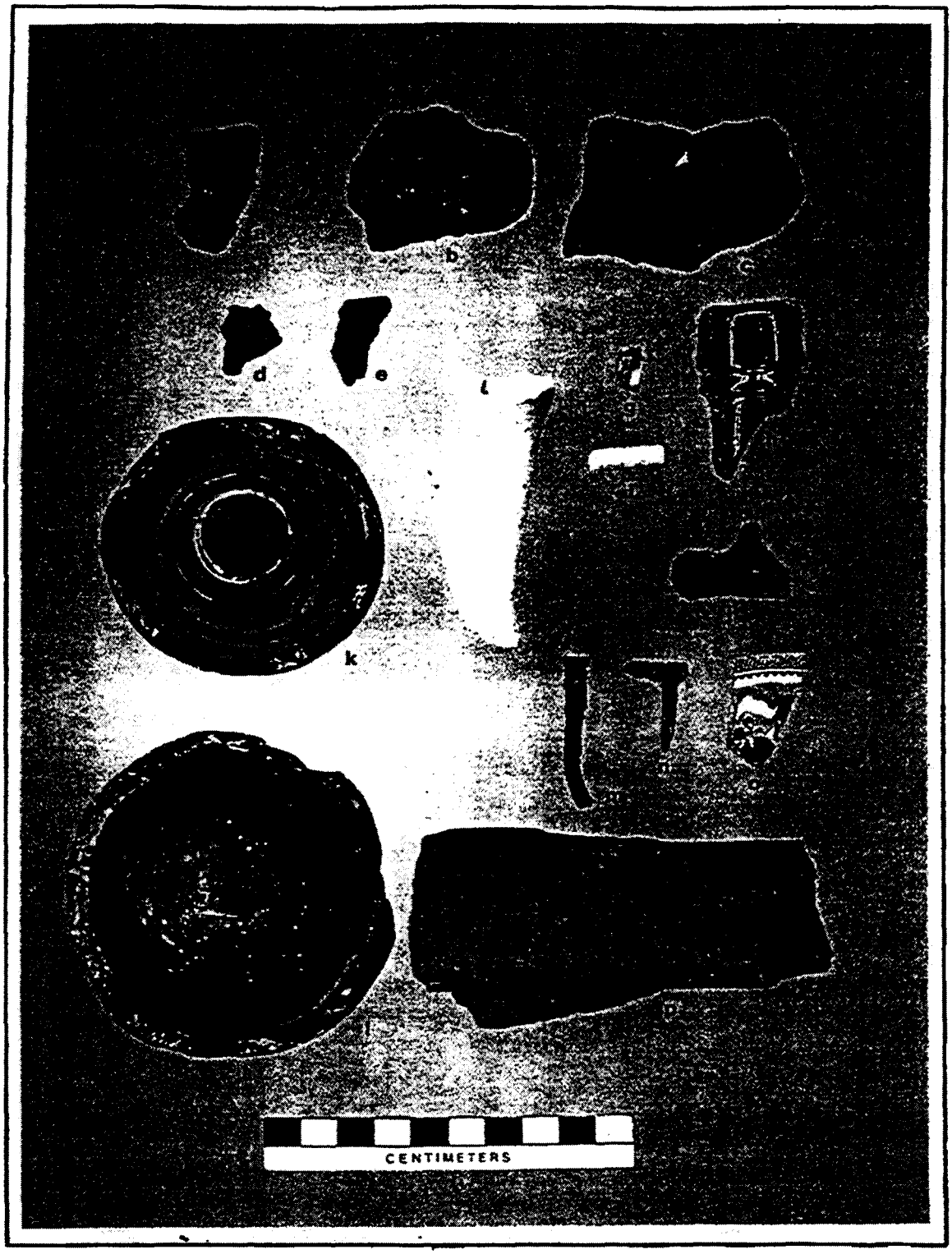


Figure 38. Historic Artifacts Found at Ruyter Bay in Shovel Tests, 1992 Water Island Archeological Survey, U.S. Virgin Islands. a-d African-Caribbean ware; e aboriginal sherd; f shell pick; g Blue Transfer Printed Pearlware; h Aqua Green Bottle Neck and Lip fragment; i kaolin pipe stem; j Gun Spall dover chert; k Light Green Wine Bottle Base; l Dark Green Wine Bottle Base; m cut nail; n tack; o Brown Transfer Printed Whiteware; p terra cotta pot rim.

magazine occupied approximately the same location as a present day boat house, and traces of it may have been removed during construction. No evidence for this powder magazine was found. The majority of the diagnostic materials recovered from the 1992 testing in Ruyter Bay date from the later quarter of the eighteenth century through the nineteenth century. The amount of disturbance in the area appears to have eliminated evidence of earlier colonial occupation of the cove.

The historic masonry well in Ruyter's Bay should be protected and preserved. If preservation is not possible, a comprehensive archeological data recovery should be undertaken, including the complete excavation of the historic well to determine the well's age, contents, and construction history. Additionally, systematic shovel testing at three-meter intervals over an area 20 meters in radius around it should be conducted, to identify other possible historic remains associated with it. A study on the clay deposits located in the well area should also be undertaken to define the nature of the water source, which probably gave the island its name. Because of its close association with Carolina Point Plantation, the well in Ruyter's Bay, although listed as a separate site, should be considered part of the Carolina Point Plantation complex when preparing National Register of Historic Places nominations. The remainder of the Ruyter's Bay area has been heavily disturbed in the recent past and requires no further investigation.

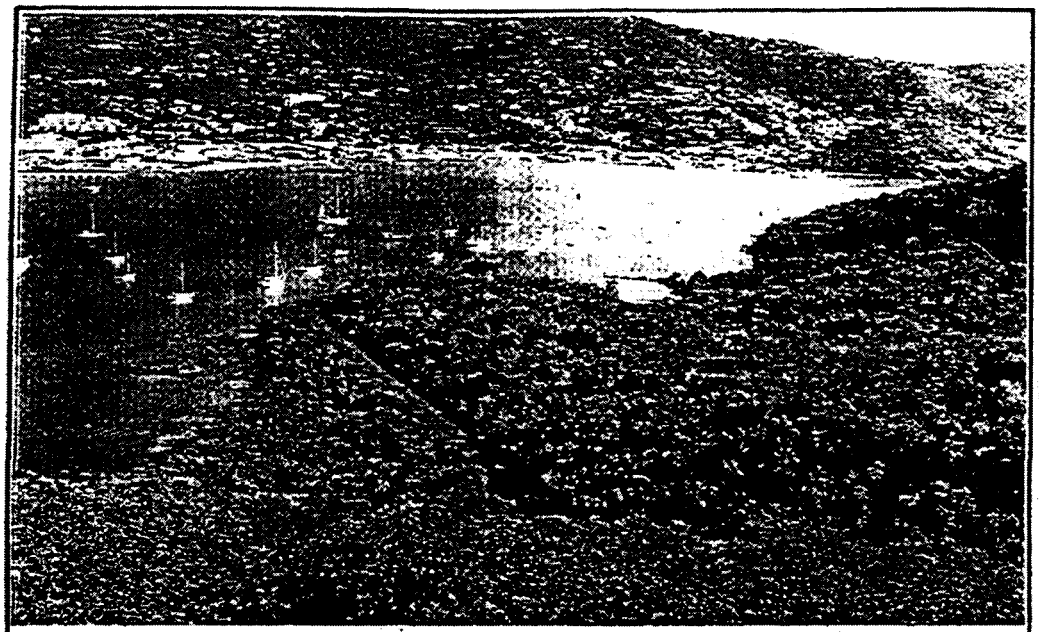
Tamarind Tree Bay (12-VAM-3-9)

Tamarind Tree Bay is located along the northwest coast of Water Island just to the south and below Carolina Point and to the north of Elephant Bay (Figures 2, 39, 40). The cove is approximately 125 meters long and extends 60 meters back from the water line. The bay is characterized by a shallow beach some five meters wide behind which lie a tree line and storm surge dunes. The vegetation in most areas is dense secondary growth consisting primarily of thorn scrub and some dry forest. Two open, unvegetated areas are located in the south-central part of the bay that appear to be dried salt ponds possibly poisoned by toxic chemical dumping of some kind.

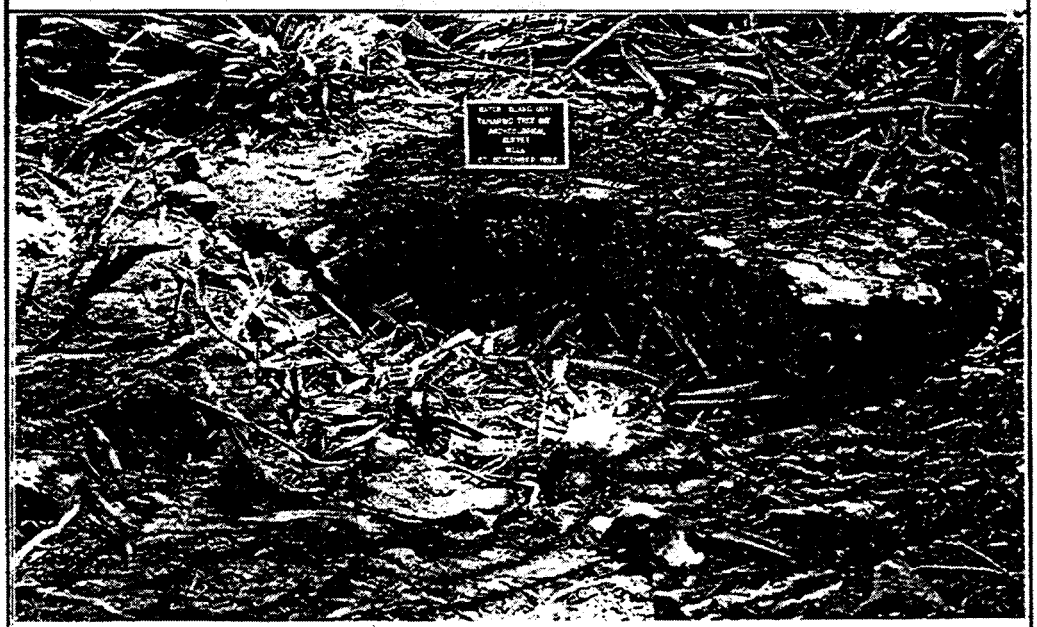
Previous Investigations

In 1934-35 Alvarez H. Julian excavated a number of human burials at Tamarind Tree Bay, in the first reported archeological investigations undertaken on Water island. The number of grave sites actually excavated in this area during this first season is unknown, as the published reports only indicate that a total of 21 burials were found at both Tamarind Tree Bay and Landing Bay (Buxton et al. 1938:3). The skeletal remains were reinterred but associated pottery, shell, and stone tools were recovered. J. C. Trevor returned to these two bays in February of 1936 and re-excavated the skeletal remains in order to study them in greater detail, although he was able to find the remains of only eight individuals, three of which came from Tamarind Tree Bay (Buxton et al. 1938:3). In the process, Trevor reported that he excavated and sifted several tons of sand. Some of the ceramics recovered by Trevor, and Julian were sent to Gudmund Hatt for analysis; his conclusions on the ceramics followed Buxton, Trevor and Julien's article in the Journal *Man* (Hatt 1938). Hatt determined that the ceramics recovered were pre-Columbian and, as a result, Buxton, Trevor, and Julian concluded that the deposits as a whole, including the skeletal remains, were pre-Columbian. Their conclusion on the skeletal remains was rebutted by Stewart in 1939, who demonstrated that they were Negroid or African in appearance, and hence likely came from graves of historic inhabitants of the island that had been dug into a prehistoric site area (Stewart 1939). (Stewart 1939).

In 1959-60 Ripley P. Bullen and Adelaide K. Bullen conducted investigations at Tamarind Tree Bay. They found Trevor's spoil piles at the "northeastern or landward side of Tamarind Tree Bay" and a few ceramic sherds they described as Botany Plain (Bullen and Sleight 1962:34). Bullen concluded, based on the ceramics that Gudman Hatt (1938) had analyzed and illustrated, that the sites at Tamarind Tree Bay and Landing Bay dated to the Magens IIC period, from approximately A.D. 1200-1500.



Carolina Point, with Tamarind Tree Bay to the southwest and Ruyter's Bay to the northeast.



Partially filled historic well at Tamarind Tree Bay. View to northeast.
The west side of the well has been damaged and the upper masonry removed.

Figure 39. View of Carolina Point in Relation to St. Thomas, and the Historic Well at Tamarind Tree Bay. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

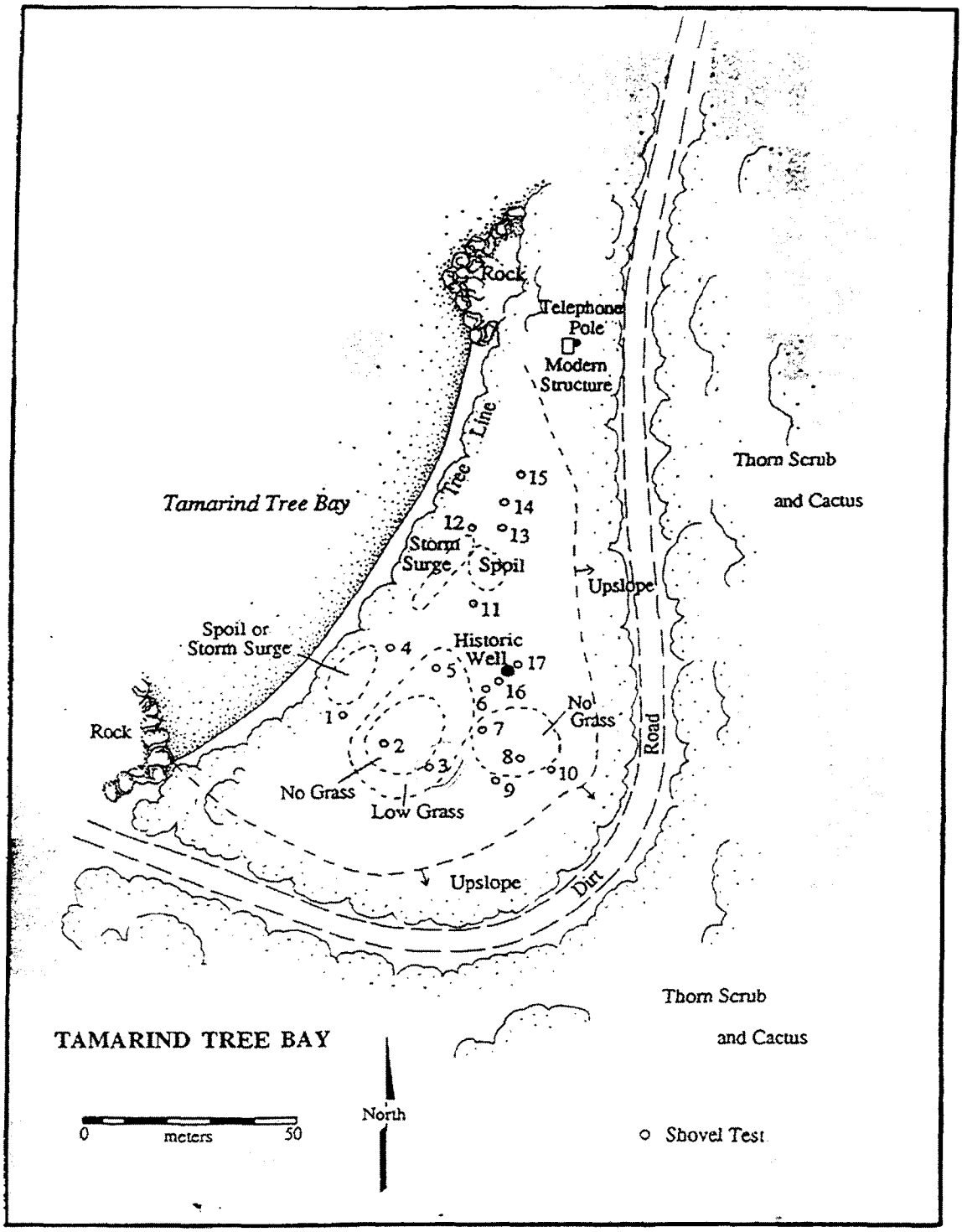


Figure 40. Tamarind Tree Bay Shovel Testing Program.
1992 Water Island Archeological Survey, U. S. Virgin Islands.

In September of 1980 Emily Lundberg and Bert Bryson, during an informal reconnaissance survey, recovered four water worn sherds on the surface of the coastal dune at Tamarind Tree Bay. An historic well was also located along the northern edge of the cove, together with several rock piles and borrow pits which were interpreted as remains of Trevor's spoil piles. In December of the same year Barbara Johnston along with Lundberg and Bryson returned to the bay. They recovered 12 prehistoric sherds and two historic sherds to the south and east of the coastal dune, with most of the material found in or near crab holes. No subsurface testing was conducted during these investigations (Johnston 1981, 1983).

The 1992 Investigations

Tamarind Bay was examined over a two day period during the 1992 testing program, during which time the cove area was thoroughly examined, the historic well was relocated, and 17 shovel tests were opened. In 1980 Lundberg and Bryson had apparently observed a salt pond within the valley of the bay. During the 1992 testing program open and level unvegetated to sparsely vegetated areas were located near the south central part of the bay, suggesting that this pond was very shallow, and that what was observed in 1980 may have been the result of recent rain fall. The open area supported no vegetation, and only low grass was observed around the margin. Shovel tests #1, #2, and #5 were opened in and around the pond area and yielded a few items of modern manufacture. During the excavation of ST #3 a strong chemical odor similar to acetone was noted by the excavators, suggesting chemical dumping in this area, and the test was abandoned at 30 cm. Although no chemical weapons testing is reported to have taken place in this area (see Figure 17), this possibility cannot be discounted.

PG. 134

In ST's #5, 7, and 8, large amounts of 1940's period trash were found to depths of 50 centimeters or more below the surface. Artifacts of this period included Coca-Cola and beer bottle fragments and ironstone pottery. The base of one semivitreous ironstone plate sherd, recovered from ST #7, was stamped U.S. Q.(uarter) M.(aster) C.(orp) and was dated September 16, 1940, providing a degree of chronological control (i.e., *aterminus post quem*) unusual in archeological inquiry (Figure 41:v). In ST #7 one historic creamware sherd was found mixed with the modern debris. In ST #8 a creamware and pearlware sherd were found mixed with the 1940s deposit. Shovel test #6, located about eight meters from the well, also produced some modern materials along with earlier historic artifacts. Diagnostic historic material from this test included two fragments of creamware (1779-1820) and one blue transfer-printed whiteware sherd (1820-1900+). Shovel tests "9 and 10, opened in the very back of the cove, found no evidence for modern disturbance, indicating that the area of 1940s activity ends just short of the back of the cove. In shovel test #9 a sherd of Jackfield ware was recovered that dates between 1740-1780. Other datable materials from this test included one sherd of creamware, two sherds of plain pearlware, a shed of a ginger beer bottle (ca. 1860s) and a kaolin pipe bowl fragment. Shovel test #10 produced no cultural material. Examples of the kinds of artifacts found during the 1992 testing program are illustrated in Figure 41.

The historic well reported by Lundberg and Bryson was located (after a search encompassing several hours) in extremely dense underbrush in the middle of the cove, approximately 40 meters from the waters edge, and some distance from where it had been mapped on the original site form. The well is made of stone and mortar, but unlike the well in Ruyter's Bay, it did not appear to be plastered (Figure 39). The well stands a few centimeters above the ground and was filled almost to the top with modern trash. The interior diameter of the well is 1.8 to 1.6 meters and the wall is from 65 to 70 centimeters thick. Two shovel tests were opened next to the historic well in an attempt to date the structure. Shovel test #16, located one meter from the west side of the well, produced one creamware sherd (1762-1820), a lead glazed course earthenware fragment and a pipe stem with a bore diameter of 5/64. Shovel test #17, located next to the well on the east side, produced one creamware sherd (1779-1820) and one shell-edged pearlware sherd manufactured between 1809-1831. The presence of these artifacts suggests the well may date to the eighteenth century.



Figure 41. Historic and Prehistoric Artifacts Found at Tamarind Tree Bay in Shovel Tests, 1992 Water Island Archeological Survey, U.S. Virgin Islands. a English Salt Glazed Stoneware; b-c English Gun Flints dover chert; d-e kaolin pipe stems; f-h Metropolitan Slipware; i aboriginal sherd; j Monochrome Brown Porcelain; l-n African Caribbean ware; o Blue on White Delft; p-s Transfer Printed Pearlware; t-u Blue Shell Edged Pearlware; v Semivitreous Ware; w Creamware; x lead glazed earthenware El Morro; y-z Stoneware Ginger Beer Bottle.

Shovel test #11 was conducted in one of Julien or Trevor's spoil piles about 20 meters to the northwest of the well. The test was excavated to a depth of 130 cmbs, with artifacts found throughout the loose soil. A total of 16 historic ceramic sherds and some historic glass were recovered in the test, suggesting this area was at or near the center of historic activity in the cove. A sherd of metropolitan slipware (1630-1660) was the earliest datable artifact recovered; a plain white sherd of delft was also recovered (1640-1802). A sherd of whiteware which dates between 1820 to 1900+ was the most recent artifact found in this location. The recovery of one prehistoric sherd during the testing in the spoil pile area confirms the earlier observation that a prehistoric site had once been present and was impacted by subsequent historic use of the area, including burial activity. The fact that only one prehistoric sherd was found in the spoil pile area, mixed in with a fair number of historic artifacts, suggests that the 1934-35 investigations were only after prehistoric remains. The large numbers of historic artifacts present also suggests that the eighteenth and nineteenth century slave village, or a dump from this village, was likely present in this area. If this village was present in the cove, then the burials found in 1934-35 were probably placed in close proximity to the houses.

Surface reconnaissance and testing at the north end of the bay also located another historic area dating from the early period of colonization into the nineteenth century that, in this case, has been left largely undisturbed. The surface inspection recovered historic ceramics that included creamware (1762-1820), English brown salt-glazed stoneware (1671-1775), ginger beer stoneware (1812-1860), el Morro ware, and porcelain (see Figure 41). Shovel tests #s 13, 14, and 15 opened in this area found historic materials to a maximum depth of 41 cmbs. Diagnostic historic materials found in these three tests included sherds of creamware, one sherd of delft blue on white (1620-1720) (Figure 41:o), one sherd of plain delft (1640-1802), sherds of metropolitan slipware (1630-1660) (Figure 41:f-h), sherds of ginger beer stoneware (Figure 41:a), and sherds of plain and blue shell-edge pearlware (1809-1830) (Figure 41:u).

Conclusions and Recommendations

An historic well and traces of a slave village were found at Tamarind Tree Bay that are considered to be eligible for inclusion on the National Register of Historic Places. P. L. Oxholm's 1779 map of Water Island depicts the slave village associated with Carolina Lyst Plantation extending down hill from Carolina Point into Tamarind Tree Bay (Figure 9). Human skeletal remains were excavated in this bay in 1934 and 1935 and were determined to be African in origin and, therefore, probably the remains of slaves from the village. It is likely that human graves are still present in the cove area, although no human bone was found in 1992. Material recovered from the cove area indicate that historic occupation began early in the period of colonization, in the late 1600s, and continued throughout the colonial period. A prehistoric site also appears to have been present in the area of the historic village and burials, but has been severely damaged by the later activities. Prehistoric pottery was recovered during a previous survey of the bay conducted in 1980, and one prehistoric sherd was found in 1992.

An early historic masonry well was found in the north-central portion of Tamarind Tree Bay. As with Ruyter's Bay, Oxholm depicts a pond in this area, which may have also been a source of fresh water. This well was probably a historic means of tapping this water source, which may have been continuously exploited from the prehistoric through the colonial period. Furthermore, historic archeological remains from the slave village were found intact in two locations in the bay, at the very back of the cove and at the north end of the cove. At the north end of the cove, some of the materials recovered date to the early period of Danish colonization. These remains are probably all that is left of the slave village that extended into this area. Because of its close association with Carolina Point Plantation, the well and slave village areas in Tamarind Tree Bay, although listed as a separate site, should be considered part of the Carolina Point Plantation complex when preparing National Register of Historic Places nominations. The remainder of the Tamarind Tree Bay area has been heavily disturbed in the recent past and requires no further investigation.

The historic masonry well and the areas where the slave village are located in Tamarind Tree Bay should be protected and preserved. If preservation is not possible, a comprehensive archeological data recovery should be undertaken, including the complete excavation of the historic well to determine the well's age, contents, and construction history. Additionally, systematic shovel testing at three-meter intervals over an area 20 meters in radius around the well should be conducted to identify other possible historic remains associated with it. Limited testing followed by the excavation of two ten-by-ten-meter blocks should be undertaken in each of the two areas of the slave village, with the goal of documenting at least one structure in each area.

Elephant Bay (12-VAM-3-22 and 12-VAM-2-23)

Elephant Bay is located along the northwest coast of Water Island just south of Tamarind Tree Bay and north of Landing Bay (Figures 2, 42). The cove is approximately 270 meters long and extends 35 meters back from the water line. The bay is characterized by a shallow beach some five meters wide behind which lies a tree line and a sand or surge storm dune that stretches the length of the bay. The vegetation in the cove consists of torn scrub, cactus scrub and dry forest. A salt pond/mangrove swamp is located at the southwest end of the bay about 20 meters back from the water line.

Previous Investigations

The first investigation of Elephant Bay was undertaken by Ripley P. Bullen and Adelaide K. Bullen during their reconnaissance survey on Water Island in 1959-1960. The Bullen's found two presumably prehistoric pottery sherds they identified as Botany Plain. One sherd was collected at the north end of the bay on high ground. The other sherd was found at the south end of the bay in a sandy low area near recent disturbance (Bullen and Sleight 1962). Since the Bullen's recovered material came from two separate parts of the bay, two site numbers were assigned, 12 VAM-3-22 and 12 VAM-3-23.

In 1979 Emily Lundberg and Bert Bryson conducted a surface survey of the cove and some limited subsurface testing. Prehistoric pottery was found on the surface of the coastal dune just southwest of the center of the bay. A shovel test opened in this area produced artifacts and faunal remains to a depth of 47 centimeters. A 1 x 1 meter excavation unit was then excavated in the same area in ten centimeter levels. Prehistoric remains, including pottery and shell, were located below the third level (20-30 centimeters) and ended at 50 centimeters, where sterile soil was reached.

In December of 1980, Barbara Johnston, Emily Lundberg, and Bert Bryson returned to Elephant Bay to define the site boundaries. The cove was surface surveyed but no subsurface testing was conducted. Prehistoric pottery was recovered from around crab holes near the excavation unit opened in 1979. Historic artifacts were also collected from this area including pipe stems, ceramics, and glass fragments. Since the prehistoric material was centrally located the investigators decided that only one site number rather than two would be appropriate. Therefore, the number 12 VAM-3-23 was dropped and the site was designated 12 VAM-3-22. The prehistoric pottery recovered was classified as late Saladoid and possibly Elenoid. Johnston concluded that more work was required in the area to determine the integrity of the site and the amount of disturbance caused by military activities (Johnston 1981,1983).

The 1992 Investigations

Elephant Bay was surveyed and systematically tested during the 1992 fieldwork (Figure 42). No surface materials were located in the cove, probably because most of these materials had likely been collected by previous investigators visiting the area. Initially, 21 shovel tests were excavated. These were dispersed at taped 20 meter intervals along and back from the shoreline; this interval was altered in areas of disturbance in the central part of the bay, where some heavy equipment activity had apparently occurred in the recent past. In ST #4 at the northeastern end of

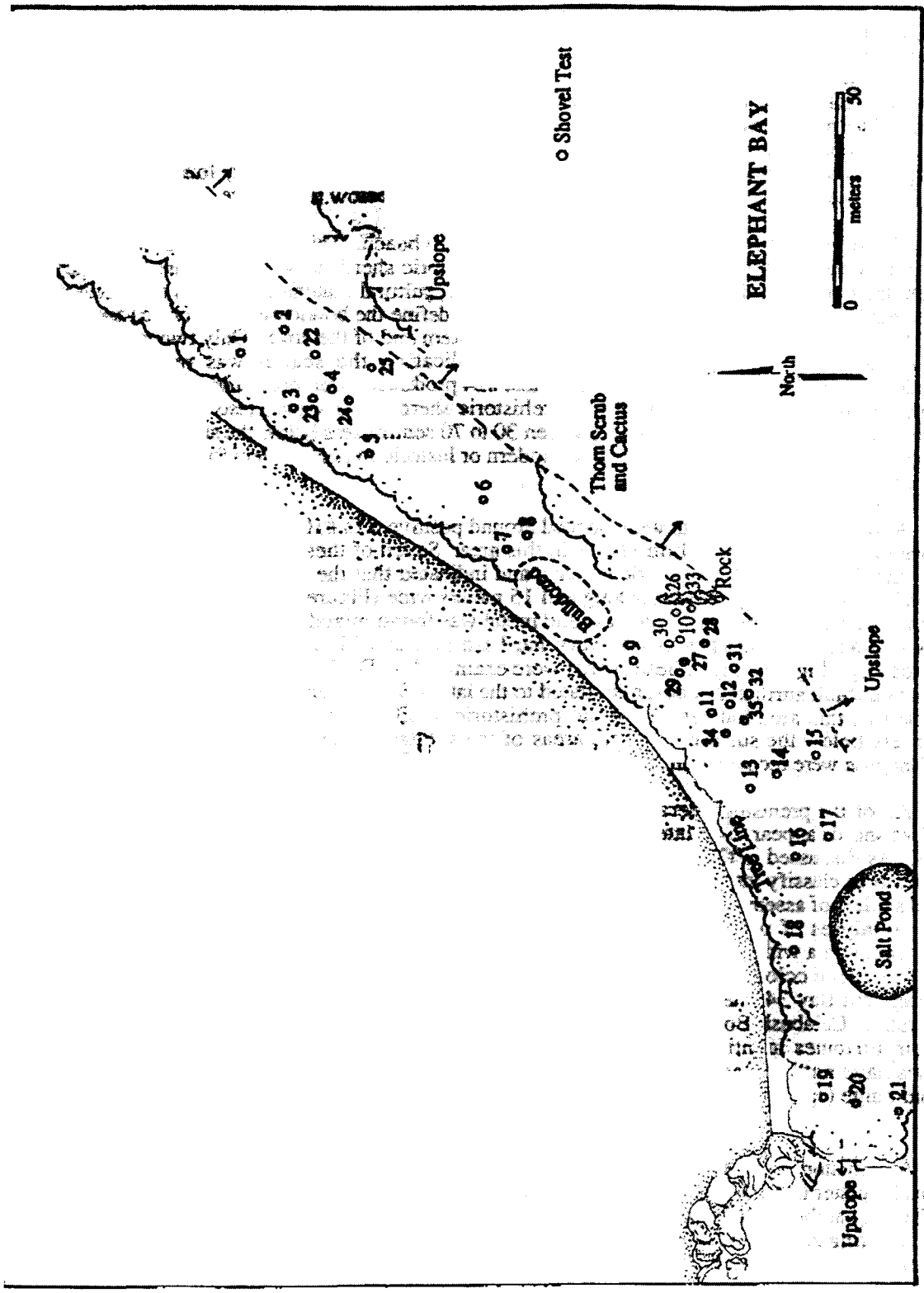


Figure 42. Elephant Bay Shovel Testing Program.
ological Survey, U.S. Virgin Islands.

the cove and in STs #10 and 12 near the central part of the cove prehistoric ceramics were recovered, and in ST #13 an historic pipe stem was recovered between 0-30 cmbs. This artifact, and a gunflint fragment found in subsequent testing to delimit the size of the scatter, were the only historic artifacts recovered confirming earlier reports of a historic component in this area (Figure 43:j, k).. The prehistoric pottery was recovered from STs # 10 and 12 came from the general area where Lundberg had previously found prehistoric materials and opened an excavation unit, although no trace of this work was observed. As in the 1979 work, the pottery found in the central part of the cove in 1992 came from more than 30 centimeters below the surface.

Shovel test #4 was located at the north end of the beach. This test produced three historic brick fragments just below the surface and two prehistoric sherds at 40 cmbs. The tests opened between the two areas yielding artifacts were devoid of cultural material. A series of shovel tests were opened around the two concentrations in order to define the boundaries of each scatter. Eight shovel tests were opened around ST #4 at the northeastern end of the cove. Only two of these tests (#24 and #25) produced prehistoric material, indicating the scatter was restricted to an approximately 20 by 15 meter area. Shovel test #24 produced three prehistoric sherds below 30 centimeters, while ST #25 produced one prehistoric sherd. The shovel tests indicated that the prehistoric site in this area was located between 30 to 70 centimeters below the surface. The site in this area appeared to be undisturbed, as no modern or historic materials were found in association with the prehistoric remains.

A total of 10 shovel tests were opened around positive STs #10 and 12 in the central part of the cove to delimit the scatter boundaries in this area. Seven of these tests (STs #26, 27, 29, 30, 32, 34, and 35) produced prehistoric pottery, and indicated that the artifact concentration in this location is approximately 40 meters long and 15 meters wide (Figure 42). A portion of the site is apparently disturbed, since modern glass and metal was found mixed with the prehistoric remains in STs #30 and 34. In ST #29 two very hard tan sherds with a smooth polished slip were recovered (e.g., Figure 43:j). These sherds were examined by Dr. Lundberg, who noted that these specimens exhibit attributes of ceramics dated to the late Saladoid Period (ca. A.D. 600). The tests conducted in this area indicated that the prehistoric remains are concentrated between 30-50 centimeters below the surface. In both areas of the site faunal remains of *Strombus gigas* and *Cittarium pica* were recovered that were probably gathered for subsistence purposes.

All of the prehistoric ceramics recovered at Elephant Bay were plain sherds (e.g., Figure 43). Two sherds appear to be late Saladoid in age, and the rest probably date to the post-Saladoid periods. As discussed in Chapter III, plain sherds which post-date the Saladoid Ceramic Period are difficult to classify into any particular temporal range or Ceramic Period due to an absence of detailed studies of assemblages dating from these times in the U.S. Virgin Islands (Lundberg et al. 1992). Analyses of pottery recovered from the Calabash Boom Site, St. John, U.S. Virgin Islands from strata with a mean radiocarbon date of A.D. 1210 were typically salmon or brownish orange in surface color (Lundberg et al. 1992; Ceaser et al. 1987). Of the 38 sherds recovered from Elephant Bay 34 sherds have surface colors which are similar to those found in the A.D. 1210 strata at Calabash Boom. In this report the sherds from Elephant Bay have been described, and their attributes identified (Appendix Ic); but except for the two late Saladoid sherds the materials have not been assigned to any temporal or Ceramic Period other than a general post-Saladoid range (ca. A.D. 600-1500).

Conclusions and Recommendations

A prehistoric site was found in Elephant Bay that is considered eligible for inclusion on the National Register of Historic Places. Prehistoric remains were found in two separate areas of the cove. Testing at the northeast end of the bay delimited subsurface materials within a 15 x 20-meter area, and testing near the center of the bay delimited subsurface prehistoric materials within a 15 x 40-meter area. The central component appears to date to the late Saladoid era (ca. A.D. 600), while the other assemblage is dated to later in the prehistoric sequence, possibly the Elenan period

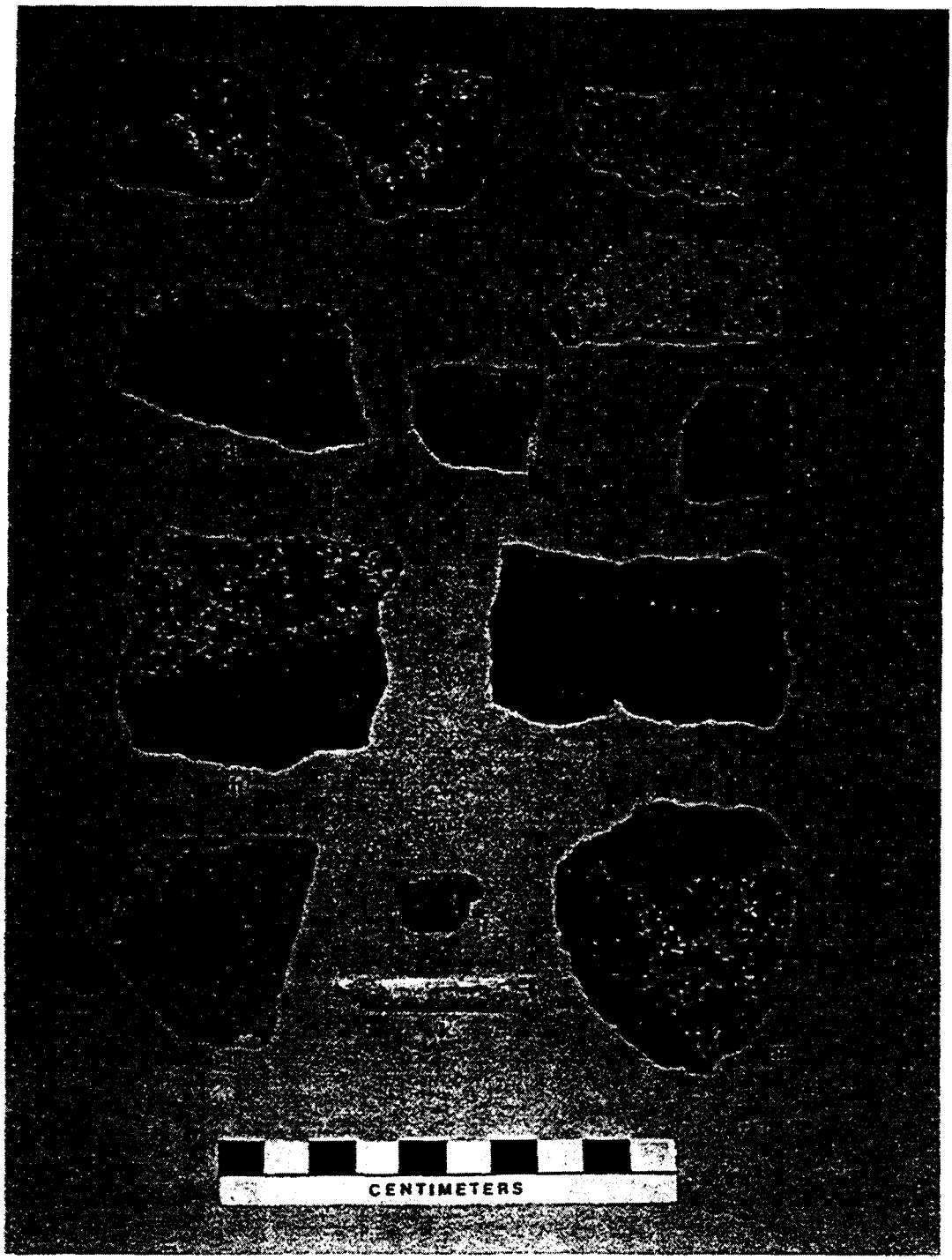


Figure 43. Historic and Prehistoric Artifacts Found at Elephant Bay in Shovel Tests, 1992 Water Island Archeological Survey, U.S. Virgin Islands. a-h prehistoric aboriginal sherds buff to brown smooth surface; i prehistoric aboriginal sherd late Saladoid; j English Gun Flint dover chert; k kaolin pipe stem; l-m prehistoric aboriginal sherds black smooth surface.

(ca. A.D. 800-1200). The majority of the pottery recovered from the cove, including some of the materials from the central scatter, probably dates to post-Saladoid prehistoric periods. In both areas of the site shellfish remains of *Strombus gigas* and *Cittarium pica* were recovered, which were probably gathered for subsistence purposes. Some evidence of modern disturbance was found in two of the shovel tests conducted in the site area located near the center of the bay, although the majority of the site in this location appears to be intact. The scatter at the northeast end of the bay was found to be undisturbed. Historic materials were recovered from only two shovel tests during the 1992 investigations, and these artifacts came from the upper 30 centimeters of the deposits. No evidence for historic structural remains were found in either the historic record or from the field investigations.

The prehistoric assemblages located in Elephant Bay should be protected and preserved. If preservation is not possible, a comprehensive archeological data recovery should be undertaken. Mitigation activity should include the hand excavation of at least two five-by-five-meter units into each of the two prehistoric scatters.

Sprat Bay Structure (12-VAM-3-208)

On the hill which overlooks Sprat and Sand Bays at the north end of the peninsula defining Sprat Point, eighteenth century era historic ruins were located during the 1992 survey. These include the masonry foundation of a small building, a rock pile which maybe the remains of a tomb, and the foundation stones of a small ancillary structure or outbuilding (Figures 2, 44). On P. L. Oxholm's 1779 map a single structure is depicted just to the west of Sand Bay that may represent this complex, albeit slightly mislocated some 200 meters north of its actual location (Figure 9). The ruins were found following information provided by several Water Island residents that old buildings were present in this area. The structure complex is located just below and to the east of the crest of a hill which rises about 88 feet above sea level; the site area at the time of survey was in dense thorn scrub and cactus forest.

The 1992 Investigations

The 1992 investigations at the site of the Sprat Bay structure consisted of surface reconnaissance, limited architectural documentation, and the excavation of seven shovel tests. Pedestrian survey over the entire crest and slopes of the hill at the north end of the Sprat Point peninsula revealed a lone structure with standing walls (Figure 45). A rock pile was discovered about five meters east of the building, while about 12 meters to the west some stones and a few bricks were found set in the ground in a square pattern approximately three meters in diameter (Figure 46). Vegetation around the ruins consisted of dense thorn scrub forest and cactus which was cleared for recording purposes.

A road running to the edge of the hill crest overlooking Sprat Bay had been cut just south of the ruins complex with a bulldozer. This road was overgrown with vegetation and had not seen use for some time. The road terminated at the highest point on the hill, which was located about 45 meters from the structure. This point that would have provided an excellent view of both Sprat and Sand Bays, Sprat Point, St. Thomas, and out to sea. The point area was in grass and a few low shrubs; the surface inspection, and the excavation of two shovel tests (#5 and 6) found no evidence for cultural activity. The terrain in the area appeared to have been impacted by the road construction, which could have removed historic remains if they had been present.

The remains of the main Sprat Bay building consist of the masonry foundation, constructed of field stone set in mortar. The structure is 8.5 meters long by 5.4 meters wide, and the long axis of the building is slightly off an east/west orientation (Figures 45, 47). A gap, possibly representing a door opening, is located at the northeast end of the structure (Figure 45). The walls along the side of the structure were found to be thicker (80 cm) than the long walls of the structure (70 cm). Sections of the walls have eroded or been leveled to the ground surface; scattered wall

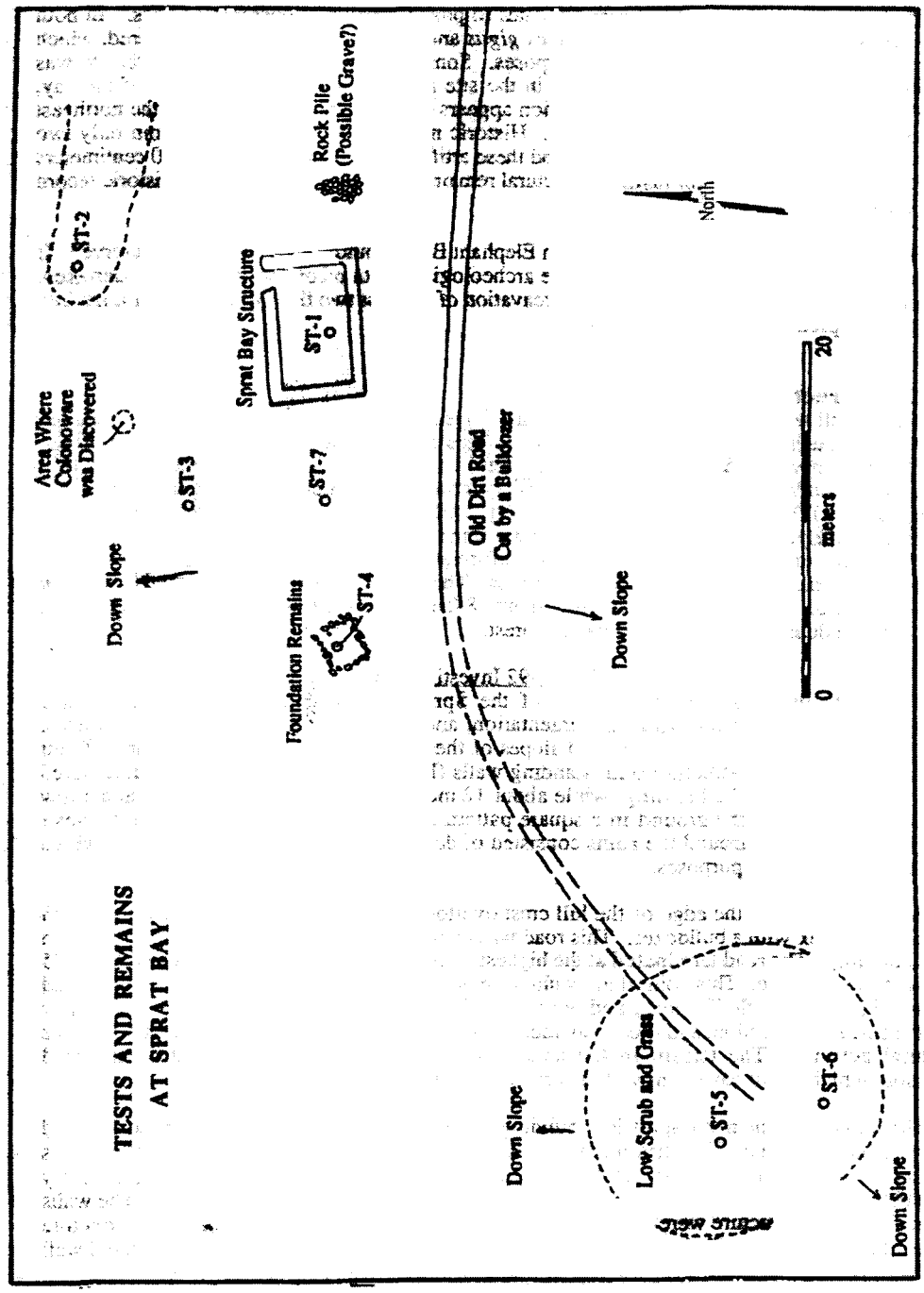


Figure 44. Tests and Architectural Features at Sprat Bay, 1992 Water Island Archeological Survey, U.S. Virgin Islands.



Overhead view of the wall lines on the north side of the main structure, showing a possible entranceway.

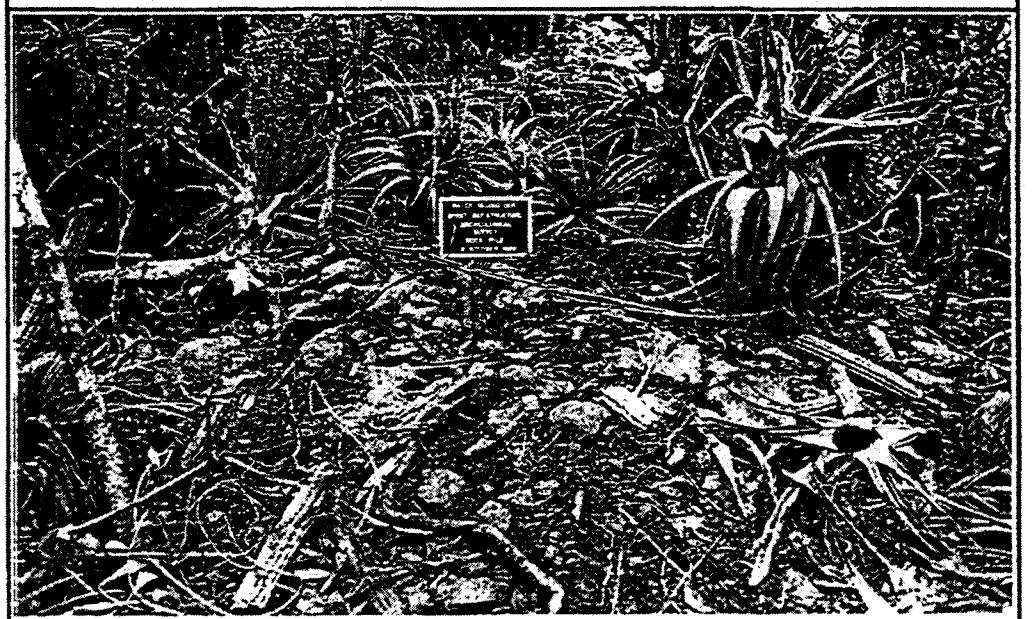


View of the main structure after extensive clearing, looking to the southwest through the possible entranceway.

Figure 45. Main Building, Sprat Bay Structure Site. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

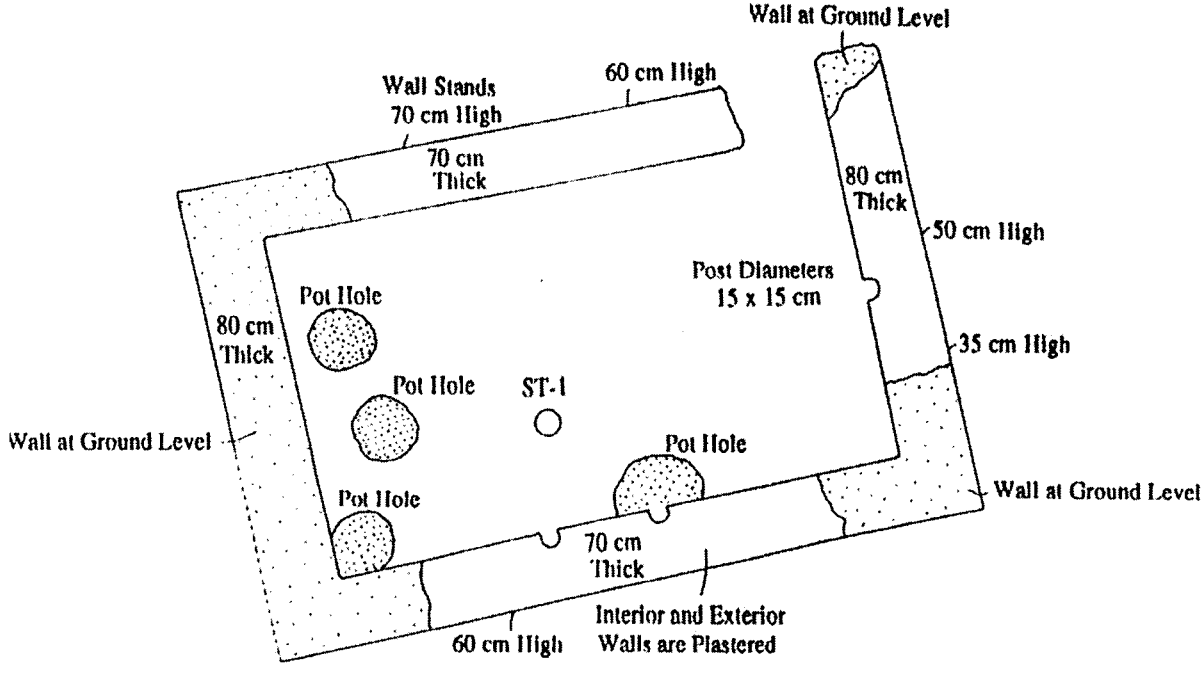


Probable outbuilding to the west of the main structure, which may be seen in the background.

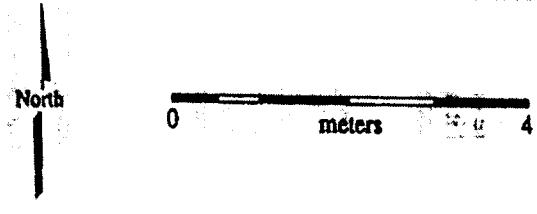


Rockpile to the east of the main structure, that may represent a grave.

Figure 46. Possible Outbuilding and Rock Pile to the West and East of the Sprat Bay Structure. 1992 Water Island Archeological Survey, U.S. Virgin Islands.



STRUCTURE AT SPRAT BAY



Note: No indication of the top of the walls was noted.
The amount of rock scatter suggests they did not go much higher.

Figure 47. Plan of the Main Structure at Sprat Bay, 1992 Water Island Archeological Survey, U.S. Virgin Islands.

rubble was found in these locations. Sections of the long walls stand 60 to 70 centimeters above the surface. No wall rubble debris is scattered in these areas, suggesting the masonry foundation of the building extended to approximately this height. The walls were plastered on the interior and exterior (Figure 48). Post molds were found in the masonry along the interior of the south and east walls, and it appears that the posts were set into the ground and the masonry was constructed around the wooden post. The posts would have supported the wooden superstructure of the building.

In and around the structure some evidence of vandalism was noted. Four looters holes were found within the walls of the main structure and one hole was found 3.5 meters north of the building. No artifacts were found on the surface in the immediate vicinity of the building suggesting that the area had been picked clean by looters or collectors. The same residents of Water Island who had explored the Carolina Point site with a metal detector had also examined the Sprat Bay structure area, but had found only a few sherds and a possible lantern fragment.

The rock pile located at the Sprat Bay Structure site is 2.5 meters from the building, and is about 2.5 meters long and 1.75 meters wide (Figure 46). It is possible that the pile of rocks may be the remains of a stone sepulchral structure. No grave marker or evidence for human remains was observed among the rocks, and no other artifacts were found in the vicinity of the pile.

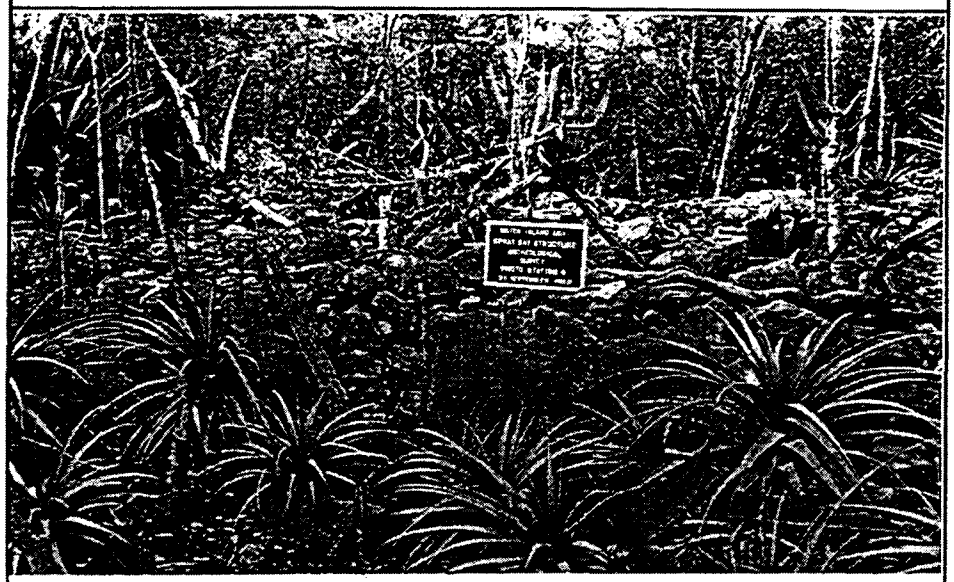
A total of seven shovel tests were opened at the site. The first shovel test, ST1, was placed inside the main structure, and contained an appreciable quantity of plaster and mortar debris. Two shovel tests were opened between the small square structure and the main building (ST #s 3 and 7), and a third test (ST #4) was placed within the small outbuilding. No artifacts were found in these three tests. Artifacts were found in ST#2, located about 10 meters to the north and downslope from the probable entrance of the main structure. These included one English gun flint, three delft sherds with blue under-glazed painting, one porcelain sherd with blue under-glazed painting, and a sherd of African-Caribbean ware (Hume 1969; South 1977).

Surface reconnaissance at the site was conducted along the length of the hill and down all the slopes. A few African-Caribbean type sherds were found next to the small square structure. Most of the African-Caribbean sherds found on the site, however, came from about ten meters north of the main structure, near ST2. This suggests that refuse was pitched outside the front door, down the northern slope. Almost all of the artifacts recovered at the site, in fact, were found downslope to the north of the structure, with debris extending all the way to the base of the hill. This hillslope terminates just east of the Sprat Bay Club Inc. beach, which was also intensively tested, yet yielded no evidence for cultural remains related to those around the Sprat Bay Structure complex. Artifacts recovered from the northwest slope included 22 sherds of delft wares (1640-1800), ten sherds of African-Caribbean ware, four Chinese porcelain sherds, one plate sherd of white salt-glazed stoneware (1740-1775), one olive jar sherd, one sherd of Rhenish stoneware (1650-1725), and five pipe stems with bore diameters ranging from 1/64 to 5/64 (Figure 49).

The ceramics recovered from the Sprat Bay Structure site indicate that the site was abandoned by ca. 1750 to 1760. One of the delft sherds recovered is the base of a small vessel, probably a tea cup (Figure 49:d). Such small vessel types, according to Noel Hume (1969:111), often lost their glaze at the lip, and hence were never very popular, and that vessels of this type are rarely found in use after 1750. While some of the ceramic types recovered were manufactured after the mid-eighteenth century, all were popular prior to this time as well. What strongly supports the inference that the site was abandoned by ca, 1760 is the absence of certain ceramic types such as creamware (1762-1820) and pearlware (1780-1830). Both of these ceramic types became very popular and are almost ubiquitous on historic sites dating to the latter part of the eighteenth century. On the 1779 Oxholm map the structure mapped near Sprat Bay is depicted as an open rectangle. Territorial Archaeologist Elizabeth Righter questioned Historic Architect Fred



East interior wall with plaster and probable post support. View to east.



South exterior wall with plaster and stone masonry construction detail. View to north.

Figure 48. Wall Construction Detail, Main Building, Sprat Bay Structure Site.
1992 Water Island Archeological Survey, U.S. Virgin Islands.

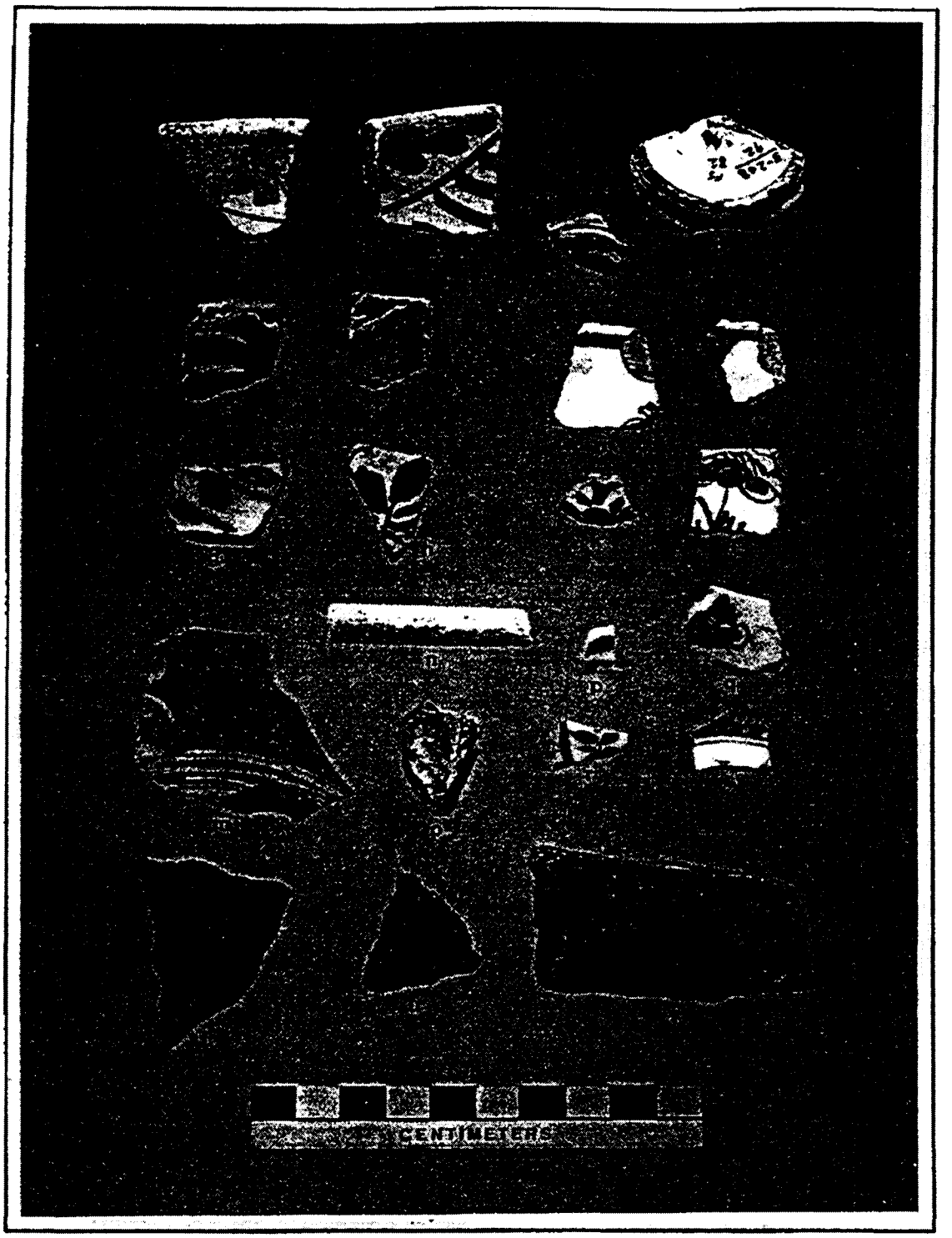


Figure 49. Historic Artifacts Found at Sprat Bay Structure in General Surface Collections and Shovel Tests, 1992 Water Island Archeological Survey, U.S. Virgin Islands. a-h Blue on White Delft; i-l Green and Orange on White Delft; m Rhenish Stoneware; n kaolin pipe stem; o kaolin pipe bowl fragment; p-s Plain Porcelain; t-u coarse earthenware lead glazed; v Olive Jar Green Glazed.

Gjessing about this depiction. He indicated that this symbol may represent an abandoned structure (Fred Gjessing: personal communication 1992).

Conclusions and Recommendations

The structural remains on the hill overlooking Sprat and Sand Bays located during the 1992 survey are considered eligible for inclusion on the National Register of Historic Places. The site consists of the masonry foundation, remains of a small building (ca. 8.5 x 5.4 meters), a rock pile which maybe the remains of a tomb, and the foundation stones of a small (ca. 3 x 3 meter) ancillary structure. The investigations recovered diagnostic materials which demonstrate that the site was abandoned before 1780. Given the antiquity of the site the building remains are in an excellent state of preservation, although some vandalism has occurred in recent years.

Because this site was abandoned and still retains a high degree of site integrity it is of considerable importance. The majority of the historic sites in the Virgin Islands were occupied throughout the colonial period, and their early record has been altered by subsequent occupation to the point where it is difficult to identify (e.g., see Wild 1988, 1989 for a discussion of this problem). Only one other comparable early site, Zufriedenheit, has been investigated to date in the Virgin Islands. It is being excavated by Territorial Archaeologist Elizabeth Righter.

The Sprat Bay Structure complex should be preserved and protected. If preservation is not an option, then comprehensive archeological data recovery should be undertaken, including the complete excavation of the inside of the primary and ancillary structures, and the excavation of the rock pile area . In addition, systematic shovel testing at ca. five-meter intervals should be conducted up to 20 meters around the structure complex to document the associated debris scatter and determine if additional structures or features are present.

Banana Bay (12-VAM-3-56)

A thick stratified shell midden was found in Banana Bay, which is located at the north end of Water Island to the southeast of Banana Point (Figures 2, 50). The cove is approximately 150 meters long and at its widest point extends back from the water line some 60 meters to a steep rocky slope. The beach at Banana Bay is very coarse consisting of storm surge debris of coral, sand, and water worn rock extending back from the water line approximately ten meters. The terrain in the southern half of the cove, behind the beach and beginning at the tree line, is relatively flat until reaching the steep hillside. The beach at the north end of the cove, where the shell midden is located, is comparatively narrow and extends up to the eroded face of the steep hillside leading to Banana Point (Figure 51) The vegetation in the cove consists primarily of dry thorn scrub forest.

The 1992 Investigations

No previous archeological investigations are known to have occurred in Banana Bay prior to the 1992 survey. While working elsewhere on Water Island, the project directors were informed by two local residents, Chet and Diane Kwiecien, that a thick layer of conch shell was present in Banana Bay. Subsequent survey located a 12 meter section of eroding bank at the north end of the cove that contained large numbers of conch or *Strombus gigas* shells mixed with water worn rock and coral. Some of the midden had eroded from the bank and shells were found scattered on the beach and to the south of the midden for approximately 40 meters (Figures 50, 51). The shell had been collected for subsistence purposes as all of the specimens examined had been punctured in order to extract the food source. No lithic or ceramic artifacts were observed in the deposits or on the adjacent beach, which was carefully examined.

The midden deposit was found to extend from the surface to as deep as two meters thick. At the north end of the deposit the midden becomes shallow and a stratum of soil and rock which appears to have eroded down the hill underlay the deposit. Below this erosion level was another

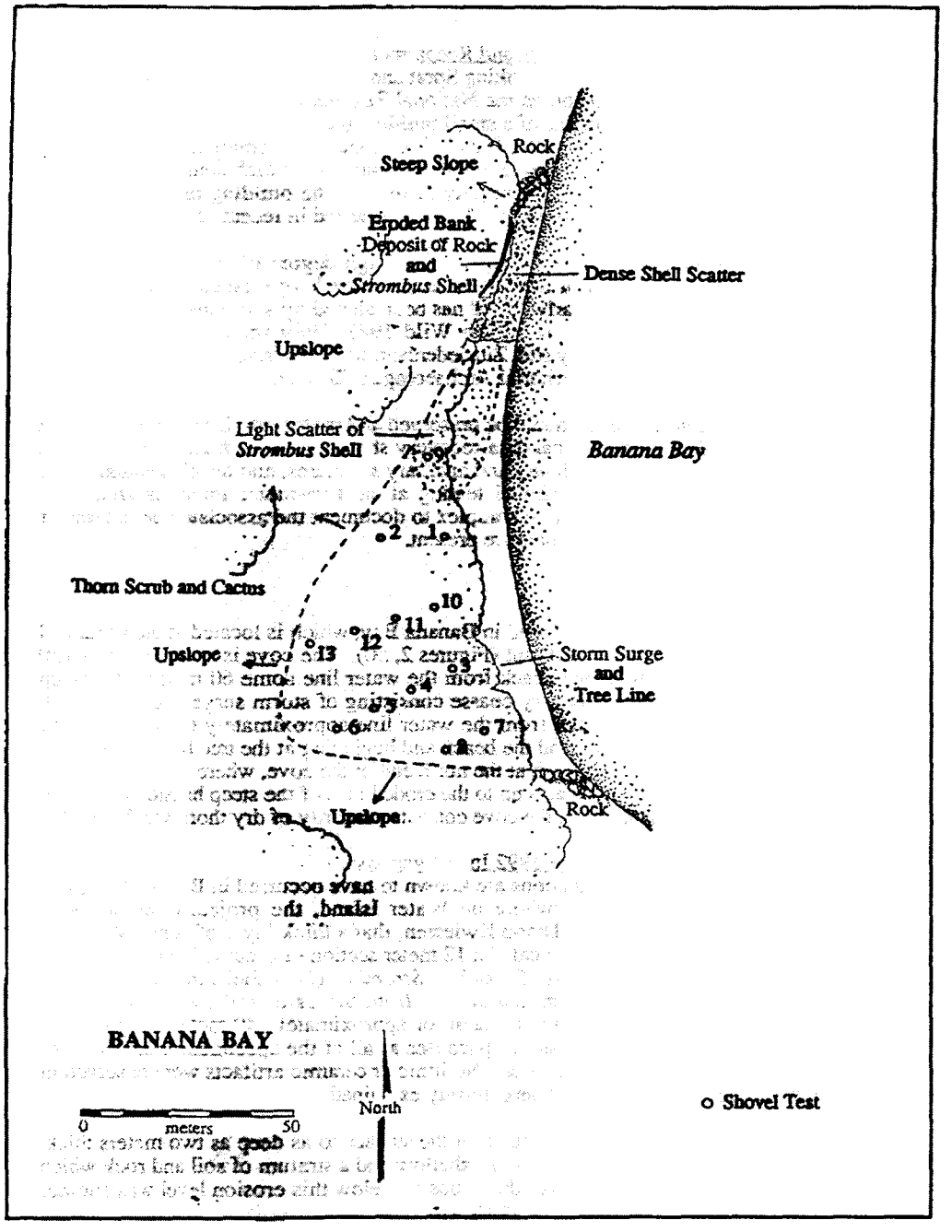
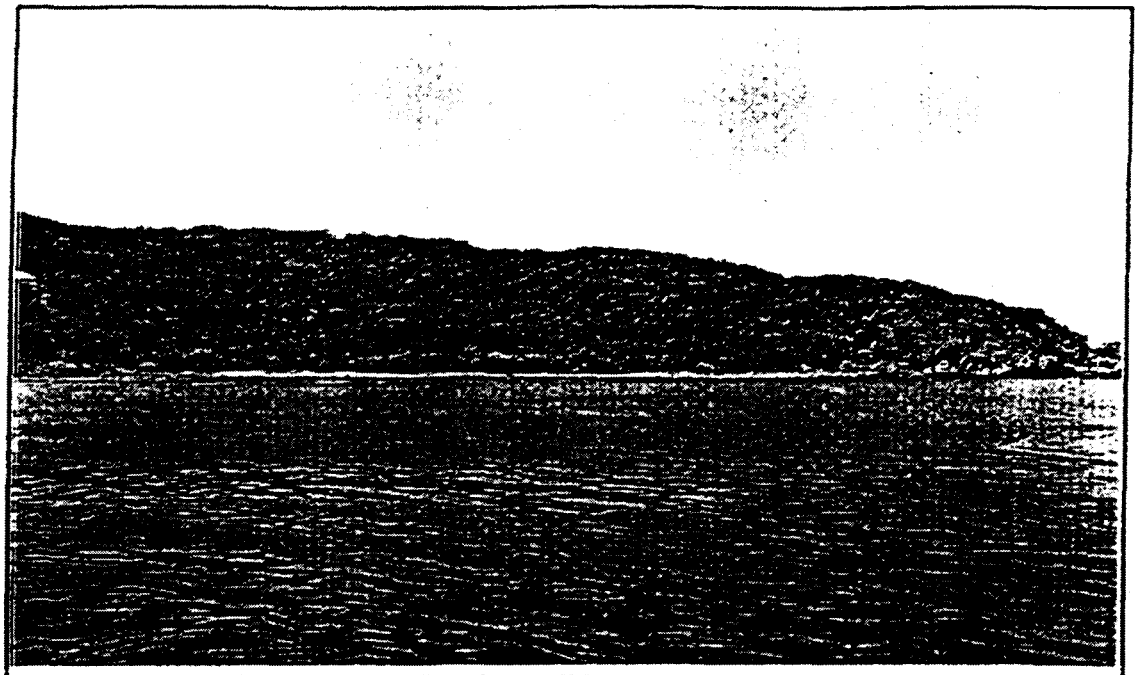


Figure 50. Banana Bay Shovel Testing Program.
1992 Water Island Archeological Survey, U.S. Virgin Islands.



View of Banana Bay from offshore. View to the southwest.
The shell midden is at the north end of the beach, just to the south of Banana Point.



The shell midden at the north end of Banana Bay.

Figure 51. Shell Midden Deposit at the North End of Banana Bay.
1992 Water Island Archeological Survey, U.S. Virgin Islands.

deposit of what appears to be storm surge debris consisting of water worn cobbles (Figure 52). The absence of historic or prehistoric pottery prompted the collection of three of the *Strombus gigas* shells for dating purposes. The samples collected were taken from the surface of the deposit, and from the middle and at the base of the midden; the specific shells taken, and their position in the midden, are illustrated in Figure 52. The shells were sent to Beta Analytic for Carbon 14 dating. The shell recovered from the base of the midden was radiocarbon dated at 1420 ± 60 years, or A.D. 530 (Beta 58094). The shell taken from ca. 50 cm below the surface was radiocarbon dated at 800 ± 60 years, or A.D. 1150 (Beta 58095). The shell recovered from the surface of the midden was radiocarbon dated to 740 ± 60 years, or A.D. 1210 (Beta 58096).

The three dates that were obtained demonstrate that prehistoric activity on Water Island was prevalent from the late Saladoid Period into the later ceramic phases of occupation leading up to the Taino culture. Of particular interest is the fact that the midden dates appear to coincide with the age of the pottery scatters found at Elephant Bay, suggesting that the use of these sites may have been contemporaneous. A total of 13 shovel tests were also opened in the level area to the south of the shell midden (Figure 50). No artifacts or other faunal remains were found in these tests to indicate that historic or prehistoric activity occurred in this area. No evidence was found, therefore, to indicate any other use of the Banana Bay area beyond the activities that created the midden, which appear to have been short term, special purpose tasks, perhaps by groups visiting the island from the mainland. During the investigation the only other indication, besides the puncture holes in the shells, that the midden area was not a natural formation was the recovery of two possible prehistoric shell pick tools; whether such shell fragments served as tools is a matter of some debate (Lundberg 1985).

Conclusions and Recommendations

A prehistoric shell midden site was found at Banana Bay that is considered eligible for inclusion on the National Register of Historic Places. The midden, which was found eroding from the bank at the west end of the bay, is approximately 40 meters in extent and at least two meters thick. All of the shell, which appears to be *Strombus gigas* or conch, had been punctured in order to extract the meat. Three of the conch shells were collected for radiocarbon dating, the first from the surface, the second from a mid point in the midden, and the third from the base of the midden. The dates indicated that the midden formed between A.D. 530-1210, with the upper and middle part deposited around A.D. 1050 to 1250 and the base around A.D. 500 to 600. The site appears to be a prehistoric shell-processing area. The Banana Bay shell midden deserves to be preserved and protected. If preservation is not an option, then comprehensive archeological data recovery should be undertaken, which would consist of the excavation of at least four two-by-two-meter blocks through the midden and the analysis of all food and other artifactual remains recovered.

Banana Bay South (12-VAM-3-210)

Eighteenth and twentieth century artifacts were found just to the west of Banana Point at the very northern end of Water Island in a small unnamed cove that was designated Banana Bay South by the 1992 survey team (Figures 1, 2, 53). This cove, located just to the east of Sandy Point, is approximately 100 meters long and up to 25 meters wide. The beach, which is about five meters wide, consists of sand and water worn rock and coral, behind which is a storm surge dune. Vegetation in the cove consists of dry thorn scrub forest and Sansavaria, an ornamental plant that may derive from the historic occupation.

The 1992 Investigations

No previous archeological investigations are known to have occurred in Banana Bay South prior to the present survey. The field effort included surface inspection followed by the excavation of five shovel tests. Several brick fragments and chunks of iron that appeared to have been melted were found on the surface at the west end of the cove, on the projection known as Sandy Point. Three shovel tests were opened in this area, and in ST # 1 and 2 a dark brown midden stratum was

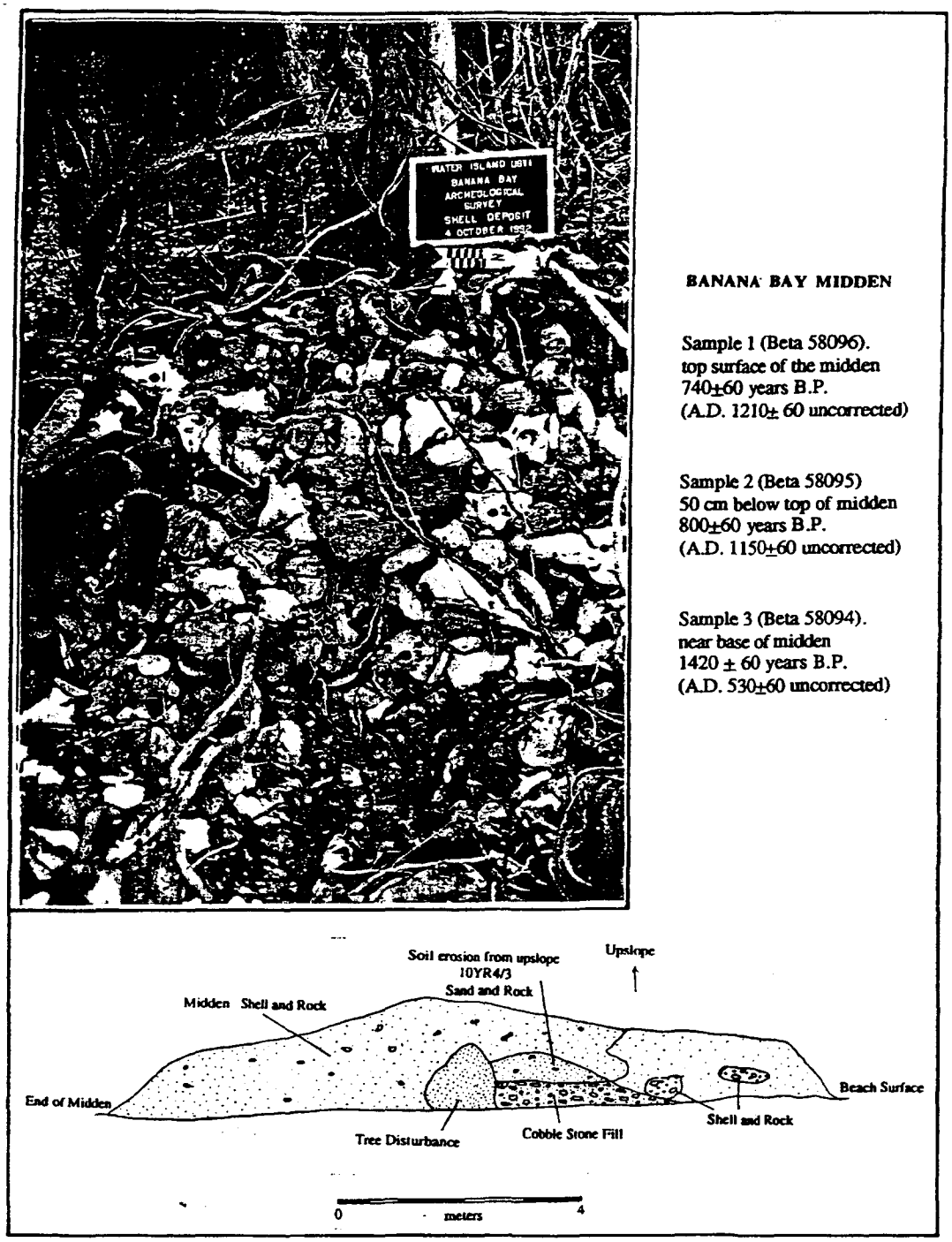


Figure 52. Closeup of the Shell Midden Deposit at Banana Bay, Showing Where the Radiocarbon Samples were Obtained. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

found from ten to twenty cm below the surface that extended to as deep as 80 cmbs in ST #1. The artifacts collected from this dark brown level indicated that it had been deposited by surge activity. Numerous fragments of water worn glass were recovered from this level as well as a brick bat with coral growth on it. The glass fragments were no older than the turn of the century and some had been manufactured within the last 30 years. A resident of the island later informed the project directors that a large metal boat had apparently been dismantled in this area earlier in the century, an activity that would help to explain the melted metal fragments scattered along the south end of the cove. A large wreck is shown in the waters of Ruyter's Bay just to the south of Sandy Point on 1873 and 1917 maps of the island (Figures 14 and 15), although whether this is the boat in question is unknown.

In the center of the cove, ST #4 was placed on the back side of the storm surge dune in a solid mass of *Sansavaria*. Eighteenth century historic materials were found from 20 to 65 centimeters below the surface, including seven creamware sherds (1762-1820), one African-Caribbean sherd, and two kaolin pipe stem fragments (Figure 54:h-l, o, p). Two historic wine bottle tops were also found on the surface near this test that date from ca. 1780 to 1840 (Figure 54:m, n). Shovel test #5 opened 20 meters north of ST #4 produced no evidence for cultural material, indicating the historic deposits in this area are comparatively limited in extent.

Conclusions and Recommendations

A historic component was found on Sandy Point at Banana Bay South that is considered eligible for inclusion on the National Register of Historic Places. A dark midden lens dating to the twentieth century and artifacts dating to the third quarter of the eighteenth century were found in a

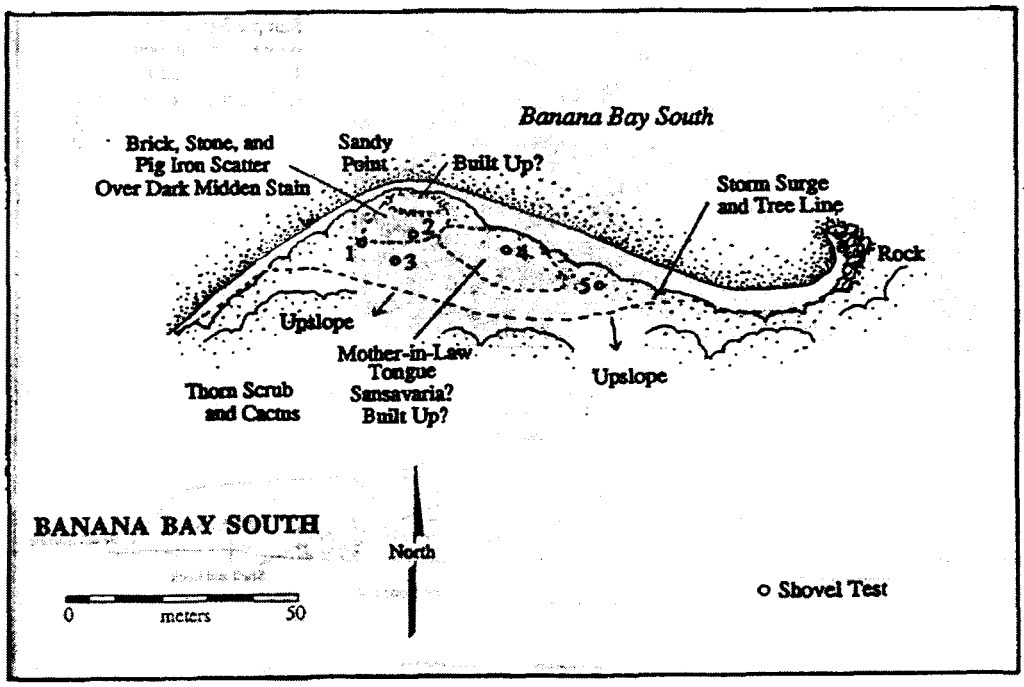


Figure 53. Banana Bay South Shovel Testing Program.
1992 Water Island Archeological Survey, U. S. Virgin Islands.

15 x 30-meter area. The historic archival study does not, however, indicate that any occupation occurred in this part of the island. It is possible that the powder magazine depicted on mid-nineteenth century maps at Ruyter's Bay, which is ca. 200 meters to the south, was mis-mapped. This is considered unlikely, however, since the powder magazine does not appear on eighteenth century maps, which is the age of the artifacts found in ST #4. The quantity and types of material recovered indicate that the Banana Bay South area was inhabited, though, and that in all likelihood a structure of some kind was constructed in the area. It is possible that this may be an outlying workshop associated with the plantation complex at Carolina Point.

The archeological components at Banana Bay South should be preserved and protected. If this is not possible, a comprehensive archeological data recovery should be undertaken, which would consist of close interval shovel testing (at ca. 3 meter intervals) followed by the complete excavation of any structures encountered or, in their absence, the excavation of at least two five-by-five-meter blocks into different parts of the scatter.

Providence Point Plantation (12-VAM-3-211)

The remains of Providence Point Plantation, and major eighteenth and nineteenth century settlement, are located along the main road that leads up the hill from Landing Bay (Figures 1, 2, 55, see also Figure 61 below). The area in which the plantation is depicted in the historic record has been developed and a number of modern structures have been built in the area where the plantation complex buildings were situated. Portions of plantation structures remain, and have been either incorporated into new buildings, or have been preserved intact by the current owners. The vegetation in the area consists of mowed grass and planted shrubs.

The 1992 Investigations

No previous archeological investigations are known to have occurred in the immediate vicinity of the structure complex making up Providence Point Plantation, although excavations were conducted at Landing Bay below this site earlier in the century (see below). Investigations conducted at the plantation complex consisted of surface reconnaissance and limited architectural documentation of the structural remains. The plantation appears on a number of nineteenth and twentieth century maps (Figures 10-15), and some, like the 1851 British Admiralty Hydrographic map of St. Thomas Harbor, provide considerable detail. Four structures, three surrounded by a fence or wall line of some kind, are shown on this map (Figure 14), and these structures continue to appear on maps up to 1917.

Surface survey was conducted from Landing Bay up to Providence Point on the east and west side of the road. This work took place in in lease lots labeled on island property maps #67-70, 72-78, and in the area between lots 78, 79, and 70. Subsurface testing was not conducted as the holders of these leased lots were off island. The remains of a bake oven and the walls of a cistern were located; the bake oven is located on the west side of the road while the cistern is directly across the road to the east (Figures 56, 57, 61). Both of these structures have been modified and incorporated into recently constructed buildings. The bake oven, which is in remarkable condition, is constructed of stone and brick, and is plastered on the outside (Figure 56). It is adjacent to a modern house. The interior arch of the oven is constructed of yellow brick followed by red brick and field stone around the arch. The cistern is used as a foundation for an apartment building, and only its west and north walls are exposed. Of the west wall 4.6 meters of the wall can be seen, while 5.8 meters of the north wall are visible. The walls are constructed of yellow brick and field stone set in mortar (Figure 57).

Conclusions and Recommendations

The remains of a major plantation complex were found at Providence Point that are considered eligible for inclusion on the National Register of Historic Places. Providence Point Plantation was constructed in the last quarter of the eighteenth century, and detailed year-by-year

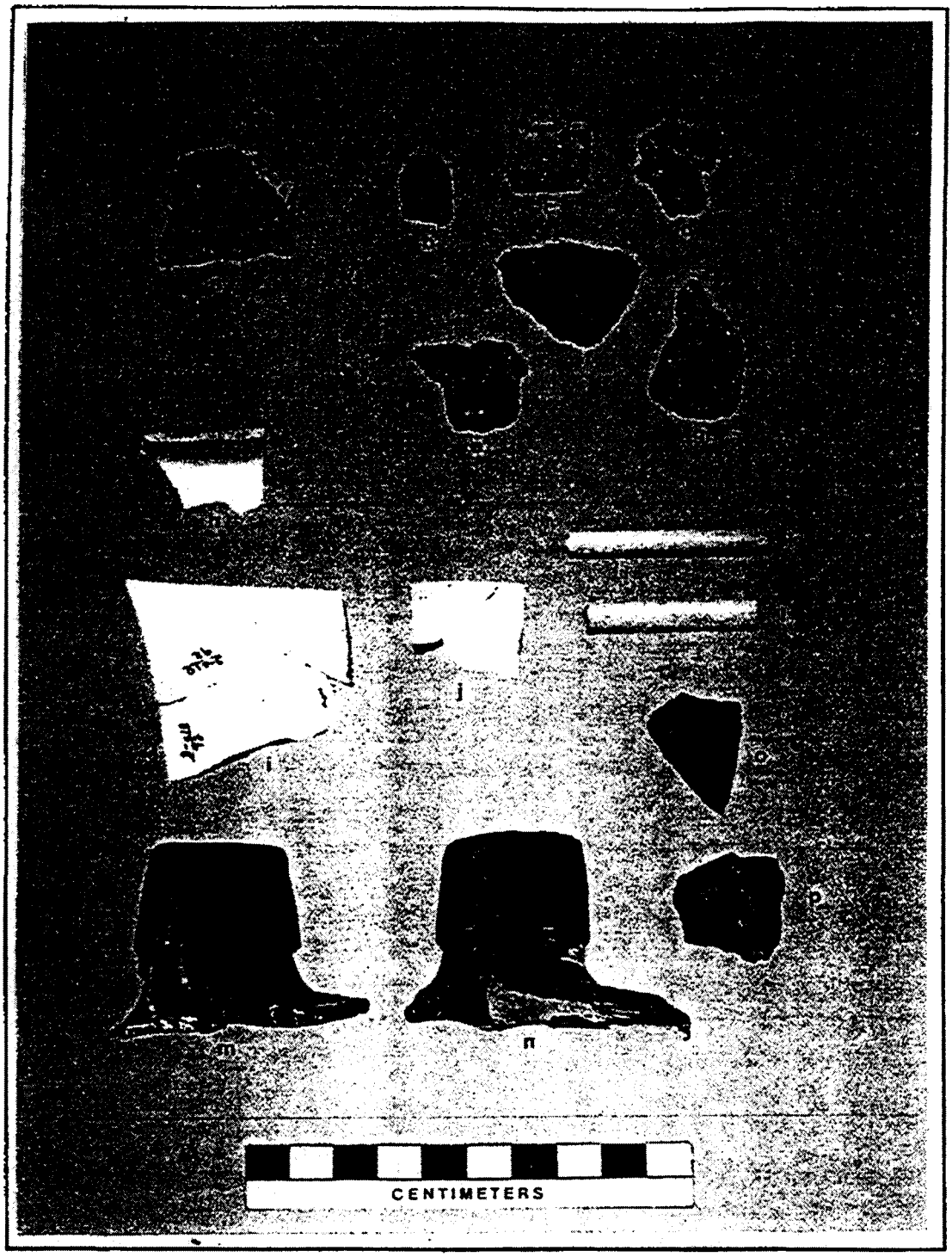


Figure 54. Historic Artifacts Found at Landing Bay, Sprat Bay, and Banana Bay South in Shovel Tests, 1992 Water Island Archeological Survey, U.S. Virgin Islands. a lead glazed earthenware El Morro; b .44 cal. bullet; c-g African Caribbean ware; h-j Creamware; k-l kaolin pipe stems; m-n Wine Bottle Neck and Lip fragments; o Redware; p African Caribbean ware.

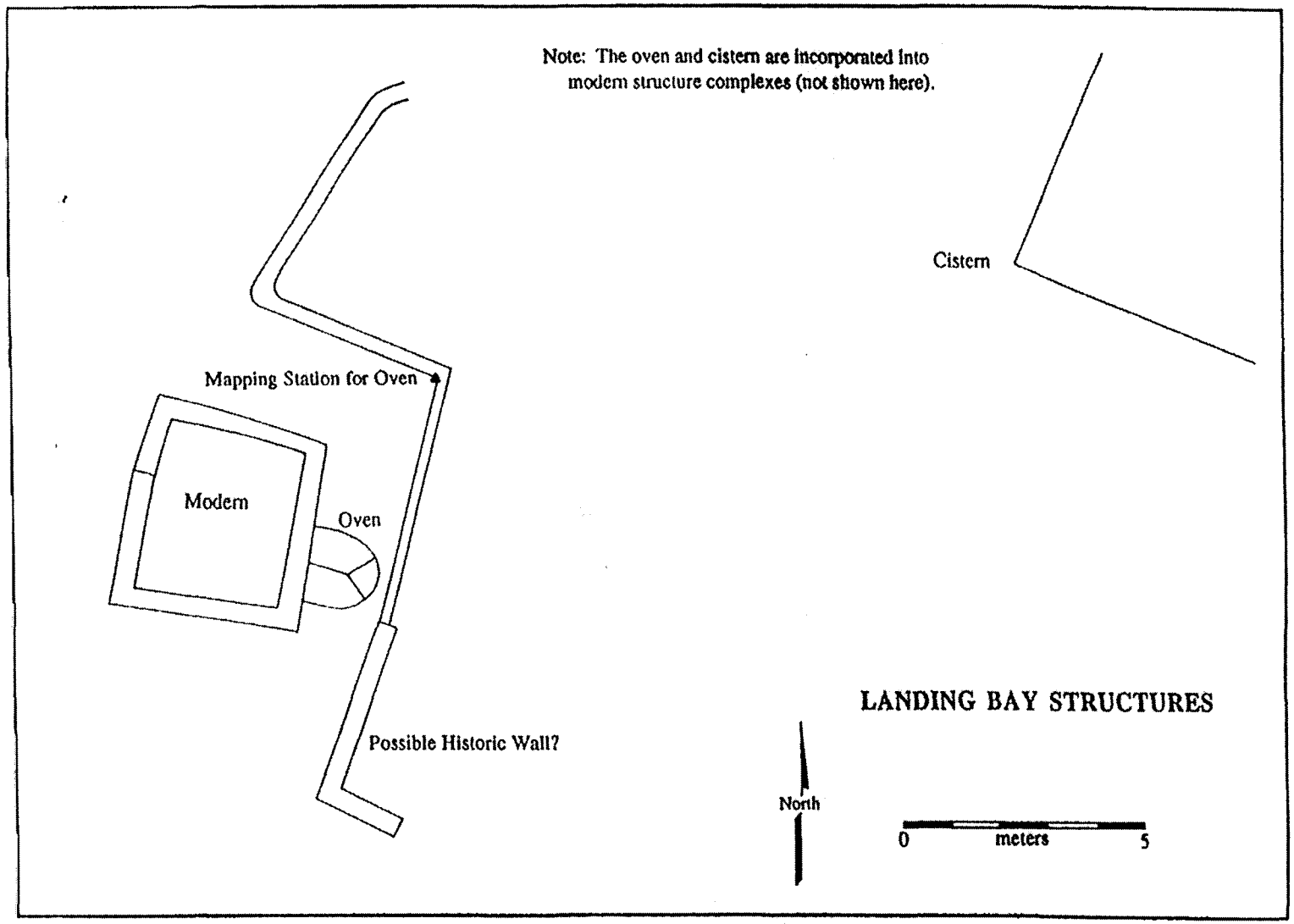
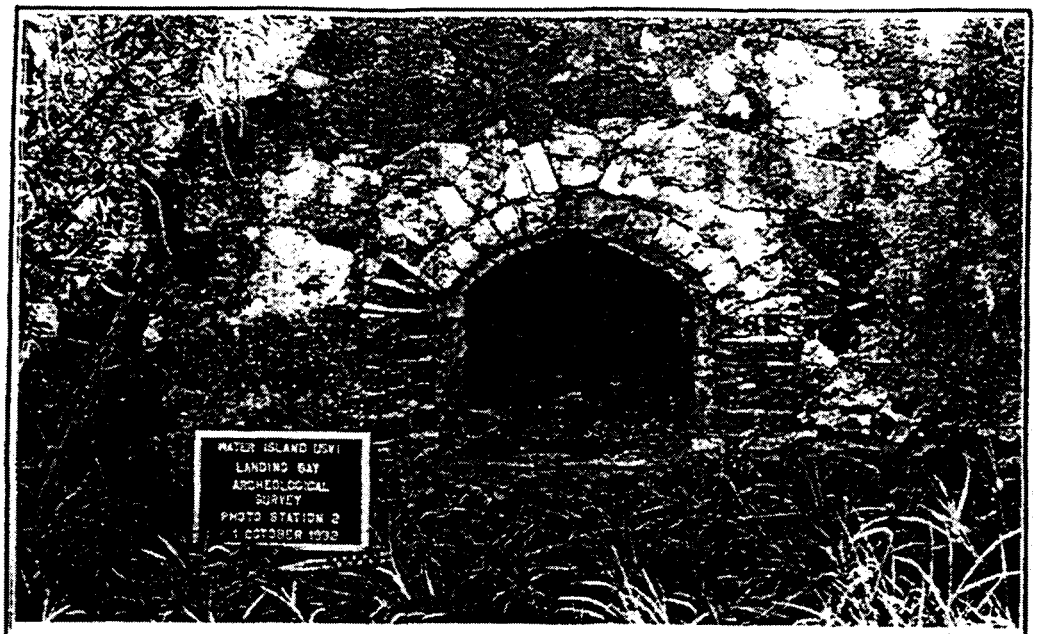


Figure 55. Landing Bay Structures. 1992 Water Island Archeological Survey, U. S. Virgin Islands.

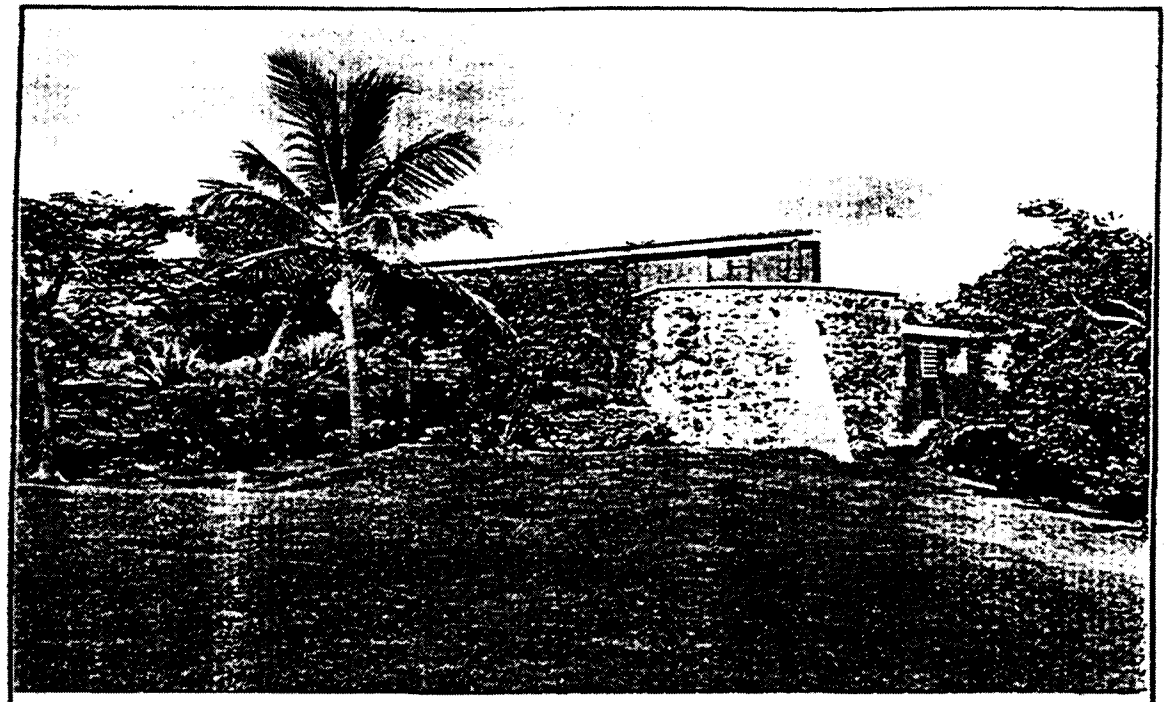


Western side of bake oven, showing arch construction detail.

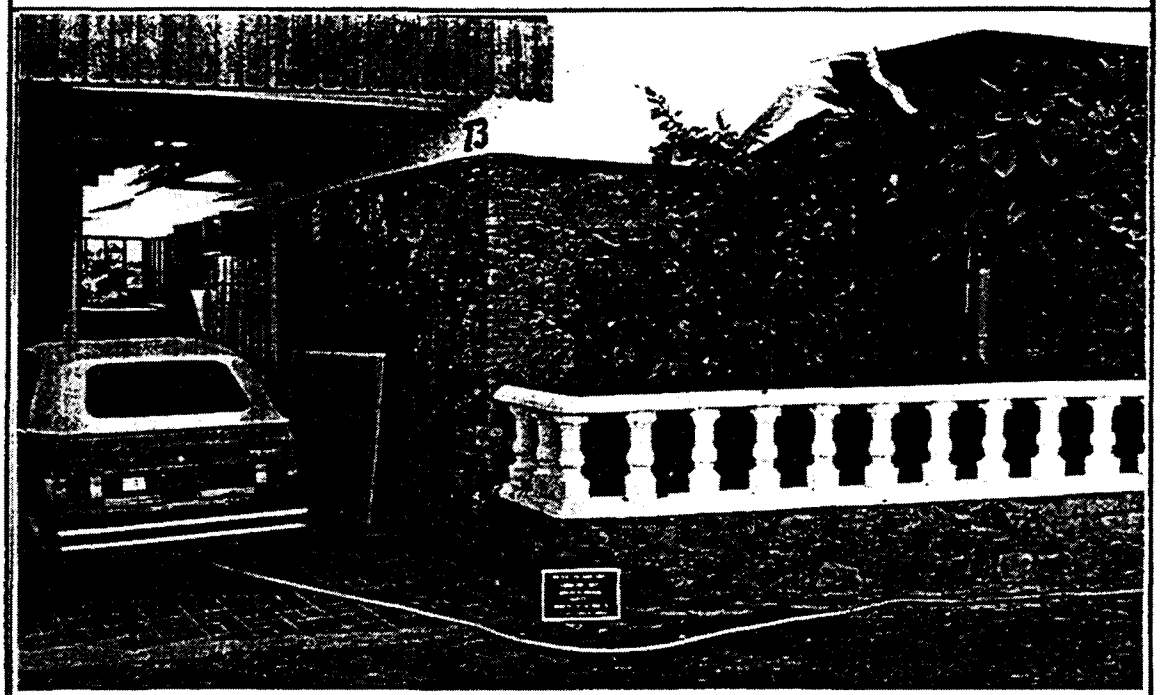


Eastern side of bake oven, with modern house in background.

Figure 56. Bake Oven, Views to West and East, Providence Point Plantation, Landing Bay. 1992 Water Island Archeological Survey, U.S. Virgin Islands.



Earlier structure beside a modern house.



Cistern incorporated into the foundation of a modern building.

Figure 57. Older Structures Incorporated into Modern Houses, Providence Point Plantation Area, Landing Bay. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

historical records of ownership and occupation date from 1799. According to the historic record, at least four structures were associated with the plantation. The area where these buildings were located has been severely disturbed by historic construction and development, although the remains of at least two structures have been preserved and incorporated into subsequent (recent) residences. During the 1992 survey, two historic support facilities were observed, a cistern and a bake oven. The bake oven has been altered slightly, but has been kept in a good state of repair. The cistern is used for the foundation of an apartment unit. Subsurface investigations in the area where the plantation complex is assumed to have been present could not be conducted due to private ownership.

The plantation remains on Providence Point, specifically the existing bake oven and cistern, should be protected and preserved. If preservation of the plantation complex is not possible, a comprehensive archeological data recovery and analysis should be undertaken to document existing structures and verify and document any subsurface features and foundations that may be present. In order to accurately determine the extent of archeological remains, a systematic testing program of the area within 75 meters of the existing bake oven and cistern should be conducted. This testing program should proceed using remote sensing equipment (i.e., metal detector, magnetometer, resistivity) followed by subsurface investigations to examine and document anomalies.

Fort Segarra

During and shortly after World War II an extensive series of structures were built on Water Island by the military. A total of 53 military structures were recorded as present on the island in 1953, in an offering circular released by Water Island, Inc. (Tyson 1980) (Figure 58). A massive underground fortifications complex, Fort Segarra, was built on Flamingo Point at the south end of the island. Almost all of the upper, accessible part of Flamingo Point away from the steep cliffs overlooking the ocean was surveyed in 1992. Limited archival research was also undertaken on the period of U.S. military presence during the 1940s and early 1950s, and structures dating to this period were documented whenever they were encountered during the survey. The recording of these World War Two-era facilities, however, was not a primary objective of the project

The Fort Segarra complex includes two gun emplacements located about 30 feet below the crest of Flamingo Point; these were serviced by in an extensive underground bunker complex centered below an observation tower located on the highest part of the hill (Figures 59, 60). Although several modern houses ring the Fort Segarra complex, the gun emplacements and observation tower area are currently undeveloped. During the 1992 survey the project directors were told that portions of the underground bunker complex had been walled off in recent years and serve as a 750,000-gallon fresh water cistern for the island's inhabitants. Consistent with this use, the remaining portions of the Fort Segarra complex should be preserved and protected. If preservation is not an option, then a comprehensive archival study should be made of the installation's construction and use, and HABS-HAER architectural documentation should be prepared for the complex.

Sites Not Eligible for Inclusion on the National Register of Historic Places

Landing Bay (12-VAM-3-10)

A prehistoric archeological site and a historic cemetery were previously located in Landing Bay, which is located on the northwestern side of Water Island north of Druif Bay and south of Elephant Bay (Figures 1, 2, 61). The cove is approximately 80 meters long and extends 60 meters back from the water line. The bay is characterized by a shallow beach approximately eight meters wide, behind which lies a tree line. A storm surge dune is located at a mid point along the length

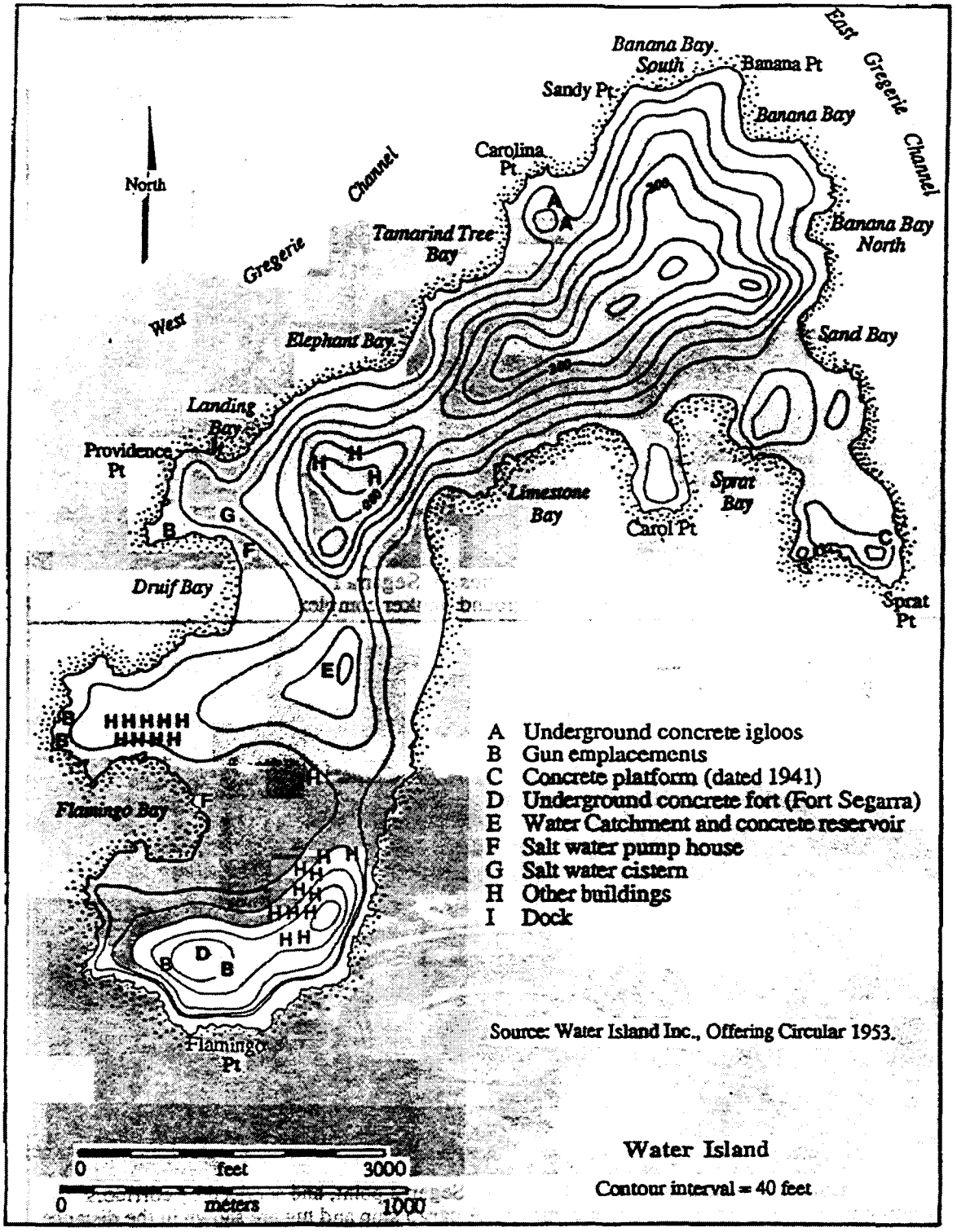
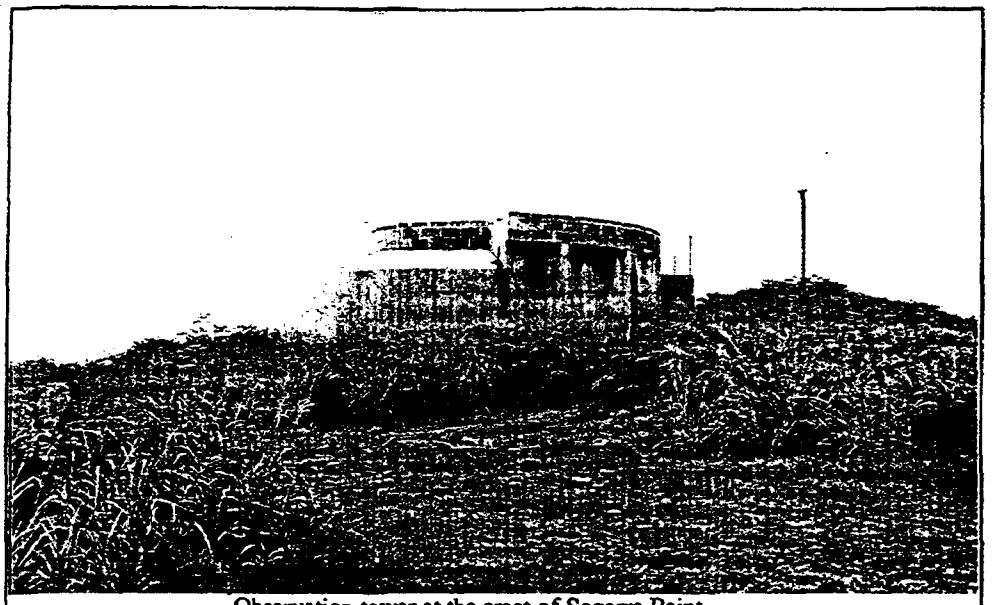
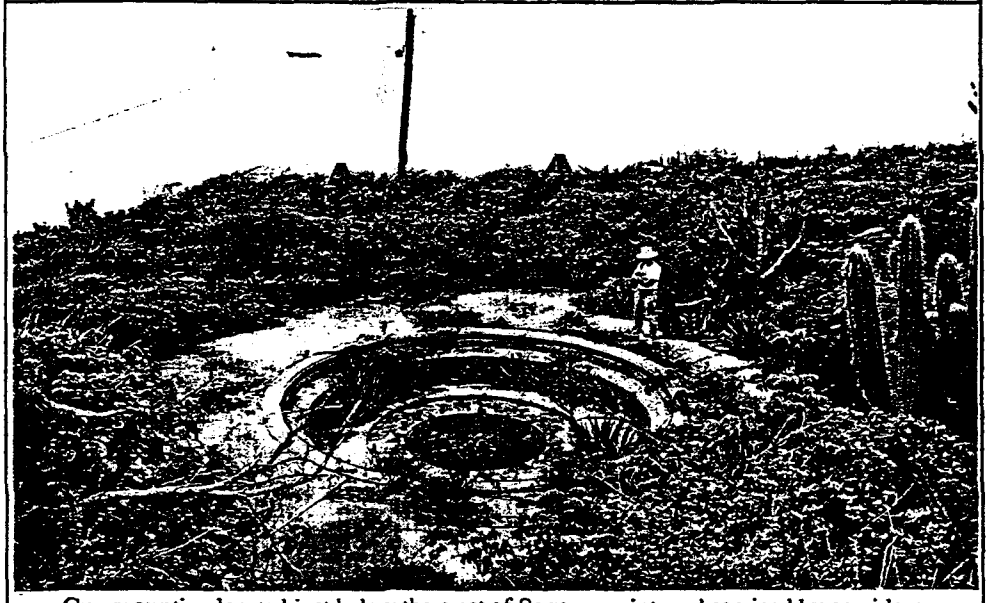


Figure 58. U.S. Army Facilities on Water Island in 1952 (locations approximate).



Observation tower at the crest of Segarra Point,
over a massive underground bunker complex.



Gun mounting located just below the crest of Segarra point, and serviced by corridors leading into the underground bunker complex. A cargo ship and tug are shown in the distance.

Figure 59. World War Two Military Structures on Segarra Point.
1992 Water Island Archeological Survey, U.S. Virgin Islands.



Figure 60. Overgrown Entranceway into the Underground Bunker Complex on Segarra Point, Behind One of the Two Gun Emplacements. 1992 Water Island Archeological Survey, U.S. Virgin Islands.

been destroyed and, hence, the Landing Bay area is considered not eligible for inclusion on the National Register of Historic Places. No further investigations in this area are recommended.

Druif or Honeymoon Bay (12-VAM-3-32)

A prehistoric component had been previously reported in Druif (also called Honeymoon) Bay, which is located along the northwest coast of Water Island just south of Providence Point (Figures 1, 2, 62). The cove is approximately 220 meters long and extends 110 meters back from the water line, and is characterized by a man-made sand beach about ten meters wide behind which lie planted shrubs and trees. A club house, wooden pavilion, and beach house have been built at the north end of the cove in this area, while a volleyball court is located at the south end of the cove. A paved road located 40 to 50 meters west of the shoreline runs the length of the cove. To the west of this road is a level area that has been bulldozed to bedrock in several locations; thorn scrub and cactus forest occupy the remainder of the back of the cove.

Previous Investigations

A prehistoric stone axe was reported to have been found on the beach at Druif Bay by Water Island resident Walter Phillips. In December of 1980, Barbara Johnston and a crew of three conducted a surface survey of the cove area in an attempt to determine whether a prehistoric site was present in the cove. They found one water-worn prehistoric sherd on the surface near a footpath within the access road turnaround at the north end of the cove. A 1.5-by-1.5-foot excavation unit was opened in the area where the sherd had been recovered. The test, which was excavated to 30 cm below the surface, did not produced additional artifacts.

The 1992 Investigations

Prior to testing at Druif Bay in 1992, island residents Walter Phillips and Warren Pond told the project directors that the beach area had been extensively altered over the past 40 years. They stated that a large quantity of the sand and coral from Limestone Bay had been removed using heavy equipment and redeposited in the cove at Druif Bay, and that the bay area itself had been dredged with the spoil placed in the cove behind the beach. Examination of Limestone Bay supported these statements, as a large section of the storm surge along that beach had been bulldozed to depths of over a meter. In discussions with Walter Phillips conducted while the fieldwork was underway he stated that the axe found on the beach had been packed away after Hurricane Hugo and that he was unable to put his hands on it.

In spite of the evidence for extensive disturbance of the beach area, an intensive testing program was conducted during the 1992 project that included surface reconnaissance and shovel testing. A total of 18 shovel tests were opened at Druif Bay in an attempt to locate evidence for possible buried cultural remains. This testing confirmed that the cove area had been severely disturbed by clearing and the construction of the beach and associated structures. No cultural material was found in any of the units except recently deposited concrete and other modern debris.

Conclusions and Recommendations

A prehistoric site, found during survey work conducted in 1980, was previously reported in the Druif Bay area. In 1992 an extensive testing program was conducted in the cove and found that the site area had apparently been completely destroyed by recent development of the beach. A number of new structures had been built in the cove; a paved road had been put through the reported site area; and, during this construction, extensive filling and bulldozing occurred. Any site once present has since apparently been destroyed and, hence, the Honeymoon Bay area is considered not eligible for inclusion on the National Register of Historic Places. No further investigations in this area are recommended.

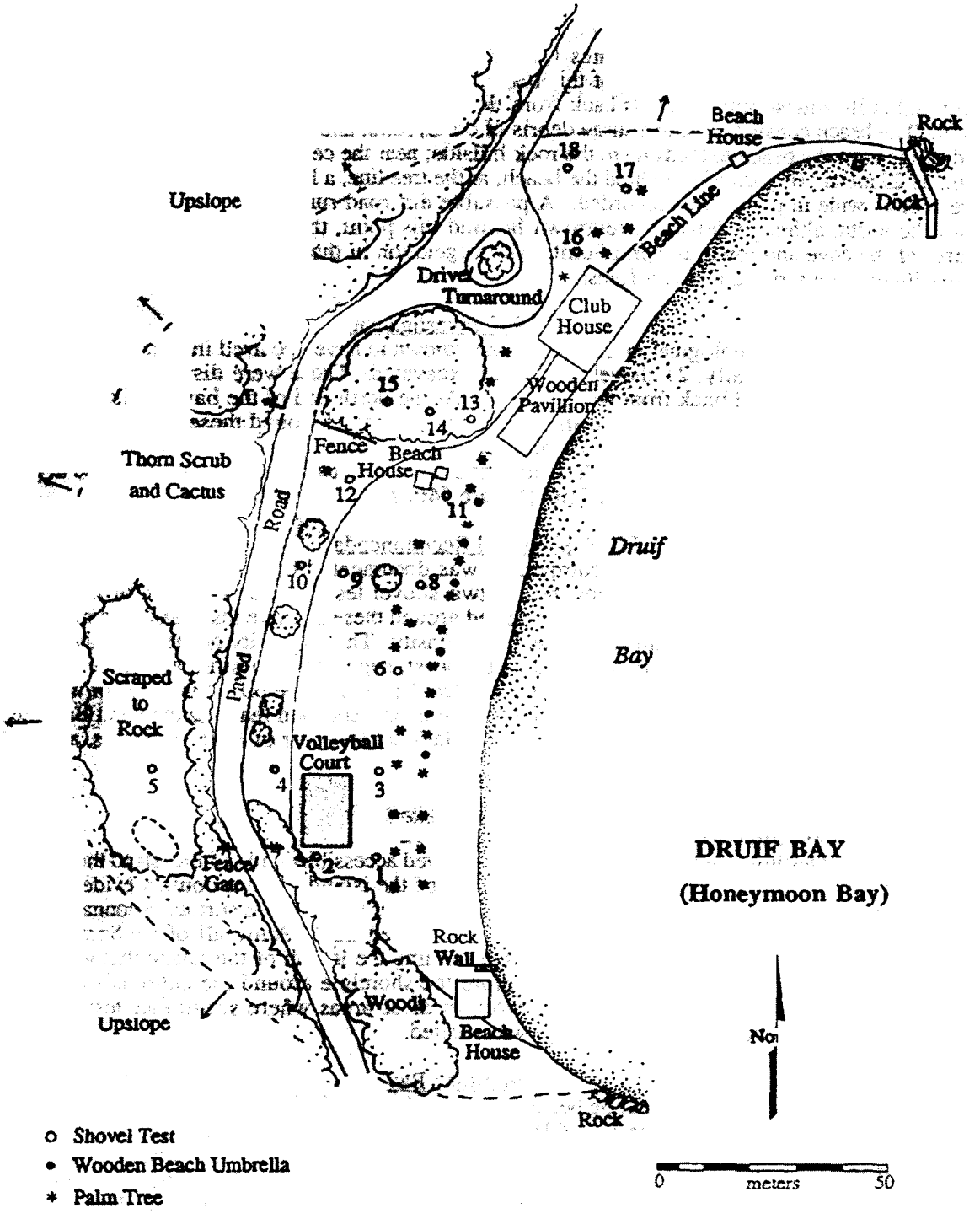


Figure 62. Druif (Honeymoon) Bay Shovel Testing Program.
1992 Water Island Archeological Survey, U.S. Virgin Islands.

Sprat Bay (12-VAM-3-212)

Sprat Bay beach is located along the south side of the Sprat Point peninsula on the northeastern side of Water Island (Figures 1, 2, 63). The Sprat Bay Structure site is located on the hill about 20 meters to the northeast of this beach. The cove itself is approximately 180 meters long and at its widest point extends back from the water line approximately 80 meters to a salt pond. The beach consists of storm surge debris of coral, sand, and water worn rock. At the north end of the cove the beach extends up to the rock hillside; near the center of the cove the beach is as wide as 25 meters (Figure 63). Behind the beach, at the tree line, a large dune of storm surge up to five meters wide in places was recorded. A passable dirt road runs to the backside of the cove from the north; although densely overgrown beyond this point, the road continued through the center of the cove and towards Sprat Point. The vegetation in the Sprat Bay cove area consists primarily of thorn scrub and cactus forest.

The 1992 Investigations

No previous archeological investigations are known to have occurred in Sprat Bay prior to the present survey. Initially, 21 shovel tests were excavated. These were dispersed at taped 20 meter intervals along and back from the shoreline. At the north end of the bay in STs # 3 and 8 pottery was found. An additional seven shovel tests were opened around these two positive tests in an unsuccessful attempt to locate more cultural material and delimit site extent. The pottery recovered from this area, six sherds in all, is identical to the African-Caribbean ware found at the Sprat Bay Structure site and at Carolina Point (Figure 54:b-g).

Conclusions and Recommendations

At Sprat Bay an early historic component was documented by the presence of sherds of African-Caribbean ware that were recovered in two shovel tests at the north end of the cove. Extensive additional close-interval testing conducted around these positive tests produced negative results, suggesting the scatter is limited in extent and density. The proximity of the site to the Sprat Bay Structure, which is located upslope and to the west, suggests a possible association. It is possible that the African-Caribbean ware found at Sprat Bay may have been discarded or washed from this site. Due to the absence of appreciable remains or associated features the Sprat Bay site area is considered not eligible for inclusion on the National Register of Historic Places, and no further investigations are recommended.

Other Areas Investigated on Water Island in 1992

The 1992 testing program of Water Island surveyed accessible lands of the island that could feasibly support human occupation. A large portion of the island did not contain evidence for either prehistoric or (pre-modern era) historic activity. Other areas where surface reconnaissance was conducted and no cultural material was found included Carol Point, all of the Sprat Point peninsula, and the level areas on the central ridge running the length of the island that were not developed. In addition, a boat was used to explore the shoreline around the entire island. The remaining pages of this chapter summarizes work in those areas where subsurface testing was conducted but no evidence for cultural activity was located.

Limestone Bay

Limestone Bay and the adjoining beach to the south runs approximately 2000 feet along the south side of Water Island (Figures 1, 2, 64). The bay is exposed to the open sea, and much of the beach is covered with deep storm surge coral and rock debris to a depth of over a meter (see Figure 20). Some of this surge material near the large salt pond located in the center of the bay salt had been removed for use as fill, and the heavy equipment scars were pronounced. This borrow activity demonstrated, however, that the storm surge was up to two meters deep in places. Although much of the cove was inaccessible, a narrow sandy beach was present at the north end of the bay, near where an access road runs down to the water. A series of seven shovel tests were opened in this area to be certain that no evidence for cultural remains were present below the

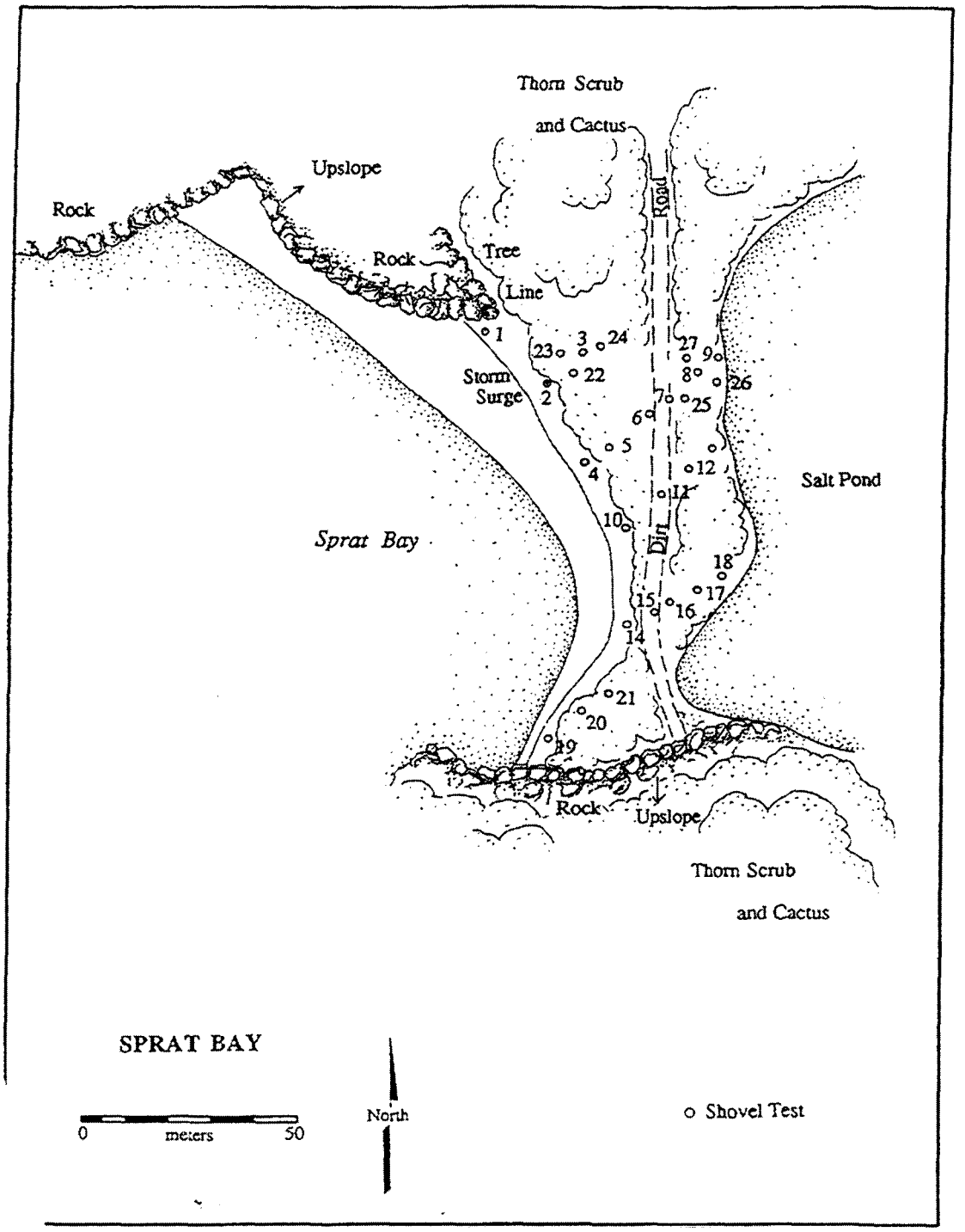


Figure 63. Sprat Bay Shovel Testing Program.
1992 Water Island Archeological Survey, U. S. Virgin Islands.

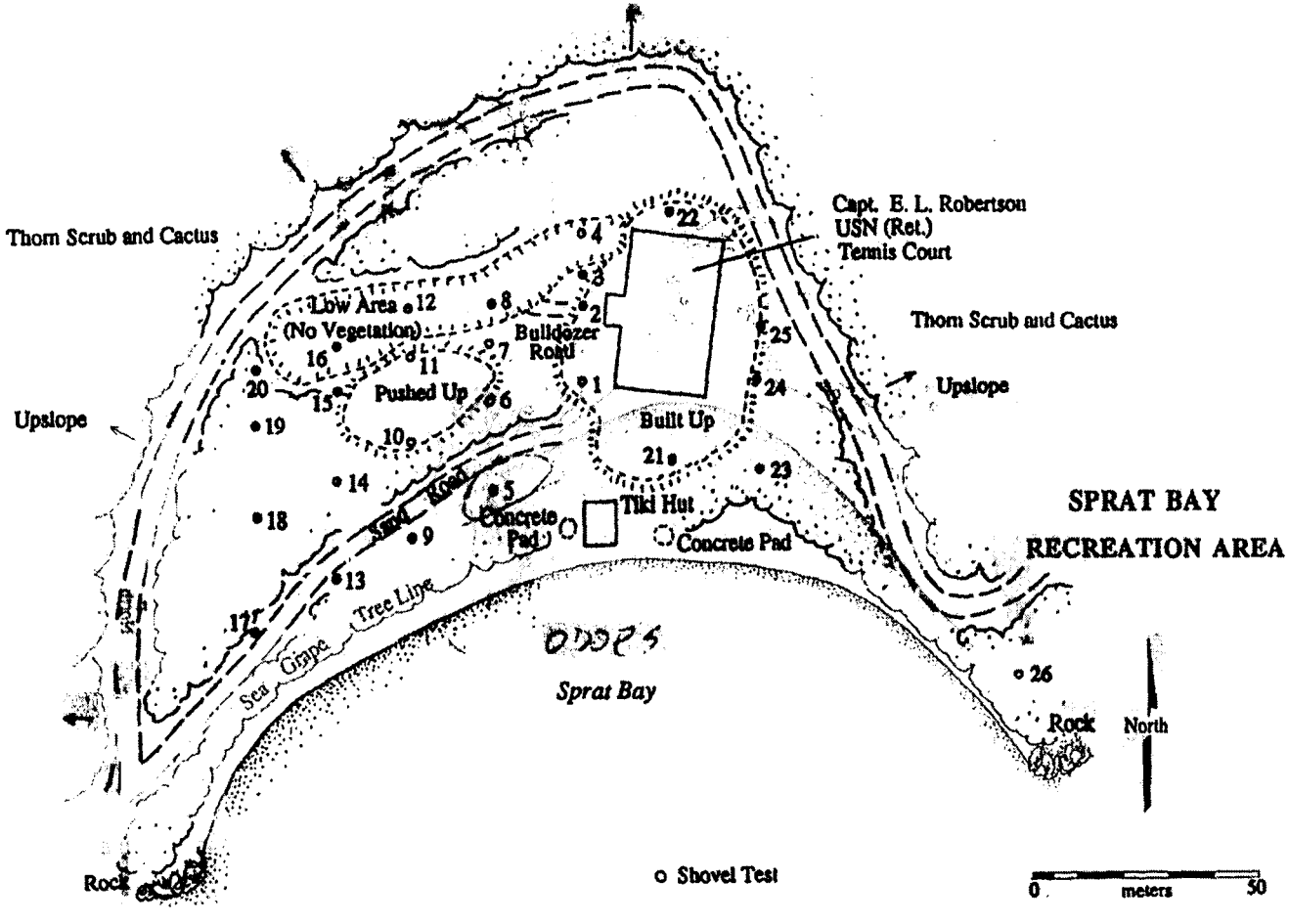


Figure 70. Sprat Bay Recreation Area Shovel Testing Program.
1992 Water Island Archeological Survey, U. S. Virgin Islands.

beach leading to a pavilion and tennis court; another road was cut at the base of the hillside around the back of the cove. Vegetation in the beach area consists of planted shrubs and trees, while the back of the cove is in thorn scrub and cactus forest. Bulldozer spoil piles and low areas that look like borrow pits were observed toward the back of the cove during the surface reconnaissance. A total of 26 shovel tests were opened across the cove (Figure 70). Most of these tests documented extensive changes in the topography of the area through either the removal of soils or the importation of sand fill. In some of the units disturbance was evident to as much as a meter. No archeological (i.e., non-modern) remains were found in any of the tests.

Carol Point West Beach

Subsurface testing was conducted at the beach and cove located along the west side of Carol Point. From the water line a large surge dune extends back to as much as 20 meters, behind which is a thorn scrub and cactus forest. Eight shovel tests were opened in the forested area of the cove, but no evidence for prehistoric or historic activity was found (Figure 71).

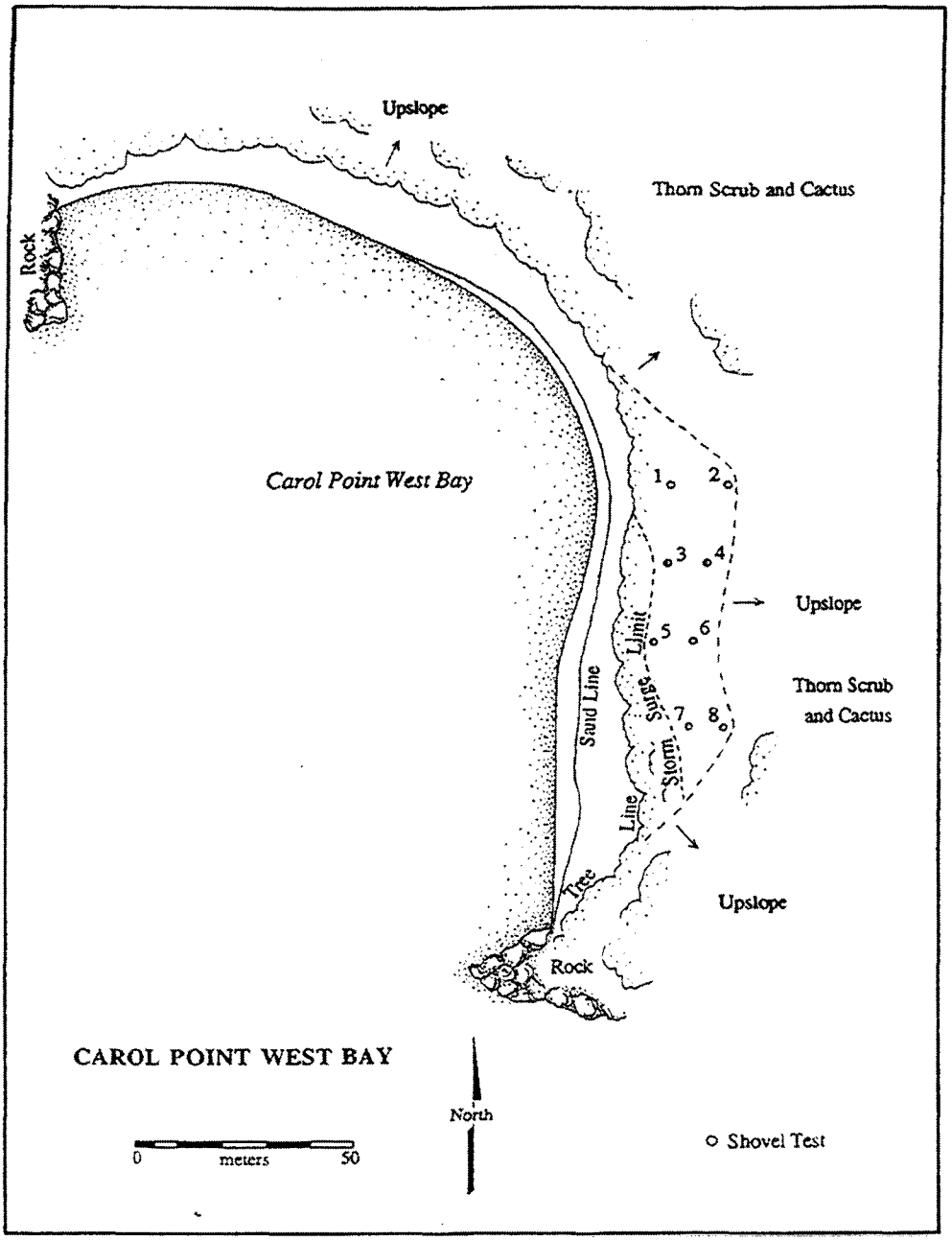


Figure 71. Carol Point West Bay Shovel Testing Program.
1992 Water Island Archeological Survey, U.S. Virgin Islands.

Chapter VIII
CONCLUSIONS

Ken S. Wild and David G. Anderson

The 1992 cultural resources investigations on Water Island documented the existence of 11 prehistoric and historic archeological sites, of which eight were determined to be eligible for inclusion on the National Register of Historic Places. In addition, the extensive World War II era bunker and gun emplacement complex, Fort Segarra, located on Flamingo Point at the southern end of the island, is also considered eligible for inclusion on the National Register of Historic Places. All of these sites should be preserved and protected and, if preservation is not an option, than the data recovery programs presented in the Management Summary and in Chapter VII should be implemented..

The fieldwork indicates that Water Island never saw intensive settlement during the prehistoric era, and that it was only sparsely settled through much of the historic era. Most of the prehistoric sites that were found appear to reflect short term camps; no sites were found with a density and diversity of remains to suggest permanent settlement. The sites that are present were likely formed by task groups coming over from the main island of St. Thomas to exploit the resources on the island and in the waters around it. The large conch shell midden found at the north end of the island, in Banana Bay, is a classic example of this kind of special purpose site, and one that appears to have formed over several centuries.

Prior to the late twentieth century development boom that brought fairly large numbers of people to Water Island, the only other period when comparable numbers of people were present was during the years shortly before and after 1800, when fairly large numbers of slaves (>50) were working the island's two plantations. A distinctive feature of the historic occupation of the island is the fact that for much of the later eighteenth and nineteenth centuries the principal land and slave owners were freed blacks.

APPENDICES

Appendix I. **Artifact Inventory by Site and Provenience.**
(Regina Leabo)

I-A Artifact Inventory by Site, Catalog Number, and Provenience
I-B Recent Materials Discarded in Laboratory
I-C Descriptions of Prehistoric Pottery Found at Elephant Bay, 1992 Water Island Survey Project

Appendix II. **Shovel Test Stratigraphy.**
(Regina Leabo).

Appendix III. **Ownership Records, Carolina's Lyst and Proovidence Point Plantations**

(George F. Tyson, Jr.).

III-A Carolina Lyst Plantation Ownership and Occupational History 1769-1794
III-B Carolina Lyst Plantation Ownership and Occupational History 1795-1914
III-C La Providence Plantation Ownership and Occupational History 1799-1914

Appendix I
Artifact Inventory by Site and Provenience.

Assembled by Regina Leabo

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APPENDIX IA: ARTIFACT INVENTORY BY SITE, CATALOG NUMBER, AND PROVENIENCE

PROVENIENCE	FIELD SPECIMEN NUMBER	CATALOG NUMBER	CATAGORY	COUNT	DESCRIPTION
CAROLINA POINT (12-VAM-3-209)					
GSC	1	3-209/92	CREAMWARE	5	PLAIN BODY SHERD
GSC	1	3-209/92	CREAMWARE		PLAIN RIM SHERD
GCS	1	3-209/92	CREAMWARE	1	PLAIN BASE SHERD
GSC	1	3-209/92	CREAMWARE	1	DIPTWARE WORMMYFINGER PATTERN
GSC	1	3-209/92	PEARLWARE	7	PLAIN BODY SHERD
GSC	1	3-209/92	PEARLWARE	2	PLAIN BASE SHERDS
GSC	1	3-209/92	PEARLWARE	3	BLUE TRANSFER PRINT WILD ROSE PATTERN
GSC	1	3-209/92	PEARLWARE	6	BLUE TRANSFER PRINT WILLOW PATTERN
GSC	1	3-209/92	PEARLWARE	1	HAND PAINTED BLUE RIM BAND
GSC	1	3-209/92	PEARLWARE	18	BLUE TRANSFER PRINT PATTERN UNKNOWN
GSC	1	3-209/92	PEARLWARE	2	BROWN TRANSFER PRINT PATTERN UNKNOWN
GSC	1	3-209/92	WHITEWARE	4	PLAIN BODY SHERDS
GSC	1	3-209/92	WHITEWARE	3	BANDED ANNULAR WARE
GSC	1	3-209/92	WHITEWARE	1	BLACK TRANSFER PRINT PATTERN UNKNOWN
GSC	1	3-209/92	WHITEWARE	4	BLUE TRANSFER PRINT PATTERN UNKNOWN
GSC	1	3-209/92	WHITEWARE	2	BLUE SHELL EDGED EVEN SCALLOP
GSC	1	3-209/92	WHITEWARE	1	GREEN SHELL EDGED EVEN SCALLOP
GSC	1	3-209/92	PORCELAIN	1	CANTON PORCELAIN
GSC	1	3-209/92	STONEWARE	2	GINGER BEER / INK WELL CONTAINERS
GSC	1	3-209/92	MEDICINE JAR	1	REFINED EARTHENWARE
GSC	1	3-209/92	REDWARE	5	UNGLAZED PLAIN REDWARE
GSC	1	3-209/92	OLIVE JAR	1	LATE SYTLE OLIVE JAR
GSC	1	3-209/92	EARTHENWARE	5	LEAD GLAZED EARTHENWARE EL MORRO
GSC	1	3-209/92	REDWARE	2	REFINED GREEN LEAD GLAZED REDWARE
GSC	1	3-209/92	BOTTLE GLASS	1	DARK GREEN WINE BOTTLE PARABOLIC BASE
GSC	1	3-209/92	TABLE GLASS	1	MOLD BLOWN TABLE GLASS COLOR CLEAR
GSC	1	3-209/92	BOTTLE GLASS	1	FLANGED LIP FRAG.EARLY GIN BOTTLE
GSC	1	3-209/92	BOTTLE GLASS	1	BULGED DARK GREEN BOTTLE NECK
GSC	1	3-209/92	BOTTLE GLASS	1	GIN CASE BOTTLE BASE BROKEN PONTIL
GSC	2	3-209/92	REDWARE	1	BASE SHERD TIN ENAMEL INTERIOR GLAZE
GSC	2	3-209/92	REDWARE	2	LEAD GLAZE EXT.-TIN ENAMALE INT.
GSC	2	3-209/92	PEARLWARE	1	HAND PAINTED COBALT BLUE FLORAL PATTERN
GSC	2	3-209/92	METAL	1	CAST IRON BOWL RIM
GSC	2	3-209/92	BOTTLE GLASS		WINE BOTTLE OLIVE GREEN 3 PART MOLD
GSC	2	3-209/92	BOTTLE GLASS	1	WINE BOTTLE BASE OLIVE GREEN DIP MOLD
GSC	2	3-209/92	BOTTLE GLASS	1	WINE BOTTLE BASE OLIVE GREEN DIP MOLD
GSC	2	3-209/92	BOTTLE GLASS	1	WINE BOTTLE BASE OLIVE GREEN DIP MOLD
GSC	2	3-209/92	BOTTLE GLASS		WINE BOTTLE BASE OLIVE GREEN DIP MOLD
GSC	2	3-209/92	BOTTLE GLASS	4	GIN BOTTLE BASES MOLD BLOWN
GSC	2	3-209/92	BOTTLE GLASS	3	BOTTLE LIPS LAID ON RINGS
GSC	3	3-209/92	BOTTLE	1	COMPLETE GIN BOTTLE GREEN MOLD BLOWN
GSC	4	3-209/92	BOTTLE GLASS	1	WINE BOTTLE BASE OLIVE GREEN DIP MOLD
ST 1	5	3-209/92	PEARLWARE	4	BLUE TRANSFER PRINT FLORAL PATTERN
ST 1	5	3-209/92	PEARLWARE	1	RIM SHERD BLUE TRANSFER PRINT BANDED
ST 1	5	3-209/92	PEARLWARE	1	PLAIN BODY SHERD
ST 1	5	3-209/92	WHITEWARE	1	BLUE GLAZED EXTERIOR BODY SHERD
ST 1	5	3-209/92	PIPE BOWL	1	KAOLIN PIPE BOWL FRAGMENT
ST 2	6	3-209/92	PEARLWARE	1	BLUE TRANSFER PRINT PATTERN UNKNOWN
ST 3	7	3-209/92	WHITEWARE	1	PLAIN BODY SHERD
ST 4	8	3-209/92	CREAMWARE	1	PLAIN BODY SHERD
ST 4	8	3-209/92	PEARLWARE	1	BLUE HAND PAINTED ROSE PATTERN PRINT
ST 4	8	3-209/92	PEARLWARE	3	BLUE TRANSFER PRINT PATTERN UNKNOWN
ST 4	8	3-209/92	EARTHENWARE	4	LEAD GLAZED EARTHENWARE EL MORRO
ST 4	8	3-209/92	STONEWARE	1	NOTTINGHAM WARE
ST 4	8	3-209/92	AFRICAN WARE	1	AFRICAN CARIBBEAN WARE
ST 4	8	3-209/92	BACIN	1	GREEN LEAD GLAZED BACIN
ST 4	8	3-209/92	BRICK	3	HAND MADE BRICKS
ST 4	8	3-209/92	PIPESTEMS	3	KAOLIN PIPESTEMS BORE DIAMETER 1/18
ST 4	8	3-209/92	PIPESTEMS	3	KAOLIN PIPESTEMS BORE DIAMETER 5/64
ST 4	8	3-209/92	PIPE BOWL	1	KAOLIN PIPE BOWL FRAGMENT
ST 4	8	3-209/92	NAILS	1	ROSE HEAD CUT NAIL

APPENDIX IA: ARTIFACT INVENTORY BY SITE, CATALOG NUMBER, AND PROVENIENCE

PROVENIENCE	FIELD SPECIMEN NUMBER	CATALOG NUMBER	CATAGORY	COUNT	DESCRIPTION
ST 4	8	3-209/92	NAILS	1	CUT NAIL MACHINED
ST 4	8	3-209/92	GUN FLINT	1	ENGLISH GUN FLINT DOVER CHERT
ST 5	9	3-209/92	WHITEWARE	1	PLAIN BODY SHERD
ST 5	9	3-209/92	PIPE STEMS	1	KAOLIN PIPE STEM BORE DIAMETER 5/64
ST 6	10	3-209/92	EARTHENWARE	1	WHITE SALT GLAZED STONEWARE
ST 6	10	3-209/92	STONEWARE	1	ALBANY SLIP INTERIOR
ST 6	10	3-209/92	METAL	1	IRON KETTLE HANDLE
ST 6	10	3-209/92	NAILS	14	ROSE HEAD CUT NAILS
ST 6	10	3-209/92	BRICK	1	YELLOW DANISH BRICK
ST 6	10	3-209/92	BRICK	1	RED BRICK
ST 7	11	3-209/92	PIPE STEMS	1	KAOLIN PIPE STEM BORE DIAMETER 5/64
ST 8	12	3-209/92	CREAMWARE	1	PLAIN BODY SHERD
ST 8	12	3-209/92	WHITEWARE	1	PLAIN BODY SHERD
ST 8	12	3-209/92	WHITEWARE	2	BLUE TRANSFER PRINT PATTERN UNKNOWN
ST 8	12	3-209/92	EARTHENWARE	3	LEAD GLAZED EARTHENWARE EL MORRO
ST 8	12	3-209/92	NAIL	1	ROSE HEAD CUT NAIL FRAGMENT
EU1	13	3-209/92	CREAMWARE	1	PLAIN BODY SHERD
EU1	13	3-209/92	PEARLWARE	1	PLAIN RIM SHERD
EU1	13	3-209/92	WHITEWARE	1	PLAIN BODY SHERD
EU1	13	3-209/92	EARTHENWARE	22	LEAD GLAZED EARTHENWARE EL MORRO
EU1	13	3-209/92	STONEWARE	1	GINGER BEER BOTTLE / INK WELL CONTAINER
EU2	14	3-209/92	DELFT	1	PLAIN TIN ENAMEL
EU2	14	3-209/92	PEARLWARE	3	BROWN TRANSFER PRINT PATTERN UNKNOWN
EU2	14	3-209/92	PEARLWARE	1	BROWN TRANSFER PRINT RIM PATTERN UID
EU2	14	3-209/92	WHITEWARE	3	PLAIN BODY SHERDS
EU2	14	3-209/92	WHITEWARE	1	PLAIN RIM SHERD
EU2	14	3-209/92	PORCELAIN	1	PLAIN HANDLE FRAGMENT
EU2	14	3-209/92	BUTTON	1	SHELL BUTTON 4 HOLES 10.6MM DIAMETER
EU3	15	3-209/92	PORCELAIN	6	PLAIN BODY SHERD
EU3	15	3-209/92	PEARLWARE	1	BLUE TRANSFER PRINT CONTINENTAL VIEW
EU3	15	3-209/92	WHITEWARE	1	BLUE TRANSFER PRINT WILLOW PATTERN
EU3	15	3-209/92	EARTHENWARE	1	LEAD GLAZED EARTHENWARE EL MORRO
EU4	16	3-209/92	WHITEWARE	1	BLACK TRANSFER PRINT OVERGLAZED PAINT
EU4	16	3-209/92	REDWARE	1	GREEN LEAD GLAZED EXTERIOR REDWARE
EU4	16	3-209/92	EARTHENWARE	1	LEAD GLAZED EARTHENWARE EL MORRO
GSC	80	3-209/92	CREAMWARE	1	PLAIN BODY SHERD
GSC	80	3-209/92	WHITEWARE	1	PLAIN BODY SHERD
GSC	80	3-209/92	PORCELAIN	1	BLUE TRANSFER PRINT ENGLISH PORCELAIN
GSC	80	3-209/92	EARTHENWARE	1	UNGLAZED EARTHENWARE
GSC	80	3-209/92	EARTHENWARE	1	GREEN GLAZED EARTHENWARE
GSC	80	3-209/92	BOTTLE GLASS	1	OLIVE GREEN BOTTLE BASE MOLD BLOWN
GSC	80	3-209/92	BOTTLE GLASS	1	LIGHT GREEN BOTTLE NECK LAID ON RING
GSC	78	3-209/92	WOOD	1	WOOD FRAGMENT FORM POST SW CORNOR HOUSE
RUYTER'S BAY (12-VAM-3-21)					
GSC	17	3-21/1992	PEARLWARE	1	BROWN TRANSFER PRINT PATTERN UNKNOWN
GSC	17	3-21/1992	AFRICAN WARE	1	AFRICAN CARIBBEAN WARE
GSC	17	3-21/1992	PIPE STEM	1	KAOLIN PIPE STEM BORE DIAMETER 1/16
ST 1	18	3-21/1992	GLASS	6	OLIVE GREEN BOTTLE GLASS
ST 2	19	3-21/1992	PEARLWARE	1	BLUE TRANSFER PRINT FLORAL PATTERN
ST 2	19	3-21/1992	EARTHERNWARE	1	LEAD GLAZED EARTHENWARE EL MORRO
ST 2	19	3-21/1992	AFRICAN WARE	7	AFRICAN CARIBBEAN WARE
ST 2	19	3-21/1992	BOTTLE GLASS	1	AQUA GREEN BOTTLE LIP STRING RIM TOOLED
ST 4	20	3-21/1992	EARTHENWARE	1	TERRA COTTA RIM SHERD
ST 4	20	3-21/1992	METAL SPIKES	7	IRON SPIKE FRAGMENTS
ST 4	20	3-21/1992	NAILS	4	SQUARE CUT NAIL FRAGMENTS
ST 4	20	3-21/1992	TACK	1	ROOFING TACK
ST 6	21	3-21/1992	BOTTLE GLASS	1	GREEN WINE BOTTLE BASE MOLD BLOWN
ST 6	21	3-21/1992	SHELL	1	CITTARIUM PICA (POSSIBLE FOOD)
ST 6	21	3-21/1992	SHELL	1	ASTRAIA UNDOSA (POSSIBLE FOOD)
ST 6	21	3-21/1992	SHELL	1	MODULUS MODULUS (POSSIBLE FOOD)
ST 7	22	3-21/1992	NAIL	1	CUT NAIL FRAGMENT
ST 7	22	3-21/1992	SHELL	1	STROMBUS GIGAS (POSSIBLE FOOD)

APPENDIX IA: ARTIFACT INVENTORY BY SITE, CATALOG NUMBER, AND PROVENIENCE

PROVENIENCE	FIELD SPECIMEN NUMBER	CATALOG NUMBER	CATAGORY	COUNT	DESCRIPTION
ST 7	22	3-21/1992	ABORIGINAL	1	BROWN TO RED SMOOTH SURFACE
ST 7	22	3-21/1992	SHELL	1	STROMBUS GIGAS (POSSIBLE FOOD)
ST 7	22	3-21/1992	SHELL	1	CITTARIUM PICA (POSSIBLE FOOD)
TEST 1	23	3-21/1992	REDWARE	1	LEAD GLAZE EXTERIOR BROWN INTERIOR
GSC	24	3-21/1992	STONEWARE	1	ALBANY SLIPPED INTERIOR
GSC	24	3-21/1992	AFRICAN WARE	1	AFRICAN CARIBBEAN WARE
ST 8	26	3-21/1992	METAL	1	MACHINED SCREW SHANK LVL 1
ST 8	27	3-21/1992	BOTTLE GLASS	1	GREEN BOTTLE BASE MOLD BLOWN LVL 2
ST 14	34	3-21/1992	GUNFLINT	1	ENGLISH GUNFLINT DOVER CHERT LVL3
TAMARIND TREE BAY (12-VAM-3-9)					
ST 4	47	3-9/1992	AFRICAN WARE	1	AFRICAN CARIBBEAN WARE
ST 4	47	3-9/1992	SHELL	1	CITTARIUM PICA (POSSIBLE FOOD)
ST 6	48	3-9/1992	PEARLWARE	1	PLAIN BODY SHERD
ST 6	48	3-9/1992	STONEWARE	1	GINGER BEER \ INK WELLS, SLIPPED INTER.
ST 6	48	3-9/1992	REDWARE	5	COARSE REDWARE
ST 6	48	3-9/1992	EARTHENWARE	1	LEAD GLAZED EARTHENWARE EL MORRO
ST 6	48	3-9/1992	WHITEWARE	2	PLAIN BODY SHERDS
ST 6	48	3-9/1992	AFRICAN WARE	1	AFRICAN CARIBBEAN WARE
ST 6	48	3-9/1992	CREAMWARE	2	PLAIN BODY SHERDS
ST 7	49	3-9/1992	CREAMWARE	1	PLAIN RIM SHERD
ST 7	49	3-9/1992	SEMIVITRIOUS	1	U.S. QUARTER MASTER CORPS, SEPT. 16,1940
ST 7	49	3-9/1992	BOTTLE GLASS	1	CLEAR BOTTLE BASE DURAGLASS MARK
ST 7	49	3-9/1992	BOTTLE GLASS	1	COCA COLA LIGHT GREEN GLASS FRAG
ST 8	50	3-9/1992	CREAMWARE	1	PLAIN BODY SHERD
ST 8	50	3-9/1992	PEARLWARE	1	BLUE TRANSFER PRINT PATTERN UNKNOWN
ST 9	51	3-9/1992	CREAMWARE	1	PLAIN BODY SHERD
ST 9	51	3-9/1992	PEARLWARE	2	PLAIN BODY SHERDS
ST 9	51	3-9/1992	PIPE FRAG	1	KAOLIN PIPE BOWL FRAGMENT
ST 9	51	3-9/1992	STONEWARE	1	GINGER BEER BOTTLE FRAGMENT
ST 9	51	3-9/1992	STONEWARE	1	JACK FIELD WARE
ST 11	44	3-9/1992	CREAMWARE	2	PLAIN BODY SHERDS
ST 11	44	3-9/1992	CREAMWARE	1	PLAIN RIM SHERD
ST 11	44	3-9/1992	PEARLWARE	2	BLUE SHELL EDGED EVEN SCALLOP
ST 11	44	3-9/1992	STONEWARE	1	BROWN GLAZED GINGER BEER TYPE
ST 11	44	3-9/1992	STONEWARE	1	NOTTINGHAM WARE
ST 11	44	3-9/1992	EARTHENWARE	1	METROPOLITAN SLIPWARE
ST 11	44	3-9/1992	PORCELAIN	1	MONOCHROME BROWN
ST 11	44	3-9/1992	DELFT	1	PLAIN BODY SHERD
ST 11	44	3-9/1992	EARTHENWARE	1	LEAD GLAZED EARTHENWARE EL MORRO
ST 11	44	3-9/1992	AFRICAN WARE	1	AFRICAN CARIBBEAN WARE
ST 11	44	3-9/1992	PIPE STEM	1	KAOLIN PIPE STEM BORE DIAMETER 5/64
ST 11	52	3-9/1992	CREAMWARE	1	PLAIN BODY SHERD
ST 11	52	3-9/1992	PEARLWARE	1	BLUE TRANSFER PRINT, PATTERN UNKNOWN
ST 11	52	3-9/1992	WHITEWARE	1	BLUE TRANSFER PRINT, PATTERN UNKNOWN
ST 11	52	3-9/1992	ABORIGININAL	1	BROWN TO RED SMOOTH SURFACE
ST 12	53	3-9/1992	CREAMWARE	1	PLAIN BODY SHERD
ST 12	53	3-9/1992	AFRICAN WARE	2	AFRICAN CARIBBEAN WARE
ST 13	54	3-9/1992	CREAMWARE	2	PLAIN BODY SHERDS
ST 13	54	3-9/1992	PEARLWARE	1	BLUE SHELL EDGED EVEN SCALLOP
ST 13	54	3-9/1992	EARTHENWARE	2	METROPOLITAN SLIPWARE
ST 13	54	3-9/1992	DELFT	1	BLUE ON WHITE FLORAL PATTERN
ST 13	54	3-9/1992	DELFT	1	PLAIN BODY SHERD
ST 13	54	3-9/1992	EARTHENWARE	1	LEAD GLAZED EARTHENWARE EL MORRO
ST 14	55	3-9/1992	CREAMWARE	6	PLAIN BODY SHERD
ST 14	55	3-9/1992	PEARLWARE	1	PLAIN BODY SHERD
ST 14	55	3-9/1992	STONEWARE	1	GINGER BEER BOTTLE FRAGMENT
ST 14	55	3-9/1992	EARTHENWARE	1	LEAD GLAZED EARTHENWARE EL MORRO
ST 14	55	3-9/1992	GUN FLINT	1	ENGLISH GUN FLINT DOVER CHERT
ST 14	55	3-9/1992	BOTTLE GLASS	1	GREEN GLASS BOTTLE LIP STRING LIP
ST 15	56	3-9/1992	CREAMWARE	3	PLAIN BODY SHERDS
ST 15	56	3-9/1992	CREAMWARE	1	PLAIN RIM SHERD
ST 15	56	3-9/1992	EARTHENWARE	1	LEAD GLAZED EARTHENWARE EL MORRO

APPENDIX IA: ARTIFACT INVENTORY BY SITE, CATALOG NUMBER, AND PROVENIENCE

PROVENIENCE	FIELD SPECIMEN NUMBER	CATALOG NUMBER	CATAGORY	COUNT	DESCRIPTION
ST 15	56	3-9/1992	PIPE STEM	1	KAOLIN PIPE STEM BORE DIAMETER 5/64
ST 16	57	3-9/1992	CREAMWARE	1	PLAIN BODY SHERD
ST 16	57	3-9/1992	PEARLWARE	1	PLAIN BODY SHERD
GSC	59	3-9/1992	CREAMWARE	2	PLAIN FOOT RING FRAGMENTS
GSC	59	3-9/1992	CREAMWARE	2	PLAIN BODY SHERDS
GSC	59	3-9/1992	STONEWARE	1	ENGLISH SALT GLAZED
GSC	59	3-9/1992	STONEWARE	1	GINGER BEER / INK WELL CONTAINERS
GSC	59	3-9/1992	PORCELAIN	1	PLAIN BODY SHERD
GSC	59	3-9/1992	EARTHENWARE	1	LEAD GLAZED EARTHENWARE EL MORRO
GSC	59	3-9/1992	BOTTLE GLASS	1	GREEN WINE BOTTLE GLASS BASE MOLD BLOWN
GSC	59	3-9/1992	CREAMWARE	1	PLAIN BODY SHERD
GSC	60	3-9/1992	CREAMWARE	1	PLAIN FOOT RING FRAGMENT
GSC	60	3-9/1992	STONEWARE	1	GINGER BEER BOTTLE FRAGMENT
GSC	60	3-9/1992	PEARLWARE	1	BLUE HAND PAINTED PATTERN UNKNOWN
GSC	60	3-9/1992	HOTELWARE	1	PLAIN FOOT RING FRAGMENT
GSC	60	3-9/1992	AFRICAN WARE	1	AFRICAN CARIBBEAN WARE RIM SHERD
GSC	60	3-9/1992	AFRICAN WARE	3	AFRICAN CARIBBEAN WARE
ELEPHANT BAY (12-VAM-3-22)					
ST 4	29	3-22/1992	ABORIGINAL	2	BROWN TO DARK BROWN SMOOTH SURFACE
ST 4	29	3-22/1992	ABORIGINAL	2	BLACK TO RED BROWN SMOOTH SURFACE
ST 10	31	3-22/1992	ABORIGINAL		BROWN TO RED SMOOTH SURFACE
ST 12	32	3-22/1992	ABORIGINAL		TAN TO BUFF SMOOTH SURFACE
ST 13	33	3-22/1992	PIPE STEM		KAOLIN PIPE STEM BORE DIAMETER 5/64
ST 24	35	3-22/1992	ABORIGINAL	3	RED TO BROWN SMOOTH SURFACE
ST 25	36	3-22/1992	ABORIGINAL	1	BROWN SMOOTH SURFACE
ST 26	37	3-22/1992	ABORIGINAL	2	BROWN TO RED SMOOTH SURFACE
ST 27	38	3-22/1992	ABORIGINAL	2	RED TO BROWN SMOOTH SURFACE
ST 27	38	3-22/1992	ABORIGINAL	2	BROWN TO RED SMOOTH SURFACE
ST 29	39	3-22/1992	ABORIGINAL	1	BROWN TO RED SMOOTH SURFACE
ST 29	39	3-22/1992	ABORIGINAL	2	LATE SALADOID TAN HARD SMOOTH SURFACE
ST 29	39	3-22/1992	SHELL	1	STROMBUS GIAGUS (POSSIBLE FOOD)
ST 30	40	3-22/1992	ABORIGINAL	1	BROWN TO RED SMOOTH SURFACE
ST 30	40	3-22/1992	SHELL	1	ASTRAEA TECTA AMERICANA (POSSIBLE FOOD)
ST 32	41	3-22/1992	ABORIGINAL	2	BROWN TO BLACK SMOOTH SURFACE
ST 32	41	3-22/1992	ABORIGINAL	2	BUFF TO ORANGE BROWN SMOOTH SURFACE
ST 32	41	3-22/1992	ABORIGINAL	3	RED TO BROWN SMOOTH SURFACE
ST 32	41	3-22/1992	SHELL		STROMBUS GIGAS POSSIBLE FOOD
ST 34	42	3-22/1992	ABORIGINAL	3	BROWN TO RED SMOOTH SURFACE
ST 34	42	3-22/1992	ABORIGINAL		BROWN TO DARK BROWN SMOOTH SURFACE
ST 34	42	3-22/1992	ABORIGINAL	3	BROWN TO BLACK SMOOTH SURFACE
ST 34	42	3-22/1992	SHELL	4	STROMBUS GIGAS (POSSIBLE FOOD)
ST 34	42	3-22/1992	SHELL	7	CITTARIUM PICA (POSSIBLE FOOD)
ST 34	42	3-22/1992	SHELL	1	CHAMA MACEROPHYLLA GMELIN (POSSIBLE FOOD
ST 35	43	3-22/1992	ABORIGINAL	2	ORANGE TO BUFF SMOOTH SURFACE
ST 35	43	3-22/1992	ABORIGINAL	2	BROWN TO RED SMOOTH SURFACE
ST 35	43	3-22/1992	ABORIGINAL	2	TAN OF BUFF SMOOTH SURFACE
ST 35	43	3-22/1992	SHELL	1	STROMBUS GIGAS (POSSIBLE FOOD)
ST 31	46	3-22/1992	GUN FLINT	1	ENGLISH GUN FLINT DOVER CHERT
SPRAT BAY STRUCTURE (12-VAM-3-208)					
GSC	62	3-208/92	DELFT	1	BLUE ON WHITE HAND PAINTED
GSC	62	3-208/92	DELFT	1	RED AND GREEN ON WHITE HAND PAINTED
GSC	62	3-208/92	AFRICAN WARE	1	AFRICAN CARIBBEAN WARE
ST 2	63	3-208/92	DELFT	3	BLUE UNDERGLAZED HAND PAINTED
ST 2	63	3-208/92	PORCELAIN	1	BLUE UNDERGLAZED PAINTED
ST 2	63	3-208/92	AFRICAN WARE	1	AFRICAN CARIBBEAN WARE
ST 2	63	3-208/92	GUN FLINT	1	ENGLISH GUN FLINT DOVER CHERT
GSC	82	3-208/92	STONEWARE	1	RHENISH
GSC	82	3-208/92	EARTHENWARE	1	WHITE SALTGLAZED STONEWARE
GSC	82	3-208/92	DELFT	1	BLUE ON BLUE PAINTED FOOT RING FRAGMENT
GSC	82	3-208/92	DELFT	6	BLUE ON WHITE PAINTED
GSC	82	3-208/92	DELFT	6	PLAIN WHITE BODY SHREDS

APPENDIX IA: ARTIFACT INVENTORY BY SITE, CATALOG NUMBER, AND PROVENIENCE

PROVENIENCE	FIELD SPECIMEN NUMBER	CATALOG NUMBER	CATAGORY	COUNT	DESCRIPTION
GSC	82	3-208/92	DELFT	2	GREEN AND ORANGE ON WHITE PAINTED
GSC	82	3-208/92	PORCELAIN	4	BLUE HAND PAINTED
GSC	82	3-208/92	AFRICAN WARE	9	AFRICAN CARIBBEAN WARE
GSC	82	3-208/92	OLIVE JAR	1	GREEN GLAZED EXTERIOR
GSC	82	3-208/92	PIPE STEM	2	KAOLIN PIPE STEM BORE DIAMETER 1/64
GSC	82	3-208/92	PIPE STEM	2	KAOLIN PIPE STEM BORE DIAMETER 3/64
GSC	82	3-208/92	PIPE BOWL	1	KAOLIN PIPE BOWL FRAGMENT
GSC	82	3-208/92	SHELL	2	STROMBUS PICKS (POSSIBLE TOOLS)
GSC	84	3-208/92	DELFT	2	BLUE ON WHITE HAND PAINTED
GSC	84	3-208/92	DELFT	1	GREEN ON WHITE HAND PAINTED
GSC	84	3-208/92	DELFT	2	PLAIN BODY SHERDS
GSC	84	3-208/92	PIPE STEM	1	KAOLIN PIPE STEM BORE DIAMETER 5/64
BANANA BAY (12-VAM-3-56)					
GSC	83	3-56/92	SHELL	1	STROMBUS GIGAS COLLECTED FOR DATING
GSC	79	3-56/92	SHELL	1	STROMBUS GIGAS COLLECTED FOR DATING
GSC	77	3-56/92	SHELL	1	STROMBUS GIGAS COLLECTED FOR DATING

APPENDIX IB: RECENT MATERIALS DISCARDED IN LABORATORY

Site Name	Site Number	Field Specimen Number	Discards
CAROLINA POINT	12-VAM-3-209	1	GREEN GLASS
CAROLINA POINT	12-VAM-3-209	2	OLIVE GREEN GLASS
CAROLINA POINT	12-VAM-3-209	5	GREEN, CLEAR GLASS
CAROLINA POINT	12-VAM-3-209	6	GREEN GLASS
CAROLINA POINT	12-VAM-3-209	8	MORTAR, GLASS, IGUANA BONE
CAROLINA POINT	12-VAM-3-209	10	SHELL, MORTAR, NAILS, GLASS
CAROLINA POINT	12-VAM-3-209	11	4 GREEN GLASS
CAROLINA POINT	12-VAM-3-209	12	GLASS, NAILS
CAROLINA POINT	12-VAM-3-209	13	GLASS, MORTAR, BRICK, PLASTER
CAROLINA POINT	12-VAM-3-209	14	GLASS, MORTAR, BRICK, SHELL
CAROLINA POINT	12-VAM-3-209	15	MORTAR, PLASTER, METAL, GLASS
RUYTER'S BAY	12-VAM-3-21	17	GLASS, SHELL
RUYTER'S BAY	12-VAM-3-21	18	6 GREEN GLASS
RUYTER'S BAY	12-VAM-3-21	19	GLASS, METAL, MAMMAL BONE
RUYTER'S BAY	12-VAM-3-21	20	3 GLASS
RUYTER'S BAY	12-VAM-3-21	21	CORAL, METAL, CINDER, GLASS
RUYTER'S BAY	12-VAM-3-21	22	GLASS, SHELL, MORTAR, BONE
RUYTER'S BAY	12-VAM-3-21	23	PLASTIC, GLASS, SHELL
RUYTER'S BAY	12-VAM-3-21	24	NAIL
RUYTER'S BAY	12-VAM-3-21	26	GLASS
RUYTER'S BAY	12-VAM-3-21	27	METAL, GLASS, SPIKE, BONE
RUYTER'S BAY	12-VAM-3-21	34	GLASS
TAMARIND TREE BAY	12-VAM-3-9	44	SPIKE, GLASS
TAMARIND TREE BAY	12-VAM-3-9	48	METAL, GLASS, NAIL, BRICK
TAMARIND TREE BAY	12-VAM-3-9	51	BRICK, GLASS
TAMARIND TREE BAY	12-VAM-3-9	52	GLASS
TAMARIND TREE BAY	12-VAM-3-9	54	GLASS
TAMARIND TREE BAY	12-VAM-3-9	55	BRICK
TAMARIND TREE BAY	12-VAM-3-9	57	GLASS
TAMARIND TREE BAY	12-VAM-3-9	59	GLASS
ELEPHANT BAY	12-VAM-3-22	81	SHELL
ELEPHANT BAY	12-VAM-3-22	30	GLASS, METAL
ELEPHANT BAY	12-VAM-3-22	29	BRICK
ELEPHANT BAY	12-VAM-3-22	38	GLASS
ELEPHANT BAY	12-VAM-3-22	42	IRON METAL
ELEPHANT BAY	12-VAM-3-22	40	GLASS, METAL
ELEPHANT BAY	12-VAM-3-22	31	GLASS
SPRAT BAY STRUCTURE	12-VAM-3-208	82	GLASS, SHELL, MORTAR, BRICK
SPRAT BAY STRUCTURE	12-VAM-3-208	84	GLASS
SPRAT BAY STRUCTURE	12-VAM-3-208	85	MORTAR, BRICK
BANANA BAY	12-VAM-3-56	73	GLASS, METAL
BANANA BAY	12-VAM-3-56	81	SHELL
BANANA BAY SOUTH	12-VAM-3-210	69	GLASS
BANANA BAY SOUTH	12-VAM-3-210	70	METAL, GLASS, WOOD, BRICK
BANANA BAY SOUTH	12-VAM-3-210	71	MORTAR
SPRAT BAY	12-VAM-3-212	67	GLASS, ROCK

APPENDIX II. SHOVEL TEST STRATIGRAPHY

Shovel Test Number	Depth of Test (cm)	Excavation Level	Soil Texture	Munsell Color
9	65	0-65	SANDY CLAY, ROCKS	10YR4/4
10	25	0-25	SANDY CLAY	10YR5/4
11	130	0-22	SANDY LOAM	10YR4/2
		22-130	SAND	10YR5/2
12	90	0-10	SAND	10YR2/2
		10-90	SAND	10YR4/4
13	41	0-8	SANDY LOAM	10YR3/4
		8-41	SAND TO ROCK	10YR4/4
14	30	0-30	SANDY LOAM	10YR3/4
15	36	0-36	SANDY CLAY	10YR4/6
16	43	0-10	SANDY LOAM	10YR4/4
		10-43	SAND TO ROCK	10YR4/1
17	35	0-35	HARD SAND TO ROCK	10YR3/3
ELEPHANT BAY (12-VAM-3-22)				
1	63	0-63	SAND	10YR6/4
2	47	0-12	SANDY LOAM	10YR3/3
		12-15	SAND	10YR4/2
		15-24	SAND	10YR4/6
		24-47	SAND	10YR4/2
3	50	0-50	SAND, ROCKS	10YR5/4
4	65	0-50	SANDY LOAM	10YR3/3
		50-65	SAND	10YR5/3
5	10	0-10	SAND TO HARDPAN	10YR5/4
6	43	0-43	SAND, ROCK	10YR5/4
7	32	0-32	SAND, SHELL	10YR5/4
8	64	0-42	SILTY SAND	10YR4/3
		42-50	SAND	10YR7/2
		50-64	SAND	10YR7/3
9	52	0-52	SAND, ROCK	10YR5/4
10	75	0-30	SANDY LOAM	10YR3/3
		30-75	SAND	10YR5/3
11	34	0-34	SAND, ROCK	10YR3/3

APPENDIX II. SHOVEL TEST STRATIGRAPHY

Shovel Test Number	Depth of Test (cm)	Excavation Level	Soil Texture	Munsell Color
12	45	0-45	SAND	10YR3/3
13	49	0-34	SANDY LOAM	10YR3/4
		34-49	SAND	10YR4/4
14	56	0-56	SILTY SAND	10YR2/2
15	50	0-50	SANDY LOAM	10YR3/2
16	50	0-50	SANDY LOAM	10YR3/3
17	70	0-70	SANDY LOAM	10YR3/2
18	40	0-40	SAND	10YR3/4
19	8	0-8	CLAY, ROCK	10YR4/4
20	33	0-33	SANDY LOAM	10YR2/2
21	30	0-22	SILT LOAM	10YR3/4
		22-30	ROCK	10YR3/4
22	44	0-16	SAND	10YR3/3
		16-44	SAND	10YR7/2
23	70	0-58	SANDY LOAM	10YR5/4
		58-70	SAND	10YR7/3
24	87	0-75	SAND	10YR3/3
		75-87	SAND	10YR7/2
25	70	0-25	SANDY LOAM	10YR2/1
		25-40	SAND	10YR4/1
		40-70	COMPACT SAND	10YR4/3
26	56	0-56	SAND	10YR3/3
		56-67	SAND	10YR7/2
27	62	0-42	SANDY LOAM	10YR3/2
		42-62	SAND	10YR5/3
28	70	0-44	SAND	10YR3/3
		44-70	SAND	10YR7/2
29	80	0-50	SAND	10YR3/3
		50-80	SAND	10YR5/3
30	95	0-40	SANDY LOAM	10YR2/1
		40-95	SAND	10YR5/3
31	75	0-34	SAND	10YR3/3
		34-75	SAND TO ROCK	10YR7/2

APPENDIX II. SHOVEL TEST STRATIGRAPHY

Shovel Test Number	Depth of Test (cm)	Excavation Level	Soil Texture	Munsell Color
32	65	0-44	SAND	10YR3/3
		44-65	SAND TO ROCK	10YR7/2
33	60	0-40	SAND	10YR3/3
		40-60	COMPACT SAND	10YR4/3
34	55	0-30	SAND	10YR4/2
		30-55	SANDY SILT	10YR5/2
35	45	0-45	COARSE SAND	10YR3/3
SPRAT BAY STRUCTURE (12-VAM-3-208)				
1	38	0-17	SILT LOAM	10YR3/3
		17-38	LOAM TO ROCKS	10YR5/4
2	35	0-35	SANDY SILT	10YR3/3
		35	BEDROCK	5YR3/4
3	38	0-25	SILTY LOAM	10YR3/3
		25-38	SAND	10YR5/4
4	39	0-39	SANDY LOAM	10YR4/4
5	45	0-45	SANDY LOAM	10YR4/4
6	55	0-20	SILT	10YR5/4
		20-55	SILT TO ROCK	10YR6/4
7	40	0-3	SILT	10YR3/6
		3-40	SILT LOAM	10YR4/6
BANANA BAY (12-VAM-3-56)				
1	45	0-45	SAND	10YR6/2
2	45	0-45	CLAY LOAM	10YR3/3
3	40	0-24	SAND	10YR3/6
		24-40	CLAY, SAND	10YR3/4
4	20	0-20	CLAY	2.5Y5/4
5	50	0-35	SANDY LOAM	10YR2/1
		35-50	SAND, CLAY	10YR4/2
6	30	0-30	CLAY LOAM	10YR4/4
7	30	0-30	CLAY LOAM	10YR4/3
8	49	0-40	SANDY LOAM	10YR3/3
		40-49	CLAY	10YR4/2

APPENDIX II. SHOVEL TEST STRATIGRAPHY

Shovel Test Number	Depth of Test (cm)	Excavation Level	Soil Texture	Munsell Color
9	30	0-30	SAND	10YR6/4
10	50	0-35	SAND	10YR3/2
		35-50	CLAY	10YR4/1
11	32	0-10	SANDY LOAM	10YR2/2
		10-92	CLAY	10YR5/3
		20-32	CLAY	10YR4/1
12	30	0-3	CLAY LOAM	10YR2/2
		3-30	CLAY	10YR5/3
13	50	0-50	SAND	10YR3/2
BANANA BAY SOUTH (12-VAM-3-210)				
1	80	0-10	SAND	10YR7/3
		10-80	SAND	10YR3/1
2	90	0-20	SAND	10YR6/2
		20-65	SANDY SILT	10YR2/1
		65-90	SAND	10YR5/2
3	60	0-60	FINE SAND	10YR3/3
4	70	0-69	SAND	10YR4/3
		69-70	SAND	10YR 5/3
5	10	0-10	SAND TO ROCK	10YR3/2
LANDING BAY (12-VAM-3-10)				
1	20	0-20	SAND	10YR6/2
2	15	0-15	SANDY LOAM	10YR4/2
3	68	0-68	SAND	10RY3/3, 8/4
4	50	0-50	SAND	10YR5/3
5	55	0-33	SAND	10YR8/8
		33-55	SAND	10RY4/4
SPRAT BAY (12-VAM-3-212)				
1	90	0-90	SAND, SHELL	10YR6/2
2	60	0-60	COARSE SAND	10YR7/2

APPENDIX II. SHOVEL TEST STRATIGRAPHY

Shovel Test Number	Depth of Test (cm)	Excavation Level	Soil Texture	Munsell Color
3	80	0-25	SAND LOAM	10YR3/2
		25-80	SAND	10YR5/3
4	90	0-20	SANDY LOAM	10YR3/4
		20-90	SAND	10YR6/4
5	80	0-20	SANDY LOAM	10YR3/5
		20-80	SAND	10YR6/4
6	30	0-13	SILTY LOAM	10YR4/4
		13-30	SANDY LOAM	10YR3/3
7	70	0-35	SANDY LOAM	10YR3/3
		35-70	SAND	10YR4/2
8	57	0-20	SILTY SAND	10YR3/3
		20-57	SAND	10YR4/3
9	25	0-25	SANDY SILT	10YR3/2
10	40	0-40	SAND	10YR3/2
11	41	0-41	SAND TO ROCK	10YR3/2
12	65	0-42	SILTY SAND	10YR3/2
		42-65	SAND TO ROCK	10YR4/1
13	55	0-15	SANDY LOAM	10YR2/2
		15-55	SAND TO ROCK	10YR4/3
14	42	0-42	LOAM	10YR2/2
15	48	0-48	SANDY LOAM	10YR3/3
16	25	0-25	SAND, ROCK, CORAL	10YR2/2
17	40	0-40	SANDY SILT	10YR3/2
18	46	0-46	SANDY LOAM	10YR2/2
19	30	0-30	SANDY SILT	10YR3/2
20	35	0-35	SANDY LOAM	10YR3/3
21	46	0-8	SANDY LOAM	10YR4/6
		8-46	SAND	10YR3/3
22	70	0-55	SAND	10YR6/2
		55-70	SAND	10YR4/3
23	75	0-45	SANDY LOAM	10YR7/2
		45-75	SAND	10YR4/3
24	60	0-60	SAND	10YR4/3

APPENDIX II. SHOVEL TEST STRATIGRAPHY

Shovel Test Number	Depth of Test (cm)	Excavation Level	Soil Texture	Munsell Color
25	75	0-75	SAND	10YR4/3
26	40	0-40	SAND TO ROCK	10YR3/3
27	49	0-24 24-49	LOOSE SAND COMPACT SAND	10YR3/3 10YR4/4
LIMESTONE BAY				
1	50	0-50	SAND	10YR8/4
	53	0-25 25-53	SAND SAND	10YR7/2 10YR4/2
	50	0-50	SANDY LOAM	10YR3/2
4	90	0-33 33-90	SAND, CORAL SAND	10YR8/2 10YR5/4
5	55	0-55	SAND, SHELL	10YR 4/3
6	42	0-42	SANDY LOAM	10YR3/2
7	43	0-43	SAND	10YR8/3
FLAMINGO BAY				
1	40	0-38 38-40	SANDY LOAM CLAY	5YR3/4 5YR6/6
2	40	0-40	SANDY LOAM	10YR4/4
3	35	0-33 33-35	SANDY LOAM CLAY	5YR3/8 5YR6/6
4	50	0-25 25-35 35-40 40-50	SANDY LOAM CLAY, SAND CLAY, SAND CLAY	10YR2/2 10YR4/3 10YR3/3 10YR4/4
BANANA BAY NORTH				
1	60	0-60	SILT LOAM	10YR4/4
2	35	0-25 25-35	SANDY CLAY CLAY	10YR4/3 10YR3/6
3	60	0-60	SANDY LOAM	10YR5/4

APPENDIX II. SHOVEL TEST STRATIGRAPHY

Shovel Test Number	Depth of Test (cm)	Excavation Level	Soil Texture	Munsell Color
SPRAT BAY RECREATION AREA				
1	110	0-75	SAND	10YR8/2
		75-110	SAND, CORAL	10YR5/2
2	95	0-20	SANDY LOAM	10YR4/3
		20-65	SAND, SHELL	10YR7/2
		65-95	SAND	10YR6/2
3	95	0-90	SAND, SHELL	10YR8/2
		90-95	SANDY CLAY	10YR7/2
4	40	0-10	SAND	10YR2/1
		10-40	CLAY	10YR8/1
5	80	0-43	SANDY LOAM	10YR7/2
		43-80	SAND	10YR8/1
6	41	0-41	SANDY SILT LOAM	10YR4/3
7	60	0-60	SILTY SAND	10YR4/3
8	55	0-20	CLAY LOAM	10YR3/2
		20-45	CLAY SAND	10YR5/3
		45-55	CLAY	10YR6/2
9	70	0-70	SAND	10YR7/2
10	64	0-10	SANDY LOAM	10YR6/2
		10-64	SAND	10YR4/3
11	75	0-35	SANDY LOAM	10YR3/3
		35-75	COMPACT SAND	10YR5/2
12	45	0-30	SANDY CLAY LOAM	10YR3/3
		30-45	CLAY	10YR4/2
13	70	0-70	SAND	10YR7/2
14	85	0-30	SAND	10YR3/2
		30-85	SAND TO ROCK	10YR3/2
15	50	0-50	SANDY CLAY	10YR3/2
16	55	0-5	CLAY LOAM	10YR3/4
		5-30	CLAY SAND	10YR4/4
		30-45	SANDY CLAY	10YR4/3
		45-55	SAND	10YR5/4
17	40	0-30	SANDY LOAM	10YR7/4
		30-40	CLAY	10YR3/4

APPENDIX II. SHOVEL TEST STRATIGRAPHY

Shovel Test Number	Depth of Test (cm)	Excavation Level	Soil Texture	Munsell Color
18	45	0-45	SAND TO ROCK	10YR2/1
19	30	0-30	CLAY	10YR4/3
20	25	0-10	SANDY CLAY	10YR3/2
		33902	SAND	10YR3/3
21	110	0-110	SAND TO ROCK	10YR8/2
22	70	0-70	SAND	10YR7/1
23	100	0-55	SAND	10YR8/2
		55-100	SAND	10YR6/2
24	70	0-70	SANDY LOAM	10YR5/3
25	100	0-80	SANDY LOAM	10YR3/3
		80-100	SAND	10YR5/3
26	60	0-60	SAND	10YR4/3
LIMESTONE BAY/CAROL POINT WEST				
	40	0-18	SAND	5YR4/4
		18-40	SAND	10YR6/2
2	30	0-30	SANDY LOAM	10YR4/4
3	65	0-17	SAND	10YR7/2
		17-65	SILT LOAM	10YR3/3
4	42	0-9	SAND LOAM	10YR2/2
		9-42	SAND	10YR5/2
5	43	0-24	SANDY LOAM	10YR3/3
		24-43	SAND	10YR7/4
6	100	0-30	SANDY LOAM	10YR4/3
		30-40	SILT LOAM	10YR3/1
		40-100	SAND	10YR8/3
7	40	0-40	SAND TO ROCK	10YR2/1
8	42	0-42	SILT LOAM	10YR3/4

Appendix III:
Ownership Records, Carolina's Lyst and Providence Point Plantations

(Compiled by George F. Tyson, Jr.).

III-A Carolina Lyst Plantation Ownership and Occupational History 1769-1794
III-B Carolina Lyst Plantation Ownership and Occupational History 1795-1914
III-C La Providence Plantation Ownership and Occupational History 1799-1914

APPENDIX IIIA: CAROLINA LYST PLANTATION OWNERSHIP AND OCCUPATIONAL HISTORY 1769-1794

Year	Name of Owner	Families (Men)	Square Feet	Capables	Manquerones	Adolescents	Under 12 Yrs	Total	Tax Free Slaves Born	Dead	Bossals	Notes
1769	Jean Renaud		x2600	9	3	2	4	18				First appearance on the tax lists
1770	Jean Renaud	1	x2600	9	3	2	4	18				
1771	Jean Renaud	1	x2600	9	6	1	5	21				
1772	Jean Renaud	1	x2600	11	3	3	5	22				
1773	Jean Renaud	1	x2600	12	6	4	5	27				
1774	Jean Renaud	1	x2600	11	6	5	7	31				
1775	Jean Renaud	1	x2600	14	5	3	6	30			2	
1776	Jean Renaud	1	x2600	15	6	2	6	32			3	
1777	Jean Renaud	1	x2600	22		11*		34			1	*Adolescents & children
1778	Jean Renaud	1	x2600	26		3*		31			2	*Adolescents & children
1779	Jean Renaud *Armstrong, Overseer	1*	x2600	25		8*		33				*Adolescents & children
1780	Jean Renaud *Armstrong, Overseer	1*	x2600	29		7*		36				*Adolescents & children
1781	Jean Renaud	1	x2600	30		8*		44			6	*Adolescents & children
1782	Jean Renaud	1	x2600	30		14*		44				*Adolescents & children
1783	Jean Renaud	1	x2600	31		14*		45				*Adolescents & children
1784	Jean Renaud	1	x2600	33		14	1	48				
1785	Jean Renaud	1	x2600	33	16	6	1	56			1	
1786	Jean Renaud	1	x2600	39		21		60				

Year	Name of Owner	Total Feet	Acres (Deeds)	Other Crops	Land Not Used	FREE				TAXABLE SLAVES						TAX-FREE							TOTAL	Remarks
						Men	Women	Boys	Girls	Field Slaves Men	Field Slaves Women	Artisans and House Slaves Men	Artisans and House Slaves Women	Artisans and House Slaves Boys	Artisans and House Slaves Girls	Field Slaves Boys	Field Slaves Girls	BORN Boys	BORN Girls	DEAD Men	DEAD Women	DEAD Burials		
1829	A. Helm & Owen Brown		100		100	1*						1	1										4	* = Colored
1830	Owen Brown		100		100	2*	1**		1**			1	1										9	* = Colored; ** = White
1831	Owen Brown to Cosmo Francevich		100	3	97	1*				8	1						2						11	* = White
1832	Cosmo Francevich		100	3	97	2*	1*	2*		10		1	1			2	3						14	* = White
1833	" Cosmo Francevich		100	3	97	1*				11						4							16	* = White
1834	James Hazzo, Jr.		100		100	1*				4						1							6	* = White
1835	James Hazzel, Jr.		100	1	99	2*	1*			3			1			1							9	* = White
1836	James Hazzel, Jr.		100		100	1*	1*	1*	1*														4	* = White
1837	James Hazzel, Jr.		100		100	1	1	1															3	
1838	James Hazzel, Jr.		100		100	1	1	1															16	Not available
1839	James Hazzel, Jr.		100	6	54	1	1			1													3	
1840	James Hazzel, Jr.		100	1	58	2																	2	
1841	Benjamin Barton		100	0	100																			
1842	Benjamin Barton		100	0	100	4	3	3	3														17	
1843	Benjamin Barton heirs		100	0	100																			
1844	B. Barton heirs		100	0	100	1																	1	
1845	B. Barton heirs		100	0	100	3										1							4	
1846	B. Barton heirs		100	0	100	2										4							6	
1847	B. Barton heirs		100		100	1										3							4	
1848	B. Barton heirs		100		100	5																	5	
1849	B. Barton heirs		100		100	4																	4	
1850	B. Barton heirs Raimond Certain		100	10	90	3																	3	* = Domestics
1851	B. Barton heirs Raimond Certain		100	8	92	3																	3	
1853	B. Barton heirs Raimond Certain		100	0	100																			Not Available
1854	B. Barton heirs Raimond Certain		100		100																			Not Recorded
1855	B. Barton heirs Raimond Certain		100		100																			Not Recorded
1856	B. Barton heirs Raimond Certain		100		100																			Not Recorded
1857	B. Barton heirs Raimond Certain		100		100																			Not Recorded

APPENDIX IIIB: CAROLINA LYST PLANTATION OWNERSHIP AND OCCUPATIONAL HISTORY 1798-1914

Year	Name of Owner	Total Feet	Acres (Deskh)	Other Crops	Land Not Used	FREE Men	FREE Women	FREE Boys	FREE Girls	TAXABLE SLAVES Field Slaves Men	TAXABLE SLAVES Field Slaves Women	TAXABLE SLAVES Artisans and House Slaves Men	TAXABLE SLAVES Artisans and House Slaves Women	TAXABLE SLAVES Artisans and House Slaves Boys	TAXABLE SLAVES Artisans and House Slaves Girls	TAX-FREE Field Slaves Boys	TAX-FREE Field Slaves Girls	TAX-FREE BORN Boys	TAX-FREE BORN Girls	TAX-FREE DEAD Men	TAX-FREE DEAD Women	TAX-FREE DEAD Bonds	TOTAL	Remarks
1858	B. Barton heirs Raimond Certain		100		100																			Not Recorded
1859	B. Barton heirs Raimond Certain		100		94	3*																	1	* = Tenants living in slave qtrs
1860	Joseph Daniel Eugene Fennet		100		100																			Not Available
1861	Joseph Daniel Eugene Fennet		100		100		1*																	* = Domestic
1862	Joseph Daniel Eugene Fennet		100		100																			
1863	Joseph Daniel Eugene Fennett		100		100																			
1864	Joseph Daniel Eugene Fennet		100		100																			
1865	Joseph Daniel		100		100																			
1866	Joseph Daniel		100		100																			
1867	Joseph Daniel		100		100																			
1868	Joseph Daniel		100		100																			
1869	Joseph Daniel		100		100																			
1870	Joseph Daniel		100		100																			
1871	Joseph Daniel		100		100																			
1872	Joseph Daniel		100		100																			
1873	Joseph Daniel		100		100																			Population not recorded in the records from 1873 onward
1874	Joseph Daniel		100		100																			
1875	Joseph Daniel		100		100																			
1876	Joseph Daniel		100		100																			
1877	Joseph Daniel		100		100																			
1878	Joseph Daniel		100		100																			
1879	Joseph Daniel		100		100																			
1880	Joseph Daniel		100		100																			
1881	Joseph Daniel		100		100																			
1882	Joseph Daniel		100		100																			
1883	Joseph Daniel		100		100																			
1884	Joseph Daniel		100		100																			
1885	Joseph Daniel		100		100																			
1886	Joseph Daniel		100		100																			
1887	Joseph Daniel		100		100																			
1888	Joseph Daniel		100		100																			

APPENDIX III: CAROLINA LYST PLANTATION OWNERSHIP AND OCCUPATIONAL HISTORY 1795-1914

Year	Name of Owner	Total Feet	Acres (Dunkirk)	Other Crops	Land Not Used	FREE				TAXABLE SLAVES						TAX-FREE							TOTAL	Remarks
						Men	Women	Boys	Girls	Field Slaves Men	Field Slaves Women	Artisans and House Slaves Men	Artisans and House Slaves Women	Artisans and House Slaves Boys	Artisans and House Slaves Girls	Field Slaves Boys	Field Slaves Girls	BORN Boys	BORN Girls	DEAD Men	DEAD Women	DEAD Boats		
1889	Joseph Daniel		100		100																			
1890	Joseph Daniel		100		100																			
1891	Joseph Daniel		100		100																			
1892	Joseph Daniel		100																					
1893	Joseph Daniel		100		100																			
1894	Joseph Daniel		100		100																			
1895	Joseph Daniel		100		100																			
1896	Joseph Daniel		100		100																			
1897	Joseph Daniel		100		100																			
1898	Joseph Daniel		100		100																			
1899	Joseph Daniel heirs		100		100																			
1900	Joseph Daniel heirs		100		100																			
1901	Joseph Daniel heirs		100		100																			
1902	Joseph Daniel heirs		100		100																			
1903	Joseph Daniel heirs		100		100																			
1904	Joseph Daniel heirs		100		100																			
1905	(East Asiatic Company)		100		100																			
1906	(East Asiatic Company)		100		100																			
1907	(East Asiatic Company)		100		100																			
1908	N. Christian E. Hansen		100		100																			
1909	N. Christian E. Hansen		100		100																			
1910	N. Christian E. Hansen		100		100																			
1911	East Asiatic Company		100		100																			
1912	East Asiatic Company		100		100																			
1913	East Asiatic Company		100		100																			
1914	East Asiatic Company		100		100																			

APPENDIX IIIC: LA PROVIDENCE PLANTATION OWNERSHIP AND OCCUPATIONAL HISTORY 1799-1914

Year	Name of Owner	Total Feet	Acres (Danish)	Other Crops	Land Not Used	FREE				TAXABLE SLAVES								TAX-FREE						Beasts	TOTAL	REMARKS
										Field Slaves		Artisans and House Slaves						Field Slaves		BORN						
						Men	Women	Boys	Girls	Men	Women	Men	Women	Boys	Girls			Boys	Girls	Boys	Girls					
1799	Jean Regis Pourier	x1300								16	7							3	4						29	
1800	Jean Regis Pourier	x1300				1	1			15	8			2				3	4						36	
1801	Jean Regis Pourier	x1300				1				15	13							3	5					8	43	
1802	Jean Regis Pourier	x1300								18	16							3	5						45	
1803	Jean Regis Pourier	x1300	60	12	48	1				19	19							5	6						50	
1804	Jean Regis Pourier	x1300	60	12	48	1	1		2	21	17		1					6	6						57	
1805	Jean Regis Pourier		60	12	48	1	1		2	17	19		2					8	5						54	
1806	Jean Regis Pourier		60																							Not recorded
1807	Jean Regis Pourier		60	12	48	1	1	1	2	19	20		2					6	7						59	
1808	Jean Regis Pourier		60	14	46	1	1	1	1	19	21		2					8	7	2	3	1	2		66	
1809	Jean Regis Pourier		75	12	63	1	1		1			2	5	6	1							1	1		17	
1810	Jean Regis Pourier		60	12	48	1	1	1	1	16	21							6	7	4	3				61	
1811	Jean Regis Pourier		60	12	48	1	1	1	1	15	23							10	9						61	
1812	Jean Regis Pourier		60	6	54	1	1	1	1	15	20							9	10						58	
1813	Jean Regis Pourier		60	6	54	1	1	1	1	15	18							9	10	2	2				60	
1814	Jean Regis Pourier		60	12	48	1	1	1	1	12	21							13	10						60	
1815	Jean Regis Pourier		60	4	56	1				32	33											7			66	
1816	Jean Regis Pourier		60	12	48	1	1	1		9	20		2					14	10	1		2			59	
1817	Jean Regis Pourier		60	12	48	1	1	1		9	20		1					16	9	2		3			60	
1818	Jean Regis Pourier		60	12	48	1	1			9	20		1					16	9	4		1			61	
1819	Jean Regis Pourier		60	12	48	1	1			9	19		1					15	9	4		2			59	
1820	Jean Regis Pourier		60	12	48	1				8	19		1					16	12	3		1			60	
1821	Jean Regis Pourier		60	12	48					3	18		1					16	12			3			50	
1822	Jean Regis Pourier heirs		60	22	38	1*	1	1*		7	12		2					7	7						36	
1823	Jean Regis Pourier heirs		60	22	38	1*	1*			7	3		2					17							29	
1824	Jean Regis Pourier heirs		60	22	38	1*	1*			7	12		2					9	7						37	
1825	Jean Regis Pourier heirs		60	22	38					7	12		2					9	7						37	
1826	Jean Regis Pourier heirs		60	22	38	2	1			7	12		2					7	7	1		1			39	
1827	Jean Regis Pourier heirs		n/a			1	1		10	6			2					12	8						40	
1828	Eliza Brathwaite		60	1	59	1	1	1	2	2								2							9	
1829	Eliza Brathwaite		60	1	59	1*	1	1	3	2	2		1		1			1							13	* = White
1830	Eliza Brathwaite		60	1	59	1*	1	1	3	3	2	2							1						14	* = White
1831	Joseph Couprie		60	1	59	6*	1	1		4		1						1							14	* = 2 White, 4 Colored
1833	Joseph Couprie		60	1	59	3*	2**			3		1		1											10	** = 1 White, 1 Colored

Year	Name of Owner	Total Feet	Acres (Danish)	Other Crops	Land Not Used	FREE Men	FREE Women	FREE Boys	FREE Girls	TAXABLE SLAVES Field Slaves Men	TAXABLE SLAVES Field Slaves Women	TAXABLE SLAVES Artisans and House Slaves Men	TAXABLE SLAVES Artisans and House Slaves Women	TAXABLE SLAVES Artisans and House Slaves Boys	TAXABLE SLAVES Artisans and House Slaves Girls	TAX-FREE Field Slaves Boys	TAX-FREE Field Slaves Girls	TAX-FREE BORN Boys	TAX-FREE BORN Girls			TOTAL	REMARKS
1833	Joseph Coupris		60	1	59	4*	1**			3						1						9	* = 2 White, 2 Colored ** = 1 White
1834	Joseph Coupris		60	1	59	6*	1**			1		1				3						12	* = 2 White, 4 Colored ** = 1 White
1835	Joseph Coupris		60	1	59	8*	2**	2	2			1								1		20	* = 2 White, 6 Colored ** = 1 white, 1 Colored
1836	Joseph Coupris		60	1	59	2*	2	1				1		1								9	* = 1 White, 1 Colored
1837	Joseph Coupris		60		60	3	1					1		1								6	
1838	Jean L. Garcia		60		60		3															3	Not Available
1839	Jean L. Garcia		60	6	54	2						3										5	
1840	Jean L. Garcia		60	6	54	3																8	
1841	Jean L. Garcia		60	15	35	2																7	
1842	Jean L. Garcia (Palmyra Pelletier -Renter)		60	6	54	2																7	
1843	Jean L. Garcia heirs (Hypoth, Robert)		60	10	50	3								1								12	
1844	Jean L. Garcia heirs		60	5	55	2						3				2						8	
1845	Jean L. Garcia heirs		60	0	60	2						3				1						6	
1846	Jean L. Garcia heirs		60	0	60	2		2				3								1		11	
1847	Jean L. Garcia heirs		60		60							2										2	
1848	Jean L. Garcia heirs		60		60				2													11	
1849	Jean L. Garcia heirs		60		60																		
1850	Joseph Daniel		60	5	55	4*																	* = 1 Domestic, 3 Field Hands
1851	Joseph Daniel		60	6	54	4*																	* = 1 Domestic, 3 Field Hands
1852	Joseph Daniel		60	5	55																		Not Available
1853	Joseph Daniel		60	5	55																		
1854	Joseph Daniel		60	5	55																		
1855	Joseph Daniel		60	5	55																		
1856	Joseph Daniel		60	5	55																		
1857	Joseph Daniel		60	5	55																		
1858	Joseph Daniel		60	12	48																		
1859	Joseph Daniel		60	12	48	1*			1*														* = Domestics
1860	Joseph Daniel		60	4	56																		
1861	Joseph Daniel		60	6	54	1*	1*		1*													3	* = Domestics
1862	Joseph Daniel		60	6	54	1*		1*	1*							1						3	* = Domestics
1863	Joseph Daniel		60	6	54	1*		1**								2						2	* = Manager, ** = Domestic
1864	Joseph Daniel		60	6	54	1*		1*														2	* = Domestics
1865	Joseph Daniel		60	12	48	1*																1	* = Domestic
1866	Joseph Daniel		60	12	48	1*		1*														2	* = Domestics

APPENDIX IIIC: LA PROVIDENCE PLANTATION OWNERSHIP AND OCCUPATIONAL HISTORY 1799-1914

Year	Name of Owner	Total Feet	Acres (Danish)	Other Crops	Land Not Used	FREE				TAXABLE SLAVES						TAX-FREE				Burials	TOTAL	REMARKS
						Men	Women	Boys	Girls	Field Slaves Men	Field Slaves Women	Artisans and House Slaves Men	Artisans and House Slaves Women	Artisans and House Slaves Boys	Artisans and House Slaves Girls	Field Slaves Boys	Field Slaves Girls	BORN Boys	BORN Girls			
1867	Joseph Daniel		60	12	48																	Not Recorded
1868	Joseph Daniel		60	12	48	1*																* = Owner or Manager
1869	Joseph Daniel		60	16	44	1*		1*														° = Domestics
1870	Joseph Daniel		60	20	40	1*		1*														° = Domestics
1871	Joseph Daniel		60	16	44	1*																* = Domestic
1872	Joseph Daniel	Providence	60	24	36																	Population not recorded in tax records from 1872 onwards
1873	Joseph Daniel		60	24	36																	
1874	Joseph Daniel		60	30	30																	
1875	Joseph Daniel		60	30	30																	
1876	Joseph Daniel		60	24	36																	
1877	Joseph Daniel		60	24	36																	
1878	Joseph Daniel		60	30	30																	
1879	Joseph Daniel		60	30	30																	
1880	Joseph Daniel		60	30	30																	
1881	Joseph Daniel		60	30	30																	
1882	Joseph Daniel		60	30	30																	
1883	Joseph Daniel		60	30	30																	
1884	Joseph Daniel		60	30	30																	
1885	Joseph Daniel		60		60																	
1886	Joseph Daniel		60		60																	
1887	Joseph Daniel		60	2	58																	
1888	Joseph Daniel		60	4	56																	
1889	Joseph Daniel		60	6	59																	
1890	Joseph Daniel		60	6	54																	
1891	Joseph Daniel		60	9	51																	
1892	Joseph Daniel		60	9	51																	
1893	Joseph Daniel		60	9	51																	
1894	Joseph Daniel		60	8	52																	
1895	Joseph Daniel		60	8	52																	
1896	Joseph Daniel		60	8	52																	
1897	Joseph Daniel		60	8	52																	
1898	Joseph Daniel		60	8	52																	
1899	Joseph Daniel heirs		60	8	52																	
1900	Joseph Daniel heirs		60	8	52																	

APPENDIX IIIC: LA PROVIDENCE PLANTATION OWNERSHIP AND OCCUPATIONAL HISTORY 1799-1914

Year	Name of Owner	Total Feet	Acres (Dunlah)	Other Crops	Land Not Used	FREE				TAXABLE SLAVES						TAX-FREE						TOTAL	REMARKS
						Men	Women	Boys	Girls	Field Slaves Men	Field Slaves Women	Artisans and House Slaves Men	Artisans and House Slaves Women	Artisans and House Slaves Boys	Artisans and House Slaves Girls	Field Slaves Boys	Field Slaves Girls	BORN Boys	BORN Girls	DEAD Men	DEAD Women		
1901	Joseph Daniel heirs		60	8	52																		
1902	Joseph Daniel heirs		60	8	52																		
1903	Joseph Daniel heirs		60	10	50																		
1904	Joseph Daniel heirs		60	10	50																		
1905	N. Christian E. Hansen		60		60																		
1906	N. Christian E. Hansen		60		60																		
1907	N. Christian E. Hansen		60		60																		
1908	N. Christian E. Hansen		60		60																		
1909	N. Christian E. Hansen		60		60																		
1910	N. Christian E. Hansen		60		60																		
1911	East Asiatic Company		60		60																		
1913	East Asiatic Company		60		60																		
1913	East Asiatic Company		60		60																		
1914	East Asiatic Company		60		60																		

REFERENCES CITED

Aley, Jennifer, Judith Moore, Meriwether Wilson, and Alfred Letourneau
1989 Natural and Cultural Resources in the United States Virgin Islands Research, Education, and Management Needs With Special Reference to St. Thomas U.S.V.I. and Case Studies of Estate Botany Bay. Yale University, School of Forestry and Environmental Studies. New Haven.

Binford, Lewis R.
1978 A New Method of Calculating Dates from Kaolin Pipe Stem Samples. In Historical Archaeology: A Guide to Substantive and Theoretical Contributions, edited by Robert L. Schuyler, pp. 66-67. Baywood Publishing Company, Inc., Farmingdale, New York.

Boyer, William P.
1983 America's Virgin Islands A History of Human Rights and Wrongs. Durham, North Carolina: Carolina Academic Press.

Bronsted, Johannes (Editor)
1966 Vore Gamle Tropekolonier. Kobenhavn: Hessing Forlag.

Bullen, Ripley P.
1962 Ceramic Periods of St. Thomas and St. John Islands, Virgin Islands. The William L. Bryant Foundation American Studies Report No. 4.

Buxton, L. H. Dudley, J.C. Trevor, Alveraz H. Julien
1938 Skeletal Remains from the Virgin Islands. Man. Vol. XXXVIII, 47:49-52.

Caesar, Margaret, Philip Caesar, and Emily Lundberg
1987 Preliminary Report: The Calabash Boom Site, St. John. Proceedings of the Twenty-Second International Congress of Caribbean Archaeology. Cayenne, French Guiana.

Calvesbert, Robert J.
1970 Climate. In Soil Survey of the Virgin Islands of the United States, by Luis H. Rivera, Wayne D. Frederick, Cornelius Farris, Earl H. Jensen, Lyle Davis, Cecil D. Palmer, Lyle F. Jackson, and William E. McKinzie, pp. 73-75. U.S. Department of Agriculture, Soil Conservation Service.

Cochran, Hamilton
1937 These are the Virgin Islands. New York: Prentice-Hall, Inc.

DCCA (Department of Conservation and Cultural Affairs)
1980 Beach Habitats. DCCA Environmental Fact Sheet No. 6

deBooy, Theodore
1917 Archeological Investigations in the Virgin Islands to Solve the Riddle of the Origin of Their Aborigines. In Scientific American Supplement, Vol. 84, No. 2180.

1919 Archeology of the Virgin Islands. In Indian Notes and Monographs, Museum of American Indian, Heye Foundation, New York.

Donnelly, Thomas W.,
1966 Geology of St. Thomas and St. John, U.S. Virgin Islands. In Caribbean Geological Investigations, edited by H. H. Hess, pp. 85-176. Geological Society of America Memoir 98.

Dookham, Isaac
1974 A History of the Virgin Islands of the United States. Epping, Essex, England.

Ebasco Environmental, Inc
1991 Archives Search Report The San Jose Project in the U.S. Virgin Islands. Unpublished draft manuscript prepared for the U.S. Army Corps of Engineers, Huntsville Division

Figueredo, Alfredo E.
1974 History of Virgin Islands Archaeology. In Virgin Islands Archaeological Society 1:1-6.

Goodwin, M. and M. Wilson
1987 Caribbean Marine Resources: Opportunities for Economic Development and Management. U.S. Agency for International Development and U.S. Department of Commerce, NAtional Oceanic and Atmospheric Administration, Washington, D.C.

Gross, Jeffery M.
1976 The Archaic Period of the Virgin Islands: New Investigations. In Proceedings of the Sixth International Congress for the Study of Pre-Columbian Cultures of the Lesser Antilles. pp. 232-238.

Hall, N. A. T.
1992 Slave Society in the Danish West Indies. Edited by B. W. Higman. Mona, Jamaica: University of the West Indies Press.

Harrington, J.D.
1978 Dating Stem Fragments of Seventeenth and Eighteenth Century Clay Tobacco Pipes. In Historical Archaeology: A Guide to Substantive and Theoretical Contributions, edited by Robert L. Schuyler, pp. 63-65. Baywood Publishing Co., Inc., Farmington, New York.

Hatt, Gudmund
1924 Archaeology of the Virgin Islands. In Proceedings of the Twenty-First International Congress of the Americanists 1.

On Pottery from the Virgin Islands. In Man, Vol. XXXVIII, 48:53.

Island Resource Foundation, St. Thomas
n.d. Virgin Islands Tourism Miscellanea, Helen Auble Collection

Study of Water Island Economic Development Options. St. Thomas: Island Resources Foundation.

Jameson, John and John E. Ehrenhard
1992 Task Directive and Scope of Work: Inventory and Assessment, Water Island, U.S. Virgin Islands. Unpublished manuscript on file, National Park Service, Interagency Archeological Services Division, Atlanta Georgia.

Jones, Olive R. and E. Ann Smith
1985 Glass of the British Military, ca 1755-1820. Parks Canada, Ottawa

Jones, Olive R.
1986 Cylindrical English Wine and Beer Bottles 1735-1850. Parks Canada, Ottawa.

Johnston, Barbara R.
1981 Virgin Islands Site Inventory Forms. Unpublished manuscripts on file at the Virgin Islands Planning Office, St. Thomas.

1983 Archeological Survey of the United States Virgin Islands: A Preliminary Report. Tenth ICSPCCLA, Fort-de-France, Martinique.

Keegan, William F.
1985 Dynamic Horticulturalists: Population Expansion in the Prehistoric Bahamas. Unpublished Ph.D. dissertation, Department of Anthropology, University of Florida. Ann Arbor, Mich. : University Microfilms International.

Knox, John P.
1852 A Historical Account of St. Thomas, W.I. New York: Charles Scribner.

Kramer, William P.
1930 Report of Forest Investigations of Virgin Islands and Recommendations, April 1930. United States Department of Agriculture, Forest Service manuscript. San Juan, Puerto Rico.

Krieger, Herbert W.
1938 Archaeology of the Virgin Islands. In Explorations and Fieldwork of the Smithsonian Institution in 1937. Washington.

Kusner, Poul
1767 De Insel Sanct Thomas mit den mehresten Plantagen. In History of the Mission of the Evangelical Brethren on the Caribbean Islands of St. Thomas, St. Croix, and St. John. by C. G. A. Oldendorp. English translation by Arnold R. Highfield and Vladimir Barac. Ann Arbor: Korma Press, 1987.

Larsen, Jens
1950 Virgin Islands Story. Philadelphia: Foretress Press.

Larsen, Kay
1927 Dansk Vertindien 1666-1917. Copehhagen: C. A. Reitzels Forlag.

Little, Elbert, Jr., and Frank H. Wabsworth
1964 Common Trees of Puerto Rico and the Virgin Islands. U.S.Department of Agriculture Forest Service Agricultuiral Handbook No. 249.

Lundberg, Emily R.
1985a Observations on Strombus Columella Fragments: Cautionary Notes and Experimental Microwear Analysis. Tenth ICSPCCLA, Fort-de-France, Martinique.

1985b Interpreting Cultural Associations of Aceramic Deposits in the Virgin Islands. Journal of Field Archaeology, 12:201-212.

1989 Preceramic Procurement Patterns at Krum Bay, Virgin Islands. Unpublished Ph.D. dissertation, Department of Anthropology, University of Illinois, Urbana.

1991 Interrelationships Among Preceramic Complexes of Puerto Rico and the Virgin Islands. In Proceedings of the Thirteenth International Congress for Caribbean Archaeology, Held in Willemstad, Curacao on July 24-29, 1989, pp. 73-85. Willemstad: Archaeological-Anthropological Institution of the Netherlands Antilles.

Lundberg, Emily R., Elizabeth C. Righter, and Margaret D. Caesar
1992 The Late Ceramic Age in the Northern Virgin Islands. Paper presented at the 57th Annual Meeting of the Society for American Archaeology, Pittsburgh.

Marfeldt, Christian
1764 The Plantations of St. Thomas. In Volume 4 of Christian Marfeldt Samalinger, Generaltoldkammeret Arkiver, Rigsarkivet. Copenhagen, Denmark.

Miller, George M.
1992 TPQ List for Glass, Ceramics, Metals, and Other Materials. Unpublished manuscript on file at the Southeast Archeological Center, Tallahassee, Florida.

NARS (National Archives and Records Service), Washington, D.C.
1904 St. Thomas Tax Returns, Record Group 55, Box 2247.

1904-1905 U.S. Consular Despatches, St. Thomas.

Nelson, Lee H.
1968 Nail Chronology as an Aid to Dating Old Buildings. American Association for State and Local History. Technical Leaflet 48. History News 24.11.

Noel Hume, Ivor
1969 A Guide to Artifacts of Colonial America. Alfred A. Knopf, New York.

Oldendorp, C. G. A.
1987 History of the Mission of the Evangelical Brethren on the Caribbean Islands of St. Thomas, St. Croix, and St. John. English translation by Arnold R. Highfield and Vladimir Barac. Ann Arbor, Michigan.

Oxholm, P. L.
1779 Map of St. Thomas Harbor 1779.

Phillips, Walter H.
1965 History of Water Island. The Daily News (St. Thomas), August 1, pp 67-68.

1972 Communication to Thomas F. Dunn, 15 August 1972. Manuscript on file with U.S. Department of Interior, Water Island files.

Posner, Ben
1980 A Feasibility Study to Determine Ownership, management and Development Options for Water Island. Unpublished manuscript on file at the Island Resources Foundation, Inc., Red Hook, St. Thomas,U. S. Virgin Islands.

Righter, Elizabeth
1989 Post-In-Ground Construction: An Example of Acculturation in the Virgin Islands. Paper Presented at the First Annual Symposium in Historical Archaeology, Baltimore, Maryland.

Statewide Comprehensive Historic Preservation Plan: Prehistoric Context. Department of Planning and Natural Resources, Division of Archaeology and Hisotric Preservation, Government of the Virgin Islands of the United States.

Righter, Elizabeth, and Emily Lundberg
n.d. Preliminary Findings at the Tutu Archaeological Village Site, St. Thomas, USVI. Paper presented at the Fourteenth International Congress for Caribbean Archaeology, Barbados, 1991. In press, Barbados Museum and Historical Society.

Rigsarkivet, Copenhagen, Denmark
1691 St. Thomas Landlister and Matriklerne.
-1914

St. Thomas Plantation Census. In Dokumenter vedr. Slavehandelkommissionen 1783-1806. Generaltoldkammeret Arkiver.

Forlegnelse over famtlige Plantager og Landejendomme paa St. Thomas. In Konsul Krebs Samalinger. Generaltoldkammeret Arkiver.

Rivera, Luis H., Wayne D. Frederick, Cornelius Farris, Earl H. Jensen, Lyle Davis, Cecil D. Palmer, Lyle F. Jackson, and William E. McKinzie
1970 Soil Survey of the Virgin Islands of the United States. U.S. Department of Agriculture, Soil Conservation Service.

Roe, Peter G., Agamemnon Gus Pintel, and Margaret B. Hamilton
1990 Monserrate Restudied: The 1978 Centro Field Season at Luquillo Beach: Excavation Overview, Lithics and Physical Antropological Remains. In Proceedings of the Eleventh Congress of the International Association for Caribbean Archaeology (San Juan, 1985), edited by Agamemnon Gus Pintel Tekakis, Iraida Vargas Arenas, and Mario Sanoja Obediente, pp. 338-369. La Fundacion Arquelogica, Antropologica e Historica de Puerto Rico, La Universidad de Puerto Rico, and U.S. Department of Agriculture, Forest Service.

Rouse, Irving
1989 Peoples and Cultures of the Saladoid Frontier in the Greater Antilles. In Early Ceramic Population Lifeways and Adaptive Strategies in the Caribbean, edited by Peter E. Siegel, pp. 383-403. British Archaeological Reports, International Series No. 506, Oxford.

1992 The Tainos: Rise and Decline of the People Who Greeted Columbus. Yale University Press New Haven & London.

Shaw, Earl B
1935 Population Adjustments in Our Virgin Islands. Economic Geography 11:267-79.

Sleight, Frederick, W.
1962 Archaeological Reconnaissance on the Island of St. John, United States Virgin Islands. The William L. Bryant Foundation American Studies Report No. 3.

South, Stanley
1977 Method and Theory in Historical Archaeology. New York: Academic Press.

Evolution and Horizon as Revealed in Ceramic Analysis in Historical Archaeology. In Historical Archaeology: A Guide to Substantive and Theoretical Contributions, edited by Robert L. Schuyler, pp. 68-82. Baywood Publishing Co., Inc., Farmingdale, New York.

Stewart, T.D.
1939 Negro Skeletal Remains from Indian Sites in the West Indies. Man Vol. XXXIX, 52-62:49-51.

Strategic Planning Group, Inc.
1990 United States Virgin Islands Alternate Concept Plans for Water Island. Manuscript on file at the Department of Planning and Natural Resources, Government of the U.S. Virgin Islands.

St. Thomas Recorder of Deeds, Charlotte Amalie, St. Thomas.
1777-1850 Book U. St. Thomas

1803-1980 Water Island File

St. Thomas Tidende (St. Thomas)
1834 Issue dated 1 February.

Issue dated 4 July.

Issue dated 11 February.

Switzer, Ronald R.
1974 The Bertrand Bottles: A study of 19th-Century Glass and Ceramic Containers. National Park Service U.S. Department of the Interior, Washington.

The Bulletin (St. Thomas)
1905 Issues dated 11 Feb., 14 Feb., 7 March and 29 May.

Thruelsen, Richard
1956 An Island of their Own. The Saturday Evening Post, December 1 1956.

Tildon, Bruce E.
1975 Excavation at the Abortum Site. Journal of the Virgin Islands Archaeological Society, No 2.

Tyson, George F.
1980 Water Island, Case History in Virgin Island Development. Occasional Paper #39. Island Resource Foundation. St. Thomas.

A Slave Island: Robert Mackay Hughes and the Origins of Independence Sentiment in St. Thomas, Danish West Indies 1865-1875. In Freedom's Flame, pp. 169-209. Virgin Islands: Bureau of Libraries, Museums and Archaeological Services,

Socio-Economic Development of the St. Thomas Harbor. In The St. Thomas Harbor: A Historical Perspective, edited by George F. Tyson, Jr., pp. 9-26. The St. Thomas Historical Trust.

On the Periphery of the Peripheries: The Cotton Plantations of St. Croix 1735-1815. Journal of Caribbean History (In Press)..

U.S. Comptroller of the Virgin Islands
1972 Audit Report No. 356-72-99, "Report of Lessees' Compliance with the Provisions of Lease for Water Island." St. Thomas. Manuscript on file at the Department of Planning and Natural Resources, Government of the U.S. Virgin Islands.

U.S. Department of Interior
n.d. Water Island Files.

C. Brewster Chapman, Jr. to Herman Marcuse, Department of Justice, May 29, 1979.

Virgin Islands, Department of Agriculture and Commerce
n.d. Water Island file. Industrial Incentive Division.

Water Island, Inc.
1953 Offering Circular. January 13, 1953.

1956 -1978 Annual Reports.

Watters, David R.
1980 Transect Surveying and Prehistoric Site Locations on Barbados and Montserrat, Leeward Islands, West Indies. Unpublished Ph.D. dissertation, Department of Anthropology, University of Pittsburgh.

Westergaard, Waldemar
1917 The Danish West Indies Under Company Rule 1671-1754. New York.

Wild, Kenneth S.
1988 A Problematic Approach to Ceramic Dating of Historic Plantations on St. John Island, U.S. Virgin Islands. M.A. Thesis, Department of Anthropology, Florida State University, Tallahassee, Florida.

Archeological Investigations Conducted Along the Lameshur Road, St. John, U.S. Virgin Islands. Unpublished manuscript on file, National Park Service, Southeast Archeological Center, Tallahassee, Florida.

Wilson, M
1988 Caribbean Marine Resources: A Report on Economic Opportunities. Oceanus 30(4):33-41.

Wilson, M., Criswell, and M. Donneely
1987 Impacts of Deforestation and Other Land Based Activities on Tropical Coral Reef Communities. The Center for Environmental Education, Washington, D.C.

Work, J. C.
n.d. A Short History of the Virgin Islands. Manuscript on file at the Department of Planning and Natural Resources, Government of the U.S. Virgin Islands.

APPENDIX F

REAL ESTATE DOCUMENTS

APPENDIX F – REAL ESTATE DOCUMENTS

The archive search did not locate any real estate information that contradicted or modified the information contained in the Inventory Project Report (INPR) for Water Island, Fort Segarra furnished in **Appendix D-1**. Complementary real estate documents were gathered and reviewed but not presented here. These documents will be stored with all the original ASR information.

APPENDIX G

NEWSPAPERS/JOURNALS

(ITEMS ARE INCLUDED IN APPENDIX E)

APPENDIX H

SUMMARY OF INTERVIEWS

(NOT USED)

APPENDIX H – SUMMARY OF INTERVIEWS

No interviews, telephonically or in person, were conducted on the Water Island, Fort Segarra Archives Search Report.

APPENDIX I

PRESENT SITE PHOTOGRAPHS



Photo – 01
Items stored around landfill at Flamingo Bay.



Photo – 02
Road repair supplies outside of landfill at Flamingo Bay.



Photo – 03
Fence erected around landfill. Flamingo bay area.
Photo fails to show it clearly, but just beyond the fence is an empty 1-ton (chemical) container.



Photo – 04
Road improvement supplies stored outside landfill. Flamingo Bay area.



Photo – 05
Northeast corner of landfill. Fence was erected to enclose the site.



Photo – 06
Test Area (TA) -4
This area between 1948 – 1950 was a part of TA 4 used to park vehicles and decon equipment.



Photo – 07
TA-4 is center of picture.
View looking west.



Photo – 08
TA-4
View looking north.



Photo – 09
Portion of TA-4
View looking northeast.



Photo – 10
TA-4
View looking south.



Photo – 11
This portion of the former TA-4 is currently being used as a disposal yard for junk vehicles. These are recently abandoned vehicles, not affiliated with DoD.



Photo – 12
TA-4
South shore of marina area.



Photo – 13
View looking back across Flamingo Bay.



Photo – 14
TA-4
View looking northwest.



Photo – 15
TA-4
View looking north northwest.

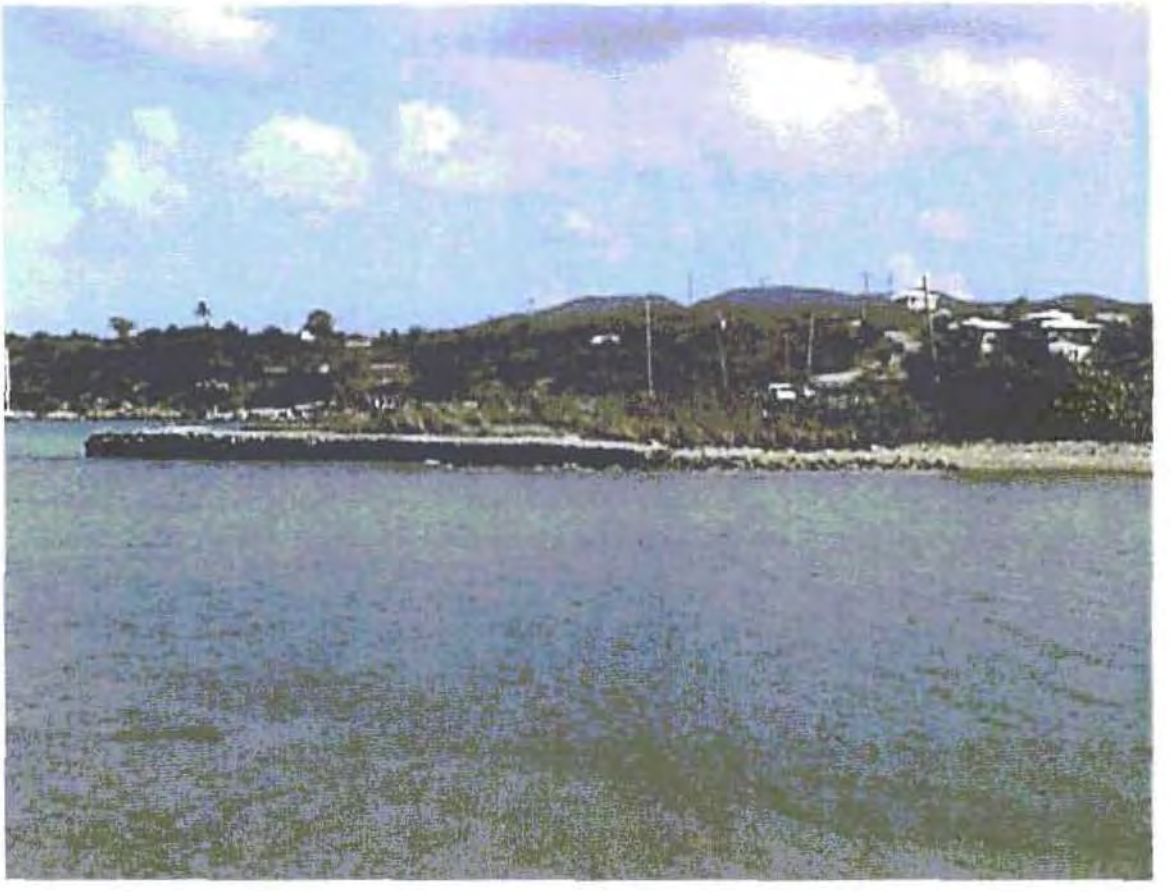


Photo – 16
TA-4
View looking west northwest.

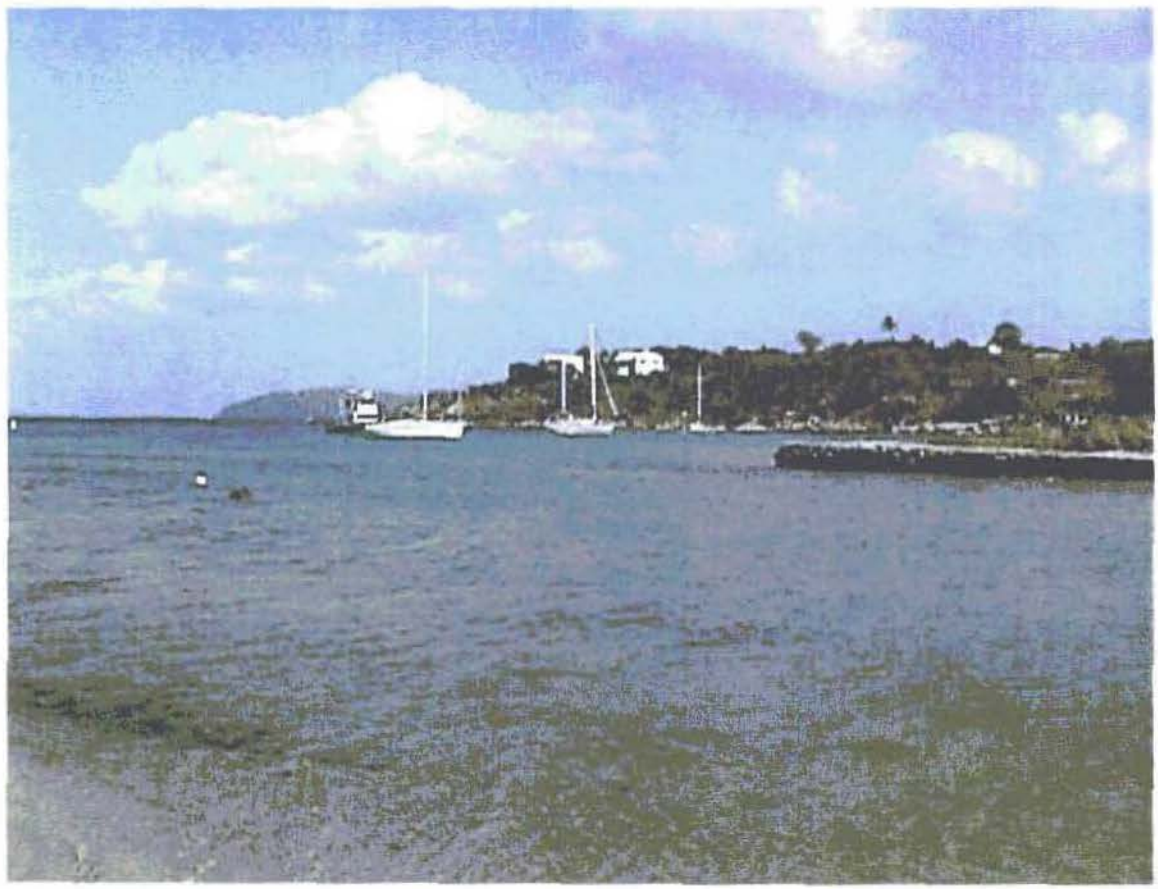


Photo – 17
TA-4
View looking west.



Photo – 18
Current efforts of the Water Island Association to establish a recycling point. The site is located in the former Test Area – 5.



Photo – 19
Water Island recycling point. The site is located in the former Test Area – 5.

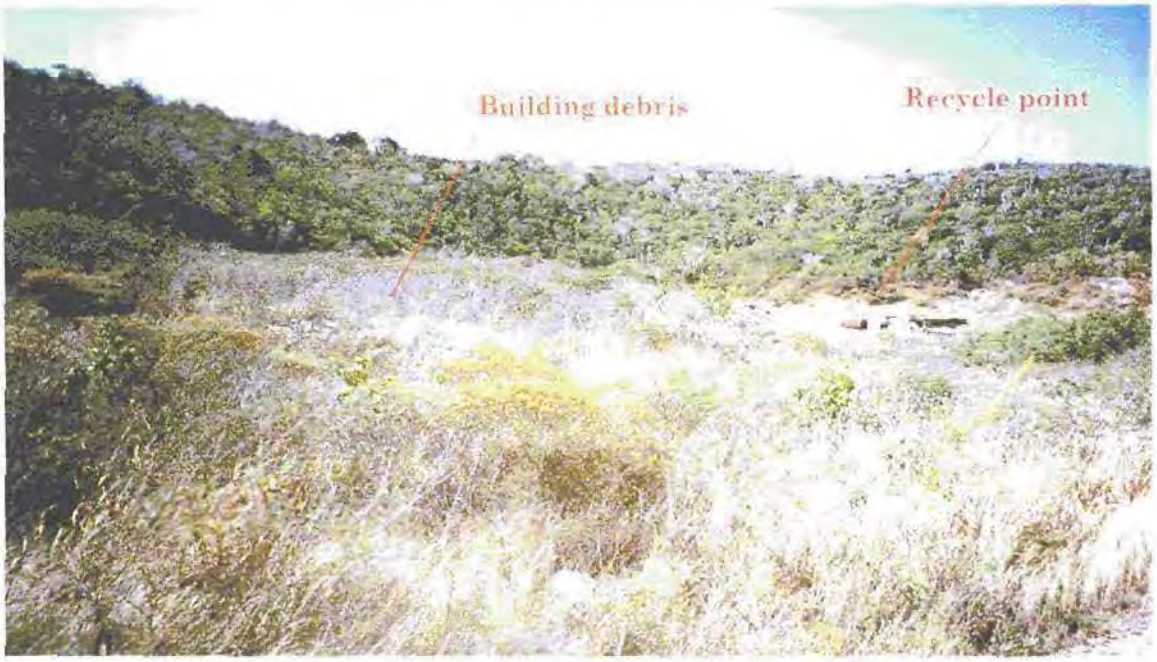


Photo – 20
Material at left is building debris from hotel destroyed during a hurricane Hugo in 1989.



Photo – 21
View of Druif Point and the former gun emplacement. Photo taken from vista point on private residence.



Photo – 22
Former gun emplacement on Druif Pt.



Photo – 23
Shore access to the former gun emplacement on Druif Pt.



Photo – 24
Former gun emplacement on Druif Pt.



Photo – 25
Safety officer standing on the former gun emplacement, Druif Pt.



Photo – 26
Residence in vicinity of the former gun emplacement, Druif Pt.



Photo – 27
Close up of former Druif Pt. gun emplacement.
Ready ammunition storage area on right.



Photo – 28
Former Druif Pt. gun emplacement.



Photo – 29
Bolts protruding from the mount were used to secure the gun carriage. Druif Pt.



Photo – 30
Overall view of Providence Point, and the former gun emplacements. Looking north across Druif Bay.

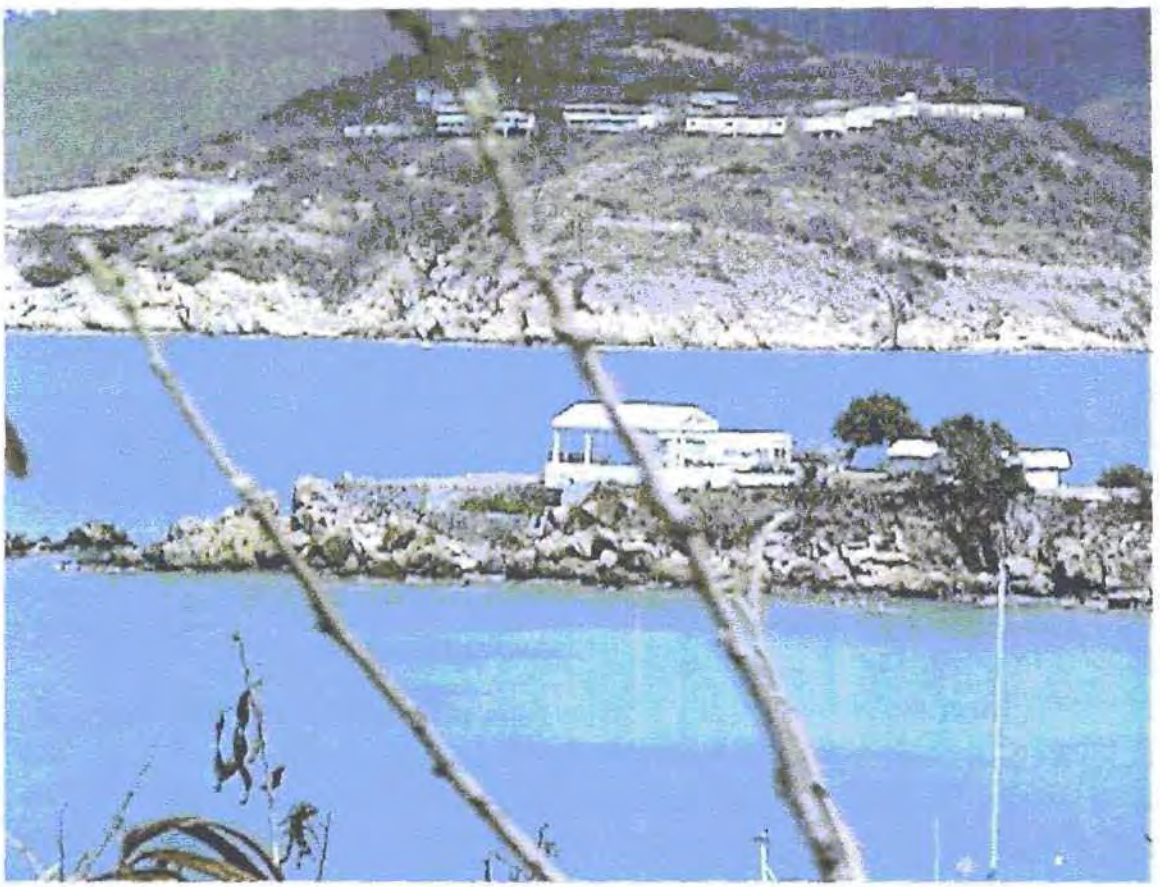


Photo – 31
The former Providence Pt. gun emplacements. Looking north across Druif Bay.



Photo – 32
Honeymoon Beach in Druif Bay.



Photo – 33
Wildlife on Water Island.



Photo – 34

The former Providence Pt. gun emplacements. Currently, privately owned and commercial advertised as "Water Island Cottages and Apartments". The covered patio was one mount. The building with the double doors was constructed on the second mount.



Photo – 35
The end of Providence Pt. in front of the former gun emplacements.



Photo - 36
One of two former gun emplacements on Providence Pt.
The swimming pool separates the two emplacements.



Photo – 37
One of two former gun emplacements on Providence Pt.



Photo – 38
The owner's version of coastal artillery.



Photo – 39
View of the ammunition storage area on Carolina Point. One of two identified magazines.



Photo – 40
The first of two identified ammunition storage magazines. Designated on a historical map as building No. 48.



Photo – 41
The plywood wall in an internal modification to the magazine. The racquetball court is currently in a state of disrepair.



Photo – 42
The second of two identified ammunition magazines. Designated on a historical map as building № 49. Located approximately 350' NW of building № 48.



Photo – 43
Entrance to ammunition magazines, building № 49.



Photo – 44
Interior of the ammunition magazine, building № 49.



Photo – 45

Former gun mount, one of two making up Battery 314, Fort Segarra. This position is to the southeast of the observation bunker. The tunnel at the back connects the two mounts along with the Fire Control (observation bunker) station (barely visible at the top left corner of the photo. Construction was completed however, the facility was declared obsolete before any guns were emplaced.



Photo – 46

Closer view of southeast mount, Battery 314, Fort Segarra. Note the entrance to the underground facilities at rear of photo. This tunnel serves as a passageway between the guns, fire control station, ammunition and powder storage, and offices and living quarters.



Photo – 47
Gun mount (southeast), Battery 314, Fort Segarra.
Bolts protruding from the mount were used to secure the gun carriage.



Photo – 48
Former gun mount, one of two making up Battery 314, Fort Segarra. This position is to the north of the observation bunker. Construction was completed however, the facility was declared obsolete before any guns were emplaced.



Photo – 49

Former gun emplacement (northwest) at Flamingo Point, Battery 314, Fort Segarra
Note the entrance to the underground facility in the foreground. The tunnel serves as a passageway between the guns, fire control station, ammunition and powder storage, and offices and living quarters.



Photo – 50

Closer view of northwest mount, Battery 314, Fort Segarra. Note the entrance to the *underground facilities at rear of photo. This tunnel serves as a passageway between the* guns, fire control station, ammunition and powder storage, and offices and living quarters.



Photo – 51
Gun mount (northwest), Battery 314, Fort Segarra.
Bolts protruding from the mount were used to secure the gun carriage gun.



Photo – 52
This tunnel serves as a passageway between the guns, fire control station, ammunition and powder storage, and offices and living quarters.



Photo – 53
This tunnel serves as a passageway between the guns, fire control station, ammunition and powder storage, and offices and living quarters.



Photo – 54

Northern entrance to the underground facility of Battery 314, Fort Segarra. This entrance serves as a passageway to the guns, fire control station, ammunition and powder storage, and offices and living quarters. White pipes at the entrance were put there after the military released the property. A hotel was constructed on the island and the fresh water supply was store in this underground facility.

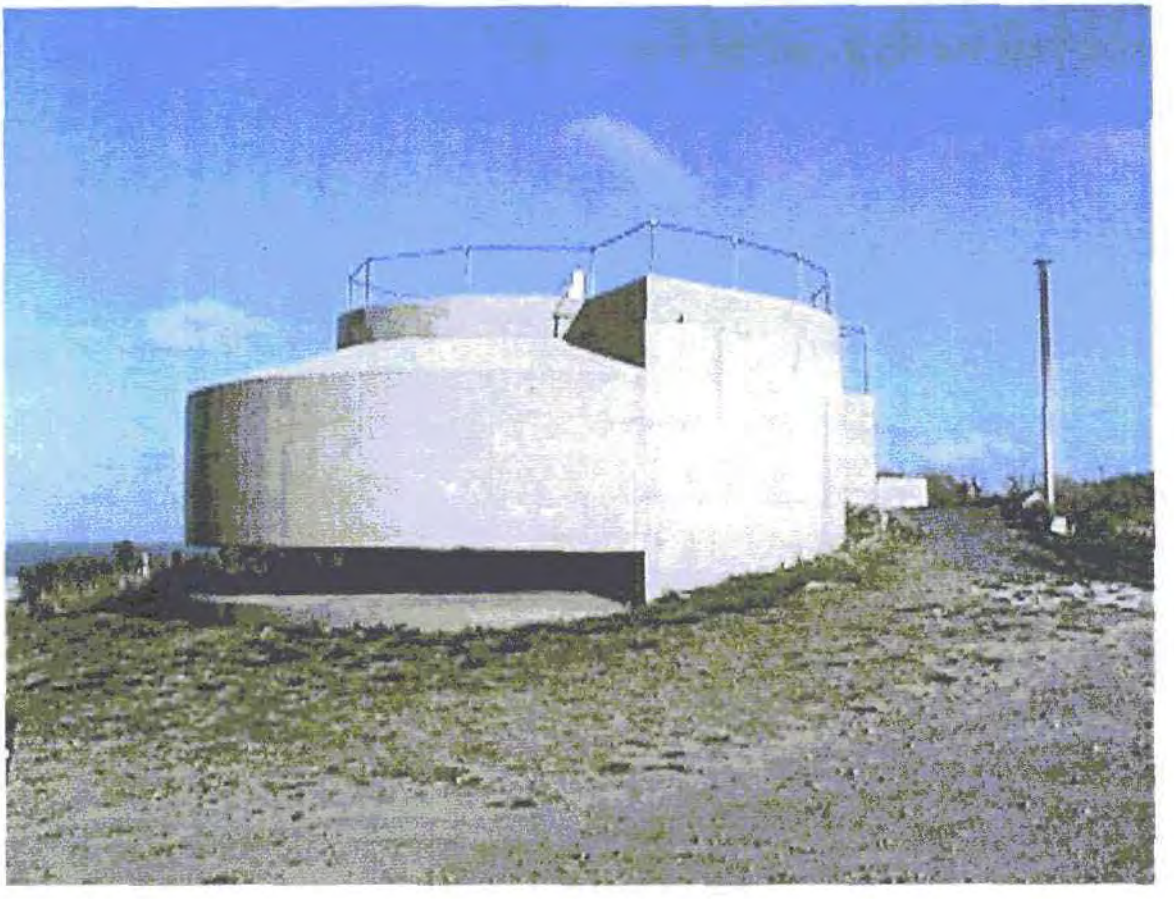


Photo – 55
Fire Control Station (observation bunker).



Photo – 56
Airshafts located near the observation bunker feed into the underground facility.



Photo – 57
View from atop the observation bunker.
Note the bicycles at the left. This area is used as a staging area for a local company running a bicycle tour of water island. Fort Segarra is starting point for the tour.



Photo – 58
View from observation bunker, looking at northwest gun mount.



Photo – 59
Photos 59 thru 64 are a panoramic view from atop the observation bunker.
Building is a private residence.
View looking northwest.

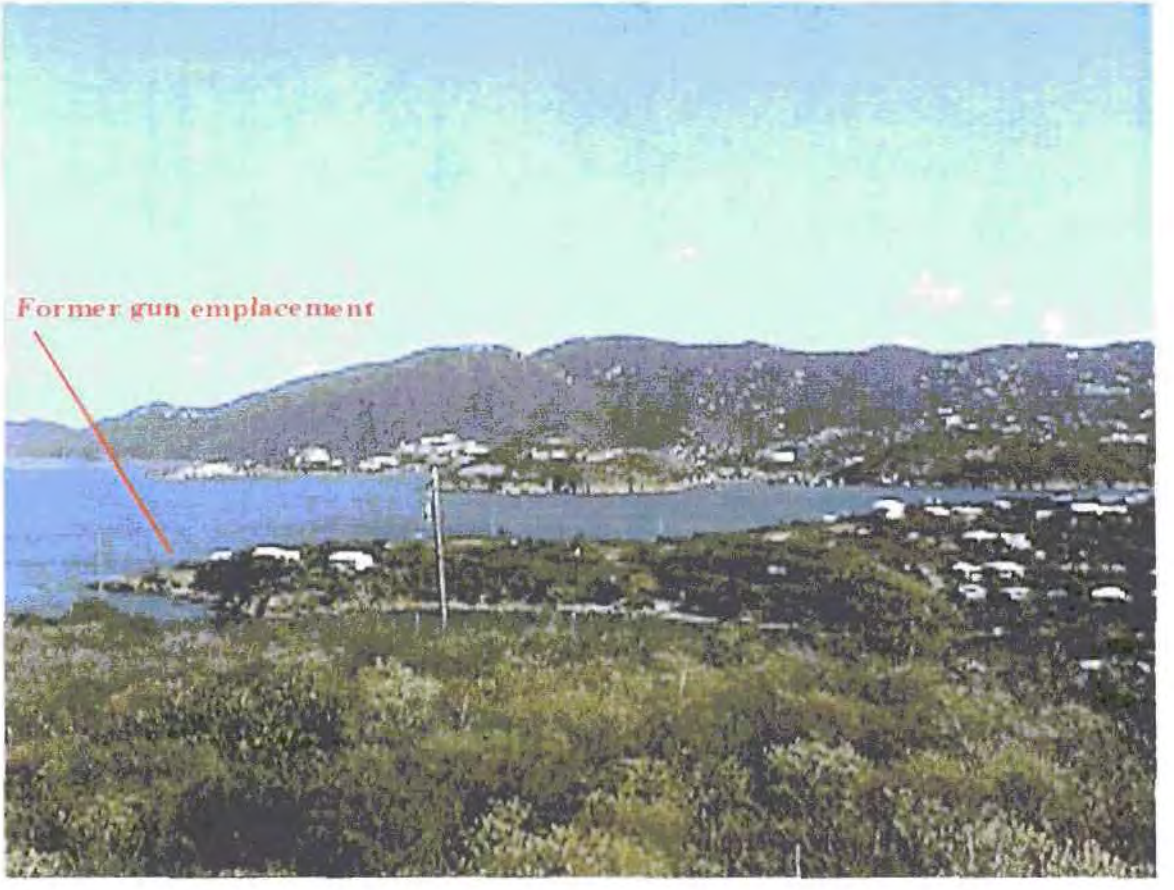


Photo – 60

Photos 59 thru 64 are a panoramic view from atop the observation bunker. View looking north. The former gun emplacement can be seen towards the end of Druif Point.



Photo – 61
Photos 59 thru 64 are a panoramic view from atop the observation bunker.
Marina area. View looking north northeast.



Photo – 62
Photos 59 thru 64 are a panoramic view from atop the observation bunker.
View looking northeast.



Photo – 63
Photos 59 thru 64 are a panoramic view from atop the observation bunker.
View looking northeast.



Photo – 64
Photos 59 thru 64 are a panoramic view from atop the observation bunker. Buildings (residences) are the former logistical support facilities for Ft. Segarra. View looking east northeast.

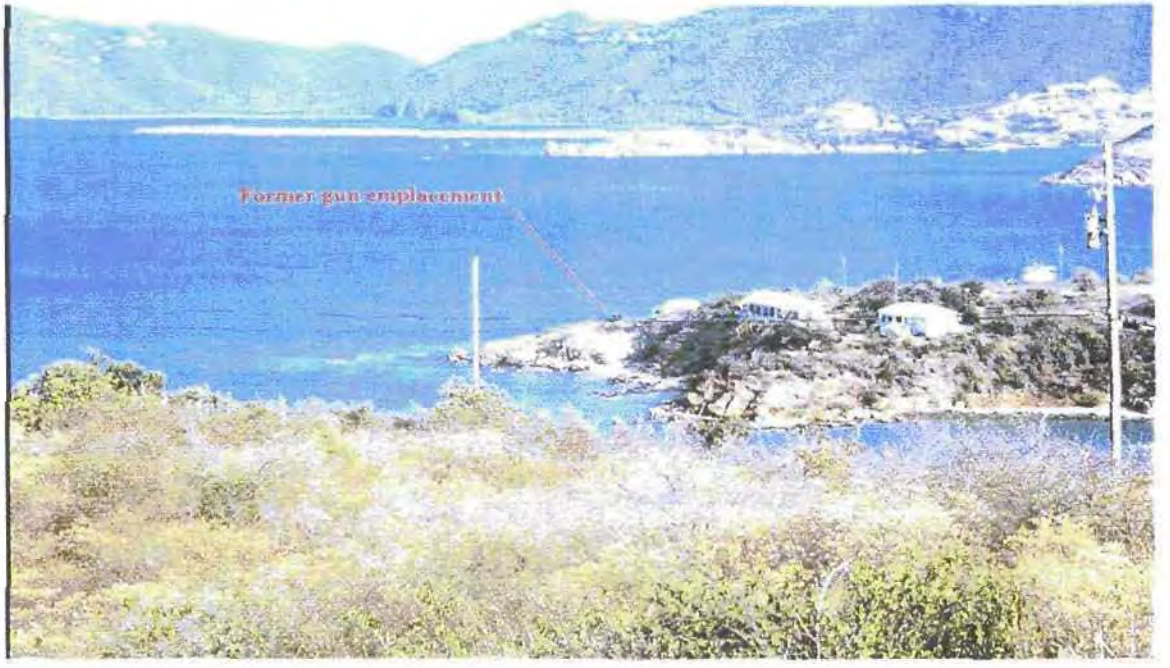


Photo – 65
Druif Point



Photo – 66
Central observation tower
The tower is not currently being unused. It sets at the front of a private home nearly destroyed during hurricane Hugo in 1989. The home is unoccupied and in state of disrepair.



Photo – 67
Clearing is the former rain catchments area. View from residence near the central observation tower.



Photo – 68
View of Water Island coastline from rear deck of residence near the central observation tower. St. Thomas coastline in background.



Photo – 69
Unidentified structure. Owner thought it might be a gun position. Site team determined that it is not a gun position or affiliated with DoD.

APPENDIX J

HISTORICAL PHOTOGRAPHS

(INCLUDED IN APPENDIX E)

APPENDIX K

HISTORICAL MAPS/DRAWINGS

(INCLUDED IN APPENDIX E - VOLUME I AND VOLUME II)

APPENDIX L

SITE SAFETY AND HEALTH PLAN/SITE INSPECTION REPORT

APPENDIX L-1

Site Safety and Health Plan

SITE SAFETY AND HEALTH PLAN (SSHP)
for
WATER ISLAND (FORT SEGARRA)
U.S. VIRGIN ISLANDS
SITE # I02VI097700

The purpose of this site visit is to reconnoiter, document, and photograph areas Water Island, U.S.V.I. suspected to be contaminated with unexploded ordnance and/or toxic chemical munitions.

PREPARED BY:	Randy Fraser
OFFICE	USACE, CEMVS-ED-P
ADDRESS	1222 Spruce St. St. Louis, Mo
PHONE	(314) 331-8268
DATE PREPARED	3-12-02

REVIEWED/APPROVED BY: George Sloan

NOTE This SSHP is to be used only for non-intrusive site visits and must be approved by safety prior to the start of the field visit. All team members must read, and comply with the SSHP, and attend the safety briefings. The Site Safety and Health Officer (SSHO) shall ensure the Safety Briefing Checklist and the SSHP acceptance form (Appendix C) is filled out prior to the start of the site visit.

A. SITE DESCRIPTION AND PREVIOUS INVESTIGATIONS

1. Site Description

a. Size Approximately 500 acres

b. Present Usage (check all that apply)

[ ] Military	[X] Recreational	[X] Other (specify)
[X] Residential	[ ] Commercial	_____
[X] Natural Area	[ ] Industrial	_____
[X] Agricultural	[ ] Landfill	

[ ] Secured [ ] Active [ ] Unknown [X] Unsecured [ ] Inactive

2. Past Uses Water Island (Fort Segarra) was acquired in 1942, for use as a harbor defense installation. In 1946, after the end of World War II, these facilities were found to be excess to the needs of the War Department before the installation became operational. By May 1948, the facilities on St. Thomas, which were formerly known as the Submarine Base and Fort Segarra, were taken over for use in continuing the tropical testing of chemical weapons systems (known as the San Jose Project). The San Jose Project continued to operate until May 1950, when the project was cancelled. By September 1950, all testing was concluded and the project closed..

3. Surrounding Population (check all that apply)

[X] Rural	[X] Residential	[ ] Urban
[ ] Commercial	[ ] Industrial	[ ] Other (specify)_____

4. Ordnance/Explosives (OE) Potential Artillery and small arms ammunition consistent with 1940 era weapons. Unlikely but possible, chemical debris and munitions relating to the San Jose Project.

B. DESCRIPTION OF ON-SITE ACTIVITIES (check all that apply)

[X] Walk-through	[X] Drive-through	[ ] Other (specify)
[X] On-Path	[X] On-road	
[X] Off-Path	[ ] Off-road	

C. SITE PERSONNEL AND RESPONSIBILITIES

1. Responsibilities

a. Project Manager The Corps of Engineers Project Manager (PM) is overall responsible for the site visit. He will assign a Team Leader, (most situations will be the PM). The PM will ensure that the SSHP is completed. Coordinates and executes the site

visit.

b. Site Safety and Health Officer Individual designated to conduct safety, enforce the SSHP, conduct safety briefings, and ensure that the team leader can safely fulfill his objectives. The SSHO will maintain the safety gear, and monitor on-site operations. The SSHO is responsible for identifying, marking, and reporting any unexploded ordnance and explosives.

2. Team Members

NAME	POSITION	ADDRESS	PHONE
Thomas Freeman	PM/Team Leader	USACE, St. Louis, MO	(314) 331-8785
Randy Fraser	SSHO/UXO Spec	USACE, St. Louis, MO	(314) 331-8268
Charlene Boecklen	Historian	USACE, St. Louis, MO	(314) 331-8268

D. OVERALL HAZARD EVALUATION (check one)

[ ] High [ ] Moderate [X] Low [ ] Unknown

This assessment was developed using the Site Investigation Hazard Analysis and Risk Assessment Code Matrix.

E. GENERAL PRECAUTIONS Prior to the on-site visit, all team members are required to read this SSHP and sign the form acknowledging that they have read and will comply with it. In addition, the SSHO shall hold a brief tailgate meeting in which site specific topics regarding the days activities will be discussed. If unanticipated hazardous conditions arise, team members are to stop work, leave the immediate area and notify the SSHO. The buddy system will be enforced at all times.

F. STANDARD OPERATION SAFETY PROCEDURES, ENGINEERING CONTROLS AND WORK PRACTICES

1. Site Rules/Prohibitions At any sign of unanticipated hazardous conditions, stop tasks, leave the immediate area and notify the SSHO. Smoking, eating and drinking allowed in designated areas only.

2. Material Handling Procedures Do not handle.

3. Drum Handling Procedures Do not handle.

4. Confined Space Entry An area identified as a Permit Required Confined space will not be entered. All confined spaces shall be considered permit required confined spaces until the pre-entry procedures demonstrate otherwise. Confined spaces may be entered without a written permit or attendant provided the space is determined not to be a permit required

confined space as specified in 29 CFR 1910.146.

5. Electrical Protection Overhead power lines, downed electrical wires and buried cables pose a danger of shock and electrocution. In addition, buildings may contain exposed wiring that may hold a potential load. Workers should avoid contact with any and all exposed wire and cables

6. Spill Containment N/A

7. Excavation Safety Do not enter trenches/excavations.

8. Illumination Site visits will be conducted during daylight hours only.

9. Sanitation Use existing sanitary facilities.

10. Buddy System Individuals will maintain constant contact with other personnel at all times. No one will work alone at any time during the site visit.

11. Engineering Controls N/A

12. Insects Wearing light colored clothing and tucking in the pant legs can reduce contact. In severely infested area it may be necessary to tape all openings. Apply repellents to both clothing and bare skin. Diethyltoluamide (DEET) is an active ingredient in many repellents, which are effective against ticks and other insects. Repellents containing DEET can be applied on exposed areas of skin and clothing. However, repellents containing permethrin should be used on only clothing. For more information on insect bites, refer to APPENDIX B of this SSHP.

13. Poisonous Vegetation Recognition and avoidance is the best protection. Cover all exposed skin. If it is known or suspected that an individual has been exposed, wash the effected area with soapy water.

14. Inclement Weather When there are warnings or indications of impending severe weather (heavy rains, strong winds, lightning, tornadoes, etc.), weather conditions shall be monitored and appropriate precautions taken to protect personnel and property from the effects of the severe weather.

15. Hot Weather In hot environments, cool drinking water shall be made available and workers shall be encouraged to frequently drink small amounts, e.g., one cup every 15 - 20 minutes; the water shall be kept reasonably cool. In those situations where heat stress may impact worker safety and health, work regimens shall be established. For more information on Heat Stress refer to APPENDIX A of this SSHP.

16. Cold Weather Cold injury (frost bite and hypothermia) and impaired ability to work are dangers at low temperatures and when the wind-chill factor is low. To guard against them;

wear appropriate clothing; have warm shelter readily available; carefully schedule work and rest periods, and monitor workers' physical conditions.

17. Off-Road Driving Ensure all emergency equipment is available with the vehicle, i.e., tire changing equipment. Drivers shall familiarize themselves with the procedures for engaging four-wheel drive systems before the need for added traction arises. Vehicles will not be driven into an environment that is unknown, such as deep water, or an unstable surface. Vehicles will not be driven into a suspected ordnance impact area.

18. Ordnance

a. General Information

(1) The cardinal principle to be observed involving explosives, ammunition, severe fire hazards or toxic materials is to limit the exposure to a minimum number of personnel, for the minimum amount of time, to a minimum amount of hazardous material consistent with a safe and efficient operation.

(2) The age or condition of an ordnance item does not decrease the effectiveness. Ordnance that has been exposed to the elements for extended periods of time become more sensitive to shock, movement, and friction, because the stability agent in the explosives may be degraded.

(3) When chemical agents may be present, further precautions are necessary. If the munitions item has green markings leave the area immediately, since it may contain a chemical filler.

(4) Consider ordnance that has been exposed to fire as extremely hazardous. Chemical and physical changes may have occurred to the contents which render it more sensitive than it was in its original state.

b. On-Site Instructions

(1) DO NOT TOUCH or MOVE any ordnance items regardless of the markings or apparent condition.

(2) DO NOT conduct a site visit during an electrical storm or an approaching electrical storm. If a storm approaches during the site visit leave the site immediately and seek shelter.

(3) DO NOT use a radio or cellular phone in the vicinity of a suspect ordnance item.

(4) DO NOT walk across an area where the ground cannot be seen.

(5) DO NOT drive a vehicle into a suspected OE area; use clearly marked lanes.

(6) DO NOT carry matches, cigarettes, lighters or other flame producing devices into an OE site.

(7) DO NOT rely on color code for positive identification of ordnance items or their contents.

(8) Approach ordnance items from the side; avoid approaching from the front or rear.

(9) Always assume ordnance items contain a live charge until it can be determined otherwise.

(10) Dead vegetation and animals may indicate potential chemical contamination. If a suspect area is encountered, personnel should leave the immediate area and evaluate the situation before continuing the site visit.

c. Specific Action Upon Locating Ordnance

(1) DO NOT touch, move or jar any ordnance item, regardless of its apparent condition.

(2) DO NOT be misled by markings on the ordnance item stating "practice", "dummy", or "inert". Practice munitions may contain an explosive charge used for spotting the point of impact. The item may also be mismarked.

(3) DO NOT roll the item over or scrape the item to read the markings.

(4) The location of any ordnance items found during site investigations should be clearly marked so it can be easily located and avoided.

(5) Reporting will be conducted in accordance with CEMVS-ED-P, Standard Operating procedure for Reporting Ordnance and Unexploded Ordnance (UXO), dated 19 January 1995.

19. Other (specify)_____

G. SITE CONTROL AND COMMUNICATIONS

1. Site Map Maintained on site by the PM or Safety Officer.

2. Site Work Zones N/A

3. **Buddy System** Individuals will maintain constant contact with other personnel at all times. No one will work alone at any time during the site visit.

4. **Communications**

a. On-Site Verbal communications will be used among team members.

b. Off-Site Communications shall be established on every site. Communications may be established by using a cellular phone or by public or private phone which may be readily accessible. (specify below)

[X] Cellular phone
[ ] Public/private phone (location) _____
[ ] Other_____

c. Emergency Signals In the case of small groups, a verbal signal for emergencies will suffice. An emergency signal for large groups (i.e. air horn, whistle) should be incorporated at the discretion of the SSHO. (specify below)

[X] Verbal
[ ] Nonverbal (specify)_____

H. EMERGENCY RESPONSE Team members are to be alert to the dangers associated with the site at all times. If an unanticipated hazardous condition arises, stop work, evacuate the immediate area and notify the SSHO. A First Aid Kit and emergency eye wash (if applicable) will be located in the SSHO's field vehicle. If qualified persons (i.e. fire department, medical facility or physician) are not accessible within five minutes of the site at least two team members shall be qualified to administer first aid and CPR.

1. **Emergency/Important Telephone Numbers**

Emergency 911

U.S.V.I. Police Department ..... (340) 774-2211

Roy Lester Schnieider Hospital ..... (505) 887-4100

EODMU 2 Roosevelt Roads ..... (787) 865-4316
Huntsville Safety Office ..... (205) 895-1582/1579
Huntsville Safety (after hours) ..... (205) 895-1180
On-site cellular phone ..... (314) 606-4960
St. Louis Corps of Engineers ..... (314) 331-8036

2. **Hospital/Medical Facility Information**

Name: Roy Lester Schnieider Hospital
Address: 9048 Sugar Estates
St. Thomas, U.S.V.I.
Phone: (340) 776-2207

Route to Medical Facility: Refer to the Site Map

I. MONITORING EQUIPMENT AND PROCEDURES

1. Exposure Monitoring For non-intrusive on-site activities such as site visits, air monitoring is typically not required. However, if the site situation dictates the need for monitoring, complete the following information on a separate page and attach the page to the SSHP.

a. Monitoring Equipment To Be Utilized N/A

b. Equipment Calibration Results N/A

c. Action Levels N/A

2. Heat/ Cold Stress Monitoring

a. Heat Stress monitoring criteria published in Chapter 8 of the NIOSH/OSHA/USCG/EPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities" shall be followed.

b. Cold Stress monitoring shall be conducted in accordance with the most current published American Conference of Governmental Industrial Hygienists (ACGIH) cold stress standard.

J. PERSONAL PROTECTIVE EQUIPMENT Typically, for non-intrusive site visits, Level D is required. If a higher level of protection is to be used initially or as contingency, a brief discussion will be attached. At a minimum personnel shall wear clothing suitable for the weather and work condition. The minimum for fieldwork shall be short sleeved shirt, long trousers, and leather or other protective work shoes or boots. If a higher level of protection is to be used initially or as contingency, a brief discussion will be attached.

1. Footwear Footwear providing protection against puncture shall meet the applicable requirements as stated in EM 385-1-1, paragraph 05.A.07. All activities which personnel are potentially exposed to foot hazards will be identified and documented in a hazard analysis.

2. Hand Protection Persons involved in activities which subject the hands to injury (e.g., cuts, abrasions, punctures, burns) shall use leather gloves.

3. Head Protection Hardhats shall be worn when personnel are subject to potential head injury. The identification and analysis of head hazards will be documented in a hazard analysis.

4. Eye Protection Personnel will wear eye protection when activities present potential injuries to the eyes. All eye protection equipment shall meet the requirements as stated in EM 385-1-1, paragraph 05.B.

K. DECONTAMINATION PROCEDURES Decontamination procedures are not anticipated

for this site investigation. Team members are cautioned not to walk, kneel or sit on any surface with potential leaks, spills or contamination.

L. TRAINING All site personnel shall have completed the training required by EM 385-1-1 and 29 CFR 1910.120 (e). The U.S. Army Corps of Engineer (USACE) Project Manager shall ensure, and the SSHO shall verify, that all on-site personnel have completed appropriate training. Additionally, the SSHO shall inform personnel before entering, of any potential site-specific hazards and procedures.

M. MEDICAL SURVEILLANCE PROGRAM The USACE Project Manager shall ensure, and the SSHO shall verify, that all on-site personnel are on the Medical Surveillance Program meeting the requirements of 29 CFR 1910.120, and ANZI Z-88.2, as appropriate, depending on the PPE and site specific tasks.

NAME	HAZWOPER (ref)	PROVIDER	MEDICAL DATE
Thomas Freeman	06-01	Corps of Engrs.	04-01
Randy Fraser	11-01	Corps of Engrs.	08-01
Charlene Boecklen	06-01	Corps of Engrs.	06-01

N. LOGS, REPORTS AND RECORD KEEPING Site logs are maintained by the Project Manager and SSHO. This is to include historical data, personnel authorized to visit the site, all records, standard operating procedures, air monitoring logs and the SSHP.

O. GENERAL The number of personnel visiting the site shall be a limited to a minimum of two, maximum of eight. The more personnel on-site, greater the potential for an accident. The SSHO may modify this SSHP if site conditions warrant it and without risking the safety and health of the team members. This modification will be coordinated with the team members. The SSHO shall notify Corps of Engineers Safety Office in Huntsville, AL. of the change as the situation allows.

APPENDIX A

HEAT- RELATED INJURIES

Once the signals of a heat-related illness begin to appear, the victim's condition can quickly get worse. A heat related illness can result in death. If you see any of the signals of sudden illness, and the victim has been exposed to extremes of heat, suspect a heat-related illness.

People at risk for heat-related illness include those who work or exercise outdoors, elderly people, young children, and people with health problems. Also at risk are those who have had a heat-related illness in the past, those with medical conditions that cause poor blood circulation, and those who take medications to get rid of water from the body (diuretics).

People usually try to get out of extreme heat before they begin to feel ill. However, some people do not or can not. Those that work outdoors often keep working even after they begin to feel ill. Many times, they might not even recognize that they are in danger of becoming ill.

Heat-cramps, heat-exhaustion, and heat-stroke, are conditions caused by overexposure to heat. You can help prevent heat-stress emergencies by recognizing and properly treating symptoms. Below is a quick reference guide to heat-related emergencies:

HEAT CRAMPS Heat cramps are the least severe, and often are the first signals that the body is having trouble with the heat. *Symptoms* include: Muscle twitching; painful spasms in the legs, arms or abdomen.

WHAT TO DO:
- Have the individual rest in a cool place.
- Give cool water or a commercially available sports drink.
- lightly stretch the muscle and gently massage the area.

HEAT EXHAUSTION Heat exhaustion is a more severe condition than heat cramps. *Symptoms:* cool, moist, pale, or flushed skin, headache, nausea, dizziness, weakness, and exhaustion.

HEAT STROKE Heat stroke is the least common but most severe heat emergency. It most often occurs when people ignore the signals of heat exhaustion. Heat stroke develops when the body systems are overwhelmed by heat and begin to stop functioning. **Heat stroke is a serious medical emergency.** *Symptoms* include: red, hot, dry skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing.

WHAT TO DO: When you recognize a heat-related illness in its early stages, you can usually reverse it.

- Get the victim out of the heat.

- Loosen any tight clothing and apply cool, wet cloths, such as towels or sheets.
- If the victim is conscious, give cool water to drink. Do not let the conscious victim drink too quickly. Give about 1 glass (4 ounces) of water every 15 minutes.
- Let the victim rest in a comfortable position, and watch carefully for changes in his or her condition. The victim should not resume normal activities the same day.

- **Refusing water, vomiting, and changes in consciousness mean that the victim's condition is getting worse. Call for an ambulance immediately if you have not already done so.**

- If the victim vomits, stop giving fluids and position them on their side.
- Watch for signals of breathing problems.
- Keep the victim lying down and continue to cool the body any way you can. If you have ice packs or cold packs, place them on each of the victim's wrists and ankles, on the groin, in each armpit, and on the neck to cool the large blood vessels.

APPENDIX B

BITES AND STINGS

Scorpions, Bees and Spiders

Bee stings are painful, but rarely fatal. Some people, however have a severe allergic reaction to an insect sting. This allergic reaction may result in a breathing emergency. If someone is stung by an insect, remove the stinger. Scrape it away with from the skin with your fingernail or plastic car, such as a credit card, or use tweezers. If you use the tweezers, grasp the stinger, not the venom sac. Wash the site with soap and water. Cover it to keep it clean. Apply a cold pack to the area to reduce the pain and swelling. Watch the victim for signals of an allergic reaction.

Scorpions live in dry regions of the southwestern United States and Mexico. They live under rocks, logs, and the bark of certain trees and are most active at night. Only a few species of scorpions have a sting that can cause death.

Spiders; there are also only two spiders in the United States whose bite can make you seriously sick or be fatal. These are the black widow spider and the brown recluse. The black widow is black with a reddish hourglass shape on the underside of its body. The brown recluse is light brown with a darker brown, violin-shaped marking on the top of its body. Both spiders prefer dark, out of the way places. Often, the victim will not know that he or she has been bitten until he or she starts to feel ill or notices a bite mark or swelling.

Symptoms: include nausea and vomiting, difficulty breathing or swallowing, sweating and salivating much more than normal, severe pain in the sting or bite area, a mark indicating a possible bite or sting, and swelling of the area.

First Aid: if someone has been stung by a scorpion or bitten by a spider he or she thinks is a black widow or brown recluse, wash the wound, apply a cold pack to the site, and get medical help immediately.

Lyme Disease

Lyme Disease is an illness that people get from the bite of an infected tick. Lyme disease is affecting a growing number of people in the United States. Everyone should take precautions against it. Not all ticks carry Lyme disease. Lyme disease is spread mainly by a type of tick that commonly attaches itself to field mice
and deer. It is sometimes called a deer tick. This tick is found around beaches and in wooded and grassy areas. Like all ticks, it attaches itself to any warm-blooded animal that brushes by. Deer ticks are very tiny and difficult to see. They are much smaller than the common dog tick or wood tick. They can be as small as a poppy seed or the head of a pin. Adult deer ticks are only as large as a grape seed.

Symptoms: The first signal of infection may appear a few days or a few weeks after a tick bite. Typically, a rash starts as a small red area at the site of the bite. It may spread up to 7 inches across. In fair-skinned people the center is lighter in color and the outer edges are red and raised. This sometimes gives the rash a bull's-eye appearance. In dark skinned people the area may look black and blue, like a bruise.

Other symptoms include fever, headache, weakness, and joint and muscle pain similar to the pain of "flu". These symptoms might develop slowly and might not occur at the same time as a rash. In fact you can have Lyme disease without developing a rash.

First Aid: If you find a tick, remove it by pulling steadily and firmly. Grasp the tick with fine-tipped tweezers, as close to the skin as possible, and pull slowly. If you do not have tweezers, use glove, plastic wrap, or a piece of paper to protect you finger. If you use your bare fingers, wash your hands immediately. Do not try to burn a tick or use other home remedies, like coating the tick with Vaseline or nail polish or picking it with a pin. Once the tick is removed, wash the area with soap and water. If available, apply antiseptic or antibiotic ointment. If you can not remove the tick or parts of the tick stay in your skin, obtain medical care. If a rash or flu like symptoms develop, seek medical attention.

APPENDIX C

SSHP ACCEPTANCE FORM

ABBREVIATED SITE SAFETY AND HEALTH PLAN

I have read and agree to abide by the contents of the Site Safety and Health Plan.

NAME	OFFICE	SIGNATURE	DATE
Thomas Freeman	CEMVS-ED-P	T R Freeman III	3/14/02
Randy Fraser	CEMVS-ED-P	Randy Fraser	3/14/02
Charlene Boecklen	CEMVS-ED-P	Charlene Boecklen	3/14/02

SITE SURVEY SAFETY BRIEFING

(Check subjects discussed) Date 25 MAR 02

SITE SPECIFIC INFORMATION

- ✓ Purpose of Visit
- ✓ Identify Key Site Personnel
- ✓ Site Description/Past Use
- ✓ Results of Previous studies
- ✓ Potential Site Hazards
- ✓ OE Safety Procedures
- ✓ Site SOP
- ✓ Site Control and Communications
- ✓ Emergency Response
  - (✓ Location of First aid Kit
  - (✓) Emergency Phone Numbers
  - (✓) Map to Facility
- ✓ PPE
- ✓ Weather Precautions
  - (✓ Cold/Heat
  - (✓ Severe Weather

Safety Briefing Attendance

All team members and any accompanying personnel will be briefed and sign this form.

Name (Print)	Organization	Signature
Thomas Freeman	CEMVS-ED-P	
Randy Fraser	CEMVS-ED-P	
Charlene Boecklen	CEMVS-ED-P	Charlene Boecklen

APPENDIX L-2

Site Inspection Report

(Included in Section 6 – Site Inspection)

APPENDIX M

FINALIZATION DOCUMENTS

DEPARTMENT OF THE ARMY
SAINT LOUIS DISTRICT, CORPS OF ENGINEERS
1222 SPRUCE STREET
SAINT LOUIS, MISSOURI 63103-2833

REPLY TO
ATTENTION OF

http://www.mvs.usace.army.mil

CEMVS-EC-P (200-1c) 26 May 2010

MEMORANDUM FOR RECORD

SUBJECT: Missing Huntsville Center (HNC) Form 7/Design Review Comments Sheet for Former Fort Segarra, U.S. Virgin Islands, Project Number I02VI097701

1. Project records located at the U.S. Army Corps of Engineers, St. Louis District, Huntsville Center and the Jacksonville (CESAJ) district office, were reviewed to locate the HNC Form 7/Design Review Comments sheet for the subject report; however, the HNC Form 7/Design Review Comments sheet was not located.

2. The subject report has been finalized without the HNC Form 7/Design Review Comments sheet based on a memorandum from Huntsville Center recommending FINAL disposition action for the report. The date of the final report, 11 March 2002, is the date of the Huntsville Center memorandum recommending final disposition.

3. If the HNC Form 7/Design Review Comments sheet is located after the subject report has been finalized, the report will be revised to reflect the content of the HNC Form 7/Design Review Comments.

THOMAS R. FREEMAN III
Chief, Ordnance and Technical Services Branch

DISCLAIMER

As of the date of re-finalization of Project Number I02VI097701-Former Fort Segarra, the U.S. Army Engineering and Support Center, Huntsville's (USAESCH) Technical Advisory Group (TAG) Risk Assessment Code (RAC) has not been located in the USAESCH files or in the U.S. Army Engineer District, St. Louis's files.

For the purpose of re-finalization, the original ASR RAC, dated 24 April 2000, prepared by Thomas R. Freeman, CEMVS-EC-P, will be used. The RAC score of "1" for the "Chemical Warfare Materials" portion of the property, and the RAC score of "3" for the "Conventional Ordnance" portion of the property have remained the same between the ASR RAC and the TAG RAC, as listed on page 1 of the Project Fact Sheet, dated 11 February 2002.

DEPARTMENT OF THE ARMY
HUNTSVILLE CENTER, CORPS OF ENGINEERS
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF:

CEHNC-OE-CX (200-1C)

11 March 2002

MEMORANDUM FOR Commander, U.S. Army Engineer District, Saint Louis, ATTN: CEMVS-PM-M (Mr. Mike Dace), 1222 Spruce Street, Saint Louis, MO 63103-2833

SUBJECT: Results of the Technical Advisory Group (TAG) Review of Archives Search Reports (ASR) and Fact Sheets for Defense Environmental Restoration Program-Formerly Used Defense Sites (DERP-FUDS)

1. The following ASR and Fact Sheet has been finalized:

PROJECT NUMBER:	SITE NAME:
I02VI097701	Water Island (Former Fort Segarra)

2. Recommended strategy for future actions to be taken by the Project Manager is included in the enclosed fact sheet. Supporting data for TAG decisions are also included with the fact sheet.

3. Fact sheet, supporting data and corrected pages, due to prior reviews, are to be distributed with the subject ASR.

4. Subject ASR is recommended to be final when enclosed fact sheets, supporting data and corrected pages are included as a part of the project package.

5. If you have any questions concerning this action, please call me at 256-895-1797, DSN 760-1797, or facsimile 256-895-1798.

FOR THE DIRECTOR OF ORDNANCE AND EXPLOSIVES DIRECTORATE:

Danny R. Mardis

1 Encl
as

DANNY R. MARDIS
Archive Search Report Manager
for Ordnance and Explosives Directorate

RESTORATION INFORMATION MANAGEMENT SYSTEM
FORMERLY USED DEFENSE SITES (FUDS)
PROJECT FACT SHEET
31 JANUARY 2002
TAG REVIEW DATE: 11 FEBRUARY 2002

1. SITE NAME: Water Island (Former Fort Segarra)

SITE NUMBER: I02VI097700

LOCATION:
St. Thomas Bay,
St. Thomas, US Virgin Islands

PROJECT NUMBER: I02VI097701

INPR RAC: 1

ASR RAC: 1 (CWM) and 3 (Conventional Ordnance)

TAG RAC: 1 (CWM) and 3 (Conventional Ordnance)

CATEGORY: OE/CWM

2. POC'S:

GEOGRAPHIC DISTRICT:
Name: Robert Bridgers
Office: CESAJ-DP-S
Phone: 904-232-3085

GEOGRAPHIC DIVISION:
Name: Sharon Taylor
Office: CESAD-PM-M
Phone: 404-562-5212

HEADQUARTERS:
Name: Dale Moeller
Office: CEMP-RF
Phone: 202-761-4694

ASR/INPR TEAM:
Name: Richard L. Pike
Office: CEHNC-OE-CX
Phone: 256-895-1559

3. SITE DESCRIPTION: The Former Fort Segarra is located on Water Island, the fourth largest of the U.S. Virgin Islands. Water Island is a small island approximately 500 acres in size, 1 3/4 miles long, and 1/2 mile wide. It is located in the St. Thomas Bay between the East and West Gregerie Channels, south of the City of Charlotte Amalie, St. Thomas. At its closest point, Water Island is only 1,800 feet from St. Thomas.

Water Island (Fort Segarra) was acquired in 1942, for use as a harbor defense installation. In 1948, following World War II, the San Jose project was moved to the U.S. Virgin Islands from Panama. The purpose of the San Jose project was to test chemical munitions to determine their effectiveness under jungle conditions. The U.S. Department of the Interior (DOI), who leases it to others, currently owns Water Island.

4. SITE HISTORY: By May 1948, the facilities on St. Thomas, which were formerly known as the Submarine Base and Fort Segarra, were taken over for use in continuing the tropical testing of chemical weapons systems. The Army's Chemical Corps moved its San Jose Project (tropical test site) from Panama to the Virgin Islands in 1948. Between 1948 and 1949, the Chemical Corps upgraded the previously constructed facilities. By late 1949, the Chemical Corps became dissatisfied with the Virgin Islands and decided to shift operation to Dugway Proving Ground, Utah, even though chemical testing was ongoing.

The San Jose Project continued to operate until May 1950, when the project was cancelled. By September 1950, all testing was concluded and the project closed.

The Army turned over Water Island to the Department of the Interior (DOI) by indefinite revocable permit. The DOI assigned the permit to the St. Thomas Development Authority (STDA) in 1951. The STDA then leased Water Island to Water Island, Inc., a local development corporation. On 11 July 1952, Public Law 511 (82nd Congress) authorized the transfer of Water Island from the DA to the DOI. On 10 December 1952, the DOI executed a new lease to Water Island, Inc., which proceeded to develop the island into a resort with many subleases. This lease expired on 31 December 1992. The island is the site of a former large tourist resort hotel (destroyed by Hurricane Hugo in 1989) and is also inhabited by about 300 people during the winter season. A map of current owners is included in this section. The name Fort Segarra refers to the World War II gun emplacements and structures built on Water Island in the early 1940s. These facilities were declared excess in 1946.

5. PROJECT DESCRIPTION:

5.1 Conventional Ordnance Activities

Five areas on Water Island were associated with conventional ordnance activities. Four were sites involved with the coastal defense operations established on the island during World War II. These were the sites originally designated as Fort Segarra. The fifth location was discovered through interviews conducted in regard to the Chemical Corps activities after World War II. One of the military personnel assigned to the project indicated that he had destroyed bursters in Test Area 4.

5.1.1 Battery 314

The first area was Battery 314 that was constructed at the top of the hill in the

southern portion of the island. A complete gun emplacement for 2-6" guns was constructed.
Besides the gun mounting structures, there were also underground compartments planned for use as ammunition and equipment storage and operations areas. Based on the interview with Mr. Couter, these compartments were walled off and used to store water to support the Water Isle Hotel when it was in operation prior to Hurricane Hugo (Couter, 1993). Historical documents indicate that the guns were never installed and the emplacement was not ever operational.

5.1.2 818th AMTB Battery
Three of the ordnance related areas were associated with 818th AMTB Battery. Although the military did not ever install any guns at Battery 314 they did have gun emplacements for the 818th AMTB (Anti-Motor Torpedo Boat) Battery. The first was at Druif Point consisting of 2-90mm guns and 2-37mm guns. The second was at Providence Point and had 2-37mm guns. Directives indicated that these were to be installations with a suitable platform with a simple parapet and ammunition niches. The third feature was an ammunition supply area located near Caroline Point. This supply area was to consist of three bunkers. However only two were ever completed. There have been no reports any munitions items related to these activities being found on the island.

5.1.3 Test Area 4
Mr. Jimmie Mains, one of the military personnel on-site at the end of the project, indicated that he had destroyed excess bursters by detonation in Test Area 4. He recalled that the site used was between the road and the site of the current marina. Bursters were detonated three boxes at a time. The area of detonation appears to be the location of the dredge cut that connected the former freshwater lagoon area with Flamingo Bay.

5.2 CHEMICAL WARFARE MATERIEL ACTIVITIES

Historical documents obtained by the USACE St. Louis District after the initial research efforts indicate that the Plan for the Dis-establishment of the San Jose Project dictated several provisions that Chemical Corps was to undertake prior to their leaving this location. A section of this overall plan, labeled "Plan H, Decontamination Clearance Certificate" and dated 2 May 1950, stipulated that the Chemical Corps would accomplish decontamination of all land, buildings and facilities to be abandoned. If any areas, such as burial pits, could not be decontaminated then they would be fenced to protect against unauthorized entry. The fence would be four-foot hog wire, topped with three strands of barbed wire on galvanized steel posts. Permanent warning signs should have been placed along the fence at intervals not to exceed 100 feet and at such locations that they would be visible when approaching the fence from any direction. The on-site Chemical Corps personnel were also required to provide a decontamination

clearance certificate. The overall plan mandated that the on-site personnel carry out these requirements because of their knowledge of the site and its operations.

A memorandum, entitled "Status of Close-out Operations", dated 13 July 1950, stated that all munitions, toxics, and experimental items, such as fuzes, etc. were either shipped or disposed of in accordance with Plans A and D prior to 1 July 1950. Plans A and D were subsections of the previously mentioned Dis-establishment Plan that covered the disposal of toxic munitions and the disposition of VT fuzes, high explosives, smoke grenades, bursters, boosters, and other munitions of war, respectively. This same 13 July 1950 memorandum mentioned that the Chemical Corps would be shortly submitting the Certificate of Clearance for Water Island. No copy of this certificate has been found to date.

Circumstances that developed during the implementation of these various plans raised the need for concern and diligence. Plan A, Annex A, allowed for the disposal of some of the chemical agent munitions items by sea dumping south of the island of Puerto Rico. During this dumping operation on 15 May 1950, fuzes in their shipping containers floated to Puerto Rico and subsequently resulted in the deaths of two persons. All items were supposed to have been removed from their containers. An immediate investigation placed responsibility for this incident on the San Jose Project Commanding Officer (CO). A memorandum dated 25 May 1950, among other things, admonished the CO that the remainder of the closeout activities should not reflect the lack of sense of duty that the sea dump did and reminded him that disciplinary action was still pending. This indicated that these closeout operations would be under great scrutiny. This scrutiny would have been going on during the period leading up to the 13 July 1950 memorandum mentioned above.

Subsequent to the completion of the testing program the Chemical Corps was required to identify any areas that might remain contaminated and fence them off. Appropriate signage was also required for these sites. Interviews obtained by SAIC with longtime Water Island inhabitants (Messrs. Couter and Phillips) and on-site inspections by various USACE and contractor personnel have not reveal the presence of any such fenced and signed areas.

Another consideration, however, for this former saltwater pond is the fact that no fencing or signage as described in the project closeout documents have been found in this area. This would tend to lead to the conclusion that the Chemical Corps did not considered the items left in this area as contaminated.

In summary, M78 and M70 chemical bomb bodies have been observed in this area in 1966. Based on EOD observations the bombs were either already vented or did not release any material when the Navy vented them. Subsequent to that time a considerable amount of fill material has been placed over the site of the bomb bodies. Based on the historical documentation and interpretation of aerial photography it

cannot be ascertained that no chemical agent remains in this area. However, if the bombs have been vented and underwater since 1966 the effectiveness of any remaining agent should have been greatly reduced.

5.2.1 Individual Test Area Histories

The US Army Chemical Corps used various portions of Water Island during May 1948 through August 1950 for chemical agent testing under the San Jose Project Test Program. These portions were designated as Test Areas 1 through 8. Another site on Water Island associated with these activities is the Flamingo Bay Landfill area.

Locations of all sites are shown on Plate 10 of the Historical Photo Analysis prepared by the US Army Corps of Engineers (USACE) Topographic Engineering Center.

The following paragraphs present the history of the test sites of the San Jose project on the U.S. Virgin Islands. For each test area, the tests that were conducted and the history of the site since the San Jose project are summarized. Plates in the Historical Photo Analysis depict conditions at the various test sites from the time of use through 1999.

5.2.2 Test Areas 1, 2, 3, and 7

Test areas 1 and 7 are located on the northwestern and northeastern comers, respectively, of Water Island. Test areas 2 and 3 are located on the western shore in the middle of Water Island. All of these test areas are located downwind of the military office used to support the project. No records were found which indicate any tests were ever conducted in these four areas. The test plan for the M70 bomb test identified test areas 1 and 7 as test areas. The test report that presented the final results of the test and showed contamination contours for each area indicated that the tests had actually been conducted in test areas 4, 5, 6, and 8. In addition, Mr. Jimmie Mains and Mr. Luke West indicated during their interviews that no tests had been conducted on the northern end of the island. Mr. Mains, who was stationed full-time on Water Island, was not aware that roads existed leading to that end of the island.

5.2.3 Test Area 4

Test Area 4, located in the southern portion of Water Island, was a broad, flat portion of land separating Flamingo Bay and the former freshwater lagoon. Test area 4 straddled the road leading to the Flamingo Bay area. Based on the 1954 aerial photographs, the area on the north side of the read was a cleared area. The area to the south side of the road was primarily covered with vegetation, with the exception of a small cleared area.

Chemical Corps tests carried out in this area included the following:

> Test No. 136 Test of M70 Bomb, HD filled, static fired performed between November 1948 and February 1949 (4 items in Area 4).

Test No. 176 Test of a Single E23 Smoke Pot, HD-filled, functioned statically in open, on land (13 items) performed during July and August 1949.

Test No. 166 Test of a Single E23 Smoke Pot, GA-filled, functioned statically in open, on land (4 items) performed during September through November 1949.

Test No. 179 Test of a Single E23 Smoke Pot, HQ-filled, functioned statically in open, on land (2 items) performed during February 1950. Although a test area is not specifically indicated for this test, Area 4 seems to be the only site used after February 1949.

Aerial photographs from various years and photographs taken circa 1950 by Mr. William Wapp during the time of testing are included in the Historical Photo Analysis performed by the USACE Topographic Engineering Center. Plate 16 of the Historical Photo Analysis shows the overall conditions at Test Area 4 during the time of testing. Analysis of the aerial photographs over time shows the openness of this test area and the relative ease of access from the main encampment and storage area. The prevailing winds provided the desired airflow patterns across this site for this type of testing.

All of the tests listed above were carried out on the surface and were functioned statically. The types and limited numbers of test items used allowed easy removal of the debris after the testing. Additionally because the Chemical Corps wanted to use this area again it was imperative that items from previous test be removed so as to not interfere with subsequent tests. Interviews (obtained by SAIC) with personnel present on the site during the Chemical Corps activities (Messrs. Mains and West) indicate that the debris was routinely removed and if any agent remained it was neutralized with decontamination materials. Metal scrap from the items may have been disposed of nearby.

Records indicate that phase I and II of the static, HD-filled, M70 bomb test (SJPRN 136) and phases I through V of the static, HD-filled, E-23 smoke pot test (SJPRN 176) were conducted in the open in test area 4. According to the interview with Mr. Mains, GA smoke pot tests were also conducted in this area. The decontamination truck would be situated in the cleared area on the south side of test area 4 while the test was being conducted. In addition, at the end of the San Jose project, burster charges were detonated and destroyed in this area (Mains, 1993).

The northern area of Test Area 4, where the tests are believed to have been conducted, is relatively clear of debris and covered with light vegetation. In 1966, this area was dredged to open the adjacent pond into a marina and much of the test area was removed at that time. This area is relatively flat and approximately 2 to 3 feet above sea level. A small concrete pad (30 by 30 feet) is located along the shore of this site.

Water Island residents have used the southern portion of test area 4 as a junkyard. There are scrapped vehicles, household appliances, containers of unknown substances, and an empty tanker truck on the site.

Beginning in 1966, significant changes were initiated in Test Area 4 where the actual chemical agent tests had been undertaken. Dredging operations began removal of the land separating the freshwater lagoon from Flamingo Bay. The former lagoon area was being developed into a protected marina. Aerial photographs, contained in the Historical Photo Analysis Report, show the changes in this area between 1966 and 1999. By the time of the 1999 photograph (Plate 37) the entire portion of the Test Area 4, on which the tests had been carried out, has been essentially removed.

In summary, Test Area 4 was used during four testing programs that involved 23 items. These items contained distilled mustard agent (HD), tabun (GA), or sesqui-mustard agent (HQ). All items were fired statically on the ground surface. The same location in Test Area 4 was repeatedly used. The purpose of this testing was to determine the dispersion capabilities of the various items and how the agent would be spread through the air. Ground contamination was not part of this testing program. Former Chemical Corps personnel report that all test items were removed from the test area and any agent remaining in them was neutralized. The remaining scrap metal would have been disposed of locally on the island. These mustard agents could remain vesicant on soil for about two weeks. The tabun has a similar persistency period.

5.2.4 Test Area 5

This test area is located in the same general vicinity of Water Island as Test Area 4. Test Area 5 was a vegetated portion of land on the south side of the former freshwater lagoon. Historical documents indicate that the only testing carried out at this location was a part of Test No. 136-Test of M70 Bomb, HD filled, static fired performed between November 1948 and February 1949. Phases 3 and 4 of this test involved the static firing of an M70 bomb, filled with HD, emplaced vertically with the nose down. Test Area 5 was used because it provided a vegetated area with an offshore wind. A total of two M70 bombs were fired in this area.

Similar to Test Area 4 these bombs were fired on the surface allowing for easy cleanup after the testing. As in the other dispersion tests carried out on Water Island, samplers would have been set up to measure the amount and concentration of agent being generated from the M70 bomb. Very little agent would be present on the soil, but as mentioned before this mustard agent remains vesicant on the soil for about two weeks.

A cleared area around a ground depression is evident in the central portion of this area from the earliest aerial photographs. Subsequent photographs show the increasing use of this site as an apparent trash dump. Based on the January 1993 site visit, test area 5 is still covered with vegetation, and the depressed area still exists. Some trash is

visible on the surface. According to Mr. Couter, this area was used to dispose of debris generated from Hurricane Hugo.

Closeout operations circumstances would have affected Test Area 5 much the same as Test Area 4. Again no fencing or signage has been reported in this area.

5.2.5 Test Area 6.

Test Area 6 is located on the eastern shore in the southern part of Water Island. Records indicate that phases VII and VIII of the static HD-filled M70 bomb test (SJPRN 136), in an open area with onshore winds, was the only test conducted in this area. Based on the 1954 aerial photograph, it appears that the only open areas in this test area are located near the shore.

This site has been significantly developed along the ridgeline since the San Jose Project. The lower part of the site is along the rocky shoreline and is undeveloped and heavily overgrown with vegetation. There does not appear to be any significant debris on the surface. Test conducted in this area were in an open area with onshore winds. It is most likely that these tests occurred in the undeveloped area near the shore.

5.2.6 Test Area 8 and Toxic Storage Yard

Test area 8 was located in the vicinity of the ruins of the former Water Isle Hotel. The 1954 aerial photograph indicates there were military buildings within this test area at that time. According to existing records, phases V and VI of the static, HD-filled, M70 bomb test (SJPRN 136) was conducted in a wooded area with offshore winds within this test area.

Test area 8 has been significantly disturbed since the San Jose testing. The former bar and dining area for the Water Isle Hotel and some support facilities were located in this area.

Based on information obtained during the interviews with Mr. Jimmie Mains, Mr. Luke West, and Mr. Alex Donovan, the toxic storage yard was located where the Water Isle Hotel was formerly situated. T-3 H/HD-filled bombs and aged, CK-filled, M70, M78, and M79 bombs involved in the surveillance tests were stored outside in this area, and all other items where stored inside buildings (SJPRN 89 AND 135). Four military personnel, including Mr. Jimmie Mains, were stationed on Water Island 5 days per week, 8 hours per day, to maintain the chemical munitions. Their office was located adjacent to the storage area. During his interview, Mr. Mains indicated that the items in the storage yard were carefully maintained since the workers understood the hazard and were in close proximity to the storage area. Agent transfer operations to support the tests were also conducted in this area (Mains, 1993).

The storage area for test animals was located near the toxic storage yard on Water Island. Approximately 1,050 feet of fence had been strung to furnish separate corrals for fresh and contaminated goats. The total area for both fresh and contaminated goats was approximately 2 acres. Sufficient cages were constructed to accommodate 2,000 pigeons. These facilities were constructed by May 1949 when the test goats arrived (SJPPR 66 and 68). SJPPR 74 indicates that work was nearing completion on the remodeling of the change house, which was also located in this area on Water Island. The new arrangement was thought to contribute to the safety in dressing and undressing of personnel working in or around contaminated areas.

This area has been significantly disturbed since the San Jose Project. Formerly the main hotel building was located in this area.

5.2.7 Flamingo Bay Landfill Area

The Flamingo Bay landfill area is located in the southwest comer of Water Island. During the San Jose project, the Flamingo Bay deep-water dock was used to deliver equipment and munitions. Personnel were transported to and from Water Island using the existing dock at the center of the island (Mains, 1993).

The Flamingo Bay Landfill Area was not a test area during the San Jose Project operations on Water Island. Events that occurred in 1966 raised the possibility that chemical agent filled munitions might be in this area. In 1966 during excavation operations in the vicinity of an old salt-water pond in this area, at least two bombs were uncovered. The bombs surfaced during a mucking operation at an approximate depth of 20 feet. US Navy Explosive Ordnance Disposal personnel from Roosevelt Roads responded to the discovery and identified the items as M70 and M78 chemical bombs. One of the bombs had been vented while the other had not. The Navy vented this bomb without any noticeable release.

Historical information contained in the Plan for the Dis-establishment of the San Jose Project indicated that 29 M78 bombs filled with the chemical agent CK had been disposed of during the sea dump on 15 May 1950. Analysis of the monthly progress reports for the San Jose Project stated that 33 M78 bombs had been used in surveillance tests in the Toxic Storage Yard. Documents revealed that there had been problems with four of the bombs. One is listed as having been destroyed but three are reported as being eliminated from observation because the agent had apparently solidified inside the bomb.

The agent CK, cyanogen chloride, is very quick acting with a short persistency period. In storage the liquid agent will polymerize to form the solid cyanuric chloride that is corrosive.

The M78 bomb identified by the Navy in the Flamingo Bay Landfill Area could very well be one of the four unaccounted for items. The fact that the Navy reported one of the

uncovered bombs had been vented would be consistent with then accepted procedures to render the bomb safe before disposal. San Jose Project Report No. 67 indicates that all four of the unaccounted for M78 bombs had been vented. Three of them were found to contain between 98.8% and 99.4% Total Non-volatile Residue.

M70 bombs had also been used in surveillance testing for the CK agent. Additionally these bombs had been used in the static firing test with mustard agents. During the sea dump at the end of the project a number of empty M70 had been jettisoned.

Historical aerial photographs beginning in 1947 show the presence of a saltwater pond in the vicinity of this land fill area. Over the years the pond is gradually filled in. Photographs before and after the time of military use show relatively easy access to this site. The pond would have provided a ready disposal area for unwanted military items.

This area has also been used as a civilian landfill since that time. Compacted vehicles and other trash were disposed of in the salt pond in a single layer and covered with dirt fill. Subsequent layers of trash with a dirt cover were disposed of in this area until the salt pond was filled. The original salt pond was thought to have been about 10 feet deep. Trash was also burned in this area until 1982, when U.S. Environmental Protection Agency (USEPA) regulations precluded open-air burning (Couter, 1993). The location and size of the old salt pond can be distinguished from the 1954 aerial photograph. The salt pond was approximately 75 feet from the shore in the Flamingo Bay area, approximately 50-feet wide by 100-feet long lying parallel to the coast. It appears that the salt pond was adjacent to the existing warehouse in the Flamingo Bay area

The bombs could have been located anywhere above that depth. The bombs were reported to be the size of small butane tanks with dimensions of 18 to 24 inches in diameter. A letter report of this incident from the Water Isle Colony Club to the DOI is shown below.

In September 1991, a fence was installed in the Flamingo Bay area by Ebasco Services, Incorporated, under contract with the U.S. Army Corps of Engineers (USACE), Huntsville Division. The decision to build this fence resulted from the bombs that were surfaced in 1966. On the northern face of the fence, several of the fence postholes were terminated at approximately 3 feet due to encountering gray ash and a black oily substance. In the southwestern corner, one of the holes was terminated at 2 1/2 feet when an unknown, orange-colored, waxy substance was encountered (Ebasco, 1991).

During the SAIC site visit in January 1993, it was noted that the Flamingo Bay landfill area has a warehouse structure that was damaged during Hurricane Hugo. There is surface debris and scrapped vehicles throughout the fenced-in area. In addition, there is debris along the shoreline. According to. Mr. Couter, the concrete-filled bomb in this area surfaced during Hurricane Hugo.

During his interview, Mr. Walter Phillips indicated that he thought the Army is looking in the wrong place for CWM left from the San Jose project. When Mr. Phillips first arrived on Water Island in 1951, there were a few empty poison gas shells at the Flamingo Bay warehouse area. He did not know what happened to these shells. He thought the Navy was called in and took them away. According to Mr. Phillips, the Army installed the fence in the wrong area. If items remain, he believes they would be located closer to the shore.

5.2.8 Areas off Water Island

5.2.8.1 Western End of St Thomas.
On the west end of St. Thomas, 2095 acres, beginning at the isthmus between Santa Maria Bay and Perseverance Bay, was leased for testing. In November 1948, 9-1/2 tons of fencing arrived to be used to isolate property held on the western end of the island.

Based on existing records, there were two tests conducted on St. Thomas. The first was a surveillance test involving fifty 4-pound E-1 particulate bombs. These inert (no explosives) bombs, filled with simulant, never developed leaks during the tests and were shipped back to Camp Detrick at the end of the test (SJPRN 132 and SJPPR No.62). Test reports indicate these tests were conducted on St. Thomas. Due to the innocuous nature of the tests, they may have been conducted in the administrative area in the submarine base.

During the second test, CG gas was emitted from ton containers to determine penetration characteristics of gasproof shelters (SJPRN 120). A gasproof shelter was constructed in two separate areas on the west end of St. Thomas to support the two phases of the test. Figures 2-6 and 2-7 show the setup for these tests. Phase I was completed near a road *20* feet south of a weather station (SJPRN *102).*

USACMDA personnel made a site visit to the western end of St. Thomas in January 1993. Other than one housing development in the Fortuna area and a Bible college at the far west end of the island along Route 30, the population at this end of the island is sparse. Various estates are located at this end of the island to include Perseverance, Botany Bay, Bordeaux, Catherina's Hope, Runnels, and Bethesda. Geographic features in this area are very similar to those photographed in the test area during phase II of SJPRN *102.*

5.2.8.2 Submarine Base, St. Thomas.
The submarine base in St. Thomas was the location of the administrative facilities used to support the San Jose project. The laboratory was the only place within the administrative area where chemical agents were present (Mains, 1993). This facility has since been torn down.

5.3 DISPOSITION OF MUNITIONS

5.3.1 Conventional Ordnance

5.3.1.1 There is no indication that any munitions related to the coastal defense operations on Water Island have ever been discovered there.

5.3.1.2 Mr. Mains indicated that at the termination of the San Jose Project, all items, with the exception of excess burster charges, were removed from Water Island and either ocean dumped or sent back to the states for storage. At the end of the project, Mr. Mains was responsible for detonating excess burster charges. Hundreds of these items were detonated in Area 4, between the road and currently existing marina. Three boxes at a time were typically detonated (Mains, 1993).0

5.3.2 Disposition of the Chemical Agent Munitions

The disposition of the chemical munitions and personnel at the end of the San Jose project is detailed in the Plan for Dis-establishment, included in Section 4. The plan designates which munitions were dumped at sea and which items were shipped to the Army Chemical Center, Maryland; the Midwest Chemical Depot, Arkansas; and the Dugway Proving Ground, Utah.

Many of the items were dumped at the Naval Ammunition Dumping Ground in the Caribbean Sea south of Vieques Island on 15 May 1950. Mr. Mains participated in the sea dump and provided the photograph in the SAIC report.

The following observations can be drawn from the list of munitions, which were removed from the San Jose project on Water Island and interviews with military personnel involved in the San Jose project.

5.3.2.1 Twenty-nine CK-filled 500-pound M78 bombs were removed from Water Island and ocean dumped. These are the only CK-filled M78 bombs recorded to have been removed at the termination of the San Jose project. As discussed in paragraph 2.1.5 d., 33 CK-filled M78 bombs were involved when surveillance test number 135 was initiated. The contents of four of these bombs were found to be largely solid and further sampling on these items was not continued. It is noted that one of the four bombs was destroyed. The final disposition of all four bombs is not provided in the memorandum in appendix F.

5.3.2.2 The surveillance tests also involved seven CK-filled M79 bombs, fifteen CK-filled M70 bombs, two HD-filled T-3 bombs, and two H-filled T-3 bombs. Removal of these items at the close of the San Jose project can be accounted for. One hundred and twenty-four CK-filled M70 bombs and eight CK-filled M79 bombs were ocean dumped. One hundred and sixty-eight HD-filled and sixty-six H-filled T-3 bombs were shipped to the Army Chemical Center in Maryland.

5.3.2.3 The test items used in four of the nine tests were smoke pots filled with GA, HD, and HQ. The disposition of smoke pots is not indicated. At least 23 smoke pots were involved in test on Water Island.

6. CURRENT STATUS: The Draft Archives Search Report (ASR) was completed by the St. Louis District in June 2001. It assigned a RAC score of 1 (Chemical Warfare Material) based on the extensive archive searches performed, the interviews with the owners of major portions of this site.
The Draft ASR assigned a RAC score of 3 (Conventional Ordnance) based on the extensive archive searches performed, the interviews with the owners of major portions of this site.

7. STRATEGY: RAC 1 EE/CA (CWM) and RAC 3 EE/CA (Conventional Ordnance)

8. ISSUES AND CONCERNS: The Huntsville Technical Advisory Group (TAG) met and evaluated this site on 11 February 2002. The consensus of the TAG was concurrence with the ASR recommendation of a RAC 1 (CWM) and RAC 3 (Conventional Ordnance) for the site.

It is not known if there are federally- or state- listed species occurring in the site area. An on-site inspection by the appropriate federal and state personnel may be necessary to verify the presence, absence or location of listed species or natural communities.

9. SCHEDULE SUMMARY:

Phase	Original Start	Scheduled Start	Actual Start	Original Complete	Scheduled Complete	Actual Complete
EE/CA						

24 Apr 00
Previous editions obsolete

RISK ASSESSMENT PROCEDURES FOR
ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name: **Water Island, Fort Segarra (Chemical Warfare Materials)**
Rater's Name: Tom Freeman
Site Location: US Virgin Islands
Phone Number: 314.331.8828

DERP Project # I02VI097700
Organization: CEMVS-ED-P

Date Completed: 17 September 2001
Score: **1**

OE RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Team (USAESCH-OE) to prioritize the remedial action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) Detachments actions, field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability**.** Personnel involved in visits to potential OE sites should view the USAESCH-OE videotape entitled "A Life Threatening Encounter: OEW."

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional Ordnance and Ammunition:	VALUE
Medium/Large Caliber (20mm and larger)	10
Bombs, Explosive	10
Grenades, Hand or Rifle, Explosive	10
Landmine, Explosive	10
Rockets, Guided Missile, Explosive	10
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	4
Landmine, Practice (w/spotting charges)	4
Small Arms, Complete Round (.22 cal - .50 cal)	1
Small Arms, Expended	0
Practice ordnance (w/o spotting charges)	0
Conventional Ordnance and Ammunition (Largest single value)	0

What evidence do you have regarding conventional unexploded ordnance? **None. The Risk Assessment Code associated with conventional ordnance is addressed in a separate worksheet in this report.**

B. Pyrotechnics (for munitions not described above):	VALUE
Munitions (Containers) containing White Phosphorus (WP) or other Pyrophoric Material (i.e., Spontaneously Flammable)	10
Munitions containing a flame or incendiary material (i.e., Napalm, Triethylaluminum Metal Incendiaries)	6
Flares, Signals, Simulators, Screening Smokes (other than WP)	4
Pyrotechnics (Select the largest single value)	0

What evidence do you have regarding pyrotechnics? **None**

C. Bulk High Explosives (Not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Demolition Charges	10
Secondary Explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military Dynamite	6
Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc.)	3
High Explosives (Select the largest single value)	0

What evidence do you have regarding bulk explosives? **None**

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):

	VALUE
Solid or Liquid Propellants	6
Propellants	0

What evidence do you have regarding bulk propellants? **None**

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:

	VALUE
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (Vomiting, Tear)	5
Chemical and Radiological (Select the largest single value)	25

What evidence do you have regarding chemical/radiological OEW? **Chemical bombs had been used in surveillance tests. Four bombs could not be accounted for at the project closeout. Two chemical bomb cases were discovered in 1966 in the Flamingo Bay Landfill.**

==========

TOTAL HAZARD SEVERITY VALUE

(Sum of the Values for A through E--Maximum of 61) 25
Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY*

DESCRIPTION	CATEGORY	HAZARD SEVERITY VALUE
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* APPLY HAZARD SEVERITY CATEGORY TO TABLE 3.
** IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM. PROCEED TO PART III AND USE A RAC SCORE OF 5 TO DETERMINE YOUR APPROPRIATE ACTION.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance or explosive materials on a formerly used Department of Defense (DoD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD
(Circle all that apply)

A. Location of OEW Hazards:	VALUE
On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (Select the single largest value)	2

What evidence do you have regarding location of OE? **Two chemical bomb casings were discovered buried in the Flamingo Bay Landfill.**

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1250 feet	5
1250 feet to 0.5 miles	4
0.5 miles to 1.0 miles	3
1.0 miles to 2.0 miles	2
Over 2 miles	1
Distance (Select the single largest value)	4

What are the nearest inhabited structures/buildings? **Scattered residences on Water Island.**

C. Number of buildings within a 2-mile radius measured from the OE hazard area, not the installation boundary:

	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of Buildings (Select the single largest value)	5

Narrative. **Scattered residences on Water Island.**

D. Types of Buildings (within a 2-mile radius)

	VALUE
Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	5
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0
Types of Buildings (Select the largest single value)	5

Describe the types of buildings. **Scattered residences on Water Island.**

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g. in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry; or an artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the area; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility).	0

Accessibility (Select the single largest value) 5

Describe the site accessibility. **A portion of the site has been enclosed by a fence. The remainder of the site is readily accessible by the Water Island inhabitants.**

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5
None Anticipated	0

Site Dynamics (Select value) 0

Describe the site dynamics. **The landfill has been closed. Intrusive activities are not currently planned for the area.**

TOTAL HAZARD PROBABILITY VALUE

(Sum of Largest Values for A through F--Maximum of 30) 21

Apply this value to Hazard Probability Table 2 to determine Hazard Probability Level.

TABLE 2
HAZARD PROBABILITY*

Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

* Apply Hazard Probability Level to Table 3.

PART III. Risk Assessment. The risk assessment value for this site is determined using the following Table. Enter the results of the Hazard Probability and Hazard Severity values.

TABLE 3

Probability Level		FREQUENTA	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLEE
Severity Category:						
CATASTROPHIC	I	1	1	2	3	4
CRITICAL	II	1	2	3	4	5
MARGINAL	III	2	3	4	4	5
NEGLIGIBLE	IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

RAC 1	Expedite INPR, recommending further action by USAESCH – Immediately call USAESCH-OE-S--commercial (256) 895-1582/1598
RAC 2	High priority on completion of INPR - Recommend further action by USAESCH.
RAC 3	Complete INPR - Recommend further action by USAESCH
RAC 4	Complete INPR - Recommend further action by USAESCH
RAC 5	Usually indicates that No DoD Action Indicated (NDAI) is necessary. Submit NDAI and RAC to USAESCH.

==========

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

Chemical tests were carried out on Water Island from 1948 through 1950. Chemical bombs from some of the testing may have been disposed of in the Flamingo Bay Landfill. Remnants from tests performed in Test Areas 4 and 5 may have been left on those sites. See Archives Search Report for details.

24 Apr 00
Previous editions obsolete

RISK ASSESSMENT PROCEDURES FOR
ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name: **Water Island, Fort Segarra** (Conventional Ordnance)
Rater's Name: Tom Freeman
Site Location: US Virgin Islands
Phone Number: 314.331.8828

DERP Project # I02VI097700
Organization: CEMVS-ED-P

Date Completed: 17 September 2001
Score: **3**

OE RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Team (USAESCH-OE) to prioritize the remedial action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) Detachments actions, field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability**.** Personnel involved in visits to potential OE sites should view the USAESCH-OE videotape entitled "A Life Threatening Encounter: OEW."

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional Ordnance and Ammunition:	VALUE
Medium/Large Caliber (20mm and larger)	10
Bombs, Explosive	10
Grenades, Hand or Rifle, Explosive	10
Landmine, Explosive	10
Rockets, Guided Missile, Explosive	10
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	4
Landmine, Practice (w/spotting charges)	4
Small Arms, Complete Round (.22 cal - .50 cal)	1
Small Arms, Expended	0
Practice ordnance (w/o spotting charges)	0
Conventional Ordnance and Ammunition (Largest single value)	6

What evidence do you have regarding conventional unexploded ordnance? **Bursters were mass detonated in the former Test Area 4 at the end of the San Jose Project.**

B. Pyrotechnics (for munitions not described above):	VALUE
Munitions (Containers) containing White Phosphorus (WP) or other Pyrophoric Material (i.e., Spontaneously Flammable)	10
Munitions containing a flame or incendiary material (i.e., Napalm, Triethylaluminum Metal Incendiaries)	6
Flares, Signals, Simulators, Screening Smokes (other than WP)	4
Pyrotechnics (Select the largest single value)	0

What evidence do you have regarding pyrotechnics? **None**

C. Bulk High Explosives (Not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Demolition Charges	10
Secondary Explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military Dynamite	6
Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc.)	3
High Explosives (Select the largest single value)	0

What evidence do you have regarding bulk explosives? **None**

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):

	VALUE
Solid or Liquid Propellants	6
Propellants	0

What evidence do you have regarding bulk propellants? **None**

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:

	VALUE
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (Vomiting, Tear)	5
Chemical and Radiological (Select the largest single value)	0

What evidence do you have regarding chemical/radiological OEW? **Covered under a separate RAC worksheet.**

==========

TOTAL HAZARD SEVERITY VALUE

(Sum of the Values for A through E--Maximum of 61) 6
Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY*

DESCRIPTION	CATEGORY	HAZARD SEVERITY VALUE
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* APPLY HAZARD SEVERITY CATEGORY TO TABLE 3.
** IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM. PROCEED TO PART III AND USE A RAC SCORE OF 5 TO DETERMINE YOUR APPROPRIATE ACTION.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance or explosive materials on a formerly used Department of Defense (DoD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD
(Circle all that apply)

A. Location of OEW Hazards:	VALUE
On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (Select the single largest value)	2

What evidence do you have regarding location of OE? **No bursters have been reported found.**

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1250 feet	5
1250 feet to 0.5 miles	4
0.5 miles to 1.0 miles	3
1.0 miles to 2.0 miles	2
Over 2 miles	1
Distance (Select the single largest value)	4

What are the nearest inhabited structures/buildings? **Scattered residences on Water Island.**

C. Number of buildings within a 2-mile radius measured from the OE hazard area, not the installation boundary:

	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of Buildings (Select the single largest value)	5

Narrative. **Scattered residences on Water Island.**

D. Types of Buildings (within a 2-mile radius)

	VALUE
Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	5
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0
Types of Buildings (Select the largest single value)	5

Describe the types of buildings. **Scattered residences on Water Island.**

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g. in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry; or an artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the area; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility).	0

Accessibility (Select the single largest value) 5

Describe the site accessibility. **There is no barrier around the former Test Area 4. It is located adjacent to the current marina area.**

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5
None Anticipated	0

Site Dynamics (Select value) 5

Describe the site dynamics. **Additional development could occur in the area of the marina.**

TOTAL HAZARD PROBABILITY VALUE

(Sum of Largest Values for A through F--Maximum of 30) 26

Apply this value to Hazard Probability Table 2 to determine Hazard Probability Level.

TABLE 2
HAZARD PROBABILITY*

Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

* Apply Hazard Probability Level to Table 3.

PART III. Risk Assessment. The risk assessment value for this site is determined using the following Table. Enter the results of the Hazard Probability and Hazard Severity values.

TABLE 3

Probability Level		FREQUENTA	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLEE
Severity Category:						
CATASTROPHIC	I	1	1	2	3	4
CRITICAL	II	1	2	3	4	5
MARGINAL	III	2	3	4	4	5
NEGLIGIBLE	IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

RAC 1	Expedite INPR, recommending further action by USAESCH – Immediately call USAESCH-OE-S--commercial (256) 895-1582/1598
RAC 2	High priority on completion of INPR - Recommend further action by USAESCH.
RAC 3	Complete INPR - Recommend further action by USAESCH
RAC 4	Complete INPR - Recommend further action by USAESCH
RAC 5	Usually indicates that No DoD Action Indicated (NDAI) is necessary. Submit NDAI and RAC to USAESCH.

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PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

Chemical tests were carried out on Water Island from 1948 through 1950. Chemical bombs from some of the testing had been statically detonated. Bursters not used during the testing program were mass detonated in the former Test Area 4. See Archives Search Report for details.

APPENDIX N

REPORT DISTRIBUTION LIST

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