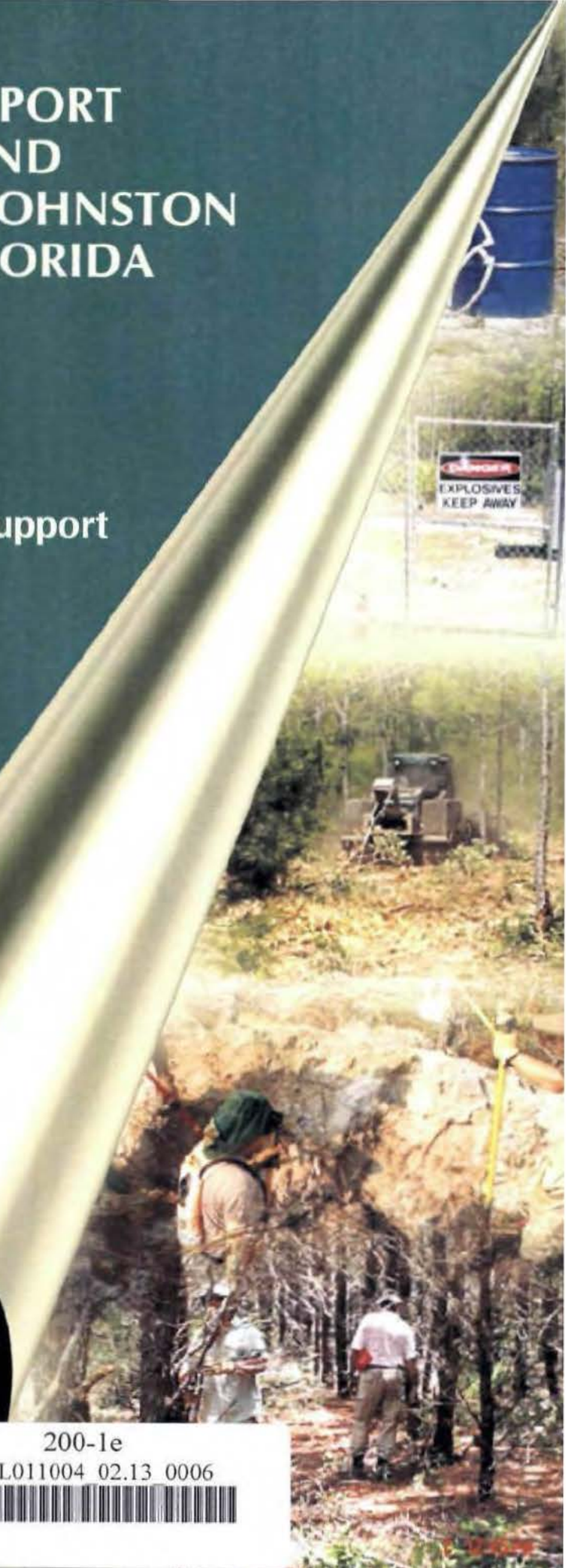
# Final
# REMOVAL ACTION REPORT
# AREA F - DOG ISLAND
# FORMER CAMP GORDON JOHNSTON
# FRANKLIN COUNTY, FLORIDA




## U.S. Army Engineering and Support Center, Huntsville

Contract No. DACA87 - 00 - D - 0038
Delivery Order 0023
FUDS Project Number 104FL011004

*Prepared by*

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"The views, opinions, and/or findings contained in the report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation"

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# FINAL
# REMOVAL ACTION REPORT

## AREA F
## FORMER CAMP GORDON JOHNSTON, FLORIDA

*Prepared For:*

**U.S. Army Corps Of Engineers**
**Jacksonville District**
**and**
**U.S. Army Engineering and Support Center**
**Huntsville**

**Contract No. DACA87-00-D-0038**
**Delivery Order No. 0023**
**FUDS Project Number 104FL011004**

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**September 2006**

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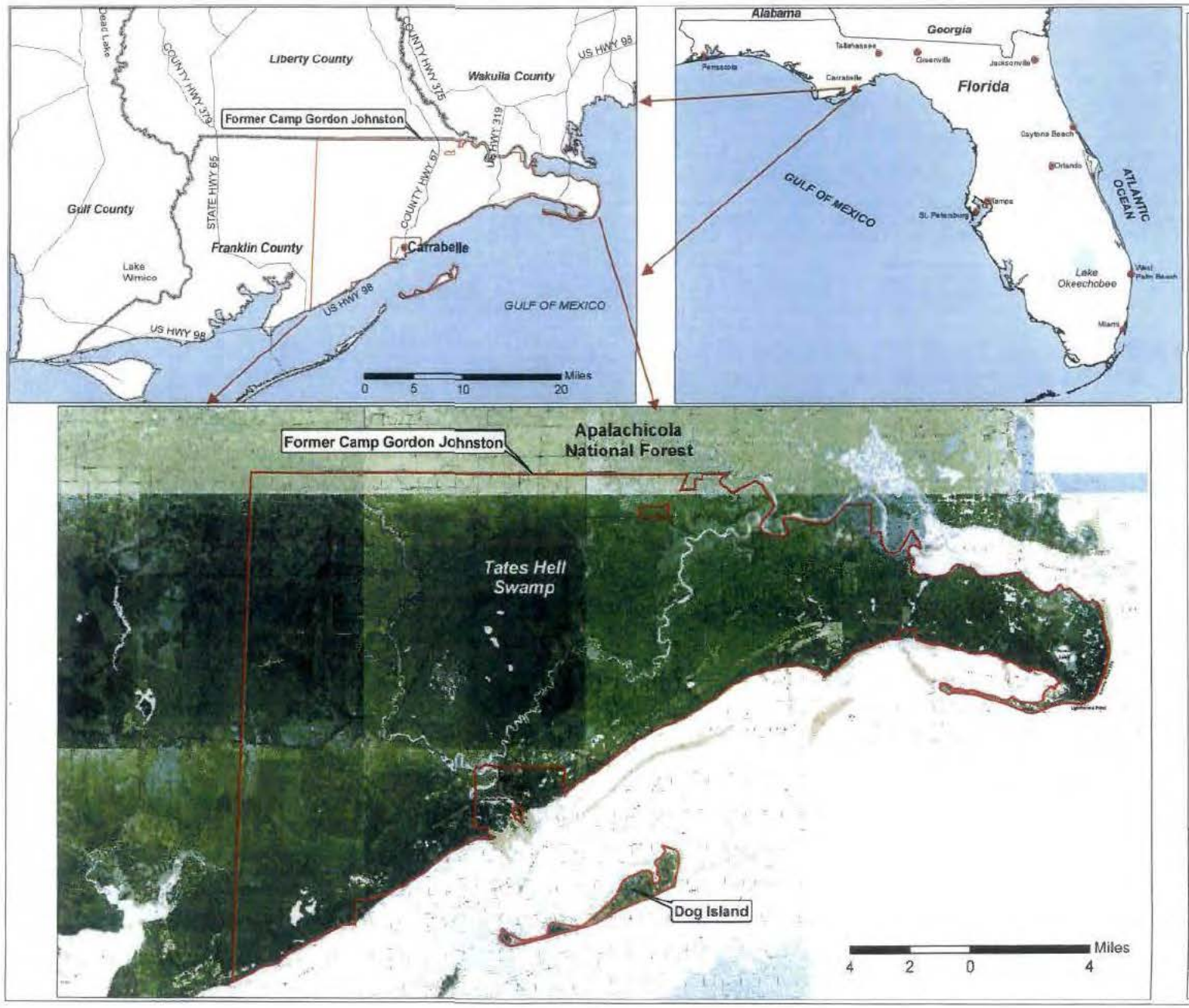
# CHAPTER 1
# INTRODUCTION

## 1.1 PROJECT AUTHORIZATION

Parsons Corporation (Parsons) received Contract No. DACA87-00-D-0038, Delivery Order No. 0023, from the United States Army Corps of Engineers, Engineering and Support Center, Huntsville (USAESCH) to perform a removal action (RA) on seven subareas within the former Camp Gordon Johnston (the Camp), in Franklin County, Florida. The approved project RA work plan (WP, Parsons, 2002) includes details of ordnance and explosives (OE) response actions for all seven subareas; however, this RA report documents only the funded site (Area F – Dog Island). Additional OE response actions, in accordance with the approved action memorandum (USACE, 2002), statement of work (SOW), and project WP will be performed as funds become available (Appendix A).

Parsons performed an RA on Area F as part of the initial task order award. A surface-only removal action was performed for Area F on Dog Island. Dog Island is located approximately five miles offshore, south of Carrabelle, Florida, and on the southern/coastal perimeter of the former Camp Gordon Johnston (Figures 1.1 and 1.2). The RA was performed at this site as a result of the OE findings during the engineering evaluation and cost analysis (EE/CA) and impending development of adjacent properties (Parsons, 2001). All work adhered to the Defense Environmental Restoration Program (DERP) for formerly used defense sites (FUDS) and relevant U.S. Army regulations and guidance for OE programs.

As specified in the delivery order, this report is prepared to summarize the work performed during the RA and presents an accounting of the OE (now referred to as munitions and explosives of concern [MEC] and munitions debris [MD]) recovered. In addition, a summary of the geophysical mapping performed in concurrence with removal activities, including anomaly maps, has been included. No interpretation of geophysical data was performed as specified in the delivery order. This report is prepared in accordance with the Data Item Description (DID) OE-030, as required by the SOW, dated May 31, 2002 (Appendix A). All tasks for this project were awarded as firm fixed price tasks; therefore, details regarding the costs incurred to perform the RA are not required in this report, per DID OE-030.




# Figure 1.1

## General Location Map

**Former Camp Gordon Johnston**
**Franklin County, Florida**

### Legend

- City
- Major Road
- Former Camp Gordon Johnston
- County

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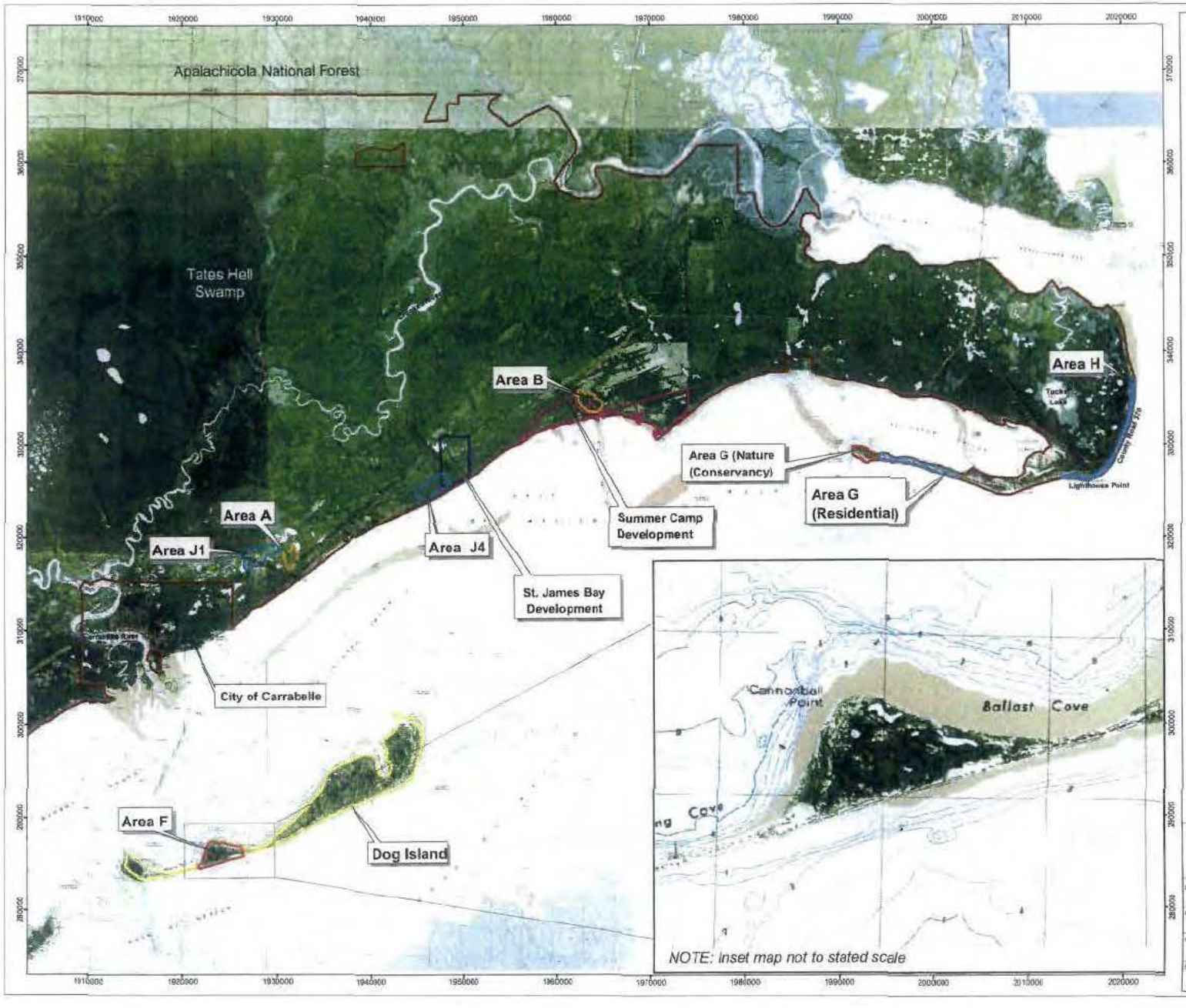


Figure 1.2

## Site Location and OE Response Action Summary Dog Island

Former Camp Gordon Johnston
Franklin County, Florida

**LEGEND:**

Area of Interest by Recommended Action:

- No Department of Defense Action Indicated (NDAI)
- Surface Clearance and Institutional Controls (IC)
- Modified Surface Clearance* and IC
- Clearance to Depth (4 feet) and IC
- St. James Bay Development
- Summer Camp Development
- Camp Boundary

* NOTE: Modified Surface Clearance is defined as a one-time 100% geophysical mapping and surface removal.

Map Units: NAD 1983 Florida State Plane North (Feet)
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## 1.2 BACKGROUND

### 1.2.1 Description

The former Camp Gordon Johnston, consisting of approximately 159,348 acres, lies approximately 60 miles southwest of Tallahassee, in Franklin County, Florida (Figure 1.1). The site is bordered to the north by the Apalachicola National Forest, to the south and east by the Gulf of Mexico, and to the west by Tate's Hell Swamp (excluding the City of Carrabelle). The former Camp Gordon Johnston includes Dog Island, part of the Gulf Barrier Chain, located approximately five miles south of Carrabelle, Florida (Figure 1.2).

Dog Island is approximately 1,923 acres and is accessible only by boat or airplane. Area F covers less than 10 percent of Dog Island and was originally approximated to be 158 acres (Figure 1.2). An additional 36 acres was cleared due to the extension of some grids beyond the Area F boundaries. As part of the training at the Camp, the island was periodically used for amphibious beach landings using live ammunition as well as other types of training. Nearly 80 percent of Area F is owned by the Nature Conservancy, a private company that protects properties from development. The island has numerous small private tracts, most with homes on them. Typically, these homes are occupied on a part-time basis; full time residents are the exception. Access to the island is essentially unrestricted, although the isolated conditions result in minimal tourism. The island consists of beaches with sand dunes and areas of marshland with a heavy growth of tall grass, palmetto groves, low-lying trees, and brush.

### 1.2.2 History

In April 1942, the War Department selected Franklin County, Florida, as the site of an Army amphibious training center. Site clearing began on July 8, 1942, and construction of the facility, originally known as Camp Carrabelle, commenced two weeks later. The mission of this amphibious training center (ATC) was to teach, by academic and practical means, all phases of amphibious operations involving a shore-to-shore movement, and to outline the basic principles of ship-to-shore movements by lectures and conferences. The objective for each student division was the formation of a highly efficient, well coordinated, hard-hitting, and fast-moving amphibious force, thoroughly qualified to act independently or in conjunction with other army troops and naval forces in a combined operation. The objective also included the mental and physical hardening of all officers and enlisted men for arduous field service and battle.

The instruction provided by the new training program emphasized loading and unloading landing craft quickly and quietly by day and night. This training consisted of boat discipline, including boat formations and control of landing craft, organization and control of troops during loading and unloading operations, and organization, tactical operation, and supply of combat teams. Seizure of the beachhead and the inland advance to the division objective included training in crossing beach obstacles and defensive works, clearing the beach of obstacles, working with demolitions, and the subsequent

beach organization to support the operation. Other training activities included the use of smoke for screening, the use of chemicals for contamination purposes, air-ground support, anti-aircraft defense, battle firing, automatic weapons firing from landing craft, and combat in cities.

In addition to the amphibious training performed at the Camp, the site also contained special training areas containing obstacle courses, grenade and bayonet courses, and areas for judo, knife and bayonet fighting, hand-to-hand fighting, and demolitions training sites. Other training sites involved the use of live ammunition, including the street fighting course, the infiltration course, battle firing, and firing from simulated landing craft.

The 38th Infantry Division was the first unit scheduled for training, arriving in late November 1942 and completing their training on December 30, 1942. In November 1942, tests were also performed using the 4.2-inch chemical mortars mounted in landing craft firing high explosive (HE) and white phosphorus projectiles onto the shore. This work was completed under the direction of the Chemical Warfare Amphibious Project. Companies of the 2nd and 3rd Chemical Battalions rotated through the center from November 1942 to March 1943. On January 13, 1943, the post was officially renamed Camp Gordon Johnston to honor a distinguished cavalry officer. Also in January 1943, the 28th Infantry Division arrived to begin amphibious training. Other smaller units also received amphibious training at the Camp in early 1943. These units consisted of the 6th Communications Squadron, the 79th Smoke Generator Company, and the 377th Coast Artillery Battalion.

In June 1943, as a result of an agreement between the U.S. Army and the U.S. Navy that transferred the amphibious training mission to the Navy, the Amphibious Training Center was officially disbanded. In November 1943, the 4th Infantry Division received amphibious training at the Camp under the supervision of the Navy. In late 1944 and early 1945, 50,000 acres west of the New River were released as activities at the Camp diminished. The post officially closed on May 1, 1946, with the War Assets Administration returning the 100,000 remaining acres of leased land to the original owners and selling the purchased land and approximately 1,000 buildings located throughout the Camp. In 1948, the last property was transferred and the Army's role ended.

An expanded discussion of the history of the Camp is presented in the Final EE/CA report (Parsons, 2001) and the archives search report [(ASR) USACE, 1995a,b]. Additional details on both the EE/CA investigation and this RA are available on the project website at www.projecthost.com.

### 1.2.3 Reasons for Removal Action

Ordnance used at the former Camp Gordon Johnston included rockets, grenades, artillery rounds, mortars, and various initiating and priming material used as obstacles and mine field clearing devices. MEC that may be encountered at the former Camp includes 2.36-inch rockets (HE and practice), 4.5-inch rockets, HE grenades, 105 to 155-

millimeter (mm) HE artillery rounds, 4.2-inch HE mortars, 4.2-inch smoke and white phosphorous mortars, 81-mm mortars (HE and practice), 60-mm mortars (HE, white phosphorus, smoke, illuminating, practice), 37-mm HE projectiles, practice antipersonnel mines, and practice antitank mines. Demolition materials used as obstacles and mine field clearing devices may include various shape charges and trinitrotoluene (TNT) blocks, cratering charges (40 pound), dynamite sticks, block M2 explosive, detonating cord, blasting caps, various firing devices, and bangalore torpedoes. Specific to Area F, historical records indicate the experimental firing of 4.2-inch HE and white phosphorous mortars and 4.5-inch rockets from landing crafts at an unspecified location on Dog Island.

The RA was identified for Area F based on the EE/CA findings and the presence of local residences and unrestricted (although sporadic) access to the area. With unrestricted access there is the potential for adverse affects to human health. There is also potential for increased human exposure in the future. The EE/CA field effort discovered 35 pieces of MD, including one live 4.2-inch mortar with flash tube and more than 25 pieces of 4.2-inch mortar fragments.

Parsons supported a three-day, on-site technical project planning (TPP) meeting session and RA project fieldwork kickoff with USAESCH and U.S. Army Corps of Engineers (USACE), Jacksonville District (CESAJ) between March 3 and 5, 2003. Meetings and coordination included members of the local government and community, such as the County Planner's Office, Camp Gordon Johnston Association, Franklin County Property Appraiser's Office, emergency response officials, St. Joe Timberland Company/Arvida, and St. James Bay Development representatives/Bayside Realty.

A project team meeting on March 3, 2003 at the Florida Department of Environmental Protection (FDEP) offices in Tallahassee, Florida reacquainted the regulators with the final EE/CA recommendations (Parsons, 2001) with respect to impending RA implementation at selected/funded sites. In addition, the selected institutional controls (IC) components were reviewed to include final wording for warning signage and public distribution brochures. The minutes for this meeting are in Appendix B.

A project update and status was also presented to the Franklin County Board of County Commissioners at their regular meeting on March 4, 2003 before starting the initial RA field activities at the request of Commissioner Cheryl Sanders. The minutes of this meeting are in Appendix B. Key project correspondence is provided in Appendix C.

## 1.3 PURPOSE AND SCOPE

The purpose of the RA was to remove all unexploded ordnance (UXO) and inert MD from the ground surface within Area F. The extent of Area F on Dog Island is shown on Figure 1.3. The scope of the RA includes the following:

- Prepare RA WP (finalized November 2002);
- Locate, gain access, identify, recover, store, and apply final disposition of all metallic anomalies within the project area equal to or larger than the probable ordnance anticipated for the subarea;
- Collect and dispose of all MD via an off-site smelter;
- Perform geophysical mapping and collect digital data for submittal to USAESCH; and
- Prepare a removal report (this document) to summarize the findings of the RA.

## 1.4 PROJECT TEAM

The RA project team consists of Parsons and USA Environmental, Inc. (USA). Parsons was the prime contractor to USAESCH, providing overall engineering support and coordinating all RA and geophysical activities. Parsons' responsibilities included providing UXO avoidance escort services for subcontractor land surveying activities, collecting and processing geophysical data, providing the UXO safety and quality control personnel, performing the intrusive investigation, interfacing and coordinating work process notifications, and controlling the project schedule and budget. USA was the UXO subcontractor for Parsons. Services provided by USA included assisting Parsons in performing the intrusive investigation, collecting and storing MD, securing the minimum separation distance (MSD), and detonating MEC items. Figure 1.4 is a project team organizational chart showing key personnel and project team details.

## 1.5 TECHNICAL APPROACH

The approved RA WP (Parsons, 2002) includes the plans listed below as required by DID OE-005-02.

- Technical management plan
- Explosives management plan
- Explosives siting plan
- Geophysical investigation plan
- Site safety and health plan
- Location surveys and mapping plan
- Work, data, and cost management plan

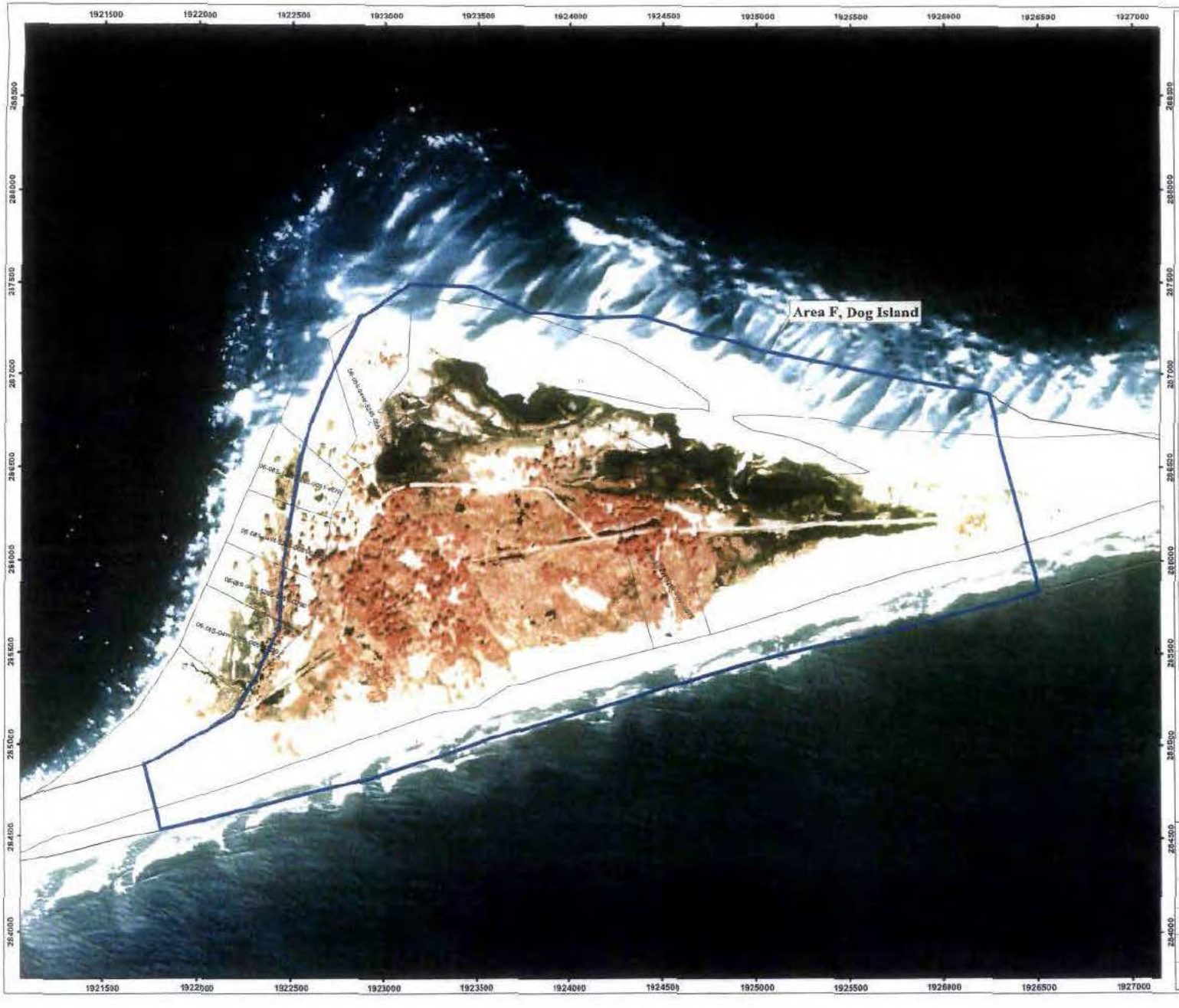


Figure 1.3

**Area F Removal Action Boundary**
**Dog Island**

*Former Camp Gordon Johnston*
Franklin County, Florida

LEGEND

Parcel

Area F Boundary

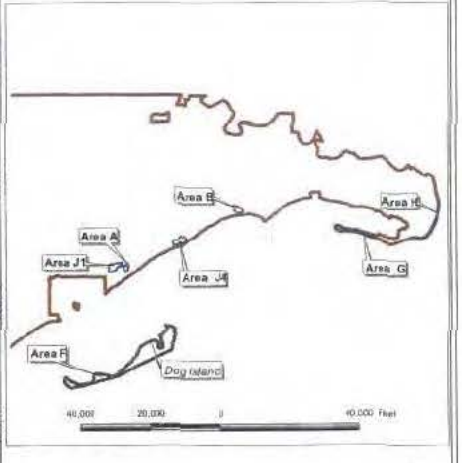


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Image Source: USGS 1995 orthophoto.
Map Units: NAD 1983 Florida State Plane North (Feet)

500 250 0 500 Feet

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- Property management plan
- Quality control plan
- Environmental protection plan
- Investigation derived waste plan
- Geographic information system (GIS) management plan

These plans discuss project objectives, technical procedures, and facilities and equipment needed for implementation of various work elements of the removal action. Detailed field operating procedures for surveys; MEC/MD identification, removal, transport and storage; and general operating procedures for MEC/MD areas were presented in the geophysical investigation plan, explosives management and explosive siting plans, and site safety and health plan.

## 1.6 PROBABILITY OF SOLUTION/ACCOMPLISHMENT

The anomalies identified at Area F as part of the subsurface RA were excavated in "real-time" using audible signal (non-recording) Schonstedt's model instruments. Therefore, geophysical identification of anomalies and surface investigation were coincident. A 500-foot by 500-foot contiguous grid network (each grid with unique identifier) was established by a Florida-certified professional land surveyor. All field activities were implemented using the procedures presented in the RA WP. This RA provided MEC/MD surface-only clearance at Area F with a high probability for successful removal of MEC items using proven techniques and reliable equipment.

# CHAPTER 2
# DISCUSSION

## 2.1 INTRODUCTION

The Area F RA began on April 25, 2005 with arrival of Parson's personnel on site following limited notice to proceed (NTP) granted by USAESCH to land survey activities. Commencement of the surface investigation in support of the RA began on April 27, 2005 following submittal and subsequent approval of the final RA WP by the USAESCH (Parsons, 2002). The explosives safety submission (ESS) was prepared by Parsons and approved by the Department of Defense Explosives Safety Board (DDESB) prior to commencement of intrusive work at the site (Parsons, 2003).

## 2.2 WORK PERFORMED

The RA field effort commenced on April 25, 2005 with the land survey of Area F, which consisted of establishing a contiguous grid network of 500-foot-by-500-foot grids throughout the site (5.74 acres per grid). Due to recent hurricanes, significant erosion changed the shape of the island, especially along its northern portions. Grids A-4, B-7, E-9, E-10, F-5, F-6, F-7, and F-8 were no longer on land and therefore were not surveyed or later swept as part of removal activities. Figure 2.1 depicts the grid layout for Area F. Parsons' subcontracted the land survey activities to a local professional land survey firm certified in the State of Florida, Edwin Brown and Associates, Inc. Parsons provided direct MEC avoidance support and oversight of the land survey effort, performed in accordance with DID OE-005-07 and the approved project WP (Parsons, 2002). Each subcontractor received a daily site safety briefing performed by Parsons' UXO safety officer (UXOSO), with input from the Parsons' site manager (SM) and on-site USAESCH MEC safety specialist, as appropriate.

RA operations began on April 27, 2005 and continued through May 17, 2005. The OE response action selected for this site included surface only MEC/MD removal using surface sweep investigation techniques. Surface-only removal of MEC/MD was performed because of human exposure to this particular area of the island and the desire to preserve the ecological habitat as much as possible of its natural condition. No brush cutting/clearing was performed at Area F, again due to concerns of destroying protected wetlands and to help preserve the natural environment of the area. Parsons subcontracted USA to assist in performing

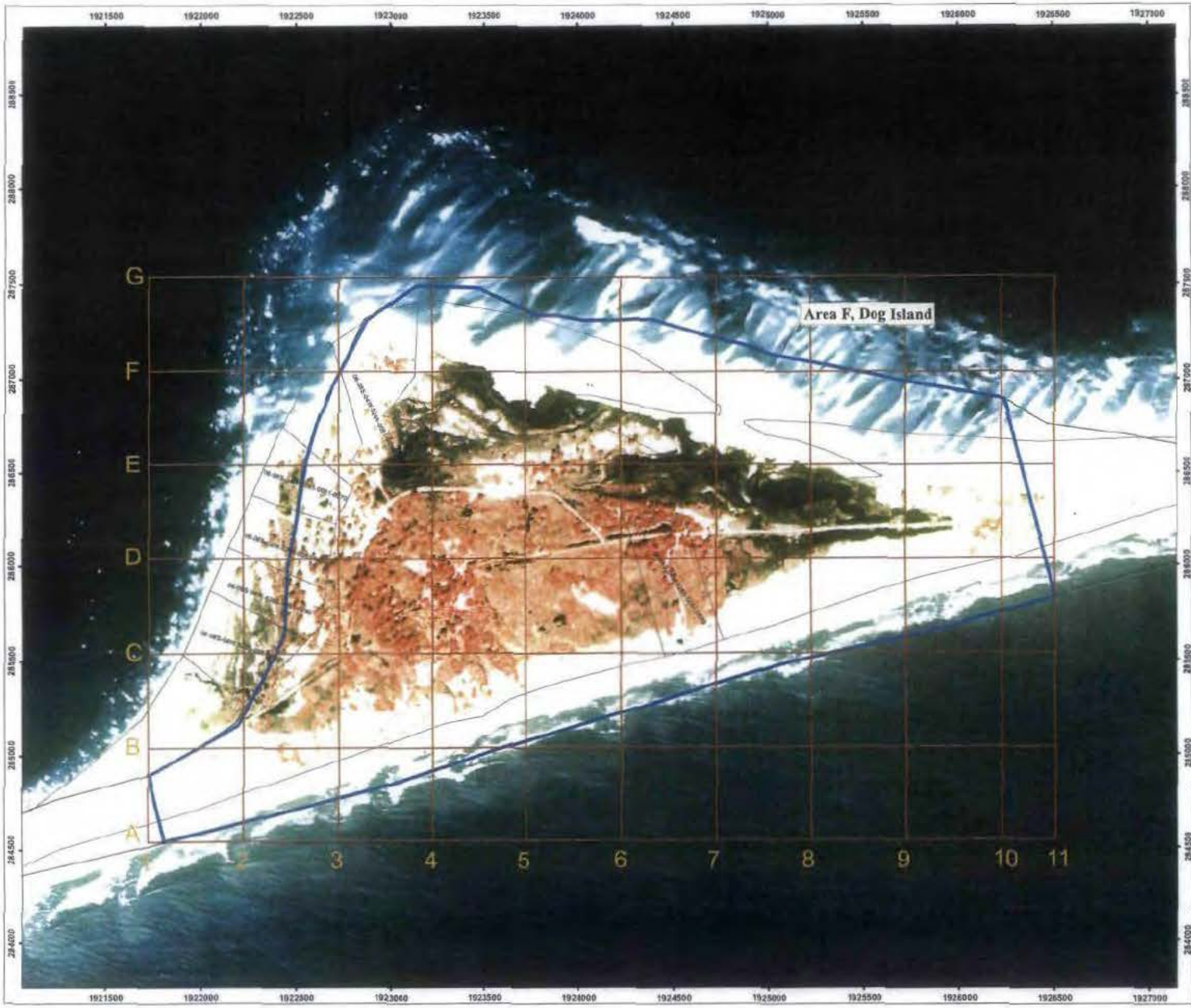


Figure 2.1

**Area F Grid**
**Dog Island**

Former Camp Gordon Johnston
Franklin County, Florida

LEGEND

- 500' x 500' Grid
- Parcel
- Area F Boundary

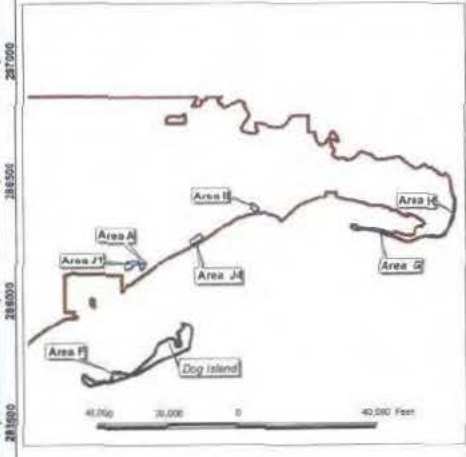


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Image Source: USGS 1995 orthophoto.
Map Units: NAD 1983 Florida State Plane North (Feet)

500 250 0 500 Feet

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| PARSONS | U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER |
| DESIGNED BY: BT | Area F Grids<br>Dog Island<br>Former Camp Gordon Johnston<br>Franklin County, Florida |
| DRAWN BY: BT | |
| CHECKED BY: JY | SCALE: As Shown — PROJECT NUMBER: 744368 |
| SUBMITTED BY: DS | DATE: March 2006 — PAGE NUMBER: |

the surface removal action. In addition, Parsons provided direct oversight and quality control (QC) of the intrusive effort, performed in accordance with the approved project WP (Parsons, 2002). Like other subcontractors, USA personnel received a daily site safety briefing from Parsons' UXOSO.

During removal activities, UXO personnel lined up to form individual search lanes approximately three to five feet wide to systematically cover the grids from one baseline to the opposing baseline. All grids as identified in the WP and on Figure 2.1 were swept by the UXO team using the surface sweep techniques. In addition to the identified grids, five extensions (Extensions 1 through 5) were added to existing grids along the eastern portion of Area F in areas outside the Area F boundary. These areas were surveyed by the UXO team for MEC/MD. The extensions were swept to offset the loss of beach area in Area F caused by storm erosion. In all, approximately 194 acres were cleared of surface MD. The team used Schonstedt magnetometers to locate suspect metallic items along the search lanes based on audible instrument signals. All located surface MD teams were removed from the grid, MEC and MD items were documented, and all MEC items (or suspect MEC items) were appropriately destroyed in place following notification procedures.

Parsons secured the perimeter of the MSD and employed traffic control procedures when intrusive activities were in progress. All removal activities ceased when non-project personnel entered the MSD (1617 feet for the 4.2-inch HE mortar), as reported via radio by site guards stationed around the site perimeter. Only after the "all clear" sign was given did removal activities recommence. The findings from the surface clearance of MEC/MD from Area F are discussed in later sections of this chapter.

## 2.3 FIELD PROCEDURES

### 2.3.1 Surface Removal Action

MEC/MD removal work began on April 25, 2005 following completion of the land survey tasks. Search operations consisted of those activities required to thoroughly investigate each operating grid to locate and/or identify surface MEC/MD present.

The UXO team was composed of a UXO Technician III and up to five UXO Technician IIs and/or Technician Is. This team performed all search operations and operated under the direct supervision of the senior UXO supervisor (SUXOS) and in accordance with the approved WP (Parsons, 2002). A Parsons UXOSO monitored the safety of the UXO team. The following subparagraphs describe the equipment and procedures the individual UXO teams used to search the individual grids and to excavate subsurface anomalies.

#### 2.3.1.1 Equipment

The equipment requirements for this activity included:

- Schonstedt (Model GA-52Cx)
- Pre-marked baselines to subdivide the land-surveyed grid into individual search lanes
- Rope reels containing nylon rope/twine to mark individual search lanes
- Assorted colored pin flags to mark MEC/MD items
- Miscellaneous common hand tools (e.g., shovels, garden trowels)
- Forms and logbooks to record activities and MEC/MD encountered
- MD collection containers.

#### 2.3.1.1.1 Schonstedt GA-52Cx Magnetometer (Schonstedt)

The Schonstedt was used during the surface clearance activities and for QC surveys. This instrument was also used when screening areas for the land survey as well as for UXO avoidance for advancement of survey stakes. The Schonstedt is a handheld magnetometer that detects subsurface ferrous metal items. The system uses two fluxgate sensors aligned and mounted a fixed distance apart to detect changes in the earth's ambient magnetic field caused by ferrous metal. The Schonstedt responds with an audio output when either of the two sensors is exposed to a magnetic field disturbance associated with a ferrous target or the presence of a permanent field associated with a ferrous target.

### 2.3.2 Visual Surface Sweep Team Procedures

Surface sweep operations were performed in Area F under the direct supervision of a UXO Technician III (or higher). The UXO Technician III assembled the sweep personnel into a sweep line and directed their movement across the survey grid.

- The sweep team personnel were spaced approximately five feet apart and, at the direction of the UXO Technician III, moved through the grid approximately on line and abreast.
- Each team was equipped with Schonstedt Model GA-52Cx magnetic locators. Team equipment included marking and flagging supplies and miscellaneous hand-tools. Magnetic locators used during the surface clearance assisted in locating surface items under brush, leaves, and debris.
- When encountering a suspect item, the individual who spotted the item called out "hold the line" and held up their hand. The line stopped while the object was inspected to determine if it was UXO or scrap. The item was marked with the appropriate colored pin flag (red for UXO or yellow for ordnance scrap). The line did not move again until directed by the UXO Technician III.
- As the team moved forward using the grid stakes as the sweep lane boundary, the person on the opposite end of the line marked the limit of the sweep lane with white pin flags. These flags became the guide for the return sweep and defined the limits of the previously cleared lane. This procedure continued until the grid was completely swept.

- The UXO Technician III systematically maneuvered his team back and forth across the grid until 100% of the area was inspected. As the team advanced, the last survey operator on line placed pin flags periodically, based on the site terrain and conditions, to mark the edge of the area cleared and to guide team members on the return. On reaching the boundary, the team turned around and returned on the opposite side of the inner pin flags. The two outside survey operators then picked up the pin flags used as the return guide to indicate the boundary of the new area cleared. When the team took a break for any reason, their furthest line of advance was temporarily marked across their front using the white pin flags. On return to the field, the team lined up behind the white pin flags and proceeded as before, picking up the temporary flags.
- The UXO Technician III followed behind the sweep line inspecting and verifying the identification of the suspect items (red or yellow flags) and recording data on the type, nomenclature, and location of the MEC/MD.
- On completion of the grid sweep, the sweep team, under the direct supervision of the UXO Technician III, recovered and stockpiled MD at a designated location.
- Demolition activities were performed for one piece of MD found during the RA. Procedures for demolition activity are summarized in Appendix B of the approved project WP (Parsons, 2002).

#### 2.3.2.1 Analog Magnetometer Searches

Magnetometer sweeps were used for surface clearance of Area F, as identified in the SOW and the approved project WP (Parsons, 2002).

#### 2.3.2.2 Removal of Surface Items

The surface clearance investigation teams removed all surface metallic items identified during the analog magnetometer searches of Area F. No below-grade intrusive investigations were performed because the intended land use would be limited and to protect the areas' natural environment. For MEC items, description, location (grid identification), photographic documentation, weight, orientation, and other pertinent data were recorded. For MD items, description (if possible), approximate size, and weight were recorded. Non-MD items recovered were staged and left on site. Suspect MEC items were destroyed in-place.

For Area F, the most probable munition (MPM), based on items encountered during the EE/CA, was the 4.2-inch mortar. An exclusion zone equivalent to the MSD for unintentional detonations (1617 feet) was observed around all removal activities within the Area F site during removal operations.

The MSD for intentional detonations was reevaluated based on each actual MEC item recovered but was at no time less than 1617 feet. No munitions with a larger MSD than that for which the MPM was determined were discovered.

The MSD was carefully monitored to ensure non-UXO/nonessential personnel were kept out of the work area. The moderate-to-heavy seasonal use of Dog Island mildly impacted the intrusive team's ability to perform removal activities. Since the MSD was at no time greater than 1617 feet, removal activity of most of the site was performed without traffic control issues.

#### 2.3.2.3 Reacquisition of Anomalies

The removal effort employed at Area F used real-time surface sweep techniques as well as visual identification; reacquisition of anomalies was not required.

### 2.3.3 UXO Disposal Procedures

#### 2.3.3.1 Demolition

On May 16, 2005, one 4.2-inch mortar was blown in place for demilling purposes by detonation in accordance with the approved WP procedures (Parsons, 2002). The item was demilled because it could not be verified whether the item was free from explosives residue; also, it was unclear to the field team whether the round was a white phosphorus or smoke mortar. The local police department, fire department, hospital, Federal Aviation Administration (FAA), and other pertinent agencies were notified of the operation. All potential entry points at the applicable MSD were secured. No residential or commercial buildings required evacuation as part of the RA. Appendix D includes photographs of various activities involved in demolition operations. Appendix E provides a summary of the MD items identified during the RA.

#### 2.3.3.2 Demolition Materials

A 4.2-inch mortar was identified at Area F (Table 2.1). Explosives brought on site the day of the detonation by Dyno Nobel and were used as the most effective way to destroy the item. George Spencer and Jim Paksi of USA Environmental received the ¾-lb booster and 4 electrical caps from Dyno Nobel, and supervised the demolition. No material was returned to Dyno Nobel. Two electrical caps were not functioning correctly and consequently were destroyed during the demolition. The remaining 2 caps were used to initiate the demolition.

**Table 2.1**
**Types and Amount of Potential MEC Items Discovered***

| UXO Item | Grid ID | Date | Status |
|---|---|---|---|
| 4.2-inch Mortar | E-3 | 5-16-05 | BIP |

The explosives and related demolition materials used for detonation purposes included the following:

- Detonation cord (50 grain)
- Boosters, 3/4 pound
- Electric detonators.

An explosives usage summary for the RA effort is provided in Table 2.2. The daily explosive usage record and magazine data cards are included in Appendix F.

**Table 2.2**
**Explosives Usage (Demolition Operation) Summary**

| Explosive Type/Materials | Unit | Total | Item 1 |
|---|---|---|---|
| | | | 5-16-05 |
| Electric blasting cap | Each | 4 | 4 |
| Primer (detonation) cord, 50 grain | Feet | 20 | 20 |
| Booster, 3/4 pound | Feet | 1 | 1 |
| Jet perforators (shaped charge) | Each | 0 | 0 |

### 2.3.3.3 Scrap Management

Temporary scrap metal and non-hazardous MD-related material collection points were established during the intrusive operation for each grid. The MD held at the collection points were inspected and brought to a stockpile for a second inspection by the SUXOS and UXOSO to confirm that no explosives or other hazardous materials existed in the scrap. Munitions debris (MD) was segregated from non-MD (non-MD). Approximately 509 pounds of MD were recovered. The MD was placed in a 55 gallon steel drum, sealed, and stored at the project sited explosive storage area located near Hwy 98, east of Carrabelle, as shown on Figure 1.1. Non MD was left onsite at the Area F grids. Disposal of the MD is pending.

Management of potentially hazardous MD is performed by storing the items in a secured 55-gallon drum at the explosive storage area. At a minimum, weekly inspections of the drum and the explosive storage area are performed. Shipment and disposal of the MD for the Camp Gordon Johnston RA is awaiting the completion of other upcoming removal activities.

### 2.3.4 Quality Control and Quality Assurance Surveys

As a QC measure on the surface sweep survey, at least 10% of each grid was searched with a handheld magnetometer by the UXO quality control specialist (UXOQCS). Appendix F includes a summary of the QC logs.

The USAESCH on-site representative performed quality assurance (QA) checks of all grids that passed the Parsons UXOQCS QC check. Appendix F provides Form 948s used to document acceptance or failure of grids inspected by the USAESCH. All 33 grids plus the five extensions passed the USAESCH QA check; therefore, no additional rechecks were required. Grids that passed government QA required no additional UXO clearance work.

### 2.3.5 Geophysical Data Mapping

Geophysical mapping began on May 17, 2005 following completion of the visual surface sweep and was performed in two phases. The first phase was performed between May 17 and June 16, 2005, and the second phase between November 7 and November 23, 2005. The mapping operations consisted of surveying available areas with digital geophysical instruments to detect the presence of subsurface items.

The geophysical survey team was composed of a site geophysicist and a geophysical operator. Phase I surveys were performed by two teams using the EM61-MK2 and Trimble 5800 global positioning system (GPS). Phase II was performed by one team using the Geometrics G-858 magnetometer with Trimble 5800 GPS system.

Digital geophysical mapping was performed to improve accuracy and depth penetration of the modified surface clearance. Data gathered from the one time 100% geophysical mapping provides quantifiable documentation for the baseline condition of the site.

#### 2.3.5.1 Equipment

The equipment requirements for this activity included:

- EM61-MK2
- G-858 magnetometer
- Trimble 5800 GPS system
- Survey tapes and orange cones
- Forms and logbooks to record activities and terrain conditions.

##### 2.3.5.1.1 Geonics® EM-61 MK 2 TDMD

The EM61 metal detector generates an electromagnetic pulse that triggers eddy currents in the subsurface. After the electromagnetic pulse is turned off, the eddy current produces a secondary magnetic field that is monitored by a receiving coil and recorded by an attached data logger. The EM61 has a double coil antenna system that receives the signal at two separate heights above the ground surface. The lower and upper coils are separated by a distance of 40 centimeters. The EM61 data logger collects data at automatic time intervals determined by the user or at a pre-programmed distance interval measured by an attached set of wheels with all-terrain tires. The EM61-MK2 uses 0.5-m by 1.0-m coils and records either four time-gates on the bottom coil or three time gates on the bottom coil and one time-gate on the upper coil. The MK2 units are generally more

suitable for use in towed-array systems because of modifications to the system electronics.

#### 2.3.5.1.2 Geometrics® G-858 Magnetometer

The Geometrics G-858 magnetic gradiometer uses a self-oscillating, split-beam, cesium vapor sensor that produces a signal proportional to the intensity of the ambient magnetic field. The sensitivity of the instrument is 0.05 nanotesla (nT) and can read as fast as ten times per second. The device is operated as a gradiometer with two sensors collecting magnetic field intensity data separated by a vertical distance of approximately 2.5 feet. The difference between the two simultaneous sensor readings is recorded as the magnetic gradient at the measurement location. The G-858 magnetometer is suitable for locating buried objects with a significant ferrous content, such as storage drums or munitions.

#### 2.3.5.1.3 Trimble® 5800 Real-Time Kinematic GPS

The Trimble 5800 real-time kinematic (RTK) GPS consists of a high-precision rover unit linked by radio to a fixed base station that allows real time acquisition of geodetic data. The Trimble 5800 RTK GPS is capable of attaining centimeter accuracy, depending on satellite constellation and unobstructed transmission signal path between satellite and ground based receivers.

### 2.3.5.2 Digital Geophysical Mapping Procedures

Digital geophysical mapping (DGM) was performed in Area F using the EM-61 MK 2 and G-858 metal detectors to identify and locate subsurface geophysical anomalies. Geophysical surveys were performed using the Trimble 5800 RTK GPS system in conjunction with the EM61 MK2 and G-858, which enabled positioning and geophysical data to be merged real time. Due to the varying topography and dense vegetation, usage of the EM61-MK2 for surveys was confined to areas of the site that were generally flat and open/non-vegetated. Data collection with the EM61-MK2 ended on June 16, 2005 due to limited access in the remaining areas. Based on the vegetation and terrain conditions of the remaining areas, Parsons, in accordance with USACE, selected the Geometrics G-858 magnetometer to complete the digital mapping in Area F. On November 7, 2005, the Parsons geophysical team remobilized with the G-858 magnetometer. The main objective of geophysical investigation was to characterize the nature and extent of MEC at the site. Figures 2.3 to 2.8 illustrate the geophysical mapping extent of Area F. Both G-858 and EM61 MK2 data are presented on each map.

#### 2.3.5.2.1 Test Plot

A test plot location was established in grid B1 representative of the conditions of the area. An inert 4.2-inch mortar round discovered on the island was used as the test item and was buried at a depth of three feet. Based on historical documents and prior investigations, the 4.2-inch mortar round was identified as the primary MPM on Dog

Island. All geophysical instruments were tested over the buried 4.2-inch mortar round to evaluate detection and positional accuracy.

#### 2.3.5.3 Quality Control of Geophysical Data

The field crew performed and recorded the following QC tests for all instruments on a daily basis:

- Static background test twice daily (beginning and end of each day) to record background response for two minutes over a quiet area considered to represent known site conditions.
- Static spike test twice daily (beginning and end of each day) to record instrument response over a standard QC item for one minutes.
- Latency test daily over a spike (e.g., trailer ball) placed at a known location. The test line was traversed in multiple directions.
- GPS accuracy daily at a known locations to ensure accurate positional data.

#### 2.3.5.4 Grid Survey

Most geophysical mapping was performed using grid survey techniques (Figure 2.3). Data was acquired using the hand-pulled EM-61 MK2, which required an operator to collect data along survey lines within a pre-established grid. The EM61-MK2 was used in conjunction with a Trimble 5800 RTK GPS to allow both geophysical and geodetic data streams to be merged during data acquisition. The hand-pulled unit consisted of a single set of 0.5-meter-by-1-meter coils, with a top and bottom coil separation of 40 centimeters. The GPS antenna was mounted on a tripod over the top coil. The unit was pulled with a plastic handle that extended perpendicular from the long axis of the lower coil.

The grid surveys were performed by first establishing the corners of a grid using professional land surveyors or qualified Parsons' personnel. Grid corners were surveyed using conventional land survey techniques in conjunction with GPS. Grid dimensions were generally based available open areas. The grid was divided into parallel lines spaced three feet apart for EM-61 MK2 surveys. Approximately 60 acres were digitally mapped using this technique.

#### 2.3.5.5 Meandering Surveys

Varying topography and dense vegetation that limited access for the EM61-MK2 also limited the application of grid surveys. Meandering path surveys were performed in semi-open areas and where satellite reception was unimpeded, but topography and vegetation restricted complete grid data acquisition (Figures 2.4 to 2.7). The G-858 was configured in vertical gradient mode with sensor separation at 2.5 feet and was used in conjunction with a Trimble 5800 RTK GPS to allow both geophysical and geodetic data streams to be merged during data acquisition. The GPS antenna was set 4.8 feet from the

sensors mounted on the backpack of the instrument operator. Data collected from the G-858 was collected at 10 readings per second. The instrument operator then traversed within the limits of the semi-open areas, carrying the magnetometer. Approximately 10 acres were digitally mapped using the meandering path technique.

#### 2.3.5.6 Data Processing

At the end of each day, the geophysical data were downloaded from the data loggers to the field laptop computer. The downloaded data files (daily static tests, latency tests, and geophysical surveys) were then imported into manufacturer-supplied software programs (DAT61 MKII™ for the EM61-MK2 or MagMapper 2000 for the G-858). Preprocessing of the transferred data was then performed.

Following the preprocessing phase, data files were converted into XYZ format and exported from DAT61 MKII™ or MagMapper 2000 into Geosoft Oasis montaj for post-processing and graphical display. The geophysical data were leveled, lagged, and translated from latitude/longitude to state plane coordinates. EM61-MK2 data included data from four channels, corresponding to the four separate time gates for use in graphical interpretation. G-858 data included data from the bottom, top, and gradient channels. Finally, processed data from the bottom coil response was gridded and graphically displayed in preparation for analysis and interpretation.

## 2.4 FACILITIES

### 2.4.1 Project Field Office

Because Area F is on an island five miles off shore, no project field office was established. Portable toilet facilities were located at Area F.

### 2.4.2 Explosive Magazines

Due to the isolated nature of Area F, no explosive storage magazines were used. Explosives were brought on site as needed to perform demolition operations.

## 2.5 RESULTS

### 2.5.1 General

The surface clearance was performed at Area F. The objective of this action was to remove any immediate safety threat to the public and at the same time ensure that ordnance was removed given the active development plans. One MD item, a 4.2-inch mortar thought to possibly have some remnants of explosive residue, was recovered and detonated during the RA. In addition, hundreds of MD items were identified from this area (Appendix E). Approximately 194 acres of surface MD clearance was performed. The additional 36 acres of MD clearance came from the extension of some 500 ft by 500 ft grids beyond the Area F boundaries.

### 2.5.2 Removal Action Findings

One MD item thought to contain explosives residue was recovered within Area F. The item, a 4.2-inch mortar, was found on the ground surface in grid E-3. The item was blown in place using demolition procedures outlined in Appendix B of the approved work plan. Photographs documenting the demolition of this item are shown in Appendix D.

Approximately 509 pounds of MD were recovered as a result of the RA. MD found in the area consisted mostly of 4.2-inch mortars (made up of white phosphorus, smoke, and HE payloads), fragments of 4.2-inch mortar rounds, and empty .50-caliber rounds (small arms ammunition). Historical records regarding the military use of Area F indicate that the area was used for amphibious beach landings and involved the use of live ammunition. The RA findings confirmed the significant presence of mortar debris (both white phosphorus and HE). Figure 2.3 depicts the pounds of MD by grid within Area F.

### 2.5.3 Recovered OE Items

#### 2.5.3.1 4.2-inch Mortar

The 4.2-inch HE mortar is a high-explosive, fragmenting, antipersonnel cartridge. Each cartridge consists of a projectile, propelling charge, and ignition cartridge with 2610 grams of explosive trinitrotoluene (TNT) or Comp B. The projectiles are distinguished by a rotating disk and pressure plate at the base. The 4.2-inch white phosphorus mortar was used to produce incendiary effects. The projectile is filled with 3.4 kilograms of white phosphorus. The transportation of either type projectile is not recommended, with disposal by detonation is recommended for both. Figure 2.2 shows a 4.2-inch mortar and boom assembly recovered during the RA.

#### 2.5.3.2 .50-Caliber Rounds

The armor-piercing .50-caliber projectile is 2.28 inches long with an average diameter of 0.51 inches, intended for use against unarmored or lightly armored vehicles or concrete structures. The bullets weight ranges from 697 grains (M2 alternative) to 710 grains (complete).

**Figure 2.2 - 4.2-inch mortar recovered in Area F**

### 2.5.4 Scrap

During the RA, all MD (totaling approximately 675 pounds) was thoroughly checked for explosive materials and stored in the sited explosive storage area located east of Carrabelle. Disposal of the MD is awaiting consolidation of recovered MD from other future Camp Gordon Johnston site removal actions.

### 2.5.5 Geophysical Results

Approximately 70 acres were digitally mapped by Parsons as part of the RA investigation. Parsons geophysical teams used a combination of EM61-MK2 and G-858 to provide geophysical data to the RA investigation. Figure 2.3 displays the geophysical data coverage in Area F. Figures 2.4 to 2.7 display the geophysical data for the western, middle, and eastern sides of Area F. Based on the geophysical data, most of the anomaly clusters were on the western portion of Area F. Figure 2.8 shows the anomaly cluster areas detected by the geophysical investigation. Geophysical data on the eastern and southern sides of Area F show very few anomalies and no anomaly cluster areas. Surface scrap removal data provided by the UXO teams resulted in a similar distribution pattern

of MD in Area F. The geophysical data collected during the clearance activities is provided on a compact disk (CD).

## 2.6 PUBLIC RELATIONS

The CESAJ project manager was the overall coordinator for public affairs on this project. The following protocol was followed during execution of the WP. All communications and contacts with the public were under the direction of CESAJ. All public information contacts made during the project were documented and forwarded immediately to CESAJ and USAESCH. Parsons supported, attended, and participated in the USAESCH public meetings held during the EE/CA effort prior to start up of the RA and coordinated logistics activities with the local community leaders. The support included preparation and delivery of briefings, graphics, and presentations as well as participation in site visits.

## 2.7 SITE SECURITY

In general, security on site was maintained by limiting personnel in the work area to those necessary to conduct the work. Given the non-residential nature of the site, no evacuation was required. During all project tasks, the SM or UXOSO was present to monitor the field personnel. Due to the hazardous nature of the operations, all personnel working on site were given a daily safety briefing to ensure awareness of the possible ordnance that might be encountered, as well as any recent developments in the ongoing work.

During the removal action, the MSD was established during work hours. For the most part, Area F was sporadically used by persons other than the UXO team and no evacuations of non-UXO personnel were needed. Only essential UXO-qualified personnel remained in the work area. Guards were posted at the perimeter of the MSD (during demolition operations) to keep the public away and to monitor vehicular traffic. The single demolition operation occurred with no interruptions. No explosives were stored on site, nor were any magazines used during the Area F RA. MD is currently stored in 55-gallon steel drums in the explosive storage area.

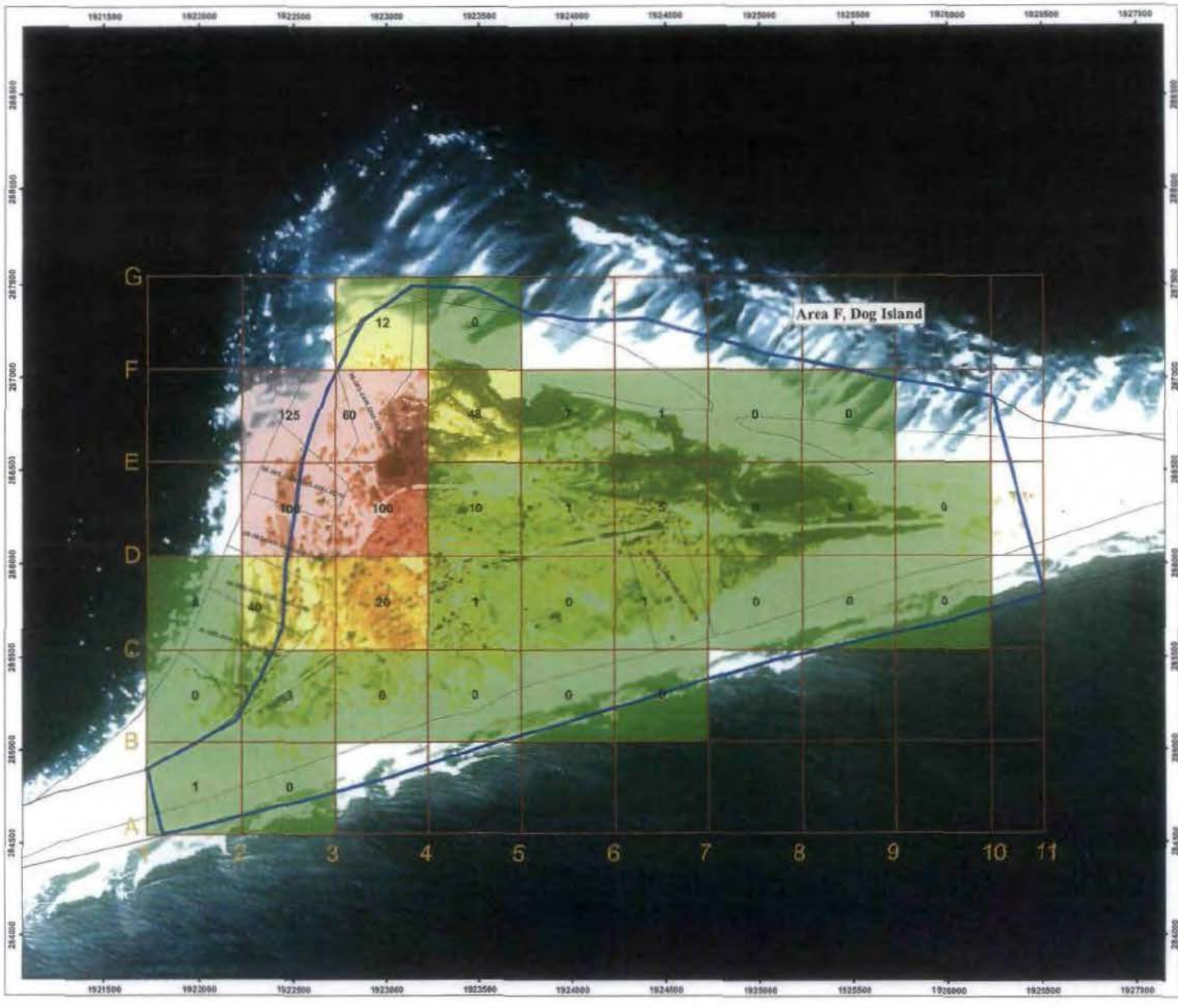


Figure 2.3

**Area Surface Sweep Findings**
**Dog Island**

Former Camp Gordon Johnston
Franklin County, Florida

LEGEND

- Parcel
- Area F Boundary

*Pounds of MD recovered :*

- 0 - 10
- 10 - 50
- 50 - 200

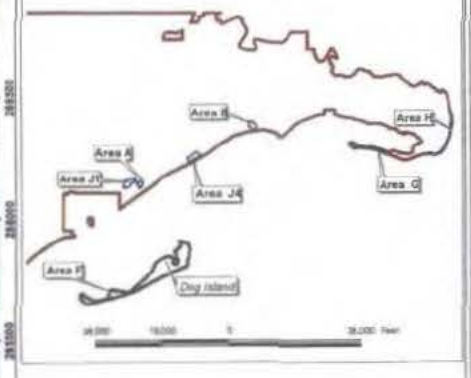


Image Source: USGS 1995 orthophoto.
Map Units: NAD 1983 Florida State Plane North (Feet)

500 250 0 500 Feet

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| DRAWN BY: BT | |
| CHECKED BY: JY | SCALE: As Shown — PROJECT NUMBER: 744368 |
| SUBMITTED BY: DS | DATE: March 2006 — PAGE NUMBER |

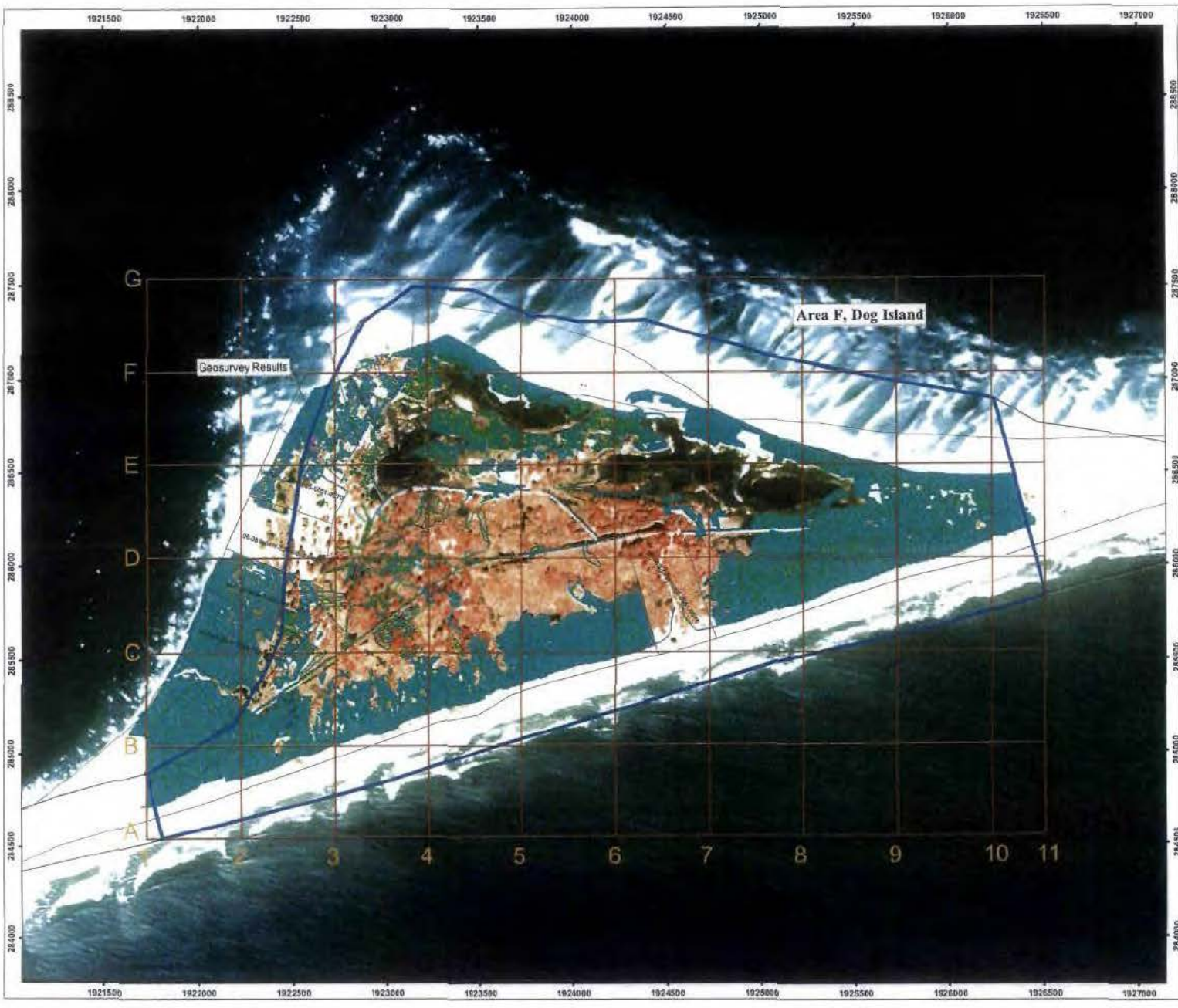


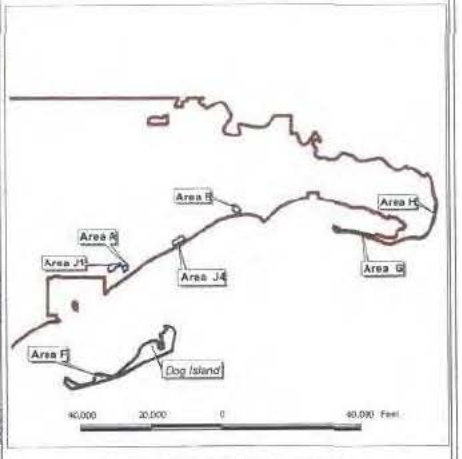

*Figure 2.4*

**Area F Geophysical Data**
**Dog Island**

Former Camp Gordon Johnston
Franklin County, Florida

LEGEND

- 500' x 500' Grid
- Parcel
- Area F Boundary




G858 and EM-61 MK2 Geophysical Data
is presented in this map

Image Source: USGS 1995 orthophoto.
Map Units: NAD 1983 Florida State Plane North (Feet)

500 250 0 500 Feet

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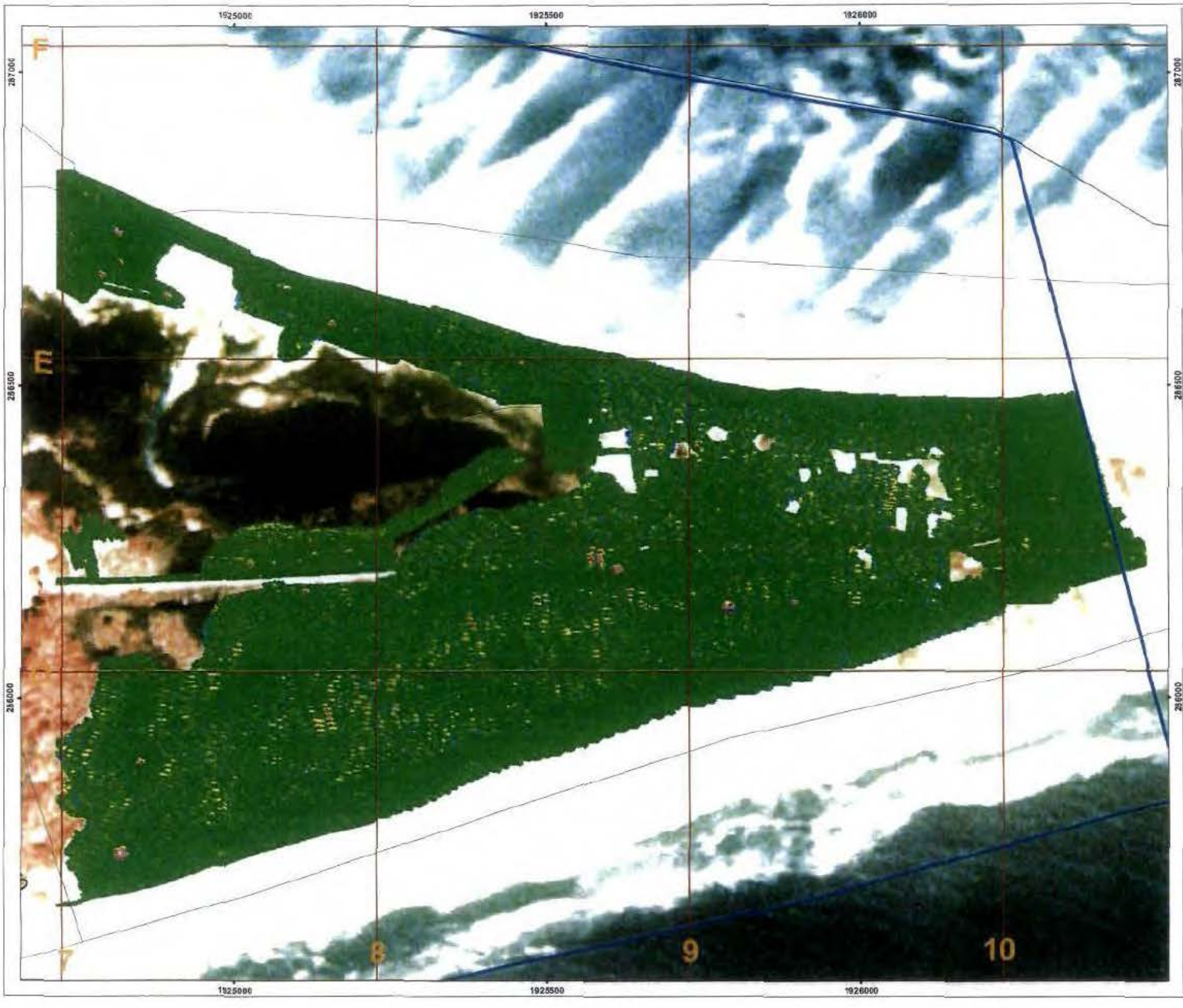


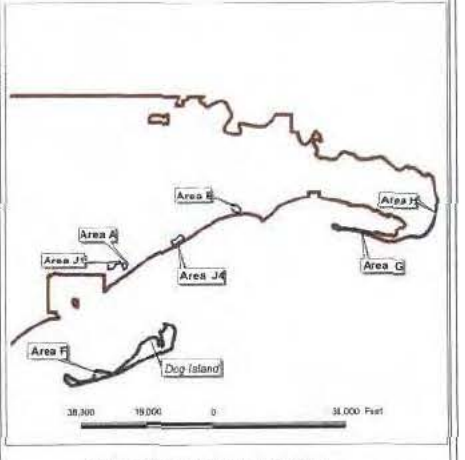

Figure 2.5

**Area F Geophysical Data (Eastern Portion) Dog Island**

*Former Camp Gordon Johnston*
Franklin County, Florida

LEGEND

- 500' x 500' Grid
- Parcel
- Area F Boundary




G858 and EM-61 MK2 Geophysical Data is presented in this map

Image Source: USGS 1995 orthophoto.
Map Units: NAD 1983 Florida State Plane North (Feet)

150 75 0 150 Feet

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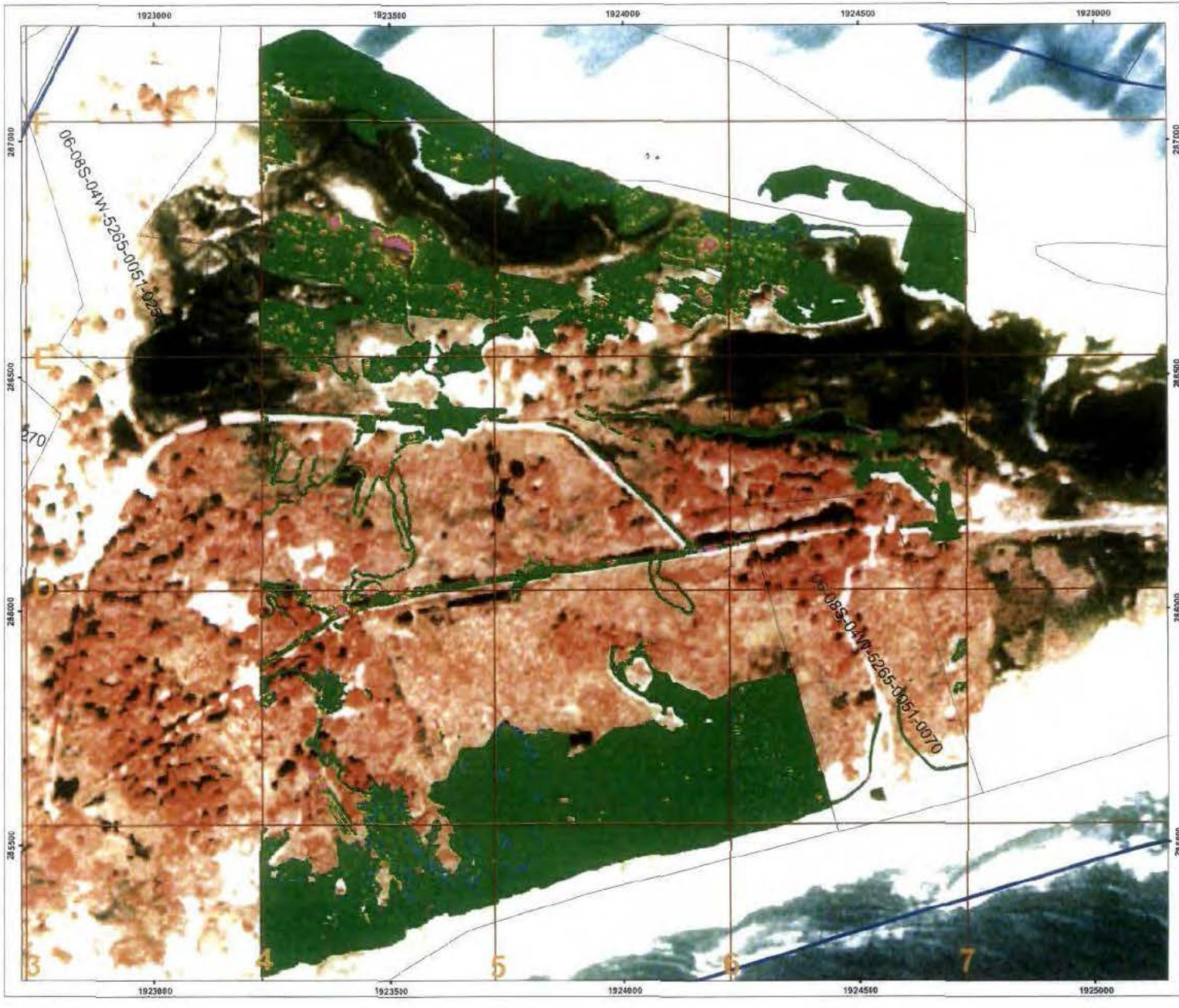


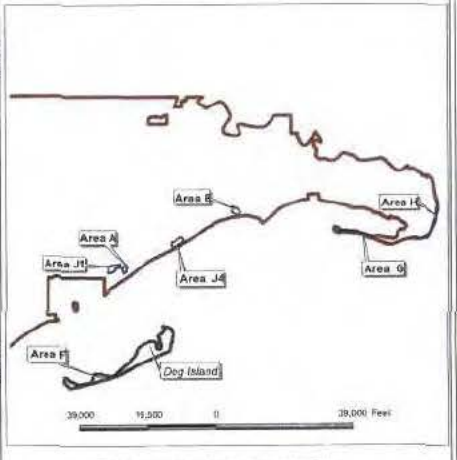

Figure 2.6

**Area F Geophysical Data (Middle Portion) Dog Island**

Former Camp Gordon Johnston
Franklin County, Florida

LEGEND

- 500' x 500' Grid
- Parcel
- Area F Boundary




G858 and EM-61 MK2 Geophysical Data is presented in this map

Image Source: USGS 1995 orthophoto
Map Units: NAD 1983 Florida State Plane North (Feet)

200 100 0 200 Feet

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PARSONS

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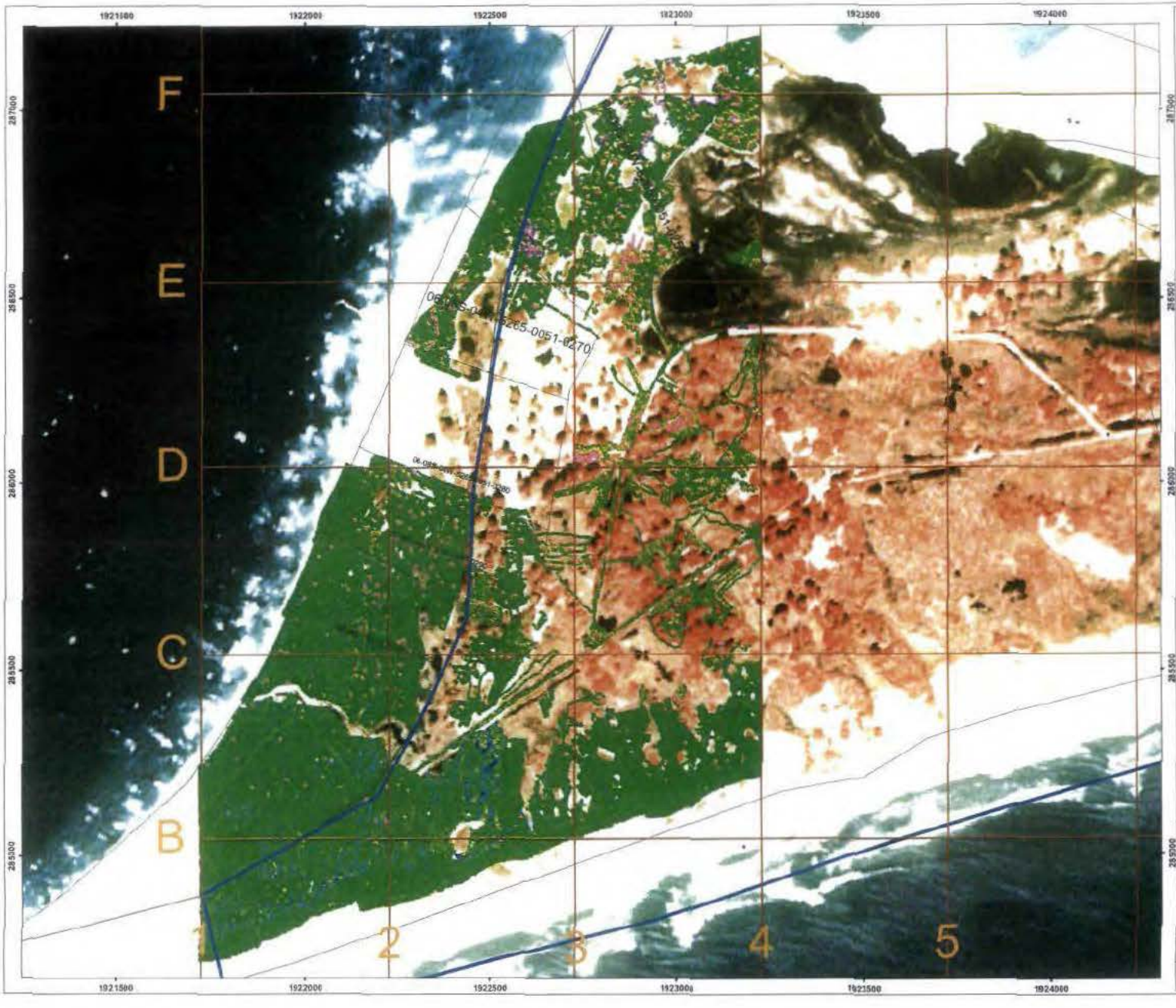


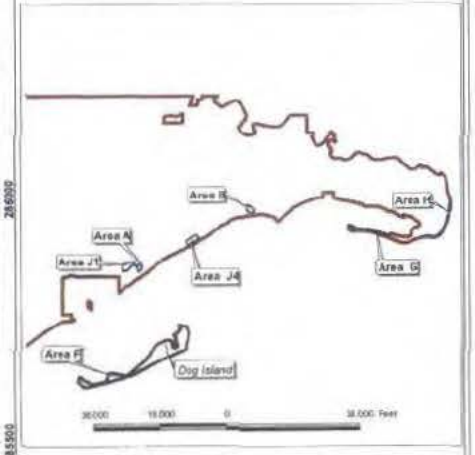

Figure 2.7

**Area F Geophysical Data (Western Portion) Dog Island**

Former Camp Gordon Johnston
Franklin County, Florida

LEGEND

- 500' x 500' Grid
- Parcel
- Area F Boundary




G858 and EM-61 MK2 Geophysical Data is presented in this map

Image Source: USGS 1995 orthophoto
Map Units: NAD 1983 Florida State Plane North (Feet)

200 100 0 200 Feet

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| DRAWN BY: BT | |
| CHECKED BY: JY | SCALE: As Shown — PROJECT NUMBER: 744368 |
| SUBMITTED BY: DS | DATE: March 2006 — PAGE NUMBER: |

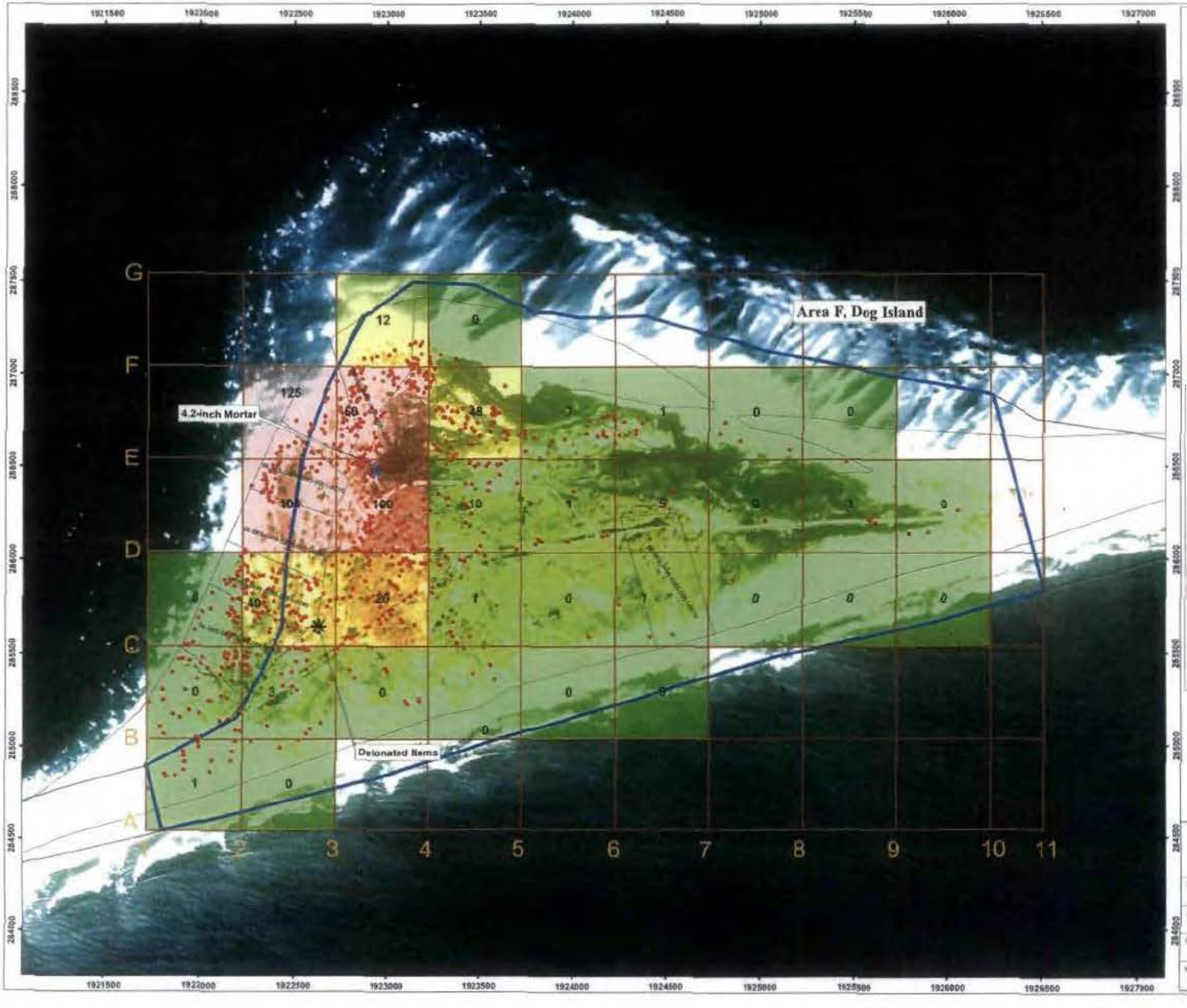


Figure 2.8

**Area F RA Findings**
**Dog Island**

*Former Camp Gordon Johnston*
Franklin County, Florida

LEGEND
- 4.2-inch Mortar from RA Investigation
- 4.2-inch Mortar from EE/CA Investigation
- Suspect Anomaly Location
- Parcel
- Area F Boundary

*Pounds of MD recovered*
- 0 - 10
- 10 - 50
- 50 - 200

Image Source: USGS 1995 orthophoto.
Map Units: NAD 1983 Florida State Plane North (Feet)

500 250 0 500 Feet

N

| | |
|---|---|
| PARSONS | U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER |
| BT | Area F RA Findings<br>Dog Island<br>Former Camp Gordon Johnston<br>Franklin County, Florida |
| BT | |
| JY | SCALE As Shown<br>PROJECT NUMBER 744368 |
| DS | DATE March 2008<br>PAGE NUMBER |

# CHAPTER 3
# DOCUMENTATION

## 3.1 INTRODUCTION

As part of the RA, extensive documentation was required for the day-to-day operations. All field operations and any correspondence related to the removal action were documented, and a copy was kept at the site office. Only management had access to the documents, which remained locked in the site office when unoccupied.

## 3.2 DAILY SAFETY BRIEFING AND DAILY FIELD REPORTS

Daily safety briefings were made by the Parsons UXOSO. Daily field reports written by the Parsons SM and the USA SUXOS recorded, in summary form, the project progress and events that occurred daily. The daily field reports prepared by the USA SUXOS and the Parsons SM are provided in Appendix G, respectively.

The Parsons daily field reports documented the weather, on-site personnel, and daily events. Detailed information was kept in the field SM logbook. Some of the items documented on the daily field reports included:

- Health and safety briefing
- Team composition, equipment, and assignments
- Visitors encountered
- Surface clearance investigation grids, UXO/MD recovered, and detonation details
- Grids that failed QC, passed QC, and passed QA
- Instrument malfunctions and remedies
- Work hours on site.

The USA daily field reports described the intrusive investigation activities and included:

- Work locations
- Weather
- Work summary
    - Work planned for the day

  - Work accomplished
  - Discrepancies
  - Inspection results
- Instructions received from customer representatives (Parsons)
- UXO summary
  - Type, quantity, location, and disposition of UXO discovered
  - Type and quantity of demolition supplies expended
  - Weight and type of scrap generated and disposed
- Personnel/equipment utilization summary
  - Number of personnel per job description
  - Number of hours worked
  - Equipment on-site
  - QC Effort
  - Other remarks.

## 3.3 USAESCH FORM 948

The Form 948s were filled out by USACE and provided to Parsons' personnel to convey information about QC, safety, work plan, and other issues. Primarily, the forms were filled out to document which grids passed QA and address other QA/QC concerns for RA activities. The USAESCH Form 948s are in Appendix F.

# CHAPTER 4
# TESTS

## 4.1 INTRODUCTION

No sampling of environmental media was included in Parsons' SOW for this RA project. As described in Chapter 2, one 4.2-inch mortar was identified as potentially containing explosives residue and was blown in place during the surface removal action for Area F. No MEC/MD items contained white phosphorous or chemical warfare material (CWM). After detonation of the 4.2-inch mortar, the post-detonation hole was cleared of all visible debris.

# CHAPTER 5
# FINANCIAL BREAKDOWN

## 5.1 INTRODUCTION

All field tasks associated with this RA were negotiated as firm fixed price. Therefore, the financial breakdown of the costs expended is not required, in accordance with DID OE-030, paragraph 10.3.7.

# CHAPTER 6
# SUMMARY

Parsons was contracted by USAESCH to perform an RA (surface clearance only) at Area F (Dog Island) within the former Camp Gordon Johnston, Florida. The RA was performed as a result of the EE/CA findings and recommendations (Parsons, 2002).

The areas of concern encompassed an estimated 158 contiguous acres on the island. Local land surveyors (certified in Florida) established grid networks across the site to aid in tracking progress. For the surface clearance of Area F, 500-foot-by 500-foot-grids (or partial grids) were used. Although extensive vegetation was present, no brush clearing was performed.

Parsons subcontracted USA Environmental, Inc. to assist in the RA operations. Surface clearance activities began on April 25, 2005 and were completed on May 17, 2005. A total of 509 pounds of MD and 166 pounds of non-MD were recovered during the investigation. The types of MD recovered are identified in Appendix E. One MPPEH item, a 4.2-inch mortar thought to have some remnants of explosive residue, was recovered and detonated during the RA.

Parsons performed a geophysical mapping investigation using both the EM61-MK2 and G-858 as part of the RA investigation. Geophysical mapping began with the EM61-MK2 on May 17, 2005 and lasted until June 16, 2005, with the remaining areas not being assessable due to dense vegetation. Resumption of the geophysical investigation began on November 7, 2005 using the G-858 magnetometer, which could be carried through the dense vegetation. Geophysical data collection was completed on November 23, 2005. Data from the mapping was processed and forwarded to the USACE Engineering and Support Center, Huntsville (CEHNC). Approximately 70 acres were mapped throughout Area F using the two instruments. No intrusive operations were planned based on the geophysical results.

Most MD recovered was in the northwest portion of the site (Figure 2.3), as determined based on the findings of the 2002 EE/CA and the 2005 RA. Similarly, most subsurface anomalies identified in the geophysical data also occur in the same region. In addition, historical records indicate the experimental firing of 4.2-inch HE mortars, white phosphorous mortars, and 4.5-inch rockets from landing crafts at an unspecified location on Dog Island. This evidence suggests that a firing range was located in this area. In addition to the MD found in Area F, one piece of unexploded ordnance was found again in the northwest portion of the site during the EE/CA; the item was destroyed. Based on this observation, more unexploded ordnance may exist on Dog Island. The RA findings also confirm that the southern and eastern regions of the site had no indication MEC/MD.

# CHAPTER 7
# REFERENCES

Parsons. 2003. *Final Explosives Safety Submission, Former Camp Gordon Johnston.* Prepared for U.S. Army Engineering and Support Center, Huntsville, March 2003.

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