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RECORD OF DECISION FOR OPERABLE UNIT 12 (OU 12) OLD GOLF COURSE NAS CECIL FIELD FL

7/24/2002

TETRA TECH NUS INC

Record Of Decision
Operable Unit 12
Old Golf Course

Naval Air Station Cecil Field

Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 0226

July 2002

050202/P

RECORD OF DECISION
OPERABLE UNIT 12
OLD GOLF COURSE

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
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CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0226

JULY 2002

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CERTIFICATION OF TECHNICAL
DATA CONFORMITY

The Contractor, Tetra Tech NUS, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-94-D-0888 are complete and accurate and comply with all requirements of this contract.

DATE: July 24, 2002

COMPANY CERTIFICATION AUTHORIZATION NUMBER: 7988
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LIST OF ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
ARAR	Applicable or relevant and appropriate requirement
BCT	BRAC Cleanup Team
bgs	Below ground surface
BRA	Baseline Risk Assessment
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
COC	Chemical of concern
EBS	Environmental Baseline Survey
EE	Envirodyne Engineers
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FFA	Federal Facility Agreement
FS	Feasibility Study
GCTL	Groundwater Cleanup Target Level (FDEP's)
G&M	Geraghty and Miller, Inc.
HLA	Harding Lawson Associates
HSWA	Hazardous and Solid Waste Amendments
IAS	Initial Assessment Study
IBDS	Inorganic Background Data Set
IR	Installation Restoration
IRA	Interim Removal Action
LUC	Land use control
MB3	Main Base Area 3
mg/kg	Milligram(s) per kilogram
NAS	Naval Air Station
Navy	Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No further action
NFF	North Fuel Farm
NPL	National Priorities List
OGC	Old Golf Course

OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PRE	Preliminary risk evaluation
PRG	Preliminary remedial goal
PSC	Potential Source of Contamination
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
SAOR	Sampling and Analysis Outline and Report
SAR	Sampling and Analysis Report
SARA	Superfund Amendments and Reauthorization Act
SCTL	Soil Cleanup Target Level (FDEP's)
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
TtNUS	Tetra Tech NUS, Inc.
UCL	Upper confidence level
U.S. EPA	United States Environmental Protection Agency
yd^3	Cubic yard(s)

1.0 DECLARATION OF THE RECORD OF DECISION

1.1 SITE NAME AND LOCATION

Operable Unit (OU) 12, the Old Golf Course (OGC) consists of the contaminated soil identified at the location of a former golf course that was operated prior to 1946 at Naval Air Station (NAS) Cecil Field, Jacksonville, Florida (U.S. EPA ID FL5 170 022 474). The OGC is located in the northern portion of the Main Base.

1.2 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedial action for OU 12, the Old Golf Course at NAS Cecil Field. The remedial action was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Community Environmental Response Facilitation Act (CERFA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) [40 Code of Federal Regulations (CFR) 300]. This decision document was prepared in accordance with Section 8.0 of the United States Environmental Protection Agency (U.S. EPA) final guidance for the preparation of decision documents (U.S. EPA, 1999).

The U.S. EPA and the Florida Department of Environmental Protection (FDEP) concur with the selected remedy.

1.3 DESCRIPTION OF THE SELECTED REMEDY

This ROD is the final action for OU 12, OGC. Final RODs have been approved for OU 1 through OU 4; OU 5, Site 14; OU 6 through OU 8; and OU 9, Sites 36 and 37. A Remedial Investigation (RI), Baseline Risk Assessment (BRA), and Feasibility Study (FS) have been prepared for OU 5, Site 15 but the FS is currently being re-evaluated. RI and FS reports have been completed for OU 11, Site 45, and decision documents are being prepared for that site. An Action Memorandum is being prepared for OU 5, Site 49. RI and FS reports are in progress for OU 9, Sites 57 and 58; OU 10, Site 21; and OU 10, Site 25. Interim Removal Actions (IRAs) have been completed for OU 12, Sites 32, 42, 44, and OGC, and decisions documents are being prepared for these sites.

The NAS Cecil Field Base Realignment and Closure (BRAC) Cleanup Team (BCT) have agreed that no further action (NFA) is required to protect human health and the environment at OU 12, OGC. Consequently, no active remediation or long-term monitoring will be conducted at OU 12, OGC.

1.4 STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, is cost effective, and complies with Federal and State applicable or relevant and appropriate requirements (ARARs). The previous IRA at OU 12, OGC has eliminated the need for further action at that site. Because no contaminant remains on site, 5-year reviews of the site are not required.

1.5 SIGNATURE AND SUPPORT AGENCY ACCEPTANCE OF REMEDY

Scott A. Glass, P.E.
Base Realignment and Closure
Environmental Coordinator

7/26/02
Date

Richard D. Green
Director, Waste Management Division
U.S. EPA Region IV

9/26/02
Date

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION

NAS Cecil Field (U.S. EPA ID No. FL5 170 022 474) is located 14 miles southwest of Jacksonville, Florida, as shown on Figure 2-1. The majority of NAS Cecil Field is located within Duval County and the southernmost part of the facility is located in Clay County. NAS Cecil Field was established in 1941 and provided facilities, services, and material support for the operation and maintenance of naval weapons, aircraft, and other units of the operation forces as designated by the Chief of Naval Operations. Since the closure of NAS Cecil Field in September 1999, most of the facility has been transferred to the Jacksonville Airport Authority (formerly the Jacksonville Port Authority) and the City of Jacksonville. According to the reuse plan, the facility will have multiple uses but will be used primarily for aviation-related activities.

OU 12, OGC consists of the contaminated soil identified at the location of a former golf course that was operated at the NAS prior to 1946. As shown on Figure 2-2, OGC is located in the northern portion of the Main Base and occupies the area bounded by New World Avenue (formerly D Avenue) on the east, Lake Newman Street (formerly 6th Street) on the north, Lake Fretwell Street (formerly 4th Street) on the south, and Residence Avenue (formerly G Avenue) on the west. The eastern one-third of the OGC is occupied by Building 331 (Bachelor Officer Quarters), Building 800 (Memorial Chapel), and Building 808 (Dispensary/Dental Clinic) (see Figure 2-2). The OGC was identified from historic aerial photographs, as shown in Figure 2-3. The eastern portion was reworked during the construction of buildings and parking lots. The remainder of the site has not significantly changed since its use as a golf course and is overgrown with vegetation.

Soil contaminated with arsenic was delineated (TtNUS, 2001) and excavated to background (residential) levels and disposed off site as part of an IRA in August 2000 (CH2M Hill, 2001).

The name of the site has been changed over the course of its investigation. In January 1999, following the Environmental Baseline Survey (EBS) (ABB-ES, 1994) and Sampling and Analysis Outline and Report (SAOR) (HLA, 1998a), the site, which was previously referred to as Main Base Area 3 (MB3), was re-designated as OGC. In May 2001, following additional investigations and the IRA, the BCT re-designated OGC as an Installation Restoration (IR) site within OU 12.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The first environmental studies for the investigation of waste handling and/or disposal sites at NAS Cecil Field were conducted between 1983 (G&M, 1983) and 1985 (G&M, 1985). These studies were followed in 1985 by an Initial Assessment Study (IAS) (EE, 1985). A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was completed in 1988 (HLA, 1988).

NAS Cecil Field was placed on the National Priorities List (NPL) by the U.S. EPA and the Office of Management and Budget in December 1989. A Federal Facility Agreement (FFA) for NAS Cecil Field was signed by the FDEP, U.S. EPA, and the Navy in 1990. Since the listing of NAS Cecil Field on the NPL and the signing of the FFA, remedial response activities at the facility have been completed under CERCLA authority. OU 12 is one of 12 OUs that have been identified. A Hazardous and Solid Waste Amendments (HSWA) permit was issued on October 13, 1996. The HSWA permit was renewed on August 25, 2000 and is still in effect. Since the State of Florida has now final authorization to administer the RCRA program, the Navy is currently in the process of applying for a new permit with FDEP.

2.2.1 Old Golf Course History

No specific documented historic information is available about the OGC. Based on historic aerial photographs, however, the OGC appears to have been constructed in the early 1940s and operated until 1946, when the current golf course was constructed (ABB-ES, 1994). Building 331 was constructed in 1957, Building 800 was constructed in 1965, and Building 808 was constructed in 1976. The railroad spur that served Building 68 passed through the southeastern corner of the OGC, south of Building 331. The railroad tracks were removed in 1986. Figure 2-3 shows the current site arrangement superimposed on an old aerial photograph.

2.2.2 Site Investigations

The following investigations and studies have been conducted in and around the OGC:

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- 1994 - 1998 — During the BRAC EBS, the OGC was identified as Main Base Area 3 (MB3) and classified as Grey (ABB-ES, 1994). MB3 and Buildings 331, 800, and 808 were initially evaluated during the EBS and were identified as grey sites requiring additional evaluation. ABB-ES conducted a Phase II Sampling and Analysis program for MB3 in 1997. The results of the investigation were presented in the SAOR for MB3 (HLA, 1998a). No Sampling and Analysis Reports (SARs) were required for Buildings 331, 800, and 808 based on the activities in the buildings. The investigation at MB3 included the collection of one soil sample; the sample contained 4,4'-DDE and 4,4'-DDT at

concentrations below the FDEP residential Soil Cleanup Target Levels (SCTLs) (FDEP, 1999). The SAOR recommended no further action at MB3.

- 1999 - 2000 — In late 1999, the BCT reconsidered the status of the OGC and determined that additional investigation was required at the former locations of tee boxes and greens. As shown on Figures 2-4 and 2-5, 71 soil samples were collected and analyzed over 4 sampling events from November 1999 through May 2000 (TtNUS, 1999 and 2000a) to identify chemicals of concern (COCs) for soil, to establish preliminary remedial goals (PRGs), and to delineate COC contamination in the surface soil. As a result of these investigations, it was determined that arsenic, which was detected at concentrations in excess of the 2.04 mg/kg site-specific NAS Cecil Field Inorganic Background Data Set (IBDS) value (HLA, 1998b), was the only COC. No groundwater investigation was deemed to be necessary because all arsenic concentrations in the soil were less than the FDEP SCTL for leachability to groundwater (FDEP, 1999).

- 2000 — Old Golf Course Action Memorandum. An Action Memorandum for OGC was prepared in July 2000 to identify the need for an IRA, to present the proposed IRA to be conducted, and to estimate the cost for the removal action (TtNUS, 2000b). The proposed IRA included the excavation and off-site disposal of arsenic-contaminated soils in excess of PRGs in a time-critical manner. This IRA would allow for unrestricted site use.

- 2000 — IRA. During August 2000, 297 cubic yards (yd^3) (483 tons) of soil were excavated from two areas of contamination (CH2M Hill, 2001). The depth of the excavations was 1 to 2 feet below ground surface (bgs). Prior to excavation, the soil was characterized for disposal. Following excavation, the soil was transported and disposed off site on the same day that the removal occurred. The excavation was then backfilled with certified clean fill before it was graded and seeded.

- 2001 — Based on the extent of soil contamination found during the field investigations, OGC was moved into the CERCLA program, re-designated as an Installation Restoration (IR) site and grouped into OU 12. A Technical Memorandum for No Further Action (NFA) was prepared in August 2001. This document summarized the results of previous investigations, discussed the additional investigations, and described the nature and extent of contamination (TtNUS, 2001). It also presented human health and ecological preliminary risk evaluations (PREs), summarized the IRA, and recommended that the OGC be designated an NFA site.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Public notice of the availability of the Proposed Plan (TtNUS, 2002) was placed in the Metro section of the *Florida Times-Union* on June 7, 2002. A 30-day comment period was held from June 7 through July 7,

2002. The results of the Technical Memorandum for No Further Action (TtNUS, 2001) and PRE were also presented and discussed at a Restoration Advisory Board (RAB) meeting held in July 2002, at which time comments were solicited from the community. No public comments have been received.

Documents pertaining to OU 12, OGC are available to the public at the Information Repository located at Building 907, 13357 Lake Newman Street, Cecil Commerce Center, Jacksonville, Florida 32252 (Telephone 904-573-0336). This ROD will become part of the Administrative Record File [NCP §300.825(a)(2)].

2.4 SCOPE AND ROLE OF OPERABLE UNIT

The environmental concerns at NAS Cecil Field are complex. As a result, work at the 24 sites in the IR Program has been organized into 12 OUs. More than 200 other areas are undergoing evaluation in the BRAC and petroleum programs.

This ROD is the final action for OU 12, OGC. Final RODs have been approved for OU1 through OU 4; OU 5, Site 14; OU 6 through OU 8; and OU 9, Sites 36 and 37. An RI, BRA, and FS have also been prepared for OU 5, Site 15 but the FS is currently being re-evaluated. RI and FS reports are currently in progress for OU 9, Sites 57 and 58, and OU 10, Sites 21 and 25. RI and FS reports have been completed for OU 11, Site 45, and decision documents are being prepared for that site. An Action Memorandum is being prepared for OU 5, Site 49. IRAs have been completed for OU 12, Sites 32, 42, 44, and OGC and decision documents are being prepared for these sites, including this ROD.

2.5 SUMMARY OF SITE CHARACTERISTICS

The contaminant sources, detected concentrations, fate and transport, contaminated media, and geologic and hydrogeologic conditions of OU 12, OGC are discussed in Sections 2.0, 5.0, and 6.0 of the OU 12, Old Golf Course Technical Memorandum for No Further Action (TtNUS, 2001). The characteristics of the site are summarized in the following paragraphs.

2.5.1 Geology and Hydrogeology

The OGC is located in the vicinity of the Golf Course Pesticide Disposal Area (OU 6, Site 11). Although no site-specific subsurface investigation was performed at the OGC, the geological and hydrogeological characteristics of the site are similar to those described in the RI Report for OU 6, Site 11 (ABB-ES, 1997).

2.5.2 Nature and Extent of Contamination

Table 2-1 presents a summary of the soil analytical data for the four sampling events that occurred between November 1999 and May 2000, and Figures 2-4 and 2-5 show the sampling locations. As shown on Table 2-1, during the first sampling event (Phase I of the investigation), arsenic was detected in four of 12 samples at concentrations greater than the NAS Cecil Field site-specific IBDS value of 2.04 milligrams per kilogram (mg/kg) (HLA, 1998b). The IBDS value becomes the default cleanup value because the residential direct exposure SCTL for arsenic is less than the background (IBDS) value. No pesticides exceeded their respective SCTLs, therefore arsenic was identified as the only soil COC.

The remainder of Table 2-1 summarizes the analytical data from Phases II through IV of the soil investigation that were performed to further delineate the extent of arsenic contamination. As shown on the table, arsenic was detected in 19 of 59 samples at concentrations greater than the NAS Cecil Field site-specific IBDS value.

A statistical evaluation was conducted to determine the areas of soil requiring removal so that the site-wide 95-percent upper confidence level (UCL) of the remaining concentrations of arsenic is equal to or less than 2.04 mg/kg. The results of this statistical evaluation are presented in the Action Memorandum for the Old Golf Course (TtNUS, 2000b). Five separate areas were identified as having at least one soil sample exceeding 2.04 mg/kg. However, the entire data set for each area was used to determine whether a post-excavation exposure concentration would be less than the IBDS value; as a result, three of the five areas did not require remediation. The remaining two areas, totaling 4,965 square feet (ft^2) were identified as requiring removal to a depth 1 to 2 feet bgs (TtNUS, 2000b).

An IRA was conducted in August 2000 (CH2M Hill, 2001). During this removal action, approximately 483 tons of soil were excavated and disposed off site so that the 95-percent UCL of the residual concentrations of arsenic in soil was equal to or less than 2.04 mg/kg. Areas of excavation are illustrated on Figure 2-5. Excavated areas were backfilled with certified clean fill material brought in from the NAS Cecil Field North Fuel Farm (NFF).

As part of the Technical Memorandum for No Further Action (TtNUS, 2001), a statistical analysis was performed to predict post-IRA soil analytical data, including minimum and maximum detected concentrations, and 95-percent UCL of detected concentrations of arsenic. To predict arsenic concentrations in the excavated and backfilled areas, it was assumed that the concentration of arsenic in the clean fill was equal to 0.5 mg/kg or one-half the detection limit. As summarized on Table 2-2, the results of this statistical analysis showed that the 95-percent UCL of remaining concentrations of arsenic have been reduced below the NAS Cecil Field Site-Specific IBDS value of 2.04 mg/kg.

2.6 CURRENT AND POTENTIAL FUTURE SITE USES

Currently, the OGC area includes both commercial and undeveloped uses. According to the reuse plan, this area will be used for offices and parks.

2.7 SUMMARY OF SITE RISKS

2.7.1 Human Health Risk Assessment

The results of pre-IRA soil investigations at OGC identified arsenic as the lone human health COC. Because the residential exposure SCTL for arsenic is less than the background value for arsenic (IBDS value), the cleanup criteria for arsenic defaults to the IBDS value. However, as summarized on Table 2-2, a statistical analysis of post-IRA soil analytical data showed that the 95-percent UCL of remaining concentrations of arsenic is lower than the NAS Cecil Field site-specific IBDS value for arsenic. In addition, because pre-IRA soil data at the OGC indicated that there were no areas of soil with arsenic concentrations greater than the FDEP SCTL for leachability to groundwater, there is no threat of future groundwater contamination. Therefore, there is no longer any unacceptable human health risk associated with the OGC.

2.7.2 Ecological Risk Assessment

Most of the site is wooded and consists of pine flatwoods habitat. As such, the site provides habitat for a variety of birds, mammals, reptiles, and invertebrates. However, soils were excavated in areas where arsenic concentrations were elevated. Arsenic concentrations in all remaining samples are less than 10 mg/kg, which is the EPA Region IV ecological screening value for arsenic (U.S. EPA, 2000). Therefore, based on the samples collected and remedial activities conducted at the site, arsenic poses negligible risks to ecological receptors at the site.

2.8 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for OU 12, Old Golf Course (TtNUS, 2002) was released for public comment on June 7, 2002. The Proposed Plan identified NFA as the preferred remedy. The public was invited to comment during a 30-day period extending from June 7 to July 7, 2002. No public comments were received during this period and no changes to the proposed remedy, as originally identified in the Proposed Plan, have been made.

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE I / NOVEMBER 1999								
				CEF-OGC-								
		Residential Direct Exposure	Leachability to Groundwater	SS-001 0-1 ft	SS-001 (DUP) 0-1 ft	SS-002 0-1 ft	SS-003 0-1 ft	SS-004 0-1 ft	SS-004 (DUP) 0-1 ft	SS-005 0-1 ft	SS-006 0-1 ft	SS-007 0-1 ft
Pesticides/PCBs (µg/kg)												
4-4'-DDD	NC	4600	4000	1.6	1.6J	2.8	3.7U	1.6J	1.1J	3.6U	2.4J	3.5
4-4'-DDE	NC	3300	18000	2	1.8J	5.8	3.7U	2.7J	2.4J	3.6U	4.7	24.9
4-4'-DDT	NC	3300	11000	3.3	2.9J	6.5	3.7U	2.5J	2.2J	3.6U	4.9J	19.2J
Alpha-Chlordane	NC	3100	9600	3.8U	3.7U	3.7U	3.7U	3.6	3.6	3.6U	2.9J	2.6J
Gamma-Chlordane	NC	3100	9600	3.8U	3.7U	3.7U	3.7U	2.7J	2.3J	3.6U	2.7J	2J
Heptachlor Epoxide	NC	100	600	1.9U	1.9U	1.8U	1.8U	1.8U	1.8U	1.8U	1.8U	1.8U
Inorganics (mg/kg)												
Arsenic	2.04	0.8	29	1.6U	1.3U	1.6U	0.55U	**4.6**	1.0U	**13.6**	3.2U	1.2U

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE I / NOVEMBER 1999					PHASE II / JANUARY 2000		
				CEF-OGC-					CEF-OGC-		
		Residential Direct Exposure	Leachability to Groundwater	SS-008 0-1 ft	SS-009 0-1 ft	SS-010 0-1 ft	SS-011 0-1 ft	SS-012 0-1 ft	SS-101 1-2 ft	SS-102 0-1 ft	SS-103 0-1 ft
Pesticides/PCBs (μg/kg)											
4-4'-DDD	NC	4600	4000	1.3J	71U	23.4J	3.6U	3.6U	NA	NA	NA
4-4'-DDE	NC	3300	18000	4.6	172	149	1.6J	3.6U	NA	NA	NA
4-4'-DDT	NC	3300	11000	3.2J	160	112J	1.6J	3.6U	NA	NA	NA
Alpha-Chlordane	NC	3100	9600	3.5U	564	176	3.6U	3.6U	NA	NA	NA
Gamma-Chlordane	NC	3100	9600	3.5U	310	89.6	3.6U	3.6U	NA	NA	NA
Heptachlor Epoxide	NC	100	600	1.7U	44.8	13.4J	1.8U	1.8U	NA	NA	NA
Inorganics (mg/kg)											
Arsenic	2.04	0.8	29	0.66U	**11.8**	**3.5**	0.54U	0.38U	0.38U	1.5	2

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE II / JANUARY 2000							
				CEF-OGC-							
		Residential Direct Exposure	Leachability to Groundwater	SS-104 0-1 ft	SS-105 1-2 ft	SS-106 0-1 ft	SS-107 0-1 ft	SS-108 0-1 ft	SS-109 0-1 ft	SS-110 0-1 ft	SS-111 0-1 ft
Pesticides/PCBs (μg/kg)											
4-4'-DDD	NC	4600	4000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	NC	3300	18000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDT	NC	3300	11000	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NC	100	600	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)											
Arsenic	2.04	0.8	29	0.93	**11.9**	**5.6**	**20.3**	**2.2**	**4.2**	0.39U	**2.2**

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE II / JANUARY 2000							
				CEF-OGC-							
		Residential Direct Exposure	Leachability to Groundwater	SS-112 1-2 ft	SS-113 0-1 ft	SS-114 0-1 ft	SS-115 0-1 ft	SS-116 0-1 ft	SS-117 0-1 ft	SS-118 0-1 ft	SS-119 0-1 ft
Pesticides/PCBs (μg/kg)											
4-4'-DDD	NC	4600	4000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	NC	3300	18000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDT	NC	3300	11000	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NC	100	600	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)											
Arsenic	2.04	0.8	29	1.1	**4**	**3.4**	**3.8**	**11.5**	**5**	**14.5**	1.4

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE II / JANUARY 2000							
				CEF-OGC-							
		Residential Direct Exposure	Leachability to Groundwater	SS-120 0-1 ft	SS-121 0-1 ft	SS-122 0-1 ft	SS-123 0-1 ft	SS-124 0-1 ft	SS-125 0-1 ft	SS-126 0-1 ft	SS-127 0-1 ft
Pesticides/PCBs (μg/kg)											
4-4'-DDD	NC	4600	4000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	NC	3300	18000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDT	NC	3300	11000	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NC	100	600	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)											
Arsenic	2.04	0.8	29	**3.3**	0.81	0.76	**2.5**	0.86	0.38U	0.35U	**4.1**

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE III / MARCH 2000								
				CEF-OGC-								
		Residential Direct Exposure	Leachability to Groundwater	SS-201 0-1 ft	SS-202 0-1 ft	SS-203 0-1 ft	SS-203 (DUP) 0-1 ft	SS-204 0-1 ft	SS-205 1-2 ft	SS-206 0-1 ft	SS-207 0-1 ft	SS-208 0-1 ft
Pesticides/PCBs (µg/kg)												
4-4'-DDD	NC	4600	4000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	NC	3300	18000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDT	NC	3300	11000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NC	100	600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)												
Arsenic	2.04	0.8	29	0.59U	0.88U	0.69U	0.38U	0.63U	0.7U	0.66U	0.36U	0.49U

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE III / MARCH 2000							
				CEF-OGC-							
		Residential Direct Exposure	Leachability to Groundwater	SS-208 (DUP) 0-1 ft	SS-209 0-1 ft	SS-210 0-1 ft	SS-211 0-1 ft	SS-212 0-1 ft	SS-213 0-1 ft	SS-214 0-1 ft	SS-215 0-1 ft
Pesticides/PCBs (μg/kg)											
4-4'-DDD	NC	4600	4000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	NC	3300	18000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDT	NC	3300	11000	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NC	100	600	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)											
Arsenic	2.04	0.8	29	0.99U	**5.2**	0.37U	0.37U	0.36U	0.49U	0.69U	1.6U

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE III / MARCH 2000							
				CEF-OGC-							
		Residential Direct Exposure	Leachability to Groundwater	SS-216 0-1 ft	SS-217 0-1 ft	SS-218 0-1 ft	SS-219 0-1 ft	SS-220 0-1 ft	SS-221 0-1 ft	SS-222 0-1 ft	SU-223 2-3 ft
Pesticides/PCBs (μg/kg)											
4-4'-DDD	NC	4600	4000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	NC	3300	18000	NA	NA	NA	NA	NA	NA	NA	NA
4-4'-DDT	NC	3300	11000	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NC	100	600	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)											
Arsenic	2.04	0.8	29	**23.3**	2.3U	0.36U	0.44U	3.7U	1.8U	**4.3**	0.35U

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE III / MARCH 2000			PHASE IV / MAY 2000			
				CEF-OGC-			CEF-OGC-			
		Residential Direct Exposure	Leachability to Groundwater	SS-224 1-2 ft	SS-225 1-2 ft	SS-226 1-2 ft	SS-301 0-1 ft	SS-302 0-1 ft	SS-303 0-1 ft	SS-303 (DUP) 0-1 ft
Pesticides/PCBs (μg/kg)										
4-4'-DDD	NC	4600	4000	NA	NA	NA	NA	NA	NA	NA
4-4'-DDE	NC	3300	18000	NA	NA	NA	NA	NA	NA	NA
4-4'-DDT	NC	3300	11000	NA	NA	NA	NA	NA	NA	NA
Alpha-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	NC	3100	9600	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NC	100	600	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)										
Arsenic	2.04	0.8	29	0.55U	0.42U	0.52U	0.37U	0.36U	0.35U	0.36U

TABLE 2-1

PRE-IRA SOIL ANALYTICAL DATA
OPERABLE UNIT 12, OLD GOLF COURSE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	Inorganic Background Data Set Levels[1]	FDEP SCTLs[2]		PHASE IV / MAY 2000		
				CEF-OGC-		
		Residential Direct Exposure	Leachability to Groundwater	SS-304 1-2 ft	SS-305 1-2 ft	SS-306 2-3 ft
Pesticides/PCBs (µg/kg)						
4-4'-DDD	NC	4600	4000	NA	NA	NA
4-4'-DDE	NC	3300	18000	NA	NA	NA
4-4'-DDT	NC	3300	11000	NA	NA	NA
Alpha-Chlordane	NC	3100	9600	NA	NA	NA
Gamma-Chlordane	NC	3100	9600	NA	NA	NA
Heptachlor Epoxide	NC	100	600	NA	NA	NA
Inorganics (mg/kg)						
Arsenic	2.04	0.8	29	1.9U	**5.8**	1U

NOTES:
Only detected analytes are reported.
J - Positive result is estimated as a result of a value below the Contract Required Quantitation Limit (CRQL) or a technical noncompliance.
NA - Not Analyzed.
NC - No Criterion.
ND - Not Detected.
U - Not detected at the indicated analytical detection limit.
1 NAS Cecil Field Inorganic Background Data Set (HLA, 1998b).
2 Florida Soil Cleanup Target Level, (SCTL) (FDEP, 1999).
Analyte concentration must be greater than NAS Cecil Field background concentrations to be considered an exceedance.

TABLE 2-2

SUMMARY OF POST-IRA SOIL ANALYTICAL DATA
OU 12, OLD GOLF COURSE
RECORD OF DECISION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Chemical	Minimum Detected Concentration	Maximum Detected Concentration	95-Percent UCL[1] Concentration	FDEP Leachability SCTL[2]	NAS Cecil Field Site-Specific IBDS[3]
Arsenic (mg/kg)					
Area 1	0.30	3.3	1.1	29	2.04
Area 2	0.28	4.6	2.0	29	2.04
Area 3	0.32	2.5	0.8	29	2.04
Area 4	0.18	5.6	1.4	29	2.04
Area 5	0.22	3.8	1.6	29	2.04

NOTES:
mg/kg Milligrams per kilogram.
1 95-percent upper confidence level of detected concentrations.
2 Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Levels (SCTLs) (FDEP, 1999).
3 Inorganic Background Data Set (HLA, 1998b).

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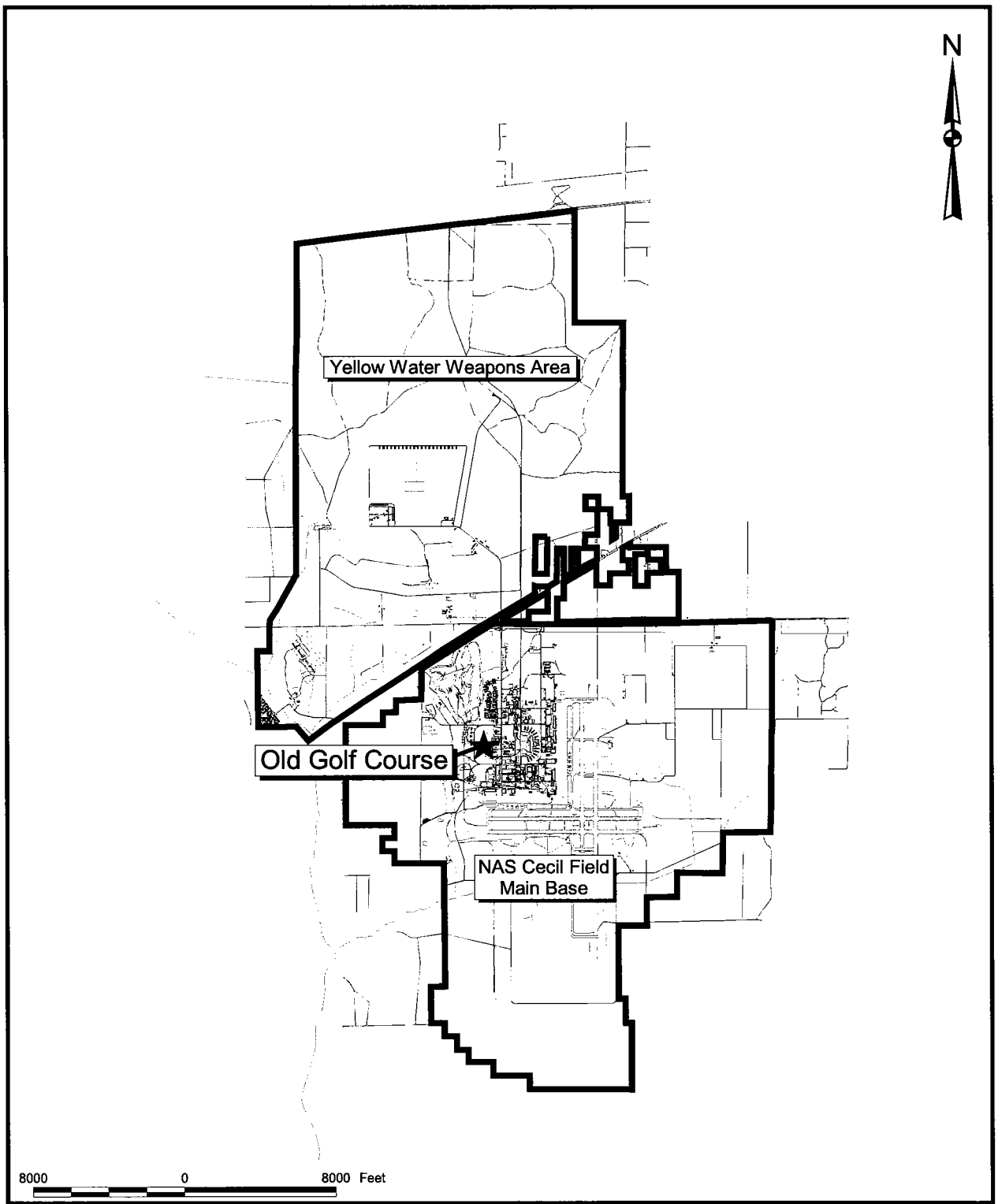
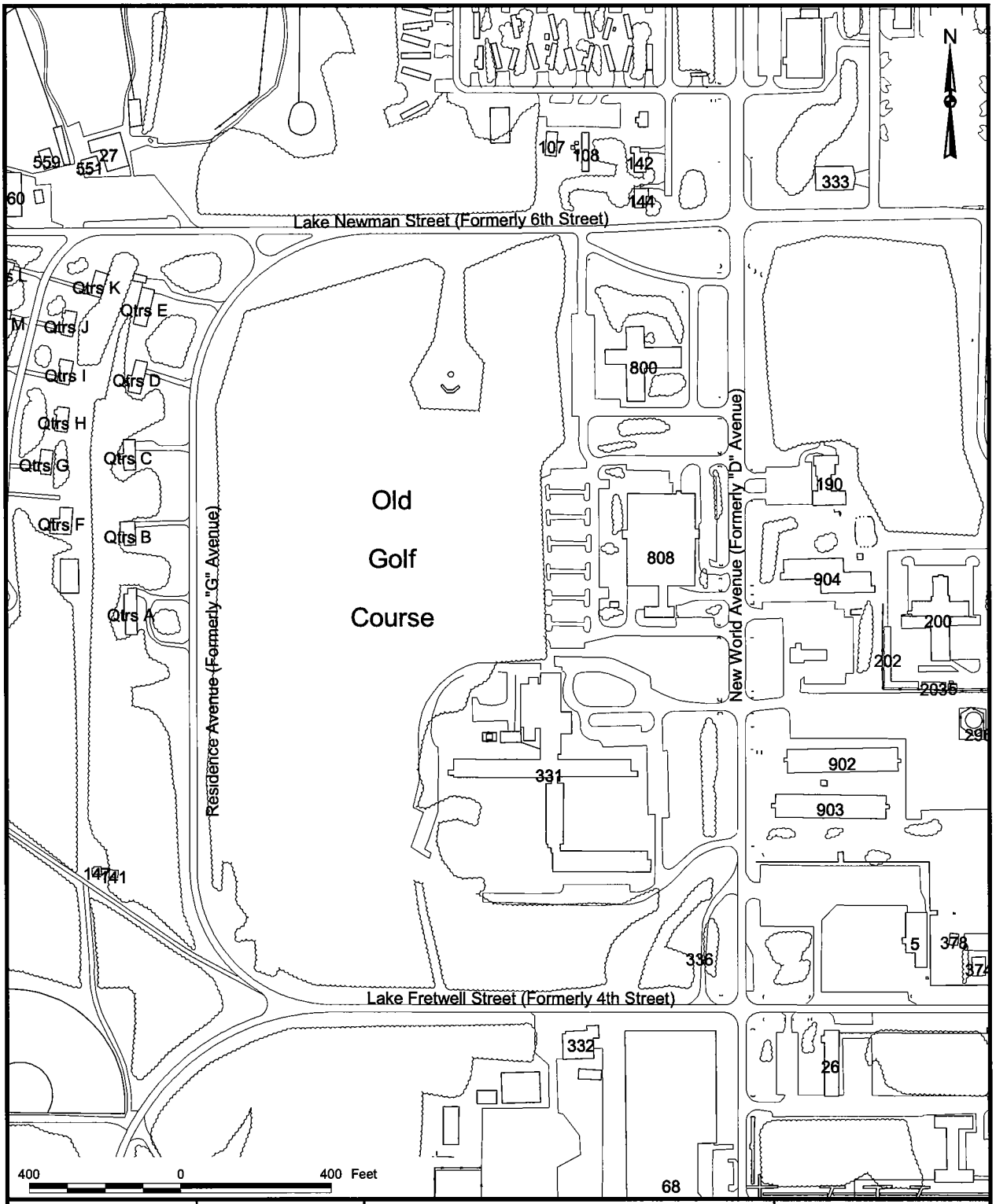


DRAWN BY MJJ	DATE 02May02	GENERAL LOCATION MAP OU12, OLD GOLF COURSE RECORD OF DECISION NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 0226
CHECKED BY	DATE		APPROVED BY DATE 07/26/02
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2-1 / REV 0

P:\GIS\NAS_CecilField\OGC_ROD.apr 02May02 MJJ Site Location Map Layout



DRAWN BY	DATE
MJJ	02May02
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	

SITE LAYOUT MAP
OU12, OLD GOLF COURSE
RECORD OF DECISION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

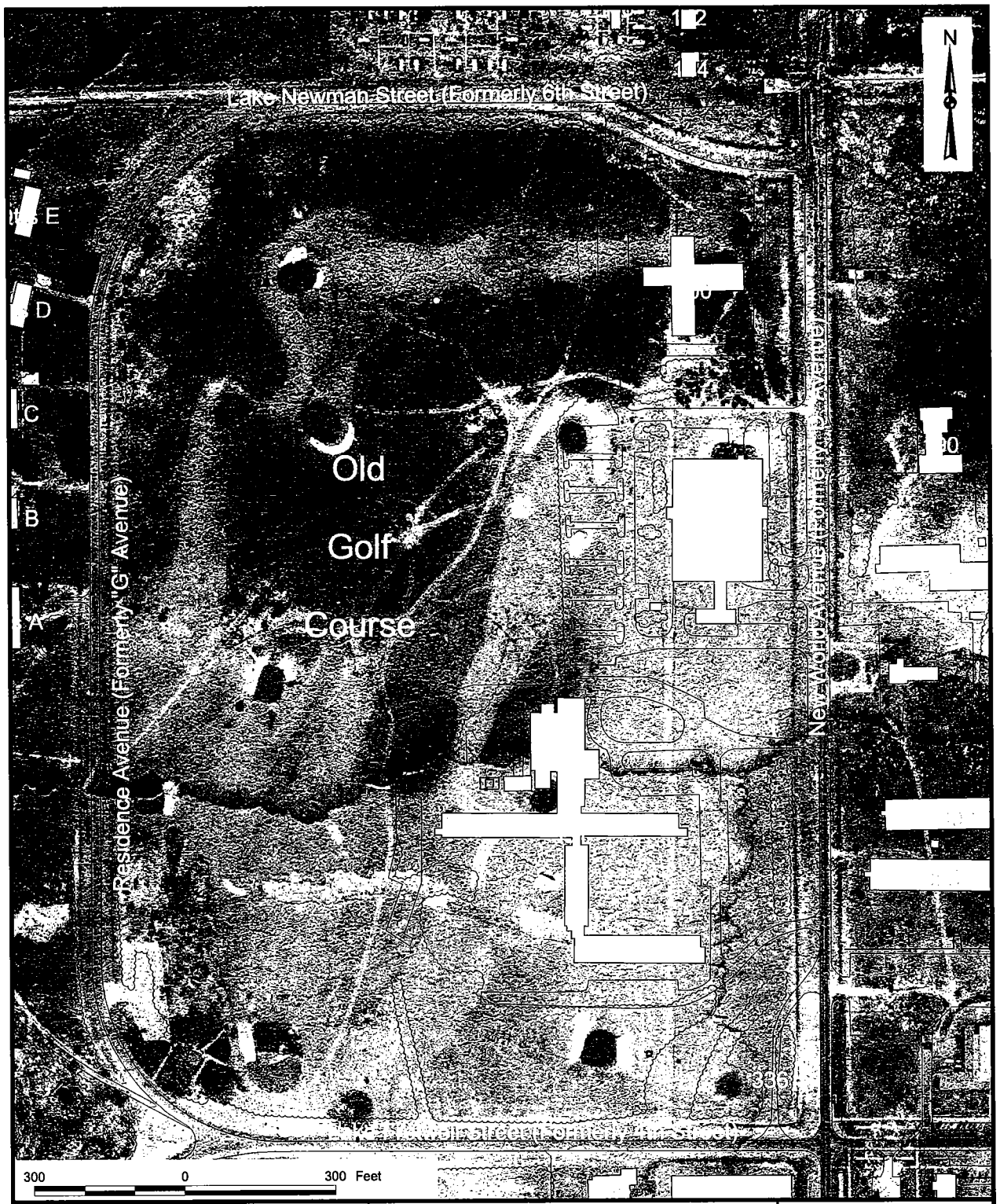
CONTRACT NUMBER 0226

APPROVED BY — DATE 07/26/02

APPROVED BY — DATE

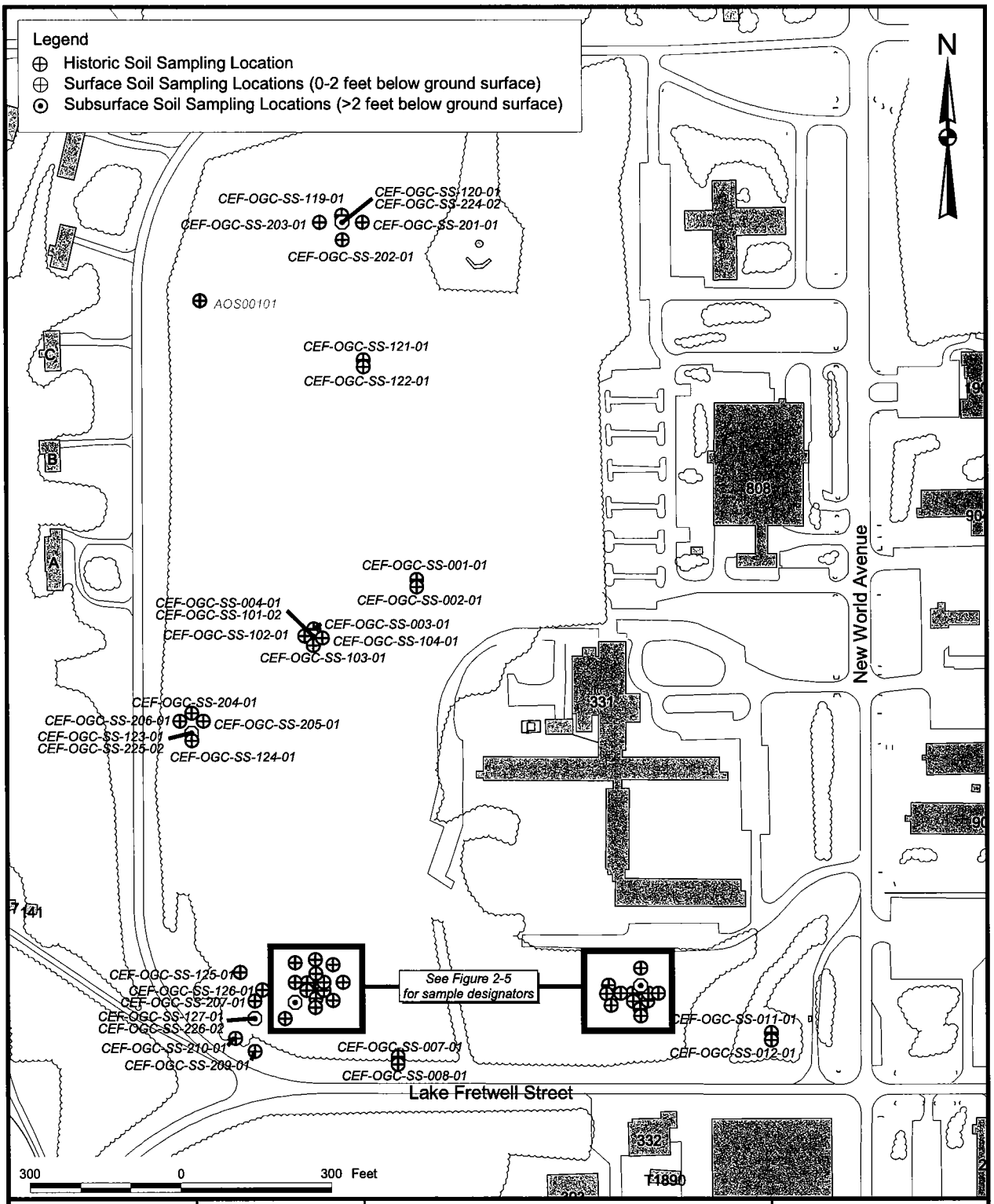
DRAWING NO. FIGURE 2-2 — REV 0

P:\GIS\NAS_CecilField\OGC_ROD.apr 02May02 MJJ Facility Location Layout



DRAWN BY MJJ	DATE 02May02	CURRENT (OUTLINE) AND HISTORIC (AERIAL PHOTOGRAPH) CONDITIONS OU12, OLD GOLF COURSE RECORD OF DECISION NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 0226
CHECKED BY	DATE		APPROVED BY DATE 07/26/02
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2-3 REV 0

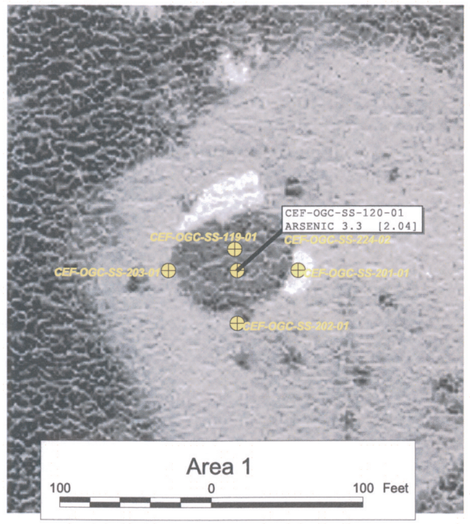
P:\GIS\NAS_CecilField\OGC_ROD.apr 02May02 MJJ Facility Location Layout

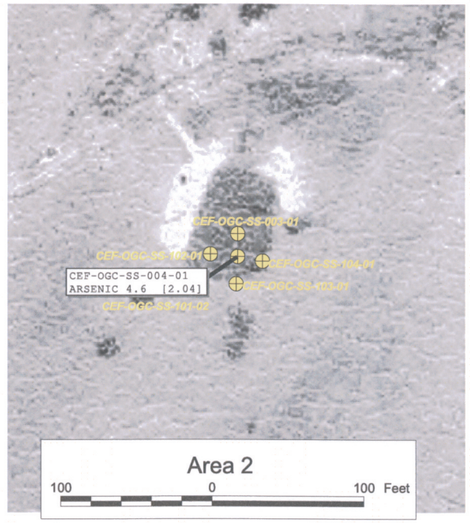


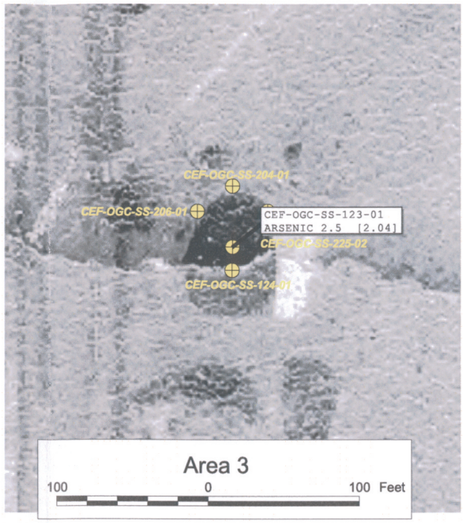
DRAWN BY MJJ	DATE 02May02	SAMPLE LOCATIONS MAP OU12, OLD GOLF COURSE RECORD OF DECISION NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 0226
CHECKED BY	DATE		APPROVED BY / DATE 07/26/02
COST/SCHEDULE-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2-4 / REV 0

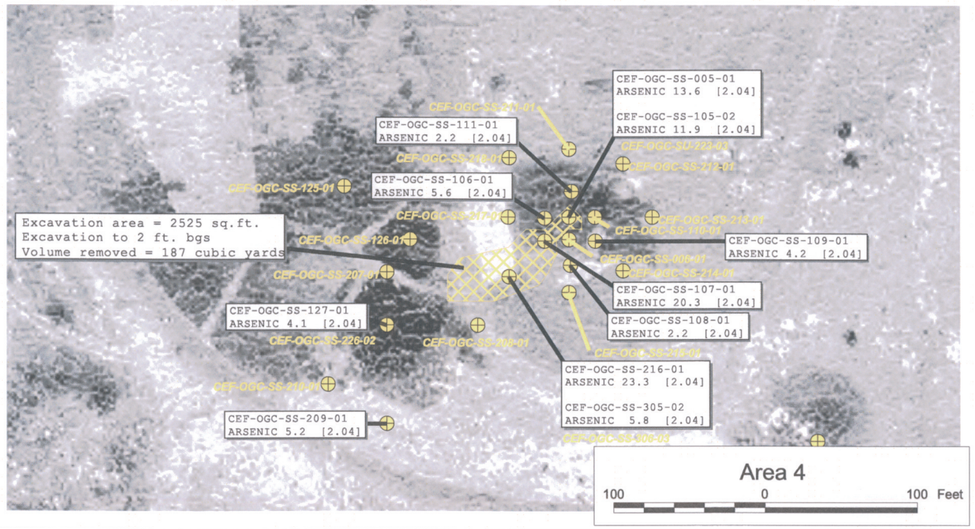
P:\GIS\NAS_CecilField\OGC_ROD.apr 02May02 MJJ Sample Locations Layout

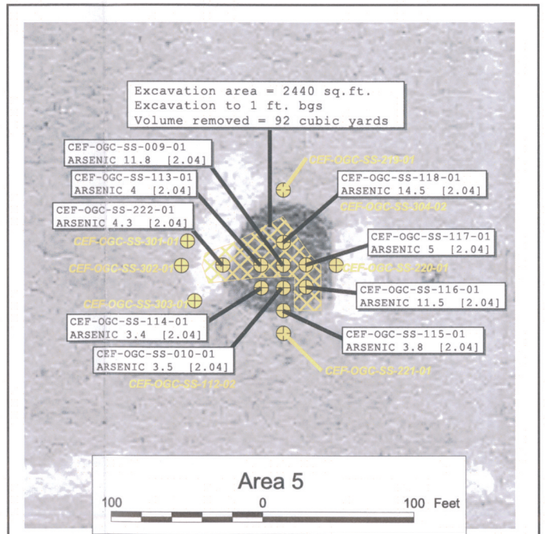
P:\GIS\NAS_CecilField\OGC_ROD.apr 02May02 MJJ Interim Action Layout

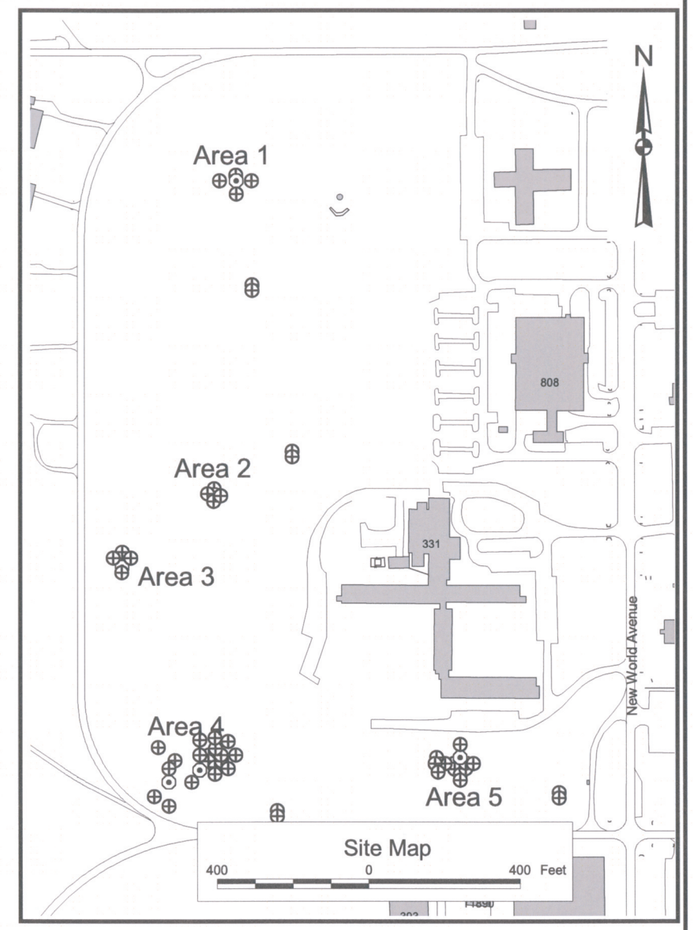












Legend
- Surface Soil Sample
- Surface and Subsurface Soil Sample
- Subsurface Soil Sample

CEF-OGC-SS-118-01 — Sample ID
ARSENIC 14.5 [2.04] — IBDS for Arsenic mg/kg
Detection Concentration
Parameter

DRAWN BY MJJ	DATE 02May02	INTERIM REMOVAL ACTION OU12, OLD GOLF COURSE RECORD OF DECISION NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NO. 0226
CHECKED BY	DATE		APPROVED BY — DATE 07/26/02
COST/SCHED-AREA			APPROVED BY — DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2-5 — REV. 0

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