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NAS CECIL FIELD
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TECHNICAL MEMORANDUM CONFIRMATORY SAMPLING PROGRAM FOR OPERABLE UNIT 5 NAS CECIL FIELD FL

6/1/1995

ABB ENVIRONMENTAL SERVICES INC

NASCF Jacksonville
N60200-000010
6/1/1995

TECHNICAL MEMORANDUM
CONFIRMATORY SAMPLING PROGRAM
OPERABLE UNIT 5

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No. N62467-89-D-0317/090

Prepared by:

ABB Environmental Services, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Alan Shoultz, Code 1875, Engineer-in-Charge

Original: January 1995
Revision 1: June 1995

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CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/090 are complete and accurate and comply with all requirements of this contract.

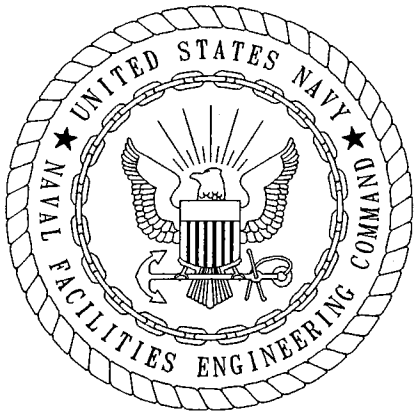
DATE: June 30, 1995

NAME AND TITLE OF CERTIFYING OFFICIAL: James A. Denier
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Robert C. Lunardini, Jr.
Project Technical Lead

(DFAR 252.227-7036)

DLH.06.95



The engineering evaluations and professional opinions rendered in this planning document that describes the confirmatory sampling program for Operable Unit 5, Naval Air Station Cecil Field, Jacksonville, Florida, were conducted or developed in accordance with commonly accepted procedures consistent with applicable standards of practice.

Robert C. Lunardini, Jr.
Professional Engineer No. 46657
Expires February 28, 1997

Robert C Lunardini Jr
6/28/95

OPERABLE UNIT 5 CONFIRMATORY SAMPLING PROGRAM

A meeting was held on December 8, 1994 at NAS Cecil Field at which ABB Environmental Services, Inc. (ABB-ES) presented to the Base Realignment and Closure (BRAC) Cleanup Team (BCT) the field screening data collected to date. The purpose of the meeting was to select confirmatory sample locations at Operable Unit (OU) 5, Sites 14 and 15. The initial memorandum (January 1995) presented a brief background of each site, screening results to date, and confirmatory sample locations as agreed to at the meeting. Revision one incorporates all screening data and confirmatory sample locations.

Site 14

Background - This site was used to detonate ordnance from 1967 through 1977. Usually 300 to 400 pounds were detonated at a time. The types of ordnance disposed of included fuses, 100-pound bombs, munitions, and explosives. Explosives used for detonation probably included 2,4,6-trinitrotoluene (TNT), trinitrophenol methylnitramine (tetryl), and cyclotrimethylenetrinitramine (RDX).

In May 1995 the site was used to detonate UXO found on NAS Cecil Field. The detonation was done in an enclosed sandbag bunker. It is recommended that Site 14, minus the sandbag detonation area, continue in the Remedial Investigation and Feasibility Study (RI/FS) process.

Screening Results - The field screening program at Site 14 consisted of an unexploded ordnance (UXO) survey, surface soil screening, and piezometer installation. Results of these activities are presented in the following paragraphs. The UXO survey was completed at the site prior to any sampling activities. No unexploded ordnance was found; however, several pieces of metal, shell casings, etc. were located and removed.

Surface soil samples collected from September 7 to 27, 1994 were screened for TNT using colorimetric field test kits (U.S. Environmental Protection Agency [USEPA] Draft Field Method 8515). The TNT test kits have a method detection limit (MDL) of 1 milligram per kilogram (mg/kg). TNT was selected as the indicator compound for surface soil because it was suspected to have been a major component of the ordnance detonated at the site. It was anticipated that if TNT was not present, the likelihood of tetryl and RDX being present would be low and would be verified during confirmation testing. The analyses were performed by PACE Environmental Laboratories, Inc. (PACE) at their onsite field laboratory. One hundred two (102) surface soil samples were collected from 0 to 1 foot below land surface (bls). Spacing was on 100-foot grid squares throughout the site except in the area around the bunker, where the spacing density was increased to 50-feet grid squares. From the 102 samples there were 14 detections ranging from 1.0 to 2.9 mg/kg. The Fourth Quarter 1994 USEPA Region III risk-based concentration for TNT in soil is 21 mg/kg and is based on a residential exposure assumption.

The workplan had indicated that two samples would be collected as split samples (for offsite nitroaromatic analysis) for correlation of the TNT colorimetric field test kit results. The split samples were CF14SS89 and CF14SS97. The TNT results were as follows.

Sample	Method 8515 (onsite)	Method 8330 (offsite)
CF14SS89	1.3 mg/kg, MDL=1.0 mg/kg	nondetect, MDL=0.328 mg/kg
CF14SS97	nondetect,MDL=1.0 mg/kg	nondetect, MDL=0.329 mg/kg

Detection of 1.3 mg/kg indicates a positive bias associated with the field screening test kit results. However, all detections were below the TNT risk-based screening threshold of 21 mg/kg.

Twenty-four (24) surface soil samples collected in the 50-foot grid squares around the bunker were analyzed onsite by PACE for USEPA modified methods 8010 and 8020, which detect volatile aromatic and chlorinated aliphatic compounds, respectively. The methods were modified by extending the chromatographic runs to allow naphthalene to be quantitatively recovered and measured. Results indicated no detections. This sampling and analysis was done because 1,1,1-trichloroethane was detected at a concentration of 11 micrograms per kilogram (μg/kg) in the one soil sample previously collected near the bunker (RFI, Harding Lawson Associates, March 1988). Figure 14-1 presents the results of the screening program at Site 14.

Five temporary piezometers were installed across the water table to estimate the direction of groundwater flow in the surficial aquifer. Water level data, collected on six different occasions, indicates that flow direction is to the northwest, toward a wetland area.

Conceptual Understanding - Site 14 became a CERCLA site because of ordnance detonation operations. The screening has not indicated the presence of any significant concentrations of TNT, a compound that would be expected to be present at an ordnance disposal site. Based on piezometric measurements, groundwater is interpreted to flow to the northwest. The confirmatory program will be used to verify the screening results.

Confirmatory Sample Locations - Since TNT contamination was not found above risk- based concentrations, **seven surface soil samples** were selected for the confirmatory sampling program. Seven samples will be collected from 0 to 1 foot bls and analyzed for full target compound list (TCL) and target analyte list (TAL) parameters and nitroaromatics (USEPA Method 8330). Sample locations were selected based on the few detections of TNT during the screening program and to distribute samples across the site after focusing on the bunker where a volatile organic compound (VOC) was detected historically (see Figure 14-2).

It was agreed that **three shallow surficial aquifer monitoring wells** will be installed at the locations depicted on Figure 14-2. Groundwater from the wells will be sampled and analyzed for full TCL and TAL parameters and nitroaromatics. Wells with turbidity readings greater than 5 nephelometric turbidity units (NTUs) after purging will have both a filtered and unfiltered sample collected and analyzed for TAL inorganics.

As part of the confirmatory sampling program, **four surface water and sediment samples** will be collected from the drainage swale bordering the site as shown on Figure 14-2. Samples will be analyzed for full TCL and TAL parameters and nitroaromatics. Both filtered and unfiltered surface water samples will be collected and analyzed for TAL inorganics.

The workplan calls for a qualitative ecological study and toxicity testing at Site 14. The need for these additional activities will be evaluated based on the confirmatory analytical results.

Site 15

Background - From the early 1940's to the mid 1950's this site was used as a skeet range. The former skeet range was approximately 1000 feet by 2400 feet in size and located approximately 9,000 feet southwest of the Yellow Water Weapons Area. The skeet range was abandoned and the site was later used to burn ordnance from the mid-1960's through 1977. Approximately 700,000 pounds of small arms

munitions, parachute and distress flares, Mark IV signal cartridges, rocket propellants, rocket ignitors, and cartridge activated devices (CADs) were burned. Some ordnance was burned inside a metal chamber located onsite, and the ashes and metal residue were spread over the area. Rocket propellant was spread on the ground and ignited.

Screening Results - The field screening program consisted of a unexploded ordnance (UXO) survey, surface and subsurface soil screening, and the installation of piezometers. Surface soil screening at the site began on August 26, 1994 and was completed by April 24, 1995. Surface soil samples are being screened for lead, polynuclear aromatic hydrocarbons (PAHs), TNT, and total recoverable petroleum hydrocarbons (TRPH). Data presented reflects all screening results. The UXO survey was completed at the site prior to any sampling activities. No unexploded ordnance was found; however, several pieces of metal, shell casings, etc. were located and removed.

Lead - A total of 322 surface soil samples have been collected and analyzed offsite for total lead (USEPA Method 6010). The analysis has a MDL of 0.1 mg/kg. Analyses were performed by Quanterra Laboratories, Canton, Ohio. Samples were collected from 0 to 1 foot bls with spacing on 100-foot grid squares throughout the site except in the area around the burn chamber and blast platform where the spacing density was increased to 25-feet grid squares. From the 322 samples there were 255 detections, ranging from 12.6 to 65,000 mg/kg (see Figure 15-1). Office of Solid Waste and Emergency Response (OSWER) Directive 9355.4-12 recommends 400 parts per million (ppm) as the screening level (action level) for lead in soil for residential land use. Screening continued until lead was not detected or was less than 400 mg/kg.

PAHs - A total of 263 surface soil samples have been collected and analyzed onsite for PAHs (USEPA Method 8310). The analysis has an MDL ranging from 0.2 to 4.0 mg/kg depending on the MDL of each PAH. Analyses for the first 130 samples were performed by PACE. The remainder of the samples were analyzed by Quanterra Laboratories, Canton, Ohio. Samples were collected as described above. Of the 263 samples, there were 171 detections ranging from 0.2 to 12,930 mg/kg (see Figure 15-2). The Florida Department of Environmental Protection (as of 7/93) (FDEP) has a clean soil criterion for thermally treated petroleum contaminated soil (Florida Administrative Code [FAC] 62-775) for PAHs of 1 mg/kg. Screening continued until PAHs were not detected or were less than 1 mg/kg.

TNT - A total of 147 surface soil samples have been collected and analyzed onsite for TNT (141 by USEPA Draft Field Method 8515, and 6 by USEPA Method 8330). The analysis has an MDL of 1.0 mg/kg. The Method 8515 analyses (MDL of 1.0 mg/kg) were performed by PACE at their onsite field laboratory. The Method 8330 analyses (MDL of 0.328 mg/kg) were performed offsite by Quanterra Laboratories. Samples were collected as described above. Of the 147 samples, there were 27 detections ranging from 1.0 to 68 mg/kg (see Figure 15-3). The Fourth Quarter 1994 USEPA Region III risk-based concentration for TNT in soil is 21 mg/kg and is based on a residential exposure assumption. Screening continued until TNT was not detected or was less than 21 mg/kg.

The workplan had indicated that two additional samples would be collected as split samples (for offsite nitroaromatic analysis) for correlation of the TNT colorimetric field test kit results. The split samples were CF15SS51 and CF15SS63. The TNT results were as follows.

Sample	Method 8515 (onsite)	Method 8330 (offsite)
CF15SS51	nondetect, MDL=1.0 mg/kg	nondetect, MDL=0.328 mg/kg
CF15SS63	nondetect, MDL=1.0 mg/kg	nondetect, MDL=0.328 mg/kg

Evaluation of these results indicates the two methods are consistent in showing nondetect for the samples.

TRPH - A total of 146 surface soil samples have been collected and analyzed onsite for TRPH (USEPA Method 418.1). The analysis has an MDL of 10 mg/kg. The analyses were performed by PACE at their onsite field laboratory. Samples were collected as described above. Of the 146 samples, there were 26 detections ranging from 10 to 430 mg/kg (see Figure 15-4). The FDEP guidance concentration for TRPH is 50 mg/kg for petroleum sites. Screening continued until TRPH was not detected or was less than 50 mg/kg.

Subsurface Soil - Sixteen subsurface soil samples were collected from four soil borings advanced in the area of the burn chamber and blast platform. Four samples were collected on October 11, 1994 from each boring. Samples were screened onsite for VOCs (Modified Method 8020/8010), PAHs, and TRPH and offsite for lead. Analysis of VOCs, PAHs, and TRPH were performed by PACE at their onsite field laboratory with lead analysis conducted offsite by Quanterra Laboratories, Canton, Ohio. There were no detections of VOCs from the 16 sampling locations. Of the 16 subsurface soil samples, there were 5 detections of TRPH ranging from 12 to 570 mg/kg. Total PAHs were detected in 15 samples at concentrations ranging from 3.9 to 138 mg/kg. Lead was detected in 11 samples at concentrations ranging from 15.1 to 214 mg/kg.

Four temporary piezometers were installed to determine the direction of groundwater flow in the surficial aquifer. Evaluation of water level data collected on three separate occasions indicated that flow direction is to the southwest, towards Yellow Water Creek.

Conceptual Understanding - Site 15 became a CERCLA site because of ordnance burning operations. The screening has indicated the presence of TNT, lead, TRPH, and PAHs. These compounds are distributed in an area approximately 10 acres in size. The screening program has also identified a large area of lead contamination that can be attributed to the operation of a recreational trap and skeet range. Inclusion of the trap- and skeet range-related lead increases the size of the site from approximately 10 acres to approximately 44 acres. Based on piezometric measurements, groundwater at the site is interpreted to flow to the southwest. The confirmatory program will be used to verify the screening results.

Confirmatory Sample Locations - The confirmatory sample locations are shown on Figure 15-5. **Forty-five surface soil samples** will be collected from 0 to 1 foot bls. Thirty-two of these samples will be analyzed for full TCL and TAL parameters and nitroaromatics, six will be analyzed for lead only, three will be analyzed for nitroaromatics only, and four will be analyzed for PAHs only. The rationale for each confirmatory surface soil sample is presented in Table 15-1.

Twenty-nine subsurface soil samples will be collected from the 1-foot interval above the water table (approximately 3 to 5 ft bls) at the locations indicated on Figure 15-5. The depth to the water table will be estimated by recording the groundwater elevations in piezometers and monitoring wells (with screens that bridge the water table) prior to the sampling event. By contouring these elevations and comparing them to the contours of the ground surface elevation, the depth to the water table will be estimated for each sample location. Twenty-five of the 29 samples will be analyzed for full TCL and TAL parameters and nitroaromatics, three will be analyzed for nitroaromatics only, and one will be analyzed for PAHs only. The rationale for each confirmatory subsurface soil sample is presented in Table 15-1.

Four surface water and sediment samples will be collected from the locations indicated on Figure 15-5 and analyzed for full TCL and TAL parameters and nitroaromatics. The rationale for each confirmatory surface water and sediment sample is presented in Table 15-2.

Eight shallow surficial aquifer monitoring wells were installed at the locations shown on Figure 15-5. Groundwater samples will be collected and analyzed for full TCL and TAL parameters and nitroaromatics. Based on the analytical results of the eight groundwater samples, the need for additional confirmatory monitoring wells will be evaluated.

The workplan calls for a qualitative ecological study and toxicity testing at Site 15. To better characterize ecological effects caused by site contaminants, the ecological survey and toxicity testing will be conducted concurrently with the confirmatory sampling effort.

Table 15-1
Surface and Subsurface Soil Sampling Rationale, Site 15

Technical Memorandum 1; Revision 1
Operable Unit 5, NAS Cecil Field
Jacksonville, Florida

Sample	Rationale
CF15SS1/CF15SB1	Verify the extent of lead and other site contaminants in the surface and subsurface soils north of the 400 mg/kg lead screening line.
CF15SS2/CF15SB2	Characterize lead contamination and verify extent of other site contaminants in the surface and subsurface soils at lead screening hot spot (65,500 mg/kg).
CF15SS3/CF15SB3	Characterize PAH and lead contamination and verify the extent of other site contaminants in the surface and subsurface soil at PAH hot spot (1,631 mg/kg) within the greater than 400 mg/kg lead screening zone.
CF15SS4/CF15SB4	Verify the extent of lead and other site contaminants in the surface and subsurface soils northwest of the 400 mg/kg lead screening line.
CF15SS5/CF15SB5	Verify the extent of lead and other site contaminants in the surface and subsurface soils northeast of the 400 mg/kg lead screening line.
CF15SS6/CF15SB6	Characterize lead contamination and verify extent of other site contaminants in the surface and subsurface soils at lead screening hot spot (31,800 mg/kg).
CF15SS7/CF15SB7	Characterize TNT and lead contamination and verify the extent of other site contaminants in the surface and subsurface soil at TNT screening hot spot (68 mg/kg) within the greater than 400 mg/kg lead screening zone.
CF15SS8/CF15SB8	Characterize and/or verify the extent of site contaminants in the surface and subsurface soil northeast of the burn chamber and blast platform.
CF15SS9/CF15SB9	Characterize and/or verify the extent of site contaminants in the surface and subsurface soil northwest of the burn chamber and blast platform.
CF15SS10/CF15SB10	Characterize and/or verify the extent of site contaminants in the surface and subsurface soil between the burn chamber and blast platform.
CF15SS12/CF15SB12	Characterize and/or verify the extent of site contaminants in the surface and subsurface soil southeast of the burn chamber and blast platform.
CF15SS13/CF15SB13	Verify the extent of lead, TNT, TRPH, in the surface and subsurface soil west of their respective screening lines and west of the burn chamber and blast platform.
CF15SS14/CF15SB14	Verify the extent of lead and other site contaminants in the surface and subsurface soils east of the 400 mg/kg lead screening line.
CF15SS15/CF15SB15	Characterize lead contamination and verify extent of other site contaminants in the surface and subsurface soils within southern portion of the greater than 400 mg/kg lead screening zone.

See notes at end of table.

Table 15-1 (Continued)
Surface and Subsurface Soil Sampling Rationale, Site 15

Technical Memorandum 1; Revision 1
Operable Unit 5, NAS Cecil Field
Jacksonville, Florida

Sample	Rationale
CF15SS16/CF15SS16	Characterize lead and PAH contamination and verify extent of other site contaminants in the surface and subsurface soils within the greater than 400 mg/kg lead screening and greater than 1 mg/kg PAH screening zones.
CF15SS17/CF15SB17	Verify the extent of lead, PAH, and other site contaminants in the surface and subsurface soils south of the 400 mg/kg lead screening line and east of the 1 mg/kg PAH screening line.
CF15SS18/CF15SB18	Characterize TRPH contamination and verify extent of other site contaminants in the surface and subsurface soils at TRPH screening hot spot (430 mg/kg).
CF15SS19/CF15SB19	Verify the extent of site contaminants in the surface and subsurface soil west of the lead (400 mg/kg), TNT (21 mg/kg), and TRPH (50 mg/kg) screening lines and north of the 1 mg/kg PAH screening line.
CF15SS20/CF15SB20	Characterize PAH contamination and verify extent of other site contaminants in the surface and subsurface soils at PAH screening hot spot (12,930 mg/kg).
CF15SS21/CF15SB21	Verify the extent of PAH and other site contaminants in the surface and subsurface soils west of the 1 mg/kg PAH screening line.
CF15SS22/CF15SB22	Characterize PAH contamination and verify extent of other site contaminants in the surface and subsurface soils within the greater than 1 mg/kg PAH screening zone.
CF15SS23/CF15SB23	Verify the extent of PAH and other site contaminants in the surface and subsurface soils southeast of the 1 mg/kg PAH screening line.
CF15SS24/CF15SB24	Verify the extent of PAH and other site contaminants in the surface and subsurface soils south of the 1 mg/kg PAH screening line.
CF15SS25/CF15SB25	Verify the extent of PAH and other site contaminants in the surface and subsurface soils southwest of the 1 mg/kg PAH screening line.
CF15SS26	Characterize lead contamination and verify extent of other site contaminants in the surface soil at lead screening hot spot (25,000 mg/kg).
CF15SS27	Verify the extent of lead, TNT, and TRPH in the surface soil west of their respective screening lines and west of the burn chamber and blast platform.
CF15SS28	Verify the extent of lead, TNT, and TRPH in the surface soil west of their respective screening lines and south of the burn chamber and blast platform.
CF15SS29	Verify the extent of PAH and other site contaminants in the surface soil north of the 1 mg/kg PAH screening line.

See notes at end of table.

Table 15-1 (Continued)
Surface and Subsurface Soil Sampling Rationale, Site 15

Technical Memorandum 1; Revision 1
Operable Unit 5, NAS Cecil Field
Jacksonville, Florida

Sample	Rationale
CF15SS30	Verify the extent of lead and other site contaminants in the surface soil south of the 400 mg/kg lead screening line.
CF15SS31	Verify the extent of PAH and other site contaminants in the surface soil east of the 1 mg/kg PAH screening line.
CF15SS32	Verify the extent of PAH and other site contaminants in the surface soil southwest of the 1 mg/kg PAH screening line.
CF15SS33	Verify the extent of lead in the surface soil north of the 400 mg/kg lead screening line.
CF15SS34	Verify the extent of lead in the surface soil northwest of the 400 mg/kg lead screening line.
CF15SS35	Characterize lead contamination in the surface soil at lead screening hot spot (55,700 mg/kg).
CF15SS36	Verify the extent of lead in the surface soil northeast of the 400 mg/kg lead screening line.
CF15SS37	Characterize lead contamination in the surface soil within southern portion of the greater than 400 mg/kg lead screening zone.
CF15SS38	Verify the extent of lead in the surface soil southeast of the 400 mg/kg lead screening line.
CF15SS39	Verify the extent of PAH and other site contaminants in the surface and subsurface soils south of the 1 mg/kg PAH screening line.
CF15SS40	Characterize PAH contamination in the surface soil within the greater than 1 mg/kg PAH screening zone.
CF15SS41	Verify the extent of PAH in surface soil north of a PAH screening hot spot (1,631 mg/kg).
CF15SS42 CF15SB42	Characterize TNT contamination in the surface and subsurface soil at TNT screening hot spot (42 mg/kg).
CF15SS43 CF15SB43	Characterize TNT contamination in the surface and subsurface soil at TNT screening hot spot (45 mg/kg).
CF15SS44 CF15SB44	Characterize TNT contamination in the surface and subsurface soil at TNT screening hot spot (25 mg/kg).
CF15SS45 CF15SB45	Characterize PAH contamination in the surface and subsurface soil at PAH screening hot spot (3,134 mg/kg).

Notes: mg/kg = milligrams per kilogram.
PAH = polynuclear aromatic hydrocarbons.
TRPH = total recoverable petroleum hydrocarbons.

Table 15-2
Surface Water and Sediment Sampling Rationale, Site 15

Technical Memorandum 1; Revision 1
Operable Unit 5, NAS Cecil Field
Jacksonville, Florida

Sample	Rationale
CF15SW1/CF15SD1	Identify and characterize any contaminants that may have migrated from the site to the surface water and sediment in the northwest drainage pathway.
CF15SW2/CF15SD2	Identify and characterize any contaminants that may have migrated from the site to the surface water and sediment in the southwest drainage pathway.
CF15SW3/CF15SD3	Identify and characterize any contaminants that may have migrated from the site to the surface water and sediment further downgradient in the southwest drainage pathway.
CF15SW4/CF15SD4	Identify and characterize any contaminants that may have migrated from the site to the surface water and sediment in Caldwell Branch via the northwest drainage pathway.

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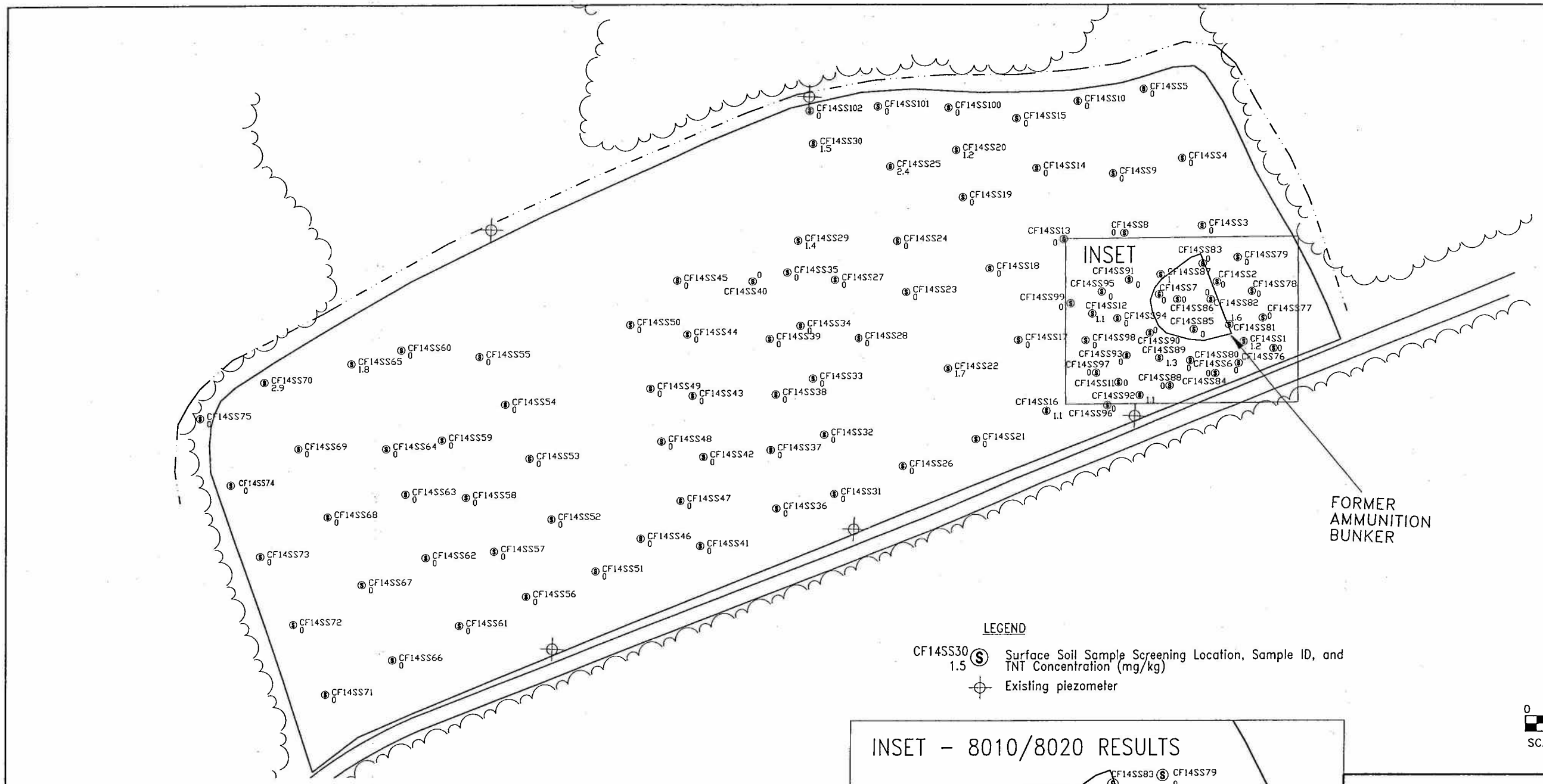
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CF14SS80 0
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CF14SS97 0
CF14SS6 0
CF14SS11 0
CF14SS88 0
CF14SS84 0
CF14SS92 1.1
FORMER AMMUNITION BUNKER
LEGEND
CF14SS30 1.5 (S) Surface Soil Sample Screening Location, Sample ID, and TNT Concentration (mg/kg)
Existing piezometer
0 75 150
SCALE: 1" = 150'
INSET - 8010/8020 RESULTS
0 50 100
SCALE: 1" = 100'
Notes:
Detection Limit for TNT = 1 mg/kg
0 = Not Detected
USEPA Region III risk based screening criterion (Fourth quarter 1994)
For TNT = 21 mg/kg
FIGURE 14-1
SITE 14
TNT AND 8010/8020
SCREENING RESULTS
OU5 TECHNICAL MEMORANDUM 1
NAS CECIL FIELD
JACKSONVILLE, FLORIDA
CECIL\RISTE14\kqp-cck\01-10-94

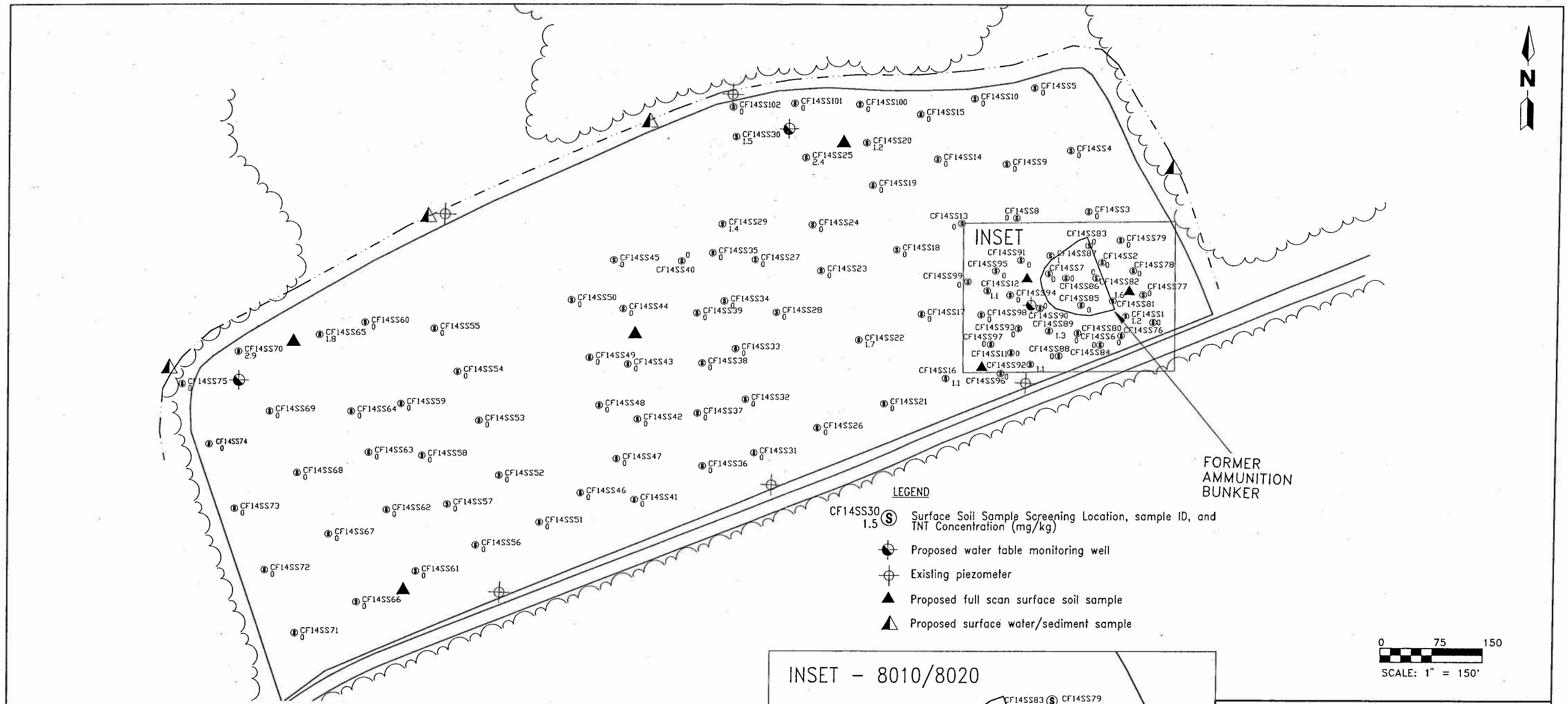
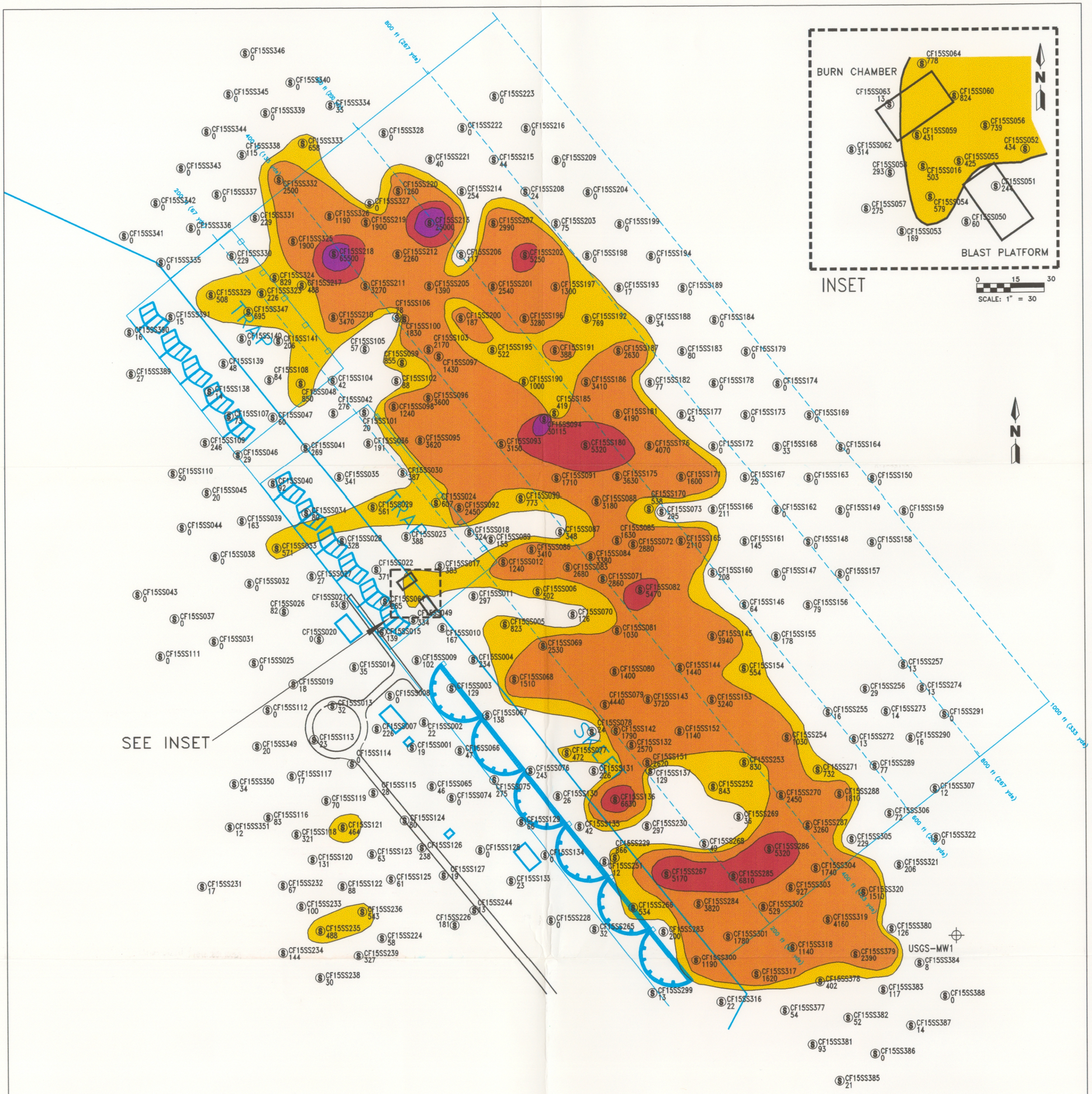


FIGURE 14-2
SITE 14
CONFIRMATORY SAMPLE LOCATIONS

OU5 TECHNICAL MEMORANDUM 1

NAS CECIL FIELD
JACKSONVILLE, FLORIDA



Color explanation

- Greater than 400 mg/kg
- Greater than 1000 mg/kg
- Greater than 5000 mg/kg
- Greater than 10000 mg/kg
- Historical features presented

LEGEND

CF15SS129 60 — Surface soil sample screening location, sample ID, and Lead concentration(mg/kg)

NOTES

Concentration in milligrams per kilogram (mg/kg)
Recommended screening criteria for lead is 400 mg/kg per USEPA OSWER directive 9355.4-12 (1994)

United States Geological Survey monitoring well

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

FIGURE 15-1
SITE 15
LEAD SCREENING RESULTS

OU5 TECHNICAL MEMORANDUM 1

NAS CECIL FIELD
JACKSONVILLE, FLORIDA

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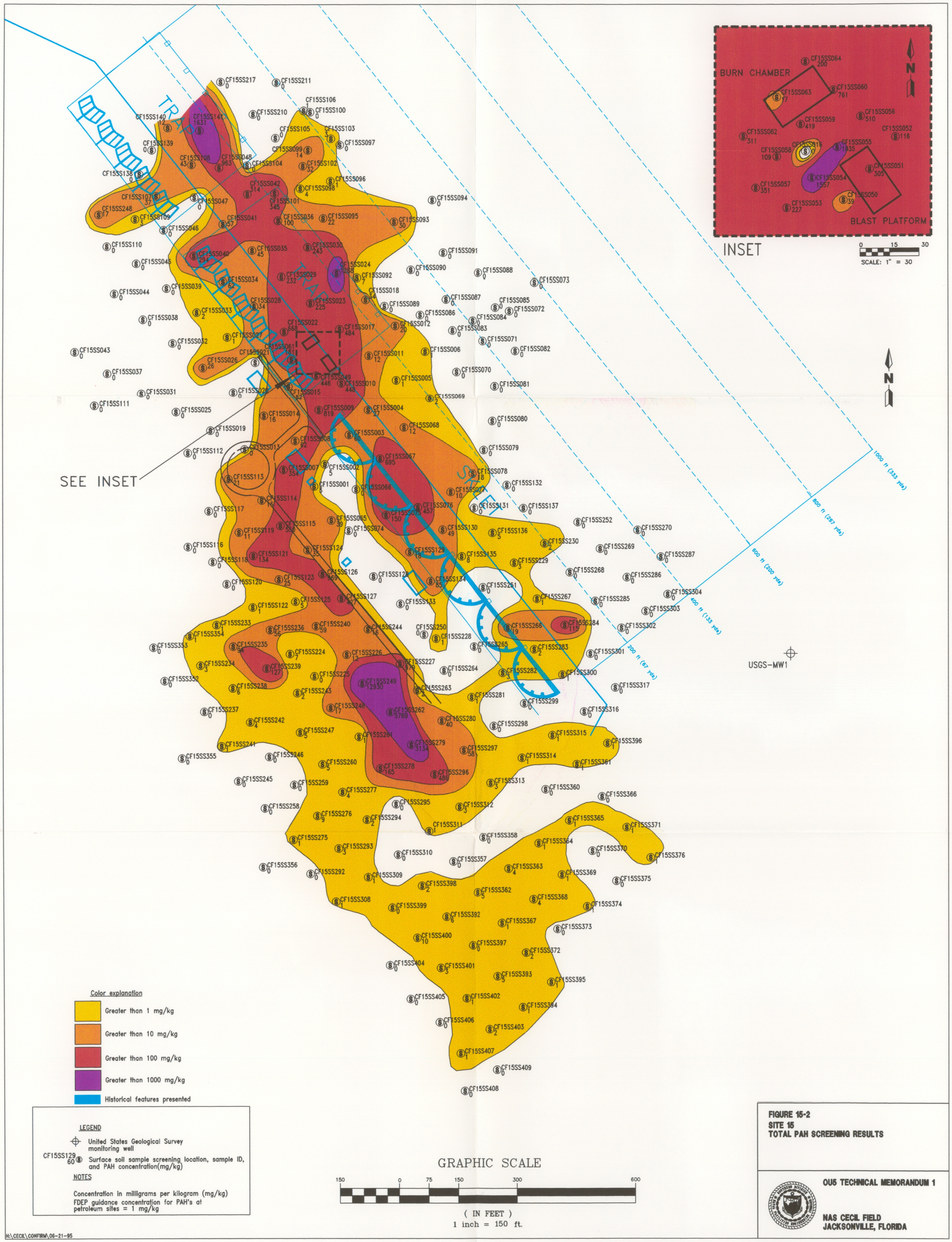

FIGURE 15-2
SITE 15
TOTAL PAH SCREENING RESULTS

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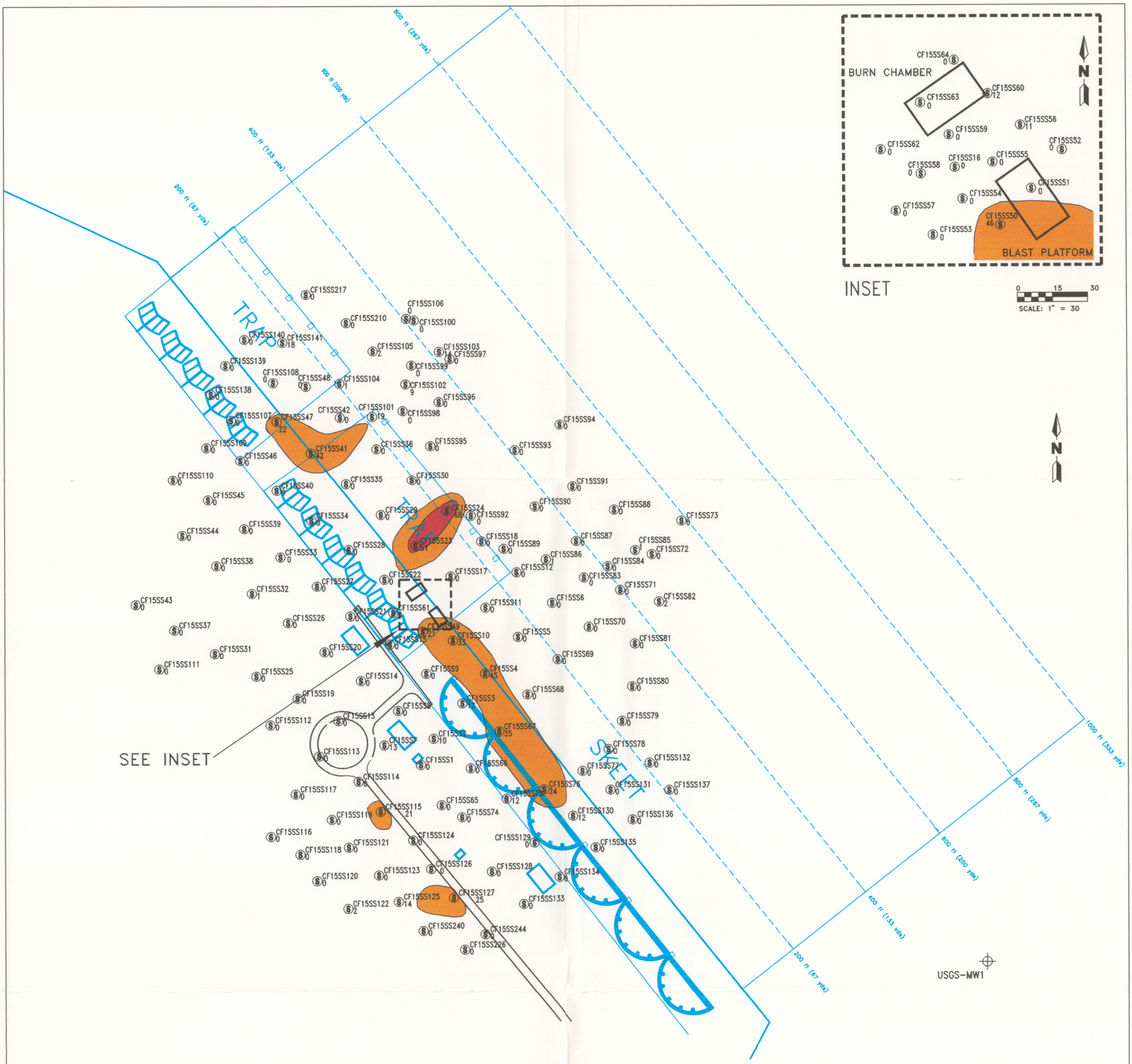

Color explanation

- Greater than 21 mg/kg
- Greater than 50 mg/kg
- Historical features presented

LEGEND

- United States Geological Survey monitoring well
- CF15SS129 60 — Surface soil sample screening location, sample ID, and TRINITROTOLUENE concentration(mg/kg)

NOTES

Concentration in milligrams per kilogram (mg/kg)
USEPA Region III risk based concentration for TNT = 21 mg/kg

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

FIGURE 15-3
SITE 15
TOTAL TRINITROTOLUENE SCREENING RESULTS

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Color explanation

- Greater than 50 mg/kg
- Greater than 100 mg/kg
- Historical features presented

LEGEND

- ⊕ United States Geological Survey monitoring well
- CF15SS129 60 Surface soil sample screening location, sample ID, and TRPH concentration(mg/kg)

NOTES

Concentration in milligrams per kilogram (mg/kg)
TRPH = Total Recoverable Petroleum Hydrocarbons
FDEP guidance concentration for TRPH at petroleum sites = 50 mg/kg

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

FIGURE 15-4
SITE 15
TRPH SCREENING RESULTS

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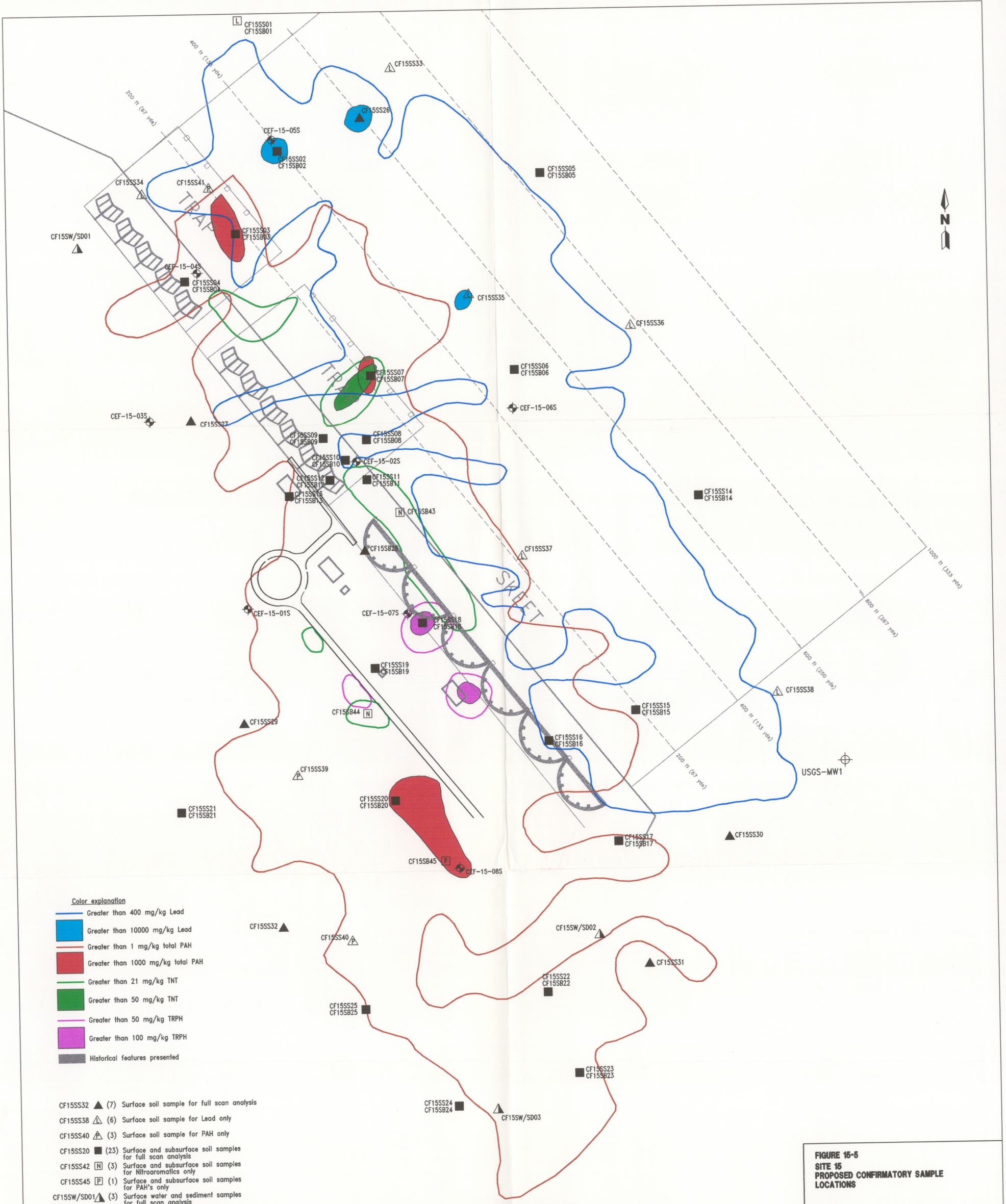

Color explanation

- Greater than 400 mg/kg Lead
- Greater than 10000 mg/kg Lead
- Greater than 1 mg/kg total PAH
- Greater than 1000 mg/kg total PAH
- Greater than 21 mg/kg TNT
- Greater than 50 mg/kg TNT
- Greater than 50 mg/kg TRPH
- Greater than 100 mg/kg TRPH
- Historical features presented

CF15SS32 ▲ (7) Surface soil sample for full scan analysis

CF15SS38 ⚠ (6) Surface soil sample for Lead only

CF15SS40 Ⓟ (3) Surface soil sample for PAH only

CF15SS20 ■ (23) Surface and subsurface soil samples for full scan analysis

CF15SS42 Ⓝ (3) Surface and subsurface soil samples for Nitroaromatics only

CF15SS45 Ⓟ (1) Surface and subsurface soil samples for PAH's only

CF15SW/SD01 ◭ (3) Surface water and sediment samples for full scan analysis

CEF-15-06S ⌖ (8) Existing monitoring wells for full scan analysis

NOTES:

1. Surface soil samples collected from 0 TO 1 foot b/s
2. Subsurface soil samples collected from the 1 foot interval above the water table
3. Full scan analysis includes TCL organics (including nitroaromatics), TAL inorganics, and TRPH

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)

1 inch = 150 ft.

FIGURE 15-5
SITE 15
PROPOSED CONFIRMATORY SAMPLE LOCATIONS

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