

**U.S. DEPARTMENT OF THE NAVY  
INSTALLATION RESTORATION PROGRAM**

**NAVAL AIR STATION, BRUNSWICK  
BRUNSWICK, MAINE**

**TECHNICAL MEMORANDUM**

**SITE 11  
FIRE TRAINING AREA**

JANUARY 1994

TECHNICAL MEMORANDUM

PRELIMINARY ASSESSMENT AND FIELD  
INVESTIGATIONS: SITE 11  
BRUNSWICK NAVAL AIR STATION  
BRUNSWICK, MAINE

*Prepared for:*

U.S. Department of the Navy  
Northern Division  
Naval Facilities Engineering Command  
Contract: N62472-91-C-1013

*Prepared by:*

ABB Environmental Services, Inc.  
Portland, Maine  
Project No. 7131-02

JANUARY 1994

U.S. DEPARTMENT OF THE NAVY  
INSTALLATION RESTORATION PROGRAM

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## 1.0 INTRODUCTION

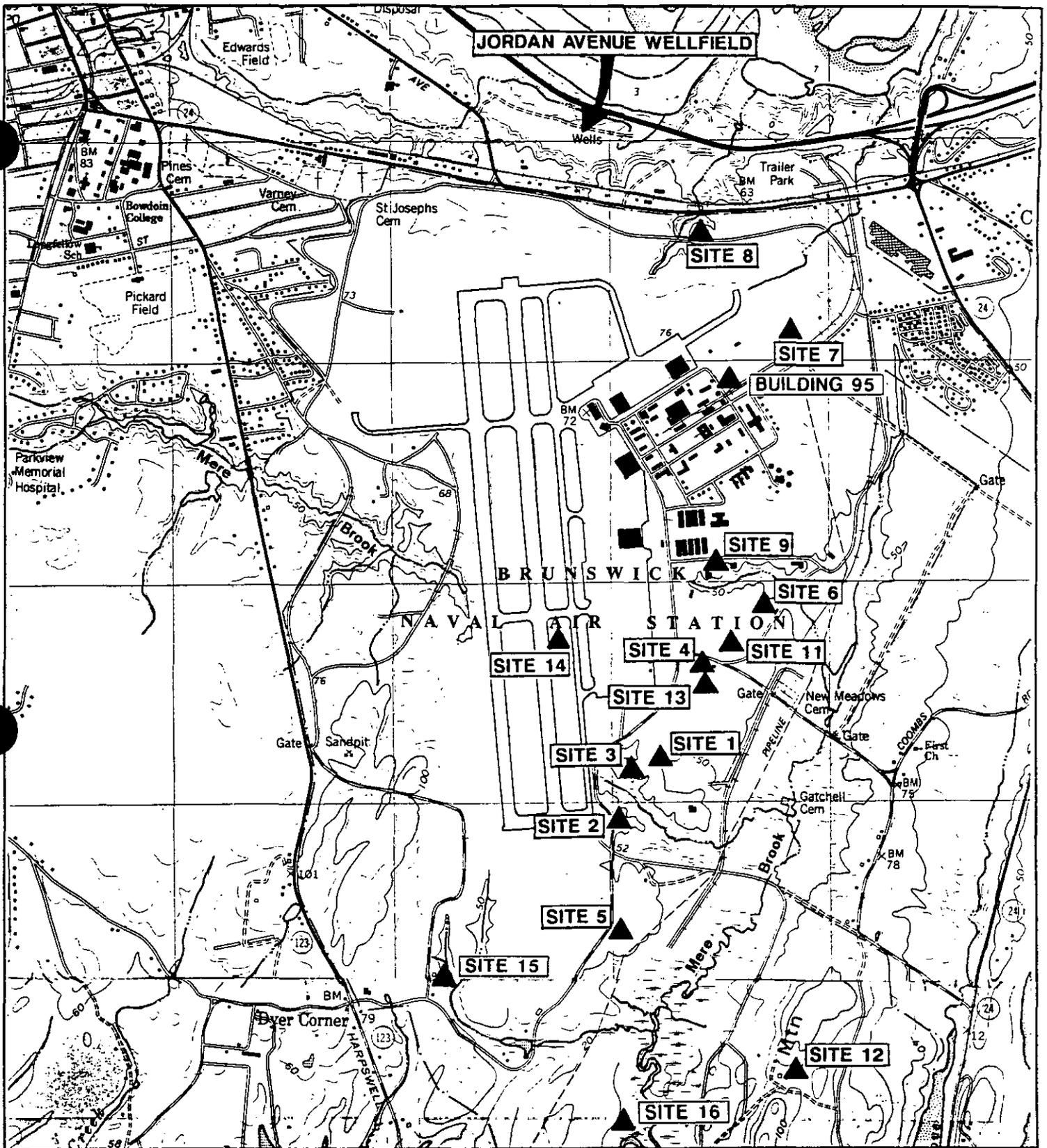
Information obtained in 1993 by staff at the Naval Air Station (NAS) Brunswick suggested for the first time that drums containing unknown liquids may have been buried at Site 11, the former Fire Training Area (FTA). Based on this information, the Navy designed a program to locate and, if possible, sample drums for characterization. This program was designed to definitively establish the presence or absence of buried drums at this site and, if possible, provide limited analytical information on the contents of up to three drums. The Navy recognized that, if drums were found, they would need to be removed from the site as part of source remediation efforts. Field activities planned for this site included magnetometer and ground penetrating radar (GPR) surveys followed by test pitting of the target areas identified during the geophysical surveys. The results of these activities are presented in this document.

## 2.0 SITE HISTORY AND PREVIOUS INVESTIGATIONS

The FTA is located near the intersection of Old Gurnet and Sandy Roads in the central portion of NAS Brunswick (Figure 2-1). NAS Brunswick, located south of the Androscoggin River between Brunswick and Bath, Maine, is an active facility supporting the U.S. Department of the Navy's antisubmarine warfare operations in the Atlantic Ocean and Mediterranean Sea. Its primary mission is to operate and maintain P-3 Orion aircraft. NAS Brunswick first became active in the 1940s during World War II, and underwent major expansion in the 1950s.

The FTA reportedly has been used for training purposes since the 1950s, and probably since World War II. A 1959 aerial photograph shows a large blackened area at the current location of the FTA. Fire-fighting exercises at the FTA introduced various liquids into soils at the site, including waste oils, fuels, solvents, and other miscellaneous liquids. There were multiple annual "burns" during the 40-to-50-year time of use. Reportedly, the only measure taken before 1987 to control infiltration of the liquids into the soils was to saturate the ground surface with water to float the product prior to a burn. In 1987, the FTA was upgraded with the installation of a concrete liner and berms. Additionally, a collection system, including piping and a 6,000-gallon fiberglass underground storage tank (UST), was installed north of the pit to contain unburned liquids. Construction details for the piping system and underground storage tank are shown on plans titled "OIL SPILL CONTROL MODIFICATIONS - BLDG 221 AND FIRE FIGHTING TRAINING PAD," dated September 9, 1986. These plans show an existing slab measuring approximately 40 feet x 40 feet and two existing curb cuts located on the north side of the slab.

The plans provide for the installation of two precast catch basins at the curb cuts with an 8 inch diameter drain pipe connecting these catch basins. A single 8 inch diameter underground drain pipe is shown to connect the eastern catch basin and the fiberglass holding tank situated approximately 100 feet to the north of the existing slab. An above ground, steel indicator valve that allows for opening and closing of the drain pipe leading to the tank is located approximately 20 feet south of the tank. The top of the fiberglass holding tank is specified for being 2.5 feet below the existing grade, and the bottom of the tank extending to approximately 8 feet below ground surface. A 4 inch vent pipe and 2 foot diameter steel manhole extensions with a removable flat-ribbed top (for clean out purposes of the tank) extend from the tank to above the existing grade. There are no specifications for the material used for the drain pipe.



SOURCE: U.S.G.S. QUADRANGLES, BRUNSWICK, AND OFFS ISLAND, ME.,  
1984, 1978. 7.5 MINUTE SERIES.



QUADRANGLE LOCATION



SCALE IN FEET

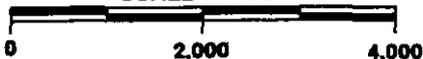


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INSTALLATION RESTORATION PROGRAM  
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BRUNSWICK, MAINE

SITE LOCATION MAP

RI/FS PROGRAM

JOB NO.  
7131-02

FIGURE 2-1

In 1989, the FTA was added to the Installation Restoration Program list of sites scheduled for Phase I Remedial Investigations (RI) that were being conducted on base. Previous site-characterization work had not been conducted at this site. Therefore, to characterize subsurface conditions, and to identify potential contamination at the site, explorations were conducted during the 1989 RI Field Program. These included a soil gas survey, five hand-auger borings, four test borings with monitoring wells, sampling of soil and groundwater, and permeability testing. Results of these explorations are discussed in the RI Report (E.C. Jordan Co, 1990).

In order to better characterize and delineate contaminants at the site, additional testing was conducted during the 1990 RI. Explorations conducted at this time included the installation of piezometers and monitoring wells, a cone penetrometer and groundwater screening program, installation of test borings and monitoring wells, the digging of eight test pits, sampling of soils and groundwater, and permeability testing. The findings of these activities are presented in the Supplemental RI Report (E.C. Jordan, Co., 1991).

Appendix A of this report contains two analytical data maps of soil and groundwater results that were obtained during the 1989 and 1990 Field Programs at the site. These data maps are an interpretive presentation of the laboratory analytical results; all organic data are presented, and, as stated on the maps, inorganic results detected in excess of eight times the contract required detection limit are the reported values. Complete analytical data are included in the appendices of the RI Report and the Supplemental RI Report (E.C. Jordan, 1990 and 1991).

### 3.0 PRELIMINARY ASSESSMENT

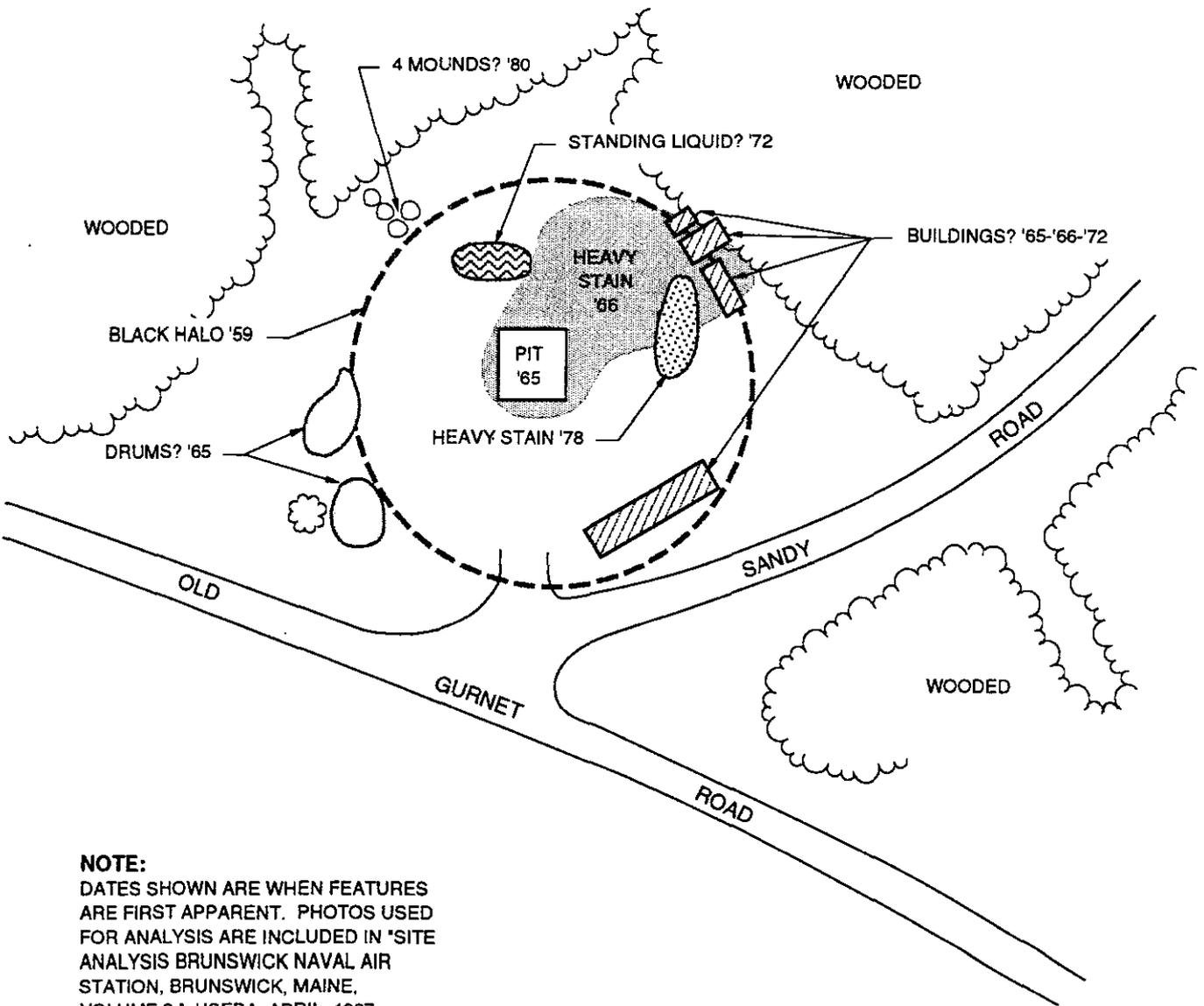
A Preliminary Assessment (PA) was conducted after the initial geophysical survey, and before the supplemental geophysical survey and test-pitting were completed. The object of the PA was to gather available information about past activities that may have impacted the site. The PA included a review of aerial photographs and an interview with the current NAS Brunswick fire chief.

The aerial photographs used for review are included in an April 1987 U.S. Environmental Protection Agency (USEPA) publication titled "Site Analysis Brunswick Naval Air Station, Brunswick, Maine, Volume 2," which contains photographs of the air station between the period of 1940 through 1980. Areas other than Site 11 were featured in this volume, but sufficient coverage of Site 11 was obtained from these photographs to allow for some interpretation of historical activities at the site.

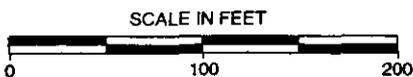
An April 1959 photograph shows the FTA as being well established. The photograph shows a darkened 200-foot-wide halo with a much darker inner halo, both of which occupy the present location of the fire pit. Several other photographs from the 1960s and 1970s show heavily stained areas north and east of the fire pit. The outline of a square fire pit area is evident for the first time in a 1965 photograph. Also evident in these photographs are buildings and/or possible plane simulators located northeast and southeast of the fire pit that may have been used in training to battle structural and aircraft fires. The only photograph that possibly shows drums is one dated August 1965. Between 15 and 20 reflective features are located approximately 70 feet south and 70 feet west of the fire pit. Another curious feature is shown in a May 1972 photograph; a dark feature measuring 35 feet long by 10 feet wide and located approximately 40 feet north of the fire pit may be standing liquid. The features obtained from a review of the aerial photographs are shown on Figure 3-1.

Before test pitting was conducted at the site, an interview and site walk-over were performed on August 9, 1993 with the current fire chief of NAS Brunswick. The fire chief has been with the fire department for 27 years, acting as chief since 1986. Early in the process, more than one person allegedly knew of drum burial at Site 11 but only the chief agreed to be interviewed.

According to the fire chief, most of the fuel used for fire-fighting exercises was JP-5 jet fuel or aviation gasoline (AVGAS), but there was no quality control for what would eventually



**NOTE:**  
 DATES SHOWN ARE WHEN FEATURES  
 ARE FIRST APPARENT. PHOTOS USED  
 FOR ANALYSIS ARE INCLUDED IN 'SITE  
 ANALYSIS BRUNSWICK NAVAL AIR  
 STATION, BRUNSWICK, MAINE,  
 VOLUME 2,' USEPA, APRIL, 1987.



	FEATURES APPARENT FROM SITE ANALYSIS PHOTOGRAPHS	
	RI/FS PROGRAM	
INSTALLATION RESTORATION PROGRAM NAVAL AIR STATION BRUNSWICK, MAINE	JOB NO. 7131-02	FIGURE 3-1

be used at the fire pit. Anything may have been brought to the site from any source on base if it was thought that the material might be flammable. Typically, barrels containing JP-5 obtained from the different squadrons on base would be brought to the site, temporarily stored, then rolled to the fire pit and emptied of their contents for the fire fighting exercises. The chief recalls that there was always just one fire pit at the site and that the storage area for these drums was located west of the fire pit. Once emptied, the drums were typically brought to the Defense Reutilization and Marketing Office for disposal.

Sometime between 1970 to 1980, the chief witnessed a one-time event of drums being buried in a trench of unknown dimensions. The exact location of the trench or the number or contents of the drums could not be recalled, but he estimated that there were between 10 and 20 drums, and the general location was north of the pit and possibly into the woods west of the present location of the UST. He did not know why the drums were buried, since any flammable liquids would presumably have been burned. The fact that some drums were buried may indicate that the contents were not flammable. A site visit with the fire chief led to the discovery of an obvious trench feature located in the woods.

#### 4.0 GEOPHYSICS

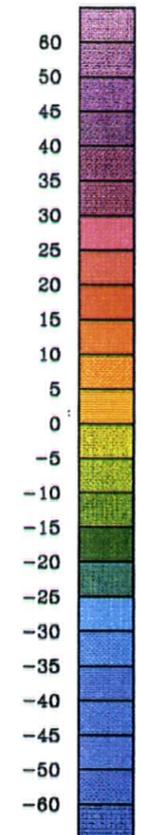
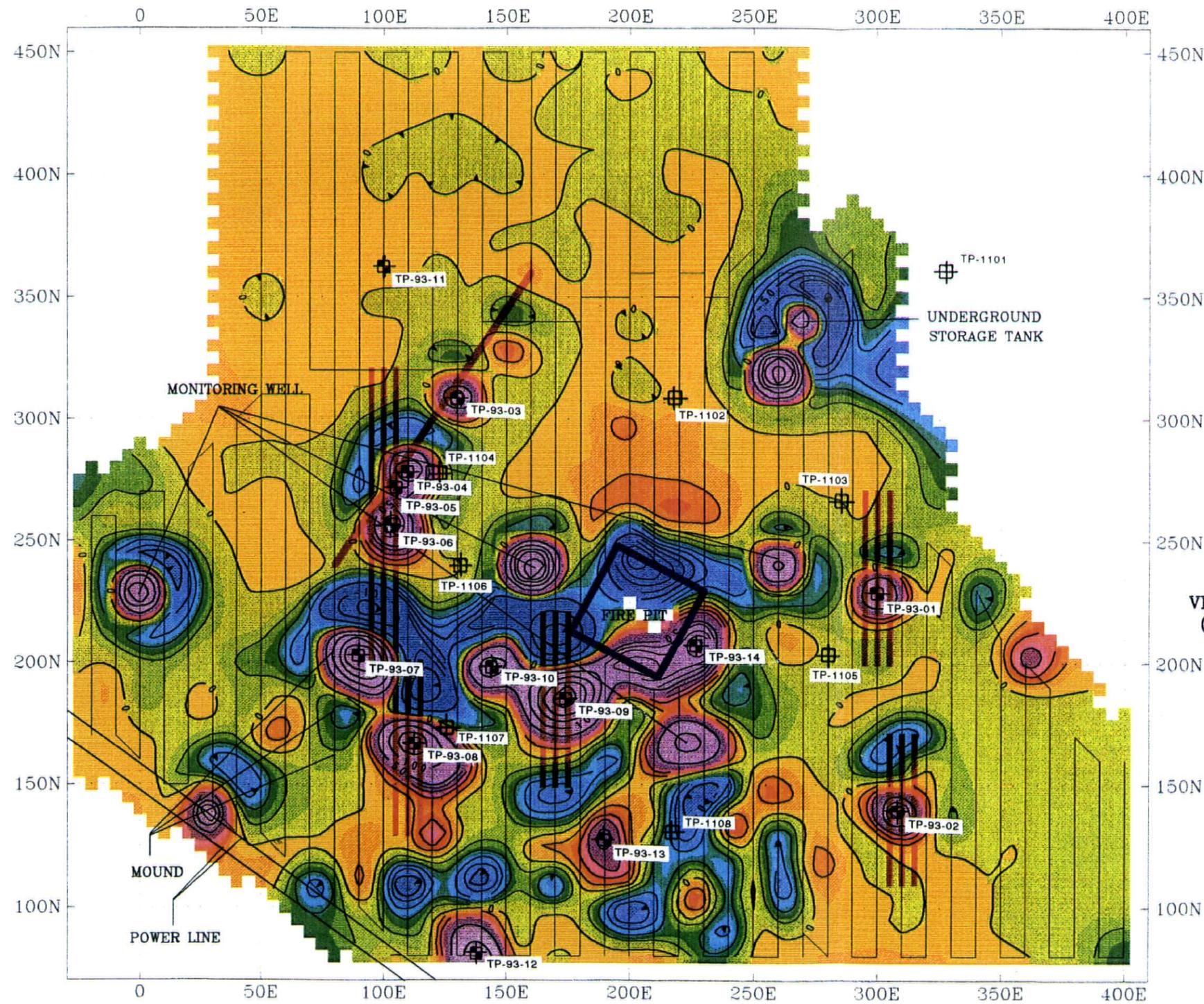
During the period of July 30 through August 3, 1993, magnetometer and GPR surveys were conducted at the site. The purpose of the surveys were to locate targets potentially containing drums. A 10-by-10-foot measurement grid was established and a total of 910 magnetometer measurements were made over an approximate 2.1 acre area. The survey essentially covered the entire cleared area bordered by Old Gurnet and Sandy roads to the south and the woods line to the north (see Figure 3-1). An EDA OmnoPlus Vertical Gradiometer was used for this work.

Magnetic data were processed on August 2, 1993, and several magnetic anomalies were selected for additional surveying with the GPR technique. A GSSI SIR System III with a 500 MHz antenna was used during the GPR survey. A number of magnetically anomalous areas were excluded because of their proximity to monitoring wells, a buried UST, power lines, and the fire training pit which contains steel gates and steel reinforcing rods. A total of six magnetic anomalies were targeted for additional work with GPR.

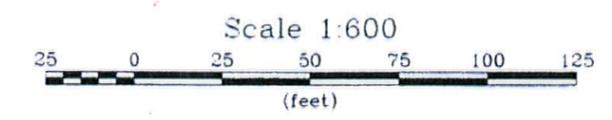
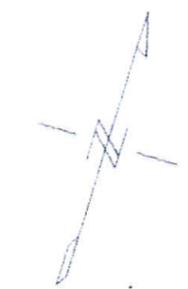
The magnetometer survey did not detect the underground drain piping system leading to the UST. There are no specifications of the materials used for the drain pipes, however, the NAS Brunswick Public Works Department has a contract file that shows PVC piping being used during the construction of the 1987 upgrade. It is speculated that the piping used was PVC based on information in the contracts file and the lack of anomalous magnetometer readings in this area.

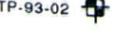
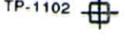
The PA (see Section 3.0) was performed after the initial geophysical survey was conducted; as a result of the PA, it was decided to extend the magnetometer survey to the north by an additional 100 to 140 feet. This additional area covered the trench that was identified during the site walk-over with the fire chief. Another 265 magnetometer measurements were collected on August 11, 1993. No further GPR profiling was conducted in this area because additional magnetic anomalies were not detected. All of the magnetometer vertical gradient data for the entire site were plotted (Figure 4-1).

Those areas showing good correlation between the magnetometer and GPR data identified areas to be test pitted. Based on all of the data, approximately 10 areas of geophysical anomalies were identified for subsequent test pitting.



VERTICAL GRADIENT  
(GAMMAS/METER)



-  GPR TRAVERSE
-  MAGNETOMETER TRAVERSE
-  APPROXIMATE TEST PIT LOCATION  
(14 NEW LOCATIONS)
-  APPROXIMATE TEST PIT LOCATION  
(8 EXISTING LOCATIONS)

 <b>ABB Environmental Services, Inc.</b> <small>ASEA BROWN BOVERI</small>	<b>VERTICAL MAGNETIC GRADIENT CONTOURS - SITE 11 (FIRE TRAINING AREA)</b>	
	<b>RI/FS PROGRAM</b>	
<b>INSTALLATION RESTORATION PROGRAM</b> <b>NAVAL AIR STATION</b> <b>BRUNSWICK, MAINE</b>	<b>JOB NO. 7131-02</b>	<b>FIGURE 4-1</b>

## 5.0 TEST PITTING

On September 8, 1993, 14 test pits were excavated at the site (see Figure 4-1 for locations). Locations of these test pits are currently marked in the field by numbered wooden stakes. These stakes were placed in the approximate center of each test pit. Fifty-five gallon drums or containers (typically five gallons) were uncovered in eight of the test pits; drums were removed from Test Pits 1 and 3 and stored on polyethylene. Apparently contaminated soil was also generated from these test pits and placed into a clean container for future disposal. At subsequent test pits where drums were encountered, they were not disturbed but rather were left in place. Analytical samples collected from three drums were submitted for TCLP analyses (see Section 6.0).

An additional four test pits uncovered metallic debris; two more test pits uncovered no metallic debris. The metallic debris uncovered is interpreted as being non-hazardous because: (1) it was miscellaneous metallic debris and not containers which presently or formerly might have contained hazardous materials; (2) it was not located in test pits that also contained drums or containers; and (3) it was not in contact with any soil that appeared to be grossly contaminated. Table 5-1 lists the number, location, and a brief description of what was found in each of these test pits. Test pit logs are located in Appendix B.

Also shown on Figure 4-1 are locations of the eight test pits previously excavated at the site during the RI and supplemental RI programs. These test pits were located without the benefit of geophysical information and generally characterize the "magnetically quiet" portions of the site. The logs for these test pits are presented in Appendix C, and interpretive analytical data figures that present results obtained during the RI and supplemental RI programs are included in Appendix A.

**TABLE 5-1  
TEST PIT RESULTS**

**TECHNICAL MEMORANDUM: SITE 11  
NAS BRUNSWICK**

<b>TEST PIT</b>	<b>APPROXIMATE DIMENSIONS<sup>1</sup></b>	<b>LOCATION<sup>2</sup></b>	<b>RESULTS</b>
TP-93-01	8'x10'x3'	300E-230N	4 Drums - collected TCLP sample of oily substance from 1 drum
TP-93-02	8'x10'x4'	310E-140N	Metal chair, airplane parts, steel bar
TP-93-03	4'x6'x3'	130E-320N	Metal table top and 5 gallon can of suspected solvent - collected TCLP sample of this liquid
TP-93-04	3'x10'x2'	110E-285N	Drum
TP-93-05	3'x10'x2'	103E-275N	Drum
TP-93-06	3'x6'x4'	90E-260N	Drum
TP-93-07	3'x7'x2'	90E-200N	5 gallon crushed can
TP-93-08	3'x10'x4'	110E-170N	5 gallon crushed cans ("floor wax water"), general refuse, drum parts
TP-93-09	3'x12'x4'	175E-185N	General refuse, cable banding wire, etc.
TP-93-10	3'x8'x4'	145E-200N	General refuse
TP-93-11	4'x10'x6'	100E-365N	Wooden pallets, 5 gallon can "lube oil" - collected TCLP sample from this can - suspected water
TP-93-12	3'x8'x2'	140E-80N	Steel plate
TP-93-13	8'x10'x5'	190E-125N	Nothing observed
TP-93-14	3'x8'x3'	230E-210N	Metal bar

<sup>1</sup> Dimensions shown are in the order of width, length, depth.

<sup>2</sup> Coordinates are based on the geophysical survey grid system.

## 6.0 ANALYTICAL RESULTS

A total of three liquid samples, one from each of three different drums excavated during test-pitting activities, were submitted for laboratory analysis. Samples were submitted from drums discovered in test pits TP-93-01, TP-93-03, and TP-93-11; the samples are identified by the test pit from which they were collected. In order to provide information useful for the ultimate disposal of these drums, especially with respect to land disposal regulations, each sample was analyzed for Toxicity Characteristic Leaching Procedure (TCLP) volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, pesticides, and herbicides. Complete results of these analytical tests are provided in Appendix D.

The TCLP results indicate that the TP-93-01 drum sample had 26 micrograms per liter ( $\mu\text{g}/\text{L}$ ) of benzene, eight detectable SVOCs, mostly polynuclear aromatic hydrocarbons (PAHs), with a total concentration of 302,000  $\mu\text{g}/\text{L}$ , and detectable concentrations of the inorganics barium, chromium, and lead. The TP-93-03 drum sample was nearly 100 percent methyl ethyl ketone (MEK); the only detectable SVOC, bis(2-ethylhexyl)phthalate (BEHP) (which is defined by USEPA as a common laboratory contaminant) was detected at 1,000  $\mu\text{g}/\text{L}$  but was also detected in the associated method blank sample at a concentration of 20  $\mu\text{g}/\text{L}$ . No TCLP inorganics were detected. The TP-93-11 drum sample was contaminated with one VOC, MEK at 0.15%, one SVOC, BEHP, at 40  $\mu\text{g}/\text{L}$  (which was also detected in the method blank sample), and one inorganic, chromium, at 1.5 mg/L.

Only two TCLP pesticides, heptachlor (and its epoxide) and gamma-BHC (Lindane) were detected in one sample, at concentrations of 0.01J  $\mu\text{g}/\text{L}$  and 0.02J  $\mu\text{g}/\text{L}$ , respectively, in the extract. Because of large analytical interferences with the TP-93-01 and TP-93-03 samples, only the TP-93-11 sample was analyzed for TCLP herbicides. None were detected.

The TCLP test results for corrosivity, reactivity, and ignitability are also presented in Appendix D. These results indicate that the TP-93-1 and TP-93-3 drum samples are ignitable; the TP-93-11 sample is not.

## 7.0 SUMMARY AND CONCLUSIONS

The 1993 magnetometer and GPR surveys of Site 11 identified a number of locations with anomalous geophysical signatures. Subsequent test-pitting activities uncovered drums in five separate locations. The condition of the drums was consistent with a reported disposal date of 10 to 20 years ago. The amount of liquids or sludges remaining in these drums is unknown. Due to the deteriorated condition of the drums and the need to minimize the possibility of rupturing them, most of them were left in the ground, although several were removed and temporarily stored above-ground at the site. It is not known how many additional drums may be present in these locations. TCLP analyses of samples from two drums indicated that one of the drums was nearly pure MEK, an industrial solvent, and one was water contaminated with approximately 0.15% MEK. A third drum sample contained low levels of fuel-related compounds.

On the basis of having found drums and containers, at least some of which contain hazardous wastes, it is recommended that all drums on-site be removed as soon as possible and the contents and drums be disposed of appropriately. A confirmatory geophysical survey should be conducted to ensure that all drums, debris, etc. are removed from the site. Because NAS Brunswick is on the Federal Facilities List, this removal action should be coordinated with regulatory agencies; it is anticipated that a time-critical removal action may be appropriate for this site.

## GLOSSARY OF ACRONYMS AND ABBREVIATIONS

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BEHP	bis(2-ethylhexyl)phthalate
FTA	Fire Training Area
GPR	ground-penetrating radar
MEK	methyl ethyl ketone
NAS	Naval Air Station
PA	preliminary assessment
PAH	polynuclear aromatic hydrocarbon
RI	Remedial Investigation
SVOC	semivolatile organic compound
TCLP	toxicity characteristic leaching procedure
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
$\mu\text{g}/\text{L}$	micrograms per liter

## REFERENCES

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- E.C. Jordan Co., 1990. "Draft Final Remedial Investigation Report, NAS Brunswick"; Portland, Maine; August.
- E.C. Jordan Co., 1991. "Draft Final Supplemental Remedial Investigation Report NAS Brunswick"; Portland, Maine; August.
- U.S. Environmental Protection Agency (USEPA), 1987. *Site Analysis, Brunswick Naval Air Station, Brunswick, Maine*, Volume 2 (TS-PIC-86130); E.T. Slonecker, The Bionetics Corporation, Warrenton, Virginia; Prepared for the Office of Research and Development, Las Vegas, Nevada; April 1987.

Appendix A  
Analytical Data Maps

Installation Restoration Program



563,500

HA-1102	2'	4'
1,1-DICHLOROETHANE	7	9
1,2-DICHLOROETHENE(TOTAL)	22	28
1,1,1-TRICHLOROETHANE	560JD	360D
TRICHLOROETHENE	1100JD	24
2-HEXANONE	6700JD	-
TETRACHLOROETHENE	8	6
TOLUENE	34	9
ETHYLBENZENE	1300JD	-
XYLENES(TOTAL)	1100JD	99
BUTYLBENZYLPHTHALATE	3900	-
BIS(2-ETHYLHEXYL)PHTHALATE	5300	-
LEAD	66J	-

TP-1104	1'	2'	3'
BARIIUM	412	-	-
CHROMIUM	21.2 J	-	-
COPPER	127 J	-	-
IRON	30300	-	-
MAGNESIUM	10700	-	-
MANGANESE	689 J	-	-
POTASSIUM	10600	-	-
VANADIUM	123	-	-
ZINC	68.7	-	-

TP-1108	1'/DUP	2'	6'
FLUORANTHENE	970 J/-	-	-
BIS(2-ETHYLHEXYL)PHTHALATE	8900/8400	-	-
BENZO(b)FLUORANTHENE	940 JX/-	-	-
BENZO(k)FLUORANTHENE	940 JX/-	-	-
AROCLOL-1254	9800 CJ/1700 J	-	-
BARIIUM	400/342	-	-
CHROMIUM	53.4 J/91.8 J	-	-
COPPER	107 J/77 J	-	-
IRON	27900/23200	7610	7970
LEAD	129/202	-	-
VANADIUM	100/85.5	-	-
ZINC	124 J/233 J	-	-

TP-1107	2'/DUP	5'	7'
TRICHLOROETHENE	8 J/15 J	-	-
4,4'-DDE	-/20	-	-

TP-1108	1'	2'	6'
NO	-	-	-

HA-1105	4'	6'
TRICHLOROETHENE	11	-
CADIUM	-	32.6
COPPER	-	121
LEAD	-	11.9
ZINC	-	86

HA-1101	2'	4'
TOTAL PAHs	ND	ND

TP-1101	0'	1'	5'
2-BUTANONE	-	21000 J	-
PHENANTHRENE	-	3600	-
PYRENE	-	3900	-
HEPTACLOR	-	59	-
ENDOSULFAN II	-	34	-
LEAD	289 J	378 J	-

TP-1103	1'	2'	6'
1,1,1-TRICHLOROETHANE	13	-	-

HA-1103	2'	4'
TOTAL PAHs	2500	-
LEAD	11.7	-

HA-1104	2'	4'
TOTAL PAHs	800	-
LEAD	9.9	-

TP-1105	1'	2'	5'
NO	-	-	-

MW-304	22'/DUP	34'	38'
NO	-	-	-

MW-1103	12'/DUP
1,1,1-TRICHLOROETHANE	-/40
TRICHLOROETHENE	-/20

**LEGEND**

- J ESTIMATED CONCENTRATION
- D CONCENTRATION OBTAINED BY DILUTION
- X LABORATORY - DEFINED QUALIFER TO PROVIDE INFORMATION NOT PROVIDED BY OTHER QUALIFERS
- MW-304 MONITORING WELL LOCATION
- TP-1101 TEST PIT LOCATION
- CP-155 CONE PENETROMETER BORING LOCATION
- P-102 PIEZOMETER LOCATION
- HA-1103 HAND-AUGER SAMPLE LOCATION

**NOTES:**

1. ORGANIC DATA REPORTED IN ug/kg.
2. SAMPLES COLLECTED IN SEPTEMBER 1990.
3. INORGANIC DATA REPORTED IN mg/kg. INORGANICS IN EXCESS OF EIGHT TIMES THE CONTRACT-REQUIRED QUANTITATION LIMIT ARE PRESENTED.
4. GROUNDWATER IS APPROXIMATELY 10 TO 15 FEET BELOW GROUND SURFACE.

Drawn By: \_\_\_\_\_ Date: 4/91  
 Checked By: \_\_\_\_\_ Date: 4/91

**E.C. JORDAN CO.**  
 CONSULTING ENGINEERS

INTERPRETIVE  
 SOIL ANALYTICAL DATA MAP  
 SITE 11

INSTALLATION RESTORATION PROGRAM  
 NAVAL AIR STATION  
 BRUNSWICK, MAINE

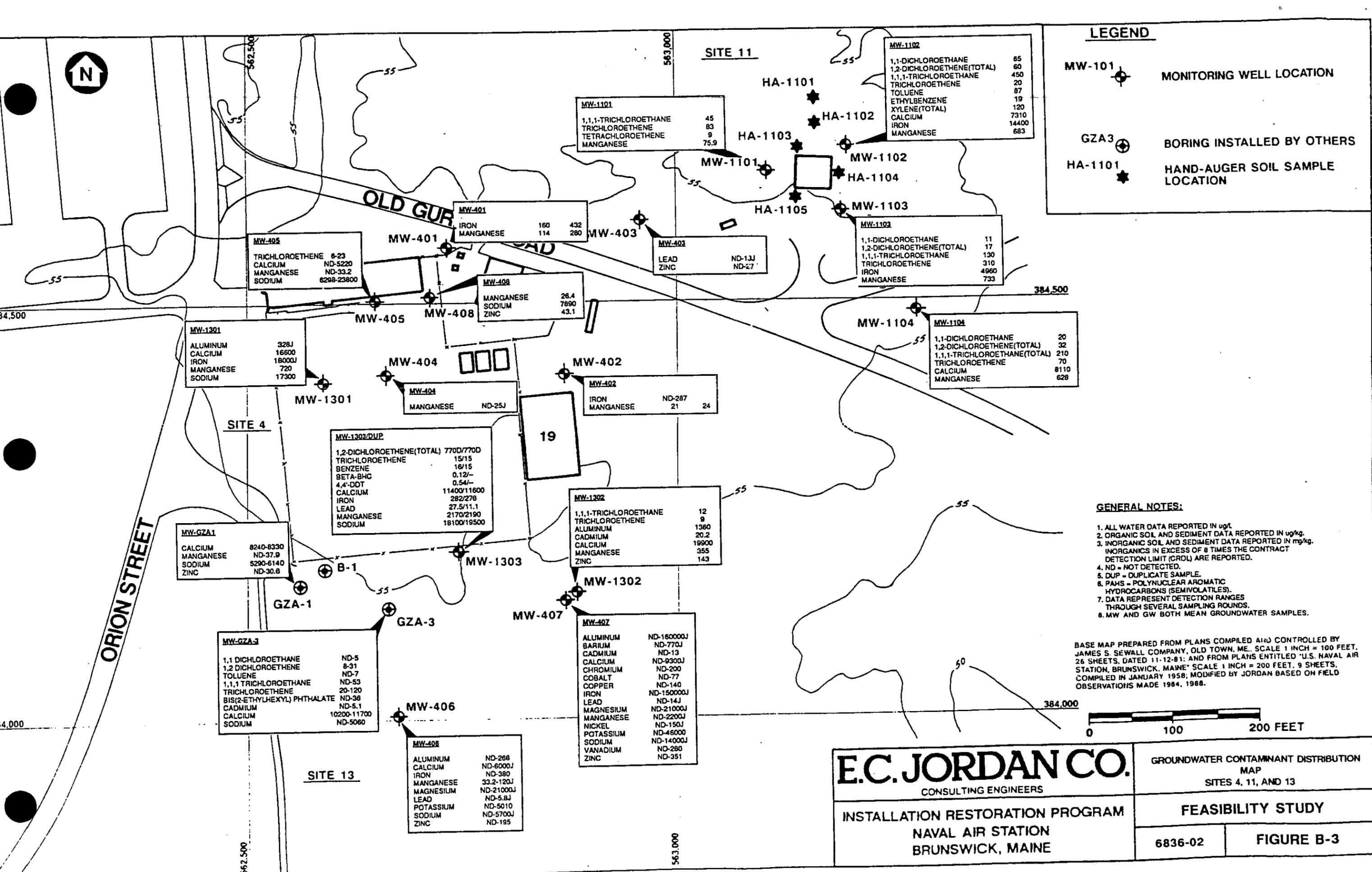
FEASIBILITY STUDY

4607-56

FIGURE 4-2

BASE MAP PREPARED FROM PLANS COMPILED AND CONTROLLED BY JAMES S. SEWALL CO., OLD TOWN, MAINE, 26 SHEETS, DATED 11/12/81; AND FROM PLANS ENTITLED "U.S. NAVAL AIR STATION, BRUNSWICK, MAINE," 9 SHEETS, COMPILED IN JANUARY 1958; MODIFIED BY E.C. JORDAN CO. BASED ON FIELD OBSERVATIONS.





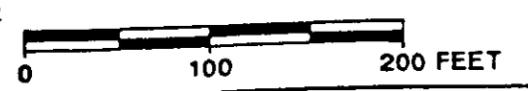
**LEGEND**

- MW-101 MONITORING WELL LOCATION
- GZA3 BORING INSTALLED BY OTHERS
- HA-1101 HAND-AUGER SOIL SAMPLE LOCATION

**GENERAL NOTES:**

1. ALL WATER DATA REPORTED IN ug/l.
2. ORGANIC SOIL AND SEDIMENT DATA REPORTED IN ug/kg.
3. INORGANIC SOIL AND SEDIMENT DATA REPORTED IN mg/kg. INORGANICS IN EXCESS OF 8 TIMES THE CONTRACT DETECTION LIMIT (CROL) ARE REPORTED.
4. ND = NOT DETECTED.
5. DUP = DUPLICATE SAMPLE.
6. PAHS = POLYNUCLEAR AROMATIC HYDROCARBONS (SEMI-VOLATILES).
7. DATA REPRESENT DETECTION RANGES THROUGH SEVERAL SAMPLING ROUNDS.
8. MW AND GW BOTH MEAN GROUNDWATER SAMPLES.

BASE MAP PREPARED FROM PLANS COMPILED AND CONTROLLED BY JAMES S. SEWALL COMPANY, OLD TOWN, ME. SCALE 1 INCH = 100 FEET. 26 SHEETS, DATED 11-12-81; AND FROM PLANS ENTITLED 'U.S. NAVAL AIR STATION, BRUNSWICK, MAINE' SCALE 1 INCH = 200 FEET. 9 SHEETS. COMPILED IN JANUARY 1958; MODIFIED BY JORDAN BASED ON FIELD OBSERVATIONS MADE 1984, 1988.



<p><b>E.C. JORDAN CO.</b> CONSULTING ENGINEERS</p> <p>INSTALLATION RESTORATION PROGRAM NAVAL AIR STATION BRUNSWICK, MAINE</p>	GROUNDWATER CONTAMINANT DISTRIBUTION MAP SITES 4, 11, AND 13	
	FEASIBILITY STUDY	
	6836-02	FIGURE B-3

## Appendix B

Test Pit Logs (1993)

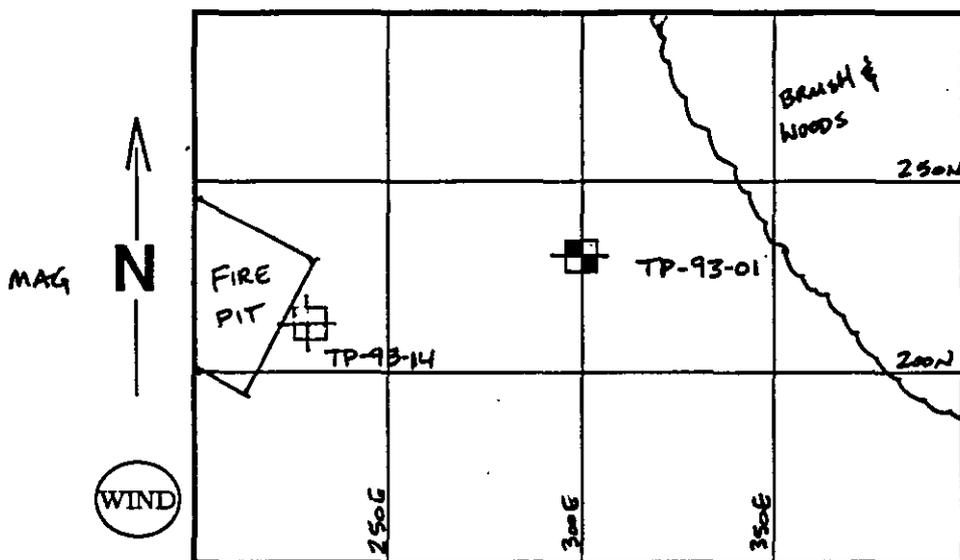
Installation Restoration Program

# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-9301 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 300E - 230N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



CREW MEMBERS:

1. TOM LONGLEY } ABB
2. DAVE DIONNE } ABB
3. FRED ANDERSON } CLEAN HARBORS
4. MIKE BAILEY } CLEAN HARBORS
- 5.
- 6.

MONITOR EQUIPMENT:

PI Meter  N  
 Explosive Gas Y N  
 Avail. Oxygen Y N  
 OVA Y N  
 Other DRAGER TUBES -

TESTED NEGATIVE FOR  
BENZENE & V.C.

Photographs, Roll \_\_\_\_\_  
 # 1

Exposure 1, 2, 3, 4, 5, 6, 7

NOTES:

TARGET IS A MAGNETIC AND GPR ANOMALOUS AREA LOCATED NORTH AND EAST OF THE FIRE TRAINING PIT.  
 ANOMALOUS AREA IS DISTINCT FROM ALL OTHER AREAS AT SITE (NOT PART OF A GROUP OR TREND OF ANOMALIES)

ABB Environmental Services, Inc.

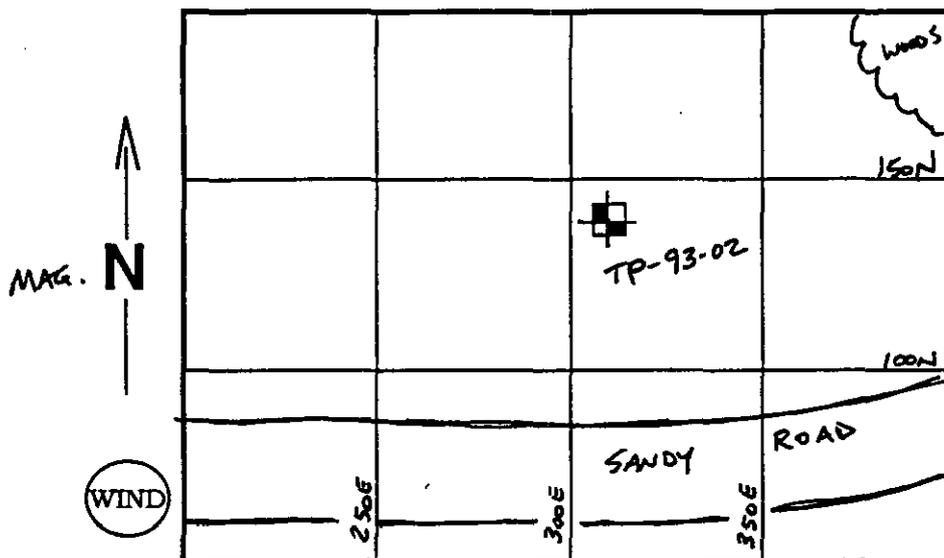


# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-93-02 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 310E - 140N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 50 FT.

NOTES: \_\_\_\_\_

TARGET IS A MAGNETOMETER AND GPR  
 ANOMALOUS AREA LOCATED EAST AND SOUTH  
 OF THE FIRE TRAINING PIT.

CREW MEMBERS:

1. TOM Langley } ABB
2. DAVE DIANNE } ABB
3. FRED ANDERSON } CLEAN
4. MIKE BAILEY } HARBORS
- 5.
- 6.

MONITOR EQUIPMENT:

PI Meter  Y  N  
 Explosive Gas  Y  N  
 Avail. Oxygen  Y  N  
 OVA  Y  N  
 Other DRAGER TUBES

Photographs, Roll \_\_\_\_\_  
 # 1

Exposure 8, 9

ABB Environmental  
 Services, Inc.

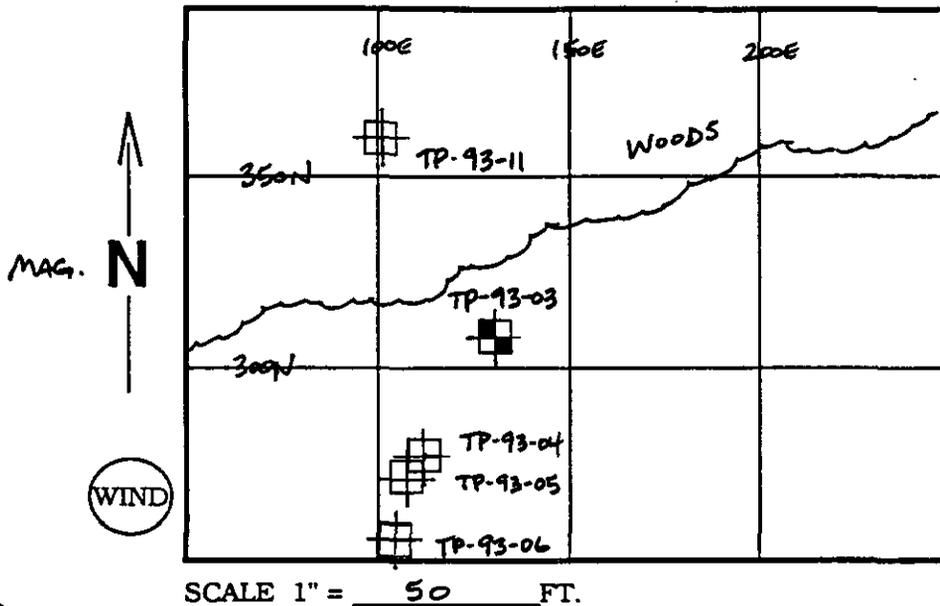


# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-93-03 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 130E-320N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



CREW MEMBERS:

1. TOM LONGLEY
  2. DAVE DIONNE
  3. FRED ANDERSON
  4. MIKE BAILEY
  - 5.
  - 6.
- } ABB  
 } CLEAN HARBORS

MONITOR EQUIPMENT:

PI Meter	<input checked="" type="checkbox"/>	N
Explosive Gas	<input type="checkbox"/>	N
Avail. Oxygen	<input type="checkbox"/>	N
OVA	<input type="checkbox"/>	N
Other	<u>DRAGER TUBES</u>	

NOTES:

TARGET IS A DISTINCT, SHARP ANOMALY  
 NEAR EDGE OF WOODS, ABOUT 80' WEST AND  
 NORTH OF FIRE PIT. BOTH MAGNETOMETER AND  
 GPR READINGS WERE POSITIVE.

Photographs, Roll \_\_\_\_\_  
 #1  
 Exposure 10, 11

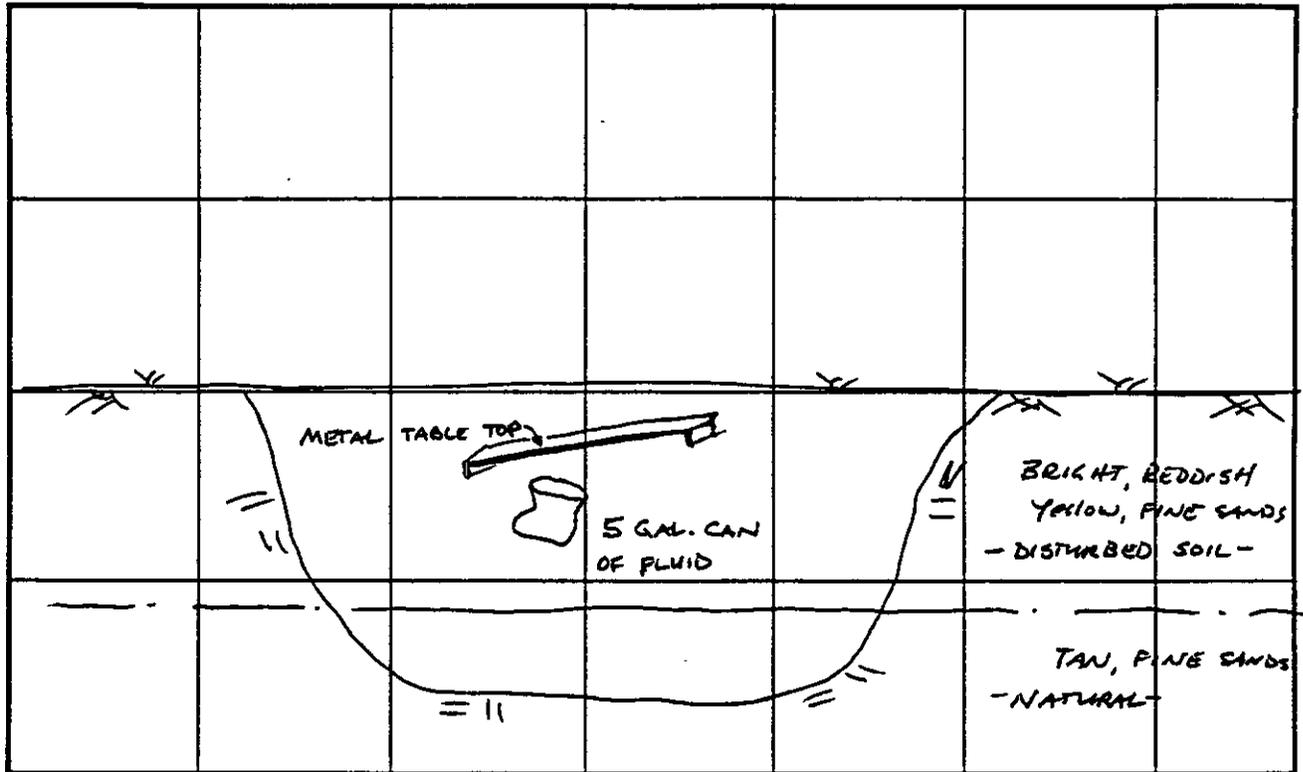
ABB Environmental  
 Services, Inc.

NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-03

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: \_\_\_\_\_

TARLET WAS CAUSED BY ~ 2'x4' RUSTY METAL TABLE TOP(?) / COUNTER TOP(?). UNDERNEATH THIS WAS PARTIALLY CRUSHED 5 GAL. CONTAINER W/ PURE SOLVENT; ABOUT 1/3 FULL. COLLECTED SAMPLE & THEN OVERPACKED REMAINDER OF CONTENTS & CAN.

SAMPLE COLLECTED FOR:

- TCLP
- CORROSIVITY
- REACTIVITY
- IGNITABILITY

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	TP-93-03		PEGGED PI
S-2			METER
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 14, 15

Attachments \_\_\_\_\_  
SIGNATURE: John D. Tully

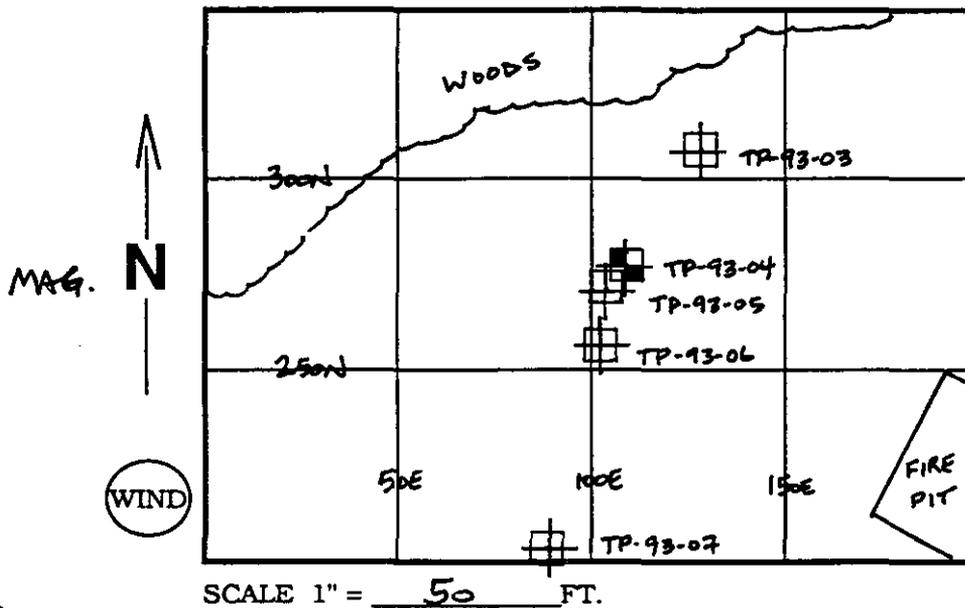
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-93-04 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 110E-284N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



CREW MEMBERS:

1. TOM LONGLEY } ABB
2. DAVE DIONNE } ABB
3. FRED ANDERSON } CLEAN
4. MIKE BAILEY } HARBORS
- 5.
- 6.

MONITOR EQUIPMENT:

PI Meter	<input checked="" type="checkbox"/>	N
Explosive Gas	<input type="checkbox"/>	N
Avail. Oxygen	<input type="checkbox"/>	N
OVA	<input type="checkbox"/>	N
Other DRAGER TUBES		

NOTES:

TARGET IS PART OF ANOMALOUS AREA  
 MEASURING ~50' LONG BY ~30' WIDE,  
 TRENDING NORTH/NORTHEAST & LOCATED  
 APPROX. 80' WEST & SLIGHTLY NORTH OF  
 FIRE PIT. THIS IS ONE OF 3 TEST PITS  
 EXCAVATED IN THIS ANOMALOUS AREA, ALONG  
 WITH TP-93-05 AND TP-93-06.

Photographs, Roll \_\_\_\_\_  
 #1  
 Exposure 20

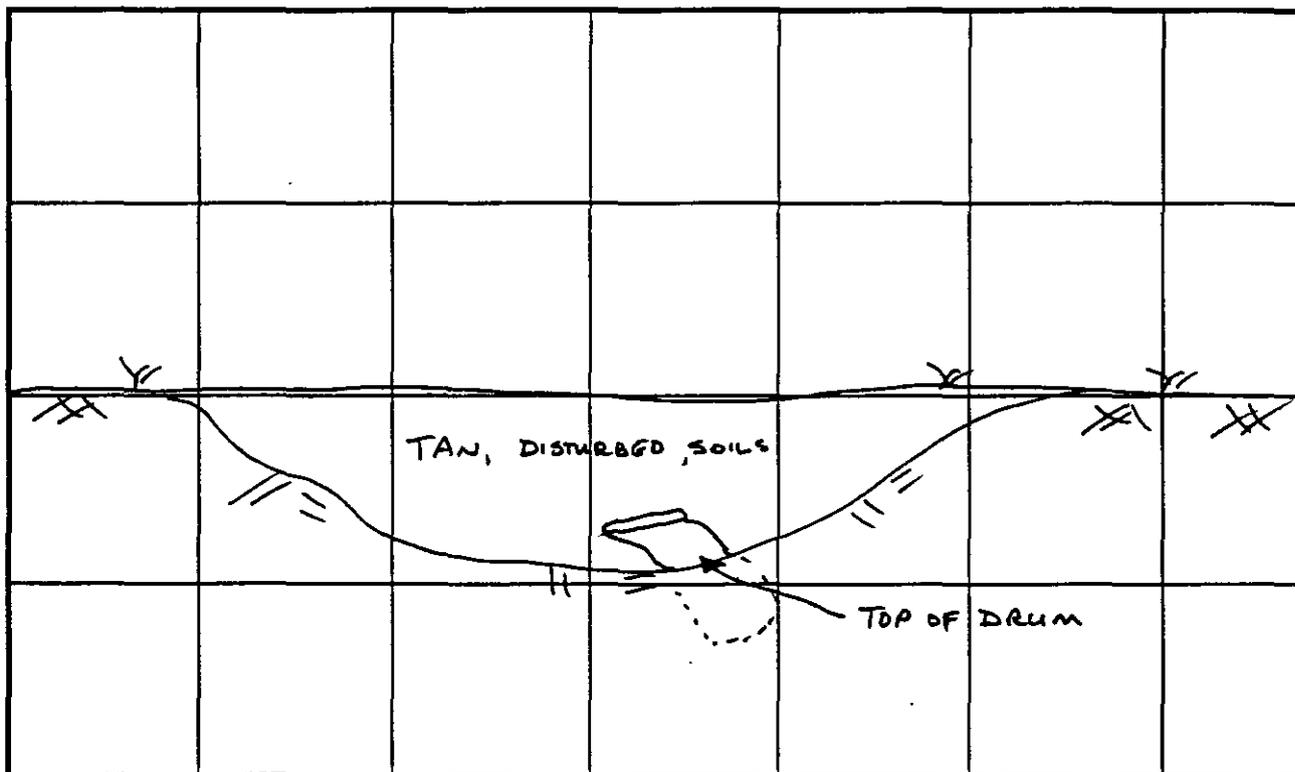
ABB Environmental  
 Services, Inc.

# NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-04

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: \_\_\_\_\_

BASED ON PRESENCE OF DRUMS  
FOUND IN TP-93-01 & TP-93-03,  
DECISION WAS MADE TO CONFIRM  
CAUSE OF ANOMALIES & THEN  
COVER UP TEST PIT. WORK FROM  
TP-93-04 ON IS CONFIRMATORY IN  
NATURE.  
DISCOVERED DRUM (~55 GAL.) 1.5' bgs.  
RUSTY & DENTED, TILTING TO  
ONE SIDE.  
NO PID READINGS.

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 15

Attachments \_\_\_\_\_

SIGNATURE: John D. Zylg

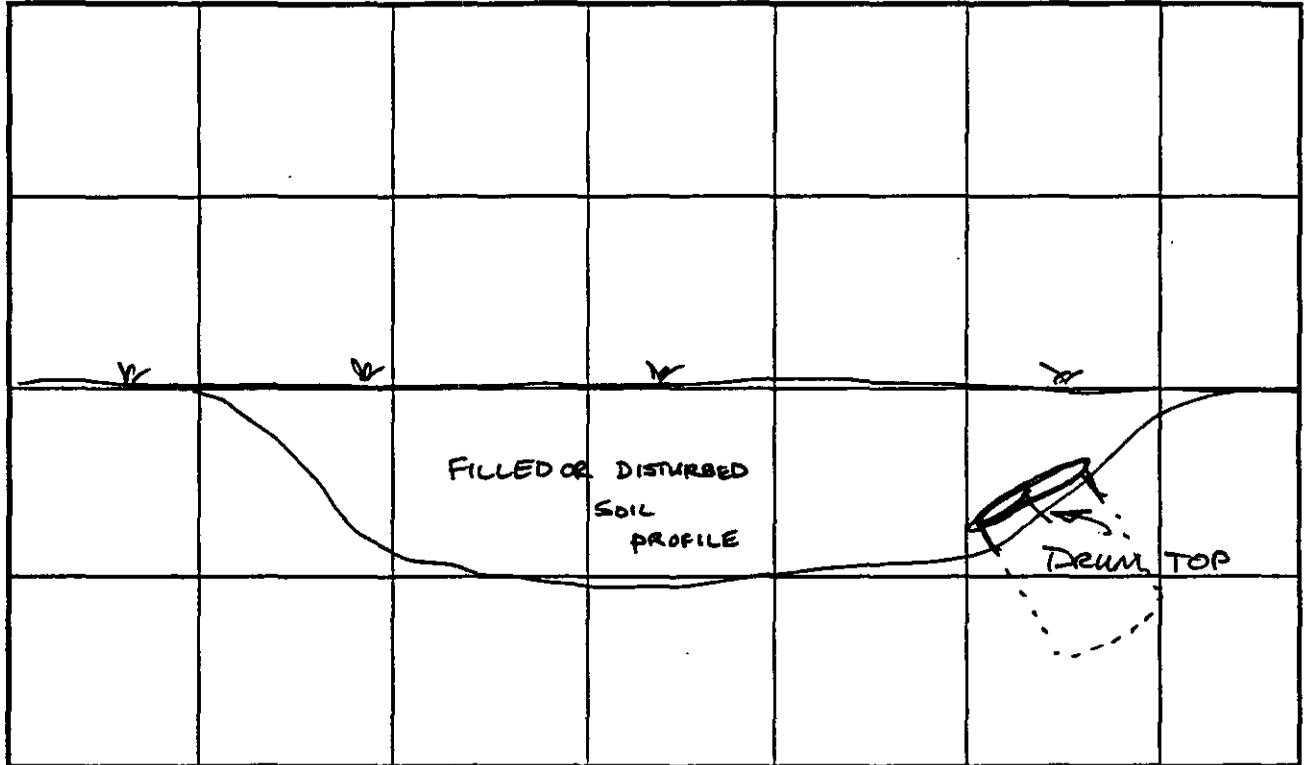
ABB Environmental Services, Inc.



NASB TEST PIT RECORD

Profile Along Test Pit- TP-93-05

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: \_\_\_\_\_

AS IN TP-93-04, DISCOVERED  
SHALLOW, BURIED (~55 GAL.) DRUM.  
PID READINGS UP TO 269 PPM  
DIRECTLY ABOVE DRUM TOP.  
CONFIRMED MAC. & GPR TARGET &  
FILLED IN TEST PIT.  
DRUM TOP IS 1' bgs.

OTHER DRUMS MAY BE PRESENT,  
SINCE EXCAVATION WAS STOPPED AFTER  
DISCOVERING THIS DRUM.

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (ft.)	HD. SP. VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 15

Attachments \_\_\_\_\_  
SIGNATURE: John W. Zylg

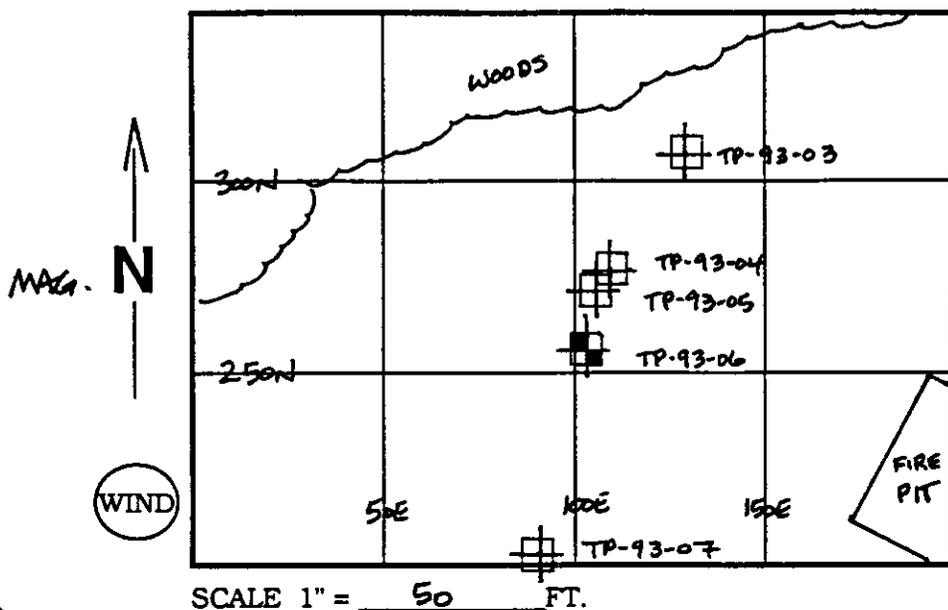
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-93-06 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 90E-260N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



**CREW MEMBERS:**

1. TOM LONGLEY } ABB
2. DAVE DIANNE } ABB
3. FRED ANDERSON } CLEAN HARBORS
4. MIKE BAILEY } CLEAN HARBORS
- 5.
- 6.

**MONITOR EQUIPMENT:**

PI Meter	<input checked="" type="checkbox"/>	N
Explosive Gas	<input type="checkbox"/>	N
Avail. Oxygen	<input type="checkbox"/>	N
OVA	<input type="checkbox"/>	N
Other	<u>DRAGER TUBES</u>	

**NOTES:** \_\_\_\_\_

TARGET IS A MAGNETIC HIGH THAT IS PART OF ANOMALOUS AREA ALSO EXPLORED WITH TP-93-04 AND TP-93-05. TARGET WAS ALSO CONFIRMED BY GPR.

Photographs, Roll \_\_\_\_\_  
 #1  
 Exposure 18

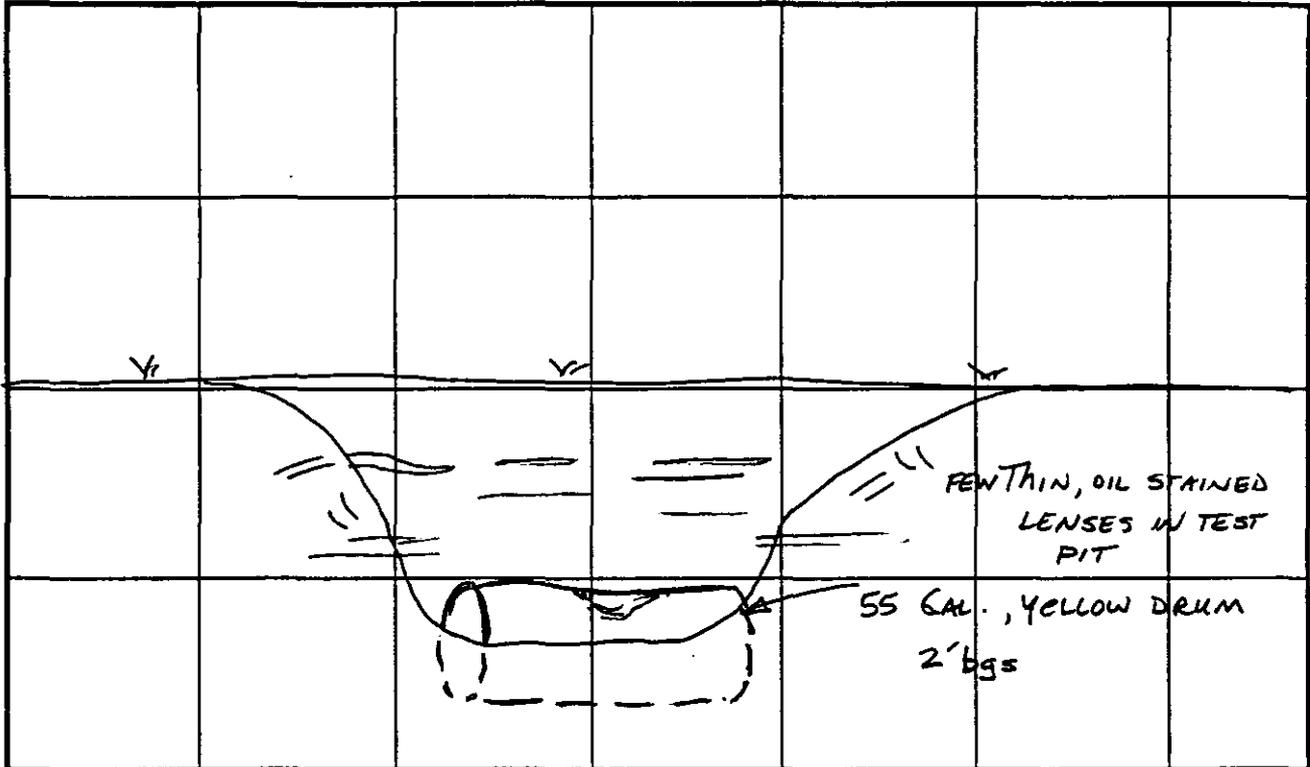
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP- 93-06

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: \_\_\_\_\_  
 \_\_\_\_\_  
 DISCOVERED 55 gal. yellow drum;  
 DAMAGED; APPEARS AS EMPTY &  
 LYING ON ITS SIDE. SIDES ARE  
 COMPRESSED. CONFIRMED ANOMALY  
 & COVERED TEST PIT ONCE FOUND  
 DRUM. NO PID READINGS ABOVE  
 DRUM.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (ft.)	HD. SP. VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 15

Attachments —

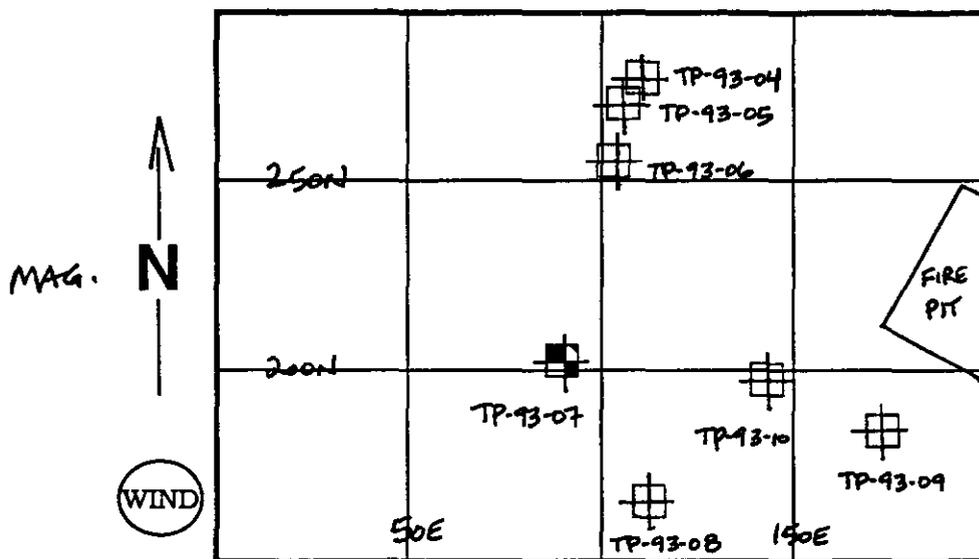
SIGNATURE: John W. Ziegler

ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

SITE SITE 11  
 TEST PIT TP-93-07 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 90E-200N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 50 FT.

NOTES: \_\_\_\_\_

TARGET IS DISTINCT SHARP, MAGNETIC  
ANOMALY LOCATED BENEATH SMALL MOUND OF  
GRAVELLY SAND, LOCATED JUST EAST OF  
LARGER MOUNDED AREA.

TARGET IS LOCATED ABOUT 80 FEET  
SOUTH WEST OF FIRE PIT.

CREW MEMBERS:

1. TOM LONGLEY } ABB
2. DAVE DIONNE } ABB
3. FRED ANDERSON } CLEAN HARBORS
4. MIKE BAILEY } CLEAN HARBORS
5. \_\_\_\_\_
6. \_\_\_\_\_

MONITOR EQUIPMENT:

PI Meter	<input checked="" type="checkbox"/>	N
Explosive Gas	Y	N
Avail. Oxygen	Y	N
OVA	Y	N
Other	<u>DRAGER TUBES</u>	

Photographs, Roll \_\_\_\_\_

# 1

Exposure 17

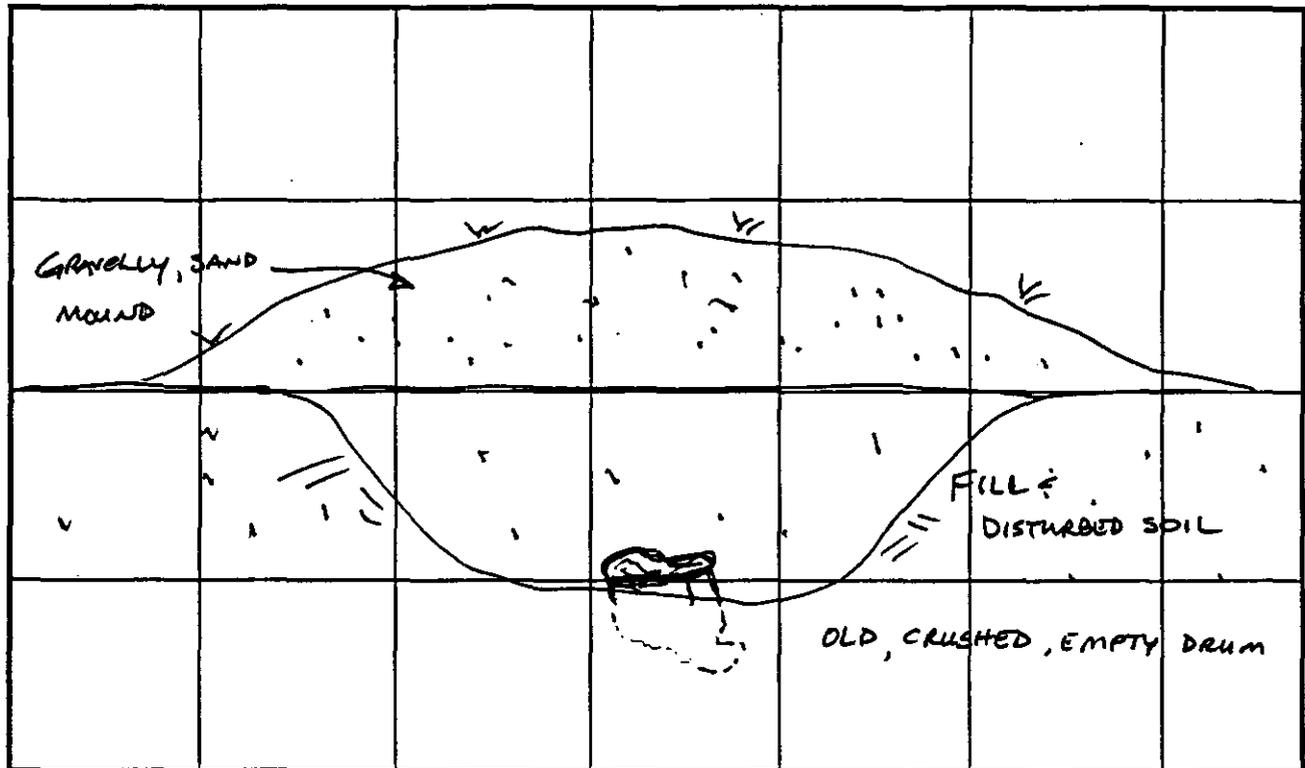
ABB Environmental  
Services, Inc.

NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-07

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: \_\_\_\_\_

DUG THROUGH FILLED MOUND INTO  
DISTURBED GROUND. AT ~1.5' TO 2'  
bgs FOUND OLD, RUSTY, CRUSHED  
DRUM. DRUM APPEARS TO BE OLDER  
THAN THOSE FOUND IN OTHER TEST  
PITS; MUCH MORE CORRODED. DID NOT  
DIG DEEPER ONCE FOUND THIS DRUM.

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (FT.)	HD. SP. VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 15

Attachments \_\_\_\_\_

SIGNATURE: John D. Zylke

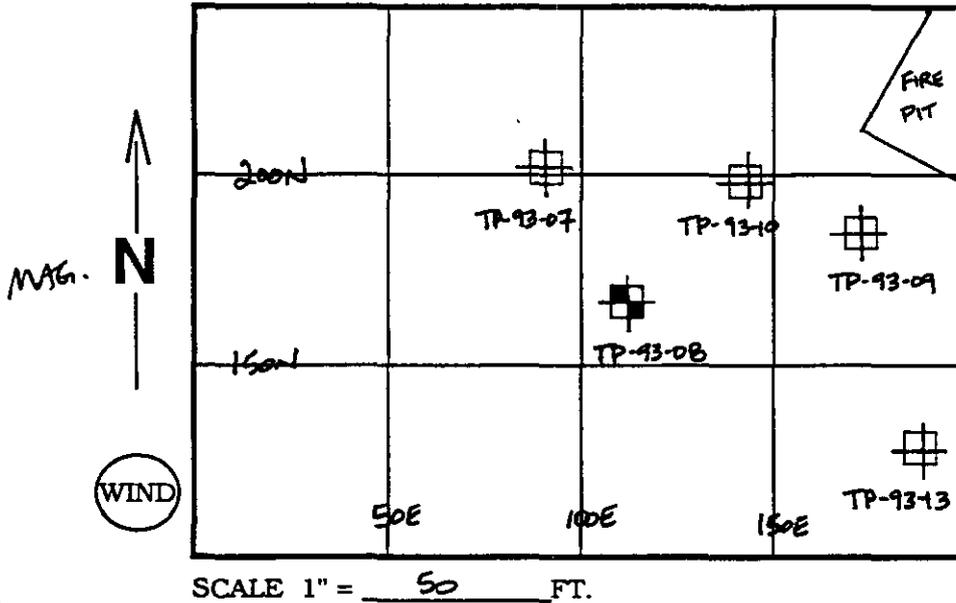
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-93-08 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 110E-170N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



**CREW MEMBERS:**

1. TOM LONGLOY } ABB
2. DAVE DIONNE } ABB
3. FRED ANDERSON } CLEAN HARBORS
4. MIKE BAILEY } CLEAN HARBORS
- 5.
- 6.

**MONITOR EQUIPMENT:**

PI Meter	<input checked="" type="checkbox"/>	N
Explosive Gas	<input type="checkbox"/>	N
Avail. Oxygen	<input type="checkbox"/>	N
OVA	<input type="checkbox"/>	N
Other	<u>DRAGER TUBES</u>	

**NOTES:** \_\_\_\_\_

TARGET AREA IS ~75' SOUTH & WEST OF  
 FIRE PIT; MAGNETOMETER DATA SUGGESTS  
 A DISTINCT, SEPARATE AREA FROM OTHER  
 AREAS AT THE SITE. GPR CONFIRMED THIS  
 TARGET.

Photographs, Roll \_\_\_\_\_  
 #1  
 Exposure 12, 13

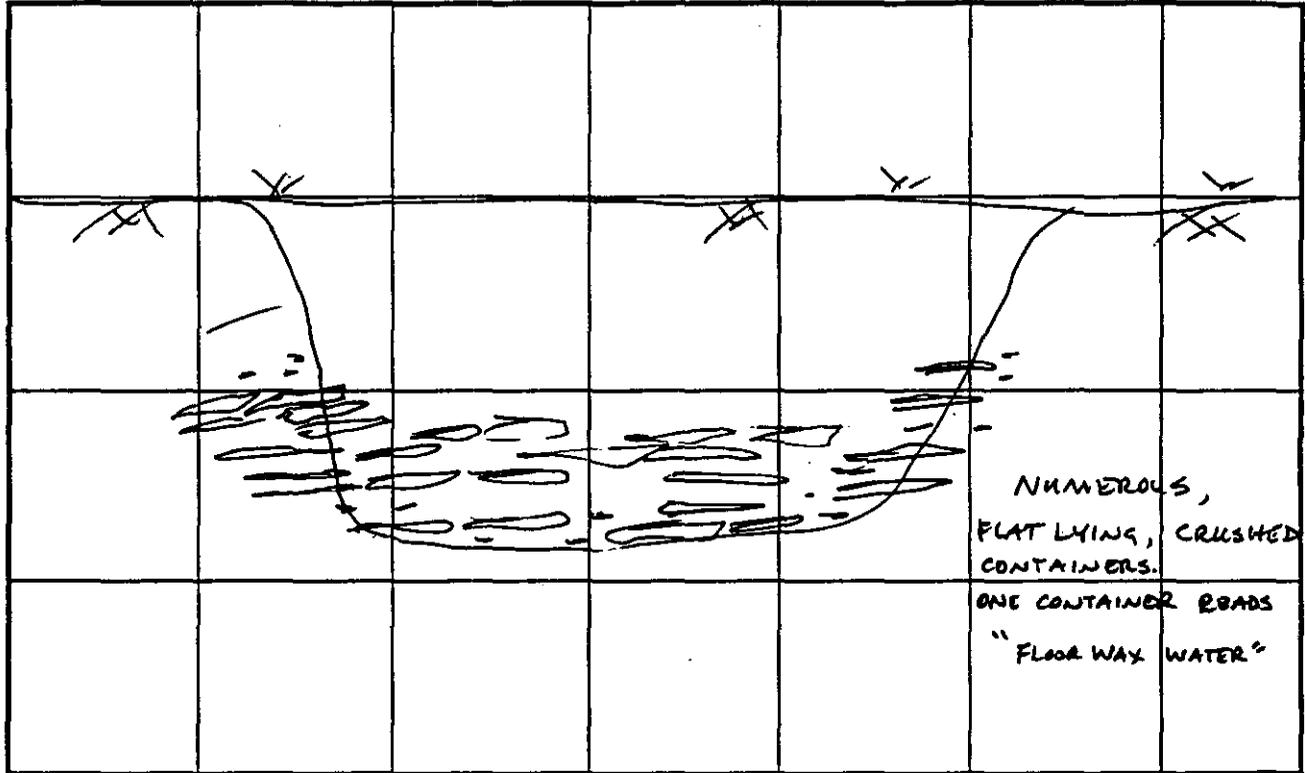
ABB Environmental  
 Services, Inc.

NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-08

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: TEST PIT ... CONTAINS GENERAL REFUSE, DRUM PARTS, NUMEROUS CRUSHED 5-GALLON CONTAINERS ("FLOOR WAX WATER"). APPEARS TO BE A CRUSHED-CAN BURY PIT. TD ≈ 3.5' bgs - HEAVILY STAINED SOIL, ODOROUS. PID RECORDS UP TO 38 PPM READINGS IN TEST PIT.

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (FL)	HD. SP. VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 16

Attachments 1

SIGNATURE: John D. Lyly

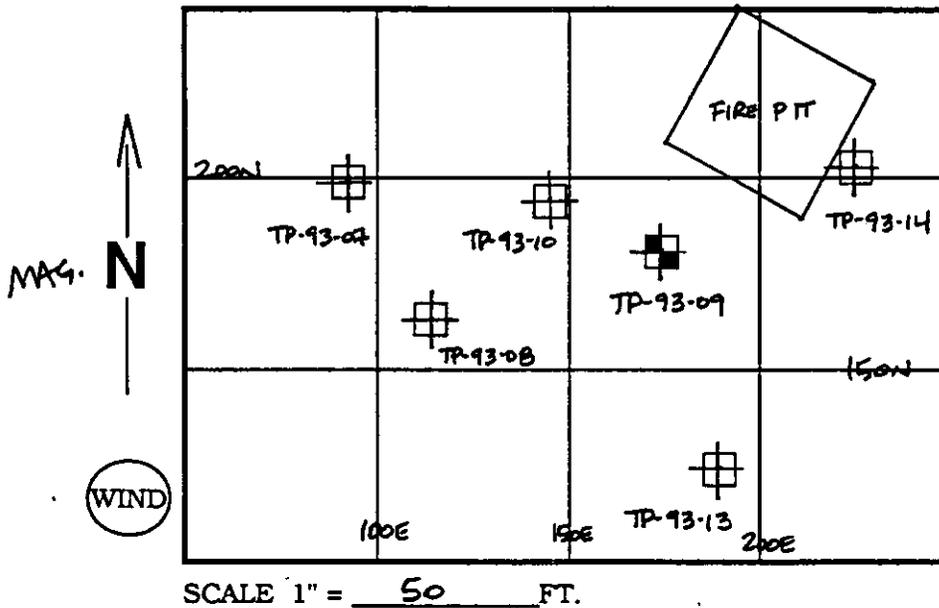
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-93-09 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 175E-185N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 50 FT.

NOTES: \_\_\_\_\_

TARGET IS A MAGNETIC HIGH WITHIN AN AREA ALONG THE SOUTHERN PORTION OF THE FIRE PIT THAT CONTAINS OTHER MAGNETIC HIGHS (TP-93-10 & TP-93-14).

CREW MEMBERS:

1. TOM LONGLEY } ABB
2. DAVIDIANNE } ABB
3. FRED ANDERSON } CLEAN HARBORS
4. MIKE BAILEY } CLEAN HARBORS
- 5.
- 6.

MONITOR EQUIPMENT:

PI Meter  Y  N  
 Explosive Gas  Y  N  
 Avail. Oxygen  Y  N  
 OVA  Y  N  
 Other DRAGER TUBES

Photographs, Roll \_\_\_\_\_  
 # 1  
 Exposure 15

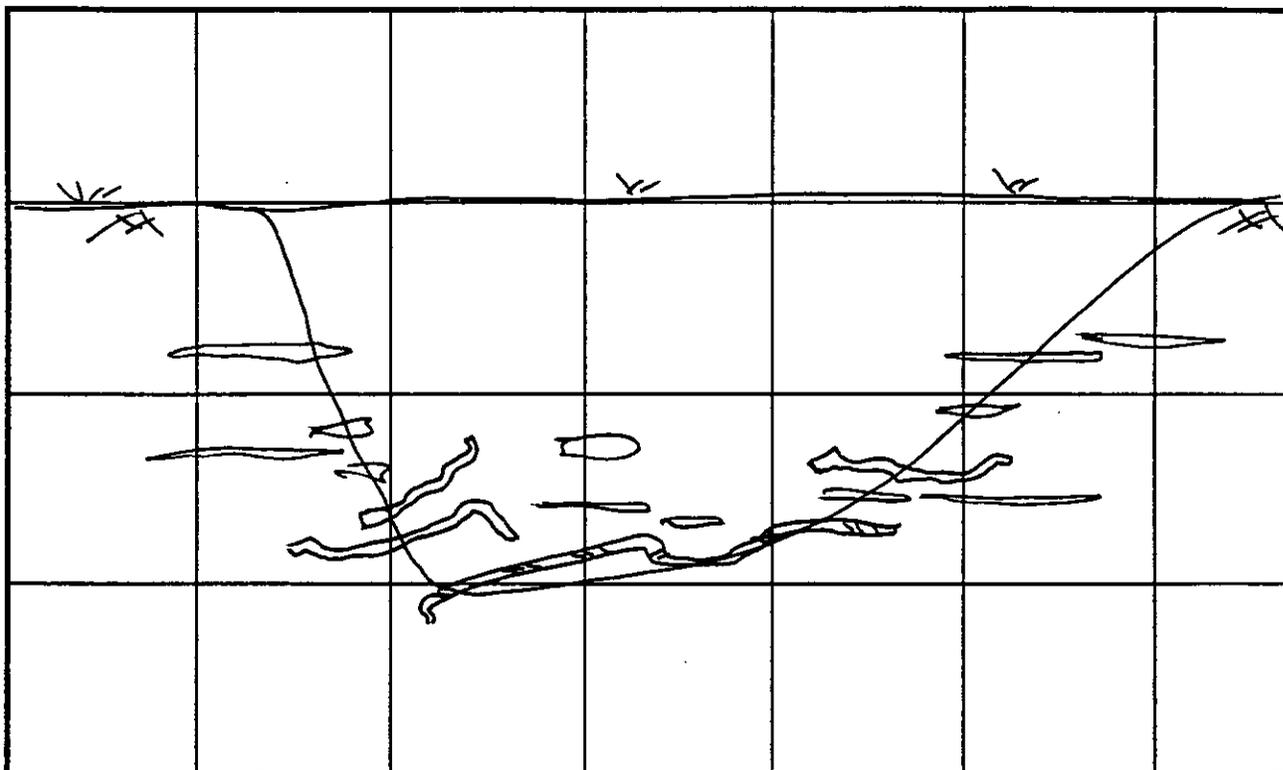
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-09

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: \_\_\_\_\_  
 TD ~ 4' bgs.  
 ALL FILL OF DISTURBED SOIL.  
 CONTAINS GENERAL REFUSE, CRUSHED  
 METAL CONTAINERS, STEEL CABLE, METAL  
 BANDING MATERIAL, POSSIBLE SONAR  
 CONTAINER. SOILS ARE DIRTY &  
 HAVE OCCASIONAL OIL-STAINED  
 LENSES (ONLY ~ 25' FROM FIRE PIT)  
 BUT HAS OVERALL TAN COLOR.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. \_\_\_\_\_

Attachments \_\_\_\_\_

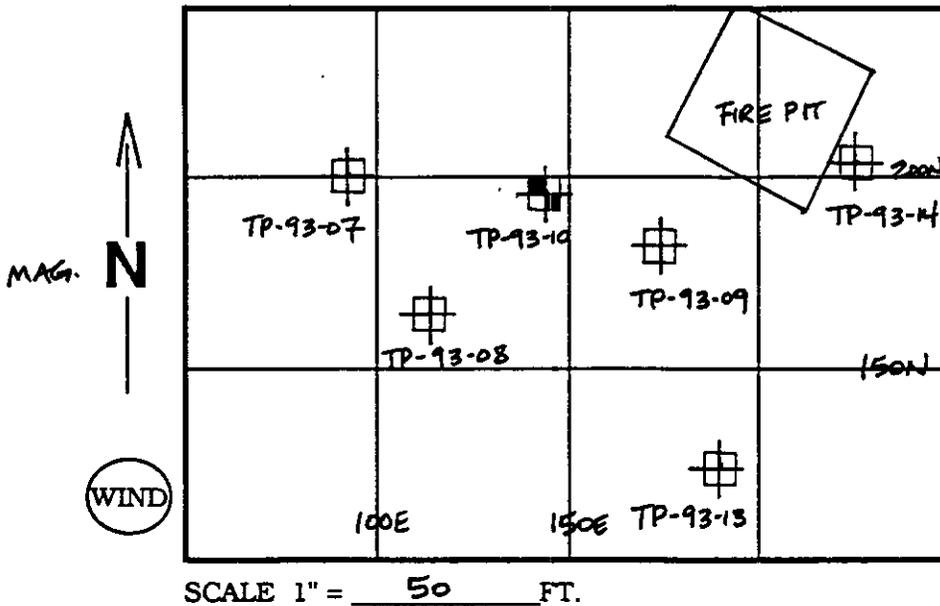
SIGNATURE: \_\_\_\_\_

ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

SITE SITE 11  
 TEST PIT TP-93-10 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 145E-200N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



CREW MEMBERS:

1. TOM LONGLEY } ABB
2. DAVE DIONNE } ABB
3. FRED ANDERSON } CLEAN HARBORS
4. MIKE BAILEY } CLEAN HARBORS
- 5.
- 6.

MONITOR EQUIPMENT:

PI Meter  Y  N  
 Explosive Gas  Y  N  
 Avail. Oxygen  Y  N  
 OVA  Y  N  
 Other DRAGER TUBES

NOTES: \_\_\_\_\_

TARGET IS 30' SOUTHWEST OF FIRE PIT.  
 MAY BE A CONTINUATION OF MAGNETIC HIGH  
 ASSOCIATED WITH TP-93-09.

Photographs, Roll \_\_\_\_\_  
 # 1  
 Exposure 16

ABB Environmental  
 Services, Inc.

# NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-10

SKETCH MAP OF TEST PIT PROFILE

		SEE TP-93-09				

SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: \_\_\_\_\_  
 \_\_\_\_\_  
 SAME TYPE OF REFUSE AS SEEN IN  
 TP-93-09. OLD, RUSTY, CORRODED  
 REFUSE & CANS. SOIL PROFILE AS IN  
 TP-93-09; OIL STAINED LENSES &  
 ODOROUS.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1			/
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

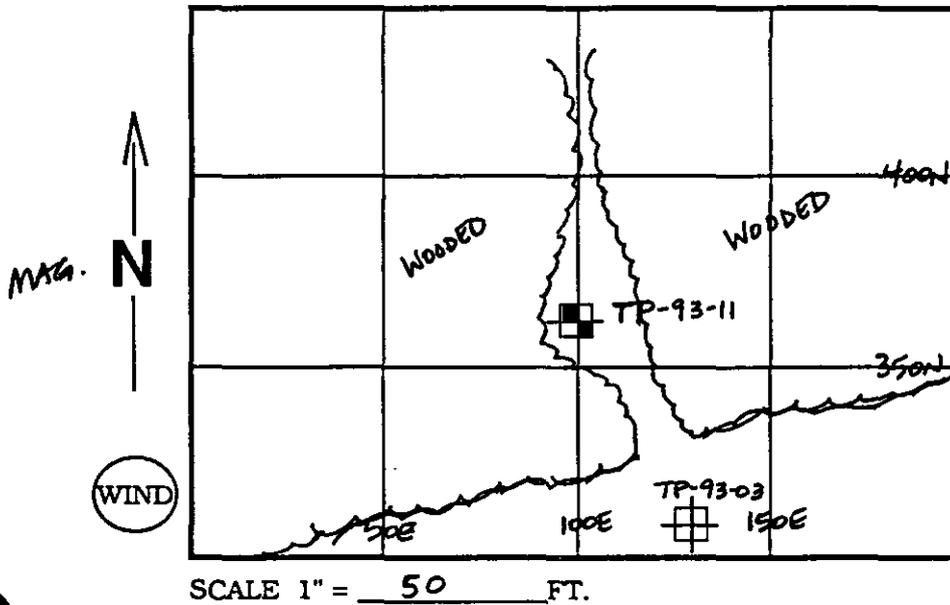
REFERENCE: Field Book, Pg. 16  
 Attachments \_\_\_\_\_  
 SIGNATURE: John W. Zylg  
 ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

1 of 2

SITE SITE II  
 TEST PIT TP-93-11 DATE 9-8-93 TIME ~14:20 END \_\_\_\_\_  
 COORDINATES 100E - 365N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



CREW MEMBERS:

1. TOM LONGLEY } ABB
2. DAVE DIANNE } ABB
3. FRED ANDERSON } CLEAN HARBORS
4. MIKE BAILEY } CLEAN HARBORS
5. \_\_\_\_\_
6. \_\_\_\_\_

MONITOR EQUIPMENT:

PI Meter	<input checked="" type="checkbox"/>	N
Explosive Gas	<input type="checkbox"/>	N
Avail. Oxygen	<input type="checkbox"/>	N
OVA	<input type="checkbox"/>	N
Other	DRAGER TUBES	

NOTES: \_\_\_\_\_

NO GEOPHYSICAL ANOMALY WAS DETECTED IN THIS MAGNETICALLY "FLAT" AREA. TEST PIT WAS DUG TO DETERMINE NATURE OF TRENCH AT THIS LOCATION; ALSO BASED ON INTERVIEW & SITE VISIT WITH NAS BRUNSWICK FIRE CHIEF. AN OBVIOUS TRENCH IS LOCATED HERE WITH APPROX. DIMENSIONS OF 20' LONG BY 10' WIDE. MATERIAL APPEARS TO HAVE BEEN EXCAVATED FROM THIS AREA & PARTIALLY FILLED BACK IN.

BOB MCGIRR - ABB ARRIVES ON SITE ~ 15:00 & STAYS THROUGH REMAINDER OF DAY

TROY SMITH }  
 NANCY BEARDSLEY } ME DEP ARRIVE ON SITE AT ~ 14:20 / REVIEW ACTIVITIES FROM TP-93-11 THROUGH TP-93-14 - LEAVE SITE AT ~ 16:00

Photographs, Roll \_\_\_\_\_ #1  
 Exposure 21, 22

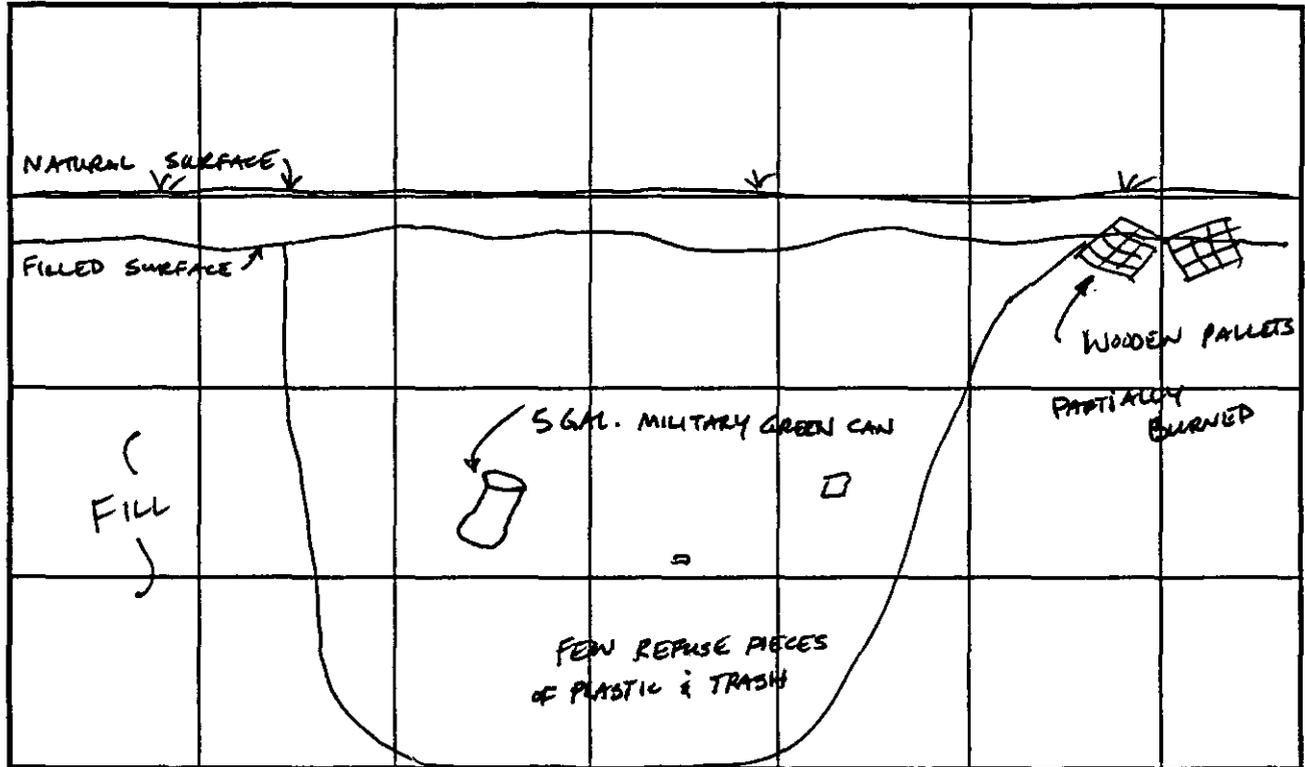
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-11

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES:

Generally CLEAN FILL WITH FEW PIECES OF PLASTIC & TRASH. UNBURNED 5 gal. CAN PARTIALLY FILLED W/ WHAT APPEARS TO BE WATER. NO PID RESPONSE ON CAN. CAN SAYS: " PL-S

LUBE OIL GENERAL PURPOSE (WEAPONS OIL, LIGHT)

VV-L-800A

---

---

DATE OF MANUFACTURE? 80  
TEST DATE 82

ALSO, WOODEN PALLETS AT ONE END OF PIT (BURNED) COLLECTED SAMPLE OF LIQUID FROM CAN FOR TCLP, IGNITABILITY, CORROSIVITY, REACTIVITY

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	TP-93-11		0 ppm
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 18, 19

Attachments \_\_\_\_\_

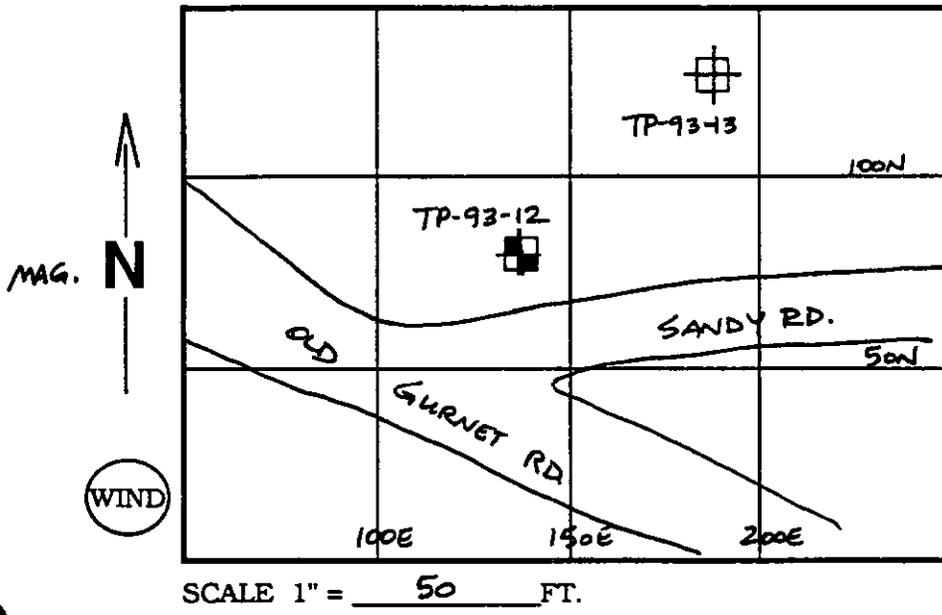
SIGNATURE: John D. Lyfey  
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-93-12 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 140E-80N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



**CREW MEMBERS:**

1. TOM LONGLEY } ABB
2. DAVE DIONNE } ABB
3. FRED ANDERSON } CLEAN
4. MIKE BAILEY } HARBORS
5. \_\_\_\_\_
6. \_\_\_\_\_

**MONITOR EQUIPMENT:**

- |               |                                     |   |
|---------------|-------------------------------------|---|
| PI Meter      | <input checked="" type="checkbox"/> | N |
| Explosive Gas | <input type="checkbox"/>            | N |
| Avail. Oxygen | <input type="checkbox"/>            | N |
| OVA           | <input type="checkbox"/>            | N |
| Other         | <u>DRAFTER TUBES</u>                |   |

**NOTES:**

TARGET IS ISOLATED MAGNETOMETER HIGH ON  
 EDGE OF SURVEY GRID, LOCATED IN TRAVELWAY  
 LEADING FROM SANDY ROAD TO FIRE TRAINING AREA.  
 ANOMALY IS VERY CLOSE TO BURIED CHLVERT  
 EXTENDING UNDER SANDY ROAD & PARALLEL TO  
 OLD GURNET RD. LOCATION IS APPROX. 130'  
 SOUTH WEST OF FIRE PIT.

Photographs, Roll \_\_\_\_\_  
 #1  
 Exposure 23

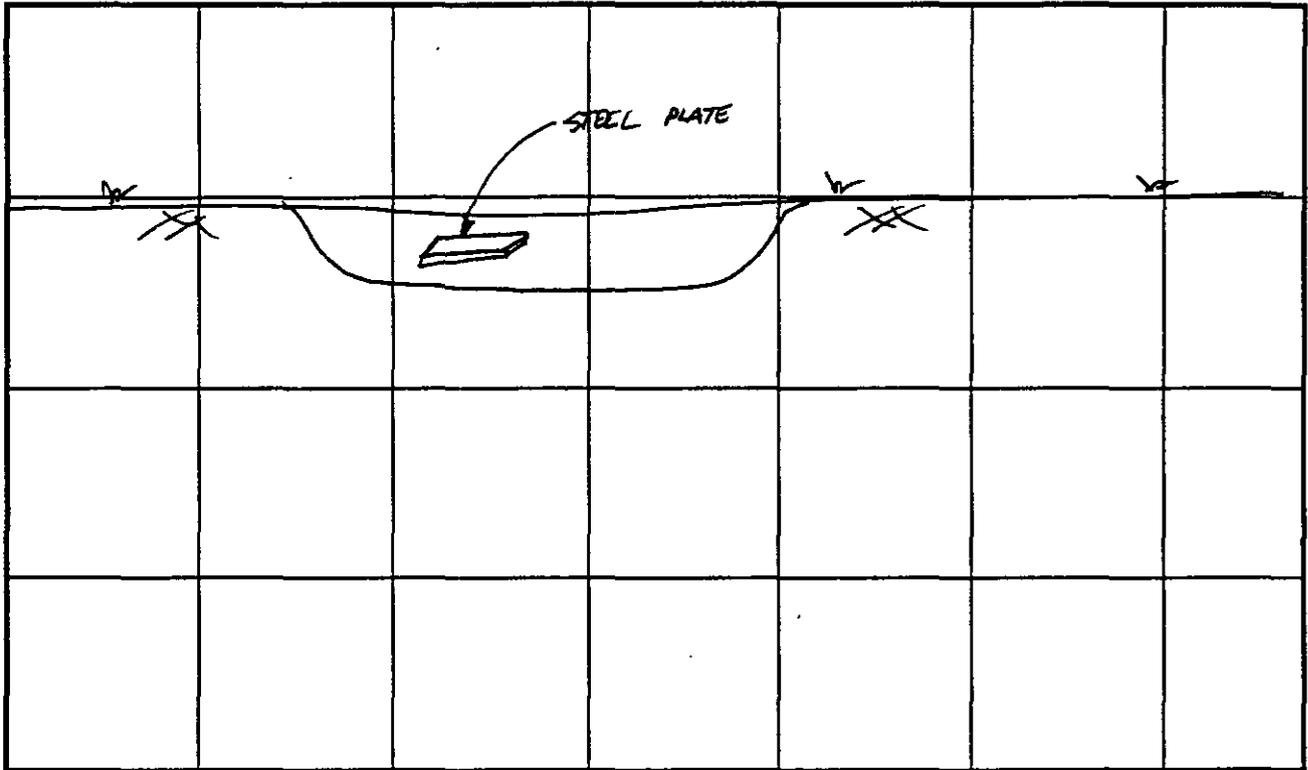
ABB Environmental  
 Services, Inc.

# NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-12

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: DISCOVERED A STEEL PLATE WITHIN  
TOP 1' OF GROUND SURFACE. PLATE  
MEASURES APPROX. 12" X 12" X 1/8".  
Interpreted AS BEING CAUSE OF  
MAGNETIC ANOMALY. TERMINATED  
TEST PIT AT 1' bgs.

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (Ft.)	HD, SP, VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 19

Attachments 1

SIGNATURE: John D. Zyl

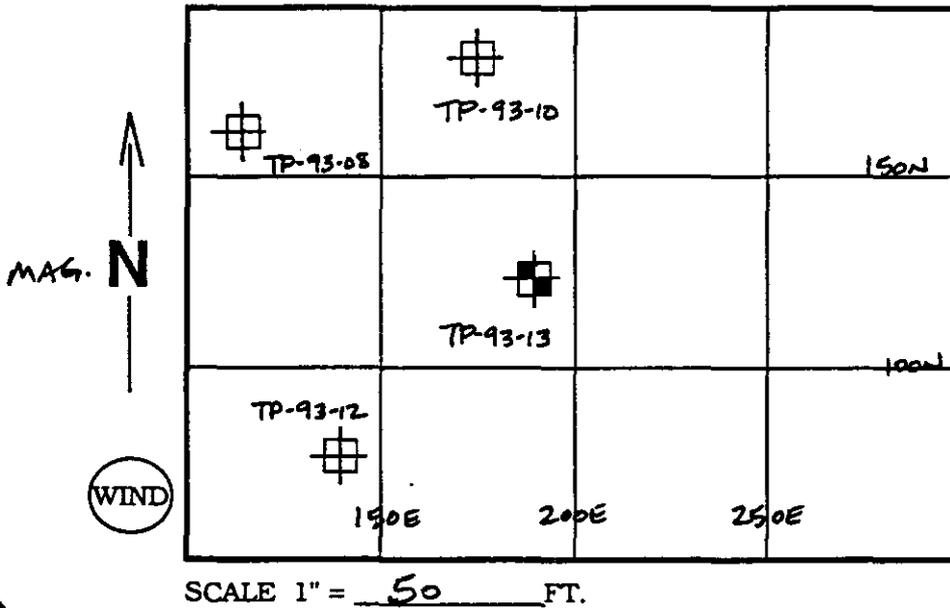
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-93-13 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 190E-125N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



CREW MEMBERS:

1. Tom Longley } ABB
2. Dave Dianne } ABB
3. Fred Anderson } CLEAN HARBORS
4. Mike Bailey } CLEAN HARBORS
5. \_\_\_\_\_
6. \_\_\_\_\_

MONITOR EQUIPMENT:

PI Meter	<input checked="" type="checkbox"/>	N
Explosive Gas	<input type="checkbox"/>	N
Avail. Oxygen	<input type="checkbox"/>	N
OVA	<input type="checkbox"/>	N
Other	<u>DRAKER TUBES</u>	

NOTES: \_\_\_\_\_

TARGET IS A SHARP, ISOLATED ANOMALY LOCATED  
APPROX. 70' SOUTH OF THE FIRE PIT.  
THIS AREA WAS NOT SINGLED OUT BY  
GEOPHYSICIST FOR CONFIRMATORY GPR  
WORK

Photographs, Roll \_\_\_\_\_  
 #1  
 Exposure \_\_\_\_\_

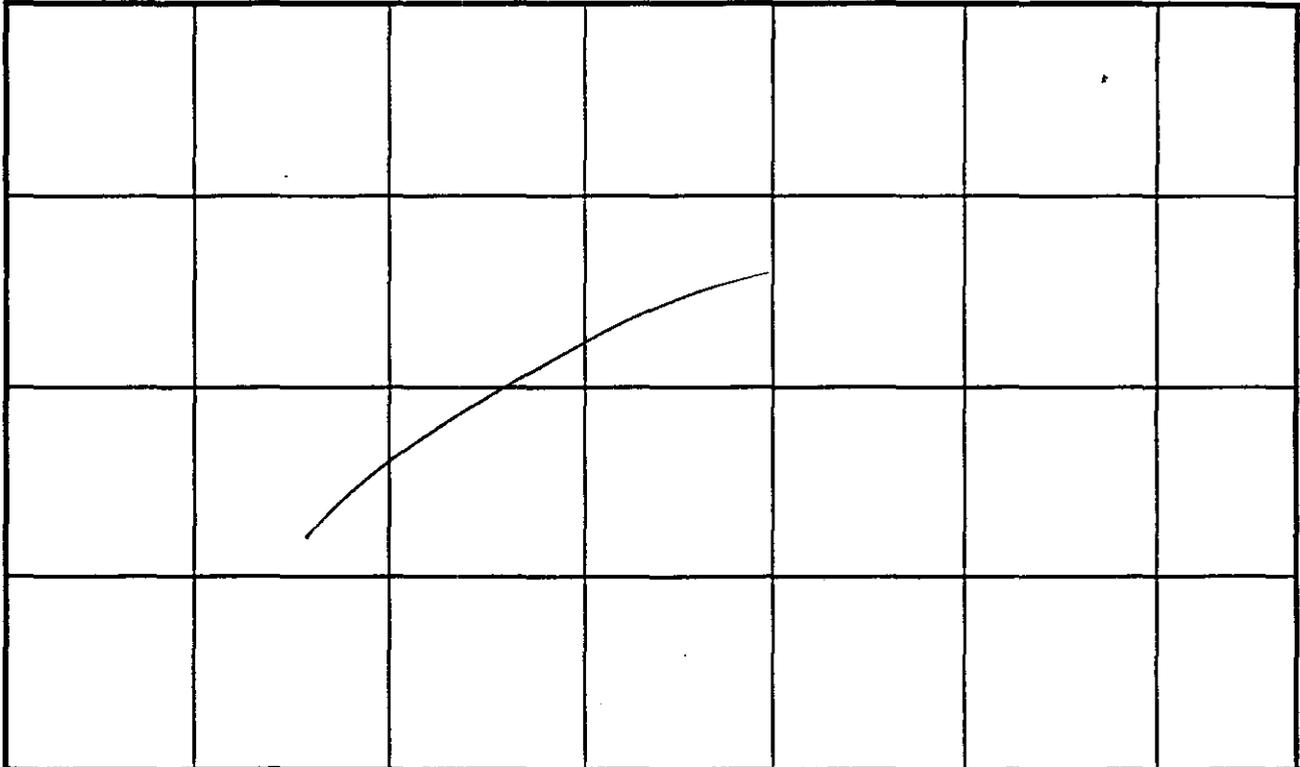
ABB Environmental  
 Services, Inc.

NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-13

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" =                      FT.  
DEPTH (FT.)

NOTES:

TEST PIT DID NOT LOCATE CAUSE  
OF MAGNETIC ANOMALY. EXPLORED IN  
A LARGE AREA CENTERED AROUND  
ANOMALOUS READING & ONLY UNEARTHED  
FINE, WELL SORTED SANDS & NO  
DEBRIS.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 19

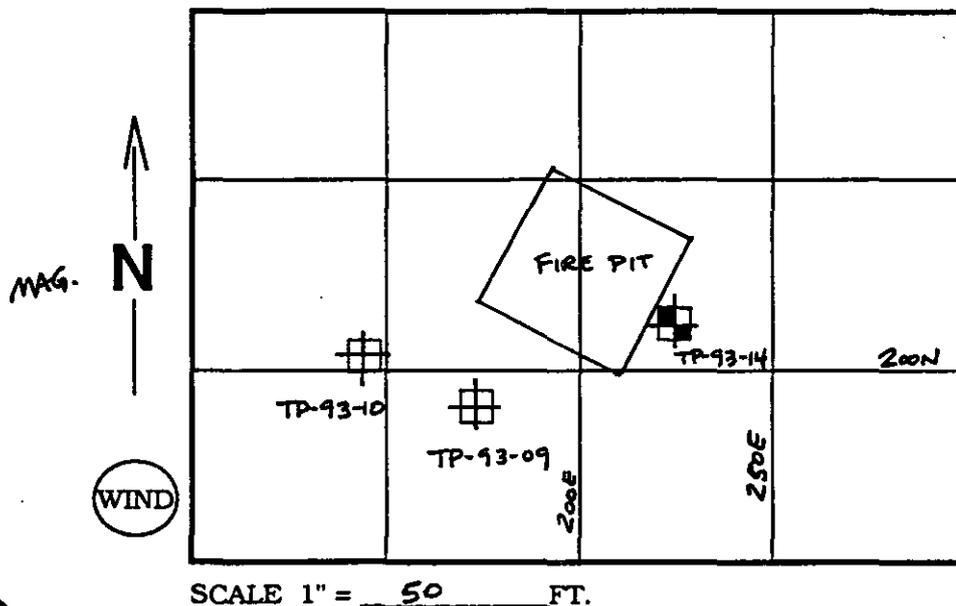
Attachments                       
SIGNATURE: Thom D. Tully  
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

1 of 2

SITE SITE 11  
 TEST PIT TP-93-14 DATE 9-8-93 TIME \_\_\_\_\_ END \_\_\_\_\_  
 COORDINATES 22SE-205N GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



CREW MEMBERS:

1. TOM LONGLEY } ABB
2. DAVE DIANNE } ABB
3. FRED ANDERSON } CLEAN HARBORS
4. MIKE BAILEY } CLEAN HARBORS

- 5.
- 6.

MONITOR EQUIPMENT:

PI Meter	<input checked="" type="checkbox"/>	N
Explosive Gas	Y	N
Avail. Oxygen	Y	N
OVA	Y	N
Other	<u>DRAGER TUBES</u>	

NOTES:

TARGET IS MAGNETICALLY HIGH AREA THAT IS THE EASTERN EXTENSION OF ANOMALOUS AREA THAT INCLUDES TP-93-09 AND TP-93-10; THE DIMENSIONS OF THIS ANOMALOUS AREA IS APPROX. 100' LONG & UP TO 30' WIDE & MAY WELL BE CAUSED BY EITHER CONTINUOUS RUBBISH & REFUSE OR OVERLAPPING, SINGLE ANOMALIES.

Photographs, Roll \_\_\_\_\_

#1

Exposure 24

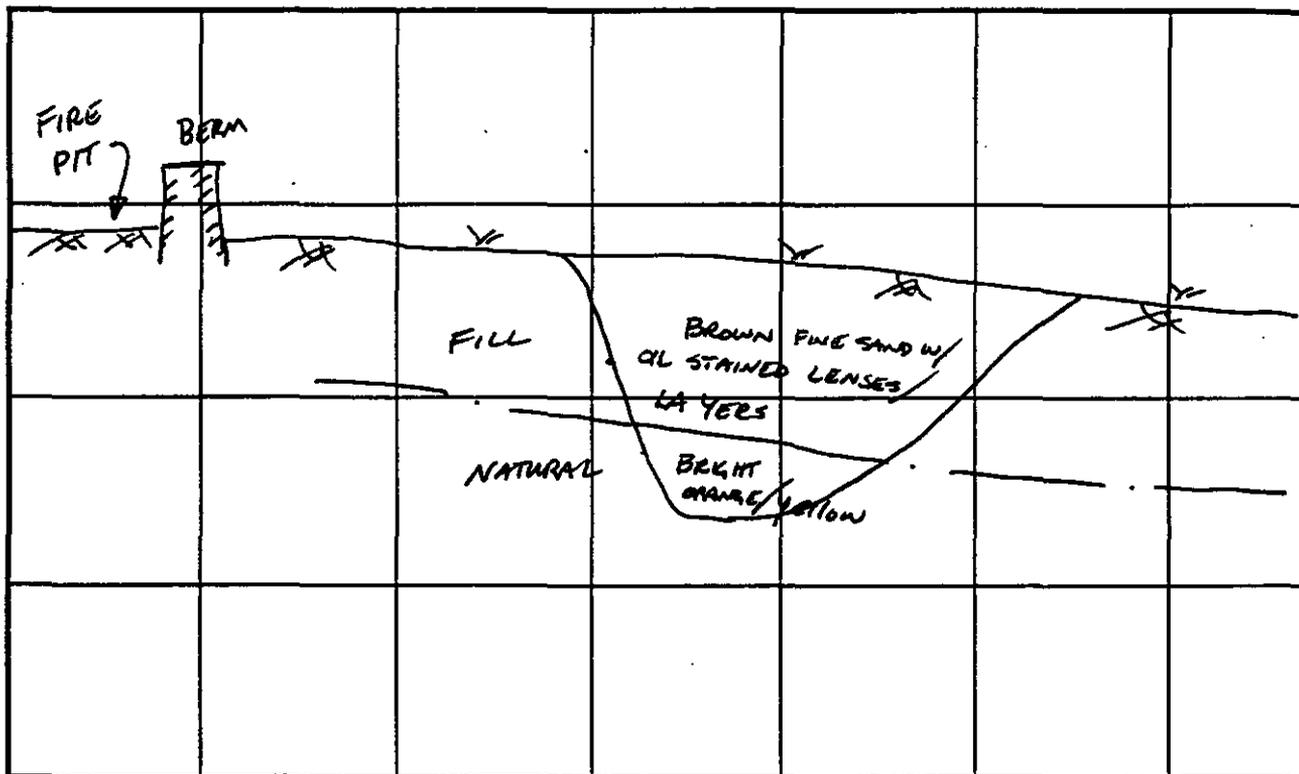
ABB Environmental Services, Inc.

# NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- TP-93-14

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: \_\_\_\_\_  
 \_\_\_\_\_  
TEST PIT IS LOCATED APPROX. 5'  
EAST OF FIRE PIT. SOILS ARE FUEL, &  
CARBON STAINED FILL OVER NATURAL  
BRIGHT ORANGE, YELLOW FINE SANDS.  
UNEARTHED A SINGLE LENGTH OF  
1" X 18" LONG PIPE FROM WITHIN  
THE FILL - NO OTHER OBVIOUS  
REASON FOR MAGNETIC ANOMALY.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (FT.)	HD. SP. VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 19

Attachments —

SIGNATURE: Thomas J. Zly

ABB Environmental Services, Inc.

Appendix C  
Test Pit Logs (1990)

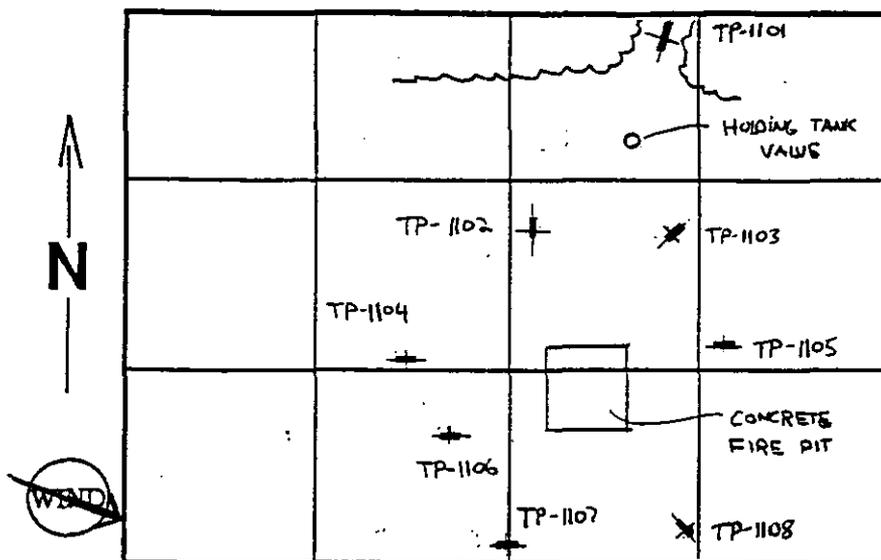
Installation Restoration Program

# NASB TEST PIT RECORD

1 of 2

SITE 89- FIRE TRAINING AREA  
 TEST PIT 1101 DATE 9/18/90 TIME 1040 END 1130  
 COORDINATES \_\_\_\_\_ GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 100 FT. (Approximate)

**NOTES:**

TP-1104  $\oplus$  Test pit location and orientation

AID Readings downwind of Fire pit were Elevated periodically due to the presence of VOC's in the soil - PID Readings at exploration locations were measured accordingly

W Wooded Area

Note - TP-1101 excavated in "area of surface soil stains where elevated PID meter Readings were noted.

**CREW MEMBERS:**

1. N. Breton
2. D. Durling
- 3.
- 4.
- 5.
- 6.

**MONITOR EQUIPMENT:**

PI Meter  Y  N  
 Explosive Gas  Y  N  
 Avail. Oxygen  Y  N  
 OVA  Y  N  
 Other PID meter

Photographs, Roll \_\_\_\_\_

Exposure \_\_\_\_\_

**E.C.JORDAN CO.**

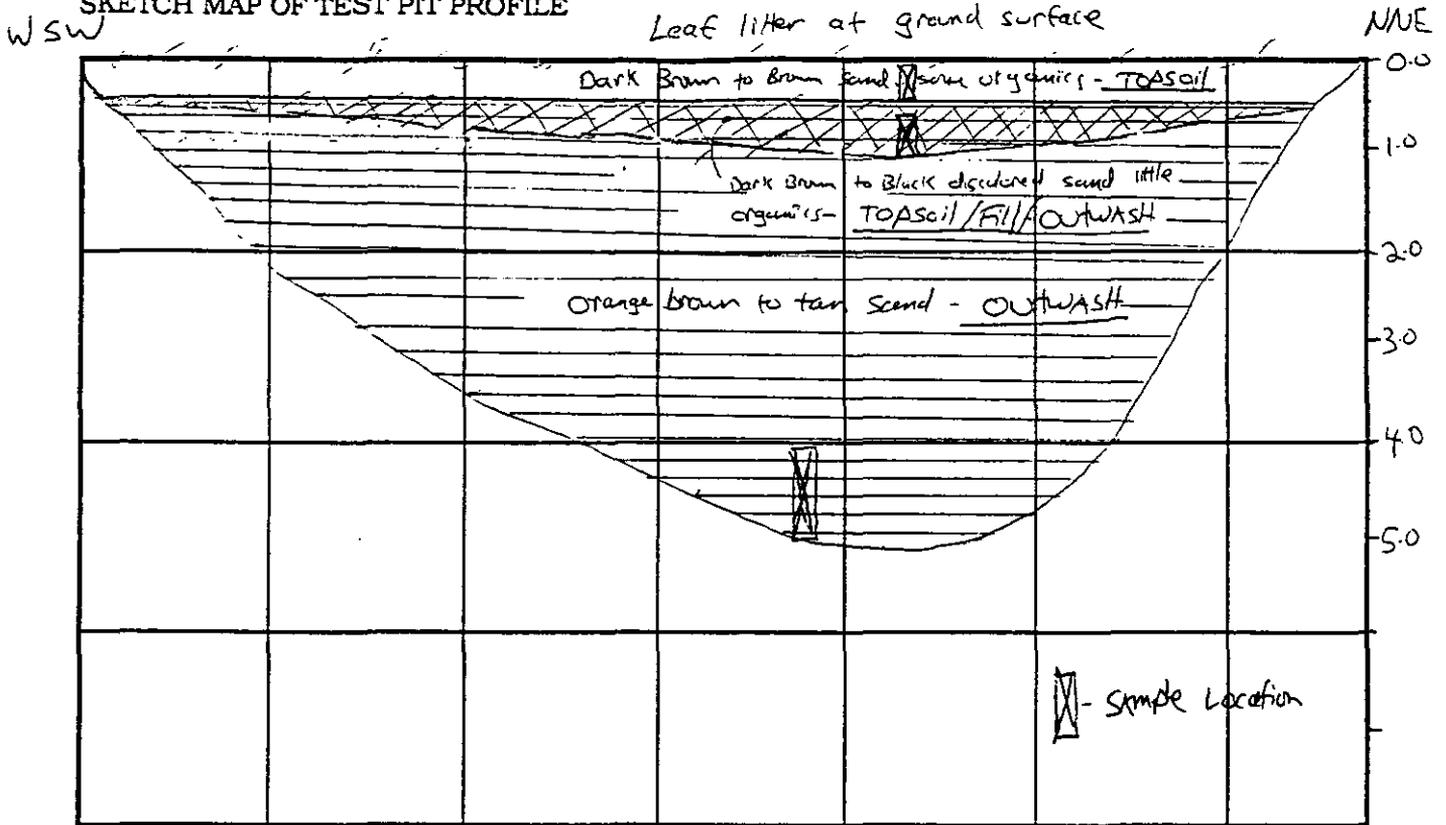
# NASB TEST PIT RECORD

2 of 2

## Profile Along Test Pit- 1101

SITE 11 - Fire Training area

### SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: - 0.0' - 0.5' - Dark brown to brown sand fine some silt some organics (roots and leaf litter) - TOPSOIL  
 - 0.5' - 1.0' Dark brown to black discolored sand, fine (contains lens from 0.1' to 0.8' in thickness) some silt, little organics (roots) - TOPSOIL/OUTWASH SM  
 - 1.0' - 5.0' Orange brown to tan sand fine poorly graded, trace to little silt, dry becoming moist with depth OUTWASH SP

→ Test pit length - 15'; width 2'

### SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (FT.)	HD. SP. VOA PPM
S-1	11PS11010001XX	0.0'-0.5'	79 ppm
S-2	11PS11010101XX	0.5'-1.0'	145 ppm
S-3	11PS11010501XX	4.0'-5.0'	45 ppm
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 15-18

Attachments \_\_\_\_\_

SIGNATURE: *E.C. Jordan*

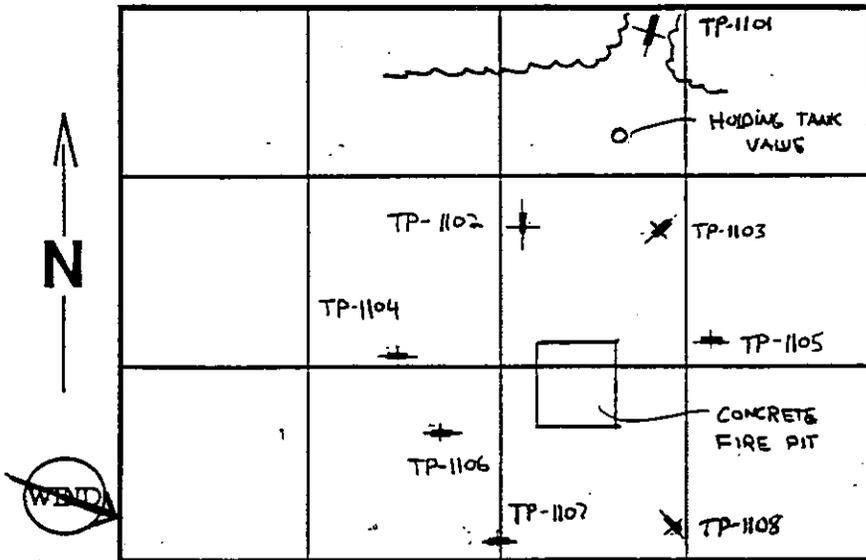
**E.C. JORDAN CO.**

# NASB TEST PIT RECORD

1 of 2

SITE 11 - FIRE TRAINING AREA  
 TEST PIT 1102 DATE 9/17/90 TIME 1545 END 1700  
 COORDINATES \_\_\_\_\_ GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 100 FT. APPROXIMATE

NOTES:

TP-1104  $\rightarrow$  Test Pit Location and Orientation

ATD Readings downwind of Fire pit were Elevated periodically due to the presence of VOC's in the pit - PED Readings at exploration locations were measured accordingly

in Wooded Area

CREW MEMBERS:

1. N. Berton
2. D. Durling
- 3.
- 4.
- 5.
- 6.

MONITOR EQUIPMENT:

PI Meter  Y  N  
 Explosive Gas  Y  N  
 Avail. Oxygen  Y  N  
 OVA  Y  N  
 Other RAO meter

Photographs, Roll \_\_\_\_\_

Exposure \_\_\_\_\_

**E.C. JORDAN CO.**

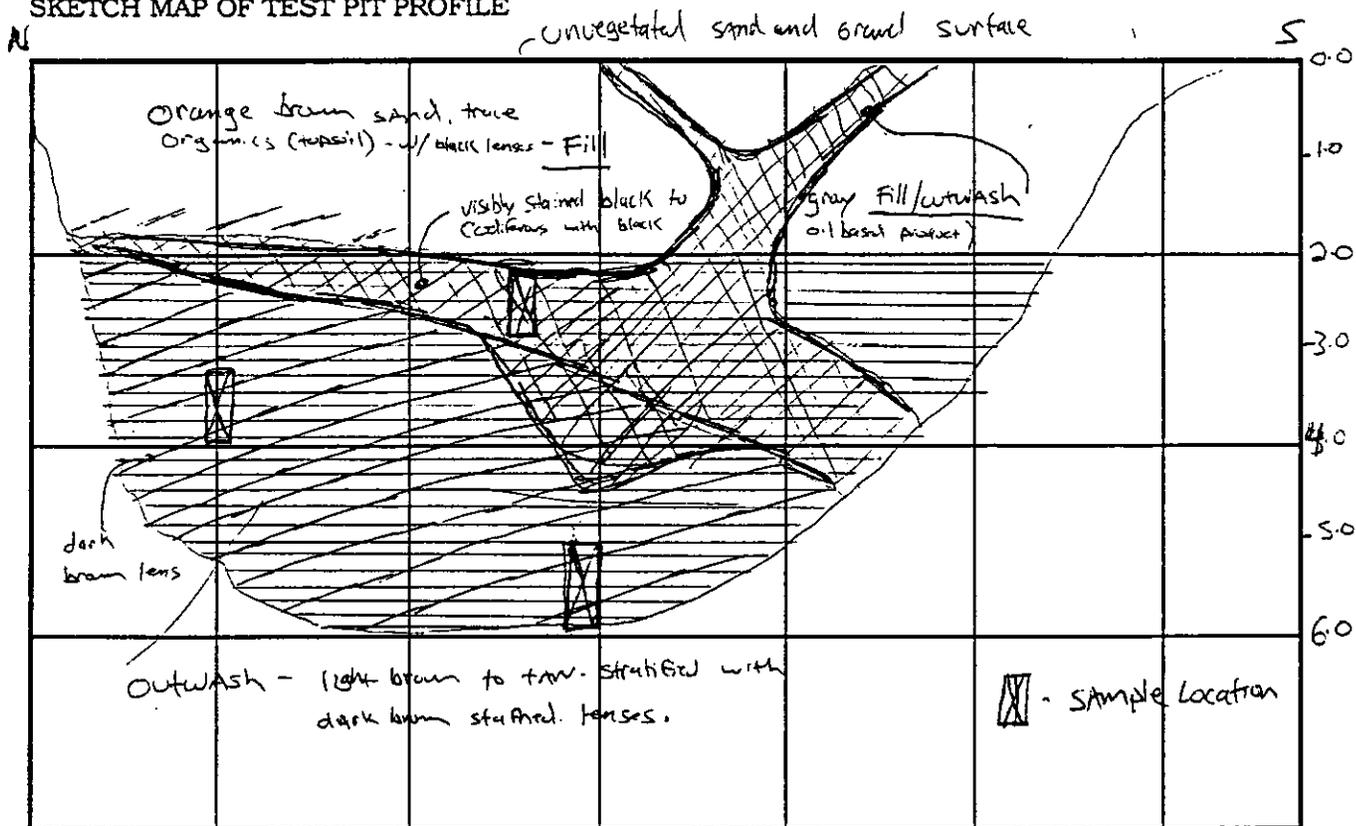
# NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- 1102

SITE 11- Fire Training Area

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: - 0'-2' - Orange brown sand, fine trace organics (topsoil) with cross cutting containing gray/black sand Fill/OUTWASH SP

- 2'-6' - light brown to tan sand with stained gray/black lens - (oil based product was seeping into excavated pit). 0.01 to 0.02' thick dark brown lenses of stained soil from 3'-6' lens below gassy stained area. Moist to wet - OUTWASH - SP.

- Test pit length - 10' width - 3'

SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (FT.)	HD. SP. VOA PPM
S-1	11PS11020301XX	20'-30'	51 ppm
S-2	11PS11020401XX	30'-40'	5 ppm
S-3	11PS11020601XX	50'-60'	38 ppm
S-4			
S-5			
S-6			
S-7			
S-8			

+ n.s./m.s.

REFERENCE: Field Book, Pg. 7-8

Attachments \_\_\_\_\_

SIGNATURE: sub m. Betts

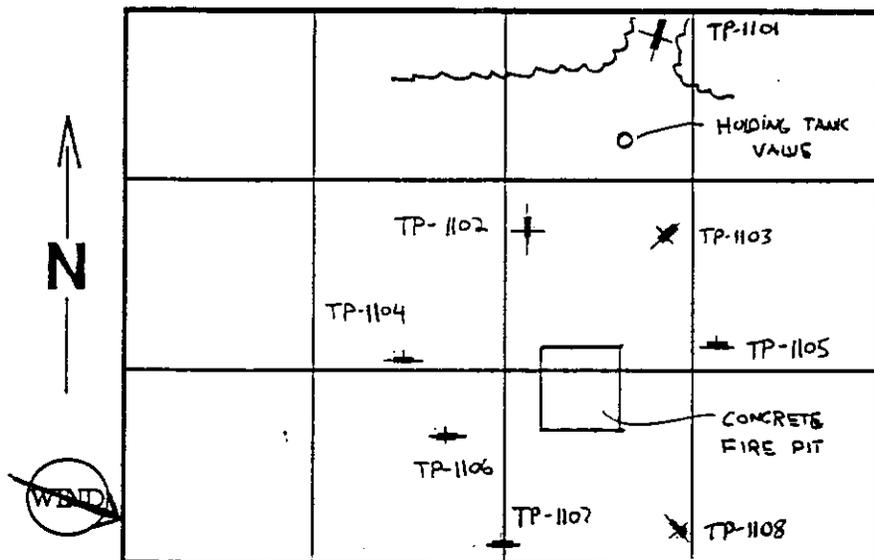
**E.C.JORDAN CO.**

# NASB TEST PIT RECORD

1 of 2

SITE 11 - FIRE TRAINING AREA  
 TEST PIT 1103 DATE 9/18/90 TIME 0925 END 1010  
 COORDINATES \_\_\_\_\_ GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 100 FT. (Approximate)

NOTES:

TP-1104 - Test Pit Location and Orientation

AID Readings downwind of Fire Pit were Elevated periodically due to the presence of VOC's in the soil - PID Readings at exfiltration locations were measured accordingly

in Wooded Area

CREW MEMBERS:

1. N. Breton
2. D. Durling
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

MONITOR EQUIPMENT:

PI Meter  Y  N  
 Explosive Gas  Y  N  
 Avail. Oxygen  Y  N  
 OVA  Y  N  
 Other PID meter

Photographs, Roll \_\_\_\_\_

Exposure \_\_\_\_\_

E.C.JORDAN CO.

# NASB TEST PIT RECORD

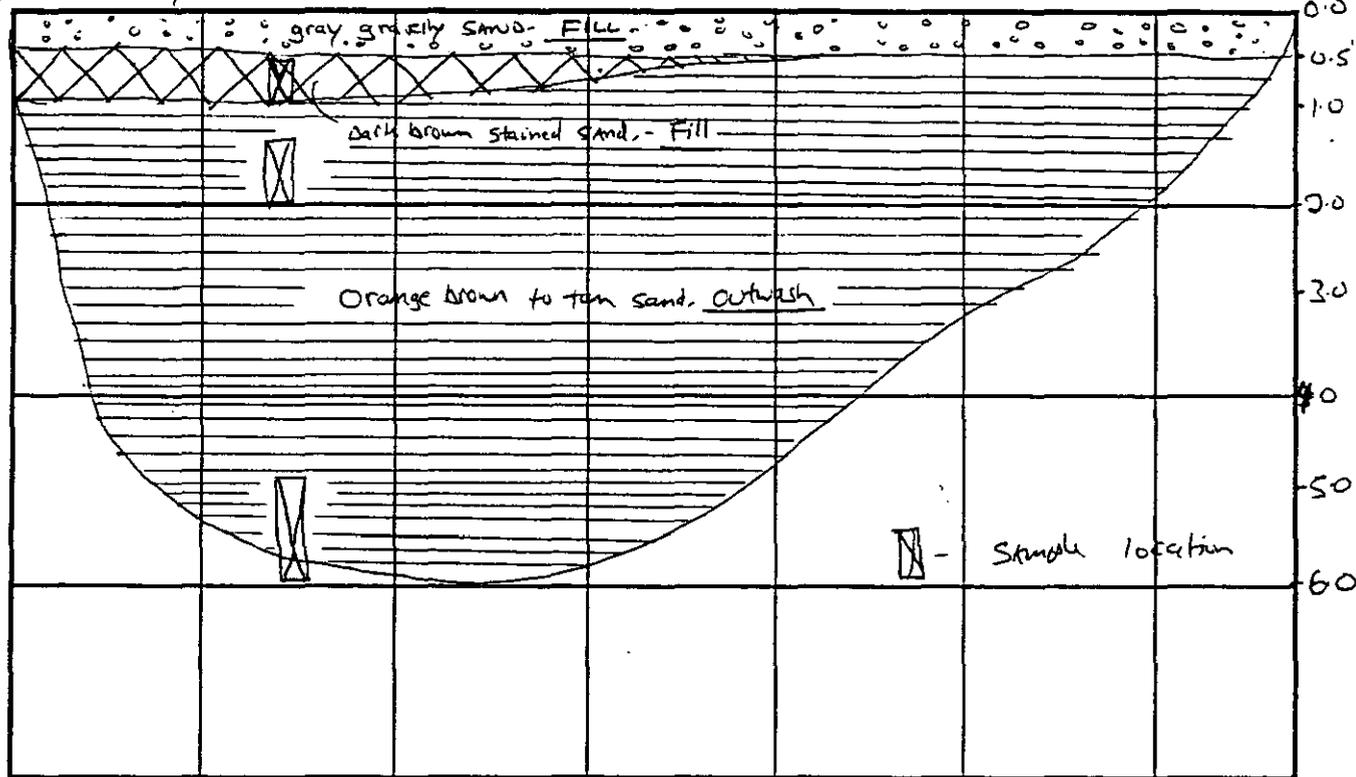
2 of 2

## Profile Along Test Pit- 1103

SITE 11 - Fire Training Area

### SKETCH MAP OF TEST PIT PROFILE

SW unvegetated Ground Surface



SCALE 1" = 2 FT.

DEPTH (FT.)

NOTES: - 0.0'-0.5' - gray gravelly sand, dry, little silt, fine to coarse sand. Fill - GM

- 0.5'-1.0' - dark brown sand, (discontinuous lens) stained, some silt, dry. Fill - SM

- 1.0'-6.0' - orange brown to tan sand, fine, little silt, poorly graded, dry becoming moist with depth - Outwash SP

- Test Pit length - 10'; width - 2'

#### SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (FT)	HD. SP. VOA PPM
S-1	11PS11030101XX	0.5'-1.0'	72 ppm
S-2	11PS11030201XX	1.0'-2.0'	26 ppm
S-3	11PS11030601XX	5.0'-6.0'	BK6.
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 13-14

Attachments \_\_\_\_\_

SIGNATURE: Neil M. Butcher

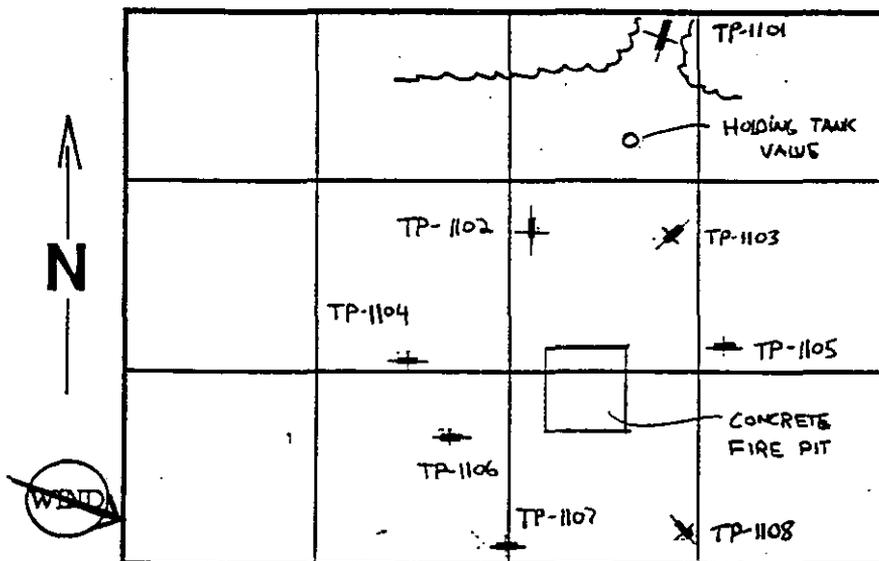
**E.C.JORDAN CO.**

# NASB TEST PIT RECORD

1 of 2

SITE 11 - FIRE TRAINING AREA  
 TEST PIT 1104 DATE 9/17/90 TIME 1450 END 1535  
 COORDINATES \_\_\_\_\_ GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 100 FT. APPROXIMATE

**CREW MEMBERS:**

1. N. Breton
2. D. Durling
- 3.
- 4.
- 5.
- 6.

**MONITOR EQUIPMENT:**

PI Meter	<input checked="" type="checkbox"/>	N
Explosive Gas	<input checked="" type="checkbox"/>	N
Avail. Oxygen	Y	<input checked="" type="checkbox"/>
OVA	Y	<input checked="" type="checkbox"/>
Other	AAA meter	

**NOTES:**

TP-1104 - Test Pit Location and Orientation

PIA Readings downwind of Fire Pit were Elevated periodically due to the presence of VOC's in the air - PIA Readings at exhalation locations were measured accordingly

m Wooded Area

Photographs, Roll \_\_\_\_\_

Exposure \_\_\_\_\_

**E.C. JORDAN CO.**

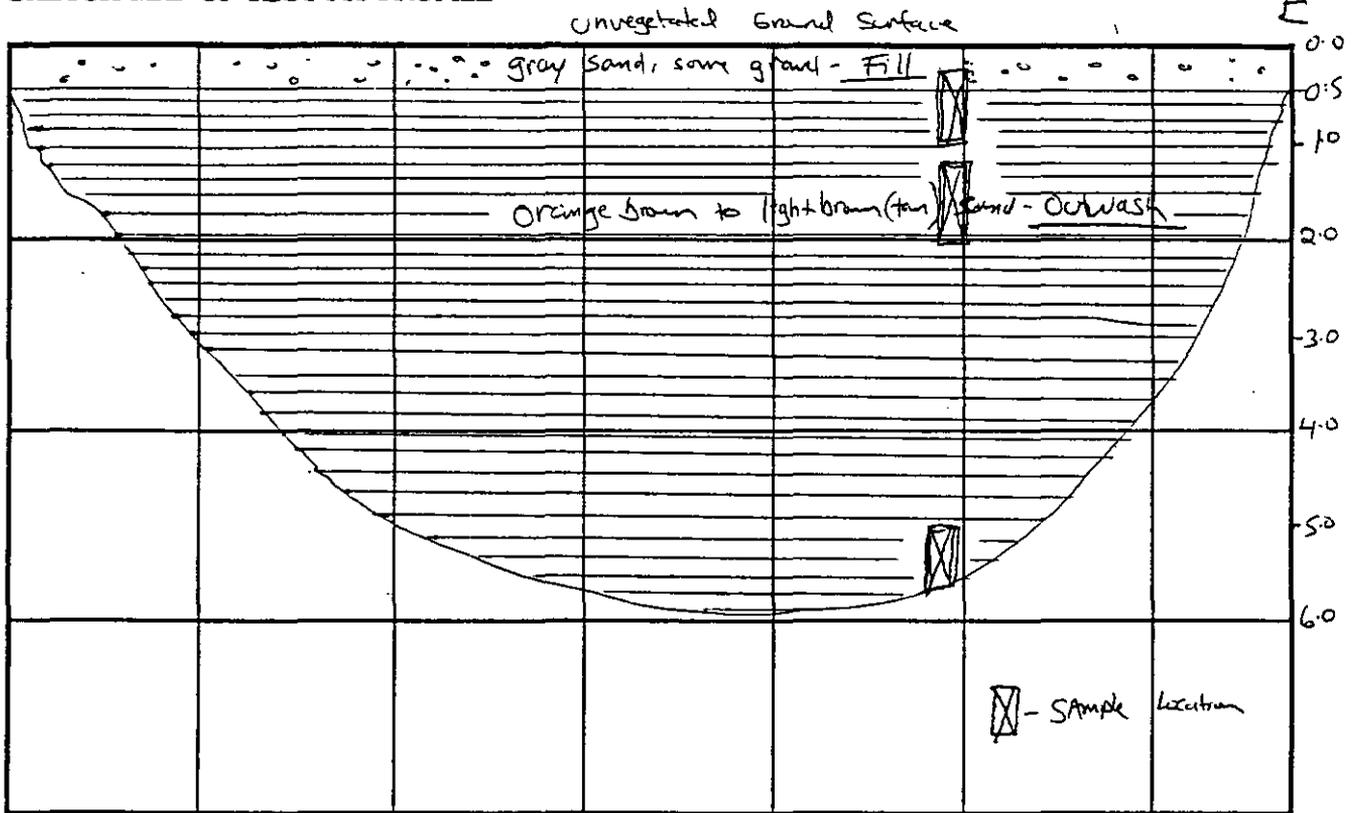
# NASB TEST PIT RECORD

2 of 2

Profile Along Test Pit- 1104

SITE 11- Fire Training Area

W SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: - 0.0-0.5' - gray sand, fine to coarse  
some gravel, little silt, dry, loose  
Fill - sm

- 0.5'-6.0' - orange brown to light  
brown (tan) sand, fine, poorly  
graded, dry, trace to little silt.  
Outwash - SA

- Test pit length 10', width 3'

**SAMPLES OBTAINED:**

No.	Int. Ser. No.	Depth (FT.)	HD. SP. VOA PPM
S-1	11PS11040101XX	0.0-0.5'	BKG.
S-2	11PS11040201XX	1.0-2.0'	BKG.
S-3	11PS11040601XX	5.0-6.0'	BKG.
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. Sy6

Attachments \_\_\_\_\_

SIGNATURE: M. M. Beth

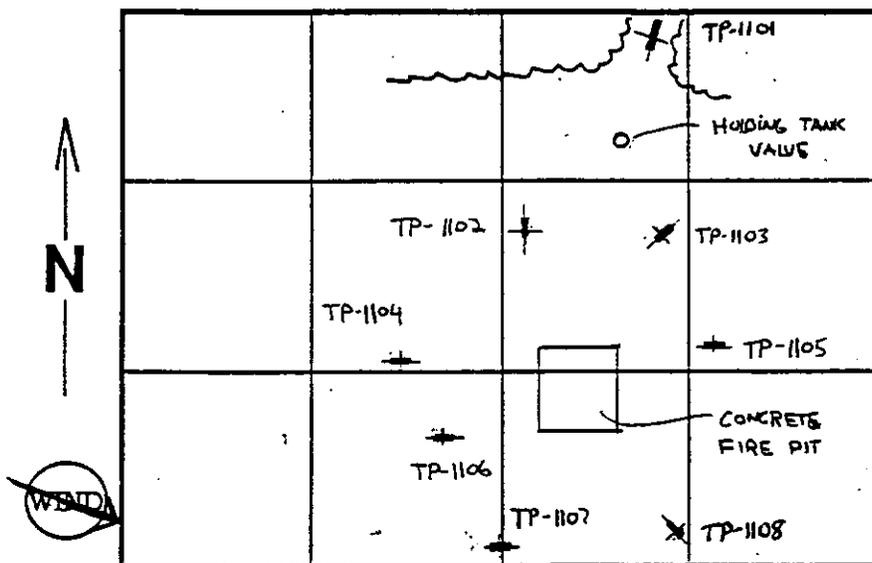
**E.C. JORDAN CO.**

# NASB TEST PIT RECORD

1 of 2

SITE 11 - FIRE TRAINING AREA  
 TEST PIT 1105 DATE 9/18/90 TIME 0830 END 0910  
 COORDINATES \_\_\_\_\_ GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 100 FT. APPROXIMATE

NOTES:

TP-1104  $\oplus$  Test pit location and orientation

AIA Readings downwind of Fire pit were Elevated periodically due to the presence of VOC's in the pit - PED Readings at excavation locations were measured accordingly

In Wooded Area

CREW MEMBERS:

1. N. Breton
2. D. Durling
- 3.
- 4.
- 5.
- 6.

MONITOR EQUIPMENT:

PI Meter  N  
 Explosive Gas  N  
 Avail. Oxygen Y   
 OVA Y   
 Other RAD meter

Photographs, Roll \_\_\_\_\_

Exposure \_\_\_\_\_

**E.C. JORDAN CO.**

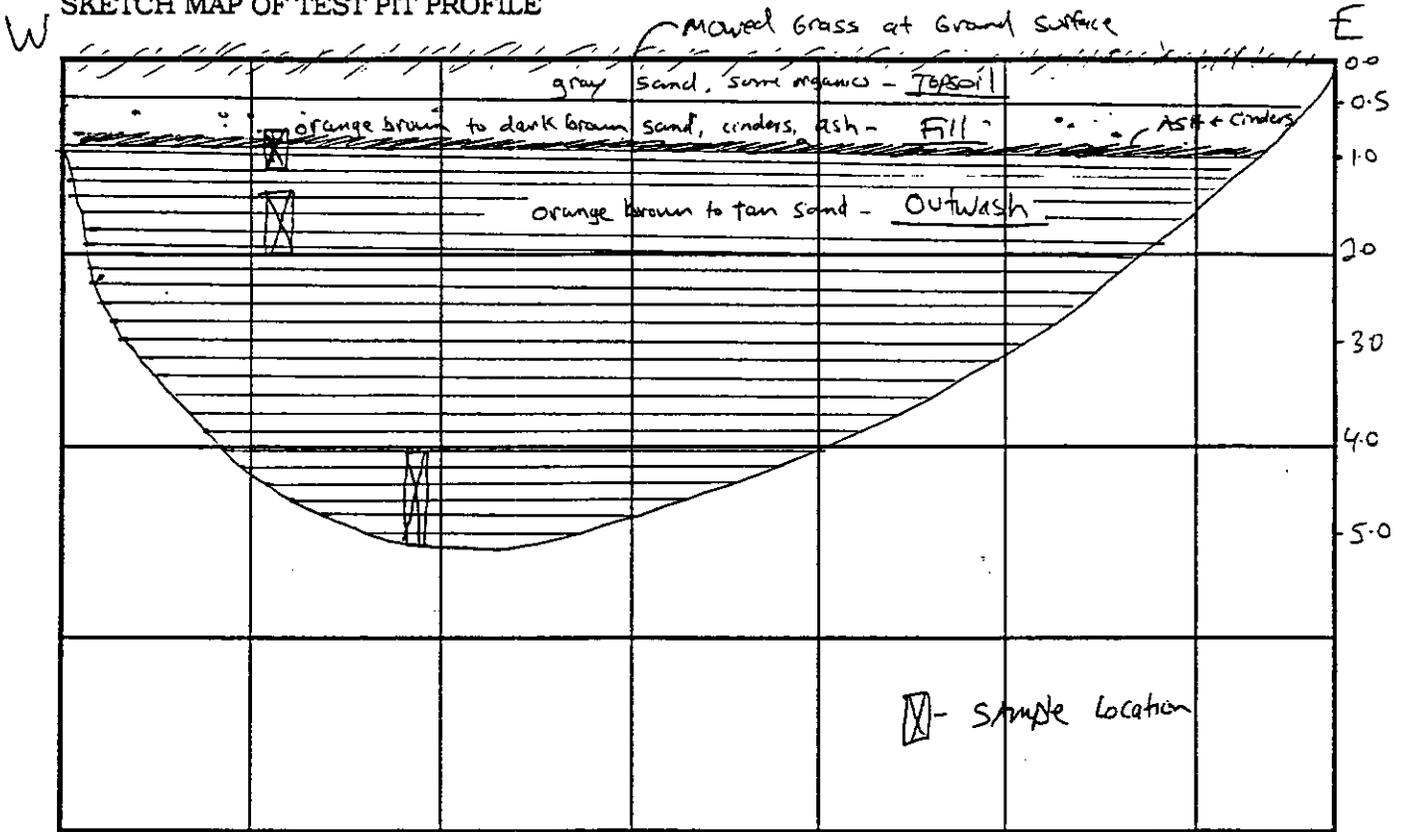
# NASB TEST PIT RECORD

2 of 2

## Profile Along Test Pit- 1105

SITE 11- Fire Training Area

### SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: - 0.0' - 0.5' - gray sand, fine, some silt, some organics (grass roots) dry  
TOPSOIL - -  
- 0.5' - 1.0' orange brown to dark brown sand, little silt w/ dark brown organic rich lens containing cinders and gray lens containing ash; each lens ranging from 1/4" to 1" in thickness - Fill sp/sm  
- 1.0' - 5.0' orange brown to tan sand, fine dry becoming moist with depth, trace to little silt, poorly graded, OUTWASH sp  
- Test pit length 10'; width 3'

#### SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (FT.)	HD. SP. VOA PPM
S-1	11PS11050101X1	0.75-1.25'	BKG
S-2	11PS11050201X1	1.0'-2.0'	BKG
S-3	11PS11050301X1	4.0'-5.0'	BKG
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 11, 12

Attachments \_\_\_\_\_

SIGNATURE: [Signature]

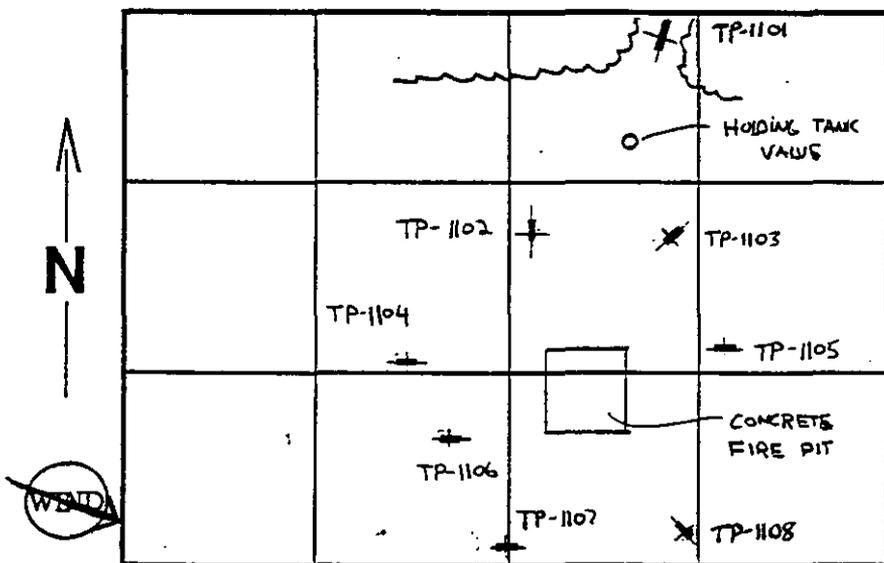
**E.C. JORDAN CO.**

# NASB TEST PIT RECORD

1 of 2

SITE 11 - FIRE TRAINING AREA  
 TEST PIT 1106 DATE 9/17/90 TIME 1400 END 1445  
 COORDINATES \_\_\_\_\_ GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 100 FT. APPROXIMATE

**NOTES:**

TP-1104  $\star$  Test pit location and orientation

AID Readings downwind of Fire pit were Elevated periodically due to the presence of VOC's in the pit - PID Readings at exploration locations were measured accordingly

in Wooded Area

**CREW MEMBERS:**

1. N. Breton
2. D. Durling
- 3.
- 4.
- 5.
- 6.

**MONITOR EQUIPMENT:**

PI Meter  Y  N  
 Explosive Gas  Y  N  
 Avail. Oxygen Y  N  
 OVA Y  N  
 Other RAD Meter

Photographs, Roll \_\_\_\_\_

Exposure \_\_\_\_\_

**E.C. JORDAN CO.**

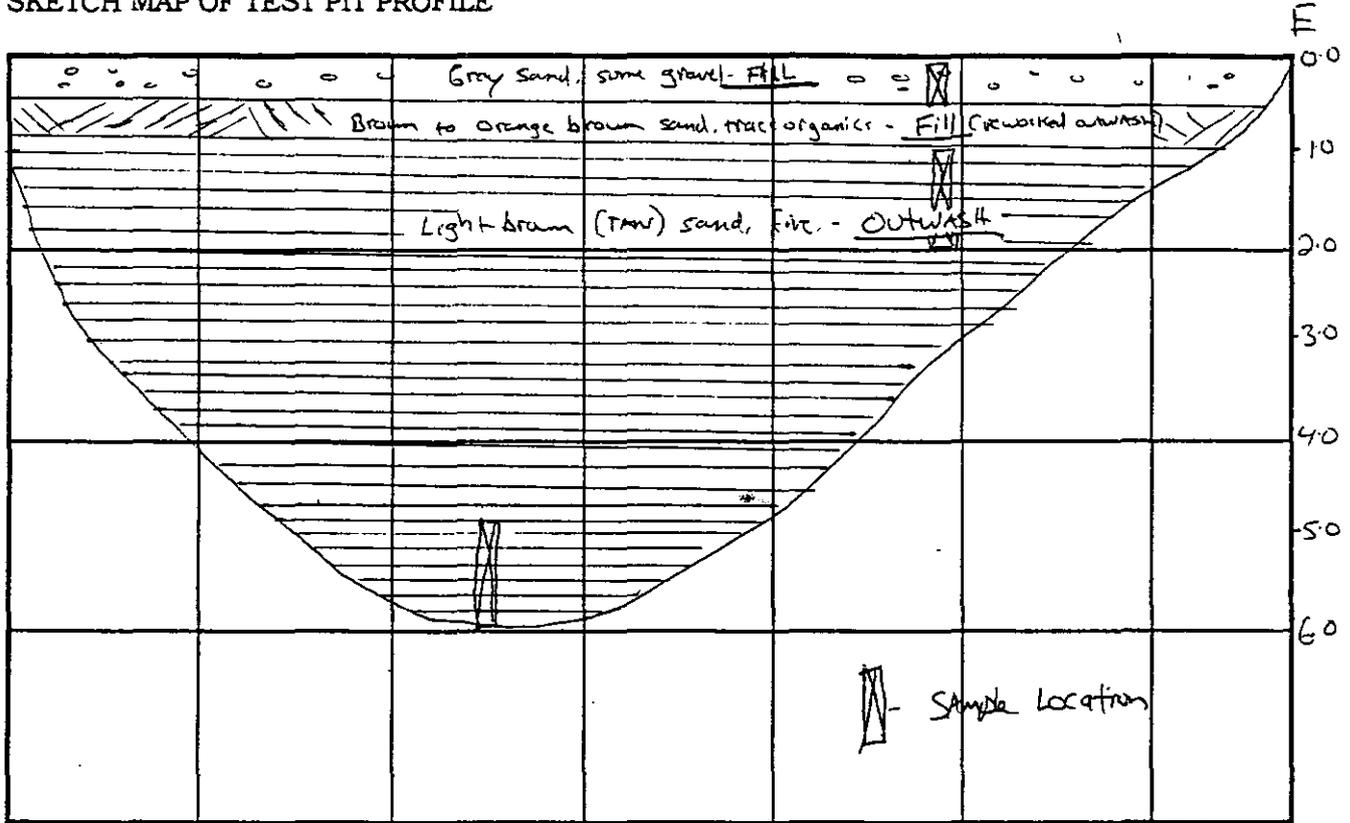
# NASB TEST PIT RECORD

2 of 2

## Profile Along Test Pit- 1106

SITE 11- Fire Training Area

### SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: 0.0-0.5' - Gray sand sand fine to coarse, some gravel little to some silt, compact dry Fill SM

- 0.5-1.0' - Brown to orange brown sand fine, poorly graded, trace organics Fill (reworked outwash) SP

- 1.0'-6.0' light brown (tan) sand, fine poorly graded, dry to moist outwash - SA

- Test pit length - 10' ; width 2'

### SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (FT.)	HD. SP. VOA PPM
S-1	11PS11060101XX	0.0-0.5'	4.0 ppm
S-2	11PS11060101X0	0.0-0.5'	4.0 ppm
S-3	11PS11060201XX	0.5-2.0'	BKG.
S-4	11PS11060601XX	5.0'-6.0'	10.4 ppm
S-5			
S-6			
S-7			
S-8			

+MS/MSD  
Duplicate

REFERENCE: Field Book, Pg. 3-5

Attachments \_\_\_\_\_

SIGNATURE: John M. Burt

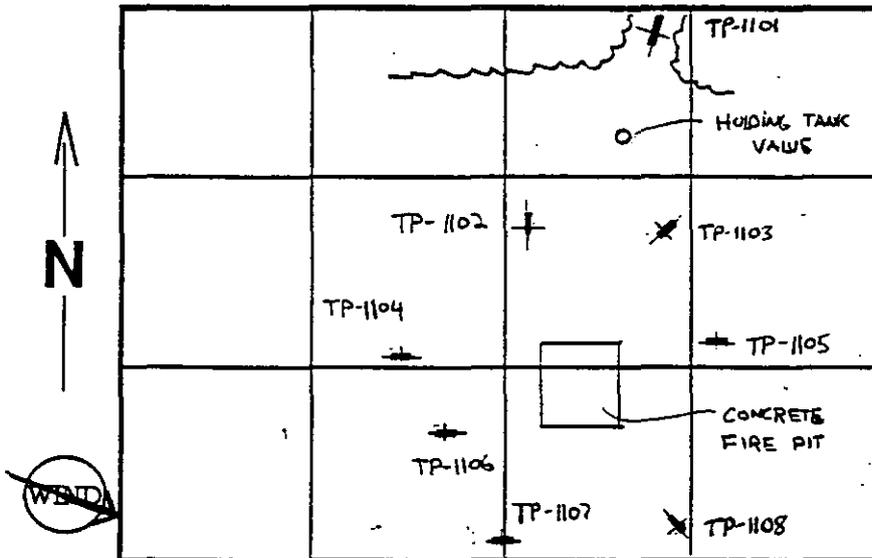
**E.C. JORDAN CO.**

# NASB TEST PIT RECORD

1 of 2

SITE 11 - FIRE TRAINING AREA  
 TEST PIT 1107 DATE 9/17/90 TIME 1205 END 1300  
 COORDINATES \_\_\_\_\_ GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 100 FT. (Approximate)

**CREW MEMBERS:**

1. N. Breton
2. D. Durling
- 3.
- 4.
- 5.
- 6.

**MONITOR EQUIPMENT:**

PI Meter  Y  N  
 Explosive Gas  Y  N  
 Avail. Oxygen  Y  N  
 OVA  Y  N  
 Other RAD Meter

**NOTES:**

TP-1104  Test pit location and orientation

AIA Readings downwind of Fire pit were Elevated periodically due to the presence of VOC's in the pit - PID Readings at excavation locations were measured accordingly

W Wooded Area

Photographs, Roll \_\_\_\_\_

Exposure \_\_\_\_\_

**E.C. JORDAN CO.**

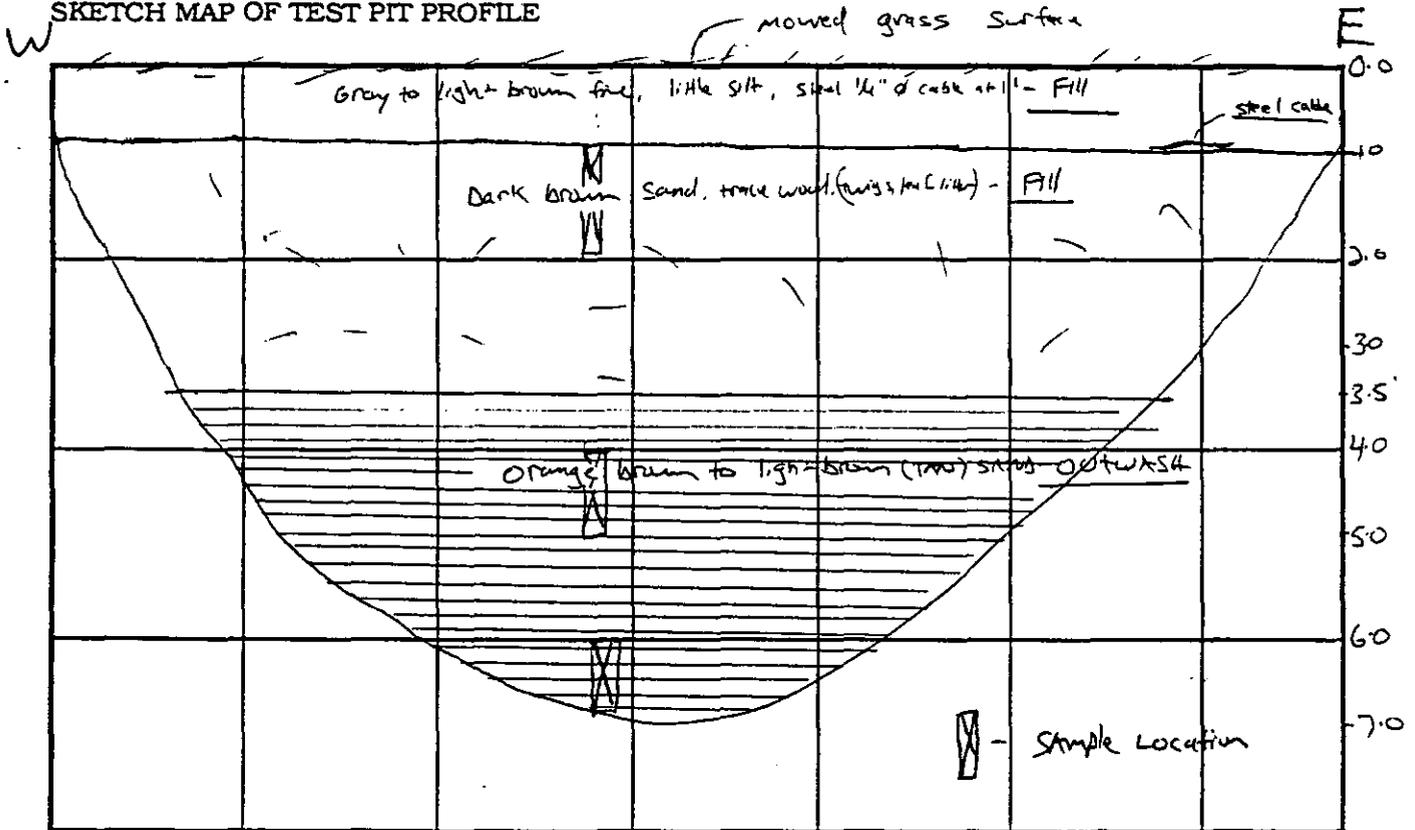
# NASB TEST PIT RECORD

2 of 2

## Profile Along Test Pit- 1107

SITE 11 - Fire Training Area

### SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: - 0.0-1.0' - gray to light brown sand  
fine little silt 1/4" thick cattle  
(construction debris), little organics  
(grass roots) - Fill SP

- 1.0'-3.5' - Dark brown sand, trace  
wood and organic (cinders, leaf litter,  
grass) - Fill SP

- 3.5'-7.0' orange brown to light brown  
(tan) sand fine little silt, moist,  
(moist - OUTWASH - SP

- Test pit length - 10' - ; width 2'

### SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (FL)	HD. SP. VOA PPM
S-1	11PS110201X1	10'-20'	BKG.
S-2	11PS110201X0	10'-20'	BKG.
S-3	11PS1102051X1	40'-50'	BKG.
S-4	11PS110201X2	60'-70'	BKG.
S-5			
S-6			
S-7			
S-8			

mus/mus  
duplicate

REFERENCE: Field Book, Pg. 1-3

Attachments \_\_\_\_\_

SIGNATURE: John M. But

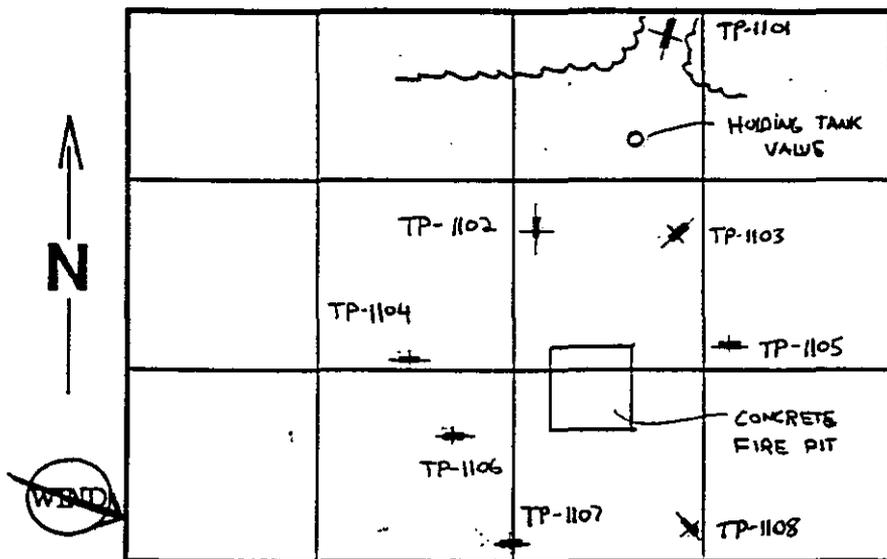
**E.C.JORDAN CO.**

# NASB TEST PIT RECORD

1 of 2

SITE 11 - FIRE TRAINING AREA  
 TEST PIT 1108 DATE 9/18/90 TIME 0740 END 0815  
 COORDINATES \_\_\_\_\_ GRID ELEMENT \_\_\_\_\_

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 100 FT. APPROXIMATE

**NOTES:**

TP-1104 Test pit location and orientation

AID Readings downwind of Fire pit were Elevated periodically due to the presence of VOC's in the AIR - PID Readings at exploration locations were measured accordingly

in Wooded Area

**CREW MEMBERS:**

1. N. Breton
2. D. Durling
- 3.
- 4.
- 5.
- 6.

**MONITOR EQUIPMENT:**

PI Meter  N  
 Explosive Gas  N  
 Avail. Oxygen Y  N  
 OVA Y  N  
 Other AAD meter

Photographs, Roll \_\_\_\_\_

Exposure \_\_\_\_\_

**E.C. JORDAN CO.**

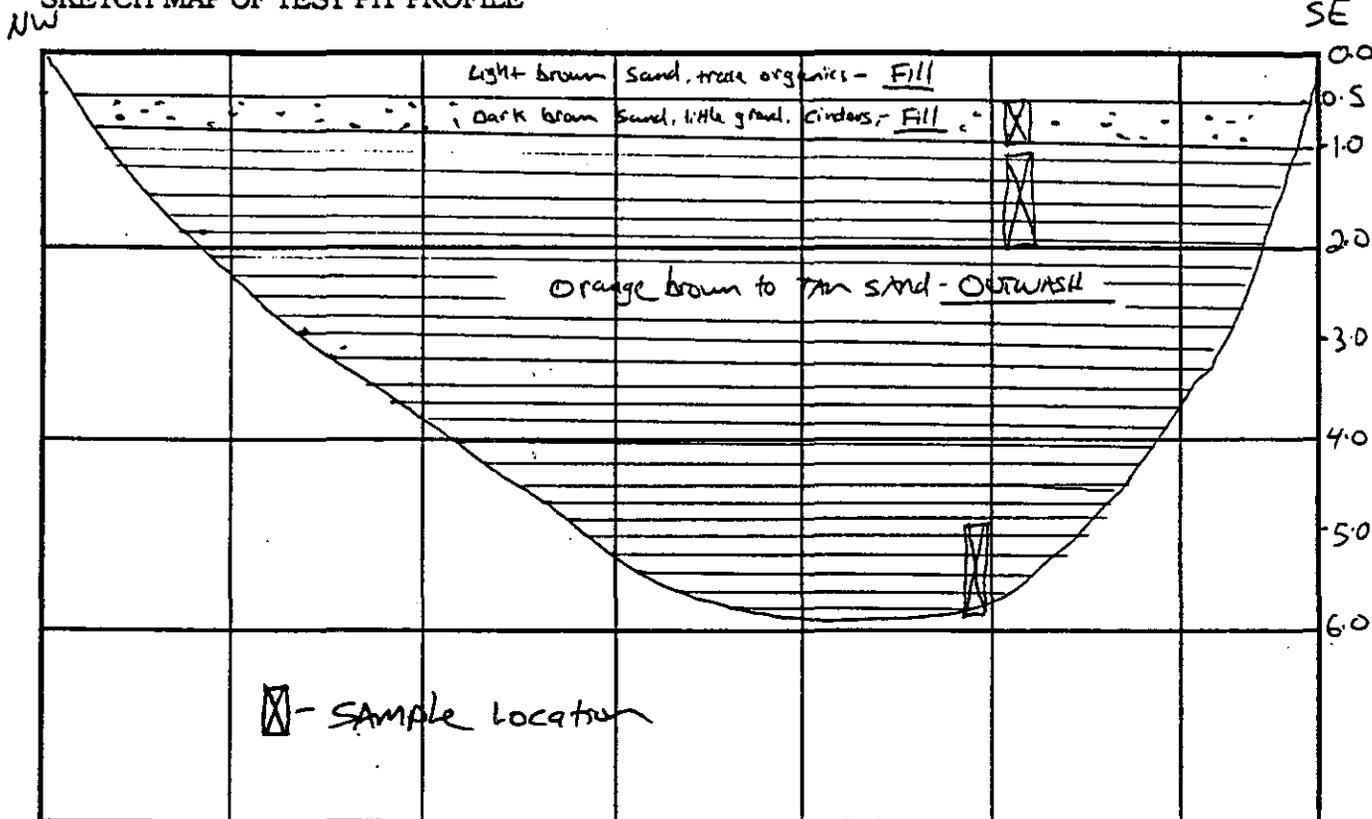
# NASB TEST PIT RECORD

2 of 2

## Profile Along Test Pit- 1108

SITE 11- Fire Training Area

### SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 2 FT.  
DEPTH (FT.)

NOTES: 0.0'-0.5' - light brown sand fine little silt, trace organics (roots), dry loose, FILL SA

0.5'-1.0' - Dark brown sand, fine to coarse, little silt, little gravel, cinders, trace organics, compact-FILL SW

1.0'-6.0' Orange brown to tan sand fine poorly graded, moist, dry becoming moist with depth - OUTWASH SA

Test pit length = 10'; width 2'

#### SAMPLES OBTAINED:

No.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	11PS118010dXX	0.5-1.0'	BKG.
S-2	11PS1080201XX	1.0-2.0'	BKG.
S-3	11PS1080201XX	5.0-6.0'	BKG.
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. 9-11

Attachments \_\_\_\_\_

SIGNATURE: E.C. Jordan

**E.C. JORDAN CO.**

Appendix D

Drum Analytical Data

Installation Restoration Program

TP-93-01

# NET Atlantic, Cambridge Division ANALYTICAL REPORT

Report Date: 10/28/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-01

NET Sample No: 87598

Parameter	ug/L	Date Analyzed	MCL ug/L
-----			
Volatiles by GC/MS-TCLP	S		
TCLP Zero Headspace Extraction		09/22/1993	
Benzene	26	09/26/1993	500
Carbon Tetrachloride	<25	09/26/1993	500
Chlorobenzene	<25	09/26/1993	100000
Chloroform	<25	09/26/1993	6000
1,2-Dichloroethane	<25	09/26/1993	500
Methyl Ethyl Ketone	<100	09/26/1993	200000
1,1-Dichloroethene	<25	09/26/1993	700
Tetrachloroethene	<25	09/26/1993	700
Trichloroethene	<25	09/26/1993	500
Vinyl Chloride	<100	09/26/1993	200

MCL = Maximum Contaminant Level

Results are uncorrected for matrix effects

▶ 30009

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 10/28/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-01

NET Sample No: 87598

Parameter	Result	Units	Analysis Date	Analyst
-----				
TCL Acid/Base/Neutrals 8270 AQ				
Acenaphthene	10000	ug/L	10/04/1993	jcg
Acenaphthylene	<10000	ug/L		
Anthracene	<10000	ug/L		
Benzo(a)Anthracene	<10000	ug/L		
Benzo(a)Pyrene	<10000	ug/L		
Benzo(b)Fluoranthene	<10000	ug/L		
Benzo(g,h,i)Perylene	<10000	ug/L		
Benzo(k)Fluoranthene	<10000	ug/L		
Benzoic Acid	<10000	ug/L		
Benzyl Alcohol	<10000	ug/L		
4-Bromophenyl-phenylether	<10000	ug/L		
Butylbenzylphthalate	<10000	ug/L		
4-Chloro-3-Methylphenol	<10000	ug/L		
4-Chloroaniline	<10000	ug/L		
bis(2-Chloroethoxy)Methane	<10000	ug/L		
bis(2-Chloroethyl)Ether	<10000	ug/L		
bis(2-Chloroisopropyl)Ether	<10000	ug/L		
2-Chloronaphthalene	<10000	ug/L		
2-Chlorophenol	<10000	ug/L		
4-Chlorophenyl-phenylether	<10000	ug/L		
Chrysene	10000	ug/L		
Di-n-Butylphthalate	<10000	ug/L		
Di-n-Octyl Phthalate	<10000	ug/L		
Dibenz(a,h)Anthracene	<10000	ug/L		
Dibenzofuran	10000	ug/L		
1,2-Dichlorobenzene	<10000	ug/L		
1,3-Dichlorobenzene	<10000	ug/L		
1,4-Dichlorobenzene	<10000	ug/L		
3,3'-Dichlorobenzidine	<10000	ug/L		
2,4-Dichlorophenol	<10000	ug/L		
Diethylphthalate	<10000	ug/L		
Dimethyl Phthalate	<10000	ug/L		
2,4-Dimethylphenol	<10000	ug/L		
4,6-Dinitro-2-Methylphenol	<10000	ug/L		
2,4-Dinitrophenol	<10000	ug/L		
2,4-Dinitrotoluene	<10000	ug/L		
2,6-Dinitrotoluene	<10000	ug/L		
bis(2-Ethylhexyl)Phthalate	<10000	ug/L		
Fluoranthene	<10000	ug/L		
Fluorene	<10000	ug/L		
Hexachlorobenzene	<10000	ug/L		
Hexachlorobutadiene	<10000	ug/L		
Hexachlorocyclopentadiene	<10000	ug/L		
Hexachloroethane	<10000	ug/L		
Indeno(1,2,3-cd)Pyrene	<10000	ug/L		
Isophorone	<10000	ug/L		
2-Methylnaphthalene	430000	ug/L		

40009

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 10/22/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-01

NET Sample No: 87598

Parameter	Result	Units	Analysis	
			Date	Analyst
2-Methylphenol	<10000	ug/L		
4-Methylphenol	<10000	ug/L	10/04/1993	jcg
N-Nitroso-di-n-Propylamine	<10000	ug/L		
N-Nitrosodimethylamine	<10000	ug/L		
N-Nitrosodiphenylamine	20000	ug/L		
Naphthalene	100000	ug/L		
2-Nitroaniline	<10000	ug/L		
3-Nitroaniline	<10000	ug/L		
4-Nitroaniline	<10000	ug/L		
Nitrobenzene	<10000	ug/L		
2-Nitrophenol	<10000	ug/L		
4-Nitrophenol	<10000	ug/L		
Pentachlorophenol	<10000	ug/L		
Phenanthrene	99000	ug/L		
Phenol	<10000	ug/L		
Pyrene	10000	ug/L		
1,2,4-Trichlorobenzene	<10000	ug/L		
2,4,5-Trichlorophenol	<10000	ug/L		
2,4,6-Trichlorophenol	<10000	ug/L		

# NET Atlantic, Cambridge Division ANALYTICAL REPORT

Report Date: 10/19/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-01

NET Sample No: 87598

Parameter		mg/L	Date Analyzed	MCL mg/L
-----				
Metals - TCLP	S			
TCLP-EXTRACTION-ORG & METALS			09/27/1993	
TCLP Digestion-Metals			10/06/1993	
Arsenic (As)	TCLP 846 ICP S	<1.0	10/08/1993	5.0
Barium (Ba)	TCLP 846 ICP S	2.5	10/08/1993	100
Cadmium (Cd)	TCLP 846 ICP S	<0.25	10/08/1993	1.0
Chromium (Cr)	TCLP 846 ICP S	1.3	10/08/1993	5.0
Lead (Pb)	TCLP 846 ICP S	15	10/08/1993	5.0
Mercury (Hg)	TCLP 846 CVAA S	<0.020	10/05/1993	0.2
Selenium (Se)	TCLP 846 ICP S	<2.0	10/08/1993	1.0
Silver (Ag)	TCLP 846 ICP S	<0.25	10/08/1993	5.0

MCL = Maximum Contaminant Level

Results are uncorrected for matrix effects

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 10/19/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-01

NET Sample No: 87598

Parameter			Result	Units	Analysis Date	Analyst
Corrosivity	SW846	S	6.69	pH units	09/14/1993	jmt
Cyanide, Reactive, SW846		S	<2.5	mg/Kg	09/17/1993	lmz
Ignitability		S	Ignitable		09/30/1993	lmz
Sulfide, Reactive, SW846		S	<250	mg/Kg	09/15/1993	pas

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 11/02/1993

Report To: ABB Environmental, Inc.

Project: BNAS Site 11 Fieldwork

NET Job No: 93.03071

Date Rec'd: 09/10/1993

Sample ID: TP-93-01

NET Sample No: 87598

Parameter	Result	Units	Analysis	
			Date	Analyst
Pesticides	TCLP			
Chlordane	<10	ug/L	10/18/1993	ner
Endrin	<0.2	ug/L		
Heptachlor and its epoxide	<0.2	ug/L		
gamma-BHC (Lindane)	<0.1	ug/L		
Methoxychlor	<1.0	ug/L		
Toxaphene	<10	ug/L		

TP-93-03

# NET Atlantic, Cambridge Division ANALYTICAL REPORT

Report Date: 10/28/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-03

NET Sample No: 87599

Parameter	ug/L	Date Analyzed	MCL ug/L
-----			
Volatiles by GC/MS-TCLP	S		
TCLP Zero Headspace Extraction		09/22/1993	
Benzene	<25000000	09/26/1993	500
Carbon Tetrachloride	<25000000	09/26/1993	500
Chlorobenzene	<25000000	09/26/1993	100000
Chloroform	<25000000	09/26/1993	6000
1,2-Dichloroethane	<25000000	09/26/1993	500
Methyl Ethyl Ketone	* 110%	09/26/1993	200000
1,1-Dichloroethene	<25000000	09/26/1993	700
Tetrachloroethene	<25000000	09/26/1993	700
Trichloroethene	<25000000	09/26/1993	500
Vinyl Chloride	<100000000	09/26/1993	200

\* Due to the pure nature of this sample the calculated concentration was reported in percent level.

MCL = Maximum Contaminant Level

Results are uncorrected for matrix effects

30014

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 10/22/1993

Report To: ABB Environmental, Inc.

Project: BNAS Site 11 Fieldwork

NET Job No: 93.03071

Date Rec'd: 09/10/1993

Sample ID: TP-93-03

NET Sample No: 87599

Parameter	Result	Units	Analysis	
			Date	Analyst
-----				
TCL Acid/Base/Neutrals 8270 AQ				
Acenaphthene	<1000	ug/L	10/04/1993	jcg
Acenaphthylene	<1000	ug/L		
Anthracene	<1000	ug/L		
Benzo(a)Anthracene	<1000	ug/L		
Benzo(a)Pyrene	<1000	ug/L		
Benzo(b)Fluoranthene	<1000	ug/L		
Benzo(g,h,i)Perylene	<1000	ug/L		
Benzo(k)Fluoranthene	<1000	ug/L		
Benzoic Acid	<1000	ug/L		
Benzyl Alcohol	<1000	ug/L		
4-Bromophenyl-phenylether	<1000	ug/L		
Butylbenzylphthalate	<1000	ug/L		
4-Chloro-3-Methylphenol	<1000	ug/L		
4-Chloroaniline	<1000	ug/L		
bis(2-Chloroethoxy)Methane	<1000	ug/L		
bis(2-Chloroethyl)Ether	<1000	ug/L		
bis(2-Chloroisopropyl)Ether	<1000	ug/L		
2-Chloronaphthalene	<1000	ug/L		
2-Chlorophenol	<1000	ug/L		
4-Chlorophenyl-phenylether	<1000	ug/L		
Chrysene	<1000	ug/L		
Di-n-Butylphthalate	<1000	ug/L		
Di-n-Octyl Phthalate	<1000	ug/L		
Dibenz(a,h)Anthracene	<1000	ug/L		
Dibenzofuran	<1000	ug/L		
1,2-Dichlorobenzene	<1000	ug/L		
1,3-Dichlorobenzene	<1000	ug/L		
1,4-Dichlorobenzene	<1000	ug/L		
3,3'-Dichlorobenzidine	<1000	ug/L		
2,4-Dichlorophenol	<1000	ug/L		
Diethylphthalate	<1000	ug/L		
Dimethyl Phthalate	<1000	ug/L		
2,4-Dimethylphenol	<1000	ug/L		
4,6-Dinitro-2-Methylphenol	<1000	ug/L		
2,4-Dinitrophenol	<1000	ug/L		
2,4-Dinitrotoluene	<1000	ug/L		
2,6-Dinitrotoluene	<1000	ug/L		
bis(2-Ethylhexyl)Phthalate	1000	ug/L		
Fluoranthene	<1000	ug/L		
Fluorene	<1000	ug/L		
Hexachlorobenzene	<1000	ug/L		
Hexachlorobutadiene	<1000	ug/L		
Hexachlorocyclopentadiene	<1000	ug/L		
Hexachloroethane	<1000	ug/L		
Indeno(1,2,3-cd)Pyrene	<1000	ug/L		
Isophorone	<1000	ug/L		
2-Methylnaphthalene	<1000	ug/L		

40028

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 10/22/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-03

NET Sample No: 87599

Parameter	Result	Units	Analysis Date	Analyst
2-Methylphenol	<1000	ug/L		
4-Methylphenol	<1000	ug/L	09/29/1993	jcg
N-Nitroso-di-n-Propylamine	<1000	ug/L		
N-Nitrosodimethylamine	<1000	ug/L		
N-Nitrosodiphenylamine	<1000	ug/L		
Naphthalene	<1000	ug/L		
2-Nitroaniline	<1000	ug/L		
3-Nitroaniline	<1000	ug/L		
4-Nitroaniline	<1000	ug/L		
Nitrobenzene	<1000	ug/L		
2-Nitrophenol	<1000	ug/L		
4-Nitrophenol	<1000	ug/L		
Pentachlorophenol	<1000	ug/L		
Phenanthrene	<1000	ug/L		
Phenol	<1000	ug/L		
Pyrene	<1000	ug/L		
1,2,4-Trichlorobenzene	<1000	ug/L		
2,4,5-Trichlorophenol	<1000	ug/L		
2,4,6-Trichlorophenol	<1000	ug/L		

# NET Atlantic, Cambridge Division

## ANALYTICAL REPORT

Report Date: 10/19/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BHAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-03

NET Sample No: 87599

Parameter		mg/L	Date Analyzed	MCL mg/L
-----				
Metals - TCLP	S			
TCLP-EXTRACTION-ORG & METALS			09/27/1993	
TCLP Digestion-Metals			09/28/1993	
Arsenic (As)	TCLP 846 ICP S	<1.0	09/30/1993	5.0
Barium (Ba)	TCLP 846 ICP S	<1.0	09/29/1993	100
Cadmium (Cd)	TCLP 846 ICP S	<0.25	09/29/1993	1.0
Chromium (Cr)	TCLP 846 ICP S	<0.25	09/29/1993	5.0
Lead (Pb)	TCLP 846 ICP S	<1.0	09/29/1993	5.0
Mercury (Hg)	TCLP 846 CVAA S	<0.020	10/05/1993	0.2
Selenium (Se)	TCLP 846 ICP S	<2.0	09/29/1993	1.0
Silver (Ag)	TCLP 846 ICP S	<0.25	09/29/1993	5.0

MCL = Maximum Contaminant Level

Results are uncorrected for matrix effects

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 10/19/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-03

NET Sample No: 87599

Parameter		Result	Units	Analysis Date	Analyst
Cyanide, Reactive, SW846	S	<2.5	mg/Kg	09/17/1993	lmz
Ignitability	S	Ignitable		10/05/1993	jmt
Sulfide, Reactive, SW846	S	8400	mg/Kg	09/15/1993	pas

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 11/02/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-93-03

NET Sample No: 87599

Parameter		Result	Units	Analysis Date	Analyst
Pesticides	TCLP				
Chlordane		<5.0	ug/L	10/18/1993	ner
Endrin		<0.1	ug/L		
Heptachlor and its epoxide		0.01	J ug/L		
gamma-BHC (Lindane)		0.02	J ug/L		
Methoxychlor		<0.5	ug/L		
Toxaphene		<5.0	ug/L		

TP-93-11

# NET Atlantic, Cambridge Division

## ANALYTICAL REPORT

Report Date: 10/28/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-11

NET Sample No: 87600

Parameter	ug/L	Date Analyzed	MCL ug/L
-----			
Volatiles by GC/MS-TCLP	S		
TCLP Zero Headpace Extraction		09/22/1993	
Benzene	<200000	09/26/1993	500
Carbon Tetrachloride	<200000	09/26/1993	500
Chlorobenzene	<200000	09/26/1993	100000
Chloroform	<200000	09/26/1993	6000
1,2-Dichloroethane	<200000	09/26/1993	500
Methyl Ethyl Ketone	1500000	09/26/1993	200000
1,1-Dichloroethene	<200000	09/26/1993	700
Tetrachloroethene	<200000	09/26/1993	700
Trichloroethene	<200000	09/26/1993	500
Vinyl Chloride	<800000	09/26/1993	200

MCL = Maximum Contaminant Level

Results are uncorrected for matrix effects.

\* 30018

# NET Cambridge Division

## ANALYTICAL REPORT

Report Date: 10/28/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-11

NET Sample No: 87600

Parameter	Result	Units	Analysis Date	Analyst
-----				
TCL Acid/Base/Neutrals 8270 AQ				
Acenaphthene	<20	ug/L	10/04/1993	jcg
Acenaphthylene	<20	ug/L		
Anthracene	<20	ug/L		
Benzo(a)Anthracene	<20	ug/L		
Benzo(a)Pyrene	<20	ug/L		
Benzo(b)Fluoranthene	<20	ug/L		
Benzo(g,h,i)Perylene	<20	ug/L		
Benzo(k)Fluoranthene	<20	ug/L		
Benzoic Acid	<20	ug/L		
Benzyl Alcohol	<20	ug/L		
4-Bromophenyl-phenylether	<20	ug/L		
Butylbenzylphthalate	<20	ug/L		
4-Chloro-3-Methylphenol	<20	ug/L		
4-Chloroaniline	<20	ug/L		
bis(2-Chloroethoxy)Methane	<20	ug/L		
bis(2-Chloroethyl)Ether	<20	ug/L		
bis(2-Chloroisopropyl)Ether	<20	ug/L		
2-Chloronaphthalene	<20	ug/L		
2-Chlorophenol	<20	ug/L		
4-Chlorophenyl-phenylether	<20	ug/L		
Chrysene	<20	ug/L		
Di-n-Butylphthalate	<20	ug/L		
Di-n-Octyl Phthalate	<20	ug/L		
Dibenz(a,h)Anthracene	<20	ug/L		
Dibenzofuran	<20	ug/L		
1,2-Dichlorobenzene	<20	ug/L		
1,3-Dichlorobenzene	<20	ug/L		
1,4-Dichlorobenzene	<20	ug/L		
3,3'-Dichlorobenzidine	<20	ug/L		
2,4-Dichlorophenol	<20	ug/L		
Diethylphthalate	<20	ug/L		
Dimethyl Phthalate	<20	ug/L		
2,4-Dimethylphenol	<20	ug/L		
4,6-Dinitro-2-Methylphenol	<20	ug/L		
2,4-Dinitrophenol	<20	ug/L		
2,4-Dinitrotoluene	<20	ug/L		
2,6-Dinitrotoluene	<20	ug/L		
bis(2-Ethylhexyl)Phthalate	40	ug/L		
Fluoranthene	<20	ug/L		
Fluorene	<20	ug/L		
Hexachlorobenzene	<20	ug/L		
Hexachlorobutadiene	<20	ug/L		
Hexachlorocyclopentadiene	<20	ug/L		
Hexachloroethane	<20	ug/L		
Indeno(1,2,3-cd)Pyrene	<20	ug/L		
Isophorone	<20	ug/L		
2-Methylnaphthalene	<20	ug/L		

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 10/28/1993

Report To: ABB Environmental, Inc.

Project: BNAS Site 11 Fieldwork

NET Job No: 93.03071

Date Rec'd: 09/10/1993

Sample ID: TP-11

NET Sample No: 87600

Parameter	Result	Units	Analysis	
			Date	Analyst
2-Methylphenol	<20	ug/L	10/04/1993	jcg
4-Methylphenol	<20	ug/L		
N-Nitroso-di-n-Propylamine	<20	ug/L		
N-Nitrosodimethylamine	<20	ug/L		
N-Nitrosodiphenylamine	<20	ug/L		
Naphthalene	<20	ug/L		
2-Nitroaniline	<20	ug/L		
3-Nitroaniline	<20	ug/L		
4-Nitroaniline	<20	ug/L		
Nitrobenzene	<20	ug/L		
2-Nitrophenol	<20	ug/L		
4-Nitrophenol	<20	ug/L		
Pentachlorophenol	<20	ug/L		
Phenanthrene	<20	ug/L		
Phenol	<20	ug/L		
Pyrene	<20	ug/L		
1,2,4-Trichlorobenzene	<20	ug/L		
2,4,5-Trichlorophenol	<20	ug/L		
2,4,6-Trichlorophenol	<20	ug/L		

# NET Atlantic, Cambridge Division

## ANALYTICAL REPORT

Report Date: 10/19/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-11

NET Sample No: 87600

Parameter		mg/L	Date Analyzed	MCL mg/L
-----				
Metals - TCLP	S			
TCLP-EXTRACTION-ORG & METALS			09/27/1993	
TCLP Digestion-Metals			09/28/1993	
Arsenic (As)	TCLP 846 ICP S	<1.0	09/30/1993	5.0
Barium (Ba)	TCLP 846 ICP S	<1.0	09/30/1993	100
Cadmium (Cd)	TCLP 846 ICP S	<0.25	09/30/1993	1.0
Chromium (Cr)	TCLP 846 ICP S	1.5	09/30/1993	5.0
Lead (Pb)	TCLP 846 ICP S	<1.0	09/30/1993	5.0
Mercury (Hg)	TCLP 846 CVA S	<0.020	10/05/1993	0.2
Selenium (Se)	TCLP 846 ICP S	<2.0	09/30/1993	1.0
Silver (Ag)	TCLP 846 ICP S	<0.25	09/30/1993	5.0

MCL = Maximum Contaminant Level

Results are uncorrected for matrix effects

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 10/19/1993

Report To: ABB Environmental, Inc.

NET Job No: 93.03071

Project: BNAS Site 11 Fieldwork

Date Rec'd: 09/10/1993

Sample ID: TP-11

NET Sample No: 87600

Parameter		Result	Units	Analysis Date	Analyst
Corrosivity	SW846 S	6.67	pH units	09/14/1993	jmt
Cyanide, Reactive, SW846	S	<2.5	mg/Kg	09/17/1993	lmz
Ignitability	S	did not ignite		10/05/1993	jmt
Sulfide, Reactive, SW846	S	300	mg/Kg	09/15/1993	pas

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 11/02/1993

Report To: ABB Environmental, Inc.

Project: BNAS Site 11 Fieldwork

NET Job No: 93.03071

Date Rec'd: 09/10/1993

Sample ID: TP-11

NET Sample No: 87600

Parameter		Result	Units	Analysis Date	Analyst
Pesticides	TCLP				
Chlordane		<50	ug/L	10/18/1993	ner
Endrin		<1.0	ug/L		
Heptachlor and its epoxide		<1.0	ug/L		
gamma-BHC (Lindane)		<0.5	ug/L		
Methoxychlor		<5.0	ug/L		
Toxaphene		<50	ug/L		

# NET Cambridge Division ANALYTICAL REPORT

Report Date: 11/02/1993

Report To: ABB Environmental, Inc.

Project: BNAS Site 11 Fieldwork

NET Job No: 93.03071

Date Rec'd: 09/10/1993

Sample ID: TP-11

NET Sample No: 87600

Parameter		Result	Units	Analysis Date	Analyst
Herbicides	TCLP				
2,4-D		<1.9	ug/L		mhc
2,4,5-TP		<0.19	ug/L		

## Appendix E

# Navy Responses To Regulatory Comments

Installation Restoration Program

**SITE 11 TECHNICAL MEMORANDUM  
NAS BRUNSWICK**

**RESPONSE TO U.S. ENVIRONMENTAL  
PROTECTION AGENCY COMMENTS  
DATED DECEMBER 6, 1993**

1. Page 6-1, Paragraph 2. Bis(2-ethylhexyl)phthalate (BEHP) was detected at a concentration of 20  $\mu\text{g/L}$  in the associated method blank. These were TCLP analyses, and data validation was not performed on the analytical data set. However, if validation had been done, only BEHP values above 200  $\mu\text{g/L}$  would be considered valid, since BEHP is defined by the USEPA as a common laboratory contaminant. Therefore, the BEHP detection at 1,000  $\mu\text{g/L}$ , not 110  $\mu\text{g/L}$  as originally reported, would be considered valid. The BEHP concentration reported in this paragraph has been corrected.
  
2. Page 6-1, Paragraph 1. The TCLP analytical results indicate that the TP-93-11 drum sample contained only about 0.15% total detectable contaminants; the field observation was that this drum appeared to be water. Therefore, the interpretation was made that the sample was "mostly water". The text has been revised for clarity.
  
3. Page 7-1, Paragraph 1. This last two sentences have been revised to read: "TCLP analyses of samples from two drums indicated that one of the drums was nearly pure MEK, an industrial solvent, and one was water contaminated with approximately 0.15% MEK. A third drum sample contained low levels of fuel-related compounds."

**RESPONSE TO MAINE DEPARTMENT OF  
ENVIRONMENTAL PROTECTION COMMENTS  
DATED DECEMBER 8, 1993**

General Comments. Comment noted. The specific procedures to be followed during the removal action will be outlined in the Work Plan, which will be made available for TRC review prior to the removal.

Pumping of any liquid remaining in the UST and associated piping will be included in the removal action for buried drums. Actual removal of the tank and piping will be addressed at a later time. It is noted that, according to the NAS Brunswick Fire Chief, the piping and UST were not extensively used; therefore, it is not anticipated that significant contamination will be found associated with these features. The removal activities at Site 11 will occur as soon as regulatory concurrence is received and funding is obtained.

Specific Comments

Page 2-1, 2-3. Construction details for the piping system and underground storage tank are shown on plans titled "Oil Spill Control Modifications - Building 211 and Fire Training Pad", dated September 9, 1986. There is no specification of the material used for the drain pipe. The NAS Brunswick Public Works Department has evaluated file records and found that PVC piping was used on this contract. Therefore, it is speculated that the piping used was PVC, because of both the contracts file and the lack of a geophysical anomaly detected in this area. The UST is fiberglass, according to the plans, and the geophysical anomaly in that area is attributed to metal connectors on the tank. As the UST and piping were reportedly used very little, it is not anticipated that significant contamination will be associated with these features.

Page 3-1, first sentence: The text in Section 4.0 is correct. The sentence in Section 3.0 has been revised to read: " A Preliminary Assessment (PA) was conducted after the initial geophysical survey and before the supplemental geophysical survey and test-pitting were completed."

Section 4.0. As the text states, the purpose of the geophysical and test-pitting activities described in this document was simply to establish the presence or absence of buried drums which might contain hazardous materials. The field activities clearly established that drums were present; therefore, this task was successfully completed. The presence of surficial, non-

hazardous materials is unimportant in that the issue of the presence or absence of drums has been answered.

Page 5-1. The metallic debris discovered in these test pits consisted of airplane structure components, angle iron, chair parts, and miscellaneous metallic debris. These objects neither contained listed hazardous wastes nor are expected to exhibit hazardous waste characteristics. Therefore, according to our interpretation of USEPA definitions, they are not considered hazardous. Although the objects were not tested for hazardous waste characteristics, it is noted that they: 1) are miscellaneous metallic debris and not containers which presently or formerly might have contained hazardous materials; 2) were not located in test pits that also contained such containers; and 3) were not in contact with any soil that appeared to be grossly contaminated. The text has been amended to include this information.

Also, please note that the original text on this page focused on the presence of 55-gallon drums and not small (approximately 5 gallon) containers that were also identified. The text has been clarified, and the presence of both 55-gallon drums and smaller containers are addressed.

Page 6-1, second Paragraph, page 6-2.

The original text in Section 6.0 was based on draft laboratory results, some of which were later found to be incorrect. The data tables in the appendices contain the final data which are correct. The concentrations cited in Section 6.0 and associated text have been corrected.

Appendix D. The samples being analyzed were from drums, in which one would potentially expect pure or very high concentrations of chemicals. The goal of this sampling event was to establish the presence or absence of drums on site, and identities and approximate concentrations of any chemicals in those drums. The effective detection limits of these analyses are more than sufficient to meet this requirement. When analyses are being performed for other specific purposes, detection limits sufficient for those purposes will be used.

**RESPONSE TO BRUNSWICK AREA CITIZENS  
FOR A SAFE ENVIRONMENT COMMENTS by R.G. GERBER  
DATED DECEMBER 13, 1993**

1. Cover Letter. The cover letter has been corrected.
  
2. Page 1-1. The purpose of the 1993 investigations has been elaborated upon.
  
3. Page 2-3. Pumping of any liquid remaining in the tank and piping will be included in the removal action for buried drums. Actual removal of the underground storage tank and associated piping will be addressed at a later time. Also, please see the response to the MEDEP comment addressing page 2-1 and the UST piping.
  
4. Page 3-1 - 3-4. Photographs used for site review were taken in the years 1940, 1959, 1965, 1966, 1972, and 1980. The 1959 photo is the first to show the present location of the fire training pit; however, the interval of 1940 to 1959 is not documented with aerial photographs so it is not possible to definitively establish activities during this interval.

Interviews with the NAS Brunswick Fire Chief are the main source of information concerning the fire training exercises. He does not recall any additional fire training areas on base. The Fire Chief has talked with retired fire fighting personnel and the possible existence of another fire training area has not been indicated.

5. Pages 4-1 - 4-3. The purpose of the geophysical survey and test pitting activities was simply to establish the presence or absence of drums at this site, in order to confirm or refute the information provided in the personnel interview. The geophysical survey and subsequent test pitting activities were successful in addressing the stated goals. The specific performance characteristics of the geophysical instrumentation, as has been noted in discussion on previous documents, depends most upon the sizes and depths of any debris and the nature of the surrounding soil.

The primary criteria for selecting areas to be investigated by test pitting were the agreement between magnetometer and ground-penetrating radar survey results and the magnitude of the magnetic anomalies. As noted in Section 4.0, this resulted in approximately 10 areas being identified for test pitting; in reality, 14 test pits were dug. All geophysical anomalies identified by the Navy and the MEDEP for test pitting were investigated. The larger anomalies were typically those associated with test pits in which drums were found; the smaller anomalies were associated with small or no amounts of metallic debris but not

drums or containers. The presence of smaller magnetic anomalies which were not investigated was not important to this task, but may be important during a drum removal action. During the removal action, geophysical techniques that can differentiate between buried objects and monitoring wells will be employed.

6. Page 5-1. Please refer to the response to a MEDEP comment regarding this page.

7. Page 6-1 & 6-2. Samples were collected from three drums because the Navy had previously established that, for this task, three samples would be sufficient to establish the nature of containerized liquids that might be found on site. Please note that this decision was made before the presence of drums was verified, and with the understanding that should drums be found, a removal action would likely need to be undertaken. During the removal action, more chemical analyses will likely be performed to address disposal options.

The TP-93-11 drum was concluded to be "mostly water" on the basis of the field observations and the analytical results which indicated that the liquid sample from the drum contained only about 1,500 mg/L of contamination.

8. Page 7-1 and 7-2. This comment is more appropriately addressed in the scope of work for the drum removal action.

9. Page 7-2. The Navy has already prepared a draft scope of work for the drum removal action. The implementation of the removal action will depend upon regulatory approval and the availability of funding; at this time it is anticipated that the funds will be available in the Summer of 1994. The first task of the removal contractor will be to develop a Work Plan that will define the actions to be taken. This Work Plan will be made available to TRC members for review prior to commencement of site activities.

10. General Comment. During test pitting exercises in 1990 (see Appendix C) a radiation monitor was used to evaluate potential radioactive hazards at the site. Elevated readings were not recorded. It should be noted that a radiation meter is generally used as a means of monitoring radiational conditions on a real-time basis for health and safety considerations. It is not used in the sense that other instruments may be used, as in a "survey", across a pre-determined grid. The instrument is turned on for the duration of the activity, in this case test pitting, and is referred to at times during the course of work. Any anomalous reading would cause the work to be terminated, and it is at this time that documentation would be initiated that would record background reading, readings with distance, etc.