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PERMA-FIX
ENVIRONMENTAL SERVICES

~~AP VV PG 08~~
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'01 AUG 2 PM 1 07
STATE OF FLORIDA
DEP - NE DISTRICT
JACKSONVILLE

July 31, 2001

Christopher Bodin
Florida Department of Environmental Protection
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256

Subj: Perma-Fix of Florida, Inc.
FLD 980 711 071
Release Assessment Report, Areas of Concern A and C

Dear Mr. Bodin:

Please find attached the above mentioned report. I hope that the results will close out these Areas of Concern that you and my predecessor, Steve Douglas, have been working on.

If you have any questions or need further information, please do not hesitate to contact me at (352) 395-1356.

Sincerely,

Ken Shoemake

Ken Shoemake
Environmental Health and Safety Manager

cc: Narindar M Kumar, Region 4
Harold Register, FDEP

DOCKET # D.11

1940 NW 67th PLACE ▯ GAINESVILLE, FLORIDA 32653 ▯ (352) 373-6066 ▯ Fax: (352) 372-8963
EPA-Permitted TSD Facility • Hazardous Waste • Non-Hazardous Waste • Mixed Waste

H/W

RELEASE ASSESSMENT REPORT
AREAS OF CONCERN A and C
(Paint Spray Booth Area and Soil Mound Area)

PERMA-FIX OF FLORIDA, INC.
1940 NW 67th Place
GAINESVILLE, FLORIDA

Prepared for:

Perma-Fix of Florida, Inc.
1940 NW67th Place
Gainesville, Florida

Prepared by:

Environmental Science Associates, Inc.
35 Jefferson Avenue
Ponte Vedra, Florida 32082

June, 2001

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RELEASE ASSESSMENT REPORT
AREAS OF CONCERN A and C
(Paint Spray Booth Area and Soil Mound Area)
Perma-Fix of Florida Inc.
1940 NW 67th Place
Gainesville, Florida

1.0 INTRODUCTION/SITE BACKGROUND

Perma-Fix of Florida, Inc. (PFF), a subsidiary of Perma-Fix Environmental Services, Inc. operates a commercial waste bulking, storage, transfer, and treatment facility located at 1940 NW 67th Place in Gainesville, Alachua County, Florida (Figure 1, Site Location Map). PFF currently operates under a Resource Conservation and Recovery Act (RCRA) permit issued by the Florida Department of Environmental Protection (FDEP). A Hazardous and Solid Waste Act (HSWA) permit is currently being prepared by the United States Enviornmental Protection Agency (USEPA) Region IV and the FDEP. In preparation for developing the HSWA permit, the USEPA and FDEP conducted a visual site inspection of the facility on September 14-15, 2000. The purpose of the visual site inspection was to provide background information for a supplemental RCRA Facility Assessment (RFA). The information collected during the September, 2000 visual site inspection supplemented the original site inspection for the facility, which was conducted in October, 1989.

During the September, 2000 visual site inspection, two (2) Area of Concern were identified, that, in the opinion of the joint USEPA/FDEP review team, required confirmatory sampling to establish their future action status under HSWA. These Areas of Concern are identified as Area of Concern A - Paint Spray Booth Area, and Area of Concern B - Soil Mound Area. At the request of the USEPA/FDEP, PFF developed a Release Assessment Workplan to perform soil sampling and laboratory analysis of the soil samples collected at each of these areas. The objectives of the release assessment were to conduct initial evaluations of the two (2) identified Areas of Concern for confirmatory sampling to determine their future action status, and to collect data of sufficient quality that can be used in any further evaluation that may be required. The significance of the impact of any releases detected by the Release Assessment are to be determined by comparing the measured values to USEPA screening criteria (Industrial RBCs) and/or background levels. The purpose of the Release Assessment Workplan was to define the sampling and analytical approaches to be used in conducting the Release Assessment, and to define the criteria to be used in evaluating the results of the Release Assessment. The location of Areas of Concern A and C are indicated in Figure 2, Site Map.

The initial confirmatory sampling event was conducted on April 3, 2001. The methods and procedures used for the initial confirmatory soil sampling were in accordance with the approved Quality Assurance Project Plan (QAPP), dated March 23, 2001 (Attachment D). The QAPP details the plan and procedures for performing the required fieldwork and for evaluating the data generated as a result of the fieldwork.

2.0 CONFIRMATORY SOIL SAMPLING AND ANALYSIS

Confirmatory soil sampling was conducted at the site on April 3, 2001 in accordance with the Release Assessment Workplan (prepared by PFF, dated March 23, 2001) and the QAPP (prepared by Schreiber, Yonley & Associates, dated March 23, 2001). The purpose of the sampling and analysis plan outlined in the Release Assessment Plan for Areas of Concern A and C was to obtain data to determine if a release to the surface and/or subsurface soils has occurred. Soil samples were collected from each Area of Concern and were transported to an approved environmental testing laboratory (Advanced Environmental Laboratories, Inc. of Jacksonville, Florida) for analysis by EPA Method 8260 (volatile organics), and for the eight (8) RCRA metals (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Silver, and Selenium) by EPA Methods 7470, 6010, and 7196. The procedures for the field sample collection at each of the Areas of Concern are outlined in detail below:

2.1 Area of Concern A - Paint Spray Booth Area

The Spray Paint Booth Area is a concrete pad located to the east of the LSV Warehouse, across an asphalt-paved drive. The concrete pad measured approximately 22.5 ft in length and 12.5 ft in width. The Spray Paint Booth that was formerly located on the concrete pad was reported to have operated from 1988 through 1997, and has since been removed from the site. A total of five (5) soil borings were conducted at the Paint Spray Booth Area, with four (4) of the borings conducted at the four (4) corners of the concrete pad (Soil Borings #PSBA-1 through PSBA-4), and the remaining soil boring (PSBA-5) conducted at the center of the concrete pad (refer to Figure 3, Soil Boring Locations, Paint Spray Booth Area). Site preparation activities included cutting a hole in the center of the concrete pad using a concrete saw, and removing overlying asphalt from soil boring locations along the western edge of the concrete pad.

Each of the soil borings were advanced manually using a stainless steel hand auger until groundwater was encountered, which was measured and found to be approximately 4.7 ft below ground surface. Three (3) discrete confirmatory soil grab samples were collected from each of the five (5) soil borings for laboratory analysis. The first confirmatory soil sample was collected at a depth of approximately 0 to 6 inches below the ground surface. The second confirmatory soil sample was collected from the mid-depth of the soil boring, at approximately 2.25 ft below the ground surface, and the third confirmatory soil sample was collected from immediately above the soil/groundwater interface, at a depth of approximately 4.5 ft below ground surface. In addition, soil samples were collected at the ground surface and at one foot intervals below the ground surface to the depth of groundwater saturation for field screening for the presence of volatile organic vapors utilizing a portable Organic Vapor Analyzer/Flame Ionization Detector (OVA/FID).

Each confirmatory soil sample was collected using a stainless steel hand auger and/or stainless steel sampling spoon, which were decontaminated between each use to prevent the possibility of cross contamination. Equipment decontamination procedures used were as outlined in the QAPP (Attachment D). Pre-cleaned sample containers, which had been provided by the designated laboratory, were appropriately labeled, preserved, sealed in zip-lock type bags, placed on wet ice inside an insulated cooler, and hand-delivered, under standard chain of custody procedures, to the designated FDEP-certified environmental laboratory for analysis. Each soil sample kit consisted of 1 x 250 ml unpreserved widemouth glass container, and 2 x 5 gram EnCore® sample containers for volatile organic analysis (EPA Method 5035/8260). In addition, appropriate

Quality Assurance/Quality Control (QA/QC) samples were collected and analyzed along with the confirmatory soil samples. QA/QC samples included a trip blank and a field equipment rinseate blank, which were prepared using analyte free water provided by the designated laboratory, as well as a field duplicate soil sample (from the location of confirmatory soil sample # PSBA-5B) and Matrix Spike/Matrix Spike Duplicate soil samples.

Organic vapor analysis of the soil was performed in the field using a Foxboro Model 128 Organic Vapor Analyzer/Flame Ionization Detector (OVA/FID) using soil vapor headspace analysis screening procedures outlined in Chapter 62-770 Florida Administrative Code (F.A.C.) and in the Florida Department of Environmental Protection (FDEP) "Guidelines for the Assessment and Remediation of Petroleum Contaminated Soils". The instrument was calibrated in the field prior to sample collection using a standard of 100 parts per million (ppm) methane. Soil samples were collected from the ground surface and from one foot intervals below the ground surface until the depth of groundwater saturation was encountered and were screened for the presence of volatile organic hydrocarbon vapors using soil vapor headspace analysis techniques. In this procedure, two clean 16-ounce, widemouth glass jars are half-filled with the soil sample to be tested. Each jar is then sealed with aluminum foil, and allowed to equilibrate at ambient temperatures for a period of five to ten minutes. The organic vapor concentration in the headspace of the jars is then analyzed using the OVA/FID, with one sample analyzed with and one sample analyzed without a carbon filter in order to detect and correct for the presence of naturally occurring organic vapors (i.e., methane). The corrected reading is reported in parts per million (ppm), and represents the concentration of organic vapor from the soil sample resulting from the presence of volatile organic hydrocarbon compounds in the sample.

2.1.1 Results of Laboratory Analysis - Paint Spray Booth Area

The results of the laboratory analysis of the confirmatory soil samples collected from Area of Concern A (Paint Spray Booth Area) indicated concentrations of Volatile Organic compounds (Acetone) and Total RCRA Metals (Arsenic, Barium, Chromium, and Lead) at concentrations below the soil cleanup target levels specified in Chapter 62-770 F.A.C., Table IV, "Selected Soil Cleanup Target Levels" Confirmatory Soil Sample #PSBA-3A indicated concentrations of Arsenic (0.93 mg/Kg) above the soil cleanup target level of 0.8 mg/Kg for Direct Exposure - Residential criteria, but below the soil cleanup target levels of 3.7 mg/Kg and 29 mg/Kg Arsenic for Direct Exposure - Industrial and Leachability criteria, respectively. The results of the laboratory analysis of the soil samples collected from the Paint Spray Booth Area are summarized in Table 1, and copies of the laboratory reports are provided in Attachment E. Results of the laboratory analysis of QA/QC samples collected as part of the Release Assessment sampling event appear within control limits.

2.1.2 Results of OVA/FID Soil Screening - Paint Spray Booth Area

The results of the OVA/FID screening of soil samples collected from Area of Concern A (Paint Spray Booth Area) were below the instrument detection limit of 1 part per million (ppm) Total Organic Vapor for all samples, with the exception of soil samples collected from soil boring #PSBA-2, which indicated Total Organic Vapor concentrations from 1.4 ppm to 2.6 ppm in soil samples collected from 1 ft to 3 ft below ground surface. The results of the OVA/FID soil screening for the Paint Spray Booth Area are summarized in Table 2.

2.2 Area of Concern C - Soil Mound Area

The Soil Mound Area is located in the northwest corner of the facility, in an area that is undeveloped and unpaved. The soil mound, which was approximately 2 to 2.5 ft in height at the time of the Release Assessment field activities, was reported by PPF personnel as having been created by land clearing and soil grading activities. One (1) soil boring (#SMA-1) was conducted in this area in the location selected as representative of the apparent worst case site conditions, based on visual observations at the time of the sampling event. The soil boring was advanced manually using a stainless steel hand auger until groundwater was encountered, which was measured and found to be approximately 4.7 ft below ground surface. Three (3) discrete confirmatory soil grab samples were collected from soil boring #SMA-1 for laboratory analysis. The first confirmatory soil sample (#SMA-1A) was collected at a depth of approximately 0 to 6 inches below the ground surface. The second confirmatory soil sample (#SMA-1B) was collected from the mid-depth of the soil boring, at approximately 2.25 ft below the ground surface, and the third confirmatory soil sample (#SMA-1C) was collected from immediately above the soil/groundwater interface, at a depth of approximately 4.5 ft below the ground surface. In addition, soil samples were collected at the ground surface and at one foot intervals below the ground surface to the depth of groundwater saturation for field screening for the presence of volatile organic vapors utilizing a portable Organic Vapor Analyzer/Flame Ionization Detector (OVA/FID).

Each confirmatory soil sample was collected using a stainless steel hand auger and/or stainless steel sampling spoon, which were decontaminated between each use to prevent the possibility of cross contamination. Equipment decontamination procedures used were as outlined in the QAPP (Attachment D). Pre-cleaned sample containers, which had been provided by the designated laboratory, were appropriately labeled, preserved, sealed in zip-lock type bags, placed on wet ice inside an insulated cooler, and hand-delivered, under standard chain of custody procedures, to the designated FDEP-certified environmental laboratory for analysis. Each soil sample kit consisted of 1 x 250 ml unpreserved widemouth glass container, and 2 x 5 gram EnCore® sample containers for volatile organic analysis (EPA Method 5035/8260).

Organic vapor analysis of the soil was performed in the field using a Foxboro Model 128 OVA/FID using soil headspace analysis screening procedures outlined in Chapter 62-770 (F.A.C.) and in the FDEP "Guidelines for the Assessment and Remediation of Petroleum Contaminated Soils". The instrument was calibrated in the field prior to sample collection using a standard of 100 parts per million (ppm) methane. Soil samples were collected from the ground surface and from one foot intervals below the ground surface until the depth of groundwater saturation was encountered and were screened for the presence of volatile organic hydrocarbon vapors using soil vapor headspace analysis techniques. In this procedure, two clean 16-ounce, widemouth glass jars are half-filled with the soil sample to be tested. Each jars is then sealed with aluminum foil, and allowed to equilibrate at ambient temperatures for a period of five to ten minutes. The organic vapor concentration in the headspace of the jars is then analyzed using the OVA/FID, with one sample analyzed with and one sample analyzed without a carbon filter in order to detect and correct for the presence of naturally occurring organic vapors (i.e., methane). The corrected reading is reported in parts per million (ppm), and represents the concentration of organic vapor from the soil sample resulting from the presence of volatile organic hydrocarbon compounds in the sample.

2.2.1 Results of Laboratory Analysis - Soil Mound Area

The results of the laboratory analysis of the confirmatory soil samples collected from Area of Concern C (Soil Mound Area) detected concentrations of one Volatile Organic Compound (Chloroform) and certain Total RCRA Metals (Arsenic, Barium, Chromium, and Lead) at concentrations below the soil cleanup target levels specified in Chapter 62-770 F.A.C., Table IV, "Selected Soil Cleanup Target Levels". Confirmatory Soil Sample #SMA-1C indicated concentrations of Arsenic (2.8 mg/Kg) above the soil cleanup target level of 0.8 mg/Kg for Direct Exposure - Residential criteria, but below the soil cleanup target levels of 3.7 mg/Kg and 29 mg/Kg Arsenic for Direct Exposure - Industrial and Leachability criteria, respectively. The results of the laboratory analysis of the soil samples collected from the Soil Mound Area are summarized in Table 3, and copies of the laboratory reports are provided in Attachment E. Results of the laboratory analysis of QA/QC samples collected as part of the Release Assessment sampling event appear within control limits.

2.2.2 Results of OVA/FID Soil Screening - Soil Mound Area

The results of the OVA/FID soil screening of soil samples collected from Area of Concern C (Soil Mound Area) were below the instrument detection limit of 1 part per million (ppm) Total Organic Vapor for all samples, with the exception of soil samples collected from soil boring #PSBA-2, which indicated Total Organic Vapor concentrations from 1.4 ppm to 2.6 ppm in soil samples collected from 1 ft to 3 ft below ground surface. The results of the OVA/FID soil screening of soil samples collected from the Soil Mound Area are summarized in Table 4.

3.0. Summary and Conclusions

Confirmatory soil sampling was conducted at the Perma-Fix site on April 3, 2001 in accordance with the Release Assessment Workplan (prepared by PFF, dated March 23, 2001) and the QAPP (prepared by Schreiber, Yonley & Associates, dated March 23, 2001). The purpose of the sampling and analysis plan outlined in the Release Assessment Plan for Areas of Concern A (Paint Spray Booth Area) and C (Soil Mound Area) was to obtain data to determine if a release to the surface and/or subsurface soils has occurred. The objectives of the release assessment were to conduct initial evaluations of the two (2) identified Areas of Concern for confirmatory sampling to determine their future action status, and to collect data of sufficient quality that can be used in any further evaluation that may be required. As specified in the approved Workplan, the significance of the impact of any releases detected by the Release Assessment are to be determined by comparing the measured values to USEPA screening criteria (Industrial RBCs) and/or background levels.

Soil samples were collected from each Area of Concern and were transported to an approved environmental testing laboratory (Advanced Environmental Laboratories, Inc. of Jacksonville, Florida) for analysis by EPA Method 8260 (volatile organics), and for the eight (8) RCRA metals (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Silver, and Selenium) by EPA Methods 7470, 6010, and 7196. In addition, field screening was conducted using a portable organic vapor analyzer (OVA/FID) to determine the presence of volatile organic hydrocarbon vapors in soil samples collected from each Area of Concern.

A total of five (5) soil borings were conducted at Area of Concern A (Paint Spray Booth Area), with four (4) of the borings conducted at the four (4) corners of the concrete pad (Soil Borings #PSBA-1 through PSBA-4), and the remaining soil boring (PSBA-5) conducted at the center of the concrete pad. A total of three (3) discrete confirmatory soil grab samples were collected from each of the five (5) soil borings for laboratory analysis. The first confirmatory soil sample was collected at a depth of approximately 0 to 6 inches below the ground surface. The second confirmatory soil sample was collected from the mid-depth of the soil boring, at approximately 2.25 ft below the ground surface, and the third confirmatory soil sample was collected from immediately above the soil/groundwater interface, at a depth of approximately 4.5 ft below ground surface. Soil samples were also collected from each soil boring at the ground surface and at one-foot intervals below the ground surface to the depth of groundwater saturation for field screening for the presence of volatile organic vapors utilizing a portable Organic

The results of the laboratory analysis of soil samples collected from Area of Concern A (Paint Spray Booth Area) were below the Direct Exposure - Industrial Use Soil Cleanup Target Levels as specified in Chapter 62-775, Table II, 'Soil Cleanup Target Levels' for all analytes of interest. The laboratory results were also below the Direct Exposure - Residential Use Soil Cleanup Target Levels and Leachability Based on Groundwater Criteria Target Levels as specified in Chapter 62-775, Table II, 'Soil Cleanup Target Levels' for all analytes of interest, with the exception of soil sample # PSBA-3A (0.93 mg/KG Total Arsenic) which exceeded the Direct Exposure - Residential Use Soil Cleanup Target Level for Arsenic of 0.8 mg/Kg. The results of the OVA/FID soil screening of soil samples collected from Area of Concern A (Paint Spray Booth Area) were below the instrument detection limit of 1 part per million (ppm) Total Organic Vapor for all samples, with the exception of soil samples collected from soil boring #PSBA-2, which indicated Total Organic Vapor concentrations from 1.4 ppm to 2.6 ppm in soil samples collected from 1 ft to 3 ft below ground surface.

One (1) soil boring soil (#SMA-1) was conducted at Area of Concern C (Soil Mound Area), in the location selected as representative of the apparent worst case site conditions, based on visual observations at the time of the sampling event. Three (3) discrete confirmatory soil grab samples were collected from soil boring #SMA-1 for laboratory analysis. The first confirmatory soil sample

(#SMA-1A) was collected at a depth of approximately 0 to 6 inches below the ground surface. The second confirmatory soil sample (#SMA-1) was collected from the mid-depth of the soil boring, at approximately 2.25 ft below the ground surface, and the third confirmatory soil sample (#SMA-1C) was collected from immediately above the soil/groundwater interface, at a depth of approximately 4.5 ft below the ground surface. In addition, soil samples were collected at the ground surface and at one-foot intervals below the ground surface to the depth of groundwater saturation for field screening for the presence of volatile organic vapors utilizing a portable Organic Vapor Analyzer/Flame Ionization Detector (OVA/FID).

The results of the laboratory analysis of soil samples collected from Area of Concern C (Soil Mound Area) were below the Direct Exposure - Industrial Use Soil Cleanup Target Levels as specified in Chapter 62-775, Table II, 'Soil Cleanup Target Levels' for all analytes of interest. The laboratory results were also below the Direct Exposure - Residential Use Soil Cleanup Target Levels and Leachability Based on Groundwater Criteria Target Levels as specified in Chapter 62-775, Table II, 'Soil Cleanup Target Levels' for all analytes of interest, with the exception of soil sample # SMA-1C (2.8 mg/KG Total Arsenic) which exceeded the Direct Exposure - Residential Use Soil Cleanup Target Level for Arsenic of 0.8 mg/Kg. The results of the OVA/FID soil screening of soil samples collected from Area of Concern C (Soil Mound Area) were below the instrument detection limit of 1 part per million (ppm) Total Organic Vapor for all samples.

Based on the results of the laboratory analysis of the soil samples collected during this investigation, which were below the applicable Direct Exposure - Industrial Soil Cleanup Target Levels and the Leachability Based on Groundwater Criteria as specified by Chapter 62-775, Table II, 'Soil Cleanup Target Levels', no further action appears warranted at this time.

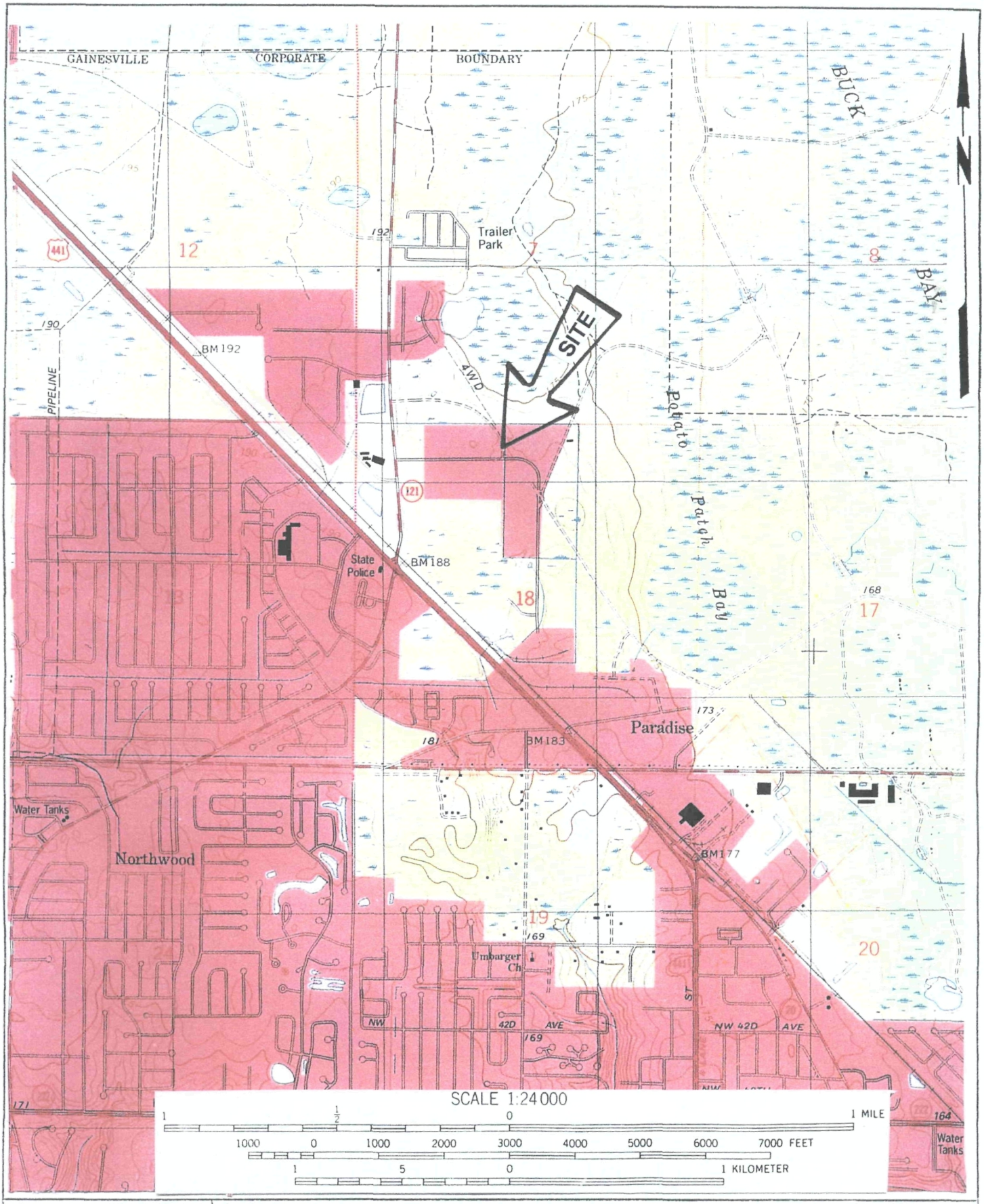
Respectfully submitted,
Environmental Science Associates, Inc.

Richard Moriarty
Environmental Scientist

Bradford J. Radloff, P.G.
Senior Geologist
Registered Florida No. 1582

ATTACHMENT A

FIGURES



Environmental Science Associates, Inc.

SITE LOCATION MAP

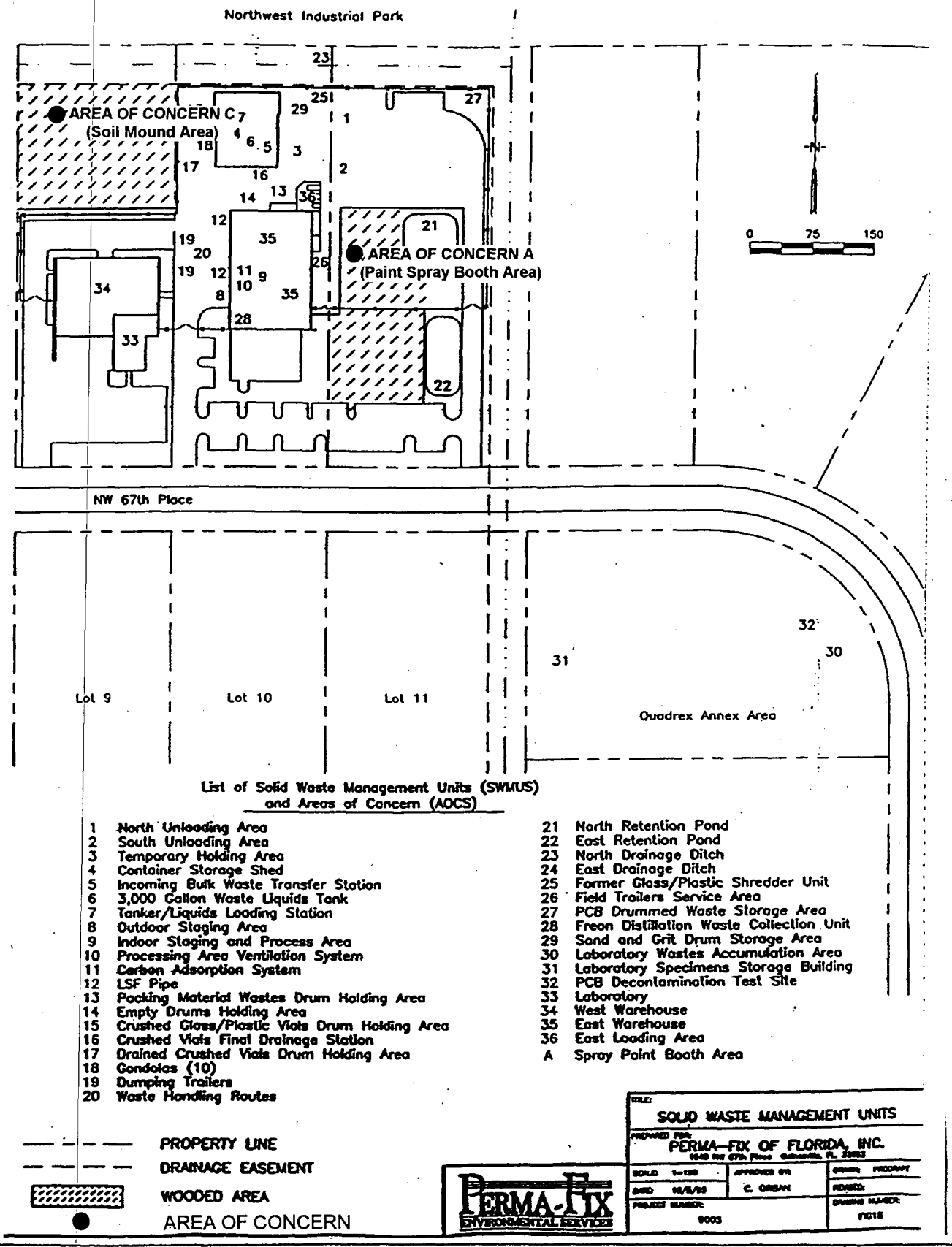
(USGS Topographic Quadrangle, Gainesville East, Florida)

PERMA-FIX of FLORIDA, INC.

1940 NW 67th Place, Gainesville, Florida

FIGURE 1

PROJECT NO.



List of Solid Waste Management Units (SWMUS) and Areas of Concern (AOCS)

1 North Unloading Area
2 South Unloading Area
3 Temporary Holding Area
4 Container Storage Shed
5 Incoming Bulk Waste Transfer Station
6 3,000 Gallon Waste Liquids Tank
7 Tanker/Liquids Loading Station
8 Outdoor Staging Area
9 Indoor Staging and Process Area
10 Processing Area Ventilation System
11 Carbon Adsorption System
12 LSF Pipe
13 Packing Material Wastes Drum Holding Area
14 Empty Drums Holding Area
15 Crushed Glass/Plastic Vials Drum Holding Area
16 Crushed Vials Final Drainage Station
17 Drained Crushed Vials Drum Holding Area
18 Gondolas (10)
19 Dumping Trailers
20 Waste Handling Routes
21 North Retention Pond
22 East Retention Pond
23 North Drainage Ditch
24 East Drainage Ditch
25 Former Glass/Plastic Shredder Unit
26 Field Trailers Service Area
27 PCB Drummed Waste Storage Area
28 Freon Distillation Waste Collection Unit
29 Sand and Grit Drum Storage Area
30 Laboratory Wastes Accumulation Area
31 Laboratory Specimens Storage Building
32 PCB Decontamination Test Site
33 Laboratory
34 West Warehouse
35 East Warehouse
36 East Loading Area
A Spray Paint Booth Area

PROPERTY LINE
DRAINAGE EASEMENT
WOODED AREA
AREA OF CONCERN

TITLE: SOLID WASTE MANAGEMENT UNITS
PREPARED FOR: PERMA-FIX OF FLORIDA, INC.
1940 NW 67th Place Gainesville, FL 32653
SCALE: 1=150 APPROVED BY: C. GRAM DRAWN: PROGRAPT
DATE: 10/5/95 REVISED:
PROJECT NUMBER: 9003 DRAWING NUMBER: FIG18

PERMA-FIX ENVIRONMENTAL SERVICES

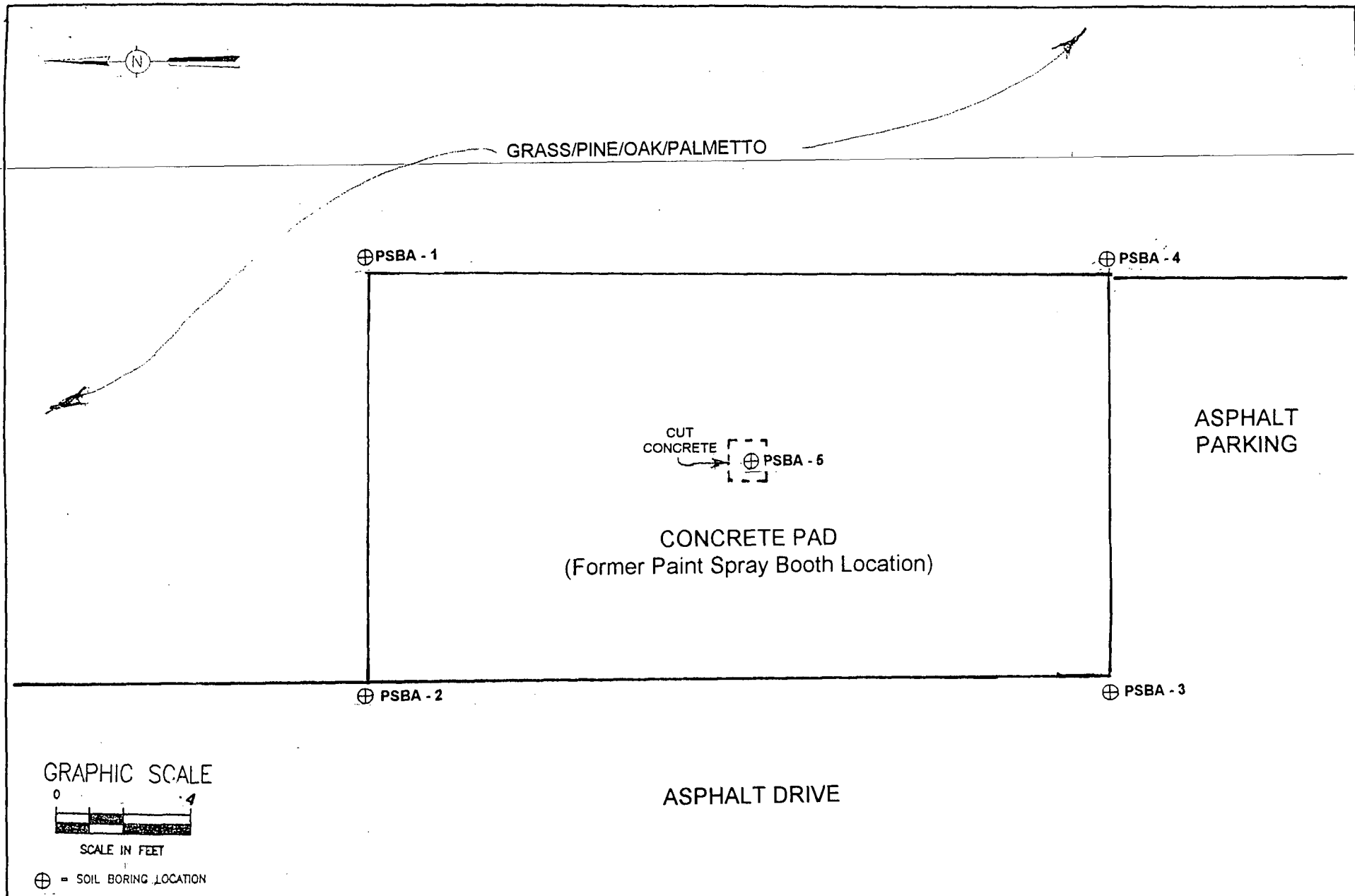
Environmental Science Associates, Inc.

SITE MAP INDICATING AREAS OF CONCERN

PERMA-FIX of FLORIDA, INC.
1940 NW 67th Place, Gainesville, Florida

FIGURE 2

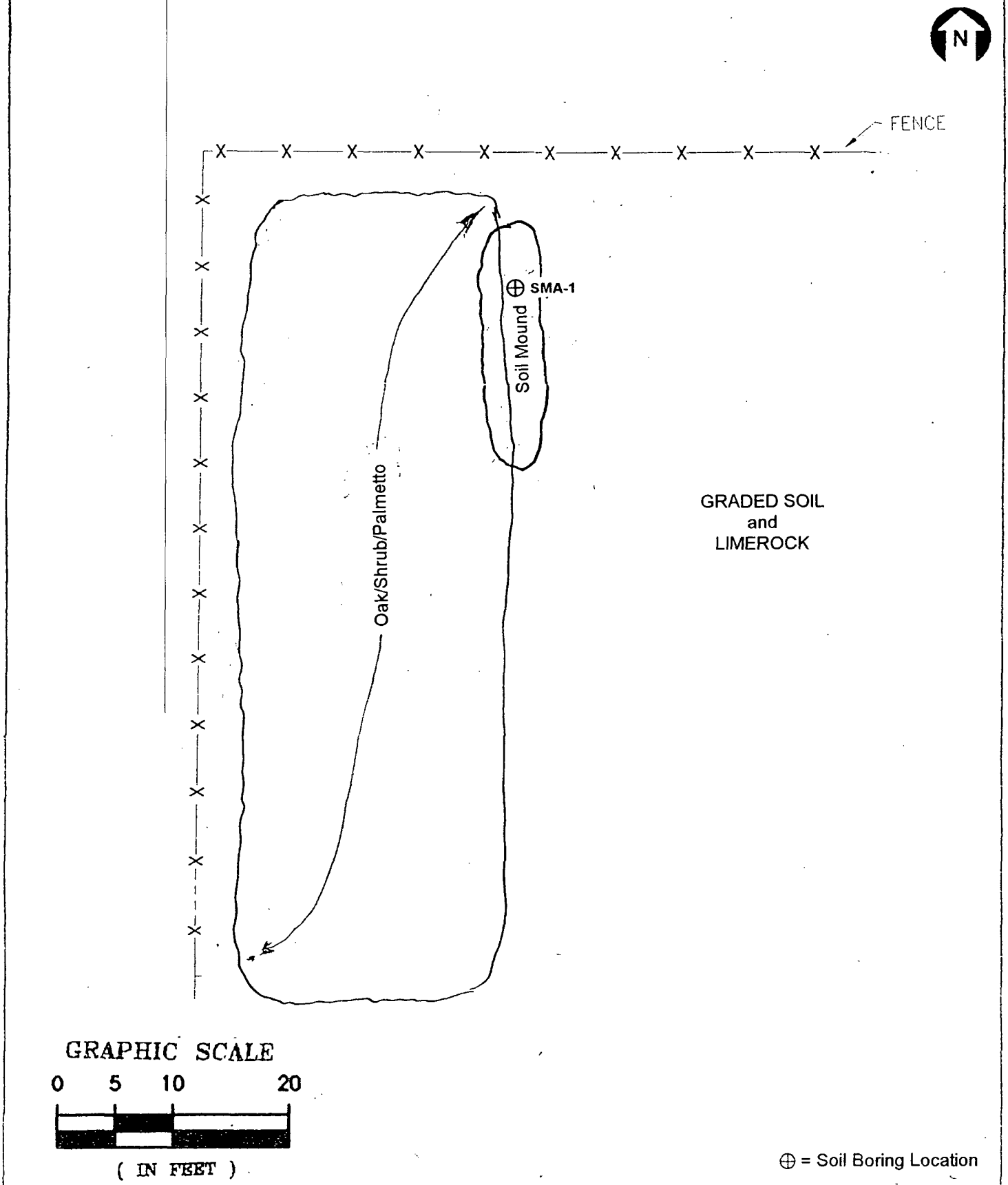
PROJECT NO.



Environmental Science Associates, Inc.

SITE MAP INDICATING SOIL BORING LOCATIONS
AREA OF CONCERN A - PAINT SPRAY BOOTH AREA
PERMA-FIX of FLORIDA, INC.
1940 NW 67th Place, Gainesville, Florida

FIGURE
3
PROJECT NO.



Environmental Science Associates, inc.

SITE MAP INDICATING SOIL BORING LOCATIONS
AREA OF CONCERN C - SOIL MOUND AREA
PERMA-FIX of FLORIDA, INC.
1940 NW 67th Place, Gainesville, Florida

FIGURE
4
PROJECT NO.

ATTACHMENT B

TABLES

Table 1. Summary of Confirmatory Soil Analysis, Paint Spray Booth Area (in mg/Kg)

Sample ID	Depth	Sample Date	EPA Method 8260:	Acetone	Chloroform	All Other 8260 Compounds	Total RCRA Metals:	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Silver	Selenium
PSBA – 1A	0-0.5 ft	4/03/01		ND	ND	ND		ND	11	ND	6.1	4.0	ND	ND	ND
PSBA – 1B	2.25 ft	4/03/01		0.233	ND	ND		ND	2.9	ND	1.7	ND	ND	ND	ND
PSBA – 1C	4.5 ft	4/03/01		ND	ND	ND		ND	2.6	ND	1.2	0.68	ND	ND	ND
PSBA – 2A	0-0.5 ft	4/03/01		ND	ND	ND		ND	10	ND	4.2	4.4	ND	ND	ND
PSBA – 2B	2.25 ft	4/03/01		ND	ND	ND		ND	2.2	ND	1.4	ND	ND	ND	ND
PSBA – 2C	4.5 ft	4/03/01		ND	ND	ND		ND	2.9	ND	1.7	0.63	ND	ND	ND
PSBA – 3A	0-0.5 ft	4/03/01		0.250	ND	ND		**0.93**	5.8	ND	3.0	1.1	ND	ND	ND
PSBA – 3B	2.25 ft	4/03/01		ND	ND	ND		ND	2.8	ND	1.8	ND	ND	ND	ND
PSBA – 3C	4.5 ft	4/03/01		ND	ND	ND		ND	6.3	ND	3.0	0.89	ND	ND	ND
PSBA – 4A	0-0.5 ft	4/03/01		ND	ND	ND		ND	42	ND	4.9	4.4	ND	ND	ND
PSBA – 4B	2.25 ft	4/03/01		ND	ND	ND		ND	4.0	ND	1.7	0.60	ND	ND	ND
PSBA – 4C	4.5 ft	4/03/01		ND	ND	ND		ND	3.4	ND	1.2	ND	ND	ND	ND
PSBA – 5A	0-0.5 ft	4/03/01		0.510	ND	ND		0.55	7.1	ND	1.7	2.9	ND	ND	ND
PSBA – 5B	2.25 ft	4/03/01		ND	ND	ND		ND	2.6	ND	1.5	0.70	ND	ND	ND
PSBA – 5C	4.5 ft	4/03/01		ND	ND	ND		ND	5.5	ND	3.0	1.2	ND	ND	ND
PSBA – DUP (PSBA-5B)	2.25 ft	4/03/01		ND	ND	ND		ND	2.7	ND	1.4	0.55	ND	ND	ND
FDEP Soil Cleanup Target Levels*															
Residential*				780	0.4	NA		**0.8**	110	75	210	400	3.4	390	390
Industrial*				5500	0.5	NA		3.7	87000	1300	420	920	26	9100	10000
Leachability*				2.8	0.03	NA		29	1600	8	38	TCLP	2.1	17	5

Note: ND = Not Detected; NA = Not Applicable: PBSA = Paint Spray Booth Area

*Soil Cleanup Target Levels as specified in Chapter 62-777, F.A.C., A) Direct Exposure – Residential; B) Direct Exposure – Industrial; or C) Leachability (based on groundwater criteria) concentrations.

TCLP = Toxicity Characteristic Leachate Procedure

Table 2. Summary of OVA/FID Headspace Screening Results Paint Spray Booth Area				
Sample Location (see Figure 3)	**Depth (ft bls)**	**FID Unfiltered (ppm)**	**FID with Filter (ppm)**	**FID Corrected (ppm)**
PSBA-1	Surficial	0	0	0
	1 ft	0	0	0
	2 ft	0	0	0
	3 ft	0	0	0
	4 ft	0	0	0
	5 ft	0	0	0
PSBA-2	Surficial	0	0	0
	1 ft	2.6	0	2.6
	2 ft	2.0	0	2.0
	3 ft	1.4	0	1.4
	4 ft	0	0	0
	5 ft	0	0	0
PSBA-3	Surficial	0	0	0
	1 ft	0	0	0
	2 ft	0	0	0
	3 ft	0	0	0
	4 ft	0	0	0
	5 ft	0	0	0
PSBA-4	Surficial	0	0	0
	1 ft	0	0	0
	2 ft	0	0	0
	3 ft	0	0	0
	4 ft	0	0	0
	5 ft	0	0	0
PSBA-5	Surficial	0	0	0
	1 ft	0	0	0
	2 ft	0	0	0
	3 ft	0	0	0
	4 ft	0	0	0
	5 ft	0	0	0

Note: Depth to Water at time of Soil Borings =approximately 4.7 ft below ground surface

Field Meter: Foxboro 128 OVA/FID

Field Calibration Check: 4/03/01, 11:45 and 14:35

Ambient Conditions: Moderate Temperature 78-80°F; sky clear: light breeze (Southerly, 3-7)

Table 3. Summary of Confirmatory Soil Analysis, Soil Mound Area (in mg/Kg)

Sample ID	Depth	Sample Date	EPA Method 8260:	Acetone	Chloroform	All Other 8260 Compounds	Total RCRA Metals:	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Silver	Selenium
SMA – 1A	0.5 ft	4/03/01		ND	ND	ND		ND	5.1	ND	1.8	1.7	ND	ND	ND
SMA – 1B	2.75 ft	4/03/01		ND	0.024	ND		ND	2.7	ND	1.6	0.61	ND	ND	ND
SMA – 1C	4.5 ft	4/03/01		ND	ND	ND		**2.8**	17	ND	10	3.4	ND	ND	ND
FDEP Soil Cleanup Target Levels*															
Residential*				780	0.4	NA		**0.8**	110	75	210	400	3.4	390	390
Industrial*				5500	0.5	NA		3.7	87000	1300	420	920	26	9100	10000
Leachability*				2.8	0.03	NA		29	1600	8	38	TCLP	2.1	17	5

Note: ND = Not Detected; NA = Not Applicable: SMA = Soil Mound Area

*Soil Cleanup Target Levels as specified in Chapter 62-777, F.A.C., A) Direct Exposure – Residential; B) Direct Exposure – Industrial; or C) Leachability (based on groundwater criteria) concentrations.

TCLP = Toxicity Characteristic Leachate Procedure

Table 4. Summary of OVA/FID Headspace Screening Results Soil Mound Area				
Sample Location (see Figure 3)	**Depth (ft bls)**	**FID Unfiltered (ppm)**	**FID with Filter (ppm)**	**FID Corrected (ppm)**
SMA-1	Surficial	0	0	0
	1 ft	0	0	0
	2 ft	0	0	0
	3 ft	0	0	0
	4 ft	0	0	0
	5 ft	0	0	0

Note: Depth to Water at time of Soil Borings =approximately 4.7 ft below ground surface

Field Meter: Foxboro 128 OVA/FID

Field Calibration Check: 4/03/01, 18:43

Ambient Conditions: Moderate Temperature 78-81°F; sky, partly cloudy: light breeze (Southerly, 5-7)

ATTACHMENT C

PHOTODOCUMENTATION

1. Photograph, facing generally south, overlooking Paint Spray Booth Area (Area of Concern A).

2. Photograph, facing generally northeast, overlooking Paint Spray Booth Area (Area of Concern A).

Photodocumentation: Release Assessment
PERMA-FIX of FLORIDA, INC.
1940 NW 67th Pl~~ace, Gainesville, Florida~~

3. Photograph, facing generally north, overlooking Soil Mound Area (Area of Concern C). Red Flag indicates location of soil boring SMA-1.

4. Photograph, facing generally west, overlooking Soil Mound Area (Area of Concern C).

Photodocumentation: Release Assessment
PERMA-FIX of FLORIDA, INC.
1940 NW 67th Place, Gainesville, Florida

ATTACHMENT D

RELEASE ASSESSMENT WORKPLAN
and
QUALITY ASSURANCE PROJECT PLAN

RELEASE ASSESSMENT WORKPLAN
AREAS OF CONCERN A AND C

PERMA-FIX OF FLORIDA, INC.
GAINESVILLE, FLORIDA

MARCH 23, 2001

PREPARED FOR:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
980 COLLEGE STATION ROAD
ATHENS, GEORGIA 30605

PREPARED BY:

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PROJECT NO. 970343

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ATTACHMENTS

1.0 INTRODUCTION/SITE BACKGROUND

Perma-Fix of Florida, Inc. (PFF), a subsidiary of Perma-Fix Environmental Services, Inc., operates a commercial waste bulking, storage, transfer, and land treatment facility in Gainesville, Florida. PFF currently operates under a Resource Conservation and Recovery Act (RCRA) permit issued by the Florida Department of Environmental Protection (FDEP). A Hazardous and Solid Waste Act (HSWA) permit is currently being prepared by the United States Environmental Protection Agency (USEPA) Region IV and FDEP. In preparation for developing the HSWA permit, the USEPA and FDEP conducted a Visual Site Inspection (VSI) of the facility on September 14-15, 2000. The purpose of the VSI was to provide background information for a supplemental RCRA Facility Assessment (RFA), which is being prepared by the USEPA and FDEP. The information collected during this VSI supplemented the original VSI for the facility performed on October 3, 1989.

During the original VSI, thirty-two (32) solid waste management units (SWMUs) were identified; all of which were later judged to require no further action. During the September 14-15, 2000 VSI, eight (8) additional SWMUs and two (2) additional Areas of Concern (AOCs) were identified. In the opinion of the joint USEPA/FDEP review team, two (2) AOCs (AOC A – Spray Booth Area, and AOC C – Unknown Soil Mound) require confirmatory sampling to establish their future action status under HSWA. Consequently, PFF has developed this Release Assessment Workplan in accordance with the USEPA/FDEP request.

1.1 Objectives of the Release Assessment (RA)

The objectives of the RA project are as follows:

- Conduct initial evaluations of the AOCs identified for confirmatory sampling to determine their future action status.
- Collect data of sufficient quality that they can be used in any further evaluation that may be required.

The significance of the impact of any detected releases will be determined by comparing the measured values to USEPA screening criteria (Industrial RBCs) and/or background levels. No cleanup standards or goals will be set by the use of these screening criteria at this stage of the investigation activities. The location of these AOCs is provided on the facility map included in Attachment 1.

1.2 Purpose of the RA Workplan

The purpose of this document is to define the sampling and analytical approaches to be used in conducting the RA and to define the criteria to be used in evaluating the results. The following subsections of the workplan address the specific information required for this initial confirmatory sampling event and includes a Quality Assurance Project Plan (QAPP) that details plans and procedures for performing the required fieldwork and evaluating the data generated as a result of the fieldwork.

2.0 AOC A – SPRAY PAINT BOOTH AREA

The Spray Paint Booth is no longer present at the site. It operated from 1988 through 1997 and was formerly located approximately 35 feet east of the field trailers service area. The paint booth encompassed an area of approximately 12 feet by 12 feet.

2.1 Sampling and Analysis Plan

2.1.1 Sampling Objectives

The purpose of the sampling and analysis plan for AOC A is to obtain data to determine if there has been a release to surface and/or subsurface soil.

2.1.2 Target Parameters and Analytical Methods

Soil samples will be analyzed for the RCRA 8 metals in accordance with USEPA methods 7470, 7000, 6010, and 7196; and for volatile organics utilizing USEPA Method 8260.

2.1.3 Sample Locations, Depths, and Frequency

Five (5) soil borings will be advanced at the Spray Paint Booth Area. Borings will be advanced at the four (4) compass points of the area, as well as in the center of the asphalt pad until groundwater is encountered (approximately seven (7) feet below ground surface). Three (3) discrete grab samples will be collected per boring. The first sample will be collected 0-6 inches below the ground surface. The second sample will be collected from the middle of the boring length. The third sample will be collected from the area immediately above the soil/groundwater interface.

2.1.4 List of Equipment

Soil samples will be collected utilizing a stainless steel hand auger and stainless steel sampling spoons.

2.1.5 Description of Sampling Procedures

The sampling procedures to be used are described in detail in the QAPP, which is included in Attachment 2. A summary is presented below.

The soil borings will be advanced manually utilizing a stainless steel hand auger until groundwater is encountered (approximately seven (7) feet below ground surface). Material from the stainless steel auger will be removed manually with a stainless steel spoon from the sampling interval presented in section 2.1.3 and placed into appropriate sampling containers provided by the laboratory. Upon completion, the boring will be backfilled using native soil.

3.0 AOC C – UNKNOWN SOIL MOUND

The unknown soil mound is located in the northwest corner of the facility. The source of the material is unknown, and the material does not appear to be recently placed at this area.

3.1 Sampling and Analysis Plan

3.1.1 Sampling Objectives

The purpose of this sampling and analysis plan for AOC C is to obtain data to determine if there has been a release to surface and/or subsurface soil.

3.1.2 Target Parameters and Analytical Methods

Soil samples will be analyzed for the RCRA 8 metals in accordance with USEPA methods 7470, 7000, 6010, and 7196; and for volatile organics utilizing USEPA Method 8260.

3.1.3 Sample Locations, Depths, and Frequency

One (1) soil boring will be advanced at the center of the Unknown Soil Mound. Three (3) discrete soil samples will be collected. The first sample will be collected 0-6 inches below ground surface. The second sample will be collected from the middle of the boring length. The third sample will be collected from the area immediately above the soil/groundwater interface.

3.1.4 List of Equipment

Soil samples will be collected utilizing a stainless steel hand auger and a stainless steel sampling spoon.

3.1.5 Description of Sampling Procedures

The sampling procedures to be used are described in detail in the QAPP, which is included in Attachment 2. A summary is presented below.

The soil boring will be advanced manually utilizing a stainless steel hand auger until groundwater is encountered (approximately seven (7) feet below ground surface). Material from the stainless steel auger will be removed manually with a stainless steel spoon from the sampling intervals presented in section 3.1.3 and placed into appropriate sample containers provided by the laboratory. Upon completion, the boring will be backfilled using native soil.

4.0 FIELD OBSERVATIONS AND PROCEDURES

4.1 Environmental Conditions

The environmental conditions during the day of sampling will be documented in a field logbook. The recent weather conditions (previous week) will also be recorded based on plant observations.

4.2 Chain-of-Custody

Chain-of-Custody forms and procedures are contained in the QAPP. Chain-of-custody forms will be provided by the analytical laboratory.

4.3 Decontamination Procedures

Whenever possible, the sampling order will begin with what are believed to be the least contaminated samples. However, to eliminate the possibility of cross contamination, each piece of sampling equipment will be decontaminated before every use. Decontamination water will be allowed to flow onto the ground surface. The decontamination procedures are contained in the QAPP.

4.4 Documentation

A description of the documentation procedures proposed is included in the QAPP.

4.5 Calibration of Field Devices

All field equipment will be inspected and calibrated daily following the manufacturer's instructions and/or standard operating procedures.

4.6 Sample Preservation

The samples will be collected in appropriate containers that will be completely filled to the maximum extent possible. Care will be exercised not to include any air bubbles or headspace. The sample bottles will be sealed with an inert material and then capped. The capped container will be sealed in such a way that the seal must be broken in order to open the container.

All samples will be stored in the dark at or below 4°C and shipped as expeditiously as possible to the laboratory for analysis. The samples will be properly stored and analyzed within the prescribed holding time for the specific analytical parameter. Specific details of the sample preservation techniques and procedures required are included in the QAPP.

4.7 Quality Assurance Project Plan (QAPP)

The QAPP is provided in Attachment 2.

5.0 PROJECT SCHEDULE

The RA activities will commence within 30 days of workplan approval. Field activities will be completed within 2 days of initiation. The RA report will be provided within 90 days of completion of the field activities. This proposed schedule will be followed unless unexpected conditions are encountered or the project is delayed due to circumstances beyond the control of PFF.

ATTACHMENT 2

QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

PERMA-FIX OF FLORIDA, INC.
GAINESVILLE, FLORIDA

MARCH 23, 2001

PREPARED FOR:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
980 COLLEGE STATION ROAD
ATHENS, GEORGIA 30605

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PROJECT NO. 970343

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TABLES

ATTACHMENTS

1.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The overall Quality Assurance (QA) objective for this project is to develop and implement procedures for field sampling, chain-of-custody, laboratory analysis, and reporting that will provide results, which are legally defensible in a court of law. Specific procedures for sampling, chain-of-custody, laboratory instrument calibration, laboratory analysis, reporting of data, internal quality control, audits, preventive maintenance of field equipment, and corrective action are described in other sections of the Quality Assurance Project Plan (QAPP).

1.1 Precision

1.1.1 Definition

Precision is a measure of the degree to which two or more measurements are in agreement.

1.1.2 Field Precision Objectives

Field precision is assessed through the collection and measurement of field duplicates. Duplicates will be collected for surface water, sediment, soil, and groundwater samples. The number of duplicates for this project is presented in Table 1. The precision objectives for field measurements are presented in Table 2.

1.1.3 Laboratory Precision Objectives

Precision in the laboratory is assessed through the calculation of relative percent differences (RPD) and relative standard deviations (RSD) for three or more replicate samples. The equations to be used for precision in this project are presented in Section 10 of this QAPP.

1.2 Accuracy

1.2.1 Definition

Accuracy is the degree of agreement between an observed value and an accepted reference value.

1.2.2 Field Accuracy Objectives

Accuracy in the field is assessed through the use of field, rinsate, and trip blanks and through the adherence to all sample handling, preservation and holding times.

1.2.3 Laboratory Accuracy Objectives

Laboratory accuracy is assessed through the analysis of matrix spikes (MS) or standard reference materials (SRM) and the determination of percent recoveries. The equation to be used for accuracy in this project can be found in Section 10 of this QAPP.

1.3 Completeness

1.3.1 Definition

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions.

1.3.2 Field Completeness Objectives

Field completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. The equation for completeness is presented in Section 10 of this QAPP. The target for field completeness for this project will be greater than 90 percent.

1.3.3 Laboratory Completeness Objectives

Laboratory completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. The equation for completeness is presented in Section 10 of this QAPP. The target for laboratory completeness for this project will be greater than 95 percent.

1.4 Representativeness

1.4.1 Definition

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition.

1.4.2 Measures to Ensure Representativeness of Field Data

Representativeness is dependent upon the proper design of the sampling program and will be satisfied by ensuring that proper sampling techniques are used and prescribed Standard Operating Procedures (SOPs) are followed.

1.4.3 Measures to Ensure Representativeness of Laboratory Data

Representativeness in the laboratory is ensured by using the proper analytical procedures, meeting sample-holding times and analyzing and assessing field-duplicated samples. The sampling network was designed to provide data

representative of facility conditions. During development of this network, consideration was given to past waste disposal practices, existing analytical data, physical setting and processes, and constraints inherent to the RCRA program. The rationale of the sampling network is discussed in detail in the Remedial Assessment (RA) Workplan.

1.5 Comparability

1.5.1 Definition

Comparability is an expression of the confidence with which one data set can be compared with another.

1.5.2 Measures to Ensure Comparability of Field Data

Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the RA Workplan is followed, that proper sampling techniques are used, and SOPs are followed. Field Procedure SOPs provided in Attachment 2-A

1.5.3 Measures to Ensure Comparability of Laboratory Data

Planned analytical data will be comparable when similar sampling and analytical methods are used and documented in the QAPP. Comparability is also dependent on similar QA objectives.

1.6 Level of Quality Control Effort

Field blank, rinsate blank, trip blank, method blank, duplicate, standard reference materials (SRM), and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs.

Field, rinsate, and trip blanks will be prepared using analyte free water; deionized water will be used for inorganic related blanks and high performance liquid chromatography grade water will be used for organic related blanks. The blanks will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field blank samples are analyzed to check for procedural contamination at the facility, which may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample collection, shipment, storage, and analysis. Rinsate blanks are created by running analyte free water over decontaminated sampling equipment to test for residual contamination.

Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures. Duplicate samples are analyzed to check for sampling and analytical reproducibility.

Matrix spikes provide information about the effect of the sample matrix on the digestion and measurement methodology. All matrix spikes are performed in duplicate and are hereinafter referred to as MS/MSD samples. One MS/MSD will be collected for every 20 or fewer investigative samples. MS/MSD samples are designated/collected for organic analyses only. MS/MSD are investigative samples. Soil MS/MSD samples require no extra volume for VOCs or extractable organics. One MS/MSD sample will be collected/designated for every 20 or fewer investigative samples per sample matrix (i.e., groundwater, soil).

The number of duplicate and field blank samples to be collected is listed in Table 1. Sampling procedures are specified in SOPs included as Attachment 2-A to this QAPP and the RA Workplan.

TABLE 1

FIELD QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

Control Sample	Frequency
Field Duplicate	1/day/matrix type
Equipment Rinsate	1/day/matrix type
Trip Blank	1/day (volatile organics only)
Matrix Spike	1/batch (20 samples of each matrix)
Matrix Duplicate or Matrix Spike Duplicate	1/batch

Note: Control sample type and frequency in accordance with SW 846-Field QA and QC requirements.

2.0 SAMPLING PROCEDURES

The sampling procedures to be used in this RA investigation will be consistent for the purpose of the data to be submitted to the Florida Department of Environmental Protection (FDEP) and/or the United States Environmental Protection Agency (USEPA) and for risk assessment. Sampling will be performed as directed by the respective SOP, standard method, or comparable sampling protocol. Sample collection procedures are detailed in the SOPs included as Attachment 2-A to this QAPP.

Sample container type and volume, number of containers per sample, and sample preservation and holding time requirements are summarized in Table 2.

2.1 Soil Sampling Procedures

Soil sampling will be completed in accordance with the Field Procedures for the Collecting Soil Samples.

TABLE 2

SAMPLE SIZE, CONTAINER, AND PRESERVATION AND HOLDING TIMES

Parameter	Soil/Sediment	Water
VOCs	Two (2) 2-oz wide mouth glass jar[1] 4°C Holding Time: 14 days from collection to analysis.	Two (2) 40-ml glass vials with Teflon Septa. Holding Time: 7 days from collection to extraction. 40 days from extraction to analysis.
Metals	One 8-oz glass jar Holding Time: Metals, 6 months; mercury, 28 days.	One 1 liter plastic jar One 16-oz wide amber glass for mercury 4°C, HNO_3, pH <2 Holding Time: Metals, 180 days; mercury, 28 days.
NOTES: [1]Extra volume not required for MS/MSD samples; however, additional vials will be collected for SVOC MS/MSD. [2]Triple volume required for VOCs and double volume required for extractable organics for MS/MSD samples.		

3.0 CUSTODY PROCEDURES

Custody is one of several factors, which is necessary for the admissibility of environmental data as evidence in a court of law. Custody procedures help to satisfy the two major requirements for admissibility: relevance and authenticity. Sample custody is addressed in three parts: field sample collection, laboratory analysis, and final evidence files. Final evidence files, including all originals of laboratory reports and purge files, are maintained under document control in a secure area.

A sample or evidence file is under your custody if:

- The item is in actual possession of a person; or
- The item is in the view of the person after being in actual possession of the person; or
- The item was in actual physical possession, but is locked up to prevent tampering; or
- The item is in a designated and identified secure area.

3.1 Field Custody Procedures

Field logbooks will provide the means of recording data collecting activities performed. As such, entries will be described in as much detail as possible so that persons going to the facility could reconstruct a particular situation without reliance on memory.

Field logbooks will be bound field survey books, or notebooks. Logbooks will be assigned to field personnel, but will be stored in the document control center when not in use. Each logbook will be identified by the project-specific document number. The title page of each logbook will contain the following:

- Person to whom the logbook is assigned
- Logbook number
- Project name
- Project start date
- Project end date

Entries into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather, names of all sampling team members present, level of personal protection being used, and the signature of the person making the entry will be entered. The names of visitors to the site, field sampling or investigation team personnel, and the purpose of their visit will also be recorded in the field logbook.

Measurements made and samples collected will be recorded. All entries will be made in ink, signed, and dated. No erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark, which will be signed and dated by the sampler. Whenever a sample is collected, or a measurement is made, a detailed description of the location of the station, including compass and distance measurements, shall be recorded. The number of the photographs taken, if any, will also be noted. All equipment used to make measurements will be identified along with the date of calibration.

Samples will be collected following the sampling procedures documented in this QAPP. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, volume, and number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples, which will receive an entirely separate sample identification number, will be noted under sample description.

The sample packaging and shipment procedures summarized below will ensure that the samples will arrive at the laboratory with the chain-of-custody intact. The protocol for sample identification and numbering is presented in Table 3, Sample Identification and Numbering System. The Chain-of-Custody document and instructions for completion, Sample Chain-of-custody Procedure is presented as Attachment 3-A to this QAPP

TABLE 3

SAMPLE IDENTIFICATION AND NUMBERING SYSTEM

In sequence, (1) SWMU or Location (2) *Matrix (3) **Sample Number		
***Matrix**	**Sediment**	**- SED**
	Surface Soil	**- SOIL**
EXAMPLES:		
10SED3	sediment sample, located at SWMU 10, sample number 3	
17SOIL6a	surface soil or uppermost sample taken from sample location 6 at SWMU 17	
17SOIL6b	subsurface soil or second sample taken from sample location 6 at SWMU 17	

The following general procedures will be in effect during all sampling activities:

a. The field sampler is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. As few people as possible should handle the samples.

b. All bottles will be identified by use of sample labels with sample numbers, sampling locations, date/time of collection, and type of analysis.

c. Sample labels are to be completed for each sample using waterproof ink unless prohibited by weather conditions.

d. Samples are accompanied by a properly completed chain-of-custody form. The sample numbers and locations will be listed on the chain-of-custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage area.

e. Samples will be properly packaged on ice at less than or equal to 4°C, if refrigeration will be required, for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in and secured to the inside top of each sample box or cooler. Shipping containers will be locked and secured with strapping tape and custody seals for shipment to the laboratory. Custody seals on sample shipping containers will be signed and dated by the field sample custodian. The preferred procedure includes use of a custody seal attached to the front right and back left of the cooler. The custody seals are covered with clear plastic tape. The cooler is strapped shut with strapping tape in at least two locations.

f. Whenever samples are shared with a government agency, a separate sample receipt is prepared for those samples and marked to indicate with whom the samples are being shared. The person relinquishing the samples to the facility or agency should request the representative's signature acknowledging sample receipt. If the representative is unavailable or refuses to sign, this is noted in the "Received By" space.

g. All shipments will be accompanied by the chain-of-custody record identifying the contents. The original record will accompany the shipment, and the additional copies will be retained by the sampler for returning to the sampling office.

h. If the samples are sent by common carrier, a bill of lading should be used. Receipts of bills of lading will be retained as part of the permanent documentation. If sent by mail, the package will be registered with return receipt requested. Commercial carriers are not required to sign off on the custody form as long as the custody forms are sealed inside the sample cooler and the custody seals remain intact.

i. Samples will be shipped to the laboratory as expeditiously as possible using an overnight carrier.

3.2 Laboratory Custody Procedures

Laboratory custody procedures for sample receiving and log-in; sample storage and numbering; tracking during sample preparation and analysis; and storage of data are described in the laboratory Quality Assurance/Quality Control Manual, attached to this

QAPP. An example of the laboratory chain-of-custody along with instructions for completion is included as Attachment 2-A.

3.3 Final Evidence Files

The final evidence file will be the central repository for all documents, which constitute evidence relevant to sampling and analysis activities as described in this QAPP. PFF is the custodian of the evidence file and maintains the contents of evidence files for the RA, including all relevant records, reports, logs, field notebooks, pictures, subcontractor reports and data reviews in a secured, limited access area, and under custody of the PFF facility manager.

The final evidence files will be maintained by PFF for a minimum of five (5) years from the submission date of the final report to USEPA. The final evidence files will be offered to USEPA prior to disposal.

The final evidence file will include at a minimum:

- Field logbooks
- Field data and data deliverables
- Photographs
- Drawings
- Soil boring logs
- Laboratory data deliverables
- Data validation reports
- Data assessment reports
- Progress reports, QA reports, interim project report, etc.
- All custody documentation (tags, forms, airbills, etc.)

4.0 CALIBRATION PROCEDURES AND FREQUENCY

This section describes the calibration procedures and the frequency at which these procedures will be performed for field equipment and instruments and laboratory instruments.

4.1 Field Equipment and Instrument Calibration

The field equipment and instruments, where required, will be calibrated as described in the respective operating procedures (including manufacturers instructions and procedures). Where calibration is applicable, the field instruments will be calibrated at the beginning and end of each day. The linearity of the field instruments will be checked by using a two-point calibration with reference standards bracketing the expected measurement. For specific instructions on the calibration frequency, acceptance criteria, and the conditions that will require more frequent calibration, refer to the manufacturers' instructions and procedures for each field instrument. For those instruments that are not calibrated an appropriate reference standard will be used.

All the calibration procedures and reference standard checks performed will be documented in the field logbook and will include the date/time of calibration/reference standard check, name of person performing the calibration, reference standard used, temperature at which readings were taken, and the readings. Multiple readings on one sample or standard, as well as readings on replicate samples, will likewise be documented.

4.2 Laboratory Instrument Calibration

Calibration procedures for a specific laboratory instrument will consist of initial calibration (3 or 5-points), initial calibration verification, and continuing calibration verification. For a description of the calibration procedures for a specific laboratory instrument, refer the applicable procedures provided in the laboratory Quality Assurance/Quality Control (QA/QC) Manual (Attachment 3-B).

Each laboratory maintains a sample logbook for each instrument which will contain the following information: instrument identification, serial number, date of calibration, analyst, calibration solutions run, and the samples associates with these calibrations.

5.0 ANALYTICAL PROCEDURES

For the purposes of this QAPP, a preliminary laboratory, TestAmerica Incorporated, has been selected to analyze the samples obtained during the RA. If a different laboratory is selected prior to project initiation, the selected laboratory QA/QC procedures will be generally consistent with those provided by TestAmerica Incorporated. The QA/QC procedures will be provided to FDEP and the USEPA prior to project initiation. The selected laboratory will be certified and licensed by the state of Florida.

5.1 Field Analytical Procedures

The standardization and QA information for field measurements covering pH, specific conductance, temperature, turbidity and water level measurement, are described previously in this QAPP.

5.2 Laboratory Analytical Procedures

The laboratory SOPs including sample preparation, cleanup, and analysis are based on SW-846 methods including applicable revisions through SW-846 Final Update IIB (1/95). These SOPs will provide sufficient details and will be specific to this RA.

Tables 4 and 5 summarize, for organics and inorganics respectively, the analyte groups of interest and EPA reference method for the organic and inorganic analytes, respectively, to be evaluated in this investigation.

TABLE 4

SUMMARY OF ORGANIC ANALYTICAL PROCEDURES

MATRIX	ANALYTE GROUP	EPA METHOD NUMBER
Soil	Volatile Organic	Anal SW-846 8260

TABLE 5

SUMMARY OF INORGANIC ANALYTICAL PROCEDURES

MATRIX	ANALYTE GROUP	EPA METHOD NUMBER
Soil	Metals	Digestion SW-846 3050A Anal SW-846 6010A

5.2.1 Project Target Compounds and Laboratory Detection Limits

A complete listing of project target compounds and project quantification limits for each the VOC compounds are provided in the laboratory QA/QC plan.

The project target metal compounds and project quantification limits for the RCRA 8 metals utilizing Method SW846 6010/7470/7000 and7196 are as follows:

Parameter	PQL Water (ug/l)	PQL Soil (ug/l)
Arsenic	5	1000
Barium	10	1000
Cadmium	1	1000
Chromium	5	1000
Lead	3	1000
Mercury	0.2	100
Selenium	5	1000
Silver	5	1000

5.2.2 List of Associated QC Samples

Section 6.0 of this QAPP contains a complete listing of the associated QC samples for every analyte group and matrix.

6.0 INTERNAL QUALITY CONTROL CHECKS

6.1 Field Quality Control Checks

QC information for field equipment is presented in Section 2.0. Assessment of field sampling precision and bias will be made by collecting field duplicates and field blanks for laboratory analysis. Collection of the samples will be in accordance with the applicable procedures presented in Section 2.0 of this QAPP.

6.2 Laboratory Quality Control Checks

The laboratory has a QC program to ensure the reliability and validity of the analyses performed at the laboratories. All analytical procedures are documented in writing in the laboratory QA/QC manual and SOPs. The internal quality control checks might differ slightly for each individual procedure, but, in general, the QC requirements will include the following:

- Field/trip blanks
- Rinsate blanks
- Method blanks
- Matrix spikes/matrix spike duplicates
- Surrogate spikes
- Field duplicates
- Laboratory control standards
- Internal standard areas for GC/MS analysis; control limits
- Mass tuning for GC/MS analysis

All data obtained will be properly recorded. The data package will include a full deliverable package capable of allowing the recipient to reconstruct QC information and compare it to QC criteria. Any samples for which the analytical results do not conform to the QC criteria will be reanalyzed by the laboratory, if sufficient volume is available. It is expected that sufficient volumes/weights of samples will be collected to allow for reanalysis when necessary. QC failures demonstrated to be due to matrix interface are not the result of laboratory nonconformance and will be reported with comments.

A summary of QC sample frequency, criteria, and corrective action is presented in the laboratory QA/QC Manual (Attachment 2-B).

7.0 DATA REDUCTION, VALIDATION, AND REPORTING

All data generated during field activities and by the laboratory operations shall be reduced, and validated prior to reporting. No data shall be disseminated until it has been subjected to these procedures that are summarized in subsections below.

7.1 Data Reduction

7.1.1 Field Data Reduction Procedures

Field data reduction procedures will be minimal compared to the data generated by the laboratory. Only direct read instrumentation will be employed in the field. The field instruments will be calibrated/standardized following the manufacturer's recommendation and as outlined in this QAPP. The readings will be recorded in field logbooks immediately after measurements are taken. If errors are made, results will be legible crossed out, initialed, and dated by the field member, and corrected in a space adjacent to the original erroneous entry. Later, when result forms required for this study are being filled out, the Field Manager will proof the forms to insure that no transcription errors have been made by the field crew.

7.1.2 Laboratory Data Reduction Procedures

Laboratory data reduction procedures will be in accordance with the following protocol:

- All raw analytical data will be recorded in numerically identified laboratory notebooks.
- These notebooks will be issued by the Laboratory QA Manager.
- Data are recorded in this notebook along with other pertinent information, such as the sample identification number and the sample tag number.
- Other details will also be recorded in the lab notebook, such as analytical method used (SOP#), name of analyst, the data of analysis, matrix sampled, reagent concentrations, instrument settings, and the raw data.
- Each page of the notebook shall be signed and dated by the analyst.
- Copies of any strip chart printout (such as gas chromatograms) will be maintained on file.
- Periodic review of these notebooks by the Lab QA Manager takes place prior to the final data reporting.
- Records of notebook entry inspections are maintained by the Lab QA Manager.

The equations presented in SW-846 will be used for data reduction for organic compounds. These formulae make pertinent allowances for matrix type. The equations presented in SW-846 will be used for data reduction for inorganic analyses. All calculations will be checked by a supervisor at the conclusion of each operating day. Errors will be noted and corrections will made; however, with the original notations cross out legibly. Analytical results for solid samples shall be calculated and reported on a dry weight basis.

Quality control data (e.g., duplicates samples, laboratory control samples, matrix spikes, and matrix spike duplicates) will be compared to the method acceptance criteria. Data considered to be acceptable will be entered into the laboratory computer system. Data summaries will be sent to the Laboratory QA Manager for review. If approved, data will

be logged into the project database format. Unacceptable data shall be appropriately qualified in the project report. Case narratives will be prepared which will include information concerning data that fell outside acceptance limits, and any other anomalous conditions encountered during sample analysis. After the Lab QA Manager approves these data, they are considered ready for third party data validation.

7.2 Data Validation

Data validation procedures shall be performed for both field and laboratory operations. These procedures are described in the following sections.

7.2.1 Procedures Used to Evaluate Field Data

Procedures to evaluate field data for this project primarily include checking for transcription errors and review of field data sheets log books, on the part of field crewmembers. This task will be the responsibility of the field manager, who will otherwise not participate in making any of the field measurements, or in adding notes, data or other information to the logbook.

7.2.2 Procedures to Validate Laboratory Data

Procedures to validate laboratory data from the organic section will be derived from the USEPA's Contract Laboratory Program (CLP), National Functional Guidelines For Organic Data Review, Multi-media, Multi-concentration, February 1993. These guidelines will be followed except where differences exist between CLP and SW-846 protocols and control limits. In instances where differences exist, appropriate SW-846 criteria will be utilized. Essentially, all technical holding times shall be reviewed, the GC/MS instrument performance check sample results shall be evaluated, and results of initial and continuing calibration will be reviewed and evaluated by trained reviewers independent of the laboratory. Also, results of all blanks, surrogate spikes, matrix spikes/matrix spike duplicates, laboratory control samples, internal standards, target compound identification and quantification, tentatively identified compounds, system performance checks shall be reviewed for volatile organic compounds and semi-volatile organic compounds by the data validator.

Procedures to validate laboratory data from the inorganic section will be derived from the USEPA's CLP, National Functional Guidelines For Inorganic Data Review, February 1994. These guidelines will be followed except where differences exist between CLP and SW-846 criteria protocols and control limits. In instances where differences exist, appropriate SW-846 criteria will be utilized. All technical holding times shall be reviewed, calibrations will be confirmed, including initial and continuing calibration, blanks, ICP interference check samples, laboratory control samples, duplicate samples, spike samples, graphite furnace atomic absorption QC (if applicable), ICP serial dilution, and field blanks.

One hundred percent of the data shall be validated by an entity independent of the group that generated the data. Additionally, a method detection limit study may

be performed, at the request of the USEPA per the provisions of Federal Register, Vol. 49 No. 209, October 26, 1984, pp. 198-199. The results shall be validated also.

All forms summarizing this information will be checked as well. The overall completeness of the data package will be checked by the data validator. Completeness checks will be administered on all data to determine whether deliverables specified in the RA Workplan and QAPP are present. At a minimum, deliverables will include sample chain-of-custody forms, analytical results, QC summaries, and supporting raw data from instrument printouts. The reviewer will determine whether all required items are present and request copies of missing deliverables.

7.3 Data Reporting

Data reporting procedures shall be carried out for field and laboratory operations as described in the following sections.

7.3.1 Field Data Reporting

Field data reporting shall be conducted principally through the transmission of report sheets containing tabulated results of all measurements made in the field, and documentation of all field calibration activities.

7.3.2 Laboratory Data Reporting

The task of reporting laboratory data begins after the validation activity has been concluded. The Laboratory QA Manager must perform a final review of the report summaries and case narratives to determine whether the report meets project requirements. In addition to the record of chain-of-custody, the report format shall consist of the following:

1. Case Narrative
    a. Date of issuance
    b. Laboratory analysis performed
    c. Any deviations from intended analytical strategy
    d. Laboratory batch number
    e. Numbers of samples and respective matrices
    f. Quality control procedures utilized and also references to the acceptance criteria
    g. Laboratory report contents
    h. Project name and number
    i. Condition of samples "as-received"
    j. Discussion of whether or not sample-holding times were met
    k. Discussion of technical problems or other observations that may have created analytical difficulties

l. Discussion of any laboratory quality control checks which failed to meet project criteria
m. Signature of the Laboratory QA Manager

2. Chemistry Data Package
   a. Case narrative for each analyzed batch of samples
   b. Summary page indicating dates of analyses for samples and laboratory quality control checks
   c. Cross referencing of laboratory sample to project sample identification numbers
   d. Data qualifiers to be used should be adequately described
   e. Sample preparation and analyses for samples
   f. Sample results
   g. Raw data for sample results and laboratory quality control samples
   h. Results of (dated) initial and continuing calibration checks, and GC/MS tuning results
   i. Matrix spike and matrix spike duplicate recoveries, laboratory control samples, method blank results, calibration check compounds, and system performance check compound results
   j. Labeled (and dated) chromatograms/spectra of sample results and laboratory quality control checks
   k. Results of tentatively identified compounds

8.0 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits of both field and laboratory activities will be conducted to verify the sampling and analysis are performed in accordance with the procedures established in the RA Workplan and QAPP. The audits of field and laboratory activities include two independent parts: internal and external audits.

8.1 Field Performance and System Audits

8.1.1 Internal Field Audits

8.1.1.1 Internal Field Audit Responsibilities

Internal audits of field activities including sampling and field measurements will be conducted by the Field QA Officer.

8.1.1.2 Internal Field Audit Frequency

These audits will verify that all established procedures are being following. An internal field audit will be conducted at least once at the beginning of the site sample collection activities.

8.1.1.3 Internal Field Audit Procedures

The audit will include examination of field sampling records, field instrument operation records, sample collection, handling and packaging in compliance with the established procedures, maintenance of QA procedures, chain-of-custody, etc. The audit will involve review of field measurement records, instrumentation calibration records, and sample documentation.

8.1.2 External Field Audits

8.1.2.1 External Field Audit Responsibilities

External field audits may be conducted by FDEP or USEPA.

8.1.2.2 External Field Audit Frequency

External field audits may be conducted any time during the field operations. These audits may or may not be announced and are at the discretion of FDEP or USEPA.

8.1.2.3 Overview of the External Field Audit Procedures

External field audits will be conducted according to the field activity information presented in the QAPP.

8.2 Laboratory Performance and System Audits

8.2.1 Internal Laboratory Audits

8.2.1.1 Internal Lab Audit Responsibilities

Internal laboratory audits are performed annually by the Laboratory QA Officer.

8.2.1.2 Internal Lab Audit Frequency

The internal lab system audit will be carried out at the beginning of the sampling collection activities.

8.2.1.3 Internal Lab Audit Procedures

The internal lab system audits will include an examination of laboratory documentation on sample receiving, sample log-in, sample storage, chain-of-custody procedures, sample preparation and analysis, instrument operation records, etc.

8.2.2 External Laboratory Audits

8.2.2.1 External Lab Audit Responsibilities

An external audit may be conducted by the USEPA.

8.2.2.2 External Lab Audit Frequency

An external lab audit may be conducted at least once prior to the initiation of the sampling and analysis activities. These audits may or may not be announced and are at the discretion of the USEPA.

8.2.2.3 Overview of the External Lab Audit Procedures

External lab audits will include (but not be limited to) review of laboratory analytical procedures, laboratory on-site audits, and/or submission of performance evaluation samples to the laboratory for analysis.

9.0 PREVENTATIVE MAINTENANCE

9.1 Field Instrument Preventative Maintenance

No field instruments are scheduled to be used in the field for this investigation.

9.2 Laboratory Instrument Preventative Maintenance

TestAmerica Incorporated has a routine preventative maintenance program to minimize the occurrence of instrument failure and other system malfunctions. Designated laboratory employees regularly perform routine scheduled maintenance and repair of [or coordinate with the vendor for the repair of] all instruments. All maintenance that is performed shall be documented in the laboratory's operating record. All laboratory instruments shall be maintained in accordance with the manufacturer's specification.

10.0 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA ACCURACY, PRECISION, AND COMPLETENESS

10.1 Accuracy Assessment

In order to assess the accuracy of the analytical procedures, an environmental sample is selected from each sampling event, for each matrix, and spiked at the laboratory with a known amount of the analyte or analytes to be evaluated. In general, a sample spike should be included in every set of 20 samples tested on each instrument. The spike sample is then analyzed. The increase in concentration of the analyte observed in the spiked sample, due to the addition of a known quantity of the analyte, compared to the reported value of the same analyte in the unspiked sampled determines the percent recovery. Daily control charts are plotted for each commonly analyzed organic compound and kept on instrument-specific, matrix-specific, and analyte-specific bases. Daily control charts are not plotted for metal analysis. This information is available from

the LIMS database. The percent recovery for a spiked sample is calculated according to the following formula:

$$\%R = \frac{\text{Amount in Spike sample - Amount in Sample x 100}}{\text{Known Amount Added}}$$

Laboratory Control Samples (LCS) are generated to provide information on the accuracy of the analytical method and laboratory performance. The LCS are a mixture of known concentrations of analytes from the parameter group of interest and are carried through the analytical procedure with the corresponding environmental samples. Accuracy is assessed using the following formula for % recovery (R):

$$\text{LCS \% R} = \frac{\text{LCS Found x 100}}{\text{LCS True}}$$

10.2 Precision Assessment

10.2.1 Laboratory Precision

Spiked samples are prepared by choosing a sample at random from each sample shipment received at the laboratory, dividing the sample into equal aliquots, and then spiking each of the aliquots with a known amount of analyte. The duplicate samples are then included in the analytical sample set. The splitting of the sample allows the analyst to determine the precision of the preparation and analytical techniques associated with the duplicate sample. The RPD between the spike and the duplicate spike are calculated and plotted. The RPD is calculated according to the following formula:

$$\text{RPD} = \frac{\text{Amount in Spike 1 – Amount in Spike 2}}{0.5\ (\text{Amount in Spike 1} + \text{Amount in Spike 2})} \times 100$$

10.2.2 Field Precision

Precision in the field will be determined using field duplicates which are samples taken from one location well mixed/homogenzied and divided into separate containers. To prevent analyte loss mixing or homogenization will be precluded for samples scheduled for VOCs analysis.

$$\text{RPD} = \frac{\text{Amount in Sample 1 – Amount in Sample 2}}{0.5\ (\text{Amount in Sample 1} + \text{Amount in Sample 2})}$$

10.3 Completeness Assessment

Completeness is the ratio of the number of valid sample results to the total number of samples analyzed with a specific matrix and/or analysis. Following completion of the analytical testing, the percent completeness will be calculated by the following equation:

$$\text{Completeness} = \frac{\text{(Number of Valid Measurements)}}{\text{(Number of Measurements Planned)}} \times 100$$

11.0 CORRECTIVE ACTION

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter unacceptable procedures or out of quality control performance that can affect data quality. Corrective action can occur during field activities, laboratory analyses, data validation, and data assessment. All corrective action proposed and implemented should be documented in the regular quality assurance reports to management. Corrective action should only be implemented after approval by the PFF Project Manager, or his designee. If immediate corrective action is required, approvals secured by telephone from the project manager should be documented in an additional memorandum.

For non-compliance problems, a formal corrective action program will be determined and implemented at the time the problem is identified. The person who identifies the problem is responsible for notifying the PFF Project Manager, who in turn will notify the FDEP and/or USEPA Project Coordinator. If the problem is analytical in nature, information on these problems will be promptly communicated to the FDEP and/or USEPA, Quality Assurance Section. Implementation of corrective action will be confirmed in writing through the same channels.

Any non-conformance with the established quality control procedures in the QAPP will be identified and corrected in accordance with the QAPP. The PFF Project Manager, or his designee, will issue a non-conformance report for each non-conformance condition.

11.1 Field Corrective Action

Corrective action in the field can be needed when the sample network is changed (i.e., more/less samples, sampling locations other than those specified in the QAPP, etc.), or when sampling procedures and/or field analytical procedures required modification, etc., due to unexpected conditions. In general, the field sampling team, PFF Project Manager and Quality Assurance Officer may identify the need for corrective action. The field staff in consultation with the Field Operation Manager will recommend a corrective action. The PFF Project Manager will approve the corrective measure that will be implemented by the field team. It will be the responsibility of the Field Operations Manager to ensure the corrective action has been implemented.

If the corrective action will supplement the existing sampling plan using existing and approved procedures in the QAPP, the corrective action will be documented. If corrective actions result in less samples (or analytical fractions), and/or alternate locations, etc. (which may be cause project quality assurance objectives not to be achieved), it will be necessary that all levels of project management, including the PFF Project Manager and the FDEP and/or USEPA Project Coordinator, concur with the proposed action.

Corrective action resulting from internal field audits will be implemented immediately if data may be adversely affected due to unapproved or improper use of approved methods. The Quality Assurance Officer will identify deficiencies and recommend corrective action to the project manager. Implementation of corrective actions will be performed by the Field Operations Manager and field team. Corrective action will be documented in quality assurance reports to the entire project management.

Corrective actions will be implemented and documented in the field record book. No staff member will initiate corrective action without prior communication of findings through the proper channels. If corrective actions are insufficient, work may be stopped by the FDEP and/or USEPA Project Coordinator.

11.2 Laboratory Corrective Action

Corrective action in the laboratory may occur prior to, during, and after initial analyses. A number of conditions such as broken sample containers, multiple phases, low/high pH readings, and potentially high concentration samples may be identified during sample login or just prior to analysis. Following consultation with lab analysts and managers, it may be necessary for the laboratory quality control coordinator to approve the implementation of corrective action. Some conditions may automatically trigger corrective action or operational procedures. These conditions may include dilution of samples, additional sample extract cleanup, automatic reinjection/reanalysis when certain quality control criteria are not met, etc. A summary of method-specific corrective actions is found in the TestAmerica Incorporated QA/QC Manual.

The bench chemist will identify the need for corrective action. The Laboratory Manager, in consultation with the Laboratory Supervisor and staff, will approve the required corrective action to be implemented by the laboratory staff. The Laboratory QA Officer will ensure implementation and documentation of the corrective action. If the non-conformance causes project objectives not to be achieved, the QA Officer will inform the Field Project Manager. The Field Project Manager will be responsible for informing all levels of project management including the USEPA/FDEP Project Coordinator to concur with the corrective action.

These corrective actions will be performed prior to release of the data from the laboratory. The corrective action will be documented in both the laboratory correction action log (signed by Analyst, Section Leader, and Quality Control Coordinator), and the narrative data report sent from the laboratory to the field team data validator. If corrective action does not rectify the situation, the laboratory will contact the PFF Project Manager.

11.3 Corrective Action During Data Validation and Data Assessment

The facility may identify the need for corrective action during either the data validation or data assessment. Potential types of corrective action may include resampling by the field team or reinjection/reanalysis of samples by the laboratory.

These actions are dependent upon the ability to mobilize the field team, and whether the data to be collected is necessary to meet the required quality assurance objectives (e.g., the holding time for samples is not exceeded, etc.). When the field data assessor identifies a corrective action situation, it is the PFF Project Manager who will be responsible for approving the implementation of corrective action, including resampling, during data assessment. All corrective actions of this type will be documented by the QA Manager.

12.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

The deliverables associated with the tasks identified in the RA workplan and monthly progress reports will contain separate QA sections in which data quality information collected during the task is summarized. Those reports will be the responsibility of the PFF Project Manager and will include the Quality Assurance Officer report on the accuracy, precision, and completeness of the data as well as the results of the performance and system audits, and any corrective action needed or taken during the project.

12.1 Contents of Project QA Reports

The QA reports will contain, on a routine basis, all results of field and laboratory audits, all information generated during the past month reflecting on the achievement of specific data quality objectives, and a summary of corrective action that was implemented, and its immediate results on the project. The status of the project with respect to the project schedule included the RA Workplan will be determined. Whenever necessary, updates on training, changes in key personnel, anticipated problems in the field or lab for the coming month that could bear on data quality along with proposed solutions, will be reported. Detailed references to QAPP modifications will be highlighted. All QA reports will be prepared in written, final format by the PFF Project Manager or his designee.

In the event of an emergency, or in case it is essential to implement corrective action immediately, QA reports can be made by telephone to the appropriate individuals. However, these events, an their resolution will be addressed thoroughly in the next issue of the monthly QA report.

12.2 Frequency of QA Reports

The QA Reports will be prepared on a monthly basis, and will be delivered to all recipients by the end of the first full week of the month. The reports will continue without interruption, until the project has been completed. The frequency of any emergency reports must be delivered verbally cannot be estimated at the present time.

12.3 Individuals Receiving/Reviewing QA Reports

Monthly QA reports will be distributed to the Field Team Leader, Field Project Manager and the PFF Project Manager.

ATTACHMENT 2-A

PROCEDURES

FIELD PROCEDURES FOR COLLECTING SOIL SAMPLES

FIELD PROCEDURES FOR COLLECTING SOIL SAMPLES

1.0 PROCEDURE

The following procedure describes the logistics, chain of events, collection technique, and documentation requirements for collecting soil samples designated for chemical analysis.

1.1 Selection of Sampling Locations

The selection of sampling locations in and around a project site will be based on a review of existing site data, site topography and surface features, access, results of preliminary site surveys, and initial estimates on the extent of contamination and surface migration pathways. Only after initial field reconnaissance will the final locations be selected.

1.2 Equipment List

The following items are to be considered a minimum listing of required field equipment for collecting soil samples. Other tools required for accessing soils beneath paved areas, etc. should be included, when necessary.

- boots, latex gloves, chemical-resistant gloves, appropriate level of protection;
- Teflon-coated or stainless-steel sample spoons;
- wooden stakes and marking paint and/or ribbons;
- a field notebook and indelible pen;
- sample bottle labels;
- chain-of-custody forms.

1.3 Order of Samples

Surface samples should be collected prior to all other site-sampling events to prevent the possibility of cross-contamination among sampling points by site personnel or equipment. For consistency with other sampling programs, the upgradient samples should be collected first.

1.4 Location and Collection of Samples

Soil samples, depending upon the contaminants of interest, can be either discrete or composite samples. Prior to sampling, approval of composites should be secured from the appropriate regulatory agency. If statistical techniques are to be employed in collecting soil samples using a random grid, the procedures provided in Section I of EPA-SWA 846 Test Methods for Evaluating Solid Waste or equivalent should be followed.

1.4.1 Surface Soil Samples

Samples will be obtained from a depth interval of 0 to 6 inches below the ground surface, using an appropriately decontaminated or dedicated stainless steel or Teflon spoon.

1.4.2 Subsurface Soil Samples

Soil boreholes will be advanced using a stainless steel hand auger.

The boreholes will be advanced to the soil/groundwater interface at each location. Soil samples will collected continuously to the total depth at each location.

Downhole soil sampling devices will be decontaminated before and between sample intervals and borehole locations following the procedure provided on the Field Procedure for Cleaning Sampling Devices Used in Environmental Site Investigation contained in Attachment 2-A. The decontamination water (maximum 10 gallons) will be discharged onto the ground surface.

Upon completion of sampling, the boreholes will be backfilled with native soils or clean fill. If a paved surface is encountered, the surface will be patched with premixed concrete and/or asphalt patch.

1.4.3 Sampling Collection

If volatile organic analysis is planned, the soil will be placed directly into sample jars, filling them completely. Leaves, twigs, gravel and other fill materials will be avoided. Once the sample jars have been filled, excess soil will be wiped from the threads using a clean paper towel. The cap will be secured firmly. When collecting soil samples for other analysis (SVOCs, metals, cyanide, grain size, etc.) soil collected with a decontaminated stainless steel or Teflon spoon will be placed in a stainless steel bowl or tray. When a sufficient volume of material has been obtained to fill sample jars, fill material, twigs, gravel, leaves, etc. will be removed and the jars will be filled with a homogenized soil. If the samples are to be analyzed utilizing microsolvent extraction, the sample jars will be filled as described for VOC samples. Immediate filling of the jars will prevent excess stripping of volatile compounds.

Latex or rubber gloves should be worn and changed after each location to protect sampling personnel and to avoid cross contamination through handling. All filled jars will be labeled with the following information, as a minimum:

- Project number;
- Sampling time and date;
- Sample number;
- Analysis; and
- Collector's initials.

The sample chain-of-custody form will then be filled out and kept with the samples. The samples will be stored in a cooled container until delivery to the analytical laboratory.

The location, depth of the sample, sample type, and time of sample and other associated data will be documented in the field notebook when the samples are obtained. If sampling is performed under a paved area or in fill, a description of these unique areas will also be included.

A description of the sample containers and preservative required for each analytical parameter are provided in the QAPP. Contaminant-free sample containers will be supplied by the selected laboratory.

Decontamination procedures are provided in the Field Procedure For Cleaning Sampling Devices Used In Environmental Site Investigations and the QAPP. Sample containers will be packed for shipping in rigid, insulated (if preserved at 4°C) shipping containers and immobilized and cushioned in the packing container to prevent breakage.

1.5 QA/QC Samples

QA/QC samples will be collected in accordance with the QAPP. Rinsate blanks are created by running distilled/deionized water over decontamination sampling equipment to test for residual decontamination. Water blanks will be collected in sample containers for handling, shipping and analysis. Rinsate blanks will be treated identical to the samples collected that day.

Trip blanks are required only for VOC analysis and are used to evaluate cross-contamination among samples during sampling, handling, shipment, and laboratory handling and analysis. Trip blanks consist of organic free/analyte free water and/or clean sand and will be handled similar to other VOC samples collected that day. A minimum of one water and one sediment/soil trip blank per VOC sample shipping container will be used.

Field Duplicates are field samples taken from one location and divided into separate containers. They will be treated as separate, independent samples through the remaining sampling and analysis chain.

Matrix Spike/Matrix Spike Duplicates are field samples that are spiked in the laboratory with a known concentration of target analytes to verify percent recoveries. Sufficient

samples will be collected in the field to provide for the matrix spike and matrix spike duplicate samples.

1.6 Sample Verification

After each soil sample is collected, the location will be marked to facilitate survey activities, if required. Once all soil samples are collected, the sample numbers and locations will be reviewed before leaving the site or progressing to other tasks in the program. All used sampling devices will be kept together, separate from clean tools for appropriate decontamination. A sample collection device will not be used more than once without proper decontamination prior to the next use.

CHAIN-OF-CUSTODY PROCEDURES

CHAIN-OF-CUSTODY PROCEDURES

1.0 PROCEDURE

The purpose of the chain-of-custody procedure is to provide the project manager with a record of the custody of any environmental field sample from time of collection to final analysis. Once a sample has been submitted to the laboratory, internal laboratory procedures will take over in the form of request of analysis forms, analytical notebooks, and reports of analysis forms.

This procedure describes the use of a chain-of-custody form to accompany all sample containers from the time of collection to submission to the analytical laboratory.

For sampling programs where a large number of samples are to be collected or where various laboratories will be receiving the samples, a chain-of-custody form is to accompany each group of samples (sample form attached). This form presents general sample information in tabular form listing sample number, date and time of sampling, whether the sample was a composite or grab and information regarding the number of containers, size and preservative used for each.

The bottom of the form is the chain-of-custody with dates and times of transfer indicated with the appropriate signatures. The sample collector is always the first signature while the analytical laboratory is the final. Theoretically, all individuals handling the samples between collection and the laboratory should sign the form. However, if a common carrier (i.e. Federal Express, UPS, etc.) is used for shipping only one signature is required.

This form can be used as a legal document to guarantee samples were not mishandled and that they were delivered to the laboratory within the time frame necessary to start analysis.

The attached chain-of-custody form was provided by Test America. Laboratory provided forms as well as contractor specific forms may be utilized as long as the information provided on the form is consistent with the attached form. Since these forms are basically sample transmittal documents a copy of the form should remain with the sampling personnel. Upon completion of the analysis the laboratory will provide a compete set of all chain-of-custody forms for inclusion with analytical reports.

FIELD PROCEDURE FOR CLEANING SAMPLING DEVICES USED IN ENVIRONMENTAL SITE INVESTIGATION

FIELD PROCEDURE FOR CLEANING SAMPLING DEVICES USED IN ENVIRONMENTAL SITE INVESTIGATION

1.0 PROCEDURE

This procedure is to be used during site investigations for the cleaning of split spoons, sampling spoons, well bailers, remote samplers, sampling dredges and all devices used to collect a sample or transfer a sample of soil or liquid into its shipping container. Following the procedures will prevent the likelihood of cross-contamination between samples.

1.1 Material Selection

All field sampling equipment that contacts the solid or liquid media being collected for eventual chemical analysis should be made of stainless steel or Teflon or should be dedicated disposable PVC equipment. These materials are easily cleaned, are disposable or relatively inert when containing the sample. Sampling equipment should be cleaned beforehand and dedicated to individual samples taken in the field. If this is not possible, a cleaning procedures must be followed between each samples. The following presents the procedures for the sampling of organic and inorganic constituents.

1.2 Procedure for Materials in Contact with Media to be Analyzed for Organics

1. Scrub the device with nonphosphate/low sudsing detergent in a stainless steel basin. This type of basin is easily cleaned and thus prevents the buildup of organic contaminants.
2. Rinse thoroughly with tap water to remove all suds.
3. Rinse three times with organic free/analyte free water using a plastic squeeze bottle.
4. Rinse three times with laboratory grade isopropyl alcohol using a Teflon squeeze bottle to remove nonpolar compounds. Allow to air dry.

Note: Solvent resistant gloves should be worn when rinsing with organic solvents to prevent contamination of the equipment and for personal safety. Use aluminum foil to provide a clean surface if the equipment is set down during the cleaning procedure.

1.3 Procedure for Materials in Contact with Media to be Analyzed for Inorganics

1. Scrub the device with nonphosphate/low sudsing detergent in a HDPE basin using a plastic brush.
2. Rinse thoroughly with tap water to remove all suds.
3. Rinse with dilute (0.1N) HCL and/or HNO3 using prerinsed plastic squeeze bottles.
4. Rinse three times with organic free/analyte free water using a plastic squeeze bottle. Allow to air dry.

Note: Any acid resistant disposable gloves can be used in this cleaning procedure. Plastic sheeting should be available to provide a clean surface if the equipment is set down during the cleaning procedure.

Drilling equipment including the drill rig and augers will be steam cleaned utilizing a high-pressure hot water system between sampling intervals and locations. The decontamination water will be collected on a decontamination pad and containerized for proper disposal.

ATTACHMENT 2-B

LABORATORY CERTIFICATION LETTER

FLORIDA DEPARTMENT OF HEALTH

Jeb Bush
Governor

Robert G. Brooks, M.D.
Secretary

October 4, 1999

Charles Ged
Advanced Environmental Laboratories, Inc.
8936 Western Way, Suite 7
Jacksonville, FL 32256

Subject: Quality Assurance Review; Advanced Environmental Laboratories, Inc.; Comprehensive QA Plan # 940242, Revision 9

Dear QA Officer:

The Statement of Intent and QA Planner file for the above referenced plan were received on October 4, 1999. The Department of Health (DOH), Laboratory Certification Program has completed the electronic evaluation of your plan.

Your QA Plan has been approved as explained in the attached evaluation report, with an effective date of October 4, 1999. Capabilities approved by the Statement of Intent are those indicated by the **electronic copy** and the signatures on the hard copy are considered valid only for the electronic version. Your QA Plan file must be revised and resubmitted if you desire approval of any activities that were not approved with this current evaluation.

Chapter 62-160, F.A.C., requires that your organization renew approval of this document on an annual basis. Your annual amendment must consist of a diskette containing your QA Plan file and a signed Statement of Intent even if changes have not been made to your plan. Your renewal request must be received by the DOH, Laboratory Certification Program on or before **November 23, 2000**.

If you have any questions, please contact Nancy Cohen at (904) 791-1580 (voice) or Nancy_Cohen@doh.state.fl.us (email).

Sincerely,

Stephen A. Arms, Program Administrator
DOH, Laboratory Certification Program

For: Sylvia S. Labie, QA Officer
DEP, Quality Assurance Section

SAA/SSL/nc

Attachment (1): Evaluation Report

cc: Sylvia S. Labie, DEP, QA Section

ATTACHMENT E

LABORATORY REPORTS
and
CHAIN-OF-CUSTODY FORMS

Advanced Environmental Laboratories, Inc.

8936 Western Way • Suite 7
Jacksonville, Florida 32256
(904) 363-9350
FAX (904) 363-9354

Client: Perma-Fix.
Project Name: Release Assessment areas of concern
Project No.:

Address: 1940 N.W. 67th Place
Gainesville, FL 32653

Attention: Steve Douglas

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported 4/24/01

Project Chemist: KB/KC

Page No.: 1 of 22

Sample Description

The following soil and water samples were submitted by Perma-Fix on 4/4/01 for analysis outlined on the attached Chain of Custody:

Project Name: Release Assessment areas of concern

1. PBSA-Soil-1A @ 12:30
2. PBSA-Soil-1B @ 12:50
3. PBSA-Soil-1C @ 13:20
4. PBSA-Soil-2A @ 14:05
5. PBSA-Soil-2B @ 14:20
6. PBSA-Soil-2C @ 14:45
7. PBSA-Soil-3A @ 15:15
8. PBSA-Soil-3B @ 15:30
9. PBSA-Soil-3C @ 15:40
10. PBSA-Soil-4A @ 16:00
11. PBSA-Soil-4B @ 16:15
12. PBSA-Soil-4C @ 16:25
13. PBSA-Soil-5A @ 16:40
14. PBSA-Soil-5B @ 16:55
15. PBSA-Soil-5C @ 17:20
16. PBSA-Soil-Duplicate
17. SMA-Soil-1A @ 18:05
18. SMA-Soil-1B @ 18:20
19. SMA-Soil-1C @ 18:35
20. PBSA-Soil Matrix Spike
21. PBSA-Soil Matrix Spike Dup.
22. Equipment Rinsate Blank
23. Trip Blank

Approved by: _____
Sean C. Hyde, Laboratory Manager

HRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 3 of 22

Volatile Organic Hydrocarbons
EPA Method 5035/8260 *or* 5030/8260
Units: µg/Kg

Analytes	MRL	Lab Code:	J011124-1	J011124-2	J011124-3	J011124-4
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
		Sample Name:	PBSA-Soil-1A	PBSA-Soil-1B	PBSA-Soil-1C	PBSA-Soil-2A
Acrolein	50		U	U	U	U
Acetone	50		U	233	U	U
Acrylonitrile	50		U	U	U	U
Benzene	5		U	U	U	U
Bromobenzene	5		U	U	U	U
Bromodichloromethane	5		U	U	U	U
Bromoform	5		U	U	U	U
Bromomethane	5		U	U	U	U
N-Butylbenzene	5		U	U	U	U
Carbon tetrachloride	5		U	U	U	U
Chlorobenzene	5		U	U	U	U
Chloroethane	5		U	U	U	U
2-Chlorotoluene	5		U	U	U	U
4-Chlorotoluene	5		U	U	U	U
Chloroform	5		U	U	U	U
Chloromethane	5		U	U	U	U
Dibromochloromethane	5		U	U	U	U
Dibromomethane	5		U	U	U	U
1,2-Dichlorobenzene	5		U	U	U	U
1,3-Dichlorobenzene	5		U	U	U	U
1,4-Dichlorobenzene	5		U	U	U	U
Dichlorodifluoromethane	5		U	U	U	U
1,1-Dichloroethane	5		U	U	U	U
1,2-Dichloroethane	5		U	U	U	U
1,1-Dichloroethene	5		U	U	U	U
cis-1,2-Dichloroethene	5		U	U	U	U
trans-1,2-Dichloroethene	5		U	U	U	U
1,2-Dichloropropane	5		U	U	U	U
1,3-Dichloropropane	5		U	U	U	U
2,2-Dichloropropane	5		U	U	U	U
1,1-Dichloropropene	5		U	U	U	U
cis-1,3-Dichloropropene	5		U	U	U	U
trans-1,3-Dichloropropene	5		U	U	U	U
MEK (2-Butanone)	50		U	U	U	U
Carbon disulfide	5		U	U	U	U
2-Chloroethyl vinyl ether	5		U	U	U	U
1,2-Dibromoethane	5		U	U	U	U
1,2-Dibromo-3-chloropropane	5		U	U	U	U
2-Hexanone (MBK)	50		U	U	U	U
Idomethane	50		U	U	U	U
4-Methyl-2-pentanone (MIBK)	50		U	U	U	U
Vinyl Acetate	50		U	U	U	U
MTBE	5		U	U	U	U
Bromochloromethane	5		U	U	U	U
Tert-butyl-Benzene	5		U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Perma-Fix	**Report No.:**	J011124
Project No.:	Release Assessment areas of concern	**Date Sampled:**	4/3/01
Matrix:	Soil	**Date Submitted:**	4/4/01
		Date Reported:	4/24/01
		Page No.:	3 of 22

continued 2 of 2

Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

Analytes	MRL	Lab Code:	J011124-1	J011124-2	J011124-3	J011124-4
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
		Sample Name:	PBSA-Soil-1A	PBSA-Soil-1B	PBSA-Soil-1C	PBSA-Soil-2A
Ethyl benzene	5		U	U	U	U
Methylene Chloride	5		U	U	U	U
Hexachlorobutadiene	5		U	U	U	U
Isopropylbenzene	5		U	U	U	U
p-Isopropyltoluene	5		U	U	U	U
Naphthalene	5		U	U	U	U
n-Propylbenzene	5		U	U	U	U
Styrene	5		U	U	U	U
1,1,1,2-Tetrachloroethane	5		U	U	U	U
1,1,2,2-Tetrachloroethane	5		U	U	U	U
1,2,3-Trichlorobenzene	5		U	U	U	U
1,2,4-Trichlorobenzene	5		U	U	U	U
Tetrachloroethene	5		U	U	U	U
Toluene	5		U	U	U	U
1,1,1-Trichloroethane	5		U	U	U	U
1,1,2-Trichloroethane	5		U	U	U	U
Trichloroethene	5		U	U	U	U
Trichlorofluoromethane	5		U	U	U	U
1,2,3-Trichloropropane	5		U	U	U	U
1,2,4-Trimethylbenzene	5		U	U	U	U
1,3,5-Trimethylbenzene	5		U	U	U	U
Vinyl Chloride	5		U	U	U	U
m&p Xylenes	5		U	U	U	U
Sec Butyl Benzene	5		U	U	U	U
o-xylenes	5		U	U	U	U

Surrogates	Acceptance Limits	Percent Recovery	Percent Recovery	Percent Recovery	Percent Recovery
1,2-Dichloroethane-d_4	80-120	113	109	113	115
Toluene-d_8	81-117	102	104	104	106
Bromofluorobenzene	74-121	109	117	109	115

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Quality Assurance Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 4 of 22

Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

Analytes	MRL	Lab Code:	J011124-5	J011124-6	J011124-7[MS]	J011124-8
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
		Sample Name:	PBSA-Soil-2B	PBSA-Soil-2C	PBSA-Soil-3A	PBSA-Soil-3B
Acrolein	50		U	U	U	U
Acetone	50		U	U	250	U
Acrylonitrile	50		U	U	U	U
Benzene	5		U	U	U	U
Bromobenzene	5		U	U	U	U
Bromodichloromethane	5		U	U	U	U
Bromoform	5		U	U	U	U
Bromomethane	5		U	U	U	U
N-Butylbenzene	5		U	U	U	U
Carbon tetrachloride	5		U	U	U	U
Chlorobenzene	5		U	U	U	U
Chloroethane	5		U	U	U	U
2-Chlorotoluene	5		U	U	U	U
4-Chlorotoluene	5		U	U	U	U
Chloroform	5		U	U	U	U
Chloromethane	5		U	U	U	U
Dibromochloromethane	5		U	U	U	U
Dibromomethane	5		U	U	U	U
1,2-Dichlorobenzene	5		U	U	U	U
1,3-Dichlorobenzene	5		U	U	U	U
1,4-Dichlorobenzene	5		U	U	U	U
Dichlorodifluoromethane	5		U	U	U	U
1,1-Dichloroethane	5		U	U	U	U
1,2-Dichloroethane	5		U	U	U	U
1,1-Dichloroethene	5		U	U	U	U
cis-1,2-Dichloroethene	5		U	U	U	U
trans-1,2-Dichloroethene	5		U	U	U	U
1,2-Dichloropropane	5		U	U	U	U
1,3-Dichloropropane	5		U	U	U	U
2,2-Dichloropropane	5		U	U	U	U
1,1-Dichloropropene	5		U	U	U	U
cis-1,3-Dichloropropene	5		U	U	U	U
trans-1,3-Dichloropropene	5		U	U	U	U
MEK (2-Butanone)	50		U	U	U	U
Carbon disulfide	5		U	U	U	U
2-Chloroethyl vinyl ether	5		U	U	U	U
1,2-Dibromoethane	5		U	U	U	U
1,2-Dibromo-3-chloropropane	5		U	U	U	U
2-Hexanone (MBK)	50		U	U	U	U
Idomethane	50		U	U	U	U
4-Methyl-2-pentanone (MIBK)	50		U	U	U	U
Vinyl Acetate	50		U	U	U	U
MTBE	5		U	U	U	U
Bromochloromethane	5		U	U	U	U
Tert-butyl-Benzene	5		U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

HRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 5 of 22

continued 2 of 2

Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

Analytes	MRL	Lab Code:	J011124-5	J011124-6	J011124-7	J011124-8
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
		Sample Name:	PBSA-Soil-2B	PBSA-Soil-2C	PBSA-Soil-3A	PBSA-Soil-3B
Ethyl benzene	5		U	U	U	U
Methylene Chloride	5		U	U	U	U
Hexachlorobutadiene	5		U	U	U	U
Isopropylbenzene	5		U	U	U	U
p-Isopropyltoluene	5		U	U	U	U
Naphthalene	5		U	U	U	U
n-Propylbenzene	5		U	U	U	U
Styrene	5		U	U	U	U
1,1,1,2-Tetrachloroethane	5		U	U	U	U
1,1,2,2-Tetrachloroethane	5		U	U	U	U
1,2,3-Trichlorobenzene	5		U	U	U	U
1,2,4-Trichlorobenzene	5		U	U	U	U
Tetrachloroethene	5		U	U	U	U
Toluene	5		U	U	U	U
1,1,1-Trichloroethane	5		U	U	U	U
1,1,2-Trichloroethane	5		U	U	U	U
Trichloroethene	5		U	U	U	U
Trichlorofluoromethane	5		U	U	U	U
1,2,3-Trichloropropane	5		U	U	U	U
1,2,4-Trimethylbenzene	5		U	U	U	U
1,3,5-Trimethylbenzene	5		U	U	U	U
Vinyl Chloride	5		U	U	U	U
m&p Xylenes	5		U	U	U	U
Sec Butyl Benzene	5		U	U	U	U
o-xylenes	5		U	U	U	U

Surrogates	Acceptance Limits	Percent Recovery	Percent Recovery	Percent Recovery	Percent Recovery
1,2-Dichloroethane-d_4	80-120	113	113	118	116
Toluene-d_4	81-117	105	104	104	108
Bromofluorobenzene	74-121	110	110	112	117

(g) Analyses obtained through multiple dilutions
U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Quality Assurance Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 6 of 22

Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

Analytes	MRL	Lab Code:	J011124-9	J011124-10	J011124-11	J011124-12
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
		Sample Name:	PBSA-Soil-3C	PBSA-Soil-4A	PBSA-Soil-4B	PBSA-Soil-4C
Acrolein	50		U	U	U	U
Acetone	50		U	U	U	U
Acrylonitrile	50		U	U	U	U
Benzene	5		U	U	U	U
Bromobenzene	5		U	U	U	U
Bromodichloromethane	5		U	U	U	U
Bromoform	5		U	U	U	U
Bromomethane	5		U	U	U	U
N-Butylbenzene	5		U	U	U	U
Carbon tetrachloride	5		U	U	U	U
Chlorobenzene	5		U	U	U	U
Chloroethane	5		U	U	U	U
2-Chlorotoluene	5		U	U	U	U
4-Chlorotoluene	5		U	U	U	U
Chloroform	5		U	U	U	U
Chloromethane	5		U	U	U	U
Dibromochloromethane	5		U	U	U	U
Dibromomethane	5		U	U	U	U
1,2-Dichlorobenzene	5		U	U	U	U
1,3-Dichlorobenzene	5		U	U	U	U
1,4-Dichlorobenzene	5		U	U	U	U
Dichlorodifluoromethane	5		U	U	U	U
1,1-Dichloroethane	5		U	U	U	U
1,2-Dichloroethane	5		U	U	U	U
1,1-Dichloroethene	5		U	U	U	U
cis-1,2-Dichloroethene	5		U	U	U	U
trans-1,2-Dichloroethene	5		U	U	U	U
1,2-Dichloropropane	5		U	U	U	U
1,3-Dichloropropane	5		U	U	U	U
2,2-Dichloropropane	5		U	U	U	U
1,1-Dichloropropene	5		U	U	U	U
cis-1,3-Dichloropropene	5		U	U	U	U
trans-1,3-Dichloropropene	5		U	U	U	U
MEK (2-Butanone)	50		U	U	U	U
Carbon disulfide	5		U	U	U	U
2-Chloroethyl vinyl ether	5		U	U	U	U
1,2-Dibromoethane	5		U	U	U	U
1,2-Dibromo-3-chloropropane	5		U	U	U	U
2-Hexanone (MBK)	50		U	U	U	U
Idomethane	50		U	U	U	U
4-Methyl-2-pentanone (MIBK)	50		U	U	U	U
Vinyl Acetate	50		U	U	U	U
MTBE	5		U	U	U	U
Bromochloromethane	5		U	U	U	U
Tert-butyl-Benzene	5		U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

HRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Perma-Fix	**Report No.:**	J011124
Project No.:	Release Assessment areas of concern	**Date Sampled:**	4/3/01
Matrix:	Soil	**Date Submitted:**	4/4/01
		Date Reported:	4/24/01
		Page No.:	7 of 22

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Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

		Lab Code:	J011124-9	J011124-10	J011124-11	J011124-12
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
Analytes	MRL	Sample Name:	PBSA-Soil-3C	PBSA-Soil-4A	PBSA-Soil-4B	PBSA-Soil-4C
Ethyl benzene	5		U	U	U	U
Methylene Chloride	5		U	U	U	U
Hexachlorobutadiene	5		U	U	U	U
Isopropylbenzene	5		U	U	U	U
p-Isopropyltoluene	5		U	U	U	U
Naphthalene	5		U	U	U	U
n-Propylbenzene	5		U	U	U	U
Styrene	5		U	U	U	U
1,1,1,2-Tetrachloroethane	5		U	U	U	U
1,1,2,2-Tetrachloroethane	5		U	U	U	U
1,2,3-Trichlorobenzene	5		U	U	U	U
1,2,4-Trichlorobenzene	5		U	U	U	U
Tetrachloroethene	5		U	U	U	U
Toluene	5		U	U	U	U
1,1,1-Trichloroethane	5		U	U	U	U
1,1,2-Trichloroethane	5		U	U	U	U
Trichloroethene	5		U	U	U	U
Trichlorofluoromethane	5		U	U	U	U
1,2,3-Trichloropropane	5		U	U	U	U
1,2,4-Trimethylbenzene	5		U	U	U	U
1,3,5-Trimethylbenzene	5		U	U	U	U
Vinyl Chloride	5		U	U	U	U
m&p Xylenes	5		U	U	U	U
Sec Butyl Benzene	5		U	U	U	U
o-xylenes	5		U	U	U	U

Surrogates	Acceptance Limits	Percent Recovery	Percent Recovery	Percent Recovery	Percent Recovery
1,2-Dichloroethane-d_4	80-120	113	115	115	114
Toluene-d_8	81-117	102	113	106	105
Bromofluorobenzene	74-121	111	122(J4)	119	116

J4 The sample matrix interfered with the ability to make an accurate determination
U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Quality Assurance Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 8 of 22

Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

Analytes	MRL	Lab Code:	J011124-13#	J011124-14	J011124-15	J011124-16
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
		Sample Name:	PBSA-Soil-5A	PBSA-Soil-5B	PBSA-Soil-5C	PBSA-Soil Dup
Acrolein	50		U	U	U	U
Acetone	50		510	U	U	U
Acrylonitrile	50		U	U	U	U
Benzene	5		U	U	U	U
Bromobenzene	5		U	U	U	U
Bromodichloromethane	5		U	U	U	U
Bromoform	5		U	U	U	U
Bromomethane	5		U	U	U	U
N-Butylbenzene	5		U	U	U	U
Carbon tetrachloride	5		U	U	U	U
Chlorobenzene	5		U	U	U	U
Chloroethane	5		U	U	U	U
2-Chlorotoluene	5		U	U	U	U
4-Chlorotoluene	5		U	U	U	U
Chloroform	5		U	U	U	U
Chloromethane	5		U	U	U	U
Dibromochloromethane	5		U	U	U	U
Dibromomethane	5		U	U	U	U
1,2-Dichlorobenzene	5		U	U	U	U
1,3-Dichlorobenzene	5		U	U	U	U
1,4-Dichlorobenzene	5		U	U	U	U
Dichlorodifluoromethane	5		U	U	U	U
1,1-Dichloroethane	5		U	U	U	U
1,2-Dichloroethane	5		U	U	U	U
1,1-Dichloroethene	5		U	U	U	U
cis-1,2-Dichloroethene	5		U	U	U	U
trans-1,2-Dichloroethene	5		U	U	U	U
1,2-Dichloropropane	5		U	U	U	U
1,3-Dichloropropane	5		U	U	U	U
2,2-Dichloropropane	5		U	U	U	U
1,1-Dichloropropene	5		U	U	U	U
cis-1,3-Dichloropropene	5		U	U	U	U
trans-1,3-Dichloropropene	5		U	U	U	U
MEK (2-Butanone)	50		U	U	U	U
Carbon disulfide	5		U	U	U	U
2-Chloroethyl vinyl ether	5		U	U	U	U
1,2-Dibromoethane	5		U	U	U	U
1,2-Dibromo-3-chloropropane	5		U	U	U	U
2-Hexanone (MBK)	50		U	U	U	U
Idomethane	50		U	U	U	U
4-Methyl-2-pentanone (MIBK)	50		U	U	U	U
Vinyl Acetate	50		U	U	U	U
MTBE	5		U	U	U	U
Bromochloromethane	5		U	U	U	U
Tert-butyl-Benzene	5		U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

HRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Perma-Fix	**Report No.:**	J011124
Project No.:	Release Assessment areas of concern	**Date Sampled:**	4/3/01
Matrix:	Soil	**Date Submitted:**	4/4/01
		Date Reported:	4/24/01
		Page No.:	9 of 22

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Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

Analytes	MRL	Lab Code:	J011124-13	J011124-14	J011124-15	J011124-16
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
		Sample Name:	PBSA-Soil-5A	PBSA-Soil-5B	PBSA-Soil-5C	PBSA-Soil Dup
Ethyl benzene	5		U	U	U	U
Methylene Chloride	5		U	U	U	U
Hexachlorobutadiene	5		U	U	U	U
Isopropylbenzene	5		U	U	U	U
p-Isopropyltoluene	5		U	U	U	U
Naphthalene	5		U	U	U	U
n-Propylbenzene	5		U	U	U	U
Styrene	5		U	U	U	U
1,1,1,2-Tetrachloroethane	5		U	U	U	U
1,1,2,2-Tetrachloroethane	5		U	U	U	U
1,2,3-Trichlorobenzene	5		U	U	U	U
1,2,4-Trichlorobenzene	5		U	U	U	U
Tetrachloroethene	5		U	U	U	U
Toluene	5		U	U	U	U
1,1,1-Trichloroethane	5		U	U	U	U
1,1,2-Trichloroethane	5		U	U	U	U
Trichloroethene	5		U	U	U	U
Trichlorofluoromethane	5		U	U	U	U
1,2,3-Trichloropropane	5		U	U	U	U
1,2,4-Trimethylbenzene	5		U	U	U	U
1,3,5-Trimethylbenzene	5		U	U	U	U
Vinyl Chloride	5		U	U	U	U
m&p Xylenes	5		U	U	U	U
Sec Butyl Benzene	5		U	U	U	U
o-xylenes	5		U	U	U	U

Surrogates	Acceptance Limits	Percent Recovery	Percent Recovery	Percent Recovery	Percent Recovery
1,2-Dichloroethane-d_4	80-120	119	114	116	116
Toluene-d_8	81-117	111	103	106	102
Bromofluorobenzene	74-121	121	114	113	117

" Analyses obtained through multiple dilutions
U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Quality Assurance Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 10 of 22

Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

		Lab Code:	J011124-17	J011124-18	J011124-19	J011124-20
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
Analytes	MRL	Sample Name:	SMA-Soil-1A	SMA -Soil-1B	SMA -Soil-1C	PBSA-Soil Matrix
Acrolein	50		U	U	U	33%
Acetone	50		U	U	U	111%
Acrylonitrile	50		U	U	U	78%
Benzene	5		U	U	U	95%
Bromobenzene	5		U	U	U	114%
Bromodichloromethane	5		U	U	U	102%
Bromoform	5		U	U	U	126%
Bromomethane	5		U	U	U	107%
N-Butylbenzene	5		U	U	U	92%
Carbon tetrachloride	5		U	U	U	106%
Chlorobenzene	5		U	U	U	98%
Chloroethane	5		U	U	U	96%
2-Chlorotoluene	5		U	U	U	109%
4-Chlorotoluene	5		U	U	U	105%
Chloroform	5		U	U	24	96%
Chloromethane	5		U	U	U	140%
Dibromochloromethane	5		U	U	U	120%
Dibromomethane	5		U	U	U	110%
1,2-Dichlorobenzene	5		U	U	U	99%
1,3-Dichlorobenzene	5		U	U	U	90%
1,4-Dichlorobenzene	5		U	U	U	94%
Dichlorodifluoromethane	5		U	U	U	110%
1,1-Dichloroethane	5		U	U	U	95%
1,2-Dichloroethane	5		U	U	U	104%
1,1-Dichloroethene	5		U	U	U	98%
cis-1,2-Dichloroethene	5		U	U	U	97%
trans-1,2-Dichloroethene	5		U	U	U	91%
1,2-Dichloropropane	5		U	U	U	96%
1,3-Dichloropropane	5		U	U	U	119%
2,2-Dichloropropane	5		U	U	U	91%
1,1-Dichloropropene	5		U	U	U	103%
cis-1,3-Dichloropropene	5		U	U	U	105%
trans-1,3-Dichloropropene	5		U	U	U	101%
MEK (2-Butanone)	50		U	U	U	97%
Carbon disulfide	5		U	U	U	90%
2-Chloroethyl vinyl ether	5		U	U	U	143%
1,2-Dibromoethane	5		U	U	U	120%
1,2-Dibromo-3-chloropropane	5		U	U	U	133%
2-Hexanone (MBK)	50		U	U	U	125%
Idomethane	50		U	U	U	101%
4-Methyl-2-pentanone (MIBK)	50		U	U	U	113%
Vinyl Acetate	50		U	U	U	3.0%
MTBE	5		U	U	U	112%
Bromochloromethane	5		U	U	U	105%
Tert-butyl-Benzene	5		U	U	U	120%

U Not detected above the MRL
MRL Method Reporting Limit

HRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 11of 22

continued 2 of 2
Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

		Lab Code:	J011124-17	J011124-18	J011124-19	J011124-20
		Dilution Factor:	1	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01	4/15/01
Analytes	MRL	Sample Name:	SMA-Soil-1A	SMA -Soil-1B	SMA -Soil-1C	PBSA-Soil Matrix
Ethyl benzene	5		U	U	U	111%
Methylene Chloride	5		U	U	U	112%
Hexachlorobutadiene	5		U	U	U	77%
Isopropylbenzene	5		U	U	U	115%
p-Isopropyltoluene	5		U	U	U	98%
Naphthalene	5		U	U	U	96%
n-Propylbenzene	5		U	U	U	111%
Styrene	5		U	U	U	110%
1,1,1,2-Tetrachloroethane	5		U	U	U	103%
1,1,2,2-Tetrachloroethane	5		U	U	U	128%
1,2,3-Trichlorobenzene	5		U	U	U	72%
1,2,4-Trichlorobenzene	5		U	U	U	70%
Tetrachloroethene	5		U	U	U	102%
Toluene	5		U	U	U	104%
1,1,1-Trichloroethane	5		U	U	U	98%
1,1,2-Trichloroethane	5		U	U	U	108%
Trichloroethene	5		U	U	U	86%
Trichlorofluoromethane	5		U	U	U	104%
1,2,3-Trichloropropane	5		U	U	U	133%
1,2,4-Trimethylbenzene	5		U	U	U	111%
1,3,5-Trimethylbenzene	5		U	U	U	114%
Vinyl Chloride	5		U	U	U	116%
m&p Xylenes	5		U	U	U	109%
Sec Butyl Benzene	5		U	U	U	111%
o-xylenes	5		U	U	U	112%

Surrogates	Acceptance Limits	Percent Recovery	Percent Recovery	Percent Recovery	Percent Recovery
1,2-Dichloroethane-d_4	80-120	116	119	118	94
Toluene-d_4	81-117	107	102	102	98
Bromofluorobenzene	74-121	118	118	114	100

U Not detected above the MRL
MRL Method Reporting Limits

Advanced Environmental Laboratories, Inc.

Quality Assurance Report

Client:	Perma-Fix	**Report No.:**	J011124
Project No.:	Release Assessment areas of concern	**Date Sampled:**	4/3/01
Matrix:	Soil	**Date Submitted:**	4/4/01
		Date Reported:	4/24/01
		Page No.:	12 of 22

Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260

Units: µg/Kg

Lab Code:		J011124-21	J011124-mb
Dilution Factor:		1	1
Date Analyzed:		4/15/01	4/15/01
Analytes	**MRL**	**Sample Name: PBSA-spike dup**	**Method Blank**
Acrolein	50	18%	U
Acetone	50	118%	U
Acrylonitrile	50	72%	U
Benzene	5	101%	U
Bromobenzene	5	117%	U
Bromodichloromethane	5	109%	U
Bromoform	5	118%	U
Bromomethane	5	111%	U
N-Butylbenzene	5	91%	U
Carbon tetrachloride	5	113%	U
Chlorobenzene	5	96%	U
Chloroethane	5	107%	U
2-Chlorotoluene	5	111%	U
4-Chlorotoluene	5	104%	U
Chloroform	5	101%	U
Chloromethane	5	122%	U
Dibromochloromethane	5	116%	U
Dibromomethane	5	112%	U
1,2-Dichlorobenzene	5	100%	U
1,3-Dichlorobenzene	5	92%	U
1,4-Dichlorobenzene	5	93%	U
Dichlorodifluoromethane	5	110%	U
1,1-Dichloroethane	5	101%	U
1,2-Dichloroethane	5	107%	U
1,1-Dichloroethene	5	104%	U
cis-1,2-Dichloroethene	5	104%	U
trans-1,2-Dichloroethene	5	96%	U
1,2-Dichloropropane	5	102%	U
1,3-Dichloropropane	5	111%	U
2,2-Dichloropropane	5	92%	U
1,1-Dichloropropene	5	107%	U
cis-1,3-Dichloropropene	5	93%	U
trans-1,3-Dichloropropene	5	106%	U
MEK (2-Butanone)	50	97%	U
Carbon disulfide	5	92%	U
2-Chloroethyl vinyl ether	5	164%	U
1,2-Dibromoethane	5	116%	U
1,2-Dibromo-3-chloropropane	5	122%	U
2-Hexanone (MBK)	50	104%	U
Idomethane	50	108%	U
4-Methyl-2-pentanone (MIBK)	50	119%	U
Vinyl Acetate	50	1.7%	U
MTBE	5	120%	U
Bromochloromethane	5	107%	U
Tert-butyl-Benzene	5	118%	U

U Not detected above the MRL
MRL Method Reporting Limit

HRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Perma-Fix	**Report No.:**	J011124
Project No.:	Release Assessment areas of concern	**Date Sampled:**	4/3/01
Matrix:	Soil	**Date Submitted:**	4/4/01
		Date Reported:	4/24/01
		Page No.:	13 of 22

Volatile Organic Hydrocarbons
EPA Method 5035/8260 or 5030/8260
Units: µg/Kg

		Lab Code:	J011124-21	J011124-mb
		Dilution Factor:	1	1
		Date Analyzed:	4/15/01	4/15/01
Analytes	**MRL**	**Sample Name:**	PBSA-spike dup	Method Blank
Ethyl benzene	5		107	U
Methylene Chloride	5		122	U
Hexachlorobutadiene	5		78	U
Isopropylbenzene	5		112	U
p-Isopropyltoluene	5		91	U
Naphthalene	5		87	U
n-Propylbenzene	5		112	U
Styrene	5		107	U
1,1,1,2-Tetrachloroethane	5		103	U
1,1,2,2-Tetrachloroethane	5		118	U
1,2,3-Trichlorobenzene	5		69	U
1,2,4-Trichlorobenzene	5		70	U
Tetrachloroethene	5		97	U
Toluene	5		99	U
1,1,1-Trichloroethane	5		103	U
1,1,2-Trichloroethane	5		113	U
Trichloroethene	5		95	U
Trichlorofluoromethane	5		109	U
1,2,3-Trichloropropane	5		122	U
1,2,4-Trimethylbenzene	5		106	U
1,3,5-Trimethylbenzene	5		114	U
Vinyl Chloride	5		103	U
m&p Xylenes	5		102	U
Sec Butyl Benzene	5		105	U
o-xylenes	5		105	U

Surrogates	**Acceptance Limits**	**Percent Recovery**	**Percent Recovery**
1,2-Dichloroethane-d_4	80-120	94	102
Toluene-d_4	81-117	92	95
Bromofluorobenzene	74-121	95	113

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Water

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 14 of 22

Volatile Organic Hydrocarbons
EPA Method 5030/8260
Units: µg/L

Analytes	MRL	Lab Code: J011124-22	J011124-23	J011124--mb
		Dilution Factor: 1	1	1
		Date Analyzed: 4/15/01	4/15/01	4/15/01
		Sample Name: Equip Blank	TB	Method Blank
Acrolein	5	U	U	U
Acetone	5	U	U	U
Acrylonitrile	5	U	U	U
Benzene	1	U	U	U
Bromobenzene	1	U	U	U
Bromodichloromethane	1	U	U	U
Bromoform	1	U	U	U
Bromomethane	1	U	U	U
N-Butylbenzene	1	U	U	U
Carbon tetrachloride	1	U	U	U
Chlorobenzene	1	U	U	U
Chloroethane	1	U	U	U
2-Chlorotoluene	1	U	U	U
4-Chlorotoluene	1	U	U	U
Chloroform	1	U	U	U
Chloromethane	1	U	U	U
Dibromochloromethane	1	U	U	U
Dibromomethane	1	U	U	U
1,2-Dichlorobenzene	1	U	U	U
1,3-Dichlorobenzene	1	U	U	U
1,4-Dichlorobenzene	1	U	U	U
Dichlorodifluoromethane	1	U	U	U
1,1-Dichloroethane	1	U	U	U
1,2-Dichloroethane	1	U	U	U
1,1-Dichloroethene	1	U	U	U
cis-1,2-Dichloroethene	1	U	U	U
trans-1,2-Dichloroethene	1	U	U	U
1,2-Dichloropropane	1	U	U	U
1,3-Dichloropropane	1	U	U	U
2,2-Dichloropropane	1	U	U	U
1,1-Dichloropropene	1	U	U	U
cis-1,3-Dichloropropene	1	U	U	U
trans-1,3-Dichloropropene	1	U	U	U
MEK (2-Butanone)	5	U	U	U
Carbon disulfide	1	U	U	U
2-Chloroethyl vinyl ether	1	U	U	U
1,2-Dibromoethane	1	U	U	U
1,2-Dibromo-3-chloropropane	1	U	U	U
2-Hexanone (MBK)	5	U	U	U
Idomethane	5	U	U	U
4-Methyl-2-pentanone (MIBK)	5	U	U	U
Vinyl Acetate	5	U	U	U
MTBE	1	U	U	U
Bromochloromethane	1	U	U	U
Tert-butyl-Benzene	1	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Water

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 15 of 22

Volatile Organic Hydrocarbons
EPA Method 5030/8260
Units: µg/L

Analytes	MRL	Lab Code:	J011124-22	J011124-23	J011124-mb
		Dilution Factor:	1	1	1
		Date Analyzed:	4/15/01	4/15/01	4/15/01
		Sample Name:	Equip. Blank	TB	Method Blank
Ethyl benzene	5		U	U	U
Methylene Chloride	5		U	U	U
Hexachlorobutadiene	5		U	U	U
Isopropylbenzene	5		U	U	U
p-Isopropyltoluene	5		U	U	U
Naphthalene	5		U	U	U
n-Propylbenzene	5		U	U	U
Styrene	5		U	U	U
1,1,1,2-Tetrachloroethane	5		U	U	U
1,1,2,2-Tetrachloroethane	5		U	U	U
1,2,3-Trichlorobenzene	5		U	U	U
1,2,4-Trichlorobenzene	5		U	U	U
Tetrachloroethene	5		U	U	U
Toluene	5		U	U	U
1,1,1-Trichloroethane	5		U	U	U
1,1,2-Trichloroethane	5		U	U	U
Trichloroethene	5		U	U	U
Trichlorofluoromethane	5		U	U	U
1,2,3-Trichloropropane	5		U	U	U
1,2,4-Trimethylbenzene	5		U	U	U
1,3,5-Trimethylbenzene	5		U	U	U
Vinyl Chloride	5		U	U	U
m&p Xylenes	5		U	U	U
Sec Butyl Benzene	5		U	U	U
o-xylenes	5		U	U	U

Surrogates	Acceptance Limits	Percent Recovery	Percent Recovery	Percent Recovery
1,2-Dichloroethane-d_4	80-120	99	106	102
Toluene-d_4	81-117	105	103	95
Bromofluorobenzene	74-121	110	108	113

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 16 of 22.

Total Metals
Units: mg/Kg

			Lab Code:	J011124-1	J011124-2	J011124-3	J011124-4
Analyte	Method	MRL	Date Analyzed	PBSA-Soil-1A	PBSA-Soil-1B	PBSA-Soil-1C	PBSA-Soil-2A
Arsenic	6010B	0.50	4/10/01	U	U	U	U
Barium	6010B	0.50	4/10/01	11	2.9	2.6	10
Cadmium	6010B	0.25	4/10/01	U	U	U	U
Chromium	6010B	0.50	4/10/01	6.1	1.7	1.2	4.2
Lead	7421	0.50	4/13/01	4.0	U	0.68	4.4
Selenium	6010B	0.50	4/10/01	U	U	U	U
Silver	6010B	0.50	4/10/01	U	U	U	U
Mercury	7470A	0.10	4/6/01	U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 17 of 22

Total Metals
Units: mg/Kg

Analyte	Method	MRL	Lab Code: Date Analyzed	J011124-5 PBSA-Soil-2B	J011124-6 PBSA-Soil-2C	J011124-7 PBSA-Soil-3A	J011124-8 PBSA-Soil-3B
Arsenic	6010B	0.50	4/10/01	U	U	0.93	U
Barium	6010B	0.50	4/10/01	2.2	2.9	5.8	2.8
Cadmium	6010B	0.25	4/10/01	U	U	U	U
Chromium	6010B	0.50	4/10/01	1.4	1.7	3.0	1.8
Lead	7421	0.50	4/13/01	U	0.63	1.1	U
Selenium	6010B	0.50	4/10/01	U	U	U	U
Silver	6010B	0.50	4/10/01	U	U	U	U
Mercury	7470A	0.10	4/6/01	U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Perma-Fix	**Report No.:**	J011124
Project No.:	Release Assessment areas of concern	**Date Sampled:**	4/3/01
Matrix:	Soil	**Date Submitted:**	4/4/01
		Date Reported:	4/24/01
		Page No.:	18 of 22

Total Metals
Units: mg/Kg

			Lab Code:	J011124-9	J011124-10	J011124-11	J011124-12
Analyte	Method	MRL	Date Analyzed	PBSA-Soil-3C	PBSA-Soil-4A	PBSA-Soil-4B	PBSA-Soil-4C
Arsenic	6010B	0.50	4/10/01	U	U	U	U
Barium	6010B	0.50	4/10/01	6.3	42	4.0	3.4
Cadmium	6010B	0.25	4/10/01	U	U	U	U
Chromium	6010B	0.50	4/10/01	3.0	4.9	1.7	1.2
Lead	7421	0.50	4/13/01	0.89	4.4	0.60	U
Selenium	6010B	0.50	4/10/01	U	U	U	U
Silver	6010B	0.50	4/10/01	U	U	U	U
Mercury	7470A	0.10	4/6/01	U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 19 of 22

Total Metals
Units: mg/Kg

			Lab Code:	J011124-13	J011124-14	J011124-15	J011124-16
Analyte	Method	MRL	Date Analyzed	PBSA-Soil-5A	PBSA-Soil-5B	PBSA-Soil-5C	PBSA-Soil-dup
Arsenic	6010B	0.50	4/10/01	0.55	U	U	U
Barium	6010B	0.50	4/10/01	7.1	2.6	5.5	2.7
Cadmium	6010B	0.25	4/10/01	U	U	U	U
Chromium	6010B	0.50	4/10/01	1.7	1.5	3.0	1.4
Lead	7421	0.50	4/13/01	2.9	0.70	1.2	0.55
Selenium	6010B	0.50	4/10/01	U	U	U	U
Silver	6010B	0.50	4/10/01	U	U	U	U
Mercury	7470A	0.10	4/6/01	U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 20 of 22

Total Metals
Units: mg/Kg

Analyte	Method	MRL	Lab Code: Date Analyzed	J011124-17 SMA-Soil-1A	J011124-18 SMA -Soil-1B	J011124-19 SMA -Soil-1C	J011124-20 SMA Soil-spike
Arsenic	6010B	0.50	4/10/01	U	U	2.8	98%
Barium	6010B	0.50	4/10/01	5.1	2.7	17	107%
Cadmium	6010B	0.25	4/10/01	U	U	U	100%
Chromium	6010B	0.50	4/10/01	1.8	1.6	10	107%
Lead	7421	0.50	4/13/01	1.7	0.61	3.4	104%
Selenium	6010B	0.50	4/10/01	U	U	U	95%
Silver	6010B	0.50	4/10/01	U	U	U	94%
Mercury	7470A	0.10	4/6/01	U	U	U	91%

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 16 of 22.

Total Metals
Units: mg/Kg

Analyte	Method	MRL	Lab Code: / Date Analyzed	J011124-1 PBSA-Soil-1A	J011124-2 PBSA-Soil-1B	J011124-3 PBSA-Soil-1C	J011124-4 PBSA-Soil-2A
Arsenic	6010B	0.50	4/10/01	U	U	U	U
Barium	6010B	0.50	4/10/01	11	2.9	2.6	10
Cadmium	6010B	0.25	4/10/01	U	U	U	U
Chromium	6010B	0.50	4/10/01	6.1	1.7	1.2	4.2
Lead	7421	0.50	4/13/01	4.0	U	0.68	4.4
Selenium	6010B	0.50	4/10/01	U	U	U	U
Silver	6010B	0.50	4/10/01	U	U	U	U
Mercury	7470A	0.10	4/6/01	U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 17 of 22

Total Metals
Units: mg/Kg

			Lab Code:	J011124-5	J011124-6	J011124-7	J011124-8
Analyte	Method	MRL	Date Analyzed	PBSA-Soil-2B	PBSA-Soil-2C	PBSA-Soil-3A	PBSA-Soil-3B
Arsenic	6010B	0.50	4/10/01	U	U	0.93	U
Barium	6010B	0.50	4/10/01	2.2	2.9	5.8	2.8
Cadmium	6010B	0.25	4/10/01	U	U	U	U
Chromium	6010B	0.50	4/10/01	1.4	1.7	3.0	1.8
Lead	7421	0.50	4/13/01	U	0.63	1.1	U
Selenium	6010B	0.50	4/10/01	U	U	U	U
Silver	6010B	0.50	4/10/01	U	U	U	U
Mercury	7470A	0.10	4/6/01	U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Perma-Fix	**Report No.:**	J011124
Project No.:	Release Assessment areas of concern	**Date Sampled:**	4/3/01
Matrix:	Soil	**Date Submitted:**	4/4/01
		Date Reported:	4/24/01
		Page No.:	18 of 22

Total Metals
Units: mg/Kg

			Lab Code:	J011124-9	J011124-10	J011124-11	J011124-12
Analyte	Method	MRL	Date Analyzed	PBSA-Soil-3C	PBSA-Soil-4A	PBSA-Soil-4B	PBSA-Soil-4C
Arsenic	6010B	0.50	4/10/01	U	U	U	U
Barium	6010B	0.50	4/10/01	6.3	42	4.0	3.4
Cadmium	6010B	0.25	4/10/01	U	U	U	U
Chromium	6010B	0.50	4/10/01	3.0	4.9	1.7	1.2
Lead	7421	0.50	4/13/01	0.89	4.4	0.60	U
Selenium	6010B	0.50	4/10/01	U	U	U	U
Silver	6010B	0.50	4/10/01	U	U	U	U
Mercury	7470A	0.10	4/6/01	U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 19 of 22

Total Metals
Units: mg/Kg

Analyte	Method	MRL	Lab Code: / Date Analyzed	J011124-13 PBSA-Soil-5A	J011124-14 PBSA-Soil-5B	J011124-15 PBSA-Soil-5C	J011124-16 PBSA-Soil-dup
Arsenic	6010B	0.50	4/10/01	**0.55**	U	U	U
Barium	6010B	0.50	4/10/01	**7.1**	**2.6**	**5.5**	**2.7**
Cadmium	6010B	0.25	4/10/01	U	U	U	U
Chromium	6010B	0.50	4/10/01	**1.7**	**1.5**	**3.0**	**1.4**
Lead	7421	0.50	4/13/01	**2.9**	**0.70**	**1.2**	**0.55**
Selenium	6010B	0.50	4/10/01	U	U	U	U
Silver	6010B	0.50	4/10/01	U	U	U	U
Mercury	7470A	0.10	4/6/01	U	U	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 20 of 22

Total Metals
Units: mg/Kg

Analyte	Method	MRL	Lab Code: Date Analyzed	J011124-17 SMA-Soil-1A	J011124-18 SMA -Soil-1B	J011124-19 SMA -Soil-1C	J011124-20 SMA Soil-spike
Arsenic	6010B	0.50	4/10/01	U	U	2.8	98%
Barium	6010B	0.50	4/10/01	5.1	2.7	17	107%
Cadmium	6010B	0.25	4/10/01	U	U	U	100%
Chromium	6010B	0.50	4/10/01	1.8	1.6	10	107%
Lead	7421	0.50	4/13/01	1.7	0.61	3.4	104%
Selenium	6010B	0.50	4/10/01	U	U	U	95%
Silver	6010B	0.50	4/10/01	U	U	U	94%
Mercury	7470A	0.10	4/6/01	U	U	U	91%

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Soil

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 21 of 22

Total Metals
Units: mg/Kg

Analyte	Method	MRL	Lab Code: Date Analyzed	J011124-21 PBSA matrix spike dup	M040601-mb Method Blank
Arsenic	6010B	0.50	4/10/01	97%	U
Barium	6010B	0.50	4/10/01	107%	U
Cadmium	6010B	0.25	4/10/01	100%	U
Chromium	6010B	0.50	4/10/01	106%	U
Lead	7421	0.50	4/13/01	108%	U
Selenium	6010B	0.50	4/10/01	94%	U
Silver	6010B	0.50	4/10/01	91%	U
Mercury	7470A	0.10	4/6/01	105%	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

Analytical Report

Client: Perma-Fix
Project No.: Release Assessment areas of concern
Matrix: Water

Report No.: J011124
Date Sampled: 4/3/01
Date Submitted: 4/4/01
Date Reported: 4/24/01
Page No.: 22 of 22

Total Metals
Units: mg/L

			Lab Code:	J011124-22	M040601-mb
Analyte	Method	MRL	Date Analyzed	Equip Rins. Blank	Method Blank
Arsenic	6010B	0.010	4/6/01	U	U
Barium	6010B	0.010	4/6/01	U	U
Cadmium	6010B	0.0050	4/6/01	U	U
Chromium	6010B	0.010	4/6/01	U	U
Lead	6010B	0.0050	4/11/01	U	U
Selenium	6010B	0.010	4/6/01	U	U
Silver	6010B	0.010	4/6/01	U	U
Mercury	7470A	0.0020	4/6/01	U	U

U Not detected above the MRL
MRL Method Reporting Limit

Advanced Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

PAGE 1 of 3

☑ Jacksonville: 8936 Western Way, Suite 7, Jacksonville, FL 32256 • (904) 363-9350 Fax (904) 363-9354
☐ Tampa: 5810-D Breckenridge Parkway, Tampa, FL 33610 • (813) 630-9616 Fax (813) 630-4327
☐ Gainesville: 2106 NW 67th Place, Suite 7, Gainesville, FL 32606 • (352) 367-1500 Fax (352) 367-0050

JOB NUMBER: J011124

CLIENT NAME: PermaFix of Florida, Inc

ADDRESS: 1940 NW 67th Place, Gainesville, Florida 32653

PHONE: (352) 395-1356 FAX: (352)

CONTACT: Mr. Steve Douglas

PROJECT NAME: Release Assessment Areas of Concern A+C (Paint Spray Booth Area and Soil Mound Area)

P.O. NUMBER / PROJECT NUMBER:

PROJECT LOCATION: PermaFix of Florida, 1940 NW 67th Place, Gainesville, Florida 32653

SAMPLED BY: Richard Moriarty (ESA-FDEP Comp QAP #970183)

TURN AROUND TIME or RESULTS DUE BY:
☒ STANDARD ☐ VERBAL
☐ RUSH ☐ FAX
☐ OTHER ☒ HARD COPY to Richard @ ESA

SPECIAL INSTRUCTIONS: Sample Kits Received from AEL - Marion Landua 3/30/01 [illegible]
Level 4 QC

	Analysis 1	Analysis 2	Analysis 3	Analysis 4
PRESERVATIVE	w/ ice	w/ ice	HCL, ice	HNO3, ice
CONTAINER SIZE AND TYPE	3x 5g Encore	1x 250ml glass	3x 40ml vials	1x 500ml poly
ANALYSIS REQUIRED	8260 (full)/5035	Total (8) RCRA Metals	8260 full	Total (8) RCRA Metals

SAMPLE ID	SAMPLE DESCRIPTION	DATE	TIME	MATRIX	NO. OF CONTAIN.	8260 (full)/5035	Total (8) RCRA Metals	LAB USE
PBSA-Soil-1A	Paint Spray Booth Area - Soil Boring #1 - shallow	4/3/01	12:30	Soil	3	X	X	-1
PBSA-Soil-1B	Paint Spray Booth Area - Soil Boring #1 - mid	4/3/01	12:50	Soil	3	X	X	-2
PBSA-Soil-1C	Paint Spray Booth Area - Soil Boring #1 - deep	4/3/01	13:20	Soil	3	X	X	-3
PBSA-Soil-2A	Paint Spray Booth Area - Soil Boring #2 - shallow	4/3/01	14:05	Soil	3	X	X	-4
PBSA-Soil-2B	Paint Spray Booth Area - Soil Boring #2 - mid	4/3/01	14:20	Soil	3	X	X	-5
PBSA-Soil-2C	Paint Spray Booth Area - Soil Boring #2 - deep	4/3/01	14:45	Soil	3	X	X	-6
PBSA-Soil-3A	Paint Spray Booth Area - Soil Boring #3 - shallow	4/3/01	15:15	Soil	3	X	X	-7
PBSA-Soil-3B	Paint Spray Booth Area - Soil Boring #3 - mid	4/3/01	15:30	Soil	3	X	X	-8

* GW—Groundwater SW—Surface Water DW—Drinking Water WW—Waste Water SO—Solid/Soil SL—Sludge HW—Hazardous Waste A—Air

FIELD PARAMETERS / COMMENTS: Sample containers sealed in "Ziplock" type bags and placed on wet ice for transport (RM)
Samples hand-delivered to AEL, Jacksonville 4/4/01 (RM)

TRANS. NO.	TRANSFERS RELINQUISHED BY:	ACCEPTED BY:	DATE:	TIME:
1	Richard Moriarty	[illegible]	4/4/01	1135
2				
3				
4				

CONTAINERS/SEALS INTACT ☒ YES ☐ NO | ON ICE/4°C ☒ YES ☐ NO | SHIPPED VIA: Hand-Delivered

DISTRIBUTION: White—Client Copy Yellow—Lab Copy Pink—Sample Copy

Advanced Environmental Laboratories, Inc.
☒ Jacksonville: 8936 Western Way, Suite 7, Jacksonville, FL 32256 • (904) 363-9350 Fax (904) 363-9354
☐ Tampa: 5810-D Breckenridge Parkway, Tampa, FL 33610 • (813) 630-9616 Fax (813) 630-4327
☐ Gainesville: 2106 NW 67th Place, Suite 7, Gainesville, FL 32606 • (352) 367-1500 Fax (352) 367-0050

CHAIN OF CUSTODY RECORD

JOB NUMBER: J011124

CLIENT NAME: PermaFix of Florida, Inc
ADDRESS: 1940 NW 67th Place, Gainesville, Florida
PHONE: (352) 395-1518 FAX: (352)
CONTACT: Al Stevens

PROJECT NAME: Release Assessment - Areas of Concern A+C (Paint Spray Booth Area and Soil Mound Area)
P.O. NUMBER / PROJECT NUMBER:
PROJECT LOCATION: PermaFix of Florida, 1940 NW 67th Place, Gainesville, Florida
SAMPLED BY: Richard Moriarty (ESA; CompQAP #970173)
SPECIAL INSTRUCTIONS: Level 4 QC

TURN AROUND TIME or RESULTS BY:
☒ STANDARD ☐ VERBAL
☐ RUSH ☐ FAX
☐ OTHER ☐ HARD COPY

PRESERVATIVE: wet ice | wet ice | HNO3/ice | HNO3/ice
CONTAINER SIZE AND TYPE: 2x5g Encore, 1x250ml glass | 3x40ml vials, 1x500ml poly
ANALYSES REQUIRED: 8260/5035 | Total (8) RCRA Metals | 8260 Full | Total (8) RCRA Metals

	SAMPLE ID	SAMPLE DESCRIPTION	DATE	TIME	MATRIX	NO. OF CONTAIN.	8260/5035	Total (8) RCRA Metals	8260 Full	Total (8) RCRA Metals			LAB USE
9	PBSA-Soil-3C	Paint Spray Booth Area - Soil Boring #3 - Deep	4/3/01	15:40	Soil	3	X	X					
8	PBSA-Soil-4A	Paint Spray Booth Area - Soil Boring #4 - Shallow	4/3/01	16:00	Soil	3	X	X					-9
10	PBSA-Soil-4B	Paint Spray Booth Area - Soil Boring #4 - mid	4/3/01	16:15	Soil	3	X	X					-10
12	PBSA-Soil-4C	Paint Spray Booth Area - Soil Boring #4 - Deep	4/3/01	16:25	Soil	3	X	X					-11
13	PBSA-Soil-5A	Paint Spray Booth Area - Soil Boring #5 - Shallow	4/3/01	16:40	Soil	3	X	X					-12
14	PBSA-Soil-5B	Paint Spray Booth Area - Soil Boring #5 - mid	4/3/01	16:55	Soil	3	X	X					-13
15	PBSA-Soil-5C	Paint Spray Booth Area - Soil Boring #5 - Deep	4/3/01	17:20	Soil	3	X	X					-14
16	PBSA-Soil-Duplicate	Paint Spray Booth Area - Duplicate Soil Sample	4/3/01	00:00	Soil	3	X	X					-15
													-16

*GW—Groundwater W—Surface Water DW—Drinking Water WW—Waste Water SO—Solid/Soil SL—Sludge HW—Hazardous Waste A—Air

FIELD PARAMETERS/COMMENTS:
Sample containers stored in Ziploc Type bags and placed on wet ice for transport (RM)
Samples hand delivered to AEL, JAX 4/4/01 (RM)

TRANS. NO.	TRANSFERS RELINQUISHED BY:	ACCEPTED BY:	DATE:	TIME:
1	Richard Moriarty	[signature]	4/4/01	11:30
2				
3				
4				

CONTAINERS/SEALS INTACT ☒ YES ☐ NO
ON ICE/4°C ☒ YES ☐ NO
SHIPPED VIA: Hand delivered

DISTRIBUTION: White—Client Copy Yellow—Lab Copy Pink—Sample Copy

Advanced Environmental Laboratories, Inc.

☒ Jacksonville: 8936 Western Way, Suite 7, Jacksonville, FL 32256 • (904) 363-9350 Fax (904) 363-9354
☐ Tampa: 5810-D Breckenridge Parkway, Tampa, FL 33610 • (813) 630-9616 Fax (813) 630-4327
☐ Gainesville: 2106 NW 67th Place, Suite 7, Gainesville, FL 32606 • (352) 367-1500 Fax (352) 367-0050

CHAIN OF CUSTODY RECORD

JOB NUMBER: J011124

CLIENT NAME: PermaFix of Florida, Inc	PROJECT NAME: Release Assessment - Areas of Concern A and C (Paint Spray Booth Area and Soil Mound Area)
ADDRESS: 1940 NW 67th Place, Gainesville, Florida 32653	P.O. NUMBER / PROJECT NUMBER:
PHONE: (352) 395-1356 FAX: (352)	PROJECT LOCATION: PermaFix of Florida, 1940 NW 67th Place, Gainesville, Florida 32653
CONTACT: Mr Steve Douglas	SAMPLED BY: Richard Moriarty (ESA; DEP CompQAP # 970173)
TURN AROUND TIME or RESULTS DUE BY: ☒ STANDARD ☐ VERBAL ☐ RUSH ☐ FAX ☐ OTHER ☐ HARD COPY	SPECIAL INSTRUCTIONS: Level 4 QC

	8260 Full / 5035	Total (8) RCRA Metals	8260 Full	Total (8) RCRA Metals			LAB USE
PRESERVATIVE		w/ ice	w/ ice	HCl/ice	HNO3/ice		
CONTAINER SIZE AND TYPE	2x5 g Encore	1x250 ml Glass	3x40 ml vials	4x500 ml poly			

	SAMPLE ID	SAMPLE DESCRIPTION	DATE	TIME	MATRIX	NO. OF CONTAIN.	8260 Full/5035	Total (8) RCRA Metals	8260 Full	Total (8) RCRA Metals			LAB USE
17	SMA-Soil-1A	Soil Mound Area - Soil Boring #1 - Shallow	4/3/01	18:05	Soil	3	X	X					-17
18	SMA-Soil-1B	Soil Mound Area - Soil Boring #1 - Mid	4/3/01	18:20	Soil	3	X	X					-18
19	SMA-Soil-1C	Soil Mound Area - Soil Boring #1 - Deep	4/3/01	18:35	Soil	3	X	X					-19
20	PBSA-Soil-Matrix Spike	QA/QC Sample - Matrix Spike	4/3/01	16:45	Soil	3	X	X					-20
21	PBSA-Soil-Matrix Spike Dup.	QA/QC Sample - Matrix Spike Duplicate	4/3/01	16:45	Soil	3	X	X					-21
22	Equipment Rinsate Blank	QA/QC Sample - Equipment Rinsate	4/3/01	13:30	DI water	4			X	X			-22
23	Trip Blank	QA/QC Sample - Trip Blank (VOC's only)	4/3/01	07:00	DI water	3			X				-23

* GW—Groundwater SW—Surface Water DW—Drinking Water WW—Waste Water SO—Solid/Soil SL—Sludge HW—Hazardous Waste A—Air

FIELD PARAMETERS / COMMENTS: Sample Containers sealed in Ziplock type BAGS and placed on wet ice FOR Transport (RM)
Samples Hand-Delivered to AEL, Jacksonville 4/4/01 (RM)

TRANS. NO.	TRANSFERS RELINQUISHED BY:	ACCEPTED BY:	DATE:	TIME:
1	Richard Moriarty	[signature]	4/4/01	1130
2				
3				
4				

CONTAINERS/SEALS INTACT ☒ YES ☐ NO | ON ICE/4°C ☒ YES ☐ NO | SHIPPED VIA: Hand-Delivered

DISTRIBUTION: White—Client Copy Yellow—Lab Copy Pink—Sample Copy

Received Apr-24-01 01:02pm from 9043639354 → ESA INC page 25
Advanced Environmental Labs 9043639354 04/24/01 11:55A P.025