UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT BUILDING 2700.4 TMS NO. C-93-2613 UST NO. 62 NJDEP FACILITY UST NO. 081515 SPILL CASE NO. 92-3-7-1047-43

January 1995

Work Order No.: 03886-088-001

Prepared For:

UNITED STATES ARMY
Directorate of Public Works
Building 167
Fort Monmouth, New Jersey 07703

Prepared by:

ROY F. WESTON, INC.
Raritan Plaza I
4th Floor
Raritan Center
Edison, New Jersey 08837

TABLE OF CONTENTS

Section	Title	Page
	EXECUTIVE SUMMARY	ES-1
1.0	**UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES**	**1-1**
	1.1 Overview	1-1
	1.2 Site Description and UST History	1-2
	1.3 Geological/Hydrogeological Setting	1-2
	1.3.1 Geological Setting	1-2
	1.3.2 Hydrogeological Setting	1-5
	1.3.3 Offsite Groundwater Usage	1-6
	1.4 Health and Safety	1-7
	1.5 Removal of Underground Storage Tank	1-7
	1.5.1 General Procedures	1-7
	1.5.2 Underground Storage Tank Excavation	1-8
	1.6 Underground Storage Tank Transportation and Disposal	1-8
	1.7 Management of Excavated Soils	1-9
2.0	**SITE INVESTIGATION ACTIVITIES**	**2-1**
	2.1 Overview	2-1
	2.2 Field Screening/Monitoring	2-2
	2.3 Soil Sampling	2-2
3.0	**CONCLUSIONS AND RECOMMENDATIONS**	**3-1**
	3.1 Soil Sampling Results	3-1
	3.2 Conclusions and Recommendations	3-1

TABLE OF CONTENTS (CONTINUED)

LIST OF APPENDICES

Appendix A - NJDEP-BUST Closure Approval Correspondence with NJDEP
Appendix B - NJDEP UST Site Assessment Summary Form
Appendix C - Monitor Well Information
Appendix D - Well Search Information
Appendix E - Waste Disposal Certificates
Appendix F - Analytical Data Package

LIST OF TABLES

Table	Title	Page
2-1	Summary of Post-Excavation Sampling	2-3
3-1	Summary of Analytical Results	3-2
3-2	Analytical Methods/Quality Assurance Summary Table	3-3

LIST OF FIGURES

Figure	Title	Page
1-1	Facility Location Map	1-3
1-2	Site Plan	1-4
2-1	Post-Excavation Sampling Locations	2-4

EXECUTIVE SUMMARY

Due to inventory discrepancies, fuel loss with no recorded usage, a discharge was reported to the NJDEP by the Fort Monmouth Directorate of Public Works (DPW) on 7 March 1992 (Case # 92-3-7-1047-43). Underground storage tank (UST) No. 62 was located adjacent to Building 2700.4 in the Charles Wood area of Fort Monmouth. Tank No. 62, was a single walled steel, 550-gallon capacity, diesel fuel tank.

On 3 June 1993, an UST Decommissioning/Closure Plan was submitted to the New Jersey Department of Environmental Protection and Energy (NJDEP) by the DPW. Closure Approval No. TMS C-93-2613 was issued with an effective date of 12 July 1993. The UST Closure Plan Approval application, UST Decommissioning/Closure Plan and Closure Approval are provided in Appendix A.

On 10 September 1993, one UST was closed at U.S. Army Fort Monmouth, in Fort Monmouth, New Jersey. All Service Environmental (ASE) began the tank closure on 8 September 1993. On 10 September 1993 ASE was replaced by Serv-Air, Inc. Serv-Air, Inc. completed the tank closure.

Soils surrounding the tank were visually inspected and screened with air monitoring instruments for evidence of contamination. The tank was inspected following removal for cracks, corrosion holes and puncture holes as indications of historical leakage from the tank. Several corrosion holes of approximately 1/16-inch diameter were noted. Following removal of the tank, approximately 35 tons of potentially contaminated soil was excavated and transported to the Charles Wood area hazardous waste accumulation site at Fort Monmouth, for storage prior to ultimate disposal at Soil Remediation of Philadelphia. No groundwater was encountered in the tank excavation.

On 10 September 1993, five post-excavation soil samples were collected and analyzed by U.S. Army Fort Monmouth Environmental Laboratory (FMEL) for total petroleum hydrocarbons (TPHC). In accordance with NJDEP requirements, samples which exhibited a concentration of TPHC exceeding 1,000 milligrams per kilogram (mg/kg) were analyzed for volatile organic compounds plus 15 tentatively identified compounds (VO+15). The results indicated a concentration of TPHC (7,520 mg/kg) which exceeded the NJDEP requirement of 1,000 mg/kg.

On 13 September 1993, Sample Site E was analyzed by 21st Century Environmental Laboratories, Inc. for VO+15 and base neutral compounds plus 15 tentatively identified compounds (BN+15). Analytical results were compared to NJDEP Impact to Ground Water (ITGW) and Residential Direct Contact (RDC) Soil Cleanup Criteria. The results were below both sets of criteria.

Based on the analytical testing results indicating that all potentially contaminated soils have been removed, no further action is recommended for soils.

On 19 July 1994, in accordance with N.J.A.C. 7:26E-1 et seq., one monitoring well was installed in the excavation. The well will be sampled in accordance with NJDEP requirements outlined in the Field Sampling Procedures Manual, dated May 1992. Groundwater samples will be analyzed for volatile organics with a library search, and base neutral compounds with library search. Results of the testing and recommendations for groundwater will be provided in an addendum to this report.

SECTION 1.0

UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

On 10 September 1993, one UST identified as Tank No. 62, was closed by removal at Building 2700.4, at U.S. Army Fort Monmouth, New Jersey. UST No. 62 was a single wall steel, 550-gallon capacity, diesel fuel tank. The tank was located immediately adjacent to Building 2700.4. This report presents the results of the DPW's implementation of the UST Decommissioning/Closure Plan submitted to the NJDEP-DHWM on 3 June 1993 and approved 12 July 1993 (Closure approval No. C-93-2613).

All activities associated with the decommissioning of UST No. 62 complied with all applicable Federal, State and Local laws and ordinances in effect at the date of decommissioning. These laws included but were not limited to: N.J.A.C. 7:14B-1 et seq., N.J.A.C. 5:23-1 et seq., N.J.A.C. 7:26E-1 et seq. and Occupational Safety and Health Administration (OSHA) 29 CFR 1910.146 & 29 CFR 1910.120. All permits including but not limited to the NJDEP-approved Decommissioning/Closure Plan were posted onsite for inspection. The UST Closure was initiated by ASE. ASE was registered and certified by NJDEP, to perform UST closures at the time of the tank decommissioning. Prior to completion of the UST closure, ASE resigned from the project. Serv-Air, Inc., under the supervision of Mr. Charles Appleby, U.S. Army, Fort Monmouth, completed the UST closure. Mr. Appleby is certified by NJDEP to perform UST closures.

The NJDEP Closure Approval and correspondence with the NJDEP have been included in Appendix A. The UST Site Assessment Summary Form for UST No. 62 has been included in Appendix B. The UST Site Assessment Summary Form has been signed by Mr. James Ott, Acting Director of DPW, U.S. Army Fort Monmouth.

This UST Closure and Site Investigation Report was prepared by Roy F. Weston Inc. (WESTON®), to assist the United State Army Directorate of Public Works (DPW) in complying with the NJDEP Bureau of Underground Storage Tanks (NJDEP-BUST) regulations. The applicable NJDEP-BUST regulations at the date of closure were the "Technical Requirements for Site Remediation" (N.J.A.C. 7:26E-1 et seq. dated June 1993).

Section 1 of this UST Closure and Site Investigation Report provides a summary of the tank decommissioning activities. Section 2 of this report describes the site investigation activities. Conclusions and recommendations, including the results of the soil sampling investigation, are presented in the final section of this report.

1.2 SITE DESCRIPTION AND UST HISTORY

Building 2700.4 is located in the Charles Wood area of U.S. Army, Fort Monmouth. A site location map is provided in Figure 1-1. The building is elevated above the area surrounding it with a concrete pad located approximately 40 feet to the southwest. Building 2700.4 is used as a research and development facility, also known as the Myer Center. UST No. 62 was located immediately adjacent to Building 2700.4. A site plan is provided in Figure 1-2.

Due to inventory discrepancies, fuel loss with no recorded usage, a discharge was reported to the NJDEP by the DPW on 7 March 1992 (Case # 92-3-7-1047-43). UST No. 62 was located adjacent to Building 2700.4 in the Charles Wood area of Fort Monmouth. Tank No. 62, was a single walled steel, 550-gallon capacity, diesel fuel tank.

On 3 June 1993, an UST Decommissioning/Closure Plan was submitted to the NJDEP by the DPW. Closure Approval No. TMS C-93-2613 was issued with an effective date of 12 July 1993. The UST Closure Plan Approval application, UST Decommissioning/Closure Plan and Closure Approval are provided in Appendix A.

On 10 September 1993, one UST was closed at U.S. Army Fort Monmouth, in Fort Monmouth, New Jersey. ASE began the tank closure on 8 September 1993. On 10 September 1993 ASE was replaced by Serv-Air, Inc. Serv-Air, Inc., under the supervision of Mr. Charles Appleby, U.S. Army, Fort Monmouth, performed the tank closure.

1.3 GEOLOGICAL/HYDROGEOLOGICAL SETTING

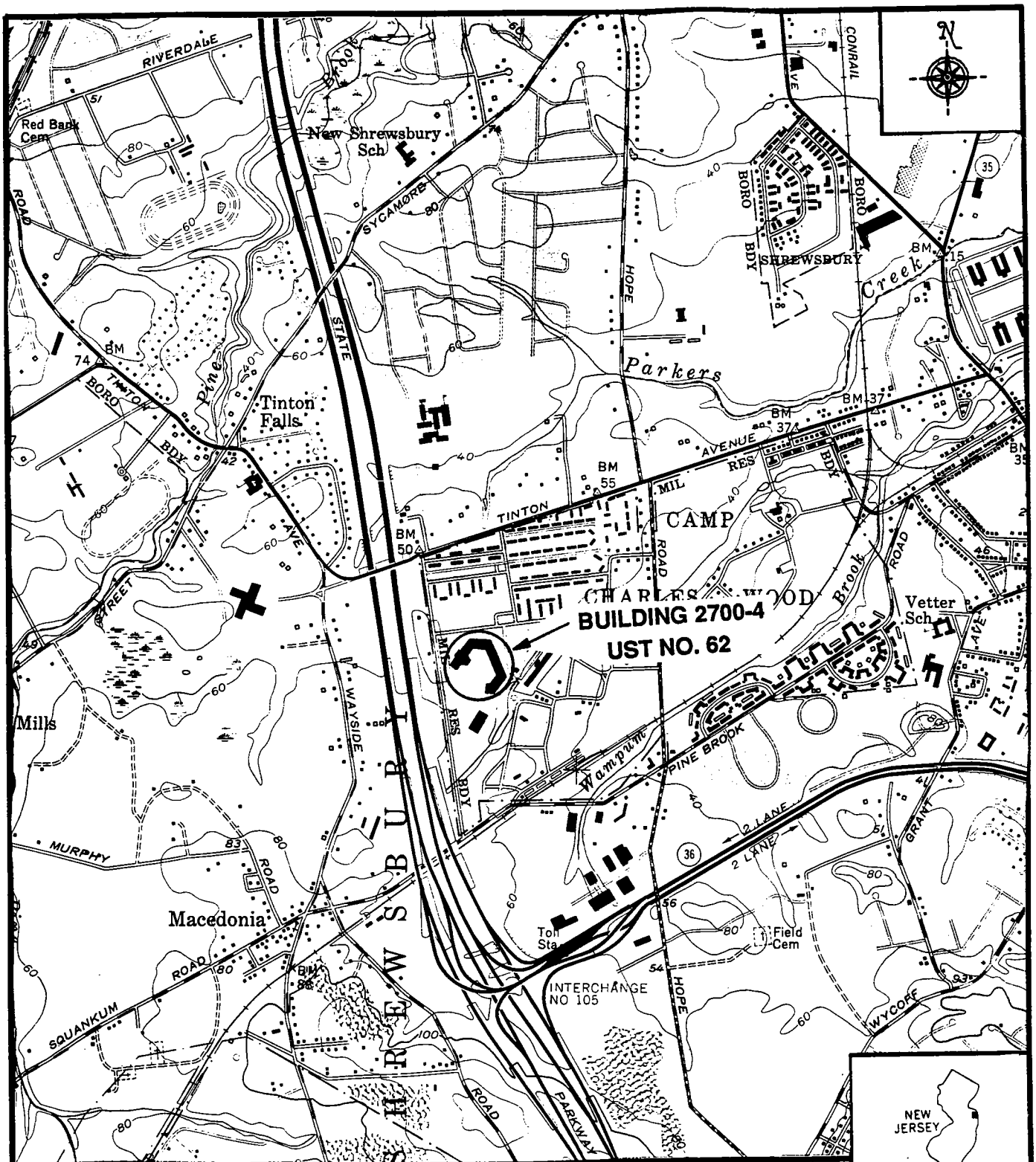
The following is a description of the geological/hydrogeological setting of the area surrounding Building 2700.4. Included is a description of the regional geology of the area surrounding Fort Monmouth as well as descriptions of the local geology and hydrogeology of the Charles Wood area.

1.3.1 Geological Setting

Regional Geology

Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain physiographic province. The Main Post, Charles Wood, and the Evans areas are located in what may be referred to as the Outer Coastal Plain subprovince, or the Outer Lowlands.

In general, New Jersey, Coastal Plain formations consist of a seaward-dipping wedge of unconsolidated deposits of clay, silt, sand, and gravel. These formations typically strike northeast-southwest with a dip ranging from 10 to 60 feet per mile and were deposited on



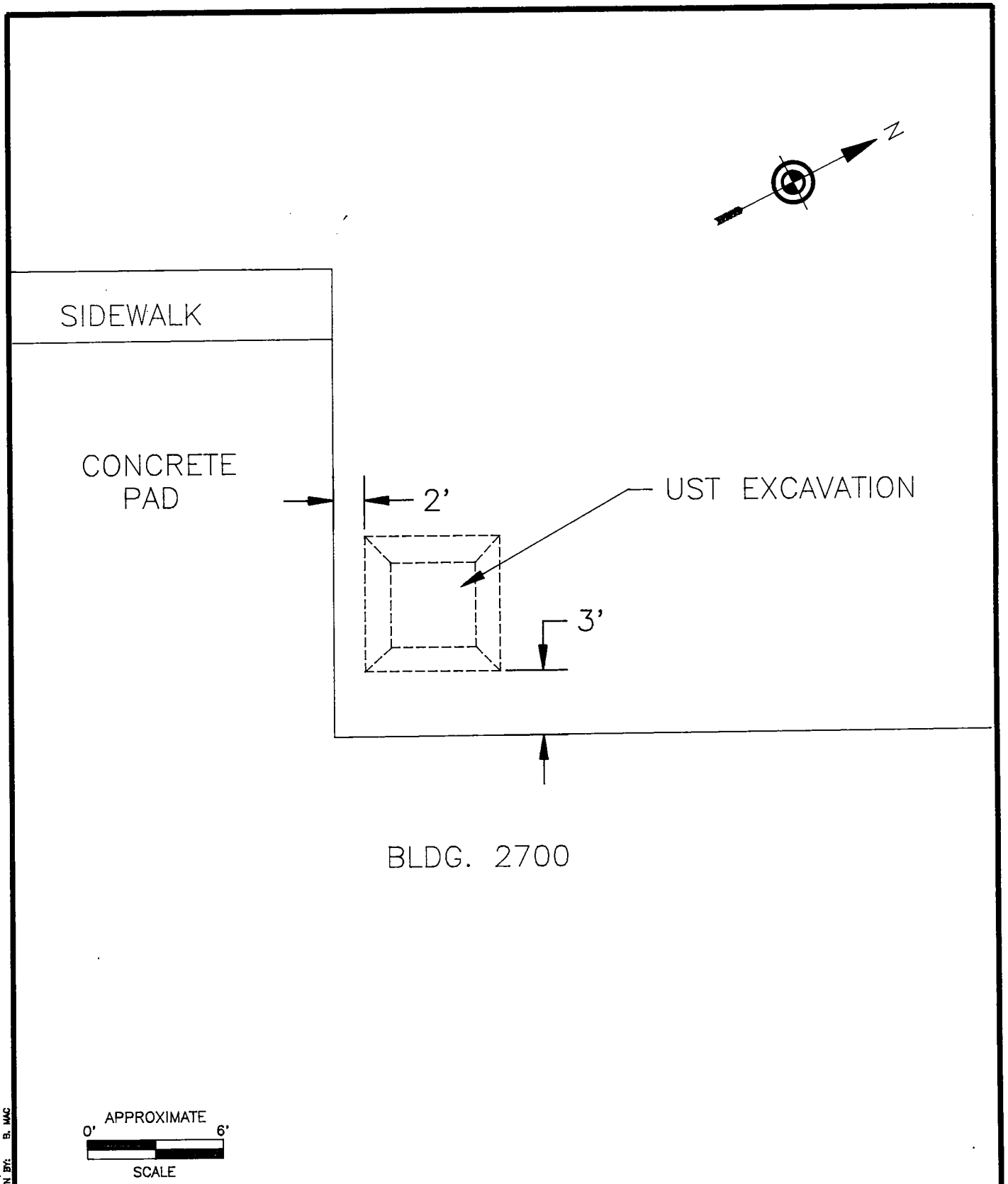
REFERENCE: U.S.G.S. QUADRANGLE LONG BRANCH, NJ: PHOTOREVISED 1981
CONTOUR INTERVAL 20 FEET SCALE 1 INCH = 2000 FEET

UST LATITUDE: N 40 Deg. 17 Min. 45 Sec.
UST LONGITUDE: W 74 Deg. 6 Min. 45 Sec.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

FIGURE 1-1
FACILITY LOCATION MAP
U.S. ARMY - DIRECTORATE OF PUBLIC WORKS
FORT MONMOUTH, NEW JERSEY

COG-ESPC.DRW



REVISION #: 1 DATE: 7/25/94 PLOT NAME:
FILE NAME: DEH-2700.DWG DRAWN BY: B. MAC

WESTON
MANAGERS DESIGNERS/CONSULTANTS

PROJECT NAME:
UNDERGROUND STORAGE TANK CLOSURE
AND SITE INVESTIGATION REPORT
BUILDING 2700-4 – TANK NO. 62
FORT MONMOUTH, NEW JERSEY

CLIENT NAME: U.S. ARMY – FORT MONMOUTH
DIRECTORATE OF PUBLIC WORKS

SITE PLAN

DATE: 6/10/94

FIGURE #: 1-2

Precambrian and lower Paleozoic rocks (Zapecza, 1989). These sediments, predominantly derived from deltaic, shallow marine, and continental shelf environments, date from Cretaceous through the Quaternary Periods. The mineralogy ranges from quartz to glauconite.

The formations record several major transgressive/regressive cycles and contain units which are generally thicker to the southeast and reflect a deeper water environment. Over 20 regional geologic units are present within the sediments of the Coastal Plain. Regressive, upward-coarsening deposits are usually aquifers (e.g., Englishtown and Kirkwood Formations, and the Cohansey Sand) while the transgressive deposits act as confining units (e.g., the Merchantville, Marshalltown, and Navesink Formations). The individual thicknesses for these units vary greatly (i.e., from several feet to several hundred feet). The Coastal Plain deposits thicken to the southeast from the Fall Line to greater than 6,500 feet in Cape May County (Brown and Zapecza, 1990).

Local Geology

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Charles Wood area. The Red Bank sand conformably overlies the Navesink Formation and dips to the southeast at 35 feet per mile. The upper member (Shrewsbury) of the Red Bank sand is a yellowish-gray to reddish-brown clayey, medium-to-course-grained sand that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark grey to black, medium-to-fine grained sand with abundant clay,mica, and glauconite.

The Tinton sand conformably overlies the Red Bank Sand and ranges from a clayey, medium-to-very coarse grained feldspathic quartz and glauconite sand to a glauconitic coarse sand. The color varies from dark yellowish-orange or light brown to moderate brown and from light olive to grayish olive. Glauconite may constitute 60 to 80 percent of the sand fraction in the upper part of the unit (Minard, 1969). The upper part of the Tinton is often highly oxidized and iron-oxide encrusted (Minard).

Over the last 80 years, the natural topography of Fort Monmouth has been altered by excavation and filling activities by the military. Topographic elevations for the Charles Wood area range from five feet above mean sea level (MSL) to 31 feet above MSL.

1.3.2 Hydrogeological Setting

Hydrogeology

The water table aquifer at the Charles Wood area is identified as part of the "composite confining units", or minor aquifers. The minor aquifers include the Navesink formation, Red

Bank Sand, Tinton Sand, Hornerstown Sand, Vincentown Formation, Manasquan Formation, Shark River Formation, Piney Point Formation, and the basal clay of the Kirkwood Formation.

Based on records from wells drilled at the Charles Wood area, ground water is typically encountered at depths of two to nine feet below ground surface (BGS). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may produce from 2 to 25 gallons per minute (gpm). Some well owners have reported acidic water that requires treatment to remove iron.

Shallow groundwater is locally influenced within the Charles Wood area by the following factors:

- tidal influence (based on proximity to the Atlantic Ocean, rivers and tributaries),
- topography,
- nature of the fill material within the Charles Wood area,
- presence of clay and silt lenses in the natural overburden deposits, and
- local groundwater recharge areas (i.e. stream, lakes).

Due to the fluvial nature of the overburden deposits (i.e. sand and clay lenses), shallow groundwater flow direction is best determined on a case-by-case basis. This is consistent with lithologies observed in borings installed within the Charles Wood area, which primarily consisted of fine-to-medium grained sands, with occasional lenses or laminations of silt and/or clay.

Based on information obtained from the Building 2567 monitoring wells, groundwater flows in a southeasterly direction. Building No. 2567 is located approximately 2,000 feet east of Building 2700.4. Building 2700.4 lies directly southeast of the former UST No. 62 location. On 19 July 1994, one well was installed to assess groundwater conditions. Groundwater sampling had not been performed at the time this report was completed. Monitor well permit, log and well records are provided in Appendix C.

Building 2700.4 is less than 1 mile north of Wampum Brook, the nearest water body. The Atlantic Ocean is located approximately 6 miles east of the site.

1.3.3 Offsite Groundwater Usage

In compliance with the NJDEP regulations, WESTON conducted a well search to identify all irrigation, monitoring, domestic, industrial and public supply wells within one half mile of U.S. Army Fort Monmouth, Charles Wood area. The file search produced records for 68 wells. The well search summary table includes the following information on surrounding wells: well identification number; well owner; well address; total depth (feet BGS); casing length (feet); static water level elevation (feet BGS); use code; and NJDEP permit number. In addition, a summary table of all U.S. Army wells located at Fort Monmouth, which includes the following information: well number; NJDEP permit number; New Jersey State Plane Coordinates; casing

elevation; elevation of ground surface; and, well records for the nearest identified offsite well have been included, if available. This information is included in Appendix D.

A review of the well records indicated that the majority of the wells within the area of concern are used for irrigation purposes. A domestic well (Permit Number 29-19540), owned by Wolf Press/Linda Daly is the closest to the site in the downgradient direction. The well is located at 1138 Pinebrook Road, approximately 2,700 feet southeast of the site. A production well, owned by U.S. Army Fort Monmouth is the closest well, located approximately 1,000 feet east of the site.

1.4 HEALTH AND SAFETY

Before, during, and after all activities, hazards at the work site which may have posed a threat to the health and safety of all personnel who were involved with, or were affected by, the decommissioning of the UST system were minimized. All areas which posed, or may have been suspected to pose a vapor hazard were monitored by a qualified individual utilizing approved equipment. The trained individual ascertained if the area was properly vented to render the area safe, as defined by OSHA.

1.5 REMOVAL OF UNDERGROUND STORAGE TANK

1.5.1 General Procedures

On 10 September 1993, UST No. 62 was closed by removal at Building 2700.4 in the Charles Wood area of Fort Monmouth. Tank closure activities were conducted as follows:

- All underground obstructions (utilities,... etc.) were marked out by the contractor performing the closure prior to excavation activities.
- Surface materials (i.e, asphalt, concrete, etc...) were excavated and staged separate from all soils. These materials were later recycled in accordance with all applicable laws and regulations.
- The tank atmosphere was inerted.
- Access ways on top of the tank were opened.
- Licensed tank closure contractor personnel entered the tank to visually inspect and manually clean the insides of the tank.
- All wastes (tank bottom sludge and tank rinsate) generated during cleaning were collected and disposed.

- Post closure soil samples were collected for laboratory analysis.
- The tank was removed from the excavation and staged on plastic sheeting.
- Approximately 35 tons of potentially contaminated soil was excavated during the tank closure, and transported to the Charles Wood area hazardous waste accumulation site for storage prior to ultimate disposal/reuse at Soil Remediation of Philadelphia.
- The excavation was backfilled with clean fill material to the original surface grade.
- A Sub-Surface Evaluator from the DPW was present during all closure activities.

1.5.2 Underground Storage Tank Excavation

Soil was excavated to expose the UST and the associated piping. The piping was not removed/disturbed until all free product was drained into the UST. The UST was rendered vapor free by purging prior to any cutting or access. After removal of the associated piping, a manway from the UST was made to allow for proper cleaning. The UST was completely emptied of all liquids prior to removal. All of the openings in the tank were plugged except for one hole (manway).

After the UST was removed from the excavation, it was staged on polyethylene sheeting and examined for cracks, corrosion or puncture holes. The presence or absence of holes was documented by the Sub-Surface Evaluator. Several corrosion holes of approximately 1/16-inch diameter were noted. A discharge was reported to the NJDEP by the DPW on 7 March 1992 (Case No. 92-3-7-1047-43). No groundwater was present in the tank excavation.

Soils surrounding the UST were screened visually and with a Photoionization Detector (PID) for evidence of contamination. Approximately 35 tons of potentially contaminated soil were removed from the area surrounding UST No. 62. The potentially contaminated soil was transported to the Charles Wood area hazardous waste accumulation site for storage prior to ultimate disposal/reuse at Soil Remediation of Philadelphia.

1.6 UNDERGROUND STORAGE TANK TRANSPORTATION AND DISPOSAL

The tank was transported by Serv-Air, Inc. to Mazza and Sons, Inc., for recycling in compliance with all applicable regulations and laws. A copy of the weighmaster certificate is enclosed in Appendix E.

The contractor labelled the UST prior to transport with the following information:

- Site of origin,
- Contact person,
- NJDEP UST Facility ID number,
- Name of transporter/contact person, and
- Destination site/contact person.

1.7 MANAGEMENT OF EXCAVATED SOIL

Approximately 35 tons of potentially contaminated soil were removed from the area surrounding UST No. 62 and placed on and covered with polyethylene sheets. Potentially contaminated soils were stockpiled separately from other excavated material. Potentially contaminated soils were transported to the Charles Wood area hazardous waste accumulation site for storage prior to ultimate disposal at Soil Remediation of Philadelphia. All soils free of evidence of contamination were backfilled into the excavation following removal of the UST.

WESTON
MANAGERS DESIGNERS CONSULTANTS

SECTION 2.0

SITE INVESTIGATION ACTIVITIES

2.1 OVERVIEW

The Site Investigation was managed and carried out by U.S ARMY DPW personnel. All analyses were performed and reported by FMEL and 21st Century Environmental Laboratories, which are NJDEP-certified testing laboratories. All sampling was performed under the direct supervision of a NJDEP Certified Sub-Surface Evaluator according to the methods described in the NJDEP Field Sampling Procedures Manual (May 1992). Sampling frequency and parameters analyzed complied with the NJDEP-BUST document "Technical Requirements for Site Remediation" (June 1993) which was the applicable regulation at the date of closure. All records of the Site Investigation activities are maintained by Fort Monmouth DPW: Environmental Office.

The following Parties participated in Closure and Site Investigation activities:

- Closure Contractor #1: All Service Environmental, Inc.
  Contact Person: Mark Turoff
  Phone Number: (914) 365-0800
  NJDEP Company Certification No.: 3100194

- Closure Contractor #2: Serv-Air, Inc.
  HazMat Response Team
  Contact Person: Tom Berger
  Phone Number: (908) 532-6147

- Subsurface Evaluator: Charles Appleby
  Employer: U.S. Army, Fort Monmouth
  Phone Number: (908) 532-6224
  NJDEP Certification No.: 2056

- Analytical Laboratory: 21st Century Environmental Laboratory
  Contact Person: Richard W. Lynch
  Phone Number: (609) 467-9521
  NJDEP Laboratory Certification No.: 08031

- Analytical Laboratory: U.S. Army Fort Monmouth Environmental Testing Laboratory
  Contact Person: Brian McKee
  Phone Number: (609) 532-4359
  NJDEP Laboratory Certification No.: 13461

2.2 FIELD SCREENING/MONITORING

All soils that were excavated as part of the removal of the UST were screened using a PID, for evidence of contamination. Soils were also inspected visually for evidence of contamination (staining, free product, etc..). Soils on the sidewalls and base of the excavation were screened with a PID by an individual under the direct supervision of the NJDEP Certified Sub-Surface Evaluator. Evidence of contamination was noted during excavation of soils surrounding the UST and soils were subsequently removed.

2.3 SOIL SAMPLING

On 10 September 1993, following the removal of UST No. 62, five post-excavation samples were collected for analysis by FMEL for TPHC.

On 13 September 1993, one sample, Sample No. Site E, was collected for analysis by 21st Century Environmental Laboratory for VO+15 and BN+15. The sample, designated Site E, was analyzed because the TPHC result for the sample exceeded 1,000 mg/kg.

A summary of sampling activities including parameters analyzed is provided in Table 2-1. Figure 2-1 depicts the location of the post-excavation soil samples. The post-excavation soil samples were collected using decontaminated stainless steel scoops. Following soil sampling activities, the samples were chilled and delivered to the applicable testing laboratory.

The frequency of sampling and parameters analyzed were consistent with the applicable NJDEP regulations at the date of closure, which were the "Technical Requirements for Site Remediation" (N.J.A.C. 7:26E-1 et seq. dated June 1993).

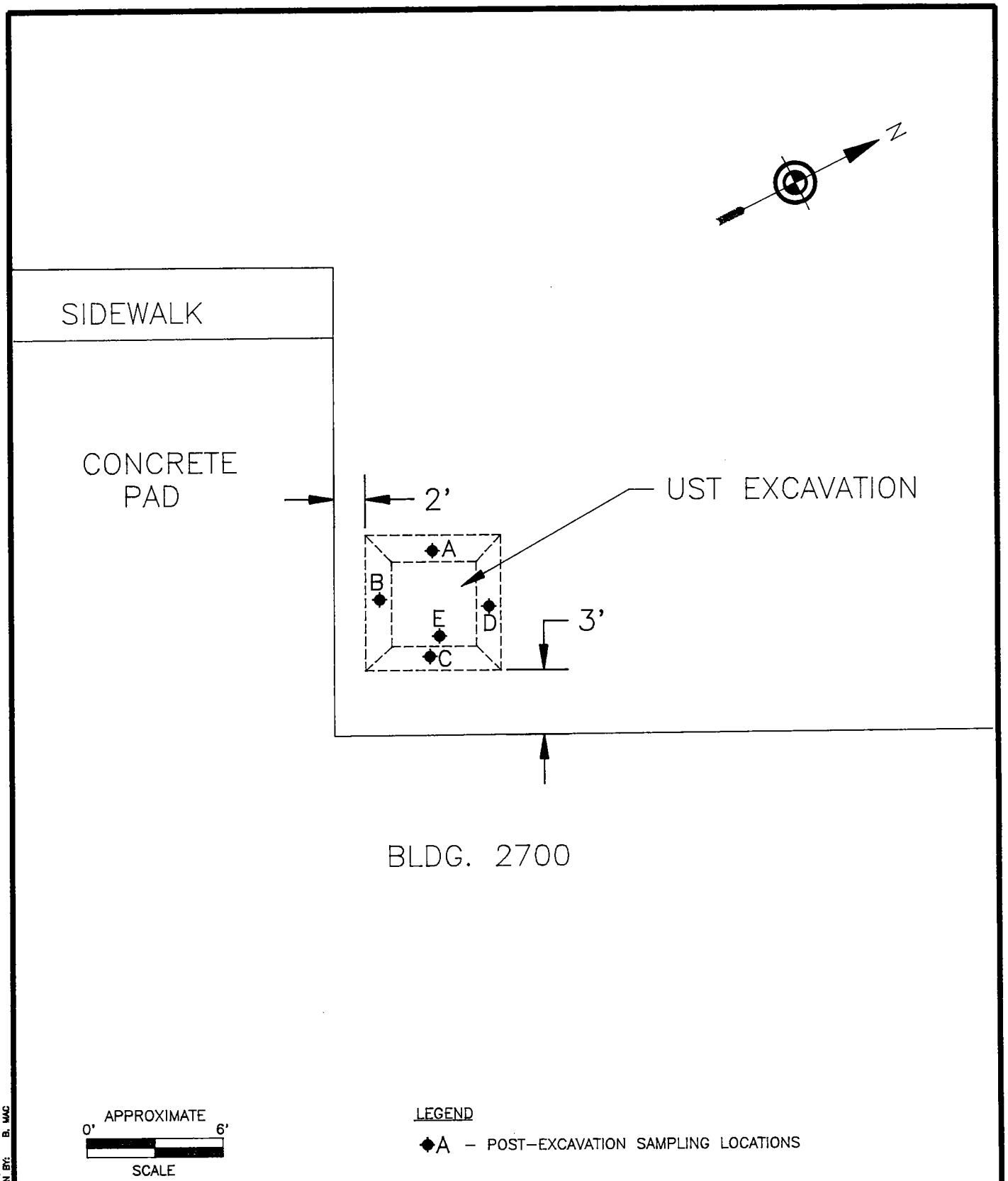
TABLE 2-1

SUMMARY OF POST-EXCAVATION SAMPLING
UST NO. 62
BUILDING NO. 2700.4
FORT MONMOUTH, NEW JERSEY

Sample ID No.	Date of Collection	Matrix	Sample Type	Analytical Parameters	Sampling Method
Site A	9/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
Site B	9/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
Site C	9/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
Site D	9/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
Site E	9/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
Site F (Duplicate of site E)	9/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
Site E (Pit Bottom)	9/13/93	Soil	Post-Excavation	BN+15, VO+15	Stainless Steel Scoop

Notes:

TPHC: - Total Petroleum Hydrocarbons
BN+15 - Base Neutral Analysis plus 15 Tentatively Identified Compounds
VO+15 - Volatile Organic Analysis plus 15 Tentatively Identified Compounds



REVISION #: 1 DATE: 7/25/94 PLOT NAME:
FILE NAME: DEH-2700.DWG DRAWN BY: B. MAC

WESTON MANAGERS DESIGNERS/CONSULTANTS

PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT BUILDING 2700–4 – TANK NO. 62
FORT MONMOUTH, NEW JERSEY

CLIENT NAME: U.S. ARMY – FORT MONMOUTH DIRECTORATE OF PUBLIC WORKS

POST–EXCAVATION SAMPLING LOCATIONS

DATE: 6/10/94

FIGURE #: 2–1

WESTON
MANAGERS DESIGNERS CONSULTANTS

SECTION 3.0

CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

To evaluate soil conditions following removal of the UST and associated soils, the post-excavation sample results were compared to NJDEP ITGW and RDC Soil Cleanup Criteria (N.J.A.C. 7:26D and revisions dated 3 February 1994). Summaries of analytical results for soils are presented in Table No. 3-1.

A summary of the analytical methods used and quality assurance information is provided in Table 3-2. The analytical data package summary is provided in Appendix F. The full data package, including associated quality control and chromatograph data is on file at U.S. Army Fort Monmouth, DPW.

In accordance with NJDEP requirements, those samples which exhibited a concentration of TPHC exceeding 1,000 milligrams per kilogram (mg/kg) shall be analyzed for volatile organic compounds plus 15 tentatively identified compounds (VO+15). The results of the 10 September 1993 soil analysis indicated a concentration of TPHC (7,520 mg/kg) in the sample designated Site E, which exceeded the NJDEP requirement of 1,000 mg/kg.

On 13 September 1993, a sample was collected from the same location as Site E and analyzed for VO+15 and BN+15. The results of the 13 September 1993 soil analysis indicated non-detectable concentrations of contaminants or concentrations of contaminants below NJDEP ITGW and RDC Soil Cleanup Criteria.

3.2 CONCLUSIONS AND RECOMMENDATIONS:

On 10 September 1993, DPW successfully closed UST No. 62 at Building 2700.4 in the Charles Wood area of U.S. Army Fort Monmouth.

Based on the analytical testing results indicating that all potentially contaminated soils have been removed, no further action is recommended for soils.

In accordance with N.J.A.C. 7:26E-1 et seq. a minimum of one monitoring well will be installed in the excavation. The well will be installed, developed and sampled in accordance with NJDEP requirements outlined in the Field Sampling Procedures Manual, May 1992. Groundwater samples will be analyzed for volatile organics with a library search, and base neutral extractable compounds with a library search.

Results of the testing and recommendations for groundwater will be provided in an addendum to this report.

TABLE 3-1

SUMMARY OF ANALYTICAL RESULTS
UST NO. 62
BUILDING NO. 2700.4
FORT MONMOUTH, NEW JERSEY

Sample ID No.		Site A	Site B	Site C	Site D	Site E	Site F (Duplicate of Site E)	Site E (Pit Bottom)	NJDEP Impact to Groundwater Soil Cleanup Criteria	Residential Direct Contact Soil Cleanup Criteria
Lab ID No.		1268.1	1268.2	1268.3	1268.4	1268.5	1268.6	A4024		
Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Type		PE	PE	PE	PE	PE	PE	PE		
Date of Collection		9/10/93	9/10/93	9/10/93	9/10/93	9/10/93	9/10/93	9/13/93		
Analytical Parameters	Units									
TPHC	mg/kg	ND	11.7	ND	309	7,520	7,440	NR	NC	NC
Base Neutral Compounds										
Naphthalene	mg/kg	NR	NR	NR	NR	NR	NR	6.9 J	100	230
2-Methylnaphthalene	mg/kg	NR	NR	NR	NR	NR	NR	43	NC	NC
Dibenzofuran	mg/kg	NR	NR	NR	NR	NR	NR	2.1 J	NC	NC
Fluorene	mg/kg	NR	NR	NR	NR	NR	NR	5.4 J	100	2,300
Phenanthrene	mg/kg	NR	NR	NR	NR	NR	NR	11 J	NC	NC
Volatile Organic Compounds										
Methylene Chloride	mg/kg	NR	NR	NR	NR	NR	NR	0.93 B	10	49
Xylenes (Total)	mg/kg	NR	NR	NR	NR	NR	NR	5.3	10	410
Toluene	mg/kg	NR	NR	NR	NR	NR	NR	0.86	500	1,000
Ethylbenzene	mg/kg	NR	NR	NR	NR	NR	NR	1.0	100	1,000

Notes:
TPHC: - Total Petroleum hydrocarbons.
mg/kg: - Milligrams per Kilograms.
PE: - Post Excavation.
NC: - No cleanup criterion has been proposed for TPHC by NJDEP.
J: - Indicates an estimated amount.
NR: - Not requested.
NC: - No subsurface cleanup criterion has been proposed for this analyte by NJDEP.
B: - Indicates also present in blank.

TABLE 3-2

ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE
UST NO. 62
BUILDING NO. 2700.4
FORT MONMOUTH, NEW JERSEY

Analytical Parameter	No. of Samples Collected	Matrix	Date Collected	Date Analysis Completed	Preservation Method	USEPA SW-846 Analytical Method
TPHC	6	S	9/10/93	9/10/93	Cool to 4°C	418.1
BNA	1	S	9/10/93	9/14/93	Cool to 4°C	8270
VOC	1	S	9/10/93	9/14/93	Cool to 4°C	USEPA-CLP-IFB
VOC	1	S	9/13/93	9/14/93	Cool to 4°C	USEPA-CLP-IFB
BNA	1	S	9/13/93	9/14/93	Cool to 4°C	8270

Notes:

TPHC - Total Petroleum Hydrocarbons.
C - Celsius.
BNA - Base Neutral Analysis.
VOC - Volatile Organic Compound Analysis.

APPENDIX A

NJDEP-BUST CLOSURE APPROVAL, CORRESPONDENCE WITH NJDEP

UST-013
9/90

FOR STATE USE ONLY	
UST #	
Date Rec'd	
CA #	
Staff	

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES
BUREAU OF UNDERGROUND STORAGE TANKS
TANK MANAGEMENT SECTION

CN 029, 401 EAST STATE STREET
TRENTON, N.J. 08625-0029

UNDERGROUND STORAGE TANK CLOSURE PLAN APPROVAL APPLICATION

Under the provisions of the Underground Storage of Hazardous Substances Act in accordance with N.J.A.C. 7:14B-9 et seq.

This application form shall be used by all applicants who plan to close Underground Storage Tank Systems pursuant to N.J.A.C. 7:14B-9 et seq.

INSTRUCTIONS:

- *Before completing application form please refer to the attached Application Instruction Sheet.*
- *Please print legibly or type.*
- *Fill in all appropriate blanks. This application form requires that additional sheets be attached for some of the information requested. You may call the Bureau of Underground Storage Tanks/Tank Management Section (609/984-3156) for assistance.*
- *Return one original of this form (including all attachments required) and a copy of the complete Standard Reporting Form (SRF) to the address above. You must sign all forms as required and attach a check for the proper fee (see the fee schedule on Page 3). Make check payable to the Treasurer, State of New Jersey.*
- *If the subject facility is not registered the Closure Plan will not be approved.*
- *Please Note: Make sure that all required informaiton on the Standard Reporting Form (SRF) is submitted. The SRF and this Closure Plan Application must be submitted together.*

Date of Application 6/6/93

FACILITY REGISTRATION #
81515-62

I. FACILITY NAME AND ADDRESS

U.S. Army Fort Monmouth

DEH Bldg. 167

Fort Monmouth NJ 07703

Telephone No. (908) 532-1475

II. **THIS CLOSURE PLAN IS FOR:**

A. Substance stored in subject tank(s):

1. Petroleum Products

Indicate Type of Product diesel
(Write out product name;, e.g.)

a. Gasoline, Jet Fuel, or Kerosene
b. Heating Oil (#2, 4, 6), or Diesel
c. Waste Oil (Please indicate total storage capacity of waste oil at the facility [including the tank(s) being closed]) 550 gals.

2. Hazardous Substances other than Petroleum Products *(Describe)*

Indicate Type of Product _____
(Write out product name; add sheet if necessary.)

B. Type of Activity: *(Circle one)*

1. Abandonment of Tank(s)

Attach the closure plan for abandonment, as required by N.J.A.C. 7:14B-9.2(b) or 9.3(b), which must contain the following items:

a. Implementation schedule (3 copies per N.J.A.C. 7:14B-9.2(a)3)
b. Site assessment plan
c. Tank decommissioning plan
d. A site map
e. Attach all justification for abandonment-in-place as required by N.J.A.C. 7:14-9.1(d). Attach the certification statement (on the back page) for abandonment-in-place, if applicable.

2. Removal of Tank(s)

Attach the closure plan for removal as required by N.J.A.C. 7:14B-9.2(b) or 9.3(b). The following items must be included:

✓ a. Implementation schedule (3 copies)
✓ b. Site assessment plan
✓ c. Tank decommissioning plan
✓ d. A site map

3. Temporary Closure

Indicate which situation applies and attach appropriate documentation.

a. ____ Temporary closure for 12 months or less is subject to requirements of N.J.A.C. 7:14B-9.1(a).

b. ____ Requesting an extension of temporary closure for more than 12 months per N.J.A.C 7:14B-9.1(b) must perform site assessment and submit results.

4. Change in Service

Attach documentation that the tank system being changed from the storage of a regulated to a non-regulated substance has been emptied and cleaned and that a site assessment has been performed, as required by N.J.A.C. 7:14B-9.1(e).

III. FEE SCHEDULE

Check the activities below that apply, calculate the Total Fee and submit that amount with this application. Make checks payable to Treasurer, State of New Jersey. Public schools and religious and charitable institutions are exempt form the fees. The owner or operator shall submit a separate fee for each excavation where an activity occurs.

A. Activities Which Require a Site Assessment 1. Removal or Abandonment without exemption to site assessment requirement	120.00	$ 120.00
2. Change in service from a regulated substance to a non-regulated substance		
3. Extension of period of Temporary Closure		
B. Activities Not Requiring a Site Assessment 1. Removal or abandonment with valid exemption	_____	$ 80.00
C. Additional Activities 1. Change in service from one regulated substance to another regulated substance		NO FEE
APPLICATION REVIEW FEE (activities in A, B, C) +	$ 50.00	
TOTAL FEE DUE	$ 170.00	

IV. THE BUREAU OF UNDERGROUND STORAGE TANKS WILL REVIEW THE CLOSURE PLAN FOR COMPLETENESS AND APPROPRIATENESS AS SPECIFIED IN SUBCHAPTER 9 OF THE UST REGULATIONS. PLAN APPROVAL WILL INDICATE THAT THE OWNER OR OPERATOR MAY PROCEED WITH THE CLOSURE. FINAL APPROVAL OF THE CLOSURE IS NOT IMPLIED. ALL APPROPRIATE AND APPLICABLE PERMITS, LICENSES AND CERTIFICATES REQUIRED FOR ANY OF THE ABOVE ACTIVITIES FROM ANY LOCAL, STATE AND/OR FEDERAL AGENCIES MUST BE OBTAINED SEPARATELY FROM THIS APPLICATION.

THE SITE ASSESSMENT SAMPLING AND ANALYTICAL REQUIREMENTS WILL BE SENT WITH THE APPROVAL TO PROCEED.

NOTE: Notice of Approval to Proceed or Disapproval will be mailed to the facility address unless some other address is specified here.

_____

_____

_____

SIGNATURE OF CONTACT PERSON

This application form must be signed by a contact person of the owner or operator of the subject facility. The contact person should have overall knowledge of tank decommissioning procedures and the site assessment requirements applicable to the tank closure which is the subject of this application.

NAME (Print or Type) CHARLES M. APPLEBY *SIGNATURE* _____

TITLE ENVIRONMENTAL PROTECTION SPEC. *DATE* 6/6/93

DEH File copy

US ARMY
FORT MONMOUTH NJ

DIRECTORATE OF
ENGINEERING AND HOUSING
ENVIRONMENTAL OFFICE

UNDERGROUND STORAGE TANK
CLOSURE PLAN

BUILDING 2700
SUBSTATION #4

PREPARED BY

CHARLES M. APPLEBY
ENVIRONMENTAL PROTECTION SPECIALIST
NJDEPE UST SUBSURFACE CERTIFICATION # 002056

JUNE 6, 1993

U.S. Army
DEH Bldg. 167
SELFM-EH
Fort Monmouth, NJ 07703

Date: 3, JUNE 1993
Building #: 2700 sub.4
NJDEPE UST Reg. #:0081515- 62
NJDEPE CASE # 92-3-7-1047

UNDERGROUND STORAGE TANK (UST) DECOMMISSIONING / CLOSURE PLAN

A. General Requirements:

All activities associated with the decommissioning of any underground storage tank (UST) shall comply with all applicable Federal, State and Local laws and ordinances. These laws include but are not limited to: NJAC 7:14B et seq., 5:23 et seq. and OSHA 1910.146, 1910.120. All permits including but not limited to this document, the NJDEP Closure Plan Approval Package, etc..., shall be posted on site for inspection. The Contractor conducting the decommissioning activities shall be registered and certified by the NJDEP for performing said activities.

B. Safety and Health:

Before, during, and after all activities, the work site shall be made free of all hazards which may pose a threat to the health and safety of all personnel who are involved with, or are affected by, the decommissioning of the UST. All areas which pose, or may be suspected of posing, a vapor hazard shall be monitored by a qualified individual utilizing approved equipment. This individual will ascertain if the area is properly vented to render the area safe, as defined by OSHA. THIS SITE IS AN NJDEPE REPORTED SPILL SITE AND ALL OSHA REQUIREMENTS WILL BE FOLLOWED. THIS INCLUDES A SITE SPECIFIC HEALTH AND SAFETY PLAN. ALL WORKERS WILL HAVE A MINIMUM OF 40 HOURS H&S TRAINING.

C. UST Excavation:

1. All underground obstructions (utilities,... etc.) shall be marked out by the contractor performing the excavation.

2. All activities shall be carried out with the greatest regard to safety and health and the safeguarding of the environment.

3. All excavated soils will be evaluated as to the possibility of contamination. Soils suspected to be contaminated with product shall be staged on poly-sheeting separate from soils not suspected to be contaminated (see section E Excavated Soils management).

4. Surface materials (ie. asphalt, concrete, etc...) shall be excavated and staged separate from all soils.

5. Soil will be excavated to expose the UST and associated piping. The piping shall not be removed/disturbed until all free product is drained into the UST. The UST will be rendered vapor free by purging or addition of dry ice prior to any cutting or access. After the removal of the associated piping, a manway will be made in the UST to allow for the proper cleaning of the UST. The UST will be completely emptied of all liquids prior to removal of the UST from the ground. All of the openings in the tank will be plugged except for one vent hole.

6. After the UST is removed from the ground, it will be staged on poly-sheeting and examined for corrosion holes. The presence or absence of corrosion holes will be documented by the Sub-Surface Evaluator. If corrosion holes are observed, or if upon inspection of the excavation site evidence of a discharge to the environment exists, the NJDEPE hotline shall be notified at (609)292-7172.

7. In the event of a discharge to the environment, additional soils will be excavated as needed. Site assessment activities under the direct supervision of the Sub-Surface Evaluator will determine to what extent the contractor will excavate.

8. After completion of the Site Assessment activities, the excavation will be backfilled to grade with noncontaminated soils form the site and additional certified clean fill provided by the contractor.

D. UST Transport / Disposal:

1. The tank will be transported and disposed / recycled in compliance with all applicable regulations and laws.

2. The contractor shall label the tank with the following information:

a. site of origin
b. generator / contact person
c. NJDEPE UST ID number
d. product previously stored
e. name of transporter / contract person
f. destination site / contact person
g. other information as required

3. The contractor shall provide Fort Monmouth with sufficient documentation certifying that transport / disposal (recycling) of the tank was completed according to all applicable Federal and State regulations.

E. Excavated Soils Management:

1. All excavated soils suspected to be contaminated will be transported, by the contractor, to a designated staging area within Fort Monmouth. The designated area will contain the soils and direct all stormwater runoff away from any contact with the soil.

2. All soils stored in the designated staging areas will be maintained in piles no larger than 100 cubic yards each. Each pile will be lined and covered with poly-sheeting and weighted to ensure proper containment.

3. Each soil pile will be sampled and analyzed for waste classification as outlined in the NJDEPE document titled "Management of Excavated Soils" dated August 17, 1990.

4. All soils categorized as Hazardous waste or nonhazardous waste will be managed as such, in accordance with N.J.A.C. 7:26-1 et seq..

5. All soils that contain levels of contaminants below the Category 3 soil limits will be used in accordance with Federal and State requirements.

F. Changes / Authorizations:

All deviations in activities related to the closure of a UST as outlined in this document shall require prior authorization from the NJDEPE-DWR-BUST.

U.S. Army
DEH Bldg. 167
SELFM-EH
Fort Monmouth, NJ 07703

Date: 3, JUNE 1993
Building #: 2700 sub.4
NJDEPE UST Reg. #:0081515- 62
NJDEPE CASE # 92-3-7-1047

UNDERGROUND STORAGE TANK (UST)
SITE ASSESSMENT PLAN

General:

This site specific assessment plan will be managed and carried out by U.S. Army DEH and Serv-Air Inc. personnel. All analyses will be performed and reported by NJDEPE certified testing laboratories. All monitoring wells will be installed by NJDEPE licensed well drillers. All sampling will be performed under the direct supervision of a NJDEPE Certified Sub-Surface Evaluator and according to the methods described in the 1992 NJDEP Field Sampling Procedures Manual. All records of the Site Assessment will be maintained by DEH and submitted to the NJDEPE-DWR-Bust in accordance with NJAC 7:14B-9.2 and 9.3.

PHASE I
UST DECOMMISSIONING

A. Initial Soil Excavation:

1. Soil will be excavated from the UST site and screened utilizing a Photo Ionization Detector (PID) and/or a Flame Ionization Detector (FID).

2. All soils suspected to be contaminated will be treated in accordance with the UST Decommissioning Plan.

B. Continued Excavation:

1. Excavation of suspect contaminated soil will continue until one of the following situations is encountered:

a. groundwater

b. excavated soils no longer exhibit characteristics of contamination determined in the field as determined by the Sub-Surface Evaluator

c. excavation equipment can no longer remove soils due to the depth of the excavation or other restrictive cause.

U.S. Army
DEH Bldg. 167
SELFM-EH
Fort Monmouth, NJ 07703

Date: 3, JUNE 1993
Building #: 2700 sub.4
NJDEPE UST Reg. #:0081515- 62
NJDEPE CASE # 92-3-7-1047

PHASE II
Site Survey

A. Vapor Screening:

1. An individual under the direct supervision of a NJDEPE Sub-Surface Evaluator and trained in the operation of a FID and/or PID shall evaluate the sides and pit bottom of the excavation.

2. All observed instrument readings will be documented and included in the Site Assessment Survey report. This documentation will include all factory and daily calibrations of the instrument.

PHASE III
Site Sampling

A. Soil samples will be collected from the UST excavation and analyzed according to the following schedule:

PRODUCT	SIZE (gal.)	# TPHC SAMPLES	VOA +15 (if TPHC >10000)
HEATING OIL	550	6	6
FIELD BLANKS		1	1
DUPLICATE SAMPLES		1	1
TOTAL # SAMPLES		8	8

B. Soil samples will be collected from the Pipe excavation at the same time as UST pit sampling and analyzed according to the following schedule:

PRODUCT	LENGTH OF PIPING	# TPHC SAMPLES	VOA +15 (if TPHC >10000)
HEATING OIL	20 FEET	2	2
FIELD BLANKS		0	0
DUPLICATE SAMPLES		0	0
TOTAL # SAMPLES		2	2

C. All TPHC samples will be taken in the native soil below the bedding material. The sample locations should be along the mid-lines of the tank outline except for at least two of the samples which should be taken within one foot of each of the two highest field survey readings. All of the soil samples should be discrete samples taken within a 6" vertical interval. All samples will be collected by utilizing laboratory decontaminated stainless steel trowels dedicated to each sample location. All VOA+15 samples will be taken within 24 hours of UST excavation at a depth of 0-6" with the use of a laboratory decontaminated stainless steel core sampler. Each VOA+15 sample will be screened with an FID and\or PID and recorded immediately after collection.

D. The excavations of USTs containing #2 Fuel Oil will remain open until laboratory results determine all TPHC samples are less than 1000 ppm. If levels greater than 1000 ppm are reported, further excavation and resampling may be requested by the Sub-Surface Evaluator for those contaminated areas. If further excavation is not possible, additional VOA+15 analyses on 25% of the TPHC samples with the highest results will be performed and the excavation will be filled to grade with certified clean fill. In the case of USTs containing gasoline, all samples will be sampled for TPHC and VOA+15. If TPHC results are greater than 100 ppm additional excavation and subsequent sampling may be requested by the Sub-Surface Evaluator.

U.S. Army
DEH Bldg. 167
SELFM-EH
Fort Monmouth, NJ 07703

Date: 3, JUNE 1993
Building #: 2700 sub.4
NJDEPE UST Reg. #:0081515- 62
NJDEPE CASE # 92-3-7-1047

PHASE IV
Groundwater Monitoring

A. Monitoring wells will be installed within the UST field at all UST locations where the tanks(s) being closed stored gasoline, kerosene, jet fuel and/or site specific factors indicate a know or potential impact of soil contamination exists.

B. Groundwater monitoring wells will be installed by a New Jersey licensed Well Driller in accordance with N.J.S.A 58:4A-4.1 et seq.. The well driller will obtain all required permits prior to well installation.

C. All monitoring wells will be sampled as described in the NJDEP Field Sampling Procedures Manual, 1992.

D. All monitoring wells will be analyzed in accordance with the following table:

PRODUCT	NUMBER OF MONITORING WELLS REQUIRED	EPA METHOD 624 (A)	EPA METHOD 625 (B)
HEATING OIL	1	1	1
FIELD BLANKS		1	1
DUPLICATE SAMPLES		1	1
TOTAL # SAMPLES		3	3

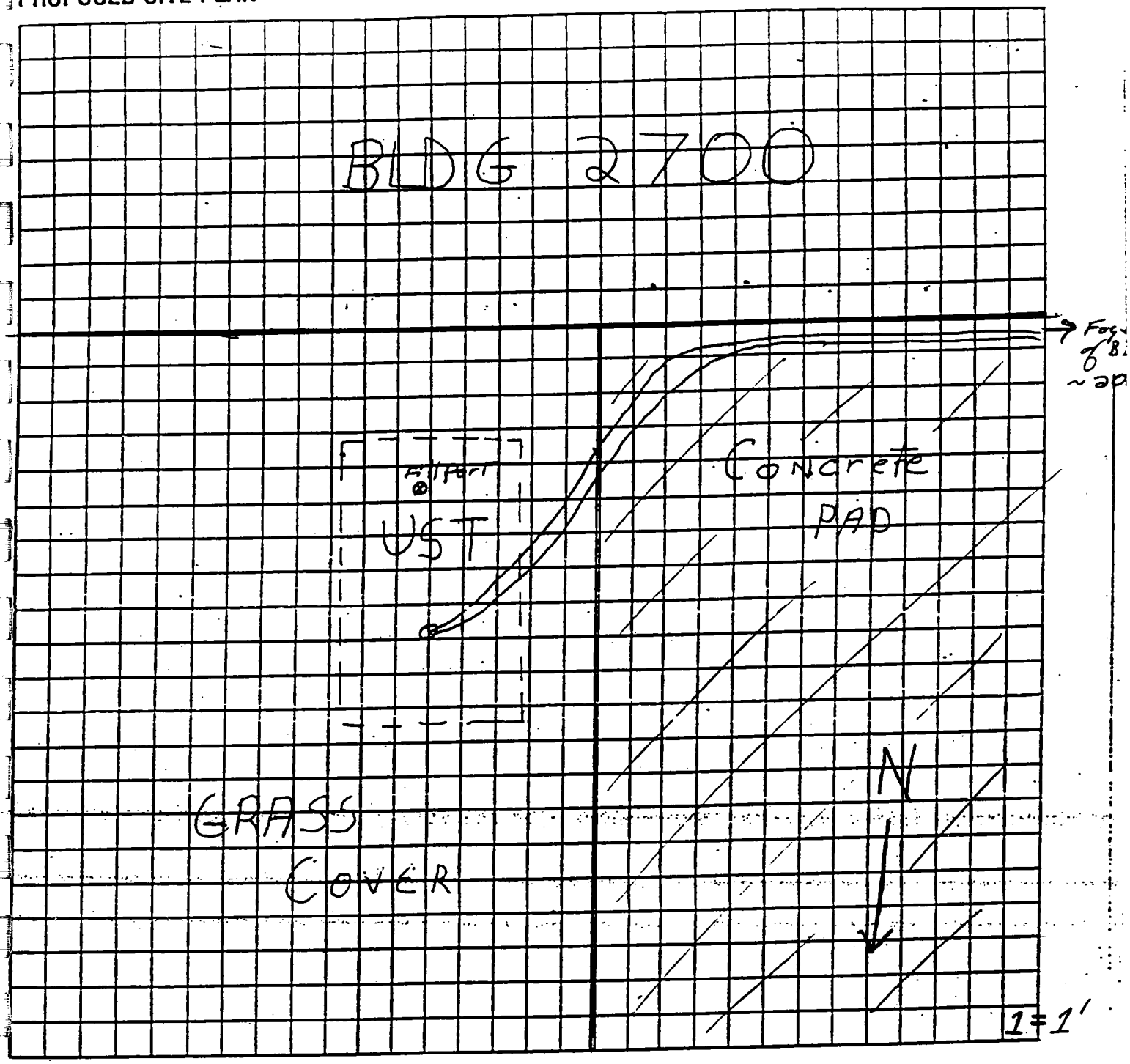
Note (A): Sample must be analyzed by EPA Method 624 + 15 (GC/MS plus identification of non-targeted compounds) modified to include calibration for xylene, methyl tertiary butyl ether (MTBE), tertiary butyl alcohol (TBA) and LEAD.

Note (B): Sample must be analyzed by EPA method 624 + 15 (GC/MS plus identification of non-targeted compounds) modified to include calibration for xylene; and EPA Method 625 + 15 (base/neutral extractable, extractable organics).

C. All monitoring well sampling will be conducted according to methods described in the NJDEP Field Sampling Procedure Manual 1992.

D. All laboratory analyses will be performed by NJDEP certified Laboratories using approved methods and follow all Quality Control/Assurance procedures as described for each method.

PROPOSED SITE PLAN



NOTE: *Indicate scale and compass direction.*

REMARKS

UST NOT In USE -
Loss of Product Inventory Resulted in
an investigation - determine discharge (confirmed)
- CASE # 92-3-7-1047-43
- Planned Removal Fall 1992
- Alternate Fuel Source (Aboveground) installed

3/5/92 by Serv-Air Inc.

TANK LOCATION

BLDG# 2700 EG Sub 4
TANK # 51515 - 62
TANK SIZE 550 gal. Steel
TANK CONTENTS #2 Diesel
Age. 1952

UST-013
9/90

FOR STATE USE ONLY	
UST #	
Date Rec'd	
CA #	
Staff	

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES
BUREAU OF UNDERGROUND STORAGE TANKS
TANK MANAGEMENT SECTION

CN 029, 401 EAST STATE STREET
TRENTON, N.J. 08625-0029

UNDERGROUND STORAGE TANK CLOSURE PLAN APPROVAL APPLICATION

Under the provisions of the Underground Storage of Hazardous Substances Act in accordance with N.J.A.C. 7:14B-9 et seq.

This application form shall be used by all applicants who plan to close Underground Storage Tank Systems pursuant to N.J.A.C. 7:14B-9 et seq.

INSTRUCTIONS:

- *Before completing application form please refer to the attached Application Instruction Sheet.*
- *Please print legibly or type.*
- *Fill in all appropriate blanks. This application form requires that additional sheets be attached for some of the information requested. You may call the Bureau of Underground Storage Tanks/Tank Management Section (609/984-3156) for assistance.*
- *Return one original of this form (including all attachments required) and a copy of the complete Standard Reporting Form (SRF) to the address above. You must sign all forms as required and attach a check for the proper fee (see the fee schedule on Page 3). Make check payable to the Treasurer, State of New Jersey.*
- *If the subject facility is not registered the Closure Plan will not be approved.*
- *Please Note: Make sure that all required informaiton on the Standard Reporting Form (SRF) is submitted. The SRF and this Closure Plan Application must be submitted together.*

Date of Application 6/6/93

FACILITY REGISTRATION #
81515 - 62

I. FACILITY NAME AND ADDRESS

U.S. Army Fort Monmouth

DEH Bldg. 167

Fort Monmouth NJ 07703

Telephone No. (908) 532-1475

II. THIS CLOSURE PLAN IS FOR:

A. Substance stored in subject tank(s):

1. Petroleum Products

Indicate Type of Product diesel
(Write out product name;, e.g.)

a. Gasoline, Jet Fuel, or Kerosene
b. Heating Oil (#2, 4, 6), or Diesel
c. Waste Oil (Please indicate total storage capacity of waste oil at the facility [including the tank(s) being closed]) 550 gals.

2. Hazardous Substances other than Petroleum Products *(Describe)*

Indicate Type of Product _____
(Write out product name; add sheet if necessary.)

B. Type of Activity: *(Circle one)*

1. Abandonment of Tank(s)

Attach the closure plan for abandonment, as required by N.J.A.C. 7:14B-9.2(b) or 9.3(b), which must contain the following items:

a. Implementation schedule (3 copies per N.J.A.C. 7:14B-9.2(a)3)
b. Site assessment plan
c. Tank decommissioning plan
d. A site map
e. Attach all justification for abandonment-in-place as required by N.J.A.C. 7:14-9.1(d). Attach the certification statement (on the back page) for abandonment-in-place, if applicable.

2. Removal of Tank(s)

Attach the closure plan for removal as required by N.J.A.C. 7:14B-9.2(b) or 9.3(b). The following items must be included:

✓ a. Implementation schedule (3 copies)
✓ b. Site assessment plan
✓ c. Tank decommissioning plan
✓ d. A site map

3. Temporary Closure

Indicate which situation applies and attach appropriate documentation.

a. ____ Temporary closure for 12 months or less is subject to requirements of N.J.A.C. 7:14B-9.1(a).

b. ____ Requesting an extension of temporary closure for more than 12 months per N.J.A.C 7:14B-9.1(b) must perform site assessment and submit results.

4. Change in Service

Attach documentation that the tank system being changed from the storage of a regulated to a non-regulated substance has been emptied and cleaned and that a site assessment has been performed, as required by N.J.A.C. 7:14B-9.1(e).

III. FEE SCHEDULE

Check the activities below that apply, calculate the Total Fee and submit that amount with this application. Make checks payable to **Treasurer, State of New Jersey.** Public schools and religious and charitable institutions are exempt form the fees. The owner or operator shall submit a separate fee for each excavation where an activity occurs.

A. Activities Which Require a Site Assessment	120.00	$ 120.00
1. Removal or Abandonment without exemption to site assessment requirement		
2. Change in service from a regulated substance to a non-regulated substance		
3. Extension of period of Temporary Closure		
B. Activities Not Requiring a Site Assessment	_____	$ 80.00
1. Removal or abandonment with valid exemption		
C. Additional Activities		
1. Change in service from one regulated substance to another regulated substance		NO FEE
APPLICATION REVIEW FEE (activities in A, B, C) +	$ 50.00	
TOTAL FEE DUE	$ 170.00	

IV. THE BUREAU OF UNDERGROUND STORAGE TANKS WILL REVIEW THE CLOSURE PLAN FOR COMPLETENESS AND APPROPRIATENESS AS SPECIFIED IN SUBCHAPTER 9 OF THE UST REGULATIONS. PLAN APPROVAL WILL INDICATE THAT THE OWNER OR OPERATOR MAY PROCEED WITH THE CLOSURE. **FINAL APPROVAL OF THE CLOSURE IS NOT IMPLIED.** ALL APPROPRIATE AND APPLICABLE PERMITS, LICENSES AND CERTIFICATES REQUIRED FOR ANY OF THE ABOVE ACTIVITIES FROM ANY LOCAL, STATE AND/OR FEDERAL AGENCIES MUST BE OBTAINED SEPARATELY FROM THIS APPLICATION.

THE SITE ASSESSMENT SAMPLING AND ANALYTICAL REQUIREMENTS WILL BE SENT WITH THE APPROVAL TO PROCEED.

NOTE: Notice of Approval to Proceed or Disapproval will be mailed to the facility address unless some other address is specified here.

_____

_____

_____

SIGNATURE OF CONTACT PERSON

This application form must be signed by a contact person of the owner or operator of the subject facility. The contact person should have overall knowledge of tank decommissioning procedures and the site assessment requirements applicable to the tank closure which is the subject of this application.

NAME (Print or Type) CHARLES M. APPLEBY *SIGNATURE* [signature]

TITLE ENVIRONMENTAL PROTECTION SPEC. *DATE* 6/6/93

U.S. Army
DEH Bldg. 167
SELFM-EH
Fort Monmouth, NJ 07703

Date: 3, JUNE 1993
Building #: 2700 sub.4
NJDEPE UST Reg. #:0081515- 62
NJDEPE CASE # 92-3-7-1047

UNDERGROUND STORAGE TANK
REMOVAL / ABANDONMENT
IMPLEMENTATION SCHEDULE

Facility Name: U.S. Army, Fort Monmouth
Facility Location: BLDG. 2700, SUB 4
Fort Monmouth, Monmouth County NJ 07703

Owners Mailing Address: DEH Bldg. #167
Fort Monmouth, NJ 07703

Owners Name: U.S. Army

Contact Person: Charles Appleby
Phone Number: (908) 532-6224

UST Regestration Number: 0081515

TANK ID NUMBERS	PRODUCT STORED (OIL, GAS)	TANK CAPACITY (GALLONS)	SITE ASSESSMENT REQUIRED	MONITORING WELL REQUIRED
62	#2 H-OIL	550	YES	NONE

SCHEDULE

ACTIVITY	START DATE	COMPLETION
Removal	7/20/93	7/20/93
Site Assessment	7/20/93	
Monitoring Well Installation	8/20/93	
Site Assessment Analytical Results	9/20/93	
Monitoring Well Analytical Results	9/20/93	
UST Site Assessment Summary	10/20/93	

U.S. ARMY, Fort Monmouth
Directorate of Engineering and Housing
Fort Monmouth, New Jersey 07703

June 10, 1993

New Jersey Department of
Environmental Protection and Energy
DIVISION OF WATER RESOURCES
BUREAU OF UNDERGROUND STORAGE TANKS
TANK MANAGEMENT SECTION
CN 029
401 EAST STATE STREET
Trenton, NJ 08625 - 0029
ATTN: Monmouth County UST Closure Specialist

Dear Sir:

Enclosed please find UST Closure Plan Approval Applications for the following Fort Monmouth Areas:

Charles Wood - 0081515
UST #'s: 24, 41 and 62
Closure Activity Fees 3 @ $170.00..... $ 510.00

Charles Wood - 0081515
UST Emergency closure of UST#: 34
Closure Activity Fees 1 @ $170.00..... $ 170.00

Main Post West - 0081533
UST #'s: 3, 4, 5, 6, 7 and 8
Closure Activity Fees 6 @ $170.00 ..... $ 1,020.00

Total: $ 1,700.00

To identify any specific UST location, correlate the corresponding building number located in the Closure Plan with the building number on the detailed area map which was issued with the initial UST Registrations. Due to the complexity of our facility's registrations, we have developed and are currently using this system for locating and managing our USTs.

With regard to the Emergency Closure of UST# 0081515-34, I contacted your department and I was informed to proceed but that all activities must be followed IAW applicable guidelines. The money for that removal activity is inclosed with the completed Site Assessment Summary Report. If the information provided in this enclosure is inadequate or you require further information with regard to any UST activities please contact me at (908) 532-6224.

Sincerely,

Charles M. Appleby
Engineering Technician

UNDERGROUND STORAGE TANK SYSTEM
CLOSURE APPROVAL

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY
DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF UNDERGROUND STORAGE TANKS
CN-029, TRENTON, NJ 08625-0029

TMS # C-93-2613 **UST #** 0081515

US Army Fort Monmouth
DEH Bldg 205 2700.4 CA
Ft. Monmouth, NJ

Monmouth

THE ABOVE LISTED FACILITY IS HEREBY GRANTED APPROVAL TO PERFORM THE FOLLOWING ACTIVITY IN ACCORDANCE WITH N.J.A.C. 7:14B-1 et. seq.:

Removal of: one 550 gallon #2 diesel UST(s) and appurtenant piping.
SITE ASSESSMENT: Soil samples will be taken every five (5) feet along the center line of each tank and one (1) soil sample for every 15 feet along all associated piping. Two (2) additional samples will be taken from around the tank and biased to the areas of highest field screened readings. Samples will be analyzed for TPHC. If sample results are greater than 1,000ppm than samples will be analyzed for VO+10.

ON-SITE MANAGER: C. Appleby **TELEPHONE:** 908-532-1475

OWNER: **TELEPHONE:**

EFFECTIVE DATE: JUL 12 1993

THIS FORM MUST BE DISPLAYED AT THE SITE DURING THE APPROVED ACTIVITY AND MUST BE MADE AVAILABLE FOR INSPECTION AT ALL TIMES.

Fred DeCenzo

KEVIN F. KRATINA, BUREAU CHIEF
BUREAU OF UNDERGROUND STORAGE TANKS

State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 029
Trenton, NJ 08625-0029
Tel. # 609-984-3156
Fax. # 609-292-5604

Scott A. Weiner
Commissioner

Karl J. De
Di

JUL 29 1993

Dear Applicant:

The Department of Environmental Protection (the Department) received an "Underground Storage Tank Closure Plan Approval Application" for your facility. This application detailed the procedures to be implemented as required by the Underground Storage Tank Systems Technical Requirements and Procedures at N.J.A.C. 7:14B-1 et seq. Based upon our review of the information submitted, a Closure Approval is hereby granted.

A Standard Reporting Form (SRF) must be submitted to the Department within seven (7) days of removal or abandonment of the tank(s). The date of removal or abandonment must be included with the SRF. The SRF will be used to delist the tank(s) from the Bureau of Underground Storage Tanks (BUST) registration files. A copy of the SRF is attached.

Within ninety (90) days of completion of the tank(s) closure, a Site Assessment Summary pursuant to N.J.A.C. 7:14B-9.5 must be submitted to BUST (copy attached). If contamination is discovered during closure, you are required to initiate corrective action as per N.J.A.C. 7:14B-8 and outlined in the Department's Scope of Work document. All discharges must be reported to the Spill Hotline at (609) 292-7172.

Once you have obtained a Closure Approval, a demolition permit issued pursuant to N.J.A.C. 5:23 et seq. and authorized by the Department of Community Affairs (DCA), Construction Code Element must be procured from your local construction code official. For further information in obtaining a demolition permit, please contact the local construction code official directly, or DCA's Code Assistance Unit at (609) 530-8793.

If you require further information or assistance, please contact the Tank Management Section of BUST at (609) 984-3156.

Attachments: Closure Approval
SRF
SAS

New Jersey is an Equal Opportunity Employer
Recycled Paper

State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 028
Trenton, NJ 08625-0029

ATTN: UST Program
(609) 984-3156

For State Use Only	
Date Rec'd	
Auth.	
Routing	
UST NO.	

STANDARD REPORTING FORM
for reporting activities at an UST facility:

____ General Facility Information Changes
X Closure (Abandonment or Removal)
____ Temporary Closure
____ Change in Service
____ Sale or Transfer
____ Substantial Modification
____ Financial Responsibility
____ Address Change Only

Check ONLY One Type of Activity – Complete Form For That Activity

(More than one tank can be listed per activity)

*** * * NOTE * * * ALL NEW tank installations at existing registered facilities must submit a Registration Questionnaire for the new tanks.**

Answer questions 1 through 5 and others as applicable.

1. Company name and address (as it appears on registration questionnaire): U.S. ARMY Fort Monmouth
DEH Bldg 167
Fort Monmouth NJ 07703
ATTN: Charles Appleby

2. Facility name and location (if different from above):

3. Contact person for this activity: Charles Appleby
Telephone Number: (908) 532-6224

4. The identification number of the affected tank as it appears in Question Number 12 on the Registration Questionnaire: 62
Bldg 2700.4

5. Registration Number (if known): UST- 0081515

6. For GENERAL FACILITY INFORMATION changes (address, telephone, contact person, etc. – supply NEW information only):

a. Facility name:
b. Facility location:
c. Owner's mailing address:
NJ
d. Block: Lot:
e. Contact person (facility operator):
f. Contact telephone number: ( ) –
g. Other (Specify):

(OVER)

7. For CLOSURE (abandonment or removal – check all that apply):
   a. ☐ Abandonment
      Attach the necessary implementation schedule (3 copies) and all documentation needed for abandonment per N.J.A.C. 7:14B-9.1 (d).
   b. ☐ Removal
      Attach the necessary implementation schedule (3 copies).
8. For CHANGES IN HAZARDOUS SUBSTANCES STORED (check all that apply):
   a. ☐ Temporary Closure (12 month maximum time – see N.J.A.C. 7:14B-9.1(b)). Remove all hazardous substances; leave tank in place.
   b. ☐ Change in service from a regulated substance to a non-regulated substance. Tank must be cleaned and site assessment performed per N.J.A.C. 7:14B-9.1(e).
   c. ☐ Changes in service from one regulated hazardous substance to another regulated hazardous substance.

      Tank No. _____ Old _____ New _____
      Tank No. _____ Old _____ New _____
      Tank No. _____ Old _____ New _____
      (Attach additional sheets if more space is needed)
9. For TRANSFER OF OWNERSHIP:
   a. New Owner (operator) _____
   b. New Facility Name _____
      _____
      _____ NJ _____
      _____
      County
   c. Closing Attorney _____ Tele: (_____) _____ – _____
10. For SUBSTANTIAL MODIFICATIONS (to include any retrofitted activity – e.g. the addition of spill/overfill protection, monitoring systems, cathodic protection, etc.):
    a. Type of Modification _____
    b. * NOTE * Substantial modifications require a permit under N.J.A.C. 7:14B-10.
11. For changes in FINANCIAL RESPONSIBILITY to (check appropriate changes and attach copies of new information):
    a. Policy Type: ☐
    b. Policy Number: ☐
    c. Other: ☐
    d. Company/Carrier: ☐
    e. Expiration Date: ☐

    _____
    _____
    _____
    (Specify)

NOTE: ALL appropriate and applicable permits, licenses and certificates required by the above activity(ies) from any local, state and/or federal agencies must be obtained separately from this notification.

CERTIFICATION

This registration form shall be signed by the highest ranking individual at the facility with overall responsibility for that facility (N.J.A.C. 7:14B-2.3 (a) 1).

"I certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties for submitting false, inaccurate or incomplete information, including fines and/or imprisonment."

Signature: _____

Name (print or type): _____

Title: _____ Date: _____

APPENDIX B

NJDEP UST SITE ASSESSMENT SUMMARY FORM

UST-014
2/91

UST #	
Date Rec'd	
TMS #	
S.aI.T	

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES
BUREAU OF UNDERGROUND STORAGE TANKS
TANK MANAGEMENT SECTION

CN 029, 401 EAST STATE STREET
TRENTON, N.J. 08625-0029

UNDERGROUND STORAGE TANK SITE ASSESSMENT SUMMARY

Under the provisions of the Underground Storage of Hazardous Substances Act in accordance with N.J.A.C. 7:14B

This Summary form shall be used by all owners and operators of Underground Storage Tank Systems (USTS) who have either reported a release and are subject to the site assessment requirements of N.J.A.C. 7:14B-8.2 or who have closed USTS pursuant to N.J.A.C. 7:14B-9.1 et seq. and are subject to the site assessment requirements of N.J.A.C. 7:14B-9.2 and 9.3.

INSTRUCTIONS:

- *Please print legibly or type.*
- *Fill in all applicable blanks. This form will require various attachments in order to complete the Summary. The technical guidance document, Interim Closure Requirements for UST's, explains the regulatory (and technical) requirements for closure and the Scope of Work, Investigation and Corrective Action Requirements for Discharges from Underground Storage Tanks and Piping Systems explains the regulatory (and technical) requirements for corrective action.*
- *Return one original of the form and all required attachments to the above address.*
- *Attach a scaled site diagram of the subject facility which shows the information specified in Item IV B of this form.*
- *Explain any "No" or "N/A" response on a separate sheet.*

Date of Submission March 14, 1995

081515
FACILITY REGISTRATION #

I. **FACILITY NAME AND ADDRESS**

U.S. Army Fort Monmouth
Directorate of Public Works, Building 167
Fort Monmouth, NJ 07703 County Monmouth
Telephone No. (908) 532-1475

OWNER'S NAME AND ADDRESS, if different from above

Telephone No.

II. DISCHARGE REPORTING REQUIREMENTS

A. Was contamination found? X Yes ___ No If Yes, Case No. 92-3-7-1047
(Note: All discharges must be reported to the Environmental Action Hotline (609) 292-7172)

B. The substance(s) discharged was(were) #2 Fuel Oil

C. Have any vapor hazards been mitigated? X Yes ___ No ___ N/A

III. DECOMMISSIONING OF TANK SYSTEMS

Closure Approval No. C-93-2613

The site assessment requirements associated with tank decommissioning are explained in the Technical Guidance Document, **Interim Closure Requirements for UST's**, Section V. A-D. Attach complete documentation of the methods used and the results obtained for each of the steps of tank decommissioning used. Please include a site map which shows the locations of all samples and borings, the location of all tanks and piping runs at the facility at the beginning of the tank closure operation and annotated to differentiate the status of all tanks and piping (e.g., removed, abandoned, temporarily closed, etc.). The same site map can be used to document other parts of the site assessment requirements, if it is properly and legibly annotated.

IV. SITE ASSESSMENT REQUIREMENTS

A. Excavated Soil

Any evidence of contamination in excavated soil will require that the soil be classified as either Hazardous Waste or Non-Hazardous Waste. Please include all required **documentation** of compliance with the requirements for handling contaminated excavated soil (if any was present) as explained in the technical guidance documents for closure and corrective action. Describe amount of soil removed, its classification, and disposal location.

B. Scaled Site Diagrams

1. Scaled site diagrams must be attached which include the following information:

   a. North arrow and scale
   b. The locations of the ground water monitoring wells
   c. Location and depth of each soil sample and boring
   d. All major surface and sub-surface structures and utilities
   e. Approximate property boundaries
   f. All existing or closed underground storage tank systems, including appurtenant piping
   g. A cross-sectional view indicating depth of tank, stratigraphy and location of water table
   h. Locations of surface water bodies

C. Soil samples and borings (check appropriate answer)

1. Were soil samples taken from the excavation as prescribed? X Yes ___ No ___ N/A

2. Were soil borings taken at the tank system closure site as prescribed? ___ Yes X No ___ N/A

3. Attach the analytical results in tabular form and include the following information about each sample:
   a. Customer sample number (keyed to the site map)
   b. The depth of the soil sample
   c. Soil boring logs
   d. Method detection limit of the method used
   e. QA/QC Information as required

D. Ground Water Monitoring

1. Number of ground water monitoring wells installed 0

2. Attach the analytical results of the ground water samples in tabular form. Include the following information for each sample from each well:

   a. Site diagram number for each well installed
   b. Depth of ground water surface
   c. Depth of screened interval
   d. Method detection limit of the method used
   e. Well logs
   f. Well permit numbers
   g. QA/QC Information as required

V. SOIL CONTAMINATION

A. Was soil contamination found? X Yes ___ No
If "Yes", please answer Question B-E
If "No", please answer Question B

B. The highest soil contamination still remaining in the ground has been determined to be:
1. 7,160 ppb total BTEX, 160,700 ppb total non-targeted VOC
2. 68,400 ppb total B/N, 2,581,000 ppb total non-targeted B/N
3. 7,520 ppm TPHC
4. ___ ppb ___ (for non-petroleum substance)

C. Remediation of free product contaminated soils

1. All free product contaminated soil on the property boundaries and above the water table are believed to have been removed from the subsurface X Yes ___ No
2. Free product contaminated soils are suspected to exist below the water table ___ Yes X No
3. Free product contaminated soils are suspected to exist off the property boundaries. ___ Yes X No

D. Was the vertical and horizontal extent of contamination determined? ___ Yes X No ___ N/A

E. Does soil contamination intersect ground water? ___ Yes X No ___ N/A

VI. GROUND WATER CONTAMINATION

A. Was ground water contamination found? ___ Yes X No
If "Yes", please answer Questions B-G.
If "No", please answer only Question B.

B. The highest ground water contamination at any 1 sampling location and at any 1 sampling event to date has been determined to be:

1. N/A ppb total BTEX, N/A ppb total non-targeted VOC
2. N/A ppb total B/N, N/A ppb total non-targeted B/N
3. N/A ppb total MTBE, N/A ppb total TBA
4. N/A ppb N/A (for non-petroleum substance)
5. greatest thickness of separate phase product found N/A
6. separate phase product has been delineated ___ Yes ___ No X N/A

C. Result(s) of well search

1. A well search (including a review of manual well records) indicates that private, municipal or commercial wells do exist within the distances specified in the Scope of Work. ___ Yes ___ No ___ N/A

2. The number of these wells identified is ___.

D. Proximity of wells and contaminant plume

1. The shallowest depth of any well noted in the well search which may be in the horizontal or vertical potential path(s) of the contaminant plume(s) is _____ feet below grade (consideration has been given for the effects of pumping, subsurface structures, etc. on the direction(s) of contaminant migration). This well is _____ feet from the source and its screening begins at a depth of _____ feet.

2. The shallowest depth to the top of the well screen for any well in the potential path of the plume(s) (as described in D1 above) is _____ feet below grade. This well is located _____ feet from the source.

3. The closest horizontal distance of a private, commercial or municipal well in the potential path of the plume (as determined in D1) is _____ feet from the source. This well is _____ feet deep and screening begins at a depth of _____ feet.

E. A plan for separate phase product recovery has been included. ___ Yes ___ No ___ N/A

F. A ground water contour map has been submitted which includes the ground water elevations for each well. ___ Yes ___ No ___ N/A

G. Delineation of contamination

1. The ground water contaminants have been delineated to MCLs or lower values at the property boundaries. ___ Yes ___ No

2. The plume is suspected to continue off the property at concentrations greater than MCLs. ___ Yes ___ No

3. Off property access (circle one): is being sought has been approved has been denied

VII. **SITE ASSESSMENT CERTIFICATION** [preparer of site assessment plan - N.J.A.C. 7:14B-8.3(b) &9.5(a)3]

The person signing this certification as the "Qualified Ground Water Consultant" (as defined in N.J.A.C.7:14B-1.6) responsible for the design and implementation of the site assessment plan as specified in N.J.A.C. 7:14B-8.3(a) & 9.2(b)2, must supply the name of the certifying organization and certification number.

"I certify under penalty of law that the information provided in this document is true, accurate, and complete and was obtained by procedures in compliance with N.J.A.C. 7:14B-8 and 9. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) Charles Appleby SIGNATURE [signature]

COMPANY NAME U.S. Army Fort MOnmouth DATE 12-21-94
(Preparer of Site Assessment Plan)

CERTIFYING ORGANIZATION NJDEPE CERTIFICATION NUMBER 2056

VIII. **TANK DECOMMISSIONING CERTIFICATION** (person performing tank decommissioning portion of closure plan - N.J.A.C. 7:14B-9.5(a)4)

"I certify under penalty of law that tank decommissioning activities were performed in compliance with N.J.A.C. 7:14B-9.2(b)3. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) Charles Appleby SIGNATURE [signature]

COMPANY NAME U.S. Army Fort Monmouth DATE 12-21-94
(Performer of Tank Decommissioning)

IX. **CERTIFICATIONS BY THE RESPONSIBLE PARTY(IES) OF THE FACILITY**

A. The following certification shall be signed by the highest ranking individual with overall responsibility for that facility [N.J.A.C. 7:14B-2.3(c)1i].

"I certify under penalty of law that the information provided in this document is true, accurate, and complete . I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) James Ott SIGNATURE [signature]

COMPANY NAME U.S. Army Fort Monmouth DATE 3/25/95

B. The following certification shall be signed as follows (according to the requirements of N.J.A.C. 7:14B-2.3(C)2i):

1. For a corporation, by a principal executive officer of at least the level of vice president.
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, Federal or other public agency by either the principal executive officer or ranking elected official.
4. In cases where the highest ranking corporate partnership, governmental officer or official at the facility as required in A above is the same person as the official required to certify in B, only the certification in A need to be made. In all other cases, the certifications of A and B shall be made.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) _____ SIGNATURE _____

COMPANY NAME _____ DATE _____

WESTON
MANAGERS DESIGNERS CONSULTANTS

ATTACHMENT I

NO/NA RESPONSE EXPLANATION

SAS QUESTION #	RESPONSE	EXPLANATION
IV.C.2	No	No soil borings were collected at the tank system closure site. A minimum of one monitoring well will be installed in the excavation.
V.C.2,3	No	Since all free products has been removed, it is not suspected to exist below the water table or off the property boundary.
V.D	No	Same as above.
V.E	No	Same as above.
VI.A	No	The required groundwater monitoring well has not been installed at the site. Groundwater samples will be collected after well installation.

APPENDIX C

MONITOR WELL INFORMATION

DWR-133M (7/92) SERIAL # 37093

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY
TRENTON, NJ

Mail to
Water Allocation
CN 029
Trenton, N.J. 08625

Permit No. 293096

MONITORING WELL PERMIT

38

VALID ONLY AFTER APPROVAL BY THE D.E.P.E.

COORD #: 29138/16

Owner: US ARMY FORT MONMOUTH
Address: FORT MONMOUTH, NJ 07703

Driller: TREC ORGANIZATION, LTD
Address: 1510 RT 130 S
BURLINGTON, NJ 08016

Name of Facility: GENERAL SITE (CHARLESWOOD AREA)
Address: BUILDING 2700
FORT MONMOUTH, NJ 07703

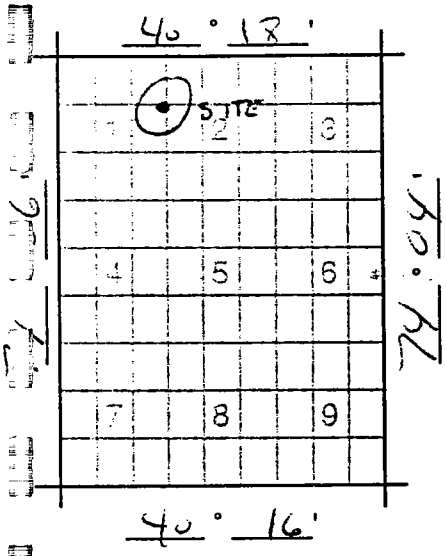
Diameter of Well(s)	4 Inches	Proposed Depth of Well(s)	15 Feet
# of Wells Applied for (max. 10)	1	Will pumping equipment be installed? YES ☐ NO ☒	
Type of Well (see reverse)	HANDAUGER	If Yes, give pump capacity	GPM

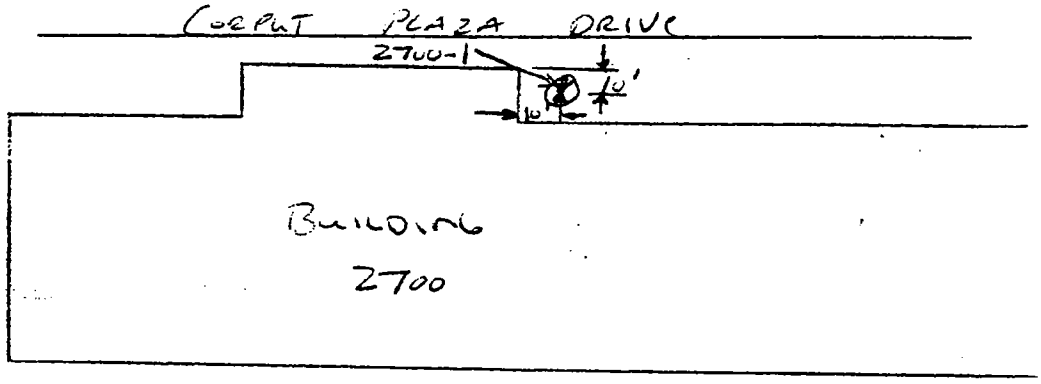
LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
		FORT MONMOUTH	MONMOUTH

State Atlas Map No. 29

Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.





N↑

FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT. PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- ☐ Spill Fund Case
- ☐ ECRA Case
- ☐ CERCLA (Superfund) Site
- ☐ RCRA Site
- ☒ Underground Storage Tank
- ☐ NJPDES Municipal Discharge Permit
- ☐ NJPDES Industrial Discharge Permit
- ☐ Water and Hazardous Waste Enforcement Case
- ☐ Water Supply Aquifer Test Observation Well
- ☐ Other (explain)

Case I.D. Number: 92-3-7-1047-43

This Space for Approval Stamp

WELL PERMIT APPROVED
Dept. of Environmental Protection
Water Resources/Water Allocation
APR 5 1994

FOR D.E.P.E. USE
- ☐ Issuance of this permit is subject to the conditions attached. (see next page)
- ☐ For monitoring purposes only
- ☐ The well(s) may not be completed with more than 25 feet of total screen or uncased borehole.
- ☐

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS AND REGULATIONS PERTAINING TO THIS PERMIT.

In compliance with N.J.S.A. 58:4A-14, application is made for a permit to drill a well as described above.

Date: MARCH 28, 1994

Signature of Driller: [signature] License # 1421

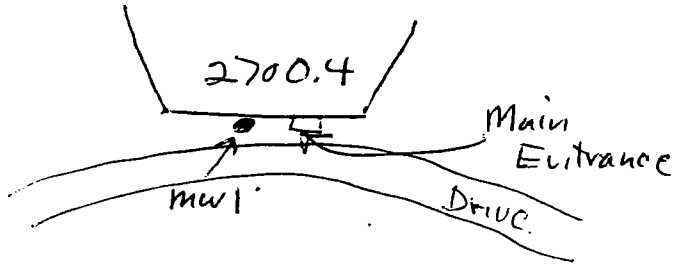
Signature of Owner: [signature] SELFM-PW-EV

COPIES: Water Allocation — White and Pink; Health Dept. — Yellow; Owner — Blue; Driller — White

FIELD LOG OF BORING

SHEET 1 OF 2

LOCATION OF BORING: Fort Monmouth, Building #2700.4 mw1



PROJECT: US Army Fort Monmouth.	BORING NO:
	TOTAL DEPTH:
JOB NO: SELFM-PW-EV	LOGGED BY: V Swanson
PROJ. MGR.: JC	EDITED BY:
DRILLING CONTRACTOR: Tyree	
DRILL RIG TYPE: Mobil B80	
DRILLERS NAME: Mike Beck	
SAMPLING METHODS: Split Spoon	
HAMMER WT.: 140 lb	DROP: 30"
STARTED, TIME: 0600	DATE: 7/19/94
COMPLETED, TIME: 1130	DATE: 7/19/94
BORING DEPTH (ft): 20'	
CASING DEPTH (ft): 8'	
WATER DEPTH (ft): 17'	
TIME: 1130	
DATE: 7/19/94	
BACKFILLED, TIME: 1130	DATE: 7/19/94 BY: Tyree
SURFACE ELEV:	DATUM:
CONDITIONS:	

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN.	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION	DRILLING RATE (min./ft.)	PID READING (ppm)	ODOR (Y / N ?)	GRAPHIC WELL CONST.	DEPTH IN FEET	GRAPHIC LOG	
0-2	SS	5	6	24			1	N				SAND, fine, green-brown trace till
		10	6							1		
		12	6									
		17	6									
2-4	SS	7	6	18			0	N		2		SAME
		9	6									
		10	6							3		
		9	6									
4-6	SS	8	6	16			0	N		4		SAME
		7	6									
		6	6							5		
		7	6								SM	
6-8		7	6	16			0	N		6		
		7	6									
		7	6							7		
		10	6				0	N				
8-10		6	6	24						8		
		6	6									
		10	6							9		
		12	6									
										10		10' RED BROWN SAND
											SP	to 11'

TYREE ENVIRONMENTAL TECHNOLOGIES

FIELD LOG OF BORING (CONTINUED) 2700-4 SHEET 2 OF 3

PROJECT: NO: BORING NO:

DEPTH	TYPE	BLOWS	DRIVEN	REC'V'D	COND.	D. RATE	PID	ODOR	GR.WELL	DEPTH	GRAPHIC LOG	
10-12	SS	7	6	24			0	N		11		
		10	6									11-12' very fine green brown SAND and till
		17	6							12		
		11	6.									
12-14							0	N		13		VO, BN, TPH
												SAME
										14		
											SM	
14-16							0	N		15		SAME
										16		
16-18							0	N				SAME
										17		
18-20							0	N		18		SAME

DWR-138 M
12/91

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 29 - 30069
Atlas Sheet Coordinates 29 : 13 : 816

OWNER IDENTIFICATION - Owner U S ARMY FORT MONMOUTH
Address
City FORT MONMOUTH State NJ Zip Code

WELL LOCATION - If not the same as owner please give address. Owner's Well No. Bldg 2700-1 MW-1
County MONMOUTH Municipality OCEANPORT BORO Lot No. N/A Block No. N/A
Address

TYPE OF WELL (as per Well Permit Categories) MONITORING Date well completed 7 / 19 / 94
Regulatory Program Requiring Well UST Case I.D. # 92-3-7-1047-43

CONSULTING FIRM/FIELD SUPERVISOR (if applicable) Tele. #

WELL CONSTRUCTION

Total depth drilled 20 ft.
Well finished to 20 ft.
Borehole diameter:
Top 8 in.
Bottom 8 in.
Well was finished: ☐ above grade ☑ flush mounted
If finished above grade, casing height (stick up) above land surface ____ ft.
Was steel protective casing installed? ☐ Yes ☑ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing	6"	10'	4"	PVC
Outer Casing (Not Protective Casing)				
Screen (Note slot size)	10'	20'	4"	20 SLOT PVC
Tail Piece				
Gravel Pack	8'	20'		#2
Annular Seal/Grout	6"	8'		Bentonite Pellets
Method of Grouting	Tremmie			

Static water level after drilling 15 ft.
Water level was measured using Tape
Well was developed for 1 hours at 10 gpm
Method of development Pump
Was permanent pumping equipment installed? ☐ Yes ☑ No
Pump capacity ____ gpm
Pump type:
Drilling Method Auger
Drilling Fluid Type of Rig B-80
Name of Driller Michael E Beck
Health and Safety Plan submitted? ☑ Yes ☐ No
Level of Protection used on site (circle one) None D C B A
N.J. License No. 1421
Name of Drilling Company

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0-6" Top Soil
6"-16' Yellow Med To Coarse Sand + Clay
16-20' Lite Brown Fine Sand

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Date 7-20-94

COPIES: White & Green - DEPE Canary - Driller Pink - Owner Goldenrod - Health Dept.

THIS FORM MUST BE COMPLETED BY THE PERMITTEE AND/OR SURVEYOR

MONITORING WELL CERTIFICATION-FORM B-LOCATION CERTIFICATION

Name of Permittee: U.S. ARMY
Name of Facility: FORT MONMOUTH
Location: MONMOUTH COUNTY, NJ
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:
This number must be permanently affixed to the well casing. _____

Longitude (to nearest second): West 74° 05' 19.93"

Latitude (to nearest second): North 40° 17' 46.88"

Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): 69.93

Elevation of ground level (1/100th ft.) 70.31

Source of elevation datum (benchmark, nail, etc.) and year. (If an alternate datum has been approved by the Department, identify here, assume datum of 100', and give approximated actual elevation.) Source: CW-205

☑ 1927 ☐ 1983

Elev.: 55.13

Owners Well Number (As shown on application or plans): BLDG 2700.4 MW-1

Elevations are to be determined by double run, three wire leveling methods using balanced sights, commencing from a well marked and described point. This beginning point shall either be derived from Federal or State benchmarks if not more than 1000 feet from the site or from an alternate datum approved by the Department. Tolerances should meet third order standards, which are 0.05 ft x $(\text{miles})^{1/2}$. For sections less than 0.1 mile, let miles = 0.1.

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Wayne W. Burgett
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

WAYNE W BURGETT
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

31654
PROFESSIONAL LAND SURVEYOR'S LICENSE #

APPENDIX D

WELL SEARCH INFORMATION

SECTION 2.0

CHARLES WOOD AREA - WELL SEARCH

WELL SEARCH SUMMARY TABLE
CHARLES WOOD AREA
U.S. ARMY FORT MONMOUTH

WELL ID NO	WELL OWNER	WELL ADDRESS	TOTAL DEPTH (FEET BGS)	CASING LENGTH (FEET)	STATIC WATER ELEV. (FEET BGS)	USE CODE	NJDEPE PERMIT NO.
1	Wolf Press/Linda Daly	1138 Pinebrook Rd, Tinton Falls	215	200	33	D	29-19540
2	M&M Fair	7 Violate Court, Eatontown	40	30	8	G	29-28128
3	Frank Sancez	30 Victor Avenue, Eatontown	51	41	5	D	29-13163
4	Joseph Stella	144 Grant Avenue, Eatontown	117	111	12	D	29-16207
6	The Ranney School	235 Hope Rd, Tinton Falls	14	4	8	M	29-27751
7	The Ranney School	235 Hope Rd, Tinton Falls	14	4	6	M	29-27752
8	The Ranney School	235 Hope Rd, Tinton Falls	12	2	3.67	M	29-27800
9	The Ranney School	235 Hope Rd, Tinton Falls	25	5	5	G	29-14431
10	Anne Marie Schweitzer	27 Devon Court, Tinton Falls	46	32	6	G	29-11142
13	John Flock	463 Tinton Avenue, Tinton Falls	186	171	32	D	29-21698
18	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	4	6.4	M	29-25316
19	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	6.7	M	29-25317
20	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	7	M	29-25318
21	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	7	M	29-25319
22	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	7	M	29-25320
23	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	*	M	29-26053
24	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	*	M	29-26054
25	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	*	M	29-26055
26	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	7	M	29-26056
27	Eatontown Bd of Education	250 Pinebrook Rd, Eatontown	12	2	10	M	29-26865
28	Eatontown Bd of Education	250 Pinebrook Rd, Eatontown	12	2	10	M	29-26866
29	Eatontown Bd of Education	250 Pinebrook Rd, Eatontown	12	2	10	M	29-26867
30	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	23	3	8	E	29-27770
31	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	18	5	8	E	29-27771
32	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	18	5	8	E	29-27772
33	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	18	5	8	E	29-27773
45	S. Ruda	539 Tinton Avenue, Tinton Falls	261	241	21	D	29-28140
46	County of Monmouth	Hwy District 316 (B97;L21.01), Tinton Falls	17	7	11.08	M	29-28781
47	County of Monmouth	Hwy District 316 (B97;L21.01), Tinton Falls	17	7	7.17	M	29-28782
48	County of Monmouth	Hwy District 316 (B97;L21.01), Tinton Falls	17.5	7.5	8.33	M	29-29607
49	County of Monmouth	Hwy District 316 (B97;L21.01), Tinton Falls	14	4	6.58	M	29-29623
50	NJDOT	Block 113, Lot 8A,9A, Tinton Falls	63	58	*	M	29-16775
51	NJDOT	Block 113, Lot 8A,9A, Tinton Falls	76.5	71.5	*	M	29-16776

ID – Identification
BGS – Below Ground Surface
G – Irrigation Well
D – Domestic Well
P – Inactive Production Well

M – Monitoring Well
E – Recovery Well
S – Sealed Well
* – This information was not available during the well search

WELL SEARCH SUMMARY TABLE
CHARLES WOOD AREA
U.S. ARMY FORT MONMOUTH

WELL ID NO	WELL OWNER	WELL ADDRESS	TOTAL DEPTH (FEET BGS)	CASING LENGTH (FEET)	STATIC WATER ELEV. (FEET BGS)	USE CODE	NJDEPE PERMIT NO.
52	County of Monmouth	143A Wayside Road, Tinton Falls	17	7	11.33	M	29-27443
53	County of Monmouth	143A Wayside Road, Tinton Falls	17	7	11.5	M	29-27444
54	County of Monmouth	143A Wayside Road, Tinton Falls	17.5	7.5	11.75	M	29-27453
55	D Bowe/Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	12	2	4	M	29-23921
56	D. Bowe	Block 114.01, Lot 21.02, Tinton Falls	12	2	4	M	29-25775
57	David E. Bowe	Block 114.01, Lot 21.02, Tinton Falls	8	0	4	M	29-26312
58	Win Cup	46 Park Road, Tinton Falls	13	3	3.5	M	29-29421
59	D Bowe/Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	12	2	3	M	29-23919
60	D Bowe/Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	12	2	3	M	29-23290
61	D Bowe/Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	9	2	3	M	29-23916
62	D Bowe/Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	13	2	3	M	29-23917
63	D Bowe/Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	12	2	3	M	29-23918
102	Exxon Corporation	Block 2; Lot 7.01,8 Eatontown	15	3	5	M	29-26806
103	Exxon Corporation	Block 2; Lot 7.01,8 Eatontown	16	3	5	M	29-26807
104	Exxon Corporation	Block 2; Lot 7.01,8 Eatontown	17	3	6	M	29-26808
105	Exxon Corporation	Block 2; Lot 7.01,8 Eatontown	17	3	5	M	29-26809
107	Amoco Oil Company	Route 35 South, Eatontown	16.5	1.5	12	M	29-14593
108	Amoco Oil Company	Route 35 South, Eatontown	16.5	1.5	12	M	29-14594
109	Amoco Oil Company	Route 35 South, Eatontown	16.5	1.5	12	M	29-14595
110	Amoco Oil Company	Route 35 South, Eatontown	16.5	1.5	12	M	29-14596
111	Harold E. Conover	11 West Street, Eatontown	150	150	7	D	29-2952
126	Tinton Woods	301 Tinton Avenue., Eatontown	80	41	15	G	29-13187
2567/1	U.S. Army, Fort Monmouth	Charles Wood Bldg 2567, Ft Monmouth ***	13	3	4	M	29-26925
2567/2	U.S. Army, Fort Monmouth	Charles Wood Bldg 2567, Ft Monmouth ***	13	3	5.5	M	29-26926
2567/3	U.S. Army, Fort Monmouth	Charles Wood Bldg 2567, Ft Monmouth ***	13	3	4	M	29-26927
2567/4	U.S. Army, Fort Monmouth	Charles Wood Bldg 2567, Ft Monmouth ***	12	2	3	M	29-26928
3021/1	U.S. Army, Fort Monmouth	Charles Wood Bldg 3021, Ft Monmouth	12	2	3.5	M	29-26930
3021/2	U.S. Army, Fort Monmouth	Charles Wood Bldg 3021, Ft Monmouth	11	1	3	M	29-26931
3021/3	U.S. Army, Fort Monmouth	Charles Wood Bldg 3021, Ft Monmouth	12	2	2.5	M	29-26932
2500/1	U.S. Army, Fort Monmouth	Charles Wood Bldg 2500, Ft Monmouth	25	5	7	M	29-29742
2500/2	U.S. Army, Fort Monmouth	Charles Wood Bldg 2500, Ft Monmouth	25	5	7	M	29-29743
2500/3	U.S. Army, Fort Monmouth	Charles Wood Bldg 2500, Ft Monmouth	25	5	7	M	29-29744
2500/4	U.S. Army, Fort Monmouth	Charles Wood Bldg 2500, Ft Monmouth	25	5	7	M	29-29745
P1	U.S. Army, Fort Monmouth	Charles Wood, Ft Monmouth	*	*	*	P	*
P2	U.S. Army, Fort Monmouth	Charles Wood, Ft Monmouth	*	*	*	P	*

ID – Identification
BGS – Below Ground Surface
G – Irrigation Well
D – Domestic Well
P – Inactive Production Well

M – Monitoring Well
E – Recovery Well
S – Sealed Well
* – This information was not available during the well search
*** – Form B has been completed for this well.

US Army Fort Monmouth Well Coordinates Charles Wood Area

Well No.	Permit No.	NJ Planar Coord****		Elevation-TOC	Elevation-GRD
		Northing	Easting		
1	29-19540	530800	2163200	41.5	40
2	29-28128	537125	2167270	***	***
3	29-13163	532540	2169300	***	***
4	29-16207	530600	2167380	***	52
6	29-27751	538100	2163440	***	***
7	29-27752	538080	2163710	***	***
8	29-27800	537930	2163550	***	***
9	29-14431	537935	2163820	***	***
10	29-11142	537200	2163140	***	90
13	29-21698	536750	2161900	56.5	55
18	29-25316	537000	2168170	***	***
19	29-25317	537000	2168170	***	***
20	29-25318	537000	2168170	***	***
21	29-25319	537000	2168170	***	***
22	29-25320	537000	2168170	***	***
23	29-26053	537000	2168170	***	***
24	29-26054	537000	2168170	***	***
25	29-26055	537000	2168170	***	***
26	29-26056	537000	2168170	***	***
27	29-26865	533000	2168320	***	***
28	29-26866	533000	2168320	***	***
29	29-26867	533000	2168320	***	***
30	29-27770	537220	2168150	***	***
31	29-27771	537220	2168150	***	***
32	29-27772	537220	2168150	***	***
33	29-27773	537220	2168150	***	***
45	29-28140	536165	2159995	***	***
46	29-28781	530650	2158720	***	***
47	29-28782	530650	2158720	***	***
48	29-29607	530650	2158720	***	***
49	29-29623	530650	2158720	***	***
50	29-16775	528720	2160450	***	***
51	29-16776	528720	2160450	***	***
52	29-27443	530480	2158725	***	***
53	29-27444	530480	2158725	***	***
54	29-27453	530480	2158725	***	***
55	29-23921	529100	2162200	***	***
56	29-25775	529100	2162200	***	***

Well No.	Permit No.	NJ Planar Coord****		Elevation-TOC	Elevation-GRD
		Northing	Easting		
57	29-26312	529100	2162200	***	***
58	29-29421	529100	2162200	***	***
59	29-23919	529100	2162200	***	***
60	29-23290	529100	2162200	***	***
61	29-23916	529100	2162200	***	***
62	29-23917	529100	2162200	***	***
63	29-23918	529100	2162200	***	***
102	29-26806	537380	2168125	***	***
103	29-26807	537380	2168125	***	***
104	29-26808	537380	2168125	***	***
105	29-26809	537380	2168125	***	***
106	29-22900	496050	2166050	***	***
107	29-14593	538700	2168050	***	***
108	29-14594	538700	2168050	***	***
109	29-14595	538700	2168050	***	***
110	29-14596	538700	2168050	***	***
111	29-2952	536625	2168160	***	***
126	29-13187	535985	2163975	***	50
2500/1	29-29742	531340	2161910	***	***
2500/2	29-29743	531340	2161910	***	***
2500/3	29-29744	531340	2161910	***	***
2500/4	29-29745	531340	2161910	***	***
2567/1	29-26925	533250	2163740	33.93	33.72
2567/2	29-26926	533250	2163740	35.26	35.24
2567/3	29-26927	533250	2163740	33.88	33.82
2567/4	29-26928	533250	2163740	33.51	33.38
3021/1	29-26930	533265	2165780	***	***
3021/2	29-26931	533265	2165780	***	***
3021/3	29-26932	533265	2165780	***	***

Notes: * - This information was not available during the well search

** - This well was not issued a permit by NJDEPE

*** - No elevation data was found for this well location.

**** - Except for wells 699/1-14, all coordinates shown are approximate. The information given does not represent surveyed coordinates.

TOC - Top of Casing

GRD - Ground Surface

WELL ID NO. 1

Form DWR-138
11/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

WELL RECORD

Well Permit No. 29 19540 ~~29 13 829~~
Atlas Sheet Coordinates _____ : _____ : _____

OWNER IDENTIFICATION - Owner WOLF PRESS/LINDA DALY
Address 1138 PINEBROOK ROAD
City TINTON FALLS (WR:4D) State NJ Zip Code

WELL LOCATION - If not the same owner please give address. Owner's Well No.
Address Property: 1138 Pinebrook Road, Tinton Falls, NJ
County City: Monmouth Municipality TINTON FALLS BO Lot No. 8 Block No. 114

WELL USE WITHDRAWAL Status IN USE

WATER USE DOMESTIC Average 1,000 gals. daily Maximum 2,000 gals. daily

WELL CONSTRUCTION Date well completed COMPLETED: 87/11/25
BOREHOLE DIMENSIONS Depths: Total TD: 215 ft. Finished _____ ft.
Diameter: Top 8.5 in. Bottom --- in.
Land Surface Elevation at well E: 40 ft. Elevation was determined using Topographic map
Casing Height (stick-up) above land surface 1.5" ft.

	DEPTH TO TOP (FT.)	LENGTH (FT.)	DIAMETER (IN.)	TYPE AND MATERIAL Screens: Note Slot Size(s)
Casing 1		L: 200	4.0"	Sched 40 PVC
Casing 2				
Casing 3	Top: 200	[illegible]	[illegible]	[illegible]
Screen 1				
Screen 2		[illegible]	4.0"	Sched 40 PVC
Tail Piece	Top: 190	~~25'~~	~~8.5"~~	.025 Blended
Gravel Pack	Surface	L: [illegible]		2" [illegible]
Grout				
Grouting Method	Pressure thru tremie pipe			

WELL FLOWS NATURALLY _____ gals. per min. at _____ ft. above the land surface.
Water rises to _____ ft. above the land surface.

Test Date: 87/11.25

RECORD OF TEST Test Date ____ / ____ / ____ Level: 154
Static water-level before pumping Static: 33 ft. below land surface. Water level _____ ft. below land surface after 1 hrs. of pumping.
Water level was measured using estimated Drawdown DD: 121 ft.
Discharge rate measured using measured container Discharge Rate Q: 60 gals. per min.
Well was pumped using Air lift Specific Capacity S: 0.5 gals. per min. per ft. of drawdown
Observed effects on nearby wells none
Water Quality (taste, odor, color, etc.) good

PERMANENT PUMPING EQUIPMENT Installed by PICKWICK WELL DRLG Pump Type Submersible
Mfrs. Name Gould/~~Red Jacket~~ Model Model: 10EJ07422
CAPACITY: Pump delivers ~~16 gpm~~ GPM at 40 PSI pressure.
POWER: ~~3/4 HP~~ HP at 2450 RPM Power Source Electric
DEPTHS: Pump ~~Set: 130~~ ft. Footpiece _____ ft. Airline _____ ft.
FLOW METER: Model _____ installed on _____ in. diameter pipe.

CONTRACTOR - Name of Drilling Contractor PICKWICK WELL DRILLING
Address P.O. Box 8, Farmingdale, NJ 07727 (201 938 5500)
City _____ State _____ Zip Code _____
Name of Driller ~~David Primost~~ M 1041 License No.
Norman Primost J 1040
~~Allen Primost~~ J 1407
Signature of Contractor [signature] Date 88/02/07

COPIES: White - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

APPENDIX E

WASTE DISPOSAL CERTIFICATES

CERTIFIED WEIGHTMASTER WEIGHT TICKET	S Army Garrison Fort Monmouth Directorate for Installation Logistics, Sup Svcs Div. Fort Monmouth, New Jersey 07703

WEIGHT

13040 Lbs. GROSS

12840 Lbs. TARE

250 Lbs. NET

VEHICLE IDENTIFICATION	B/L NUMBER	COMMODITY
HMC 259		2" Urea metal

NAME OF SHIPPER	NAME OF CARRIER
Ft Monmouth	Gary-Air - B Sutter

REMARKS	DRIVER SIGNATURE
# UST 81515-62	☐ DRIVER ON ☒ DRIVER OFF

DATE	WEIGHMASTER
10 Mar 94	

SBJHI Form 1871 — August 1988

USAGPM 2710-88

APPENDIX F

ANALYTICAL DATA PACKAGE

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEPE Certification # 13461

Client: U.S. Army
DEH, SELFM-EH-EV
Bldg. 167
Ft. Monmouth, NJ 07703

Lab. ID #: 1268.1-.6
Sample Rec'd: 09/10/93
Analysis Start: 09/10/93
Analysis Comp: 09/10/93

Analysis: 418.1 (TPH)
Matrix: Soil
Analyst: S. Hubbard
Extract: SONC.

NJDEPE UST Reg.#:
TMS #:
NJDEPE Case #: XXXX
Location #: Bldg. # 2700

Lab ID.	Description	%Solid	Result (mg/Kg)	MDL
1268.1	Site A, West Side Wall	87	ND	3.3
1268.2	Site B, South Side Wall	86	11.7	3.3
1268.3	Site C, East Side Wall	88	ND	3.3
1268.4	Site D, North Side Wall	88	309.	100
1268.5	Site E,Pit Bottom(highest Conc.)	84	7520. *	100
1268.6	Site F, Duplicate of E	83	7440. *	100
M. BL.	Method Blank	100	ND	3.3

Notes: ND = Not Detected, MDL = Method Detection Limit
* = Silica Gel Added

1268.5 Dup = 99%; 1268.6 Spike =119%; 1268.6 Spike Dup. = 84%

Brian K. McKee
Laboratory Director

PHC Conformance/Non-conformance Summary Report

	No	Yes
1. Blank Contamination - If yes, list the sample and the corresponding concentrations in each blank	✓	
2. Matrix Spike/Matrix Sp Dup. Recoveries Meet Criteria (If not met, list the sample and corresponding recovery which falls outside the acceptable range)		✓
3. IR Spectra submitted for standards, blanks, & samples		✓
4. Chromatograms submitted for standards, blanks, and samples if GC fingerprinting was conducted.	—	
5. Extraction holding time met. (If not met, list number of days exceeded for each sample)		✓
6. Analysis holding time met. (If not met, list number of days exceeded for each sample)		✓

Comments:

Laboratory Authentication Statement

I certify under penalty of law, where applicable, that this laboratory meets the Laboratory Performance Standards and Quality Control requirements specified in N.J.A.C. 7:18 and 40 CFR Part 136 for Water and Wastewater Analyses and SW 846 for Solid Waste Analysis. I have personally examined the information contained in this report, and to the best of my knowledge, I believe that the submitted information is true, accurate, complete, and meets the above referenced standards where applicable. I am aware that there are significant penalties for purposefully submitting falsified information, including the possibility of a fine and imprisonment.

Brian K. McKee
Laboratory Manager

SERV-AIR, INC.
An E-SYSTEMS Company

P.O. #:

Chain of Custody

Project #:	Sampler: Charles Appleby	Date / Time 9/10/93	Analysis Parameters	Start:
Customer: Serv-Air Inc.	Site Name: Bldg. 270014			Finish:
Phone: 532-6224				Preservation Method

Lab Sample ID Number	Date/Time		Customer Sample Location/ID Number	Sample Matrix	# of Bottles	TPHC	VOA 415	HNU	Remarks
1268.1	9/10/93	9:35	Site A West Side wall		2	X		ND	
.2	9/10/93	9:38	Site B South Side wall		2	X		ND	
.3	9/10/93	9:40	Site C East Side wall		2	X		ND	
.4	9/10/93	9:30	Site D North Side wall		2	X		ND	
.5	9/10/93	925	Site E Pit Bottom Highest Cont		2	X		100	VOA 415 to
.6	9/10/93	927	Site F Duplicate of E		2	X		100	be done if tPHC
									> 1000 ppm only.
									HNU - Sw - 270136
									Span @ 55 ppm = 5.2

Relinquished By (signature)	Date / Time	Received By (signature)	Shipped By:
[signature]	9/10/93 1115	[signature]	POV
Relinquished By (signature)	Date / Time	Received for Lab by (signature):	Date / Time

Note: A drawing depicting sample location should be attached or drawn on the reverse side of this chain of custody.

SAI-ENV COC form 01 Page 1 of 1 Pages Rev. A Date: 02 Apr 93

FT. MONMOUTH OFFICE
E-SYSTEMS, INC. • P. O. BOX 369, BUILDING 1209 • FT. MONMOUTH, NEW JERSEY 07703-5000 • (201) 544-0995

UST ANALYSIS RESULT CHECKLIST

(one form for each site report)

Building No. 2700 Laboratory(SAI/~~Cont.~~) ID#s 1268.5

IJO No. 93-0116 Date Sampled: 9-13-93

Date Analysis Submitted: _____ Date Reviewed: 5-12-94

ITEM	ITEM OF WORK	ITEM COMPLETE (YES/NO)	COMMENTS
A	Labor and Equip. Supplied	N	
B	Work done by Cert. Lab	Y	
C	Trip and Field Blanks, ect. Supplied by Contractor	N	
D	Contractor picked up samples at Bldg. 490	Y	[illegible]
G	Aqueous samples analyzed for Xylene, ~~MTBE, TBA~~	Y	
H	Chain of Custody correct (Hnu, Site Names, SAI #'s)	N	No HNU
H	MW sampling field data (DTW, Hnu/OVA, ect..)	NA	
H	Laboratory Decon. Narrative	NA	
J	Samples were not distributed to another Laboratory	Y	
K	Appropriate NJDEPE checklists are completed	Y	
J	Result headers are correct	Y	
J	QA/QC data	Y	
J	Non-TIC results reported within 48 hrs.	—	
J	Final Report complete within 3-Weeks (3 copies)	—	
J	Final Report complete within 4- weeks (3 copies) PP+40	—	
J	List Approved Contract Deviations	NA	

ANALYSIS / SERVICE	COST	QUANTITY	SUB-TOTAL
SOIL- B/N+15	$190.00	1	
SOIL- VOA+15	140.00	1	
SOIL- VOA+15, XYLENE,Pb	150.00		
SOIL- B/N+15, VOA+15, XYLENE, Pb	340.00		
SOIL- PP+40	825.00		
AQUEOUS- 624(XYLENE,TBA,MTBE) 625, Pb	340.00		
MONITORING WELL SAMPLING	65.00		
		TOTAL	$ 330

REVIEWERS NAME B. MK

21ST CENTURY ENVIRONMENTAL

618 HERON DRIVE P.O. BOX 489 • BRIDGEPORT, NJ 08014-0489 • 609-467-9521

E-SYSTEMS, INC

PROJECT: U.S. ARMY-FORT MONMOUTH, NJ BLDG 2700

ANALYSIS NO:	CLIENT ID:
A 4024	SITE E PIT BOTTOM

DATE RECEIVED: SEPTEMBER 13, 1993

TWENTY FIRST CENTURY
ENVIRONMENTAL, INC.

Richard W Lynch

RICHARD W. LYNCH
LABORATORY MANAGER

GC/MS ANALYSIS CONFORMANCE/NON-CONFORMANCE SUMMARY FORMAT

	No	Yes
1. Chromatograms Labeled/Compounds Identified (Field Samples and Method Blanks)		✓
2. GC/MS Tune Specifications		
a. BFB Meet Criteria		✓
b. DFTPP Meet Criteria		✓
3. GC/MS Tuning Frequency - Performed every 24 hours for 600 series and 12 hours for 8000 series.		✓
4. GC/MS Calibration - Initial Calibration performed within 30 days before sample analysis and continuing calibration performed within 24 hours of sample analysis for 600 series and 12 hours for 8000 series		✓
5. GC/MS Calibration Requirements		
a. Calibration Check Compounds		✓
b. System Performance Check Compounds		✓
6. Blank Contamination - If yes, list compounds and concentrations in each blank:		
a. VOA Fraction: Acetone + Methylene Chloride: Below MDL		
b. B/N Fraction: Bis (2-EH) Phthalate: Below MDL		
c. Acid Fraction:		
7. Surrogate Recoveries Meet Criteria		✓
If not met, list those compounds and their recoveries which fall outside the acceptable range:		
a. VOA Fraction: None		
b. B/N Fraction: TBP + NBZ OST		
c. Acid Fraction:		
If not met, were the calculations checked and the results qualified as "estimated"?		N/A
8. Matrix Spike/ Matrix Spike Duplicate Recoveries Meet Criteria (If not met, list those compounds and their recoveries which fall outside the acceptable range)		✓
a. VOA Fraction:		
b. B/N Fraction:		
c. Acid Fraction:		
9. Internal Standard Area/Retention Time Shift Meet Criteria		✓

GC/MS ANALYSIS CONFORMANCE/NON-CONFORMANCE SUMMARY FORMAT (CONTINUED)

	No	Yes
10. Extraction Holding Time Met		✓
If not met, list number of days exceeded for each sample:		
11. Analysis Holding Time Met		✓
If not met, list number of days exceeded for each sample:		

Additional Comments: This form Completed By Prime Contractor

Laboratory Manager: B. MK Date: 5-12-94

TABLE OF CONTENTS

Narrative 00001

Chain of Custody Forms 00002

Methodology 00003

Laboratory Chronicle 00004

Result Summary 00005

Data Package 00010

Quality Control Data 00019

NARRATIVE

There were no problems encountered during the analysis of this sample (A4024). All extractions and analysis were completed within proper hold times. Field blanks and trip blanks were not provided.

SERV-AIR, INC.
An E-SYSTEMS Company

174024

P.O. #: R3-0151

Chain of Custody

COC-02

Project #:	Sampler: Charles Appleby	Date / Time 9/10/93 0925	Analysis Parameters
Customer: Serv-Air, Inc.	Site Name: B.2700		
Phone:			

Start:

Finish:

Lab Sample ID Number	Date/Time Date	Date/Time Time	Customer Sample Location/ID Number	Sample Matrix	# of Bottles	VOA + 15	BN + 15	Preservation Method	Remarks
268.5	9/10/93	0925	Site E, Pit Bottom	Soil	1				9/13/93 Spoke to Glenn ~~[illegible]~~ on 9/13/93 at 11:15 to arrange pick-up? Mark F may pick-up 9/13/93 P.M.

Relinquished By (signature)	Date / Time	Received By (signature)	Shipped By:
Sarah J. Hubbard	9/13/93 1350	Mark Perlitz	
Mark Perlitz	9/13/93 1615	Lynda Carlin	

Relinquished By (signature)	Date / Time	Received for Lab by (signature):	Date / Time
			9/13/93 1615

Note: A drawing depicting sample location should be attached or drawn on the reverse side of this chain of custody.

FT. MONMOUTH OFFICE
E-SYSTEMS INC • P.O. BOX 369, BUILDING 1209 • FT. MONMOUTH, NEW JERSEY 07703-5000 • (201) 544-0995

Purgeables	U.S.E.P.A. Method 624 - This is a purge and trap Gas Chromatograph/ Mass Spectrometer (GC/MS) method applicable to the determination of the compounds listed in the U.S.E.P.A. Manual entitled "Test Procedures for the Analysis of Organic Pollutants". An HP5996 GC/MS was used with a capillary column. Method detection limits are as stated. Soil samples are prepared for analysis as prescribed in Method 8240/8260 from SW-846.
Acid Extractables Base Neutrals	U.S.E.P.A. Method 625 - This method covers the determination of a number of organic compounds that are partitioned in an organic solvent and amenable to gas chromatography/mass spectrometer (GC/MS) method applicable to the determination of the compounds listed in the U.S.E.P.A. manual entitled "Test Procedures for the Analysis of Organic Pollutants". A HP5970 was used with a DB-5 FSCC. Method detection limits are as stated. Soil samples were prepared for analysis as prescribed in Method and analyzed as prescribed in Method 8270 from SW-846.

LABORATORY CHRONICLE

RECEIPT/REFRIGERATION 9/13/93

ORGANICS
EXTRACTION

1. Acids NA
2. Base/Neutrals 9/14/93
3. Pesticides/PCB's/Herbicides NA
4. Petroleum Hydrocarbons/Oil & Grease NA

ANALYSIS

1. Volatiles 9/14/93
2. Acids NA
3. Base/Neutrals 9/14/93
4. Pesticides/PCB's/Herbicides NA
5. Petroleum Hydrocarbons/Oil & Grease NA
6. Total Organic Carbon NA

Section Supervisor
Review & Approval Jeffrey G Martin

INORGANICS

1. Metals NA
2. Cyanides NA
3. Phenols NA

OTHER ANALYTES

Section Supervisor
Review & Approval NA

Quality Control Supervisor
Review & Approval

Laboratory Director
Review & Approval Richard W Pigott

If fractions are re-extracted and re-analyzed because initial endeavors did not meet quality control acceptance criteria, include dates for both.

RESULT SUMMARY

21st Century Environmental Inc.
VOLATILE ORGANIC ANALYSIS DATA

JOB NUMBER	US ARMY FT. MONMOUTH NJ	MATRIX	Soil
SAMPLE NUMBER	A4024	DILUTION FACTOR	125.00
CLIENT ID	BLDG 2700 SITE E PIT BOTTOM	COMMENTS	HNU NA
DATA FILE	>81630	DATE ANALYZED	09/14/93

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
Chloromethane	ND	1500	2-Chloroethylvinylether	ND	1500
Bromomethane	ND	1500	2-Hexanone	ND	1500
Vinyl Chloride	ND	1500	trans-1,3-Dichloropropene	ND	760
Chloroethane	ND	1500	Toluene	860	760
Acrolein	ND	7600	cis-1,3-Dichloropropene	ND	760
Acetone	ND B	1500	1,1,2,2-Tetrachloroethane	ND	760
1,1-Dichloroethene	ND	760	1,1,2-Trichloroethane	ND	760
Carbon Disulfide	ND	1500	4-Methyl-2-pentanone	ND	1500
Acrylonitrile	ND	7600	Tetrachloroethene	ND	760
Methylene Chloride	930 B	760	Dibromochloromethane	ND	760
1,2-Dichloroethene(trans)	ND	760	Chlorobenzene	ND	760
1,1-Dichloroethane	ND	760	Ethylbenzene	1000	760
Vinyl Acetate	ND	760	m&p-Xylenes	3100	760
2-Butanone	ND	1500	o-Xylene	2200	760
Chloroform	ND	760	Styrene	ND	760
1,1,1-Trichloroethane	ND	760	Bromoform	ND	760
Carbon Tetrachloride	ND	760	m-Dichlorobenzene	ND	760
1,2-Dichloroethane	ND	760	p-Dichlorobenzene	ND	760
Benzene	ND	760	o-Dichlorobenzene	ND	760
Trichloroethene	ND	760	Bromodichloromethane	ND	760
1,2 Dichloropropane	ND	760			

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	106	70 - 121	OK
Toluene-d8	98.3	81 - 117	OK
Bromofluorobenzene	102	74 - 121	OK

Percent Solid of 82.0 is used for all Target Compounds.

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected
(D) Indicates calculated from dilution

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SITE E
PIT BOTTOM

ab Name:21st Century Environmental Contract:N/A

ient Name: US Army Ft. Monmouth, NJ

Client ID: BLDG 2700

atrix: (soil/water) SOIL

Lab Sample ID: A4024

ample wt/vol: 0.04 (g/mL) g

Lab File ID: >B1630

evel: (low/med) LOW

Date Received: 09/13/93

Moisture: 18

Date Analyzed: 09/14/93

olumn: DB-624

Dilution Factor: 125

Number TICs Found 20

CONCENTRATION UNITS
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST CONC
1	1678928	Cyclohexane, propyl- (8CI9CI)	14.01	5500
2	611143	Benzene, 1-ethyl-2-methyl- (9CI)	15.14	12000
3	124185	Decane (8CI9CI)	15.30	11000
4	622968	Benzene, 1-ethyl-4-methyl- (9CI)	15.65	5200
5	620144	Benzene, 1-ethyl-3-methyl- (9CI)	15.96	11000
6	1074437	Benzene, 1-methyl-3-propyl- (9CI)	17.13	11000
7	105055	Benzene, 1,4-diethyl- (9CI)	17.24	15000
8	1120214	Undecane (8CI9CI)	17.47	5000
9	135988	Benzene, (1-methylpropyl)- (9CI)	17.58	4900
10	535773	Benzene, 1-methyl-3-(1-methylethyl)- (9CI)	17.80	8000
11	934805	Benzene, 4-ethyl-1,2-dimethyl- (9CI)	17.94	4300
12	1196583	Benzene, (1-ethylpropyl)- (8CI9CI)	18.19	12000
13	619556	Benzamide, 4-methyl- (9CI)	18.38	4500
14	95932	Benzene, 1,2,4,5-tetramethyl- (8CI9CI)	18.77	6600
15	2049958	Benzene, (1,1-dimethylpropyl)- (9CI)	18.91	4600
16	767588	1H-Indene, 2,3-dihydro-1-methyl- (9CI)	19.24	6500
17	824226	1H-Indene, 2,3-dihydro-4-methyl- (9CI)	19.54	13000
18	119642	Naphthalene, 1,2,3,4-tetrahydro- (8CI9CI)	19.85	11000
19	17057828	1H-Indene, 2,3-dihydro-1,2-dimethyl- (9CI)	20.42	4400
20	3877198	Naphthalene, 1,2,3,4-tetrahydro-2-methyl- (8	20.87	5200

21st Century Environmental Inc.
SEMIVOLATILE ANALYSIS DATA

JOB NUMBER	US ARMY FT. MONMOUTH, NJ	MATRIX	Soil
SAMPLE NUMBER	A4024	DILUTION FACTOR	50.00
CLIENT ID	BLDG 2700,SITE E,PIT BOTTOM	QA BATCH	
DATA FILE	>C2236	DATE ANALYZED	09/14/93

COMPOUND	UG/KG	MDL
N-Nitrosodimethylamine	ND	20000
bis(-2-Chloroethyl)Ether	ND	20000
1,3-Dichlorobenzene	ND	20000
1,4-Dichlorobenzene	ND	20000
Benzyl Alcohol	ND	20000
1,2-Dichlorobenzene	ND	20000
bis(2-chloroisopropyl)Ether	ND	20000
N-Nitroso-Di-n-Propylamine	ND	20000
Hexachloroethane	ND	20000
Nitrobenzene	ND	20000
Isophorone	ND	20000
Benzoic Acid	ND	100000
bis(-2-Chloroethoxy)Methane	ND	20000
1,2,4-Trichlorobenzene	ND	20000
Naphthalene	6900 J	20000
4-Chloroaniline	ND	20000
Hexachlorobutadiene	ND	20000
2-Methylnaphthalene	43000	20000
Hexachlorocyclopentadiene	ND	20000
2-Chloronaphthalene	ND	20000
2-Nitroaniline	ND	100000
Dimethyl Phthalate	ND	20000
Acenaphthylene	ND	20000
3-Nitroaniline	ND	100000
Acenaphthene	ND	20000
Dibenzofuran	2100 J	20000
2,4-Dinitrotoluene	ND	20000

COMPOUND	UG/KG	MDL
2,6-Dinitrotoluene	ND	20000
Diethylphthalate	ND	20000
4-Chlorophenyl-phenylether	ND	20000
Fluorene	5400 J	20000
4-Nitroaniline	ND	100000
N-Nitrosodiphenylamine	ND	20000
4-Bromophenyl-phenylether	ND	20000
Hexachlorobenzene	ND	20000
Phenanthrene	11000 J	20000
Anthracene	ND	20000
Di-n-Butylphthalate	ND	20000
Fluoranthene	ND	20000
Pyrene	ND	20000
Butylbenzylphthalate	ND	20000
3,3'-Dichlorobenzidine	ND	40000
Benzo(a)Anthracene	ND	20000
Bis(2-Ethylhexyl)Phthalate	ND	20000
Chrysene	ND	20000
Di-n-Octyl Phthalate	ND	20000
Benzo(b)Fluoranthene	ND	20000
Benzo(k)Fluoranthene	ND	20000
Benzo(a)Pyrene	ND	20000
Indeno(1,2,3-cd)Pyrene	ND	20000
Dibenzo(a,h)Anthracene	ND	20000
Benzo(g,h,i)Perylene	ND	20000
Benzidine	ND	40000

Percent Solid of 82.0 is used for all Target compounds.

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

E1

semi-VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NUMBER

BLDG 2700
SITE E
PIT BOTTOM

Client: US Army, Ft. Monmouth, NJ

Comments: None

Matrix: (soil/water) SOIL

Lab Sample ID: A4024

Sample wt/vol: 30 (g/mL) GM

Lab File ID: >C2236

Level: LOW

Date Received: NA

% Moisture: 18

Date Analyzed 09/14/93

Extraction: (Sepf/Cont/Sonc) SONC

Date Extracted 09/14/93

GPC (Y or N): N

Column: DB-5

Dilution Factor: 50

Number TICs Found 20

CONCENTRATION UNITS
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST CONC
1	UNKNOWN	10.66	75000
2	UNKNOWN	12.35	139000
3	UNKNOWN	14.10	38000
4	UNKNOWN	14.98	83000
5	UNKNOWN	15.32	250000
6	Dimethyl Naphthalene Isomer	15.43	72000
7	Dimethyl Naphthalene Isomer	15.65	62000
8	Dimethyl Naphthalene Isomer	15.70	47000
9	UNKNOWN	15.97	48000
10	UNKNOWN	16.15	102000
11	UNKNOWN	16.65	250000
12	Trimethyl Naphthalene Isomer	17.13	40000
13	UNKNOWN	17.33	67000
14	UNKNOWN	17.91	250000
15	UNKNOWN	19.09	350000
16	UNKNOWN	19.17	266000
17	UNKNOWN	20.23	92000
18	UNKNOWN	20.32	100000
19	UNKNOWN	21.29	157000
20	UNKNOWN	22.32	93000

DATA PACKAGE

21st Century Environmental Inc.
VOLATILE ORGANIC ANALYSIS DATA

JOB NUMBER	US ARMY FT. MONMOUTH NJ	MATRIX	Soil
SAMPLE NUMBER	A4024	DILUTION FACTOR	125.00
CLIENT ID	BLDG 2700 SITE E PIT BOTTOM	COMMENTS	HNU NA
DATA FILE	>81630	DATE ANALYZED	09/14/93

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
Chloromethane	ND	1500	2-Chloroethylvinylether	ND	1500
Bromomethane	ND	1500	2-Hexanone	ND	1500
Vinyl Chloride	ND	1500	trans-1,3-Dichloropropene	ND	760
Chloroethane	ND	1500	Toluene	860	760
Acrolein	ND	7600	cis-1,3-Dichloropropene	ND	760
Acetone	ND B	1500	1,1,2,2-Tetrachloroethane	ND	760
1,1-Dichloroethene	ND	760	1,1,2-Trichloroethane	ND	760
Carbon Disulfide	ND	1500	4-Methyl-2-pentanone	ND	1500
Acrylonitrile	ND	7600	Tetrachloroethene	ND	760
Methylene Chloride	930 B	760	Dibromochloromethane	ND	760
1,2-Dichloroethene(trans)	ND	760	Chlorobenzene	ND	760
1,1-Dichloroethane	ND	760	Ethylbenzene	1000	760
Vinyl Acetate	ND	760	m&p-Xylenes	3100	760
2-Butanone	ND	1500	o-Xylene	2200	760
Chloroform	ND	760	Styrene	ND	760
1,1,1-Trichloroethane	ND	760	Bromoform	ND	760
Carbon Tetrachloride	ND	760	m-Dichlorobenzene	ND	760
1,2-Dichloroethane	ND	760	p-Dichlorobenzene	ND	760
Benzene	ND	760	o-Dichlorobenzene	ND	760
Trichloroethene	ND	760	Bromodichloromethane	ND	760
1,2 Dichloropropane	ND	760			

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	106	70 - 121	OK
Toluene-d8	98.3	81 - 117	OK
Bromofluorobenzene	102	74 - 121	OK

Percent Solid of 82.0 is used for all Target Compounds.

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected
(D) Indicates calculated from dilution

21st Century Environmental Inc.
VOLATILE ORGANIC ANALYSIS DATA

JOB NUMBER	US ARMY FT. MONMOUTH NJ	MATRIX	Soil
SAMPLE NUMBER	A4024	DILUTION FACTOR	125.00
CLIENT ID	BLDG 2700 SITE E 1268.5	COMMENTS	
DATA FILE	>81630	DATE ANALYZED	09/14/93

COMPOUND	UG/KG		MDL
Acrolein	ND		7600
Acrylonitrile	ND		7600
Chloromethane	ND		1500
Bromomethane	ND		1500
Vinyl Chloride	ND		1500
Chloroethane	ND		1500
Acetone	ND	B	1500
1,1-Dichloroethene	ND		760
Carbon Disulfide	ND		1500
Methylene Chloride	930	B	760
1,2-Dichloroethene(trans)	ND		760
1,1-Dichloroethane	ND		760
Vinyl Acetate	ND		760
2-Butanone	ND		1500
Chloroform	ND		760
1,1,1-Trichloroethane	ND		760
Carbon Tetrachloride	ND		760
1,2-Dichloroethane	ND		760
Benzene	ND		760
Trichloroethene	ND		760
1,2-Dichloropropane	ND		760

COMPOUND	UG/KG	MDL
Bromodichloromethane	ND	760
2-Chloroethylvinylether	ND	1500
2-Hexanone	ND	1500
trans-1,3-Dichloropropene	ND	760
Toluene	860	760
cis-1,3-Dichloropropene	ND	760
1,1,2,2-Tetrachloroethane	ND	760
1,1,2-Trichloroethane	ND	760
4-Methyl-2-pentanone	ND	1500
Tetrachloroethene	ND	760
Dibromochloromethane	ND	760
Chlorobenzene	ND	760
Ethylbenzene	1000	760
m&p-Xylenes	3100	760
o-Xylene	2200	760
Styrene	ND	760
Bromoform	ND	760
m-Dichlorobenzene	ND	760
p-Dichlorobenzene	ND	760
o-Dichlorobenzene	ND	760

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	106	70 - 121	OK
Toluene-d8	98.3	81 - 117	OK
Bromofluorobenzene	102	74 - 121	OK

Percent Solid of 82.0 is used for all Target compounds.

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SITE E
PIT BOTTOM

Lab Name: 21st Century Environmental Contract: N/A

Client Name: US Army Ft. Monmouth, NJ

Client ID: BLDG 2700

Matrix: (soil/water) SOIL

Lab Sample ID: A4024

Sample wt/vol: 0.04 (g/mL) g

Lab File ID: >B1630

Level: (low/med) LOW

Date Received: 09/13/93

Moisture: 18

Date Analyzed: 09/14/93

Column: DB-624

Dilution Factor: 125

Number TICs Found 20

CONCENTRATION UNITS
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST CONC
1	1678928	Cyclohexane, propyl- (8CI9CI)	14.01	5500
2	611143	Benzene, 1-ethyl-2-methyl- (9CI)	15.14	12000
3	124185	Decane (8CI9CI)	15.30	11000
4	622968	Benzene, 1-ethyl-4-methyl- (9CI)	15.65	5200
5	620144	Benzene, 1-ethyl-3-methyl- (9CI)	15.96	11000
6	1074437	Benzene, 1-methyl-3-propyl- (9CI)	17.13	11000
7	105055	Benzene, 1,4-diethyl- (9CI)	17.24	15000
8	1120214	Undecane (8CI9CI)	17.47	5000
9	135988	Benzene, (1-methylpropyl)- (9CI)	17.58	4900
10	535773	Benzene, 1-methyl-3-(1-methylethyl)- (9CI)	17.80	8000
11	934805	Benzene, 4-ethyl-1,2-dimethyl- (9CI)	17.94	4300
12	1196583	Benzene, (1-ethylpropyl)- (8CI9CI)	18.19	12000
13	619556	Benzamide, 4-methyl- (9CI)	18.38	4500
14	95932	Benzene, 1,2,4,5-tetramethyl- (8CI9CI)	18.77	6600
15	2049958	Benzene, (1,1-dimethylpropyl)- (9CI)	18.91	4600
16	767588	1H-Indene, 2,3-dihydro-1-methyl- (9CI)	19.24	6500
17	824226	1H-Indene, 2,3-dihydro-4-methyl- (9CI)	19.54	13000
18	119642	Naphthalene, 1,2,3,4-tetrahydro- (8CI9CI)	19.85	11000
19	17057828	1H-Indene, 2,3-dihydro-1,2-dimethyl- (9CI)	20.42	4400
20	3877198	Naphthalene, 1,2,3,4-tetrahydro-2-methyl- (8	20.87	5200

E1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NUMBER

SITE E

Client Name: US ARMT FT. MONMOUTH, NJ

Matrix: (soil/water) SOIL

Sample wt/vol: .04 (g/mL) g

Level: MED

% Moisture: 18

Column: CAP

Number TICs Found 20

Client Name: BLDG 2700

Lab Sample ID: A4024

Lab File ID: >B1630

Date Received: 09/13/93

Date Analyzed 09/14/93

Dilution Factor: 125

CONCENTRATION UNITS
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST CONC
1	1678928	Cyclohexane, propyl- (8CI9CI)	14.01	5500
2	611143	Benzene, 1-ethyl-2-methyl- (9CI)	15.14	12000
3	124185	Decane (8CI9CI)	15.30	11000
4	622968	Benzene, 1-ethyl-4-methyl- (9CI)	15.65	5200
5	620144	Benzene, 1-ethyl-3-methyl- (9CI)	15.96	11000
6	1074437	Benzene, 1-methyl-3-propyl- (9CI)	17.13	11000
7	105055	Benzene, 1,4-diethyl- (9CI)	17.24	15000
8	1120214	Undecane (8CI9CI)	17.47	5000
9	135988	Benzene, (1-methylpropyl)- (9CI)	17.58	4900
10	535773	Benzene, 1-methyl-3-(1-methylethyl)- (9CI)	17.80	8000
11	934805	Benzene, 4-ethyl-1,2-dimethyl- (9CI)	17.94	4300
12	1196583	Benzene, (1-ethylpropyl)- (8CI9CI)	18.19	12000
13	619556	Benzamide, 4-methyl- (9CI)	18.38	4500
14	95932	Benzene, 1,2,4,5-tetramethyl- (8CI9CI)	18.77	6600
15	2049958	Benzene, (1,1-dimethylpropyl)- (9CI)	18.91	4600
16	767588	1H-Indene, 2,3-dihydro-1-methyl- (9CI)	19.24	6500
17	824226	1H-Indene, 2,3-dihydro-4-methyl- (9CI)	19.54	13000
18	119642	Naphthalene, 1,2,3,4-tetrahydro- (8CI9CI)	19.85	11000
19	17057828	1H-Indene, 2,3-dihydro-1,2-dimethyl- (9CI)	20.42	4400
20	3877198	Naphthalene, 1,2,3,4-tetrahydro-2-methyl- (8	20.87	5200

QUANT REPORT

Operator ID: MANAGER
Output File: ^B1630::D4
Data File: >B1630::D6
Name: A4024
Misc: BLDG 2700 SITE E 1268.5

Quant Rev: 6
Quant Time: 930914 04:48
Injected at: 930914 04:02
Dilution Factor: 1.00000

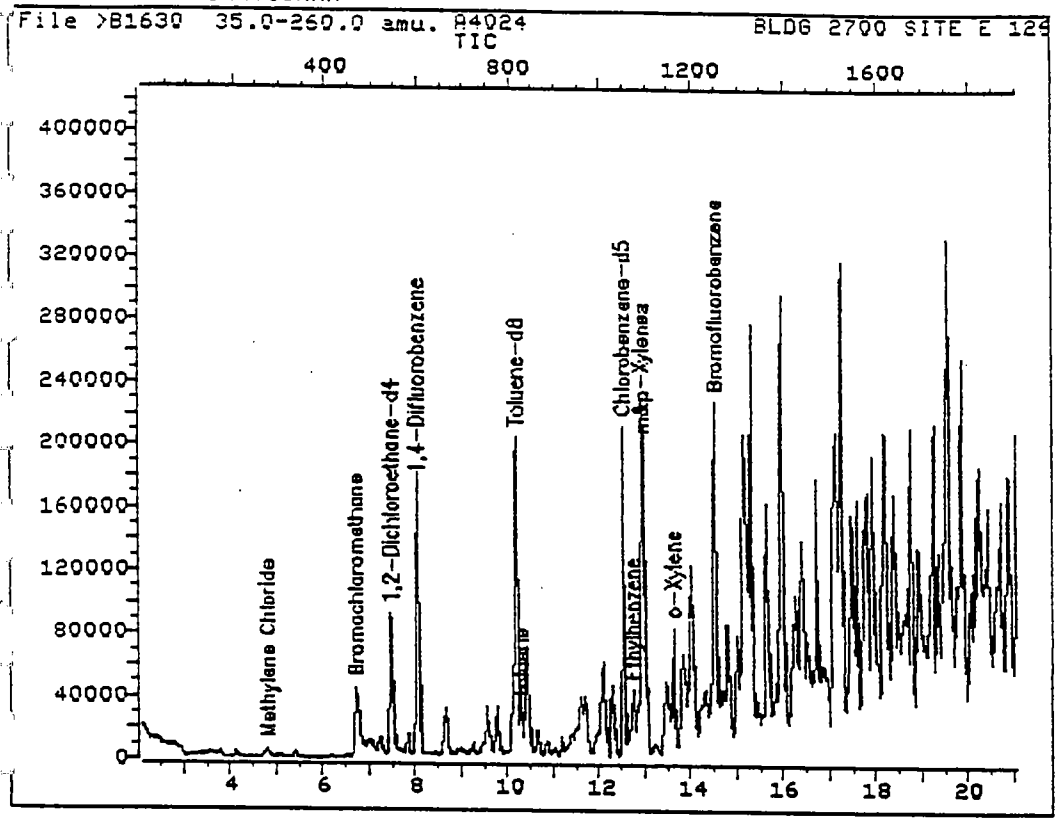
.04g

ID File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930914 02:58

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	6.71	463	50195M	50.00	UG/L	100
15)	Methylene Chloride	4.80	271	7655	6.12	UG/L	74
[illegible])	1,2-Dichloroethane-d4	7.47	540	124864	53.02	UG/L	100
24)	*1,4-Difluorobenzene	8.04	597	272799	50.00	UG/L	100
33)	Toluene-d8	10.18	813	274840	49.13	UG/L	100
[illegible])	Toluene	10.28	823	33907	5.62	UG/L	98
[illegible])	*Chlorobenzene-d5	12.52	1048	231166	50.00	UG/L	100
43)	Ethylbenzene	12.74	1070	50816	6.82	UG/L	80
[illegible])	m&p-Xylenes	12.94	1090	111858	20.66	UG/L	90
[illegible])	o-Xylene	13.62	1158	79044	14.33	UG/L	87
48)	Bromofluorobenzene	14.53	1250	140522	51.18	UG/L	100

* Compound is ISTD

TOTAL ION CHROMATOGRAM



Data File: >B1630::D6
Name: A4024
Misc: BLDG 2700 SITE E 1268.5

Quant Output File: ^B1630::D4

.04g

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930914 02:58

Operator ID: MANAGER
Quant Time: 930914 04:48
Injected at: 930914 04:02

21st Century Environmental Inc.
SEMIVOLATILE ANALYSIS DATA

JOB NUMBER	US ARMY FT. MONMOUTH, NJ	MATRIX	Soil
SAMPLE NUMBER	A4024	DILUTION FACTOR	50.00
CLIENT ID	BLDG 2700,SITE E,PIT BOTTOM	QA BATCH	
DATA FILE	>C2236	DATE ANALYZED	09/14/93

COMPOUND	UG/KG	MDL
N-Nitrosodimethylamine	ND	20000
bis(-2-Chloroethyl)Ether	ND	20000
1,3-Dichlorobenzene	ND	20000
1,4-Dichlorobenzene	ND	20000
Benzyl Alcohol	ND	20000
1,2-Dichlorobenzene	ND	20000
bis(2-chloroisopropyl)Ether	ND	20000
N-Nitroso-Di-n-Propylamine	ND	20000
Hexachloroethane	ND	20000
Nitrobenzene	ND	20000
Isophorone	ND	20000
Benzoic Acid	ND	100000
bis(-2-Chloroethoxy)Methane	ND	20000
1,2,4-Trichlorobenzene	ND	20000
Naphthalene	6900 J	20000
4-Chloroaniline	ND	20000
Hexachlorobutadiene	ND	20000
2-Methylnaphthalene	43000	20000
Hexachlorocyclopentadiene	ND	20000
2-Chloronaphthalene	ND	20000
2-Nitroaniline	ND	100000
Dimethyl Phthalate	ND	20000
Acenaphthylene	ND	20000
3-Nitroaniline	ND	100000
Acenaphthene	ND	20000
Dibenzofuran	2100 J	20000
2,4-Dinitrotoluene	ND	20000

COMPOUND	UG/KG	MDL
2,6-Dinitrotoluene	ND	20000
Diethylphthalate	ND	20000
4-Chlorophenyl-phenylether	ND	20000
Fluorene	5400 J	20000
4-Nitroaniline	ND	100000
N-Nitrosodiphenylamine	ND	20000
4-Bromophenyl-phenylether	ND	20000
Hexachlorobenzene	ND	20000
Phenanthrene	11000 J	20000
Anthracene	ND	20000
Di-n-Butylphthalate	ND	20000
Fluoranthene	ND	20000
Pyrene	ND	20000
Butylbenzylphthalate	ND	20000
3,3'-Dichlorobenzidine	ND	40000
Benzo(a)Anthracene	ND	20000
Bis(2-Ethylhexyl)Phthalate	ND	20000
Chrysene	ND	20000
Di-n-Octyl Phthalate	ND	20000
Benzo(b)Fluoranthene	ND	20000
Benzo(k)Fluoranthene	ND	20000
Benzo(a)Pyrene	ND	20000
Indeno(1,2,3-cd)Pyrene	ND	20000
Dibenzo(a,h)Anthracene	ND	20000
Benzo(g,h,i)Perylene	ND	20000
Benzidine	ND	40000

Percent Solid of 82.0 is used for all Target compounds.

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

QUANT REPORT

Operator ID: JEFF
Output File: ^C2236::DA
Data File: >C2236::D2
Name: A4024 E-SYSTEM
Mix: 1:50D

Quant Rev: 6
Quant Time: 930914 17:23
Injected at: 930914 16:46
Dilution Factor: 1.00000

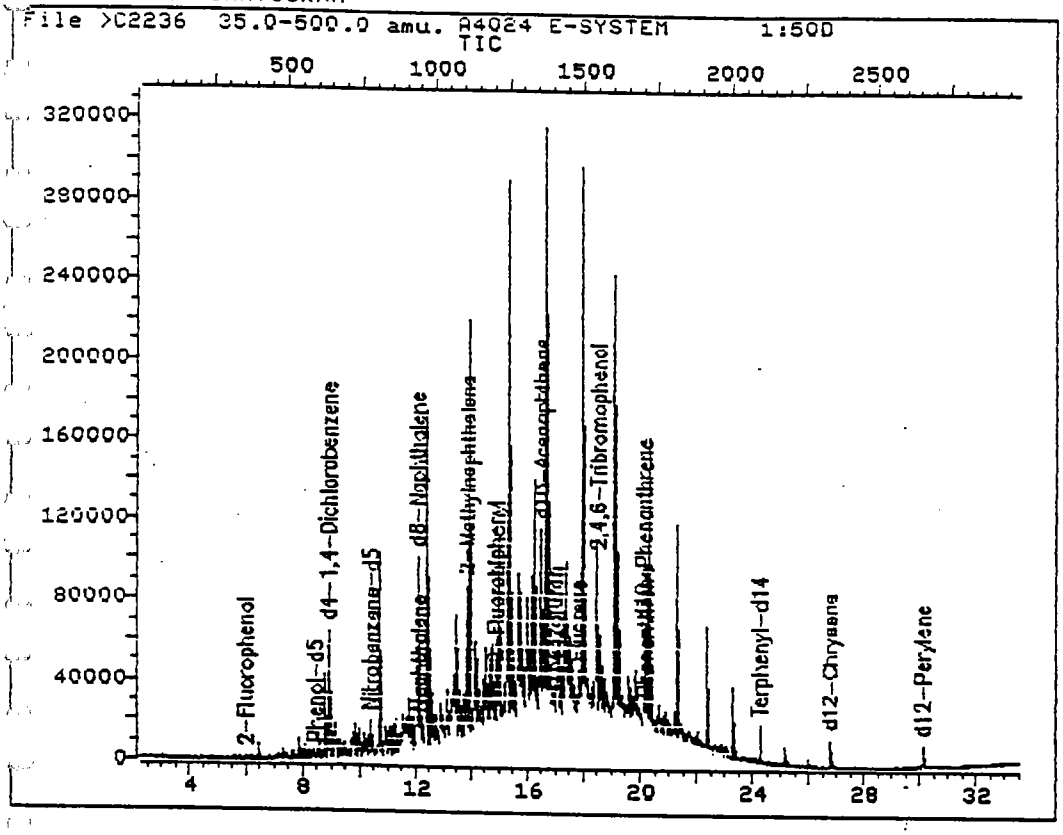
BTL# 5

ID File: ID914C::SC
Title: hSL BNA STD
Date: Calibration: 930914 12:00

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*d4-1,4-Dichlorobenzene	8.87	632	30451	40.00	UG/L	98
4)	2-Fluorophenol	5.97	354	633	1.23	UG/L	78
5)	Phenol-d5	8.43	590	1008	1.53	UG/L	98
18)	*d8-Naphthalene	12.03	934	73914	40.00	UG/L	94
19)	Nitrobenzene-d5	10.38	776	1075	1.32	UG/L	61
28)	Naphthalene	12.09	939	6917	3.41	UG/L	90
32)	2-Methylnaphthalene	13.84	1106	29555	21.07	UG/L	99
33)	*d10-Acenaphthene	16.46	1354	37285	40.00	UG/L	93
38)	2-Fluorobiphenyl	14.89	1205	1334	.98	UG/L	90
46)	Dibenzofuran	16.95	1400	1595	1.01	UG/L	96
51)	Fluorene	17.79	1480	3035	2.64	UG/L	86
53)	*d10-Phenanthrene	20.10	1698	33701	40.00	UG/L	97
56)	2,4,6-Tribromophenol	18.48	1545	30M	.28	UG/L	
60)	Phenanthrene	20.15	1703	5468	5.63	UG/L	96
64)	*d12-Chrysene	26.74	2330	10807	40.00	UG/L	96
67)	Terphenyl-d14	24.24	2091	288M	.88	UG/L	
73)	*d12-Perylene	30.07	2649	9518	40.00	UG/L	95

* Compound is ISTD

OTAL ION CHROMATOGRAM



Data File: >C2236
Name: A4024 E-SYSTEM
Misc: 1:50D

Quant Output File: ^C2236::DA

BTL# 5

Id File: ID914C::SC
Title: hSL BNA STD
Last Calibration: 930914 12:00

Operator ID: JEFF
Quant Time: 930914 17:23
Injected at: 930914 16:46

Q C RESULTS

21st Century Environmental Inc
SOIL VOLATILE SURROGATE RECOVERY

SAMPLE NO.	S1 (DCE)#	S2 (TOL)#	S3 (BFB)#	TOT OUT
BLANK	102	95	99	0
A4024	106	98	102	0
A3875MS	97	97	99	0
A3875MSD	98	100	98	0

	QC LIMITS
S1 (DCE) = 1,2-Dichloroethane-d4	70-121
S2 (TOL) = Toluene-d8	81-117
S3 (BFB) = Bromofluorobenzene	74-121

Column used to flag surrogate recovery values

21st Century Environmental Inc.
SOIL semi-VOLATILE SURROGATE RECOVERY

SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (FPH)#	S6 (TBP)#	TOT OUT
NA BLNK	92	90	129	93	89	59	0
A4024 1:50	132*	98	88	76	62	14*	2
A3589MS	86	97	87	101	88	78	0
A3589MSD	87	97	87	102	84	78	0

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(23-120)
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)
S3 (TPH)	= Terphenyl-d14	(18-137)
S4 (PHL)	= Phenol-d5	(24-113)
S5 (FPH)	= 2-Fluorophenol	(25-121)
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)

Column used to flag surrogate recovery values

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Contract: N/A

Lab Code: Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix Spike - EPA Sample No.: A3875 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.0	ND	53.2	106	59-172
Trichloroethene	50.0	ND	40.7	81	62-137
Benzene	50.0	ND	49.0	98	66-142
Toluene	50.0	ND	44.5	89	59-139
Chlorobenzene	50.0	ND	51.9	104	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	50.3	101	5	22	59-172
Trichloroethene	50.00	40.6	81	<1	24	62-137
Benzene	50.00	48.7	97	1	21	66-142
Toluene	50.00	44.8	90	1	21	59-139
Chlorobenzene	50.00	50.4	101	3	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

QUANT REPORT

Operator ID: MANAGER
Output File: ^81587::QT
Data File: >81587::D2
Name: A3875MS
Misc: P-2

Quant Rev: 6
Quant Time: 930910 01:50
Injected at: 930910 01:23
Dilution Factor: 1.00000

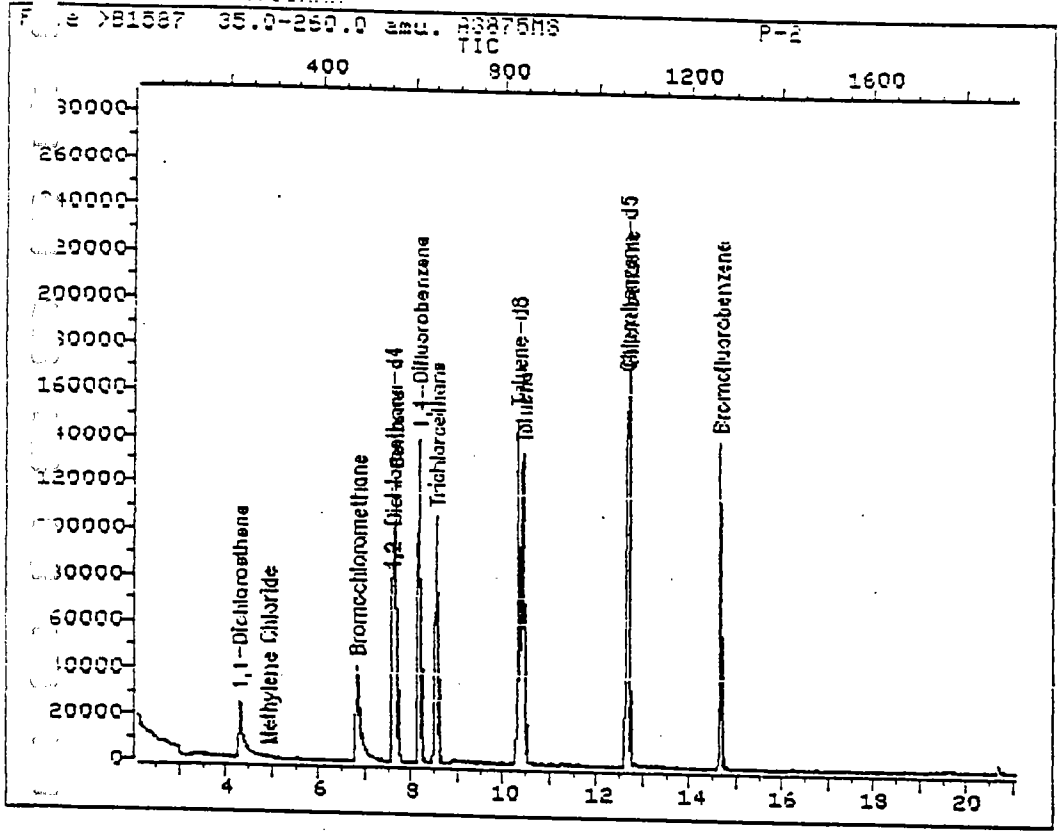
5g

ID File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930910 01:11

	Compound	R.T.	Scan#	Area	Conc	Units	q
1	*Bromochloromethane	6.82	475	38937M	50.00	UG/L	100
10)	1,1-Dichloroethene	4.29	220	59937	53.17	UG/L	100
15	Methylene Chloride	4.91	283	1126	1.30	UG/L	69
23	1,2-Dichloroethane-d4	7.58	552	93506	48.64	UG/L	100
24)	*1,4-Difluorobenzene	8.16	610	203744	50.00	UG/L	100
26)	Benzene	7.64	558	180085	49.04	UG/L	100
27	Trichloroethene	8.53	647	65731	40.72	UG/L	85
33	Toluene-d8	10.30	826	198449	48.42	UG/L	100
34)	Toluene	10.41	837	189370	44.47	UG/L	95
35	*Chlorobenzene-d5	12.63	1061	159364	50.00	UG/L	100
42	Chlorobenzene	12.68	1066	147849	51.88	UG/L	95
48)	Bromofluorobenzene	14.64	1263	94922	49.34	UG/L	100

* Compound is ISTD

TOTAL ION CHROMATOGRAM



Data File: >B1587::D2
Name: A3875MS
Misc: P-2

Quant Output File: ^B1587::QT

5g

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930910 01:11

Operator ID: MANAGER
Quant Time: 930910 01:50
Injected at: 930910 01:23

QUANT REPORT

Operator ID: MANAGER
Output File: ^B1588::QT
Data File: >B1588::D2
Name: A3875MSD
Misc: P-2

Quant Rev: 6
Quant Time: 930910 02:20
Injected at: 930910 01:53
Dilution Factor: 1.00000

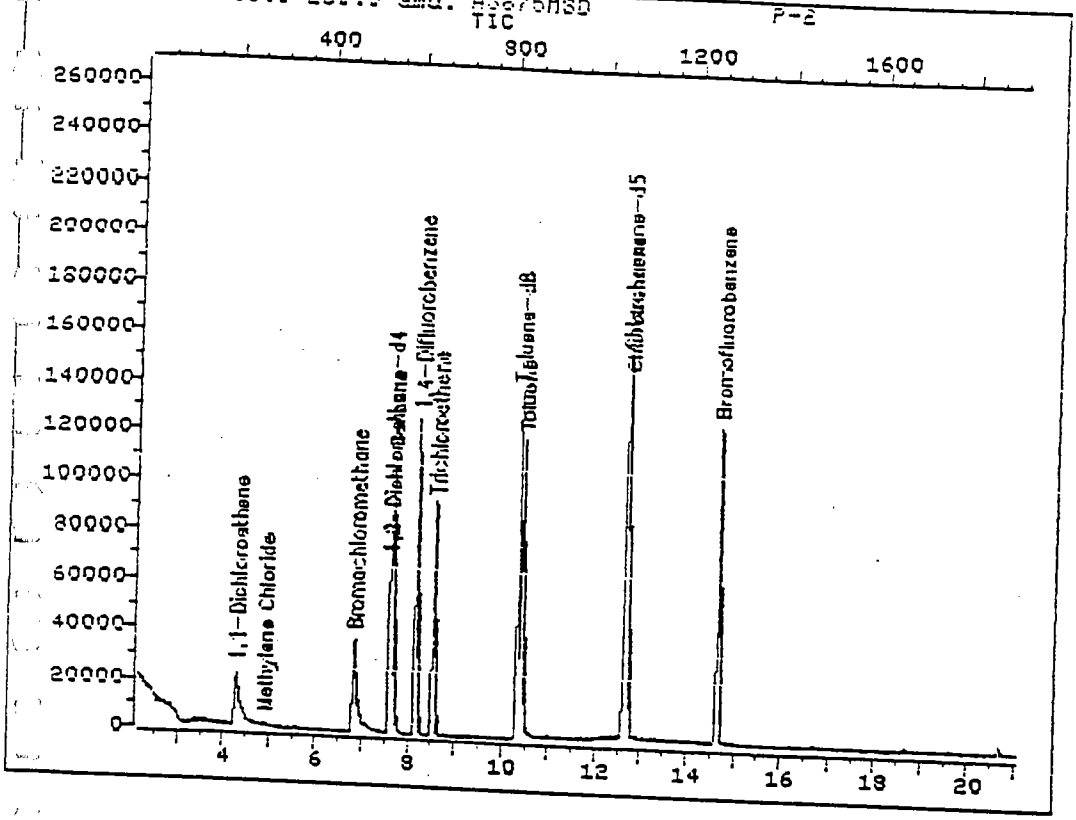
5g

ID File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930910 01:11

	Compound	R.T.	Scan#	Area	Conc	Units	q
)	*Bromochloromethane	6.83	469	35875M	50.00	UG/L	100
10)	1,1-Dichloroethene	4.29	213	52224	50.28	UG/L	100
15)	Methylene Chloride	4.90	275	1313	1.65	UG/L	80
2)	1,2-Dichloroethane-d4	7.58	545	87174	49.22	UG/L	100
2)	*1,4-Difluorobenzene	8.17	604	183341	50.00	UG/L	100
26)	Benzene	7.64	551	160962	48.71	UG/L	100
2)	Trichloroethene	8.54	641	59032	40.64	UG/L	90
3)	Toluene-d8	10.31	820	183532	49.76	UG/L	100
34)	Toluene	10.42	831	171632	44.79	UG/L	97
3)	*Chlorobenzene-d5	12.63	1054	144294	50.00	UG/L	100
4)	Chlorobenzene	12.68	1059	129942	50.36	UG/L	95
48)	Bromofluorobenzene	14.64	1256	85061	48.83	UG/L	100

Compound is ISTD

OTAL ION CHROMATOGRAM
File >81588 35.0-250.0 amu. A3875MSD
TIC
P-2



Data File: >81588::D2
Name: A3875MSD
Misc: P-2

Quant Output File: ^81588::QT

5g

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930910 01:11

Operator ID: MANAGER
Quant Time: 930910 02:20
Injected at: 930910 01:53

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: 21st Century Environmental
Lab Code: Case No: SAS No.: Contract No.:
MATRIX SPIKE- EPA SAMPLE NO.: A3589 SDG No.:

COMPOUND NAME	SPIKE ADDED UG/KG	MS CONC UG/KG	SAMP CONC UG/KG	MS % REC#	QC LIMITS RECOVERY
Phenol	100	73.8	ND	74	26-90
2-Chlorophenol	100	72.5	ND	73	25-102
1,4-Dichlorobenzene	50	33.0	ND	66	28-104
N-Nitroso-di-n-prop. (1)	50	36.2	ND	72	41-126
1,2,4-Trichlorobenzene	50	33.6	ND	67	38-107
4-Chloro-3-methylphenol	100	70.5	ND	70	26-103
Acenapthene	50	36.4	ND	73	31-137
4-Nitrophenol	100	49.6	ND	99	11-114
2,4-Dinitrotoluene	50	27.9	ND	56	28-89
Pentachlorophenol	100	73.1	ND	73	17-109
Pyrene	50	38.6	ND	77	35-142

COMPOUND NAME	SPIKE ADDED UG/KG	MSD CONC UG/KG	MSD % REC.	% RPD	QC LIMITS RPD	QC LIMITS RECOV
Phenol	100	71.2	71	4	35	26-90
2-Cholrophenol	100	70.7	71	3	50	25-102
1,4-Dichlorobenzene	50	33.2	66	<1	27	28-104
n-Nitroso-di-n-prop.	50	36.2	72	0	38	41-126
1,2,4-Trichlorobenzene	50	33.1	66	1	23	38-107
4-Chloro-3-Methylphenol	100	67.0	67	5	33	26-103
Acenaphthene	50	35.5	71	3	19	31-137
4-Nitrophenol	100	53.5	54	8	50	11-114
2,4-Dinitrotoluene	50	30.6	71	9	47	28-89
Pentachlorophenol	100	75.8	76	4	47	17-109
Pyrene	50	35.5	71	8	36	32-142

1 N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values
values outside of qc limits

RPD: 0 out of outside limits
Spike Recovery: 0 out of outside limits

COMMENTS:

FORM III SV-2 1/87 REV

QUANT REPORT

ɔe ator ID: JEFF
ɹtput File: ^C2237::D5
ata File: >C2237::D2
am : A3589MS
is :

Quant Rev: 6 Quant Time: 930914 18:09
Injected at: 930914 17:33
Dilution Factor: 1.00000

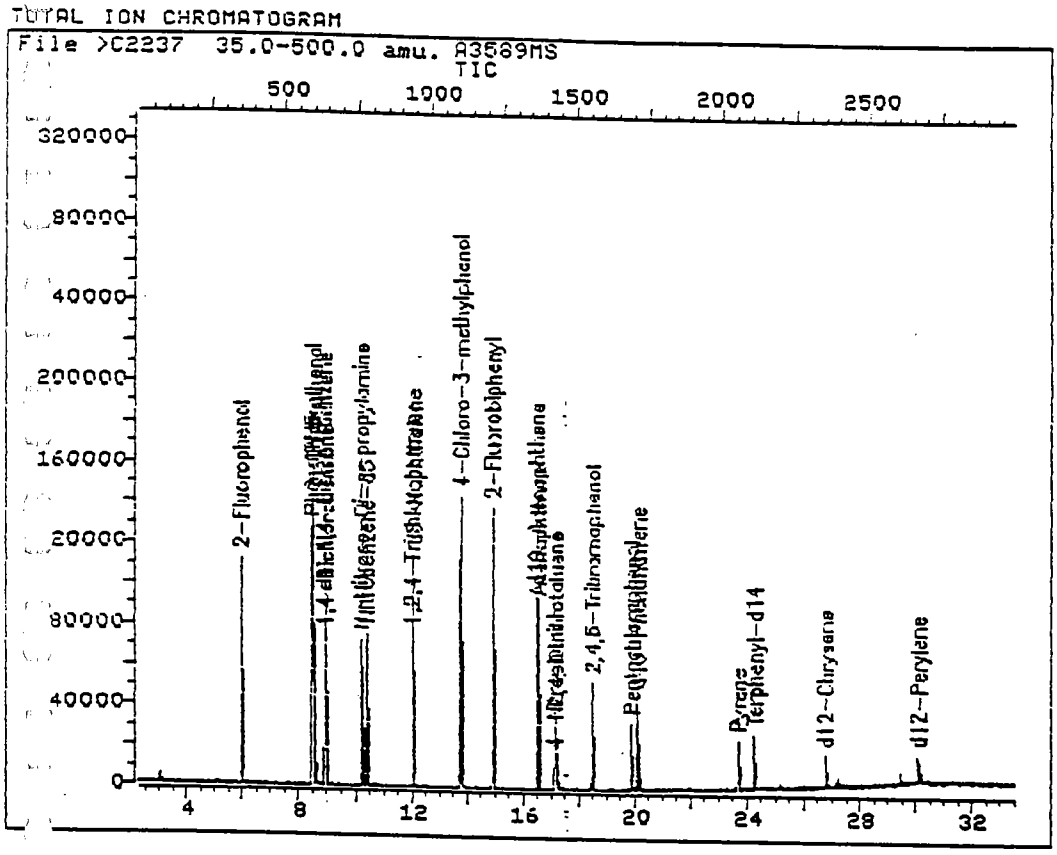
BTL# 6

D File: ID914C::SC
it e: hSL BNA STD
ast Calibration: 930914 12:00

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*d4-1,4-Dichlorobenzene	8.88	632	42248	40.00	UG/L	97
4)	2-Fluorophenol	5.90	347	63332	88.36	UG/L	89
5)	Phenol-d5	8.42	588	92907	101.45	UG/L	92
6)	Phenol	8.45	591	75280	73.84	UG/L	79
3)	2-Chlorophenol	8.47	593	59172	72.49	UG/L	97
1)	1,4-Dichlorobenzene	8.92	636	30983	32.99	UG/L	96
5)	N-Nitroso-Di-n-propylamine	10.17	756	27289	36.19	UG/L	89
3)	*d8-Naphthalene	12.04	935	92206	40.00	UG/L	93
9)	Nitrobenzene-d5	10.36	774	43673	43.04	UG/L	85
7)	1,2,4-Trichlorobenzene	11.97	929	25713	33.59	UG/L	97
1)	4-Chloro-3-methylphenol	13.76	1100	58143	70.53	UG/L	92
3)	*d10-Acenaphthene	16.45	1358	42571	40.00	UG/L	95
3)	2-Fluorobiphenyl	14.89	1208	75400	48.70	UG/L	96
3)	Acenaphthene	16.52	1365	49650	36.43	UG/L	97
5)	4-Nitrophenol	17.13	1423	8133	49.59	UG/L	59
7)	2,4-Dinitrotoluene	17.16	1426	10131	27.88	UG/L	60
3)	*d10-Phenanthrene	20.09	1707	33395	40.00	UG/L	98
6)	2,4,6-Tribromophenol	18.45	1550	8371	78.06	UG/L	92
9)	Pentachlorophenol	19.86	1685	6703	73.11	UG/L	93
4)	*d12-Chrysene	26.74	2342	12572	40.00	UG/L	96
5)	Pyrene	23.66	2048	21800	38.59	UG/L	99
7)	Terphenyl-d14	24.24	2104	16540	43.57	UG/L	91
5)	*d12-Perylene	30.07	2660	11320	40.00	UG/L	95

* Compound is ISTD

TOTAL ION CHROMATOGRAM



Data File: >C2237::D2
Name: A3589MS
Misc:

Quant Output File: ^C2237::D5

BTL# 6

Id File: ID914C::SC
Title: hSL BNA STD
Last Calibration: 930914 12:00

Operator ID: JEFF
Quant Time: 930914 18:09
Injected at: 930914 17:33

QUANT REPORT

Operator ID: JEFF
Output File: ^C2238::D5
Data File: >C2238::D2
Name: A3589MSD
Title:

Quant Rev: 6 Quant Time: 930914 18:56
Injected at: 930914 18:19
Dilution Factor: 1.00000

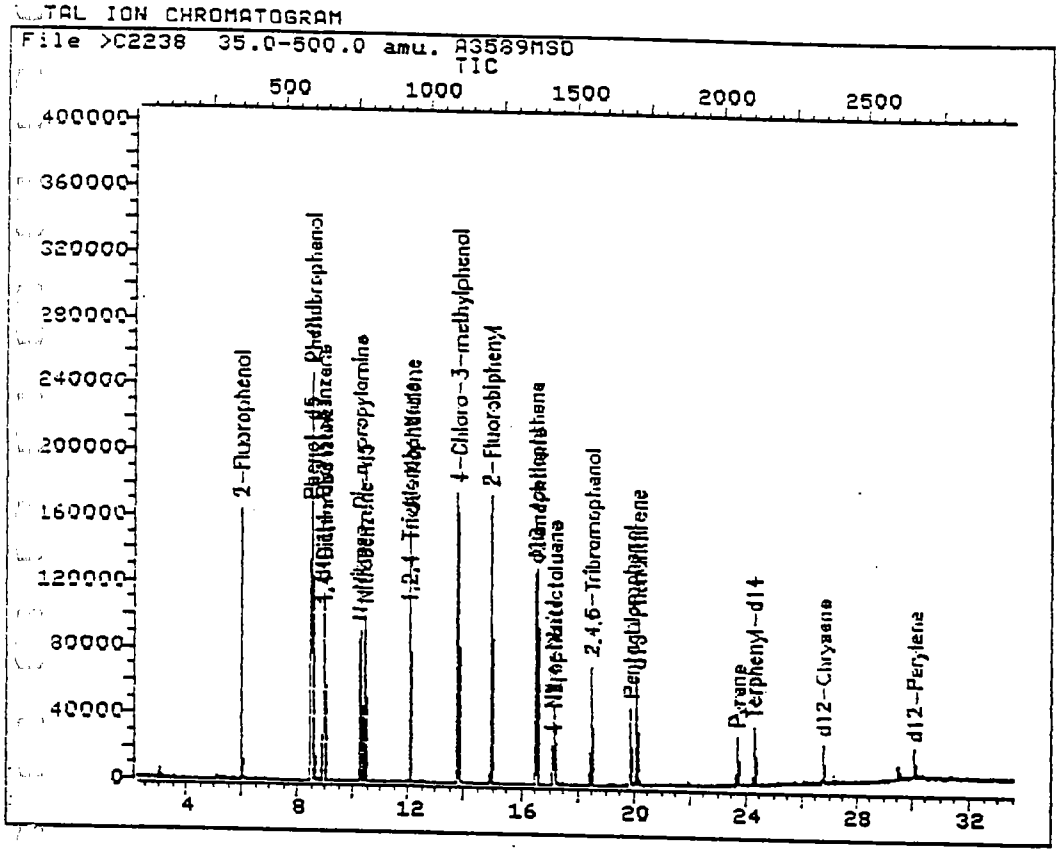
BTL# 7

ID File: ID914C::SC
Title: hSL BNA STD
Last Calibration: 930914 12:00

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*d4-1,4-Dichlorobenzene	8.89	632	57244	40.00	UG/L	98
4)	2-Fluorophenol	5.92	348	81771	84.20	UG/L	92
5)	Phenol-d5	8.44	589	126732	102.14	UG/L	93
6)	Phenol	8.47	592	98287	71.15	UG/L	79
8)	2-Chlorophenol	8.48	593	78239	70.74	UG/L	98
10)	1,4-Dichlorobenzene	8.93	636	42307	33.25	UG/L	97
16)	N-Nitroso-Di-n-propylamine	10.19	757	36939	36.16	UG/L	93
18)	*d8-Naphthalene	12.05	935	126182	40.00	UG/L	93
19)	Nitrobenzene-d5	10.37	774	60447	43.53	UG/L	85
27)	1,2,4-Trichlorobenzene	11.99	929	34651	33.07	UG/L	93
31)	4-Chloro-3-methylphenol	13.76	1099	75625	67.04	UG/L	96
37)	*d10-Acenaphthene	16.47	1358	56407	40.00	UG/L	96
38)	2-Fluorobiphenyl	14.89	1207	99789	48.65	UG/L	96
43)	Acenaphthene	16.54	1365	64184	35.54	UG/L	96
45)	4-Nitrophenol	17.14	1422	11635	53.54	UG/L	50
47)	2,4-Dinitrotoluene	17.17	1425	14742	30.62	UG/L	70
73)	*d10-Phenanthrene	20.10	1706	46683	40.00	UG/L	97
76)	2,4,6-Tribromophenol	18.46	1549	11717	78.16	UG/L	95
79)	Pentachlorophenol	19.87	1684	9720	75.84	UG/L	99
94)	*d12-Chrysene	26.75	2341	17189	40.00	UG/L	97
95)	Pyrene	23.67	2047	27389	35.46	UG/L	97
97)	Terphenyl-d14	24.26	2103	22503	43.36	UG/L	90
103)	*d12-Perylene	30.08	2657	15143	40.00	UG/L	95

* Compound is ISTD

TAL ION CHROMATOGRAM



Data File: >C2238::D2
Name: A3589MSD
Misc:

Quant Output File: ^C2238::D5

BTL# 7

Id File: ID914C::SC
Title: hSL BNA STD
Last Calibration: 930914 12:00

Operator ID: JEFF
Quant Time: 930914 18:56
Injected at: 930914 18:19

21st Century Environmental Inc.

GC/MS STANDARD p-BROMOFLUOROBENZENE (BFB) TUNE
CRITERIA FOR VOLATILES 50ng

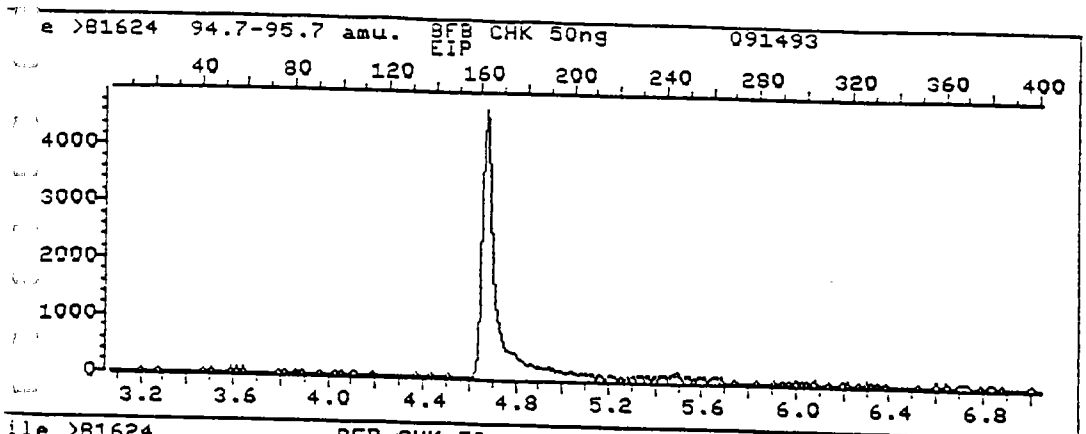
DATE AND TIME OF INJECTION: 9/13/93 23:04
INSTRUMENT ID: 5995

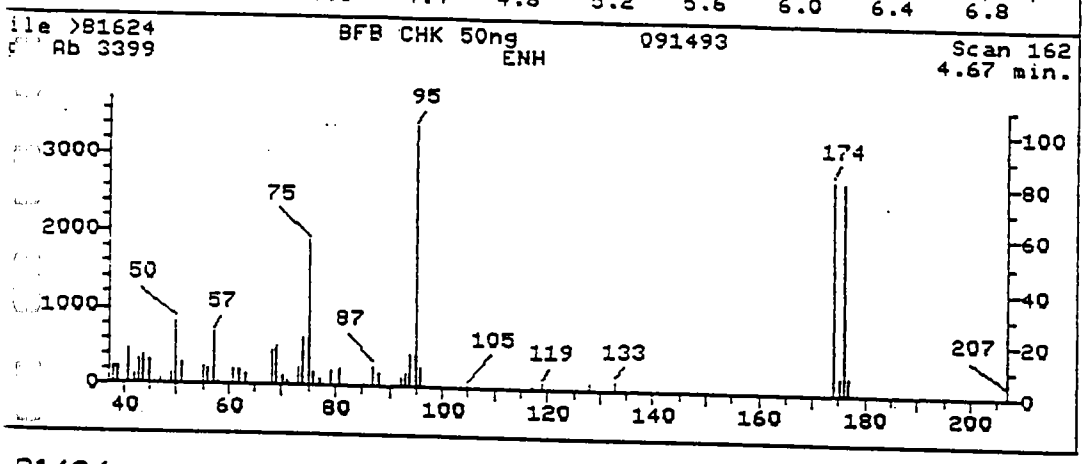
DATA RELEASE AUTHORIZED BY Richard W Lynch

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	24.12	24.12	Ok
75	30-60% of mass 95	55.44	55.44	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	7.27	7.27	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	82.14	82.14	Ok
175	5-9% of mass 174	6.52	7.94	Ok
176	95-101% of mass 174	80.82	98.39	Ok
177	5-9% of mass 176	6.31	7.80	Ok

THIS PERFORMANCE AFFECTS ALL SAMPLES
STANDARDS AND BLANKS LISTED BELOW

SAMPLE ID		LAB ID		DATE	TIME
>81624::D6		BFB CHK 50ng		9/13/93	23:04
>81625::D6		HSL CAL CHK 50ppb		9/14/93	0:36
>81626::D6		BLANK		9/14/93	1:58
>81627::D6		MeOH BLK		9/14/93	2:33
>81628::D6		A3936		9/14/93	3:02
>81629::D6		A3847		9/14/93	3:32
>81630::D6		A4024		9/14/93	4:02
>81631::D6		A3309		9/14/93	4:32
>81632::D6		A3313		9/14/93	5:02
>81633::D6		A2990		9/14/93	5:32
>81634::D6		A2997		9/14/93	6:03
>81635::D6		A3000		9/14/93	6:33
>81636::D6		A3922		9/14/93	9:51
>81637::D6		A3922MS		9/14/93	10:19
>81638::D6		A3922MSD		9/14/93	10:50





>B1624 BFB CHK 50ng 091493
162 NRM ENH

le: >B1624 Scan #: 162 Retn. time: 4.67

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
7.05	7.301	50.05	24.116	69.00	15.203	85.10	.682	117.10	.918
38.05	6.525	51.05	8.148	70.10	3.024	87.00	7.631	119.00	2.536
38.95	6.436	55.05	6.872	71.10	2.071	88.00	4.942	128.00	2.189
1.05	12.979	56.10	5.801	73.10	6.942	92.10	3.436	133.00	3.471
42.05	3.124	57.10	19.603	74.00	18.592	93.10	5.189	173.95	82.144
42.95	9.260	58.10	.724	75.10	55.439	94.00	12.567	175.05	6.525
3.95	10.584	61.00	6.019	76.00	5.019	95.00	100.000	175.95	80.820
4.95	9.472	62.10	5.854	77.10	2.406	96.00	7.272	176.95	6.307
47.05	1.524	63.10	4.171	79.00	5.683	98.10	.318	207.05	1.806
49.05	4.195	68.00	13.238	81.00	6.348	105.00	.788		

21st Century Environmental Inc.

GC/MS STANDARD DECAFLUOROTRIPHENYLPHOSPHINE(DFTPP) TUNE
CRITERIA FOR SEMIVOLATILES 50ng

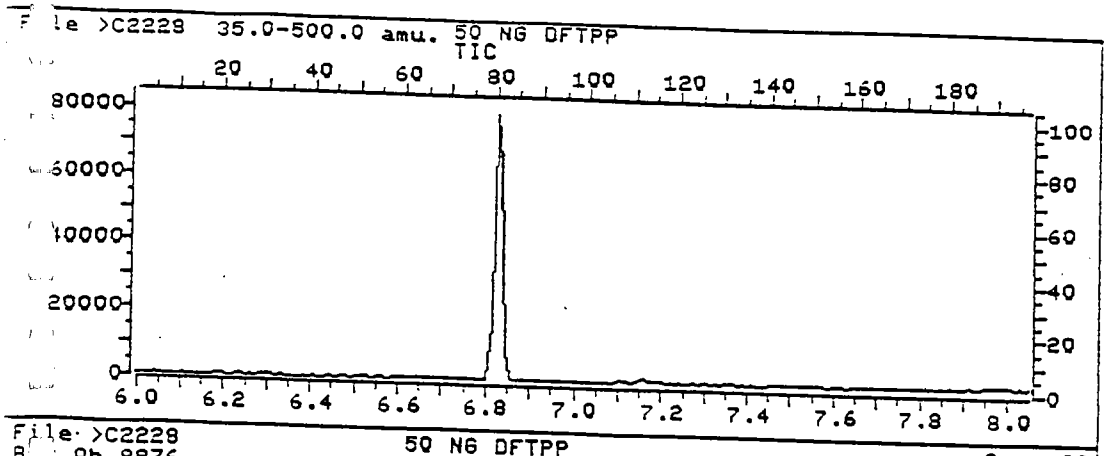
DATE AND TIME OF INJECTION: 9/14/93 9:11
INSTRUMENT ID: 5970

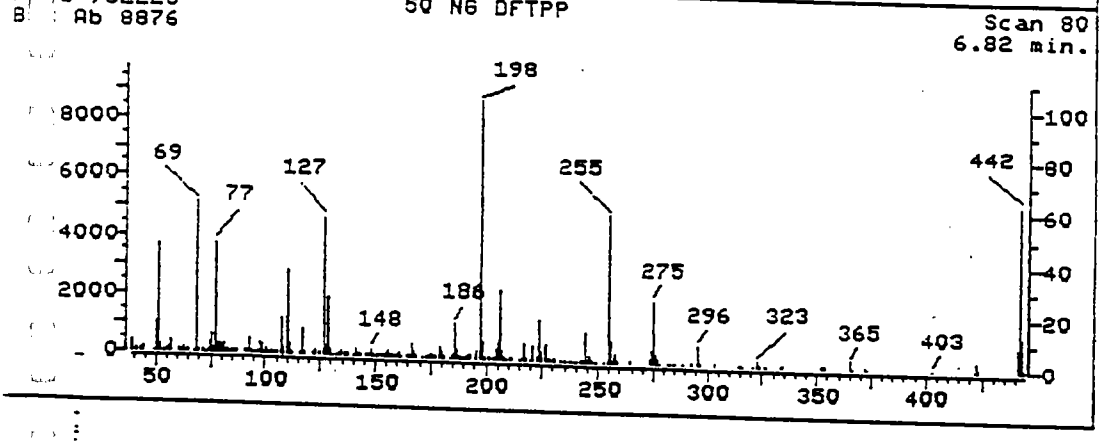
DATA RELEASE AUTHORIZED BY Richard W Lynch

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriate Peak	Status
51	30-60% of mass 198	41.32	41.32	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	57.74	57.74	Ok
70	Less than 2% of mass 69	.54	.94	Ok
127	40-60% of mass 198	53.19	53.19	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.76	6.76	Ok
275	10-30% of mass 198	24.18	24.18	Ok
365	Greater than 1% of mass 198	3.00	3.00	Ok
441	0-100% of mass 443	8.77	66.90	Ok
442	Greater than 40% of mass 198	63.87	63.87	Ok
443	17-23% of mass 442	13.10	20.52	Ok

THIS PERFORMANCE AFFECTS ALL SAMPLES
STANDARDS AND BLANKS LISTED BELOW

SAMPLE ID		LAB ID		DATE TIME
>C2228::05		50 NG DFTPP		9/14/93 9:11
>C2229::03		50 PPM BNA STD		9/14/93 9:36
>C2230::03		A3308 CYCLE		9/14/93 11:08
>C2231::05		NA BLANK 9/13		9/14/93 11:59
>C2232::04		A3282MS		9/14/93 12:44
>C2233::04		A3282MSD		9/14/93 13:30
>C2234::04		A3669 BRINKERHOFF		9/14/93 14:15
>C2235::04		A3670 BRINKERHOFF		9/14/93 15:01
>C2236::02		A4024 E-SYSTEM		9/14/93 16:46
>C2237::02		A3589MS		9/14/93 17:33
>C2238::02		A3589MSD		9/14/93 18:19
>C2239::02		A3649 ACCUQUAL		9/14/93 19:05
>C2240::02		NA BLK 8/25		9/14/93 19:51
>C2241::02		A3410 8/25		9/14/93 20:36





>C2228 50 NG DFTPP
80 NRM

File: >C2228 Scan #: 80 Retn. time: 6.82

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
[illegible]7.00	4.157	92.90	6.129	146.90	1.262	198.90	6.760	258.80	.608
[illegible]7.90	1.374	93.90	.552	147.80	2.704	199.90	.699	264.75	1.115
41.10	1.059	94.40	.225	148.90	.541	201.40	.665	272.95	1.915
[illegible]2.90	.879	94.70	.372	149.80	.237	203.00	.518	273.95	4.743
[illegible]5.90	1.735	94.90	.428	150.90	.620	203.90	4.000	274.95	24.178
49.05	.259	96.00	.361	152.80	.777	204.90	6.433	275.80	3.571
[illegible]9.95	11.830	97.00	.552	153.90	.642	205.90	26.577	276.90	2.028
[illegible]0.95	41.325	98.00	3.954	154.90	1.420	206.90	3.481	277.80	.304
52.05	2.411	98.90	3.155	155.95	2.186	207.90	.958	281.80	.180
52.95	.180	99.90	.315	156.85	.699	208.75	.383	282.90	.248
[illegible]4.05	.270	101.00	2.062	157.95	.744	210.75	1.228	284.90	.451
[illegible]4.25	.259	101.65	.169	158.85	.473	214.75	.304	288.70	.124
54.95	1.037	102.95	.563	159.85	.789	215.95	.653	292.85	.507
55.95	1.577	103.95	1.273	160.95	1.667	216.85	6.861	295.95	7.875
[illegible]5.95	3.932	104.95	1.296	161.85	.327	217.85	1.070	296.85	1.070
60.55	.180	105.85	.394	164.95	.901	219.95	.248	302.90	.699
61.00	.834	106.95	14.365	165.95	.924	220.95	5.577	314.30	.169
[illegible].90	.439	107.95	2.298	166.95	5.340	222.90	1.453	314.90	.642
[illegible].00	1.859	109.95	31.929	167.95	2.287	223.90	16.167	316.00	.451

97.10	.462	115.80	.890	173.00	[illegible]	[illegible]	[illegible]	322.95	2.197
7.30	.394	116.90	10.038	173.90	.631	227.90	.980	323.95	.586
8.90	57.740	117.90	.834	175.00	1.172	228.90	1.003	326.85	.372
70.00	.541	121.90	1.037	175.90	2.129	231.00	.507	332.90	.192
71.00	.597	122.90	1.712	176.90	.755	233.80	.451	333.20	.248
2.90	.338	124.90	.766	177.50	.868	235.00	.406	333.90	1.037
73.10	.338	125.10	.766	178.90	.259	236.85	.372	351.95	.721
74.00	4.045	127.00	53.188	179.90	4.169	238.65	.225	352.95	.518
4.95	7.391	128.00	3.695	180.90	2.445	238.85	.225	354.05	.642
76.05	2.005	128.85	22.048	183.85	.924	239.75	.214	364.90	2.997
76.95	42.564	129.85	2.524	184.15	.338	241.75	.631	365.90	.372
7.95	3.188	130.95	.394	184.95	.259	243.05	1.048	371.85	.946
8.95	3.222	132.15	.338	185.85	1.949	243.95	11.469	372.95	.237
79.95	2.873	133.85	.800	186.95	14.139	244.85	1.160	401.95	.304
0.95	3.549	134.95	1.836	187.95	3.797	245.95	2.174	402.95	.439
2.05	.913	136.05	.552	188.85	.541	246.85	.653	421.10	.394
82.95	1.262	137.05	1.059	190.15	.732	248.85	.473	422.00	.462
84.05	.203	137.75	.169	190.85	.180	252.70	.270	423.00	3.560
4.95	.946	139.95	.349	191.95	.653	252.90	.293	423.95	.541
5.85	.879	140.95	2.557	192.95	1.374	254.90	56.861	441.00	8.765
86.95	.766	141.90	1.059	195.90	1.701	255.90	7.977	442.00	63.869
0.90	.913	142.80	.969	197.80	3.121	256.70	.935	442.90	13.103
2.00	.822	145.80	.687		100.000	257.90	3.436	444.00	1.093

21st Century Environmental Inc.

GC/MS STANDARD DECAFLUOROTRIPHENYLPHOSPHINE(DFTPP) TUNE
CRITERIA FOR SEMIVOLATILES 50ng

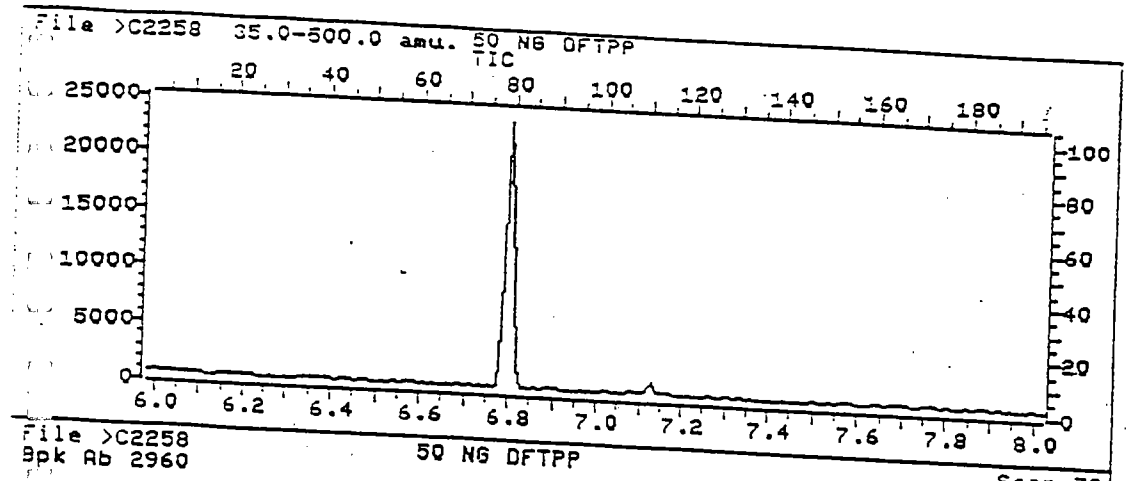
DATE AND TIME OF INJECTION: 9/16/93 8:41
INSTRUMENT ID: 5970

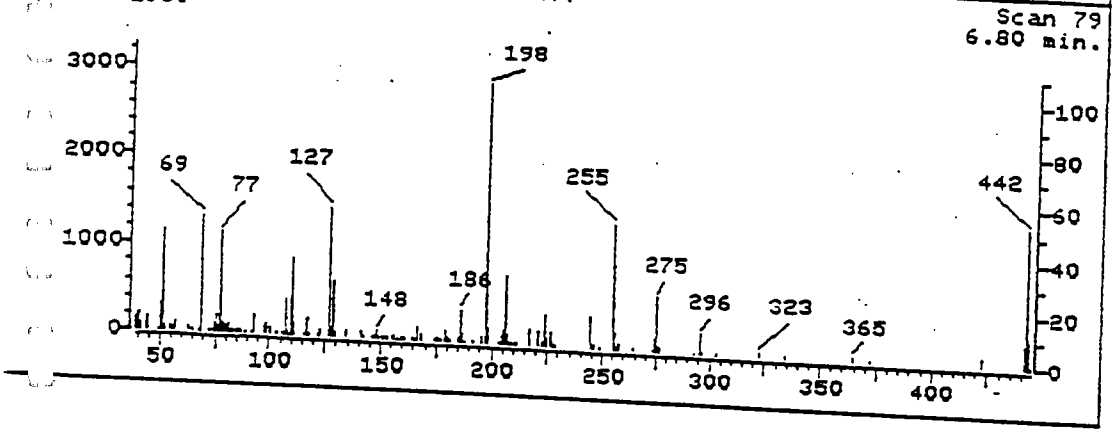
DATA RELEASE AUTHORIZED BY Richard W Pyrd

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriate Peak	Status
51	30-60% of mass 198	39.22	39.22	Ok
68	Less than 2% of mass 69	.37	.83	Ok
69	(reference only)	44.83	44.83	Ok
70	Less than 2% of mass 69	0.00	0.00	Ok
127	40-60% of mass 198	49.97	49.97	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	5.64	5.64	Ok
275	10-30% of mass 198	21.52	21.52	Ok
365	Greater than 1% of mass 198	2.03	2.03	Ok
441	0-100% of mass 443	8.95	81.29	Ok
442	Greater than 40% of mass 198	53.68	53.68	Ok
443	17-23% of mass 442	11.01	20.52	Ok

THIS PERFORMANCE AFFECTS ALL SAMPLES
STANDARDS AND BLANKS LISTED BELOW

SAMPLE ID		LAB ID		DATE TIME
>C2258::03		50 NG DFTPP		9/16/93 8:41
>C2260::05		50 PPM BNA STD		9/16/93 9:57
>C2261::05		TCLP BLANK 9/14		9/16/93 11:17
>C2263::05		A3159 CWM		9/16/93 12:51
>C2264::05		A3165 CWM		9/16/93 13:35
>C2265::05		NA BLNK 9/14		9/16/93 14:20
>C2266::05		A3157 CWM		9/16/93 15:05
>C2267::05		A3165 CWM		9/16/93 15:50
>C2268::05		TCLP BLNK 9/16		9/16/93 16:36
>C2269::05		A4065 CWM FB047		9/16/93 17:54
>C2270::05		A4071 CWM 052COMP		9/16/93 18:39
>C2271::05		A4078 CWM 053COMP		9/16/93 19:24
>C2272::05		A4084 CWM 054COMP		9/16/93 20:09





>C2258 50 NG DFTPP
79 NRM

File: >C2258 Scan #: 79 Retn. time: 6.80

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
39.00	4.696	86.00	1.250	145.90	.980	186.95	3.446	248.80	.608
[illegible]0.00	6.655	86.90	.845	147.00	1.622	188.05	.405	254.90	48.041
41.00	2.466	89.00	.338	147.90	3.108	191.90	1.149	256.00	6.959
44.10	4.899	91.90	.439	148.90	1.115	195.90	2.331	257.00	.878
[illegible].85	.405	93.00	7.500	151.00	.507	197.90	100.000	257.85	2.736
[illegible].95	10.608	98.00	3.615	152.95	1.284	198.90	5.642	264.95	1.115
51.05	39.223	99.00	3.851	155.95	1.520	203.10	.642	272.80	1.149
[illegible].05	1.588	100.95	2.297	157.75	.473	204.00	3.649	273.80	4.696
[illegible].05	1.655	103.85	1.014	159.45	.372	204.95	5.980	274.90	21.520
55.85	.709	106.15	.507	160.05	1.047	205.95	26.250	275.90	2.973
57.05	3.277	106.95	14.054	160.95	1.047	206.95	4.358	276.90	1.689
[illegible].00	1.892	107.95	1.791	164.85	1.047	207.95	.743	292.85	.405
[illegible].10	.811	108.85	.473	165.70	.372	208.95	.574	295.85	8.041
67.70	.372	109.95	29.561	166.20	.878	210.85	.946	296.80	1.047
[illegible].00	44.831	110.95	4.831	166.90	5.338	216.95	6.791	302.10	.372
[illegible].85	.946	116.10	1.014	168.00	2.500	220.80	5.608	303.00	.912
73.95	3.074	117.00	6.858	173.90	.878	222.30	.608	323.00	2.095
75.05	6.453	117.70	.912	175.00	1.926	222.90	1.453	334.00	1.115
[illegible].15	2.230	121.80	.845	176.40	.574	223.80	[illegible]	[illegible]	[illegible]

00038

79.95	2.432	128.95	[illegible]	179.95	1.689	227.90	.743	422.95	3.277
0.95	3.142	130.05	21.655	180.85	1.182	229.00	1.149	441.00	8.953
81.95	1.081	134.95	1.689	181.05	1.115	243.95	12.365	441.95	53.682
82.85	1.216	140.90	2.196	184.85	1.554	245.00	1.622	442.95	11.014
5.05	1.014	141.80	2.399	185.95	12.736	245.80	1.419	444.05	.811
			.676						

Continuing Calibration Check
HSL Compounds

Case No:

Calibration Date: 09/14/93

Contractor: 21ST Century Env

Time: 00:36

Contract No:

Laboratory ID: >81625

Instrument ID: Volatile Inst 8

Initial Calibration Date: 08/23/93

Minimum $\overline{RF}$ for SPCC is .300

Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.52159	.57780	10.78		**	
Bromomethane	.57263	.54908	4.11			
Vinyl Chloride	.84800	.88350	4.19	*		
Chloroethane	.40088	.35570	11.27			
Acrolein	.01462	.01567	7.16			(Conc=80.00)
1,1,2-Trichlorotrifluoroethane	2.13787	2.47154	15.61			
Trichlorofluromethane	3.12501	3.38525	8.33			
Acetone	.73842	.74600	1.03			
1,1-Dichloroethene	1.66856	1.47681	11.49	*		
Carbon Disulfide	2.61211	1.42179	45.57			
Methyl Tertiary Butyl Ether	3.48114	3.01821	13.30			
Tertiary Butyl Alcohol	.93521	1.86138	99.03			
Acrylonitrile	.50368	.39879	20.82			
Methylene Chloride	1.34147	1.24583	7.13			
1,2-Dichloroethene(trans)	1.64254	1.60271	2.43			
1,1-Dichloroethane	2.51826	1.60370	36.32		**	
Vinyl Acetate	.07659	.09801	27.96			
2-Butanone	1.62448	1.29377	20.36			
Chloroform	3.13117	3.31454	5.86	*		
1,1,1-Trichloroethane	2.78385	2.95690	6.22			
Carbon Tetrachloride	2.33658	2.39207	2.37			
1,2-Dichloroethane-d4	2.29334	2.34585	2.29			(Conc=50.00)
1,2-Dichloroethane	.41285	.48926	18.51			
Benzene	.85561	.93952	9.81			
Trichloroethene	.37847	.42613	12.59			
1,2-Dichloropropane	.28633	.33161	15.81	*		
Bromodichloromethane	.49613	.55493	11.85			
2-Chloroethylvinylether	.25258	.26908	6.53			
2-Hexanone	.36752	.41952	14.15			
trans-1,3-Dichloropropene	.47521	.53642	12.88			
Toluene-d8	.97960	1.02533	4.67			
Toluene	.97784	1.10483	12.99	*		

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 09/14/93

Contractor: 21ST Century Env Time: 00:36

Contract No: _____ Laboratory ID: >B1625

Instrument ID: Volatile Inst B Initial Calibration Date: 08/23/93

Minimum $\overline{RF}$ for SPCC is .300 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
cis-1,3-Dichloropropene	.48595	.51233	5.43		
1,1,2,2-Tetrachloroethane	.45583	.46845	2.77		**
1,1,2-Trichloroethane	.37039	.39213	5.87		
4-Methyl-2-pentanone	.45792	.48823	6.62		
Tetrachloroethene	.39197	.44681	13.99		
Dibromochloromethane	.54690	.59308	8.44		
Chlorobenzene	.89006	.90675	1.88		**
Ethylbenzene	1.50672	1.61199	6.99	*	
m,p-Xylenes	1.12152	1.17112	4.42		
o-Xylene	1.08518	1.19333	9.97		
Styrene	.87140	.85845	1.49		
Bromoform	.42174	.49129	16.49		**
Bromofluorobenzene	.56278	.59390	5.53		
m-Dichlorobenzene	.70130	.87595	24.90		
p-Dichlorobenzene	.72664	.90062	23.94		
o-Dichlorobenzene	.67713	.83808	23.77		

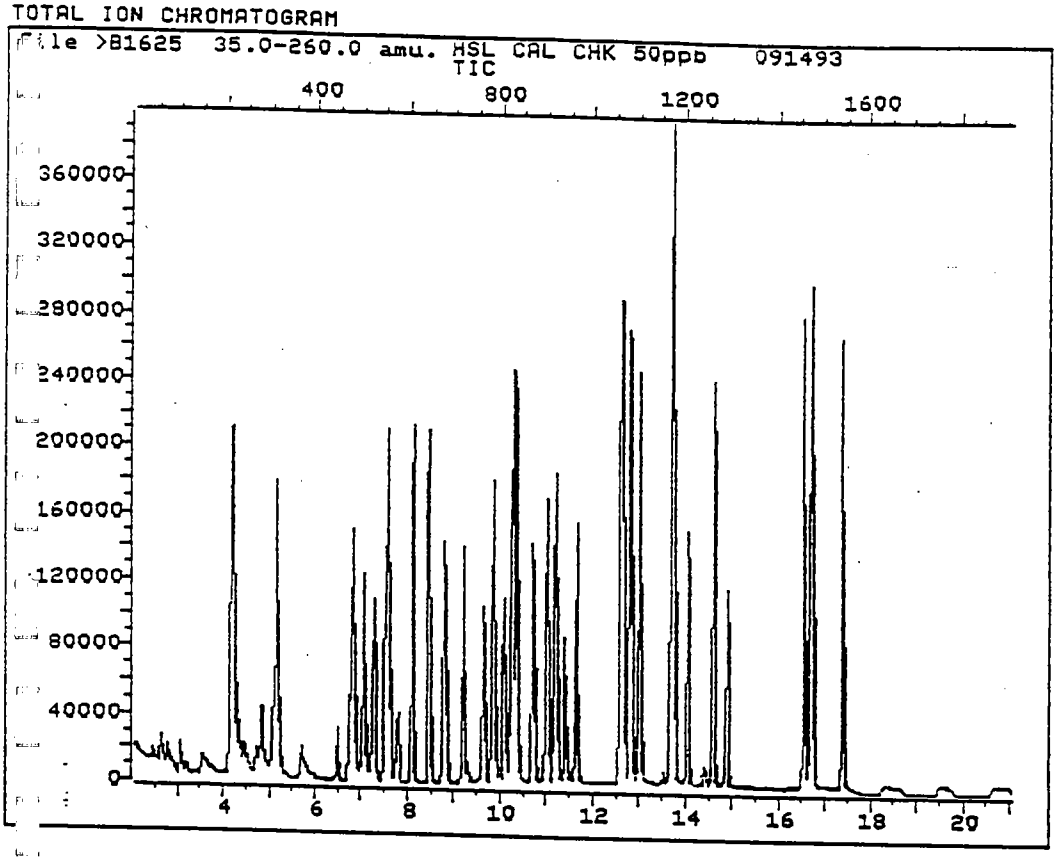
RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

TOTAL ION CHROMATOGRAM



Data File: >B1625::D6
Name: HSL CAL CHK 50ppb
Misc: 091493

Quant Output File: ^B1625::QT

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930913 05:50

Operator ID: MANAGER
Quant Time: 930914 01:06
Injected at: 930914 00:36

Continuing Calibration Check
HSL Compounds

Case No:

Calibration Date: 09/14/93

Contractor: 21st Century Envir

Time: 09:36

Contract No:

Laboratory ID: >C2229

Instrument ID: 5970C

Initial Calibration Date: 09/08/93

Minimum $\overline{RF}$ for SPCC is 0.050

Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Pyridine	.69881	.56248	19.51			
N-Nitrosodimethylamine	.56412	.41438	26.54			
2-Fluorophenol	.76502	.67859	11.30			(Conc=100.00)
Phenol-d5	.98708	.96702	12.16			(Conc=100.00)
Phenol	1.08913	.96532	11.37	*		
Bis(-2-Chloroethyl)Ether	.94879	.81145	14.48			
2-Chlorophenol	.84101	.77287	8.10			
1,3-Dichlorobenzene	.89851	.86616	3.60			
1,4-Dichlorobenzene	.91567	.88914	2.90	*		
Benzyl Alcohol	.51984	.43194	16.91			
1,2-Dichlorobenzene	.88521	.84517	4.52			
2-Methylphenol	.76895	.65693	14.57			
Bis(2-Chloroisopropyl)ether	.86122	.73229	14.97			
4-Methylphenol	.78643	.71866	8.62			(Conc=100.00)
N-Nitroso-Di-n-propylamine	.79029	.71385	9.67		**	
Hexachloroethane	.45480	.40785	10.32			
Nitrobenzene-d5	.52545	.44016	16.23			(Conc=50.00)
Nitrobenzene	.50278	.42503	15.46			
Isophorone	1.00266	.83155	17.07			
2-Nitrophenol	.23796	.22860	3.94	*		
2,4-Dimethylphenol	.32962	.30743	6.73			
Benzoic Acid	.18039	.14413	20.10			
Bis(-2-Chloroethoxy)Methane	.49221	.42368	13.92			
2,4-Dichlorophenol	.29425	.29309	.39	*		
1,2,4-Trichlorobenzene	.32052	.33212	3.62			
Naphthalene	1.12751	1.09867	2.56			
4-Chloroaniline	.42195	.43490	3.07			
Hexachlorobutadiene	.17924	.19591	9.30	*		
4-Chloro-3-methylphenol	.37500	.35761	4.64	*		
2-Methylnaphthalene	.71471	.75921	6.23			
Hexachlorocyclopentadiene	.29071	.20556	29.29		**	
2,4,6-Trichlorophenol	.39942	.39764	.45	*		

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 09/14/93

Contractor: 21st Century Envir Time: 09:36

Contract No: _____ Laboratory ID: >C2229

Instrument ID: 5970C Initial Calibration Date: 09/08/93

Minimum $\overline{RF}$ for SPCC is 0.050 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
2,4,5-Trichlorophenol	.40862	.39165	4.15			
2-Chloronaphthalene	1.32190	1.31396	.60			
2-Fluorobiphenyl	1.48464	1.45464	2.02			(Conc=50.00)
2-Nitroaniline	.42046	.44670	6.24			
Dimethyl Phthalate	1.47621	1.68084	13.86			
Acenaphthylene	1.91606	1.87066	2.37			
3-Nitroaniline	.22138	.26725	20.72			
Acenaphthene	1.33563	1.28063	4.12	*		
2,4-Dinitrophenol	.09355	.10167	8.68		**	
4-Nitrophenol	.15308	.15409	.66		**	
Dibenzofuran	1.83366	1.68629	8.04			
2,6-Dinitrotoluene	.31730	.34137	7.59			
2,4-Dinitrotoluene	.29443	.33338	13.23			
Diethylphthalate	1.51900	1.59033	4.70			
4-Chlorophenyl-phenylether	.59972	.59506	.78			
Fluorene	1.30652	1.23108	5.77			
4-Nitroaniline	.16322	.18329	12.30			
4,6-Dinitro-2-methylphenol	.11359	.11542	1.61			
N-Nitrosodiphenylamine	.75711	.74713	1.32	*		
2,4,6-Tribromophenol	.11174	.12845	14.95			(Conc=100.00)
4-Bromophenyl-phenylether	.27913	.29750	6.58			
Hexachlorobenzene	.26569	.28148	5.95	*		
Pentachlorophenol	.11202	.10982	1.97		**	
Phenanthrene	1.19658	1.15278	3.66			
Anthracene	1.12489	1.09232	2.90			
Di-n-Butylphthalate	1.44951	1.47720	1.91			
Fluoranthene	.70654	.70251	.57	*		
Pyrene	2.12313	1.79741	15.34			
Benzidine	.03649	.02681	26.54			
Terphenyl-d14	1.28204	1.20774	5.80			(Conc=50.00)
Butylbenzylphthalate	1.07351	.96950	9.69			
3,3'-Dichlorobenzidine	.26406	.31744	20.22			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

ise No:

Calibration Date: 09/14/93

Contractor: 21st Century Envir

Time: 09:36

ntract No:

Laboratory ID: >C2229

Instrument ID: 5970C

Initial Calibration Date: 09/08/93

Minimum $\overline{RF}$ for SPCC is 0.050

Maximum % Diff for CCC is 25%

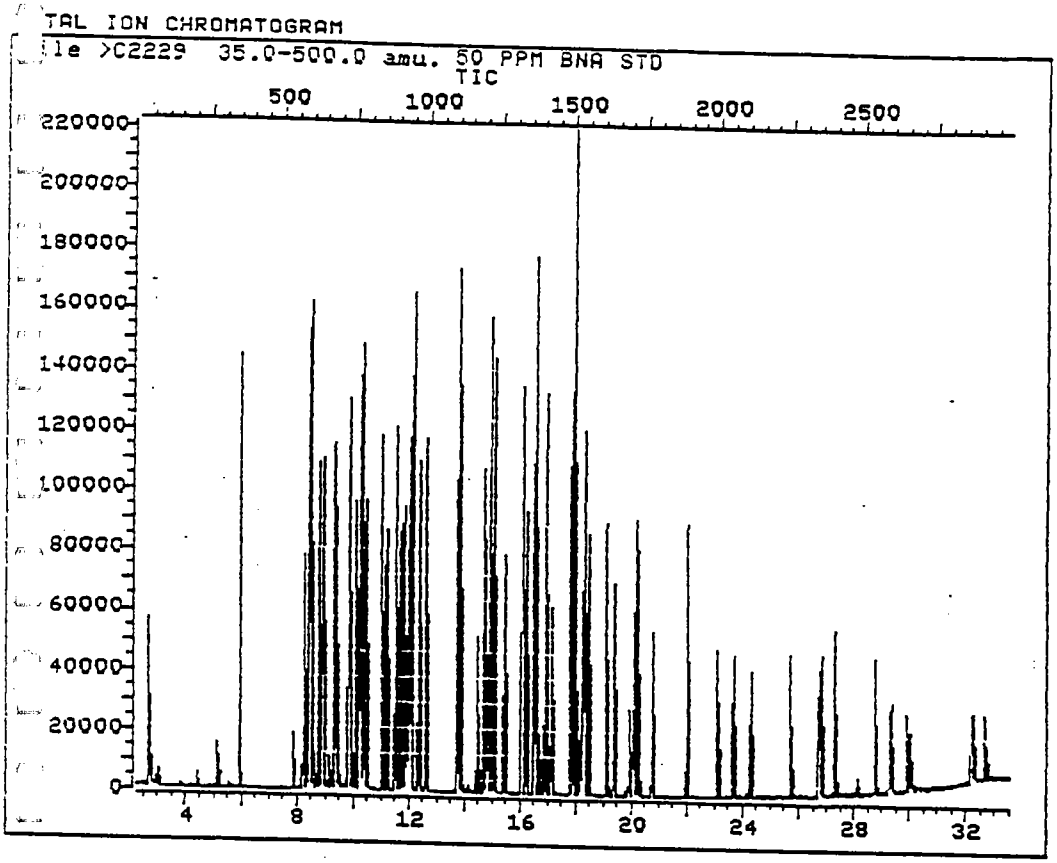
Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
Benzo(a)Anthracene	1.19240	1.18333	.76		
s(2-Ethylhexyl)Phthalate	1.32621	1.28479	3.12		
rysene	1.11734	1.07609	3.69		
Di-n-octyl phthalate	2.44477	2.18802	10.50	*	
nzo(b)fluoranthene	1.26008	1.13842	9.65		
nzo(k)Fluoranthene	1.32074	1.17670	10.91		
Benzo(a)Pyrene	1.15901	1.06819	7.84	*	
deno(1,2,3-cd)Pyrene	1.16808	1.13321	2.99		
benzo(a,h)Anthracene	.92520	.91829	.75		
Benzo(g,h,i)Perylene	1.02656	1.01676	.95		

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

iff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)



Data File: >C2229::D3
Name: 50 PPM BNA STD
Misc:

Quant Output File: ^C2229::DA

BTL# 2

Id File: ID908C::D3
Title: hSL BNA STD
Last Calibration: 930908 14:10

Operator ID: JEFF
Quant Time: 930914 10:12
Injected at: 930914 09:36

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 09/16/93

Contractor: 21st Century Envir Time: 09:57

Contract No: _____ Laboratory ID: >C2260

Instrument ID: 5970C Initial Calibration Date: 09/08/93

Minimum $\overline{RF}$ for SPCC is 0.050 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Pyridine	.69881	.49891	28.61			
n-Nitrosodimethylamine	.56412	.35620	36.86			
2-Fluorophenol	.76502	.64116	16.19			(Conc=100.00)
Phenol-d5	.98708	.86444	12.42			(Conc=100.00)
Phenol	1.08913	.82451	24.30	*		
bis(-2-Chloroethyl)Ether	.94879	.75011	20.94			
2-Chlorophenol	.84101	.70735	15.89			
1,3-Dichlorobenzene	.89851	.84154	6.34			
1,4-Dichlorobenzene	.91567	.86607	5.42	*		
Benzyl Alcohol	.51984	.47329	8.95			
1,2-Dichlorobenzene	.88521	.82159	7.19			
2-Methylphenol	.76895	.65420	14.92			
bis(2-Chloroisopropyl)ether	.86122	.73737	14.38			
4-Methylphenol	.78643	.69606	11.49			(Conc=100.00)
N-Nitroso-Di-n-propylamine	.79029	.69033	12.65		**	
Hexachloroethane	.45480	.37479	17.59			
Nitrobenzene-d5	.52545	.41976	20.12			(Conc=50.00)
Nitrobenzene	.50278	.40689	19.07			
Isophorone	1.00266	.82749	17.47			
2-Nitrophenol	.23796	.26558	11.61	*		
2,4-Dimethylphenol	.32962	.32027	2.84			
Benzoic Acid	.18039	.14115	21.75			
bis(-2-Chloroethoxy)Methane	.49221	.42939	12.76			
2,4-Dichlorophenol	.29425	.32454	10.30	*		
1,2,4-Trichlorobenzene	.32052	.37115	15.79			
Naphthalene	1.12751	1.10037	2.41			
4-Chloroaniline	.42195	.43946	4.15			
Hexachlorobutadiene	.17924	.21359	19.17	*		
4-Chloro-3-methylphenol	.37500	.34954	6.79	*		
2-Methylnaphthalene	.71471	.77316	8.18			
Hexachlorocyclopentadiene	.29071	.24275	16.50		**	
2,4,6-Trichlorophenol	.39942	.42748	7.02	*		

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

se No:

Contractor: 21st Century Envir

ntract No:

Instrument ID: 5970C

Calibration Date: 09/16/93

Time: 09:57

Laboratory ID: >C2260

Initial Calibration Date: 09/08/93

Minimum $\overline{RF}$ for SPCC is 0.050

Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
4,5-Trichlorophenol	.40862	.43302	5.97			
hloronaphthalene	1.32190	1.31934	.19			
2-Fluorobiphenyl	1.48464	1.47787	.46			(Conc=50.00)
2-Nitroaniline	.42046	.44793	6.53			
methyl Phthalate	1.47621	1.53576	4.03			
enaphthylene	1.91606	1.81816	5.11			
3-Nitroaniline	.22138	.23906	7.98			
naphthene	1.33563	1.24102	7.08	*		
4-Dinitrophenol	.09355	.11898	27.19		**	
4-Nitrophenol	.15308	.10801	29.44		**	
Dibenzofuran	1.83366	1.68974	7.85			
2-Dinitrotoluene	.31730	.31041	2.17			
2,6-Dinitrotoluene	.29443	.32006	8.71			
Diethylphthalate	1.51900	1.31154	13.66			
hlorophenyl-phenylether	.59972	.58920	1.75			
luorene	1.30652	1.17859	9.79			
4-Nitroaniline	.16322	.15353	5.94			
-Dinitro-2-methylphenol	.11359	.15306	34.75			
Nitrosodiphenylamine	.75711	.77328	2.14	*		
2,4,6-Tribromophenol	.11174	.13198	18.11			(Conc=100.00)
4-Bromophenyl-phenylether	.27913	.30935	10.82			
Hexachlorobenzene	.26569	.28951	8.97	*		
Pentachlorophenol	.11202	.10905	2.66		**	
Phenanthrene	1.19658	1.12150	6.27			
Anthracene	1.12489	1.06853	5.01			
Di-n-Butylphthalate	1.44951	1.33637	7.81			
Fluoranthene	.70654	.71774	1.59	*		
Pyrene	2.12313	1.70323	19.78			
Benzidine	.03649	.01604	56.05			
Terphenyl-d14	1.28204	1.15497	9.91			(Conc=50.00)
Butylbenzylphthalate	1.07351	.93653	12.76			
3,3'-Dichlorobenzidine	.26406	.25319	4.12			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

% Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No:

Calibration Date: 09/16/93

Contractor: 21st Century Envir

Time: 09:57

Contract No:

Laboratory ID: >C2260

Instrument ID: 5970C

Initial Calibration Date: 09/08/93

Minimum $\overline{RF}$ for SPCC is 0.050

Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
Benzo(a)Anthracene	1.19240	1.13832	4.54		
Bis(2-Ethylhexyl)Phthalate	1.32621	1.31437	.89		
Chrysene	1.11734	1.05914	5.21		
Di-n-octyl phthalate	2.44477	2.52908	3.45	*	
Benzo(b)fluoranthene	1.26008	1.20294	4.53		
Benzo(k)Fluoranthene	1.32074	1.20459	8.79		
Benzo(a)Pyrene	1.15901	1.04243	10.06	*	
Indeno(1,2,3-cd)Pyrene	1.16808	1.08744	6.90		
Dibenzo(a,h)Anthracene	.92520	.89148	3.65		
Benzo(g,h,i)Perylene	1.02656	.95241	7.22		

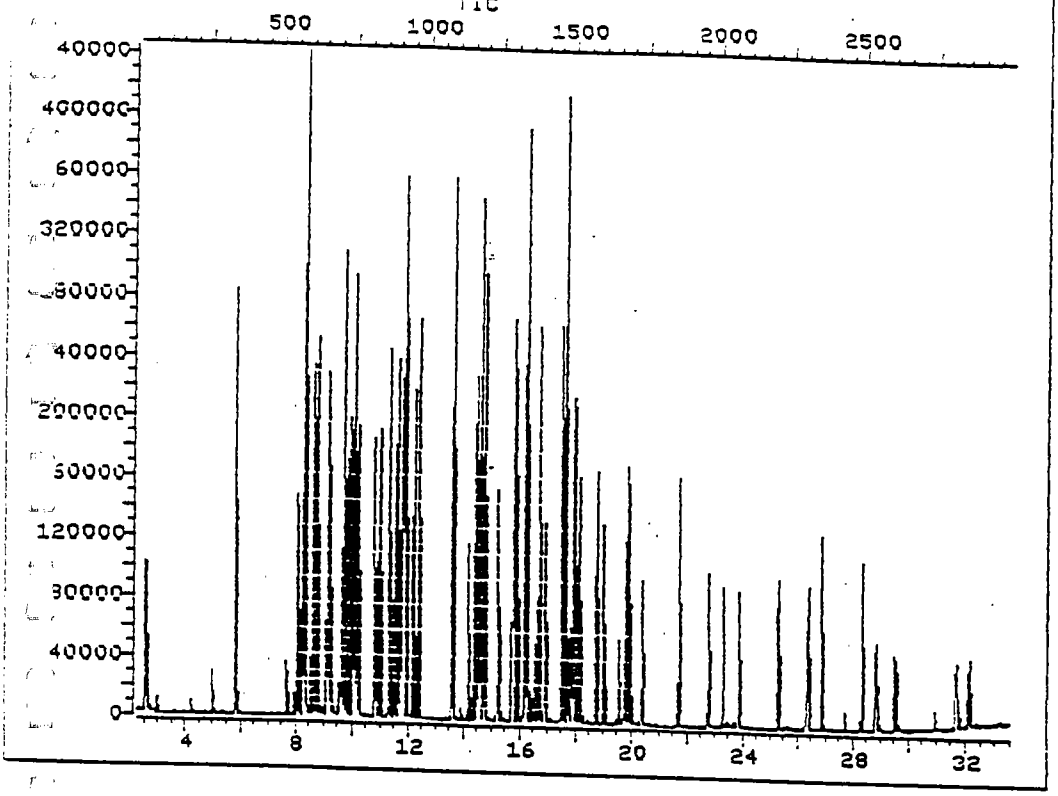
RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

TOTAL ION CHROMATOGRAM
File >C2260 35.0-500.0 amu. 50 PPM BNA STD
TIC



Data File: >C2260::D5
Name: 50 PPM BNA STD
Misc:

Quant Output File: ^C2260::E3

BTL# 2

Id File: ID916C::D5
Title: hSL BNA STD
Last Calibration: 930916 11:28

Operator ID: JEFF
Quant Time: 930916 11:30
Injected at: 930916 09:57

21st Century Environmental Inc.

GC/MS STANDARD p-BROMOFLUOROBENZENE (BFB) TUNE
CRITERIA FOR VOLATILES 50ng

DATE AND TIME OF INJECTION: 8/23/93 10:21
INSTRUMENT ID: 5995

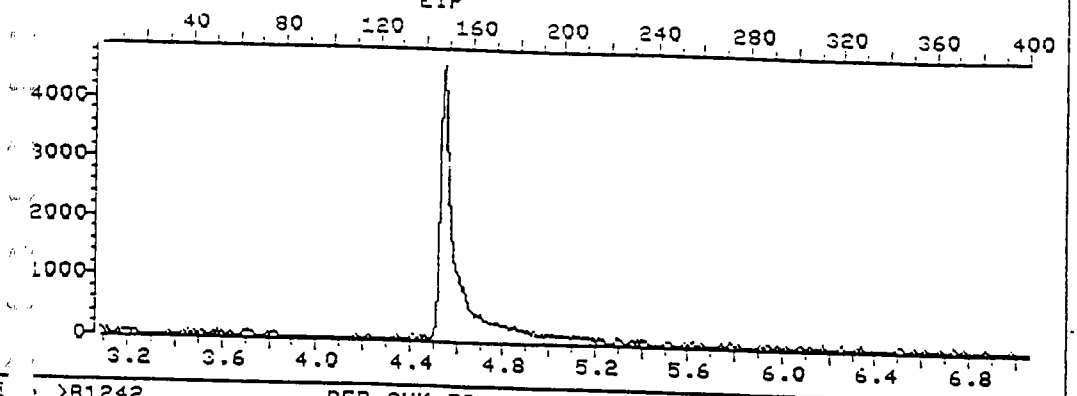
DATA RELEASE AUTHORIZED BY Richard W Lynn

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	22.07	22.07	Ok
75	30-60% of mass 95	51.73	51.73	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	8.06	8.06	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	77.05	77.05	Ok
175	5-9% of mass 174	4.84	6.28	Ok
176	95-101% of mass 174	77.43	100.50	Ok
177	5-9% of mass 176	5.04	6.51	Ok

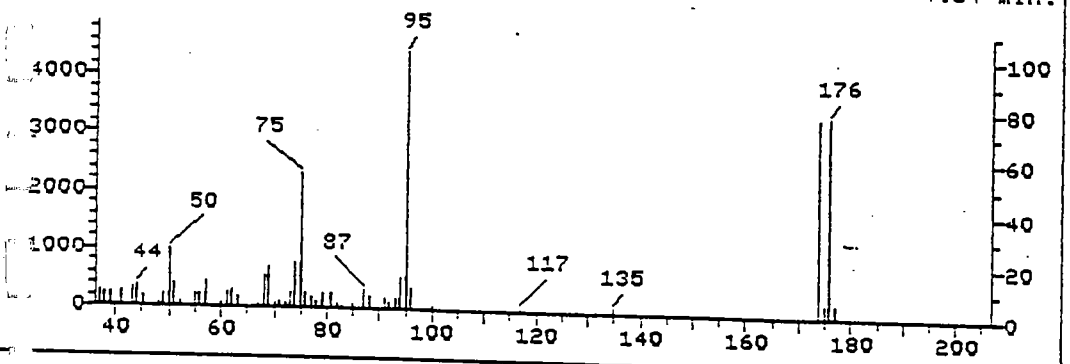
THIS PERFORMANCE AFFECTS ALL SAMPLES
STANDARDS AND BLANKS LISTED BELOW

SAMPLE ID		LAB ID		DATE TIME
>B1242::D6		BFB CHK 50ng		8/23/93 10:21
>B1243::D6		HSL CAL STD 50ppb		8/23/93 11:00
>B1244::D6		HSL CAL STD 20ppb		8/23/93 11:30
>B1245::D6		HSL CAL CHK 100ppb		8/23/93 12:01
>B1246::D6		HSL CAL CHK 150ppb		8/23/93 12:34
>B1247::D6		HSL CAL CHK 200ppb		8/23/93 13:39
>B1248::D6		BLANK		8/23/93 15:14
>B1250::D6		A3641		8/23/93 16:43
>B1251::D6		A3642		8/23/93 17:13
>B1252::D6		A3643		8/23/93 17:42
>B1253::D6		A3644		8/23/93 18:11
>B1254::D6		A3645		8/23/93 18:41
>B1255::D6		A3646		8/23/93 19:11
>B1256::D6		A3647		8/23/93 19:41
>B1257::D6		A3521		8/23/93 20:11
>B1258::D6		A3640		8/23/93 20:41
>B1259::D6		A3674		8/23/93 21:11
>B1260::D6		A3675		8/23/93 21:41
>B1261::D6		A3676		8/23/93 22:12

File >B1242 94.7-95.7 amu. BFB CHK 50ng 092393
EIP



File >B1242 BFB CHK 50ng 092393
Bpc Rb 4444 Scan 147
4.54 min.



>B1242 BFB CHK 50ng 092393
147 NRM

File: >B1242 Scan #: 147 Retn. time: 4.54

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
36.05	3.038	51.05	8.776	69.05	15.842	81.00	5.873	96.00	8.056
[illegible].05	5.851	52.05	1.485	70.05	1.868	81.90	2.115	100.00	1.845
[illegible].05	5.401	55.15	4.860	71.05	2.543	83.00	1.170	116.90	1.193
39.05	5.423	56.05	5.153	72.05	1.688	85.00	1.575	127.90	1.013
41.15	6.143	57.05	10.374	73.05	5.806	87.00	7.336	134.90	2.228
[illegible].05	7.223	60.05	1.935	74.05	17.777	88.00	4.725	173.90	77.048
44.05	7.988	61.05	5.828	75.05	51.733	91.00	3.870	175.00	4.838
45.05	4.365	62.05	6.391	76.00	6.053	92.00	2.768	175.90	77.430
[illegible].95	1.373	63.15	4.230	77.00	4.163	93.00	4.140	176.90	5.041
[illegible].05	5.153	66.95	1.485	78.00	2.160	94.00	12.534	206.90	3.510
50.05	22.075	68.05	12.219	79.00	5.513	95.00	100.000		

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: Volatile Inst B

Contractor: 21ST Century Env Calibration Date: 08/23/93

Contract No: _____

Minimum $\overline{RF}$ for SPCC is .300 Maximum % RSD for CCC is 30%

Laboratory ID:	>81244 RF 20.00	>81243 RF 50.00	>81245 RF 100.00	>81246 RF 150.00	>81247 RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Chloromethane	.48208	.54838	.48535	.54463	.54751	.366	.52159	6.638		**	
Bromomethane	.59343	.57826	.52482	.58455	.58210	.454	.57263	4.768			
Vinyl Chloride	.79552	.88669	.76965	.89349	.89466	.390	.84800	7.133	*		
Chloroethane	.41727	.40960	.38578	.40838	.38337	.473	.40088	3.815			
Acrolein	.01211	.01503	.01256	.01644	.01697	.608	.01462	15.118			(Conc=32.0,80.0,160.0,240
1,1,2-Trichlorotrifluoroethane	1.93850	2.33178	1.84998	2.26329	2.30579	.624	2.13787	10.567			
Trichlorofluromethane	2.98643	3.38895	2.74106	3.25994	3.24866	.625	3.12501	8.310			
Acetone	.71175	.72246	.67275	.75809	.82707	.640	.73842	7.874			
1,1-Dichloroethene	1.65461	1.81609	1.55371	1.71269	1.60570	.623	1.66856	6.071	*		
Carbon Disulfide	1.90386	2.03133	2.74257	3.03669	3.34611	.664	2.61211	24.022			
Methyl Tertiary Butyl Ether	-	2.76540	3.56742	4.11060	-	.770	3.48114	19.440			
Tertiary Butyl Alcohol	-	.71453	.97942	1.11168	-	.751	.93521	21.624			(Conc=40.0,100.0,200.0,30
Acrylonitrile	.45208	.48449	.47728	.54325	.56128	.761	.50368	9.212			
Methylene Chloride	1.28176	1.25183	1.28436	1.44028	1.44913	.715	1.34147	7.093			
1,2-Dichloroethene(trans)	1.57367	1.71611	1.49937	1.70233	1.72124	.764	1.64254	6.120			
1,1-Dichloroethane	2.26832	2.73405	2.29680	2.71460	2.57754	.842	2.51826	8.883		**	
Vinyl Acetate	.08620	.09168	.06681	.07816	.06011	.854	.07659	17.145			
2-Butanone	1.97393	1.74326	1.34433	1.52005	1.54085	.959	1.62448	14.844			
Chloroform	2.89732	3.19572	2.86376	3.35992	3.33911	1.015	3.13117	7.590	*		
1,1,1-Trichloroethane	2.55563	2.89720	2.50350	2.95902	3.00392	1.052	2.78385	8.475			
Carbon Tetrachloride	2.07078	2.47113	2.09184	2.49326	2.55589	1.085	2.33658	10.066			
1,2-Dichloroethane-d4	2.19121	2.23328	2.37515	2.35806	2.30899	1.113	2.29334	3.459			(Conc=50.0,50.0,50.0,50.0
1,2-Dichloroethane	.41469	.44809	.37121	.42175	.40851	.939	.41285	6.718			
Benzene	.85490	.92783	.76381	.87426	.85722	.937	.85561	6.913			
Trichloroethene	.38571	.40539	.33543	.38680	.37903	1.046	.37847	6.863			
1,2-Dichloropropane	.28955	.31073	.25817	.28902	.28420	1.085	.28633	6.559	*		
Bromodichloromethane	.48544	.52935	.44160	.51485	.50940	1.133	.49613	6.923			
2-Chloroethylvinylether	.22843	.24745	.23394	.27620	.27689	1.187	.25258	9.084			
2-Hexanone	.41097	.33887	.33119	.37149	.38506	1.405	.36752	8.975			
trans-1,3-Dichloropropene	.45852	.51172	.42888	.49366	.48327	1.215	.47521	6.789			

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: Volatile Inst B

Contractor: 21ST Century Env Calibration Date: 08/23/93

Contract No: _____

Minimum $\overline{RF}$ for SPCC is .300 Maximum % RSD for CCC is 30%

Laboratory ID:	>81244	>81243	>81245	>81246	>81247						
Compound	RF 20.00	RF 50.00	RF 100.00	RF 150.00	RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
To ene-d8	.97388	.99022	.97640	.97622	.98131	1.267	.97960	.666			(Conc=50.0,50.0,50.0,50.0
Toluene	.97214	1.05217	.87019	1.00823	.98648	1.280	.97784	6.887	*		
cis-1,3-Dichloropropene	.47568	.51485	.43148	.51030	.49743	.850	.48595	7.003			
1, 2,2-Tetrachloroethane	.44739	.48762	.39982	.47197	.47233	1.180	.45583	7.561		**	
1, 2-Trichloroethane	.36458	.39136	.32556	.38592	.38451	.873	.37039	7.299			
4-Methyl-2-pentanone	.51873	.41352	.40524	.46756	.48455	.906	.45792	10.499			
Te achloroethene	.38111	.41310	.33375	.41013	.42175	.893	.39197	9.173			
Di omochloromethane	.52801	.57307	.48329	.57612	.57400	.923	.54690	7.470			
Chlorobenzene	.88328	.93517	.77509	.93191	.92485	1.004	.89006	7.591		**	
Ethylbenzene	1.51388	1.60863	1.32259	1.57014	1.51837	1.019	1.50672	7.308	*		
m Xylenes	1.05143	1.10999	1.00195	1.20696	1.23728	1.035	1.12152	8.921			
o-ylene	1.11042	1.15701	.94920	1.12835	1.08092	1.089	1.08518	7.453			
Styrene	.80227	.83858	.80388	.95869	.95359	1.091	.87140	9.034			
Br oform	.39837	.43247	.37186	.44502	.46096	1.114	.42174	8.573		**	
Br ofluorobenzene	.57356	.55727	.55390	.56587	.56331	1.160	.56278	1.363			(Conc=50.0,50.0,50.0,50.0
m-Dichlorobenzene	.71854	.74817	.57613	.72050	.74313	1.316	.70130	10.153			
p- chlorobenzene	.73911	.76741	.60340	.75539	.76789	1.329	.72664	9.617			
o- chlorobenzene	.69758	.72495	.55651	.69638	.71026	1.382	.67713	10.103			

RF - Response Factor (Subscript is amount in UG/L)

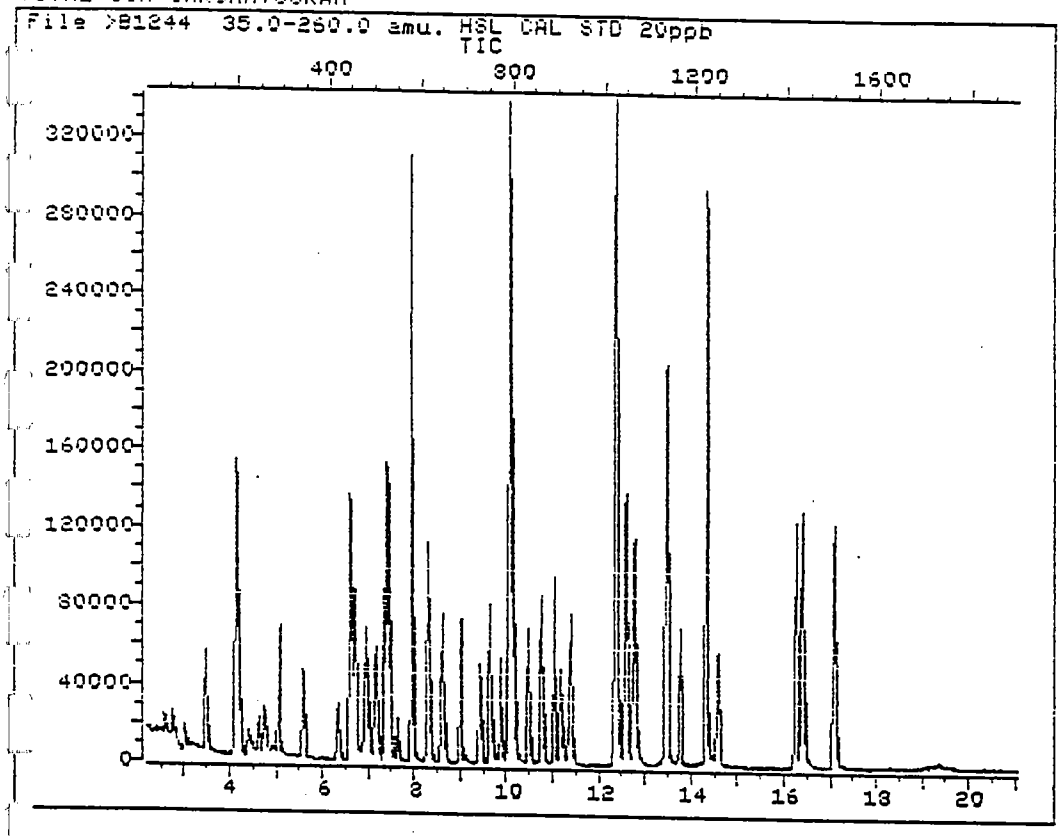
R - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

% D - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

TOTAL ION CHROMATOGRAM



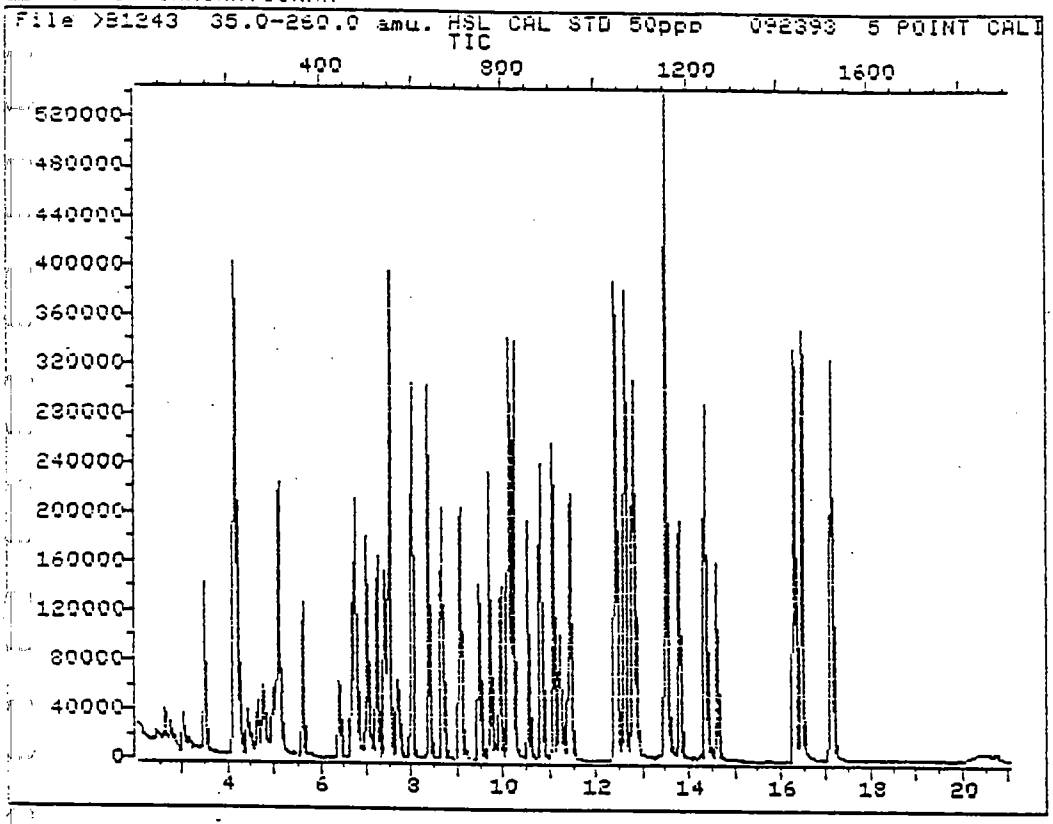
Data File: >B1244::D6
Name: HSL CAL STD 20ppb
Misc:

Quant Output File: ^B1244::D4

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930823 12:02

Operator ID: MANAGER
Quant Time: 930823 12:03
Injected at: 930823 11:30

TOTAL ION CHROMATOGRAM

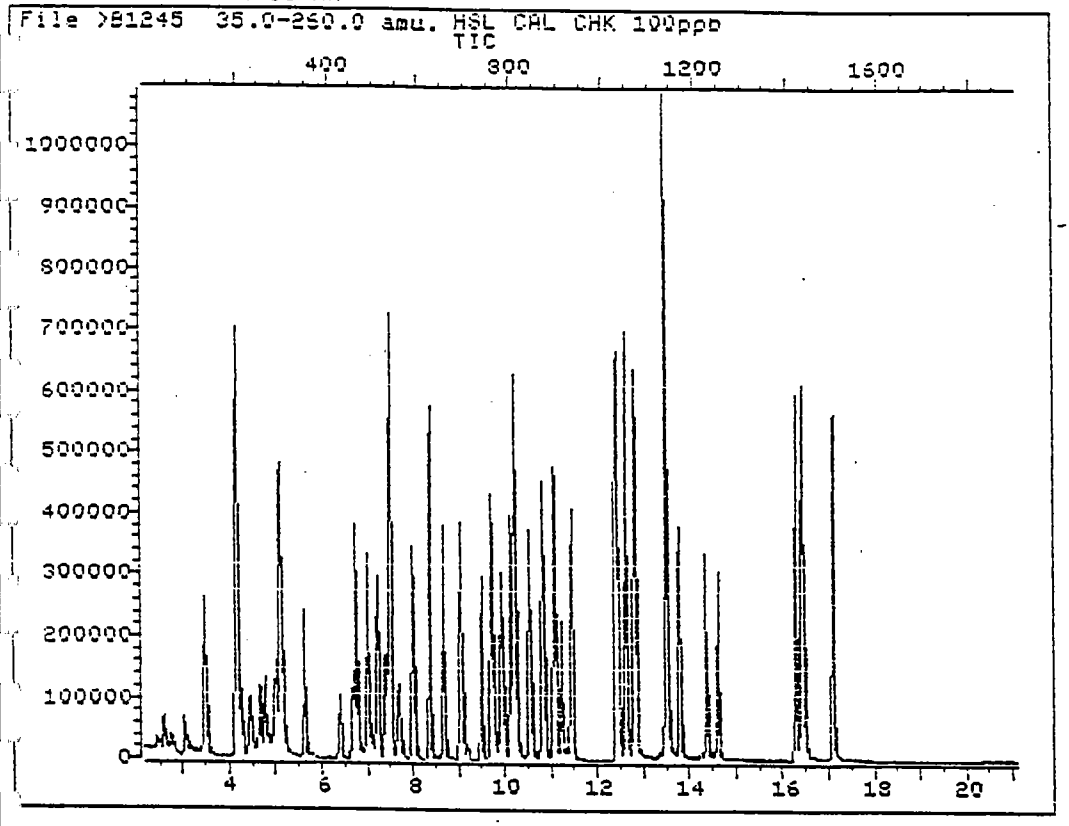


Data File: >B1243::D6 Quant Output File: ^B1243::D4
Name: HSL CAL STD 50ppb
Misc: 092393 5 POINT CALIBRATION CURVE

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930821 13:24

Operator ID: MANAGER
Quant Time: 930823 11:34
Injected at: 930823 11:00

TOTAL ION CHROMATOGRAM



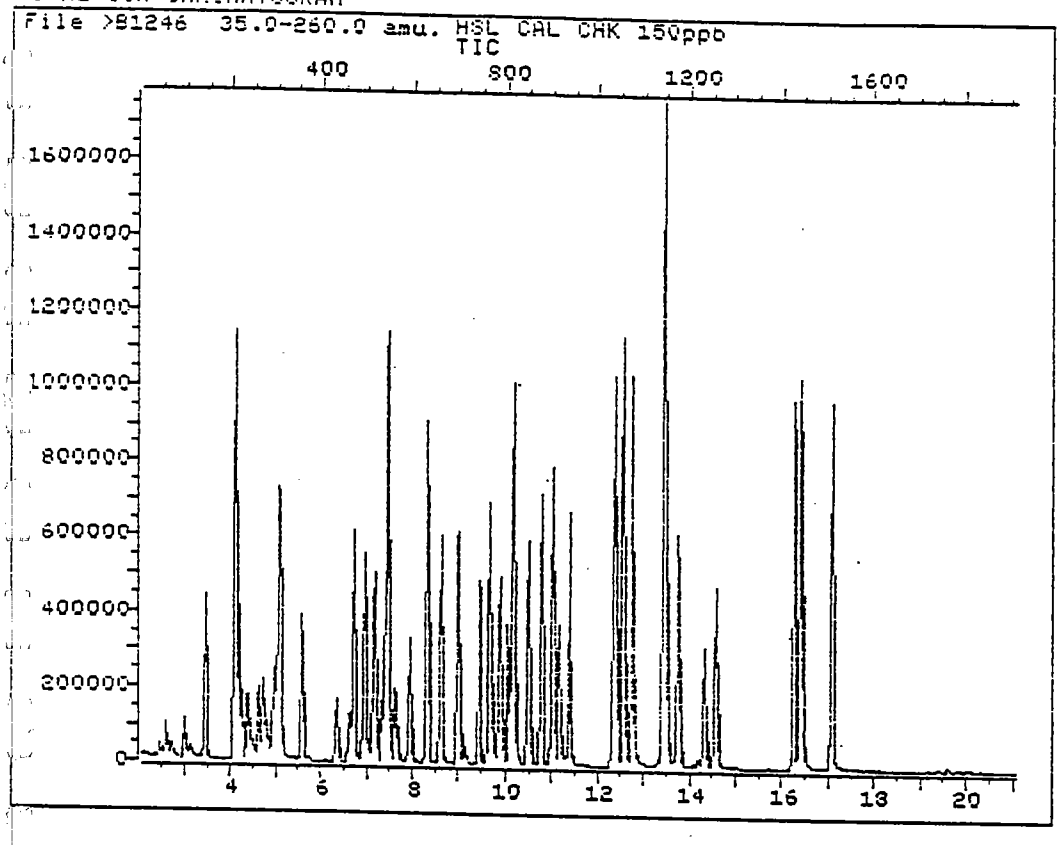
Data File: >B1245::D6
Name: HSL CAL CHK 100ppb
Misc:

Quant Output File: ^B1245::D4

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930823 12:02

Operator ID: MANAGER
Quant Time: 930823 12:28
Injected at: 930823 12:01

TOTAL ION CHROMATOGRAM



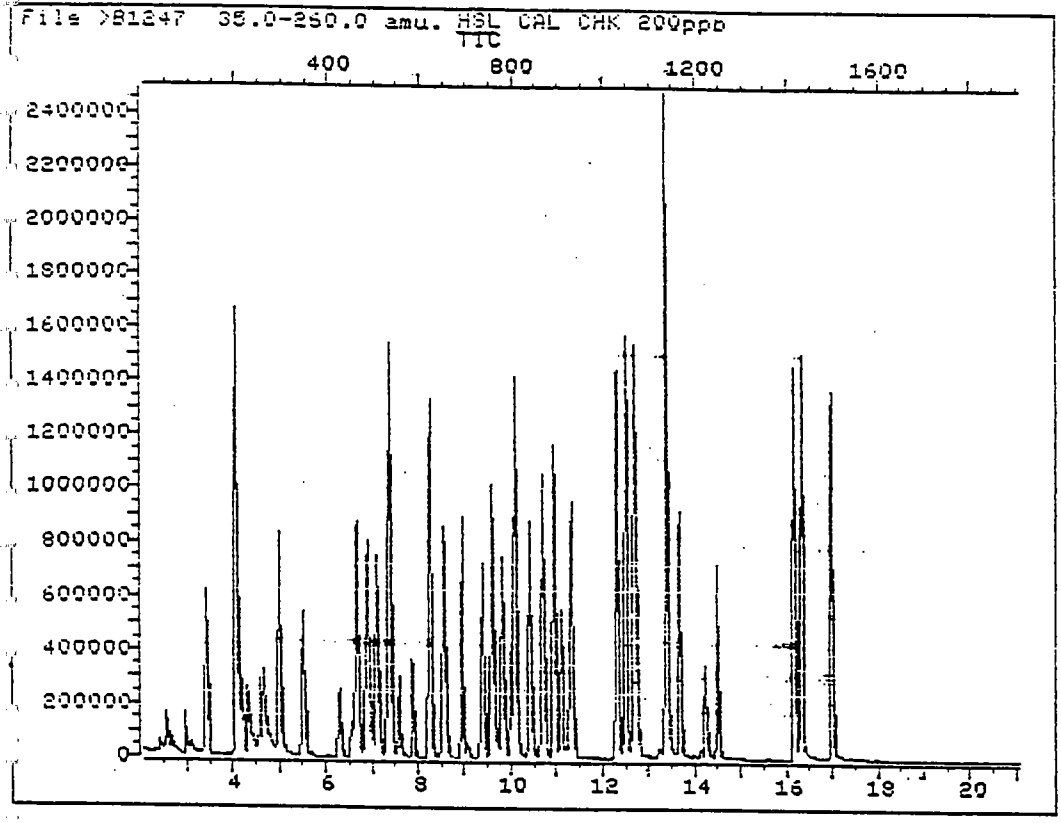
Data File: >B1246::D6
Name: HSL CAL CHK 150ppb
Misc:

Quant Output File: ^B1246::D4

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930823 12:02

Operator ID: MANAGER
Quant Time: 930823 13:00
Injected at: 930823 12:34

TOTAL ION CHROMATOGRAM



Data File: >B1247::D6
Name: HSL CAL CHK 200ppb
Misc:

Quant Output File: ^B1247::D1

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930823 12:02

Operator ID: JEFF
Quant Time: 930823 14:05
Injected at: 930823 13:39

21st Century Environmental Inc.

GC/MS STANDARD DECAFLUOROTRIPHENYLPHOSPHINE(DFTPP) TUNE
CRITERIA FOR SEMIVOLATILES 50ng

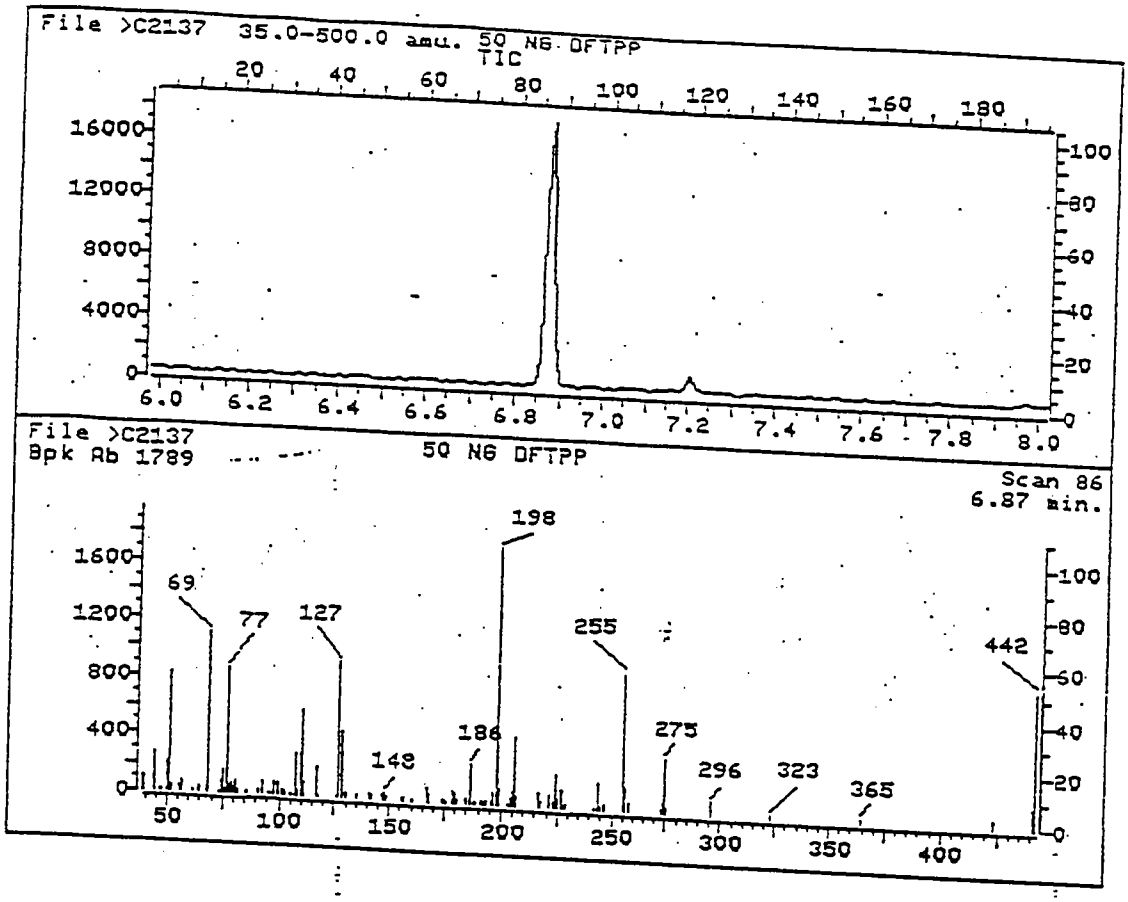
DATE AND TIME OF INJECTION: 9/08/93 8:40
INSTRUMENT ID: 5970

DATA RELEASE AUTHORIZED BY Richard W Lynch

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriate Peak	Status
51	30-60% of mass 198	46.17	46.17	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	61.93	61.93	Ok
70	Less than 2% of mass 69	0.00	0.00	Ok
127	40-60% of mass 198	52.66	52.66	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	7.10	7.10	Ok
275	10-30% of mass 198	21.13	21.13	Ok
365	Greater than 1% of mass 198	2.01	2.01	Ok
441	0-100% of mass 443	8.33	79.26	Ok
442	Greater than 40% of mass 198	53.16	53.16	Ok
443	17-23% of mass 442	10.51	19.77	Ok

THIS PERFORMANCE AFFECTS ALL SAMPLES
STANDARDS AND BLANKS LISTED BELOW

SAMPLE ID		LAB ID		DATE	TIME
>C2137::04		50 NG DFTPP		9/08/93	8:40
>C2138::04		50 PPM BNA STD		9/08/93	8:58
>C2140::E4		80 PPM BNA STD		9/08/93	10:35
>C2141::03		120 PPM BNA STD		9/08/93	11:20
>C2142::05		160 PPM BNA STD		9/08/93	12:04
>C2143::05		20 PPM BNA STD		9/08/93	12:49
>C2144::05		A3879 CWM 9/8		9/08/93	13:35
>C2145::05		A3885 CWM 9/8		9/08/93	14:20
>C2146::05		A3891 CWM 9/8		9/08/93	15:05
>C2147::05		A3897 CWM 9/8		9/08/93	15:51
>C2148::05		A3903 CWM 9/8		9/08/93	16:36
>C2149::05		TCLP BLANK 9/8		9/08/93	17:21



>C2137
86

50 NG DFTPP
NRM

File: >C2137 Scan #: 86 Retn. time: 6.87

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
38.35	1.397	80.00	2.683	128.95	25.489	186.05	15.484	227.00	7.211
39.05	4.248	80.90	5.087	130.05	2.795	186.75	3.130	228.00	.894
39.95	5.702	82.10	1.453	135.00	1.845	188.90	1.062	228.90	1.621
44.05	14.925	85.90	.950	141.00	2.739	191.80	1.342	241.85	.671
46.85	.838	90.95	1.956	141.90	1.901	192.10	1.230	243.90	11.124
50.00	11.962	92.95	5.087	146.95	2.571	192.90	1.901	244.90	1.789
51.10	46.171	96.05	1.174	147.95	3.186	196.00	5.254	246.00	2.515
52.00	2.795	97.95	5.087	148.85	1.397	197.90	100.000	254.90	52.990
56.00	2.739	99.05	4.975	155.15	2.068	198.90	7.099	255.90	9.111
57.00	4.528	100.95	2.348	156.05	2.012	202.95	.727	257.75	3.689
61.90	.559	102.85	1.621	159.95	1.118	203.95	3.577	272.80	1.342
64.95	2.348	104.90	1.230	167.00	5.981	204.95	5.869	273.90	4.304
68.95	61.934	106.90	16.546	168.00	3.298	205.95	26.160	275.00	21.129
73.15	.727	107.90	2.683	173.90	1.342	206.95	4.025	275.90	2.683
73.45	.559	109.90	33.203	174.95	1.789	216.10	.894	295.85	5.590
74.15	4.919	110.90	5.702	176.05	.615	216.90	5.590	323.05	1.342
75.05	8.944	117.00	12.018	176.35	.671	217.70	2.236	364.90	2.012
75.75	1.062	117.90	1.006	178.95	4.639	220.90	4.639	423.00	3.130
76.05	1.565	125.15	.671	179.95	3.857	223.00	2.627	441.00	[illegible]

Initial Calibration Data
HSL Compounds

Case No:

Instrument ID: 5970C

Contractor: 21st Century Envir

Calibration Date: 09/08/93

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.050 Maximum % RSD for CCC is 30%

Laboratory ID:	>C2143	>C2138	>C2140	>C2141	>C2142						
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Pyridine	.73090	.61832	.67563	.74305	.72615	.298	.69881	7.419			
n-Nitrosodimethylamine	.59126	.50711	.60253	.57684	.54288	.302	.56412	6.909			
2-Fluorophenol	.89953	.71842	.85435	.84707	.50574	.667	.76502	20.894			(Conc=100.0,100.0,100
Phenol-d5	1.09442	.86758	1.14627	1.13775	.68938	.947	.98708	20.418			(Conc=100.0,100.0,100
Phenol	1.15048	.93627	1.21702	1.11321	1.02866	.951	1.08913	10.029	*		
bis(-2-Chloroethyl)Ether	1.02575	.83614	1.00430	.96090	.91689	.956	.94879	7.967			
2-Chlorophenol	.91937	.75659	.90919	.83613	.78378	.954	.84101	8.659			
1,3-Dichlorobenzene	.98595	.84853	.95680	.88839	.81290	.988	.89851	8.059			
1,4-Dichlorobenzene	.98867	.88037	.96053	.90139	.84741	1.004	.91567	6.333	*		
Benzyl Alcohol	.46277	.43269	.56863	.58421	.55091	1.063	.51984	13.026			
1,2-Dichlorobenzene	.96341	.83448	.92622	.87369	.82825	1.054	.88521	6.623			
2-Methylphenol	.81996	.65640	.82243	.80529	.74070	1.108	.76895	9.252			
bis(2-Chloraisopropyl)ether	.94536	.69695	.88974	.88789	.88614	1.106	.86122	11.048			
4-Methylphenol	.81438	.66761	.84813	.82130	.78071	1.155	.78643	8.981			(Conc=40.0,100.0,160.
N-Nitroso-Di-n-propylamine	.86981	.72131	.90383	.81499	.64150	1.148	.79029	13.676		**	
Hexachloroethane	.49494	.41576	.47972	.45405	.43350	1.136	.45480	6.977			
Nitrobenzene-d5	.52978	.48808	.53039	.53654	.54248	.861	.52545	4.096			(Conc=50.0,50.0,50.0,5
Nitrobenzene	.52788	.47165	.50786	.50408	.50243	.865	.50278	4.011			
Isophorone	1.03348	.90369	1.03410	1.02721	1.01479	.917	1.00266	5.572			
2-Nitrophenol	.21782	.21890	.24588	.24691	.26028	.931	.23796	7.890	*		
2,4-Dimethylphenol	.33353	.31521	.33909	.33146	.32881	.957	.32962	2.700			
Benzoic Acid	.11266	.13719	.20153	.22535	.22520	1.002	.18039	28.977			
bis(-2-Chloroethoxy)Methane	.50997	.44881	.49885	.50041	.50298	.974	.49221	5.004			
2,4-Dichlorophenol	.29261	.28026	.30679	.29764	.29393	.983	.29425	3.256	*		
1,2,4-Trichlorobenzene	.33747	.31932	.31830	.31477	.31275	.995	.32052	3.070			
Naphthalene	1.19791	1.09759	1.11929	1.10871	1.11407	1.004	1.12751	3.562			
4-Chloroaniline	.39340	.38601	.44659	.45253	.43122	1.029	.42195	7.242			
Hexachlorobutadiene	.19319	.18146	.17994	.17253	.16906	1.049	.17924	5.211	*		
4-Chloro-3-methylphenol	.38222	.35100	.39815	.38249	.36114	1.140	.37500	5.011	*		
2-Methylnaphthalene	.72866	.70523	.73047	.72256	.68664	1.149	.71471	2.601			

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No:

Instrument ID: 5970C

Contractor: 21st Century Envir

Calibration Date: 09/08/93

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.050 Maximum % RSD for CCC is 30%

Laboratory ID:	>C2143 RF 20.00	>C2138 RF 50.00	>C2140 RF 80.00	>C2141 RF 120.00	>C2142 RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Hexachlorocyclopentadiene	.23258	.26104	.29812	.31553	.34627	.878	.29071	15.399		**	
2,4,6-Trichlorophenol	.37817	.37956	.40566	.40706	.42667	.893	.39942	5.140	*		
2,4,5-Trichlorophenol	.36947	.40303	.42669	.42275	.42115	.898	.40862	5.801			
2-Chloronaphthalene	1.32638	1.26636	1.28819	1.35724	1.37132	.914	1.32190	3.369			
2-Fluorobiphenyl	1.38171	1.36840	1.45571	1.56603	1.65138	.905	1.48464	8.206			
2-Nitroaniline	.41189	.42302	.41915	.41868	.42956	.940	.42046	1.540			(Conc=50.0,50.0,50.0,
Dimethyl Phthalate	1.76551	1.58545	1.47183	1.29145	1.26680	.979	1.47621	14.114			
Acenaphthylene	2.00989	1.88610	1.92268	1.88486	1.87675	.976	1.91606	2.890			
3-Nitroaniline	.24134	.23925	.22123	.20616	.19894	1.004	.22138	8.609			
Acenaphthene	1.42137	1.32752	1.32576	1.31198	1.29154	1.005	1.33563	3.747	*		
2,4-Dinitrophenol	.04928	.09673	.10999	.10397	.10776	1.020	.09355	26.994		**	
4-Nitrophenol	.09231	.15914	.17669	.17172	.16555	1.039	.15308	22.607		**	
Dibenzofuran	1.86741	1.78719	1.88602	1.81959	1.80811	1.030	1.83366	2.264			
2,4-Dinitrotoluene	.34861	.36904	.31497	.28296	.27090	1.043	.31730	13.179			
2,6-Dinitrotoluene	.31983	.31714	.29549	.27325	.26642	.986	.29443	8.311			
Diethylphthalate	1.99654	1.70410	1.48077	1.24204	1.17156	1.087	1.51900	22.354			
4-Chlorophenyl-phenylether	.64907	.61093	.60562	.57825	.55474	1.088	.59972	5.942			
Fluorene	1.42489	1.35768	1.32771	1.22993	1.19241	1.082	1.30652	7.258			
4-Nitroaniline	.14904	.16863	.17266	.16510	.16066	1.098	.16322	5.562			
4,6-Dinitro-2-methylphenol	.07290	.10179	.13049	.12838	.13438	.905	.11359	23.004			
N-Nitrosodiphenylamine	.69176	.68056	.82423	.80121	.78780	.908	.75711	8.742	*		
2,4,6-Tribromophenol	.09546	.09811	.12245	.12009	.12261	.919	.11174	12.282			
4-Bromophenyl-phenylether	.24601	.25380	.30083	.30039	.29464	.950	.27913	9.649			(Conc=100.0,100.0,100.
Hexachlorobenzene	.25987	.26015	.27454	.27090	.26298	.964	.26569	2.507	*		
Pentachlorophenol	.08494	.10209	.12524	.12462	.12323	.989	.11202	16.036		**	
Phenanthrene	1.24579	1.14324	1.23222	1.18391	1.17774	1.003	1.19658	3.509			
Anthracene	1.16330	1.07606	1.14034	1.12244	1.12233	1.009	1.12489	2.850			
Di-n-Butylphthalate	1.77284	1.38853	1.40946	1.34995	1.32676	1.094	1.44951	12.667			
Fluoranthene	.73291	.63983	.72605	.72484	.70906	1.151	.70654	5.421	*		
Pyrene	2.41253	2.33755	2.00247	1.87197	1.99112	.885	2.12313	11.166			

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No:

Instrument ID: 5970C

Contractor: 21st Century Envir

Calibration Date: 09/08/93

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.050 Maximum % RSD for CCC is 30%

Laboratory ID:	>C2143	>C2138	>C2140	>C2141	>C2142						
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Benzidine	.01749	.02490	.03552	.05130	.05326	.883	.03649	43.261			
Terphenyl-d14	1.40587	1.39008	1.19225	1.19027	1.23176	.907	1.28204	8.366			(Conc=50.0,50.0,50.0
Butylbenzylphthalate	1.10913	1.00798	1.09099	1.06541	1.09403	.960	1.07351	3.713			
3,3'-Dichlorobenzidine	.21334	.20850	.28284	.30354	.31209	1.002	.26406	18.820			
Benzo(a)Anthracene	1.19227	1.13411	1.20893	1.20612	1.22056	.999	1.19240	2.860			
Bis(2-Ethylhexyl)Phthalate	1.36825	1.17601	1.35096	1.36008	1.37577	1.020	1.32621	6.370			
Chrysene	1.19307	1.10298	1.08645	1.07298	1.13124	1.002	1.11734	4.259			
Di-n-octyl phthalate	2.19785	2.16480	2.59768	2.62085	2.64266	.956	2.44477	9.870	*		
Benzo(b)fluoranthene	1.25430	1.21059	1.27995	1.26976	1.28578	.973	1.26008	2.391			
Benzo(k)Fluoranthene	1.37252	1.23395	1.35210	1.33962	1.30550	.975	1.32074	4.110			
Benzo(a)Pyrene	1.15005	1.09835	1.22132	1.14982	1.17552	.996	1.15901	3.859	*		
Indeno(1,2,3-cd)Pyrene	1.10436	1.07357	1.22071	1.22752	1.21425	1.070	1.16808	6.266			
Dibenzo(a,h)Anthracene	.85705	.81177	.97729	.99961	.98030	1.072	.92520	9.171			
Benzo(g,h,i)Perylene	.94266	.98440	1.07025	1.07743	1.05804	1.086	1.02656	5.825			

RF - Response Factor (Subscript is amount in ug/l)

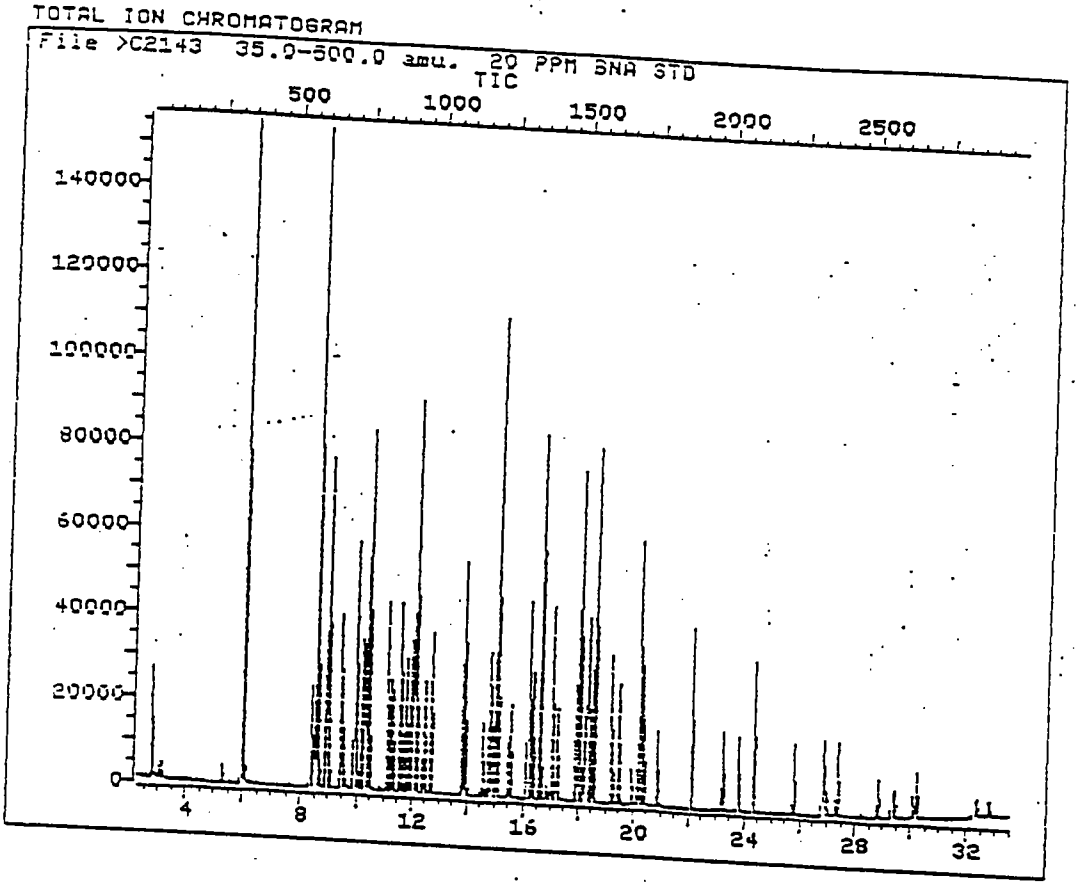
$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

TOTAL ION CHROMATOGRAM



Data File: >C2143::D5
Name: 20 PPM BNA STD
Misc:

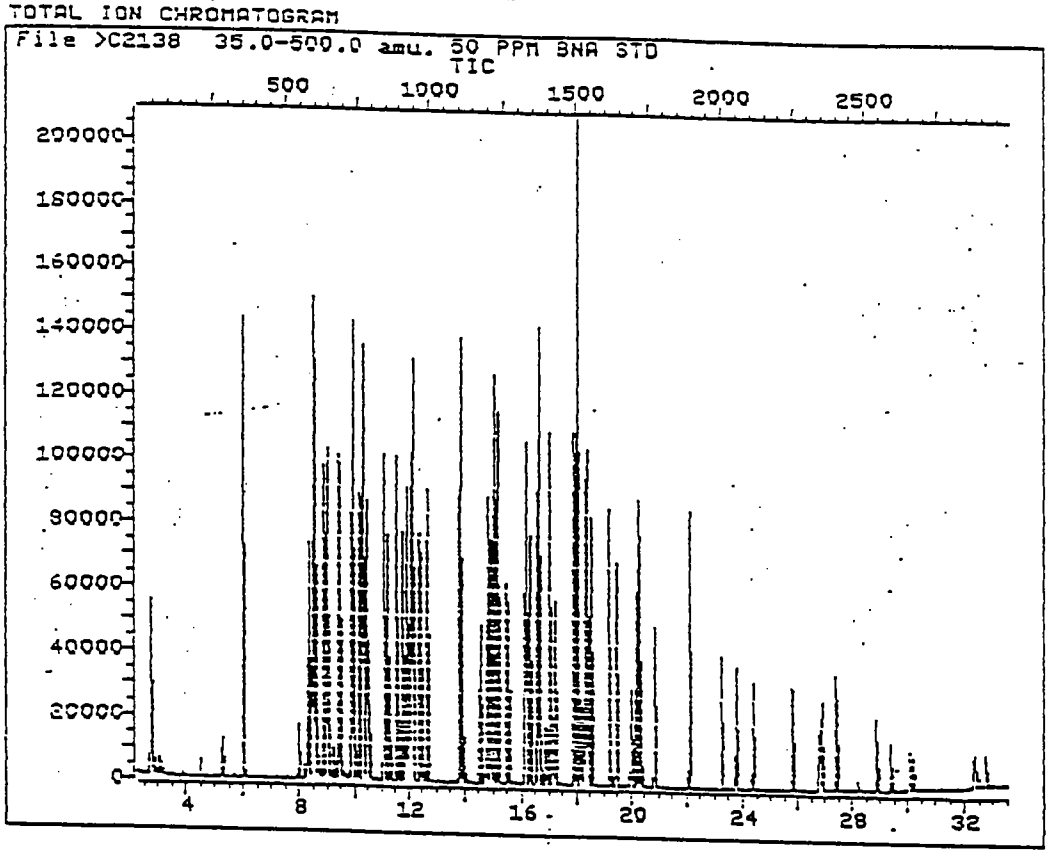
Quant Output File: ^C2143::QT

BTL# 5

Id File: ID831C::D3
Title: hSL BNA STD
Last Calibration: 930830 11:19

Operator ID: JEFF
Quant Time: 930908 13:25
Injected at: 930908 12:49

TOTAL ION CHROMATOGRAM



Data File: >C2138::D4
Name: 50 PPM BNA STD
Misc:

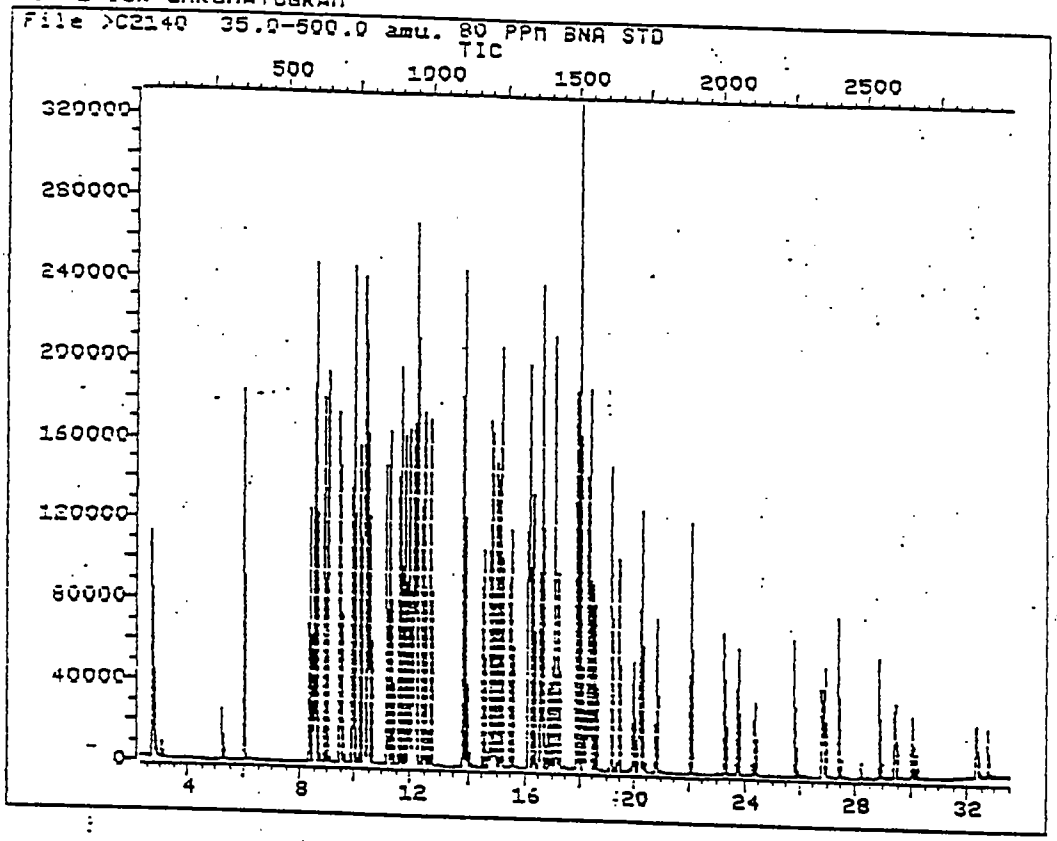
Quant Output File: ^C2138::QT

BTL# 2

Id File: ID831C::D3
Title: hSL BNA STD
Last Calibration: 930830 11:19

Operator ID: JEFF
Quant Time: 930908 09:35
Injected at: 930908 08:58

TOTAL ION CHROMATOGRAM



Data File: >C2140::E4
Name: 80 PPM BNA STD
Misc:

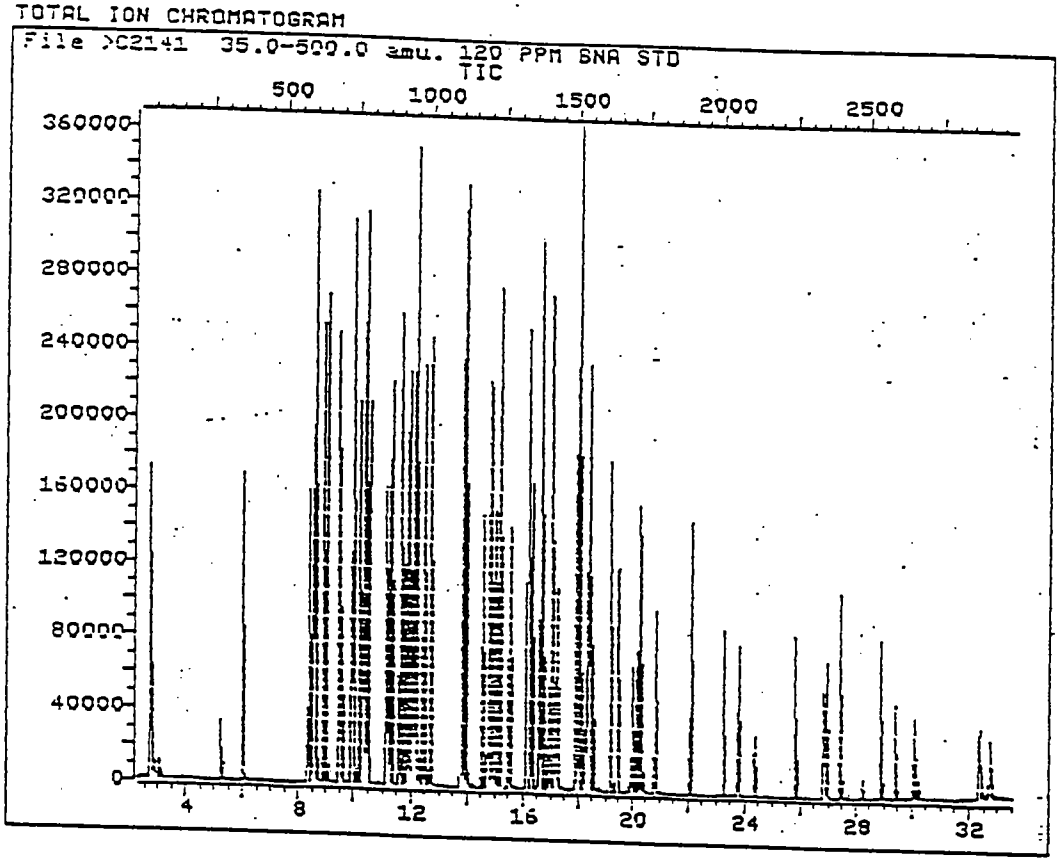
Quant Output File: ^C2140::QT

BTL# 2

Id File: ID831C::D3
Title: hSL BNA STD
Last Calibration: 930830 11:19

Operator ID: JEFF
Quant Time: 930908 11:11
Injected at: 930908 10:35

TOTAL ION CHROMATOGRAM



Data File: >C2141::D3
Name: 120 PPM BNA STD
Misc:

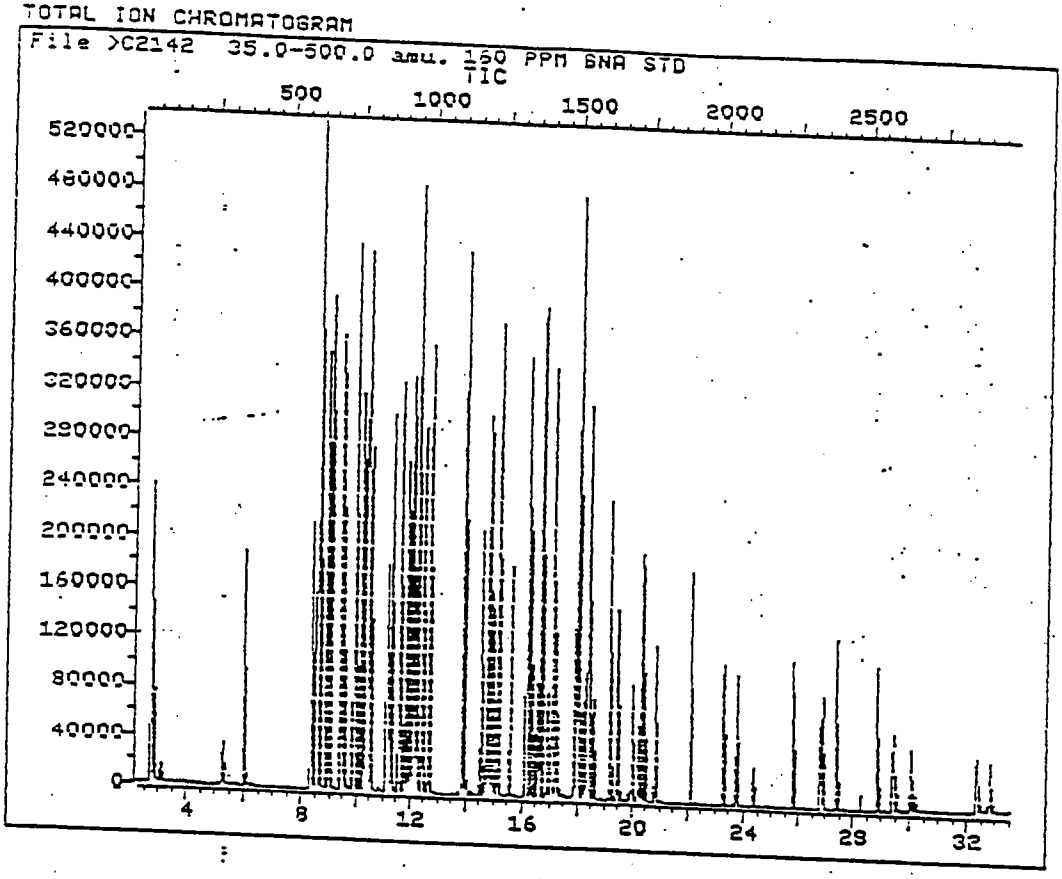
Quant Output File: ^C2141::QT

BTL# 3

Id File: ID831C::D3
Title: hSL BNA STD
Last Calibration: 930830 11:19

Operator ID: JEFF
Quant Time: 930908 12:02
Injected at: 930908 11:20

TOTAL ION CHROMATOGRAM



Data File: >C2142::D5
Name: 160 PPM BNA STD
Misc:

Quant Output File: ^C2142::QT

BTL# 4

Id File: ID831C::D3
Title: hSL BNA STD
Last Calibration: 930830 11:19

Operator ID: JEFF
Quant Time: 930908 12:41
Injected at: 930908 12:04

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: BRIDGEPORT ENVIRONMENTAL Inc. Contract No.:

Lab Code: Case No: SAS No.: SDG No.:

LAB ID FILE (BLANK): >B1626 DATE ANALYZED: 09/14/93

INSTRUMENT ID: B TIME ANALYZED: 01:58

Matrix: SOIL Level:(low/med) LOW Column:(pack/cap)

Sample ID: BLANK

THIS BLANK APPLIES TO THE FOLLOWING SAMPLES,MS AND MSD

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	MeOH BLK	>B1627	09/14/93	02:33
2	A4024	>B1630	09/14/93	04:02
3	A2990	>B1633	09/14/93	05:32
4	A2997	>B1634	09/14/93	06:03
5	A3000	>B1635	09/14/93	06:33
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

COMMENTS:

FORM IV VOA

21st Century Environmental Inc.
VOLATILE ORGANIC ANALYSIS DATA

JOB NUMBER		MATRIX	Soil
SAMPLE NUMBER	BLANK	DILUTION FACTOR	1.00
CLIENT ID	091493 METHOD BLANK	QA BATCH	
DATA FILE	>81626	DATE ANALYZED	09/14/93

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
Acrolein	ND	50	2-Chloroethylvinylether	ND	10
Acrylonitrile	ND	50	2-Hexanone	ND	10
Chloromethane	ND	10	trans-1,3-Dichloropropene	ND	5
Bromomethane	ND	10	Toluene	ND	5
Vinyl Chloride	ND	10	cis-1,3-Dichloropropene	ND	5
Chloroethane	ND	10	1,1,2,2-Tetrachloroethane	ND	5
Acetone	5.1 J	10	1,1,2-Trichloroethane	ND	5
1,1-Dichloroethene	ND	5	4-Methyl-2-pentanone	ND	10
Carbon Disulfide	ND	10	Tetrachloroethene	ND	5
Methylene Chloride	2.4 J	5	Dibromochloromethane	ND	5
1,2-Dichloroethene(trans)	ND	5	Chlorobenzene	ND	5
1,1-Dichloroethane	ND	5	Ethylbenzene	ND	5
Vinyl Acetate	ND	5	m&p-Xylenes	ND	5
2-Butanone	ND	10	o-Xylene	ND	5
Chloroform	ND	5	Styrene	ND	5
1,1,1-Trichloroethane	ND	5	Bromoform	ND	5
Carbon Tetrachloride	ND	5	m-Dichlorobenzene	ND	5
1,2-Dichloroethane	ND	5	p-Dichlorobenzene	ND	5
Benzene	ND	5	o-Dichlorobenzene	ND	5
Trichloroethene	ND	5	Methyl Tertiary Butyl Ether	ND	10
1,2-Dichloropropane	ND	5	Tertiary Butyl Alcohol	ND	50
Bromodichloromethane	ND	5			

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	102	70 - 121	OK
Toluene-d8	94.6	81 - 117	OK
Bromofluorobenzene	99.5	74 - 121	OK

Percent Solid of 100. is used for all Target compounds.

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BLANK

Lab Name:21st Century Environmental Contract:N/A

Lab Code: Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: BLANK

Sample wt/vol: 5 (g/mL) g Lab File ID: >B1626

Level: (low/med) LOW Date Received: NA

% Moisture: NA Date Analyzed: 09/14/93

Column: DB-624 Dilution Factor: 1

Number TICs found: 0

CONCENTRATION UNITS
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	No Unknowns			

FORM I VOA-TIC 1/87 Rev.

QUANT REPORT

Operator ID: MANAGER
Output File: ^B1626::D4
Data File: >B1626::D6
Name: BLANK
Misc: 091493 METHOD BLANK

Quant Rev: 6 Quant Time: 930914 04:26
Injected at: 930914 01:58
Dilution Factor: 1.00000

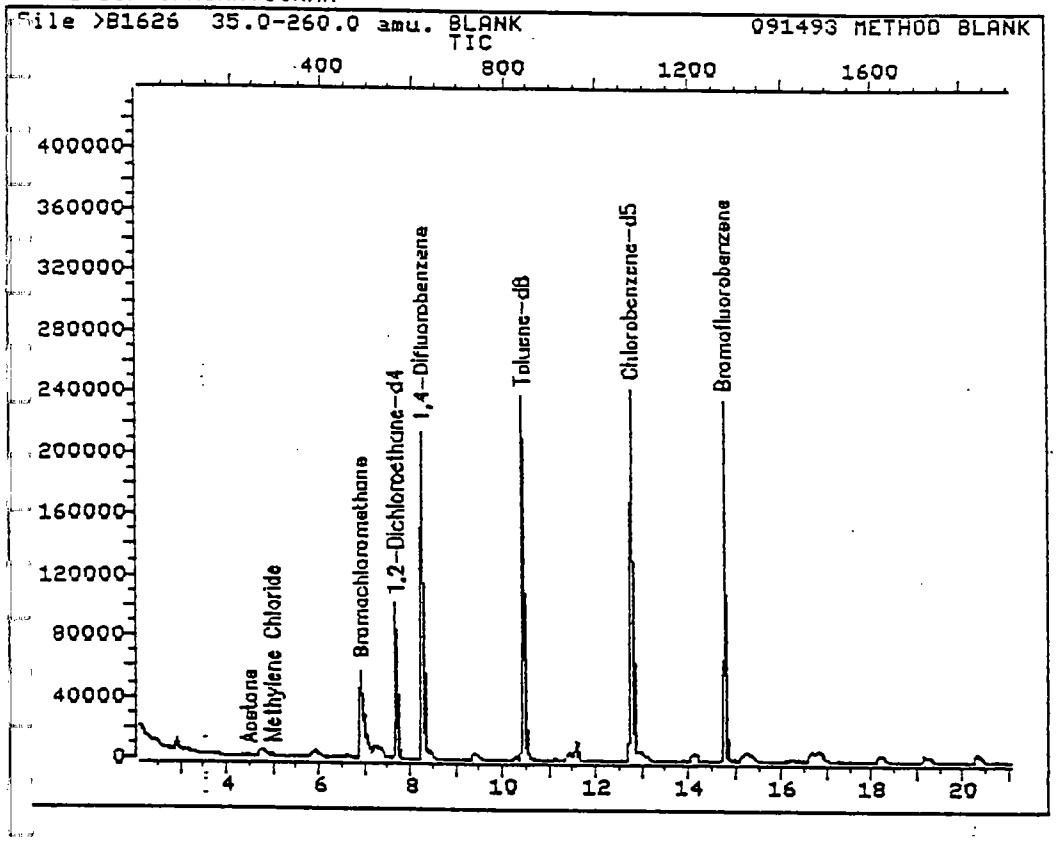
5ml

ID File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930914 02:58

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	6.92	482	56726M	50.00	UG/L	100
9)	Acetone	4.49	237	4292	5.07	UG/L	88
15)	Methylene Chloride	4.98	287	3378	2.39	UG/L	72
23)	1,2-Dichloroethane-d4	7.68	559	135293	50.83	UG/L	100
24)	*1,4-Difluorobenzene	8.27	618	317354	50.00	UG/L	100
33)	Toluene-d8	10.43	836	307831	47.30	UG/L	100
35)	*Chlorobenzene-d5	12.75	1070	265147	50.00	UG/L	100
48)	Bromofluorobenzene	14.76	1272	156670	49.75	UG/L	100

* Compound is ISTD

TOTAL ION CHROMATOGRAM



Data File: >B1626::D6
Name: BLANK
Misc: 091493 METHOD BLANK

Quant Output File: ^B1626::D4

5ml

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930914 02:58

Operator ID: MANAGER
Quant Time: 930914 04:26
Injected at: 930914 01:58

21st Century Environmental Inc.
VOLATILE ORGANIC ANALYSIS DATA

JOB NUMBER		MATRIX	Soil
SAMPLE NUMBER	MeOH BLK	DILUTION FACTOR	50.00
CLIENT ID	EXTRACTION BLANK	QA BATCH	
DATA FILE	>81627	DATE ANALYZED	09/14/93

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
Acrolein	ND	2500	Bromodichloromethane	ND	250
Acrylonitrile	ND	2500	2-Chloroethylvinylether	ND	500
Chloromethane	ND	500	2-Hexanone	ND	500
Bromomethane	ND	500	trans-1,3-Dichloropropene	ND	250
Vinyl Chloride	ND	500	Toluene	ND	250
Chloroethane	ND	500	cis-1,3-Dichloropropene	ND	250
Acetone	240 J	500	1,1,2,2-Tetrachloroethane	ND	250
1,1-Dichloroethene	ND	250	1,1,2-Trichloroethane	ND	250
Carbon Disulfide	ND	500	4-Methyl-2-pentanone	ND	500
Methylene Chloride	87 J	250	Tetrachloroethene	ND	250
1,2-Dichloroethene(trans)	ND	250	Dibromochloromethane	ND	250
1,1-Dichloroethane	ND	250	Chlorobenzene	ND	250
Vinyl Acetate	ND	250	Ethylbenzene	ND	250
2-Butanone	ND	500	m&p-Xylenes	ND	250
Chloroform	ND	250	o-Xylene	ND	250
1,1,1-Trichloroethane	ND	250	Styrene	ND	250
Carbon Tetrachloride	ND	250	Bromoform	ND	250
1,2-Dichloroethane	ND	250	m-Dichlorobenzene	ND	250
Benzene	ND	250	p-Dichlorobenzene	ND	250
Trichloroethene	ND	250	o-Dichlorobenzene	ND	250
1,2-Dichloropropane	ND	250			

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	103	70 - 121	OK
Toluene-d8	96.5	81 - 117	OK
Bromofluorobenzene	99.5	74 - 121	OK

Percent Solid of 100. is used for all Target compounds.

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BLANK

Lab Name:21st Century Environmental Contract:N/A

Lab Code: Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: BLANK

Sample wt/vol: .1 (g/mL) g Lab File ID: >B1627

Level: (low/med) LOW Date Received: NA

% Moisture: NA Date Analyzed: 09/14/93

Column: DB-624 Dilution Factor: 50

Number TICs found: 0

CONCENTRATION UNITS
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	No Unknowns			

FORM I VOA-TIC 1/87 Rev.

QUANT REPORT

perator ID: MANAGER
utput File: ^B1627::D4
at File: >B1627::D6
an : MeOH BLK
isc: EXTRACTION BLANK

Quant Rev: 6 Quant Time: 930914 04:31
Injected at: 930914 02:33
Dilution Factor: 1.00000

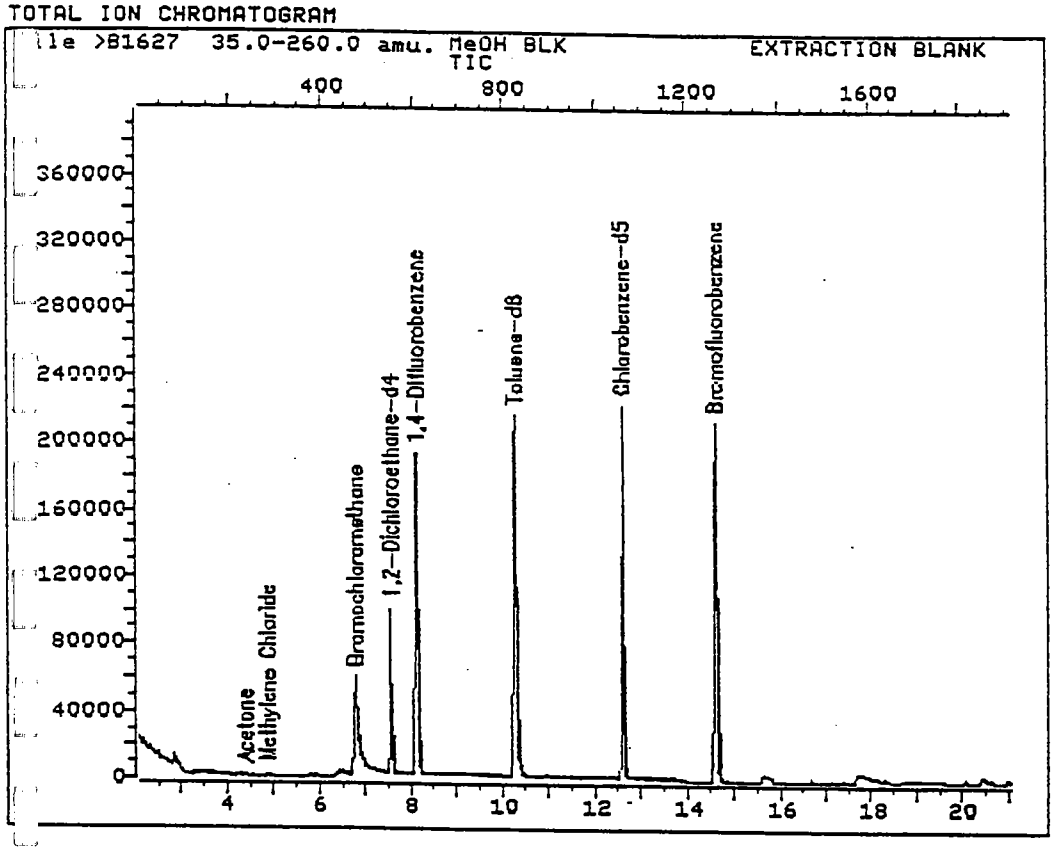
100ul/5ml

D ile: ID0401::SC
itle: USEPA 624 VOLATILES
ast Calibration: 930914 02:58

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	6.78	473	52284M	50.00	UG/L	100
9)	Acetone	4.38	231	3800	4.87	UG/L	81
5)	Methylene Chloride	4.86	280	2276	1.75	UG/L	78
3)	1,2-Dichloroethane-d4	7.54	550	125935	51.34	UG/L	100
4	*1,4-Difluorobenzene	8.12	608	288217	50.00	UG/L	100
3)	Toluene-d8	10.27	825	285050	48.23	UG/L	100
5)	*Chlorobenzene-d5	12.59	1059	247617	50.00	UG/L	100
8)	Bromofluorobenzene	14.60	1261	146295	49.74	UG/L	100

* Compound is ISTD

TOTAL ION CHROMATOGRAM



Data File: >B1627::D6
Name: MeOH BLK
Misc: EXTRACTION BLANK

Quant Output File: ^B1627::D4

100ul/5ml

Id File: ID0401::SC
Title: USEPA 624 VOLATILES
Last Calibration: 930914 02:58

Operator ID: MANAGER
Quant Time: 930914 04:31
Injected at: 930914 02:33

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: 21st Century Environmental Contract No.:

Lab Code: Case No: SAS No.: SDG No.:

LAB ID FILE (BLANK): >C2265 DATE ANALYZED: 09/16/93

INSTRUMENT ID: C TIME ANALYZED: 14:20

Matrix: SOIL Level:(low/med) LOW Column:(pack/cap)

Date Extracted: 09/14/93 Extraction:(Sepf/Cont/Sonc) SONC

Sample ID: NA BLANK

THIS BLANK APPLIES TO THE FOLLOWING SAMPLES,MS AND MSD

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	A4024 1:50	>C2236	09/14/93	16:46
2				
3				
4				
5				
6				
7				
8				

COMMENTS:

21st Century Environmental Inc.
SEMIVOLATILE ANALYSIS DATA

JOB NUMBER	US ARMY, FT. MONMOUTH, NJ	MATRIX	Soil
SAMPLE NUMBER	NA BLANK	DILUTION FACTOR	1.00
CLIENT ID	BLDG 2700	COMMENTS	NONE
DATA FILE	>C2265	DATE ANALYZED	09/16/93

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
N-Nitrosodimethylamine	ND	330	2,6-Dinitrotoluene	ND	330
bis(-2-Chloroethyl)Ether	ND	330	Diethylphthalate	ND	330
1,3-Dichlorobenzene	ND	330	4-Chlorophenyl-phenylether	ND	330
1,4-Dichlorobenzene	ND	330	Fluorene	ND	330
Benzyl Alcohol	ND	330	4-Nitroaniline	ND	1600
1,2-Dichlorobenzene	ND	330	N-Nitrosodiphenylamine	ND	330
bis(2-chloroisopropyl)Ether	ND	330	4-Bromophenyl-phenylether	ND	330
N-Nitroso-Di-n-Propylamine	ND	330	Hexachlorobenzene	ND	330
Hexachloroethane	ND	330	Phenanthrene	ND	330
Nitrobenzene	ND	330	Anthracene	ND	330
Isophorone	ND	330	Di-n-Butylphthalate	ND	330
Benzoic Acid	ND	1600	Fluoranthene	ND	330
bis(-2-Chloroethoxy)Methane	ND	330	Pyrene	ND	330
1,2,4-Trichlorobenzene	ND	330	Butylbenzylphthalate	ND	330
Naphthalene	ND	330	3,3'-Dichlorobenzidine	ND	660
4-Chloroaniline	ND	330	Benzo(a)Anthracene	ND	330
Hexachlorobutadiene	ND	330	Bis(2-Ethylhexyl)Phthalate	42 J	330
2-Methylnaphthalene	ND	330	Chrysene	ND	330
Hexachlorocyclopentadiene	ND	330	Di-n-Octyl Phthalate	ND	330
2-Chloronaphthalene	ND	330	Benzo(b)Fluoranthene	ND	330
2-Nitroaniline	ND	1600	Benzo(k)Fluoranthene	ND	330
Dimethyl Phthalate	ND	330	Benzo(a)Pyrene	ND	330
Acenaphthylene	ND	330	Indeno(1,2,3-cd)Pyrene	ND	330
3-Nitroaniline	ND	1600	Dibenzo(a,h)Anthracene	ND	330
Acenaphthene	ND	330	Benzo(g,h,i)Perylene	ND	330
Dibenzofuran	ND	330	Benzidine	ND	660
2,4-Dinitrotoluene	ND	330			

Percent Solid of 100. is used for all Target compounds.

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BLDG 2700

Lab Name: 21ST CENTURY ENVIRONMENTAL B

Client: US ARMY FT. MONMOUTH, NJ

Matrix: (soil/water) SOIL

Lab Sample ID: NA BLANK

Sample wt/vol: 30 (g/mL) G

Lab File ID: >C2265

Level: (low/med) LOW

Date Received: NA

% Moisture: NA

Date Extracted: 09/16/93

Extraction: (Sepf/Cont/Sonc) SONC

Date Analyzed: 09/14/93

GPC Cleanup: (Y/N) N

Dilution Factor: 1

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	28.99	170	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

QUANT REPORT

perator ID: JEFF
ut ut File: ^C2265::DA
ata File: >C2265::D5
ame: NA BLNK 9/14
is :

Quant Rev: 6 Quant Time: 930916 14:57
Injected at: 930916 14:20
Dilution Factor: 1.00000

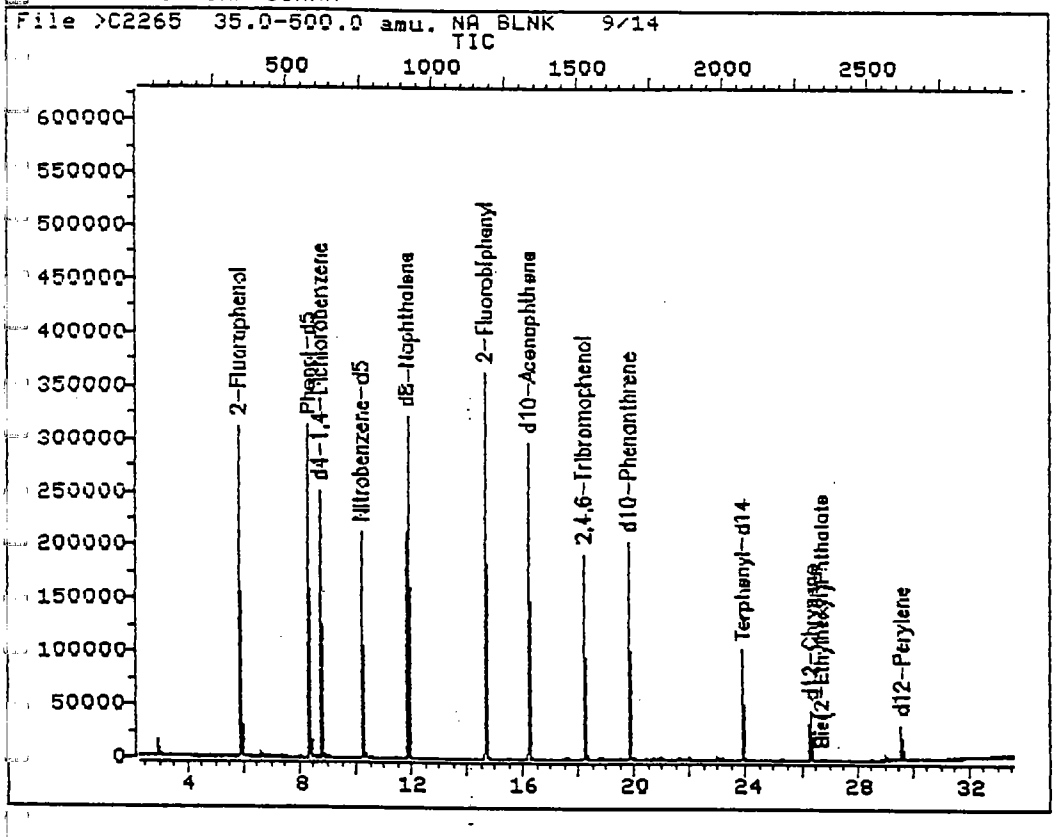
BTL# 4

D File: ID916C::D5
it e: hSL BNA STD
as Calibration: 930916 11:28

	Compound	R.T.	Scan#	Area	Conc	Units	q
1	*d4-1,4-Dichlorobenzene	8.72	613	117128	40.00	UG/L	98
4)	2-Fluorophenol	5.80	334	166404	88.63	UG/L	88
5	Phenol-d5	8.29	572	234537	92.66	UG/L	89
.8	*d8-Naphthalene	11.83	911	261532	40.00	UG/L	90
.9)	Nitrobenzene-d5	10.18	753	126783	46.20	UG/L	83
3)	*d10-Acenaphthene	16.18	1328	127250	40.00	UG/L	96
8	2-Fluorobiphenyl	14.64	1180	212335	45.16	UG/L	92
3)	*d10-Phenanthrene	19.76	1671	158385	40.00	UG/L	99
6)	2,4,6-Tribromophenol	18.16	1517	30965	59.25	UG/L	88
4	*d12-Chrysene	26.30	2297	32648	40.00	UG/L	92
7	Terphenyl-d14	23.86	2063	62515	64.57	UG/L	89
1)	Bis(2-Ethylhexyl)Phthalate	26.71	2336	1398	1.27	UG/L	93
3	*d12-Perylene	29.57	2610	27046	40.00	UG/L	96

* Compound is ISTD

TOTAL ION CHROMATOGRAM



Data File: >C2265 Quant Output File: ^C2265::DA
Name: NA BLNK 9/14
Misc:

BTL# 4

Id File: ID916C::D5
Title: hSL BNA STD
Last Calibration: 930916 11:28

Operator ID: JEFF
Quant Time: 930916 14:57
Injected at: 930916 14:20