



DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

January 30, 2015

Ms. Linda Range
New Jersey Department of Environmental Protection
Case Manager
Bureau of Southern Field Operations
401 East State Street, 5th Floor
PO Box 407
Trenton, NJ 08625

**Re: Underground Storage Tanks within Parcels 49 and 50
 Fort Monmouth, NJ**

Attachments:

- A. Site Figure for Parcels 49 and 50
- B. No Further Action Letters from NJDEP
- C. UST 283A File Review
- D. UST 290C File Review

Previous Correspondence:

- 1. December 1, 2014 letter from the Army to NJDEP, Re: *Request for No Further Action for Groundwater at FTMM-54, Fort Monmouth, Oceanport, Monmouth County, New Jersey.*
- 2. NJDEP letter to the Army dated May 30, 2013, re: *Army's January 31, 2013 Correspondence – Miscellaneous USTs.*
- 3. Army letter to NJDEP dated January 31, 2013, re: *NJDEP's Response to Army Correspondence (Dated March 16, 2012).*
- 4. NJDEP letter to the Army dated July 10, 2012, re: *March 2012 Army Response to NJDEP Correspondence Letter Dated October 28, 2008.*
- 5. Army letter to NJDEP dated March 16, 2012, re: *Army's Response to NJDEP Correspondence (Dated October 28, 2008), Draft Site Investigation.*
- 6. NJDEP letter to the Army dated October 28, 2008, re: *Draft Site Investigation Report.*
- 7. NJDEP letter to the Army dated August 14, 2007, re: *M-18 Landfill.*

Dear Ms. Range:

The U.S. Army Fort Monmouth (FTMM) has reviewed existing file information for underground storage tank (UST) sites at Fort Monmouth within Environmental Condition of Property (ECP) Parcels 49 and 50. The purpose of this review was to document the location and closure status of the various USTs within these parcels. This letter provides the information for Parcel 49 USTs requested in Correspondence (4), in addition to the USTs subsequently addressed in

Correspondence (3) and (2). This information supports the conclusion that all potential UST soil contamination issues previously identified within Parcels 49 and 50 have been adequately addressed by previous or ongoing environmental programs. NJDEP's comments regarding base neutral (BNs) constituents and polychlorinated biphenyls (PCBs) in soils at Parcel 49, as specified in Correspondence (4), will be addressed in an upcoming ECP Work Plan.

Parcel 49 includes the Squire Laboratory and adjoining structures, as well as multiple UST sites (see Attachment A). All of the USTs identified in Attachment A have been removed. Parcel 50 is encompassed by Parcel 49 and is comprised of Installation Restoration Program (IRP) sites FTMM-54 (Bldg 296), FTMM-55 (Bldg 290) and FTMM-61 (Bldg 283). Groundwater issues will be addressed through the specific IRP site activities.

The following is a summary of the USTs previously located within the outer confines of Parcel 49 (which includes Parcel 50), along with the current Army case status and reference to previous NJDEP approval of No Further Action (NFA; see Attachment B for specific letters) if available.

Site Name	IRP Site	Registration ID	DICAR	Tank Size and Type	Product	Army Case Status	NJDEP NFA Letter
283A	No	81533-58		1000 gal. steel	# 2 FUEL OIL	Case Closed	None; NFA requested herein
283B	No	81533-59		10,000 gal. steel	# 2 FUEL OIL	Case Closed	2/24/2000; 5/30/2013
283C	FTMM-61	81533-229	97-08-28-1330-33	3000 gal. steel	GASOLINE	Case Open	1/10/2003
288	No	81533-62	97-7-15-1002-56	Like, 500 gallon steel or ??	# 2 FUEL OIL	Case Closed	10/23/2000
289	No	81533-63	94-09-02-1455-00	1000 gal. steel	# 2 FUEL OIL	Case Closed	10/23/2000
290A	FTMM-55	81533-64	94-9-13-1503-57	2000 gal. fiberglass	# 2 Diesel	Case Closed	8/29/2000 but see also 8/14/2007
EC290B	FTMM-55	81533-225	94-9-2-1455-00	2000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
290B	FTMM-55	81533-224	93-11-30-1246-27	2000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
290C	No	81533-193		550 gal. fiberglass	WASTE OIL	Case Closed	None; NFA requested herein
291	No	81533-65	97-08-15-1459-35	3000 gal. steel	# 2 FUEL OIL	Case Closed	2/24/2000
292	No	81533-66	94-09-13-1503-57	10,000 gal. steel	# 2 FUEL OIL	Case Closed	10/23/2000
293	No	81533-67		1000 gal. steel	# 2 FUEL OIL	Case Closed	5/30/2013
295	No	81533-68	94-09-13-1503-57	3000 gal. steel	# 2 FUEL OIL	Case Closed	8/29/2000
296A	No	81533-69		550 gal. steel	# 2 Diesel	Case Closed	1/10/2003

296B	FTMM-54	81533-216	93-11-2-1200-13	2000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-223	93-11-2-1200-13	1000 gal. steel	DIESEL	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-217	93-11-2-1200-13	1000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-218	93-11-2-1200-13	1000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-219	93-11-2-1200-13	1000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-215	93-11-2-1200-13	1000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-221	93-11-2-1200-13	1000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-214	93-11-2-1200-13	2000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-213	93-11-2-1200-13	2000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-222	93-11-2-1200-13	1000 gal. steel	DIESEL	Case Open	1/10/2003; 8/14/2007
296B	FTMM-54	81533-220	93-11-2-1200-13	1000 gal. steel	GASOLINE	Case Open	1/10/2003; 8/14/2007

Within the table above, the term "Case Closed" has been used (consistent with previous FTMM procedures) to indicate that the Army has determined that no further sampling or remedial actions are warranted. "Case Open" indicates that the Army has determined that ongoing monitoring, reporting or possibly even remedial action is warranted. In contrast, "No Further Action" is reserved for NJDEP approval that no further sampling or remedial actions are warranted. There are USTs listed above where the Army has designated "case open" but NJDEP has approved NFA; these were assigned to one of the designated IRP sites within Parcel 50 due to groundwater issues identified following closure.

As shown above and as documented in the Attachment B - NJDEP letters, almost all of the USTs within Parcels 49 and 50 have been approved for NFA by the NJDEP. However, three tank sites represent special cases and are discussed further below:

- 283A – A summary description for this No. 2 fuel oil tank is provided in Attachment C. This tank was removed in 1990, and visible contamination was not encountered. Soil sampling was not performed in accordance with then-current procedures at FTMM for sites without visible evidence of contamination. Further, the former tank location was not encountered in the available files, and therefore is not known. Therefore, we request that NJDEP approve NFA for this site.
- 290A - closure of this UST site was already approved by NJDEP in an 8/29/2000 letter; however, additional data gaps were identified by NJDEP in their 8/14/2007 letter (Attachment B). A comprehensive discussion of the site assessment activities at Parcel 50 (IRP sites FTMM-54, FTMM-55, and FTMM-61) as well as a plan for collection of

additional soil samples for Tank 290A area will be presented in an upcoming ECP Work Plan Addendum. Therefore, our request for NFA for this site is temporarily delayed pending the completion of additional field work.

- 290C – A summary description for this waste oil tank site is provided in Attachment D. This tank was removed in 1991, and soil samples were collected. TPH and priority pollutant results were less than the NJDEP comparison criteria, as described in a 1993 Weston site investigation report (also provided in Attachment D). Therefore, we request that NJDEP approve NFA for this site based on these reported results.

As previously mentioned, groundwater contamination issues were previously identified for the three IRP sites (FTMM-54, FTMM-55, and FTMM-61). The FTMM-18 landfill IRP site is also located immediately downgradient (north) of Parcel 49. Groundwater contamination for each of these IRP sites will be addressed individually through future remedial investigation/feasibility study (RI/FS) submittals.

In summary, we request No Further Action for all previously identified UST sites within Parcels 49 and 50, with the exception of 290A, where additional soil sampling is planned. Groundwater issues will be addressed for each individual IRP site. Should you have any questions or require additional information, please contact me at (732) 380-7064 or by email at wanda.s.green2.civ@mail.mil.

Sincerely,



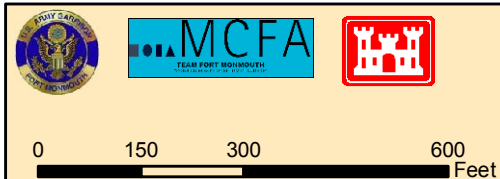
Wanda Green
BRAC Environmental Coordinator

cc: Delight Balducci, HQDA ACSIM
Joseph Pearson, Calibre
James Moore, USACE
Cris Grill, Parsons

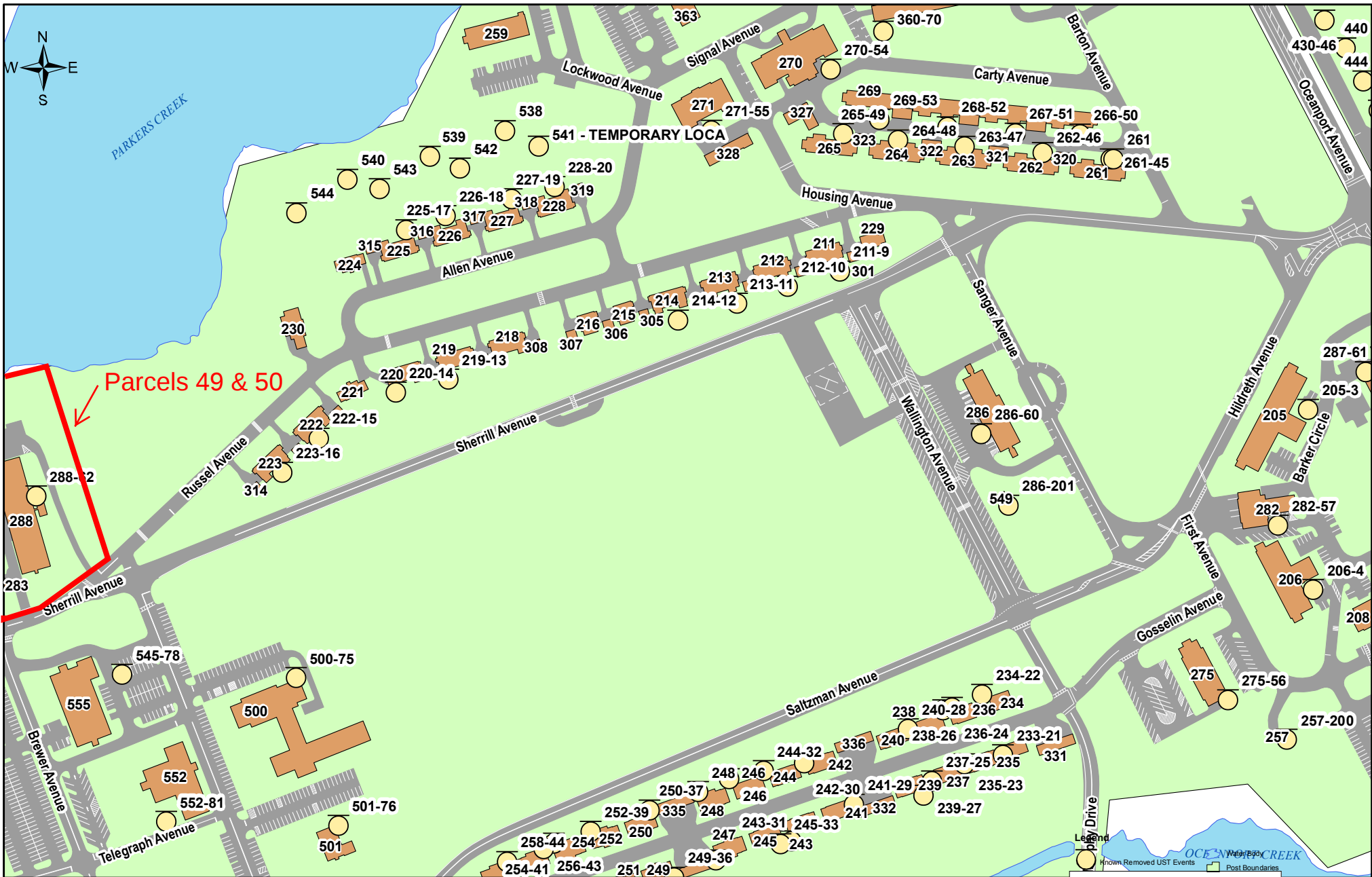
ATTACHMENT A

Site Figure for Parcels 49 and 50

(2 sheets)



Map Created by:
Fort Monmouth Installation GIO, Environmental Division
Fort Monmouth, New Jersey
Date: August 10, 2011
All drawings must be field verified.
New Jersey State Plane Feet, NAD83



UST Removal Reference Map Grid C2; Main Post Fort Monmouth, New Jersey **FOUO**

0 150 300 600 Feet

Map Created by:
Fort Monmouth Installation GIO, Environmental Division
Fort Monmouth, New Jersey
Date: August 10, 2011
All drawings must be field verified.
New Jersey State Plane Feet, NAD83

ATTACHMENT B

No Further Action Letters from NJDEP



State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

Mr. James Ott
C/O: Dinker Desai
Director - Public Works
U.S. Army, Fort Monmouth
Fort Monmouth, NJ 07703

FEB 24 2000

Re: UST Closure Reports - Closure Approvals
Fort Monmouth Army Base
Fort Monmouth, Monmouth County

Dear Mr. Ott:

The NJDEP has reviewed the UST Closure and Site Investigation Reports for the Fort Monmouth underground storage tank sites noted below. Based on the NJDEP review of these documents, your request that the NJDEP approve the closure reports for those tanks listed below.

The following tanks were removed, sampled and analyzed in accordance with State and Federal requirements. Additionally, the reports consistently state the Fort Monmouth Public Works Department policy of removing all soils which are determined to have total petroleum hydrocarbon contamination (TPHC) greater than 1000 ppm. NJDEP criteria requires similar removal for TPHC contamination greater than 10,000 ppm. These activities are conservative and therefore further assure the NJDEP that no further action is necessary at these sites.

NJDEP Reg. #	Bldg. #	NJDEP Reg. #	Bldg. #
0081533-59	283B	*0081533-135	828
0090010-46	430C	0081533-136	864A
0081533-111	695	0081533-137	866
0081533-117	739	*0081533-231	907
0081533-118	744	0081533-154	916
0081533-121	747	0081533-156	918
0081533-124	787	0081533-170	1110
0081533-125	788	0081533-172	1123
0081533-128	801A	0081533-207	1150
0081533-133	812		

* No product lines were found during the excavation of the UST due to the fact the buildings were removed prior to the USTs. Based on a review of available maps and drawings, the product lines were less than 15 feet in length at each of the locations. Thus, no additional sampling was required.

If you should have any questions or comments, please do not hesitate to contact me at (609) 633-7232 or via E-mail.

Sincerely,


Ian R. Curtis, Case Manager
Bureau of Case Management
ICURTIS@DEP.STATE.NJ.US

FTMMTH063IRC.DOC



State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

Mr. Dinkerrai Desai
DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY COMMUNICATIONS-ELECTRONIC COMMAND
FORT MONMOUTH, NJ 07703-5000

AUG 29 2000

Re: UST Closure Approval/NFA
Fort Monmouth Main Post
Monmouth County

Dear Mr. Desai:

The NJDEP is in receipt of seventeen (17) UST closure reports dated June 1, 2000. The Army has requested to receive No Further Action approval letters for each of these reports. This letter approves the NFA requests for the following 17 UST located on the Main Post of the Fort Monmouth site:

NJDEP Req. #	Bldg. #	NJDEP Req. #	Bldg. #
0090010-06	80	0081533-226	707
0090010-17	166	0081533-119	745
0081533-5	207A	0081533-160	1076
0081533-211	207B	0081533-161	1076
0081533-57	282	0081533-168	1108
0081533-64	290	00192486-1	2000
0081533-68	295	0081515-62	2700.4
0081533-108	689A	00192486-30	3050
0081533-109	689B		

The NJDEP has determined that the Army has performed the remedial actions in a manner consistent or in excess of the regulatory requirements, specifically the Technical Requirements For Site Remediation (N.J.A.C. 7:26E et seq.). Soils with contamination in excess of the NJDEP residential cleanup criteria have been excavated and the Army has taken great care to provide documentation which assures us that all sources of contamination have been remediated.

The NJDEP has one comment in that we request that future reports provide ground water flow direction indications on the well location maps.

If you should have any questions or comments, please do not hesitate to contact me at (609) 633-7232 or via E-mail.

Sincerely,


Ian R. Curtis, Case Manager
Bureau of Case Management
ICURTIS@DEP.STATE.NJ.US



State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

Mr. Dinkerrai Desai
DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY COMMUNICATIONS-ELECTRONIC COMMAND
FORT MONMOUTH, NJ 07703-5000

Re: UST Closure Approval/NFA
Fort Monmouth Main Post
Monmouth County

OCT 23 2000

Dear Mr. Desai:

The NJDEP is in receipt of forty [REDACTED] UST closure reports dated September 11, 2000. The Army has requested to receive No Further Action approval letters for each of these reports. This letter approves the NFA requests for the following 40 UST located on the Main Post of the Fort Monmouth site:

NJDEP Req. #	Bldg. #	NJDEP Req. #	Bldg. #	NJDEP Req. #	Bldg. #
0090010-04	64B	0081533-79	550	0081533-179	1220F
0090010-09	116B	0081533-116	718	0081533-180	1220E
0090010-09	206B	0081533-202	752	0081533-181	1220D
0081533-56	275	0081533-147	909	0081533-182	1220C
0090010-23	276	0081533-152	914	0081533-183	1220B
0090010-25	280	0081533-153	915	00192486-36	2043
0081533-201	286/548A	0081533-204	977	0081515-15	2504A
0081533-62	288	0081533-205	979	0081515-35	2700
0081533-63	289	0081533-167	1107	0081515-36	2700
0081533-66	292	0081533-233	1107B	0081515-37	2700
0090010-43	429	0081533-175	1220J	0081515-38	2700
0090010-52	475	0081533-176	1220I	0081515-39	2700
0090010-55	483	0081533-177	1220H		
0081533-75	500	0081533-178	1220G		

The NJDEP has determined that the Army has performed the remedial actions in a manner consistent with the regulatory requirements, specifically the Technical Requirements For Site Remediation (N.J.A.C. 7:26E et seq.). Soils with contamination in excess of the NJDEP residential cleanup criteria have been excavated and the Army has taken great care to provide documentation that assures us that all sources of contamination have been remediated.

If you should have any questions or comments, please do not hesitate to contact me at (609) 633-7232 or via E-mail.

Sincerely,

Ian R. Curtis, Case Manager
Bureau of Case Management
ICURTIS@DEP.STATE.NJ.US

FTMMTH71IRC.DOC



State of New Jersey

James E. McGreevey
Governor

Department of Environmental Protection

Bradley M. Campbell
Commissioner

Mr. Dinkerrai Desai
DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY COMMUNICATIONS-ELECTRONIC COMMAND
FORT MONMOUTH, NJ 07703-5000

Re: UST Closure Approval/NFA
Fort Monmouth Main Post
Monmouth County

JAN 10 2003

Dear Mr. Desai:

The NJDEP is in receipt of sixty-eight (68) underground storage tank (UST) closure reports dated between July 17, 2001 and May 15, 2002. The Army has requested to receive No Further Action (NFA) approval letters for each of these reports. This letter approves the NFA requests for the following 68 UST that are located on the Main Post of the Fort Monmouth site:

Submittal Date	Building No.	NJDEP Reg. #	Residential
07/17/2001	104	90010-75	NO
07/17/2001	699A	81533-112	NO
07/17/2001	800A	81533-127	NO
07/17/2001	875	81533-234	NO
07/17/2001	949	81533-203	NO
07/17/2001	1220A	81533-184	NO
07/17/2001	2000B	192486-38	NO
01/02/2002	257	81533-200	NO
01/02/2002	283C	81533-229	NO
01/02/2002	290B	81533-224	NO
01/02/2002	290B	81533-225	NO
01/02/2002	491	90010-71	NO
01/02/2002	605	81533-85	NO
01/02/2002	678	81533-105	NO
01/02/2002	699	81533-236	NO
01/02/2002	699	81533-238	NO
01/02/2002	699	81533-237	NO
01/02/2002	699	81533-235	NO
01/02/2002	801B	81533-129	NO
01/02/2002	804A	81533-130	NO
01/02/2002	2337	81515-65	NO
01/02/2002	2562A	81515-41	NO
01/02/2002	2707	81515-50	NO
01/02/2002	2707	81515-49	NO
01/02/2002	2707	81515-51	NO
01/02/2002	2707	81515-47	NO
01/02/2002	2707	81515-48	NO

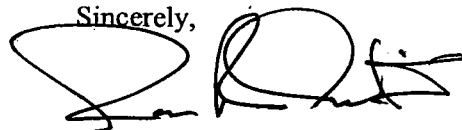
Submittal Date	Building No.	NJDEP Reg. #	Residential
02/13/2002	2044	192486-24	NO
02/13/2002	2044	192486-32	NO
02/13/2002	2044	192486-33	NO
02/26/2002	208B	81533-210	YES
03/05/2002	246	N/A	YES
03/05/2002	261B	N/A	YES
05/15/2002	106	90010-74	NO
05/15/2002	164	90010-15	NO
05/15/2002	173	90010-19	NO
05/15/2002	200	81533-2	NO
05/15/2002	208A	81533-6	YES
05/15/2002	233	81533-21	YES
05/15/2002	237	81533-25	YES
05/15/2002	271	81533-55	YES
05/15/2002	277	90010-24	NO
05/15/2002	296B	81533-217	NO
05/15/2002	296B	81533-223	NO
05/15/2002	296B	81533-221	NO
05/15/2002	296B	81533-220	NO
05/15/2002	296B	81533-222	NO
05/15/2002	296B	81533-218	NO
05/15/2002	296B	81533-216	NO
05/15/2002	296B	81533-215	NO
05/15/2002	296B	81533-214	NO
05/15/2002	296B	81533-213	NO
05/15/2002	296B	81533-219	NO
05/15/2002	426	90010-40	NO
05/15/2002	482	90010-54	NO
05/15/2002	600 A	81533-83	NO
05/15/2002	600 B	81533-212	NO
05/15/2002	611	81533-87	NO
05/15/2002	615	81533-89	NO
05/15/2002	618	81533-91	NO
05/15/2002	619	81533-92	NO
05/15/2002	621	81533-94	NO
05/15/2002	634	N/A	NO
05/15/2002	638	N/A	NO
05/15/2002	639-2	N/A	NO
05/15/2002	640	N/A	NO
05/15/2002	641	N/A	NO
05/15/2002	644	N/A	NO
05/15/2002	664	N/A	NO
05/15/2002	666	N/A	NO
05/15/2002	686	81533-107	NO
05/15/2002	697	81533-194	NO
05/15/2002	697	81533-195	NO

Submittal Date	Building No.	NJDEP Reg. #	Residential
05/15/2002	697	81533-196	NO
05/15/2002	876B	81533-139	NO
05/15/2002	886	81533-140	NO
05/15/2002	905	81533-145	NO
05/15/2002	1102	81533-162	NO
05/15/2002	1104	81533-164	NO
05/15/2002	2067	192486-37	NO
05/15/2002	2534	81515-24	NO
05/15/2002	2603	81515-60	NO
05/15/2002	2700 2,6	81515-61	NO

The NJDEP has determined that the Army has performed the remedial actions in a manner consistent with the regulatory requirements, specifically the Technical Requirements For Site Remediation (N.J.A.C. 7:26E et seq.). Soils with contamination in excess of the NJDEP residential cleanup criteria have been excavated and the Army has taken great care to provide documentation that assures us that all sources of contamination have been remediated.

If you should have any questions or comments, please do not hesitate to contact me at (609) 633-7232 or via E-mail.

Sincerely,



Ian R. Curtis, Case Manager
Bureau of Case Management
ICURTIS@DEP.STATE.NJ.US



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Remediation Management & Response
P.O. Box 413
Trenton, New Jersey 08625-0413

JON S. CORZINE
Governor

LISA P. JACKSON
Commissioner

AUG 14 2007

Mr. Joseph Fallon, CHMM
Directorate of Public Works
ATTN: IMNE-MON-PWE
167 Riverside Ave.
Fort Monmouth, NJ 07703-5101

RE: M-18 Landfill, Fort Monmouth, NJ

Dear Mr. Fallon:

The NJDEP Division of Remediation Management & Response (DRMR) has completed its review of the following reports on the M-18 Landfill at Fort Monmouth:

- Remedial Investigation Report, M-18 Landfill Site, dated October 1, 2003
- Remedial Investigation Report for Near Surface Soils, M-18 Landfill Site, dated March 17, 2004
- Remedial Investigation Report and Sediment Quality Evaluation, M-18 Landfill Site, dated February 23, 2004

NJDEP's comments are attached. NJDEP cannot make any No Further Action (NFA) determinations for soil, ground water, or sediments at the M-18 Landfill at this time, based upon the reports. Our comments describe the additional investigations or actions that would be needed before NFAs could be considered.

You or your staff may contact me at 609-633-0766 with any questions on the enclosed comments, or any other site remediation matters at Fort Monmouth.

Sincerely,

Larry Quinn, P.E., CHMM, Case Manager
Bureau of Design & Construction

Attachment

NJDEP COMMENTS ON M-18 LANDFILL SITE REPORTS
FORT MONMOUTH SITE

The comments below address the following reports on the M-18 Landfill Site:

- Remedial Investigation Report, M-18 Landfill Site, dated October 1, 2003
- Remedial Investigation Report for Near Surface Soils, M-18 Landfill Site, dated March 17, 2004
- Remedial Investigation Report and Sediment Quality Evaluation, M-18 Landfill Site, dated February 23, 2004

General

1. The Army should submit a comprehensive investigation workplan for NJDEP review and approval, prior to initiating any of the additional sampling requested below, to ensure complete agreement on all details prior to sampling. After sampling activities are completed, a supplemental remedial investigation (RI) report should be submitted.
2. To reiterate a comment provided on the M-12 and M-14 Landfills, NJDEP requests that the Army review, and re-visit if appropriate, the delineation of all landfill areas at Fort Monmouth, including M-18. There are no indications that test pitting was ever conducted to verify the limits of fill areas, which were created based upon geophysical surveys.

Surface Soils - Landfill

1. Surface soil sampling results indicate that semi-volatile organic compounds (SVOCs) and metals exceed the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC) in the 0-12 inch surface soil interval in two distinct portions of the M-18 Landfill (Area SVOC-1 and Area Metals-1). Therefore, these surface soils pose a potential direct contact threat, and remedial action is required to minimize or eliminate the direct contact threat. Depending upon the location and extent of the soils that exceed the RDCSCC, targeted soil excavations may be feasible. At a minimum, engineering controls such as additional soil cover, fencing, and warning signs may be required, in conjunction with a deed notice.

Soil – UST Removals

1. Building 296 – Eleven USTs . Since no soil contamination in excess of the New Jersey RDCSCC remains in this area, no further investigation of soils is required.
2. Building 290 – Two gasoline USTs. Since no soil contamination in excess of the New Jersey RDCSCC remains in this area, no further investigation of soils is required.

NJDEP COMMENTS ON M-18 LANDFILL SITE REPORTS
FORT MONMOUTH SITE

3. Building 290 – One 2,000 gallon diesel fuel UST. Two post-excavation samples contained total petroleum hydrocarbons (TPHC) in excess of the RDCSCC (samples A and B at 16,200 and 11,900 ppm), both at a depth of 5.5 to 6 feet. No further excavation was conducted to address those spots. Additional excavations should be considered. If the Army proposes to leave the contaminated soils in place, a deed notice must be filed to document the contamination, including location.
4. Building 290 – Suspected Former Gasoline Pump Island. Since no soil contamination in excess of the New Jersey RDCSCC remains in this area, no further investigation of soils is required.

Surface Water and Sediments

1. A Baseline Ecological Evaluation (BEE) must be performed to determine whether receptors, especially within Parkers Creek, have been impacted by contaminants from the M-18 Landfill.
2. Due to the presence of measurable VOCs in surface water samples, additional surface water samples should be collected along Parkers Creek. At a minimum, sampling locations should be as follows: one immediately upstream of the landfill, one immediately downstream, and at least two alongside the landfill. Analytes should be TCL+30 and TAL metals. It is recommended that passive diffusion bags (PDB) be used to collect the samples for VOC analysis. The PDBs can be deployed in the sediments, to monitor shallow ground water discharging to Parkers Creek.
3. Sediment samples were analyzed for PCBs only. Based upon a review of all sampling data associated with the M-18 Landfill, additional sediment samples should be collected in conjunction with the aforementioned surface water sampling, and analyzed for full Target Compound List +30 (TCL+30) and Target Analyte List (TAL) metals.
4. In addition, the Army must evaluate/investigate any Army property upgradient of the M-18 Landfill that could be sources of the VOCs in Parkers Creek.

Ground Water

1. NJDEP agrees that the ground water classification at the M-18 Landfill is Class III-A, which necessitates that Class II-A ground water quality standards be utilized. The ground water model created for the M-18 Landfill and all model inputs are

NJDEP COMMENTS ON M-18 LANDFILL SITE REPORTS
FORT MONMOUTH SITE

acceptable. However, NFA for ground water cannot be issued at this time, due to the concerns and deficiencies discussed below.

2. One upgradient background well must be installed and sampled, to provide data for remedial decision-making. The background well should be near the landfill, but in an area that is clearly not impacted by the landfill. Samples from the background wells can be analyzed for TAL Metals only.
3. For reasons unknown to NJDEP, no monitoring wells were installed in the eastern portion of the M-18 Landfill. At least 2 wells should be installed and analyzed for TCL+30 and TAL metals.
4. Since the existing wells may not have been sampled since 2001, an additional round of samples from all wells is required for remedial decision-making. Analyses should be for TCL volatiles, MTBE (methyl tertiary butyl ether), TBA (tert-butyl alcohol), TCL semi-volatiles, and TAL metals.
5. The Army must submit a map that shows the former locations of all USTs and the existing M-18 monitoring wells. The Army must justify the location of monitoring wells in relation to the USTs and demonstrate that ground water contamination was delineated, and also document whether gasoline stored was leaded or unleaded.
6. The Army must document whether there was a pump island associated with any of the removed gasoline USTs. If a pump island(s) was/were present, then a ground water sample is required at the pump island location pursuant to N.J.A.C. 7:26E-4.4 (f)3 and a figure pursuant to N.J.A.C. 7:26E-4.2(d)1 must show the location of any pump islands.
7. Paper copies of all sampling documentation (such as ground water field parameters and low-flow sampling sheets) must be submitted in summary tables in reports.



State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
401 East State Street
P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
Phone #: 609-633-1455
Fax #: 609-633-1439

BOB MARTIN
Commissioner

May 30, 2013

Wanda Green
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: Army's January 31, 2013 Correspondence – Miscellaneous USTs
Main Post & Charles Wood Area
Fort Monmouth, New Jersey
PI G000000032

Dear Ms. Green:

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced correspondence (and associated Attachments A through T), submitted to address several of the unresolved underground storage tank (UST) issues noted in this office's letter of July 10, 2012. As indicated in the referenced submittal, additional information regarding the various USTs will be forthcoming. The following comments are offered.

Parcel 28 – Former Eatontown Laboratory

As has been discussed, it is agreed no additional action is necessary for UST 2539-28, UST 2539-64, UST 2531-21, and two of the three USTs previously located between Building 2525 and Heliport Drive. Documentation as to the adequate evaluation of tanks UST 2542-29, UST 2564-32 and the UST at Building 2544 (T-7) has not yet been submitted.

Parcel 49 – Former Squier Laboratory Complex

Upon review of the documentation included in the submittal, it is agreed no further action is necessary for the UST at Building 293-67, or UST 283B-59.

Parcel 51 – 750 Area, 500 Area, 600 Area, 1100 Area – Former Buildings

Upon review of the documentation included in the submittal, it is agreed no further action is necessary for UST 695-111, UST 635, UST 642, UST 643 and 501-76.

As no sampling was apparently performed at UST 637, this office cannot concur there has been no discharge associated with the UST. As regarding Appendix K, and USTs at Buildings 644 through 654, evidently no sampling was performed; again, without same, this office cannot concur there has been no discharge.

Parcel 76 – 200 Area, 300 Area – Former Barracks

Review of the documentation included in the submittal indicates no additional action is necessary for UST 261 and UST 261B.

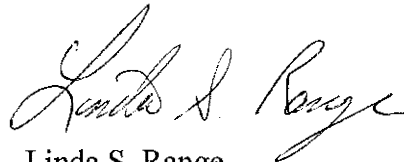
Parcel 79 – 400 Area Former Barracks

Review of the documentation included in the submittal, as well as that included in the files, indicates no further action is necessary for UST 411-28, UST 421-37, UST 423-39

As no sampling was evidently performed at UST 401-26 or UST 416-32, this office cannot concur there has been no discharge associated with the USTs.

If you have any questions regarding this matter, please contact this office at (609) 984-6606.

Sincerely,

A handwritten signature in cursive script, appearing to read "Linda S. Range".

Linda S. Range
Bureau of Case Management

C: Joe Pearson, Calibre Systems
Rich Harrison, FMERA
Julie Carver, Matrix

ATTACHMENT C

UST 283A File Review

UNDERGROUND STORAGE TANK FILE REVIEW
FORT MONMOUTH BRAC 05 FACILITY
OCEANPORT, NEW JERSEY

Date: January 20, 2015

Review Performed By: Kent Friesen, Parsons

Site ID: **Bldg. 283A**

Registration ID: 81533-58

Recommended Status of Site: **Case Closed (no change)**

UST Probability (from May 2014 "Addendum 1 ECP UHOT Report"):

Based on the file review, were there indications of a contaminant release? ☐ Yes ☒ No

NJDEP Release No. or DICAR (If applicable): _____

Did NJDEP approve No Further Action (NFA) for this site? ☐ Yes ☒ No ☐ Not Applicable

Tank Description: ☒ Steel ☐ Fiberglass Size: 1000 gals. Contents: No. 2 Fuel Oil

☐ Residential ☒ Commercial/Industrial

Tank Removed? ☒ Yes ☐ No If "yes," removal date: 5/28/1990

Were closure soil samples taken? ☐ Yes ☒ No Analyses: _____

Comparison criteria: _____

Were closure soil sample results less than comparison criteria? ☐ Yes ☐ No

Brief Narrative

This steel No. 2 fuel oil UST was located adjacent to Building 283. A separate gasoline UST (283C) at this building was assigned a NJDEP release number and was assigned to IRP site FTMM-61. However, this tank 283A is listed as "case closed" in the UST database. The tank was removed in 1990, but no closure soil samples were collected because there was no contaminant release noted during tank removal. This was consistent with the Fort Monmouth procedures at the time. A Site Assessment Compliance Statement dated 11/22/91 was submitted to the State, as well as a Standard Reporting Form (SRF) for tank removal, for this and 9 other tanks at Fort Monmouth. There is no record of NFA approval from the NJDEP encountered. The location of this tank could not be determined from existing records. Therefore, additional sampling or remedial action is not warranted.

Recommendations (if any): Request NFA from NJDEP, since former tank location is not known.

Signed: 
Kent A. Friesen, Parsons

Fort Monmouth UST Status Summary Report

UST REGISTRATION INFORMATION SUMMARY

LOCATION: 283 A **NJDEP REG ID:** 81533 - 58
RESIDENTIAL? NO

UST CONSTRUCTION INFORMATION SUMMARY

SIZE (GALLONS): 1000 **CONSTRUCTION:** STEEL
PRODUCT: #2 FUEL OIL **YEAR INSTALLED:** 1958

UST REMOVAL/INVESTIGATION SUMMARY

REMOVAL DATE: 5/28/1990 **REMOVAL CONTRACTOR:** TVS
SRF SEND DATE: 11/22/91 **TMS:** Fed. Case Mgr.
DICAR NO. **LEAK DETECT:**

REMEDICATION COMMENTS: No contamination observed; no samples taken.

REGISTRATION COMMENTS: SRF and Site Assessment sent to NJDEPE 11/22/91.

SAS DONE: **CONSULTANT:**

MWs NEEDED: GEO-SOIL **MONITORING WELLS:** 0

SUB-SURFACE EVALUATOR: D. Desai

CURRENT UST STATUS

UST STATUS: Removed; Report Submitted/Not Nec. **CASE STATUS:** Case Closed
SUBMITTAL DATE: 11/22/1991 **APPROVAL DATE:**
FINALIZED: No



Bldg. 614

For State Use Only

Date Rec'd. _____

Auth _____

Routing _____

UST NO. _____

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES

CN 029

TRENTON, NEW JERSEY 08625

ATTN: BUST Program

(609) 984-3156

STANDARD REPORTING FORM

for the:

Installation/Abandon/Remove/Sale-Transfer/Substantial Modification

Circle Only One — Use One Form Per Activity

(More than one tank can be listed per tank activity)

Answer questions 1 through 5 and others as applicable:

1. Company name and address: (as it appears on registration questionnaire)

U.S. Army

DEH Bldg. #167

Attn: SERFM-EH

Fort Monmouth, NJ 07703

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

U.S. Army Fort Monmouth

Main Post West

3. Contact person for this activity:

Mr. Joseph M. Fallon

Telephone Number: (908) 532-6223

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

Tank No. 58, 88, 95, 104, 110, 113, 146, 148, 158, + 163

Bldgs. 283A, 614, 622, 676, 692, 701A, 906, 910, 1004, 1103

5. Registration Number (if known): UST -

0081533

(OVER)

6. For TRANSFER OF OWNERSHIP:

New Company Name _____

New Facility Name _____

Address _____

New owner/operator (print) _____

Signature _____

7. For ABANDONMENT or REMOVAL

a. Describe the proposed procedure in detail on an attached sheet.

b. Specify the product last stored in the tank: #2 Heating Oil

c. Date abandoned or removed: May and June of 1990

d. Is Site Assessment Compliance Statement being completed? (YES) or NO Form MUST be completed and returned within 90 days of tank closure. (per 40 CFR 280.72)

8. For SUBSTANTIAL MODIFICATIONS:

a. Describe the reason for the modification and, in detail, the proposed procedure to be used on an attached sheet.

b. Specify the product presently stored in the tank: _____

c. Specify the product to be stored in the tank: _____

9. For NEW OR REPLACEMENT INSTALLATIONS:

a. Attach the specifications as required by the attached instructions.

b. Specify the product (s) to be stored in the tank: _____

NOTE: All appropriate and applicable permits, licenses and certificates from any local, state and/or federal agency must be obtained separately from this notification as required by the above stated activity. **CERTIFICATION**

*** This registration form shall be signed by the highest ranking individual at the facility with overall responsibility for that facility. (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: James Ott

Name (print or type): JAMES OTT

Title: Acting Director

Date: 22 NOV 1991



STATE OF NEW JERSEY
DEPAR. OF ENVIRONMENTAL PROTECT.
Bureau of Underground Storage Tanks
CN-029, Trenton, NJ 08625

SITE ASSESSMENT COMPLIANCE STATEMENT

Date Rec'd	_____
Auth	_____
Routing	_____
UST NO.	_____

Supplement to the New Jersey Standard Reporting Form
(Complete for ALL regulated UST abandonments or removals)

Within ninety (90) days of completing the UST closure of any State or Federally-regulated tank, the owner or operator must submit this completed form to the NJDEP Bureau of Underground Storage Tanks. If the facility is located in one of the counties listed on the back, a copy of this form must also be sent to the Health Agency indicated.

The owner or operator of any Federally-regulated tank must also comply with the following:

40 CFR Part 280.72 Assessing the site at closure or change-in-service

"(a) Before permanent closure or a change-in-service is completed, owners and operators must measure for the presence of a release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations, and measurement methods, owners and operators must consider the method of closure, the nature of the stored substance, the type of backfill, the depth to ground water, and other factors appropriate for identifying the presence of a release."

FACILITY U.S. Army Fort Monmouth UST # 0081533 Tank No. _____

Check off the following items as appropriate for the site.

- ☒ The UST facility is only regulated by State law, therefore a site assessment is not mandatory. 58, 88, 95, 104, 110, 113, 146, 148, 158, 163.
- ☐ The UST facility is regulated by Federal law and a site assessment was conducted.

The results of the site assessment indicate:

- ☒ There was NO release from the UST system.
- ☐ There was a release from the UST system and it was reported to the DEP Environmental Hotline (609-292-7172).

NOTE: The results of the site assessment are not to be submitted to the DEP or Health Agency unless requested to do so. The results are to be available for inspection at the UST facility.

Questions can be directed to the Bureau at (609) 984-3156.

*** This registration form shall be signed by the highest ranking individual at the facility with overall responsibility for that facility (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.

SACS-2,1/89

22 NOV 1991
Date / /
SIGNATURE
JAMES OTT
Acting Director
Dir, Engineering and Housing
(Title)



DEPARTMENT OF THE ARMY
Headquarters, U.S. Army Garrison Fort Monmouth
Fort Monmouth, New Jersey 07703-5000



REPLY TO
ATTENTION OF

Directorate of Engineering
and Housing

22 NOV 1991

SUBJECT: Removal Procedure:

U.S. Army Fort Monmouth
Main Post West
Site Registration #0081533
Tank #58, 88, 95, 104, 110, 113, 146, 148, 158, 163
POC: Joseph M. Fallon (908) 532-6223

The remaining product inside each tank was removed for disposal by Lionetti Oil Recovery Co., Inc. Lionetti is a licensed hazardous waste transporter and treatment, storage, and disposal facility (USEPA ID #NJ0084044064).

The top of each tank was excavated and cut open across the entire length of the tank. In addition, the inside of each tank was hand cleaned and thoroughly wiped down. The soil from the top of each excavation was visually inspected and analyzed using a HNU Model PI-101 photoionizer. No contamination was detected.

After each tank was cleaned, a visual inspection was made inside the tanks for signs of leakage. No corrosion was found inside the tanks.

Each tank was then removed from the ground and disposed of through a metal recycler. No contamination was discovered at the sites upon removing the tanks.

Each site was then backfilled with the excavated soil to close out the project.

ATTACHMENT D

UST 290C File Review

UNDERGROUND STORAGE TANK FILE REVIEW
FORT MONMOUTH BRAC 05 FACILITY
OCEANPORT, NEW JERSEY

Date: January 21, 2015

Review Performed By: Kent Friesen, Parsons

Site ID: **Bldg. 290C**

Registration ID: 81533-193

Recommended Status of Site: **Case Closed (no change)**

UST Probability (from May 2014 "Addendum 1 ECP UHOT Report"): **NFA**

Based on the file review, were there indications of a contaminant release? ☐ Yes ☒ No

NJDEP Release No. or DICAR (If applicable): _____

Did NJDEP approve No Further Action (NFA) for this site? ☐ Yes ☒ No ☐ Not Applicable

Tank Description: ☐ Steel ☒ Fiberglass Size: 550 gals. Contents: Waste oil

☐ Residential ☒ Commercial/Industrial

Tank Removed? ☒ Yes ☐ No If "yes," removal date: 12/17/1991

Were closure soil samples taken? ☒ Yes ☐ No Analyses: TPH, Priority Pollutants + TICs

Comparison criteria: 5,100 mg/kg TPH

Were closure soil sample results less than comparison criteria? ☒ Yes ☐ No

Brief Narrative

A waste oil UST was removed from the east side of Bldg. 290 in 1991. Following tank removal, soil samples were collected from the tank excavation and analyzed by an offsite laboratory for total petroleum hydrocarbons (TPH) and priority pollutants plus 40 tentatively identified compounds (PP+40). No evidence of soil contamination was encountered. The final soil sample results ranged from non-detected (ND) to 490 mg/kg for TPH, and priority pollutant results were less than then-current NJDEP standards. The TPH results were less than 5,100 mg/kg for TPH, which is the current TPH remediation criterion. Weston (October 1993) completed a report for closure of this registered tank (*Underground Storage Tank Closure and Site Investigation Report, Building 290, NJDEPE UST Registration No. 81533-193*), which recommended NFA for this site. There is no record of NFA approval by the NJDEP. Based on the analytical results, no additional sampling or remedial action was warranted.

In conclusion, the analytical results support the UST Case Status of "Case Closed."

Recommendations (if any): Submit Weston report and request NFA from NJDEP

Signed: _____



Kent A. Friesen, Parsons



**UNDERGROUND STORAGE TANK
CLOSURE AND SITE INVESTIGATION REPORT
BUILDING 290
NJDEPE UST REGISTRATION NO. 81533-193**

October 28, 1993

W.O. No.: 03886-088-001

Prepared For:

**UNITED STATES ARMY, FORT MONMOUTH NEW JERSEY
DIRECTORATE OF PUBLIC WORKS
BUILDING 167
FORT MONMOUTH, NJ 07703**

Prepared by:

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

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EXECUTIVE SUMMARY

On 17 December 1991, one single wall fiberglass, underground storage tank (UST) was closed at U.S. Army Fort Monmouth, in Fort Monmouth, New Jersey. The UST, New Jersey Department of Environmental Protection and Energy (NJDEPE) Registration No. 81533-193, was located adjacent to Building 290 in the Main Post area of Fort Monmouth. UST No. 81533-193 was a 550-gallon capacity, waste oil tank. The tank was located immediately adjacent to Building 290. Mr. Paul Addisson of the NJDEPE Division of Hazardous Waste Management (NJDEPE-DHWM) was on-site for the duration of the UST closure activities. Fabiano and Son, Inc. performed the tank closure. At the date of closure, contractor certification was not required by the NJDEPE.

Soils surrounding the tank were screened visually and with air monitoring instruments for evidence of contamination. The tank was inspected following removal for cracks and puncture holes for indications of historical leakage from the tank. No holes were noted in UST No. 81533-193 and no potentially contaminated soils were identified surrounding the tank.

Following removal of the tank, four post-excavation soil samples were collected and analyzed for total petroleum hydrocarbons (TPHC) and priority pollutants plus 40 tentatively identified compounds (PP+40). All samples contained either non-detectable concentrations of contaminants or concentrations below proposed NJDEPE subsurface cleanup criteria.

No further action is proposed at this site in reference to UST No. 81533-193 since no soils are present with concentrations of contaminants exceeding proposed NJDEPE subsurface cleanup criteria.

SECTION 1.0

UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 Overview:

One underground storage tank (UST), New Jersey Department of Environmental Protection and Energy (NJDEPE) UST Registration No. 81533-193 (UST No. 85133-193), was closed at Building 290 at U.S. Army Fort Monmouth, New Jersey on 17 December 1991. UST. No. 81533-193 was a single wall fiberglass, 550-gallon capacity waste oil tank. 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 NJDEPE Bureau of Underground Storage Tanks (NJDEPE-BUST) regulations. The applicable NJDEPE-BUST regulations at the date of closure were the "Interim Closure Requirements for Underground Storage Tank Systems" (NJAC 7:14B-1 et seq. September 1990 and revisions dated 1 November 1991). Closure of UST No. 81533-193 proceeded under approval and onsite supervision of Mr. Paul Addisson of the NJDEPE Division of Hazardous Waste Management (NJDEPE-DHWM). This report presents the results of the DPW's implementation of the UST Decommissioning/Closure Plan submitted to the NJDEPE-DHWM on 12 July 1991.

All activities associated with the decommissioning of UST No. 81533-193 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: NJAC 7:14B-1 et seq., NJAC 5:23-1 et seq., and Occupational Safety and Health Administration (OSHA) 1910.146 & 1910.120. All permits including but not limited to the NJDEPE-approved Decommissioning/Closure Plan were posted onsite for inspection. Fabiano and Sons Inc., the contractors that conducted the decommissioning activities, are currently registered and certified by the NJDEPE for performing UST closure activities. The NJDEPE conditional closure approval letter and the UST Site Assessment Summary Form for UST No. 81533-193 have been included in Appendices A and B, respectively. The UST Site Assessment Summary Form has been signed and sealed by Mr. James Ott, Director of DPW and Professional Engineer.

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

Building 290 is located off Wilson Avenue in the Main Post area of Fort Monmouth. A site location map is provided in Figure 1-1. Building 290 is an inactive military vehicle repair and maintenance facility. UST No. 81533-193 was located immediately adjacent to the eastern portion of Building 290.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of the area surrounding Building 290. 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 Main Post area.

Regional Geology

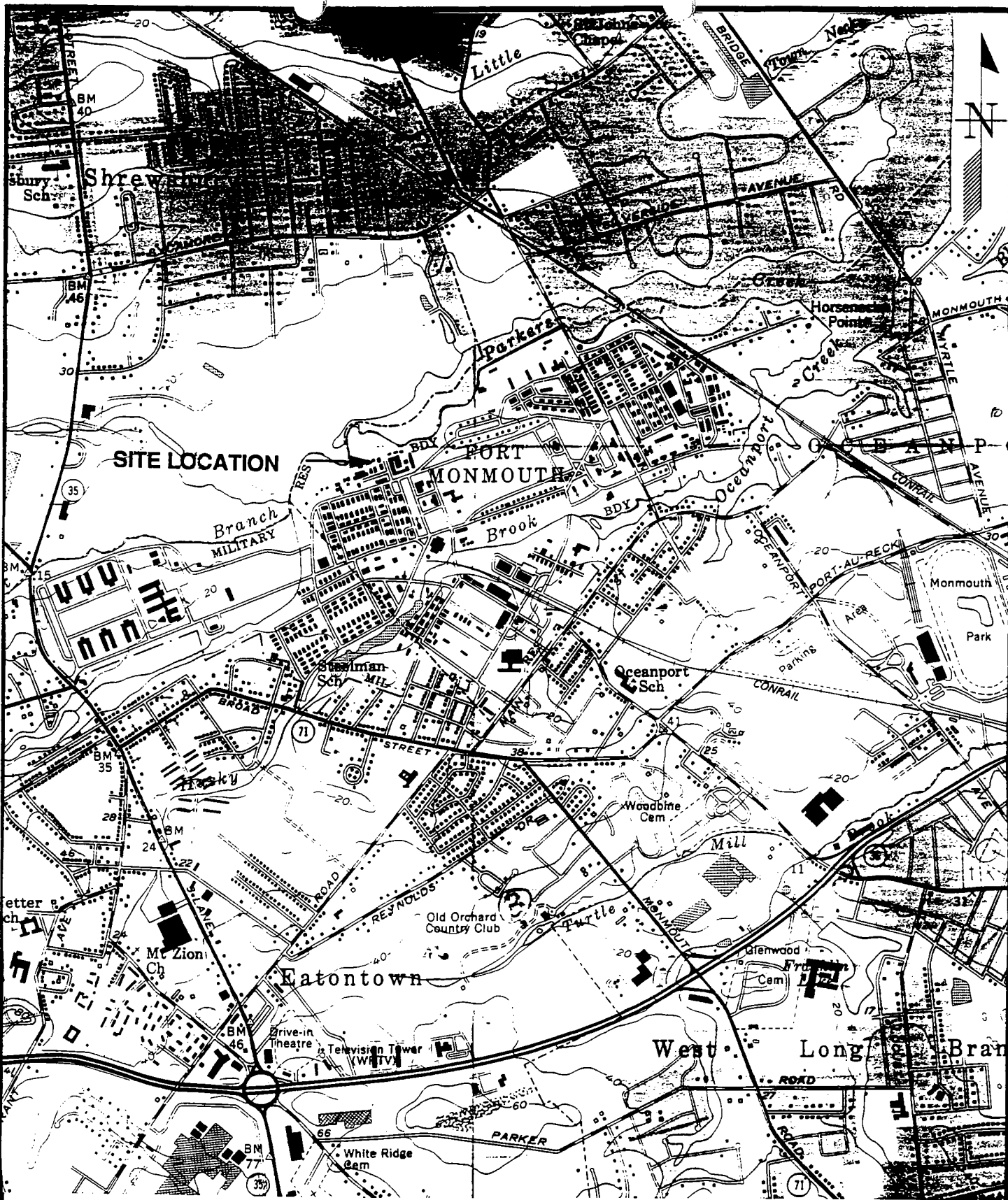
Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain physiographic province. The Main Post, Charles Wood, and the Evans areas are located in what may be referred to as the Outer Coastal Plain subprovince, or the Outer Lowlands.

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 Precambrian and lower Paleozoic rocks (Zapeczka, 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 Zapeczka, 1990).

Local Geology

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Main Post 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-coarse-grained sand



SOURCE: U.S.G.S. LONG BRANCH NJ, QUADRANGLE, MONMOUTH COUNTY, 1954 (PHOTOREVISED 1981)

SCALE: 1"=2000'



PROJECT NAME:
**UNDERGROUND STORAGE TANK CLOSURE
 AND SITE INVESTIGATION REPORT
 BUILDING 290 - TANK NO. 193**
 FORT MONMOUTH, NEW JERSEY

CLIENT NAME:
**U.S. ARMY-DEH
 FORT MONMOUTH**

SITE LOCATION MAP

DATE:
10-22-93

FIGURE #:
1-1

REVISION #: 0000 DATE: 10-19-93 PLOT NAME:
 FILE NAME: BLDG-290.DWG DRAWN BY: A. MANSUT

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 Main Post area range from five feet above mean sea level (MSL) to 31 feet above MSL.

Hydrogeology

The water table aquifer at the Main Post 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 Main Post area, around 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 Main Post area by the following factors:

- tidal influence (based on proximity to the Atlantic Ocean),
- topography,
- nature of the fill material within the Main Post,
- 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 Main Post area, which primarily consisted of fine-to-medium grained sands, with occasional lenses or laminations of silt and/or clay

1.3 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.

1.4 Removal of Underground Storage Tank

1.4.1 General Procedures

- All underground obstructions (utilities,... etc.) were marked out by the contractor performing the closure prior to excavation activities.
- All activities were carried out with the greatest regard to safety and health and the safeguarding of the environment.
- All excavated soils were screened visually and with air monitoring instruments for evidence of contamination. No potentially contaminated soils were identified during closure 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.
- A Sub-Surface Evaluator from the DPW was present during all closure activities.

1.4.2 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 the removal of the associated piping, a manway was made in the UST to allow for the proper cleaning of the UST. The UST was completely emptied of all liquids prior to removal of the UST from the ground. Liquids were transported and disposed of by L and L Oil Service, Inc. 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 or puncture holes. The presence or absence of cracks or puncture holes was documented by the Sub-Surface Evaluator. No cracks or puncture holes were observed

upon the inspection of the UST. Soils surrounding the UST were screened visually and with a Flame Ionization Detector (FID) for evidence of contamination. No evidence of contamination was noted in soils surrounding the UST.

1.5 Underground Storage Tank Transportation and Disposal:

The tanks were transported by Fabiano and Sons to Redbank Recycling Inc., for recycling in compliance with all applicable regulations and laws.

The Subsurface Evaluator labelled the UST prior to transport with the following information:

- site of origin,
- contact person,
- NJDEPE UST Facility ID number,
- name of transporter/contact person, and
- destination site/contact person.

1.6 Management of Excavated Soils:

No potentially contaminated soils were excavated as part of the removal of the UST. All soils were free of evidence of contamination and were backfilled into the excavation following removal of the UST.

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 Environmental Profile Laboratories, a NJDEPE-certified testing laboratory. All sampling was performed under the direct supervision of a NJDEPE Certified Sub-Surface Evaluator according to the methods described in the NJDEPE Field Sampling Procedures Manual (May 1988). Sampling frequency and parameters analyzed complied with the NJDEPE-BUST document "Interim Closure Requirements for Underground Storage Tank Systems " (September 1990 and revisions dated 1 November 1991) 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: **FABIANO AND SONS.**
Contact Person: Anthony Fabiano
Phone Number: (908) 571-1004
NJDEPE Company Certification No.: PLEO1349
- Subsurface Evaluator: Charles Appleby
Employer: U.S. Army, Fort Monmouth
Phone Number: (908) 532-6224
NJDEPE Certification No.: 2056
- Analytical Laboratory: Environmental Profile Laboratories
Contact Person: DANIEL WRIGHT
Phone Number: (908) 244-6278
NJDEPE Company Certification No.: 15526
- NJDEPE On-site Representative: Paul Addisson
DIVISION OF HAZARDOUS WASTE MANAGEMENT
Phone Number: (609) 584-4200

2.2 Field Screening/Monitoring

All soils that were excavated as part of the removal of the UST were screened using a FID, for evidence of contamination. Soils were also visually screened for evidence of contamination (staining, free product, etc.). No evidence of contamination was noted during excavation of soils surrounding the UST.

Soils on the sidewalls and base of the excavation were screened with a FID by an individual under the direct supervision of the NJDEPE Certified Sub-Surface Evaluator. No evidence of contamination was noted within soils on the sidewalls or base of the excavation.

2.3 Soil Sampling

Following removal of the UST, four post-excavation soil samples were collected in accordance with NJDEPE procedure and the approved closure plan. A summary of sampling activities including parameters analyzed is provided in Table 2-1. Figure 2-1 depicts the location of the post-excavation samples. The samples were typically collected along the base and sidewalls of the excavation using decontaminated stainless steel scoops. Following soil sampling activities, the samples were chilled and delivered to Environmental Profile Laboratories located in Toms River, New Jersey.

All samples were analyzed for total petroleum hydrocarbons (TPHC) and priority pollutants plus 40 tentatively identified compounds (PP+40). The frequency of sampling and parameters analyzed were approved by the on-site NJDEPE-DHWM Representative and were consistent with the applicable NJDEPE regulations at the date of closure, which were the "Interim Closure Requirements for Underground Storage Tank Systems" (NJAC 7:14B-1 et seq. September 1990 and revisions dated 1 November 1991).

TABLE 2-1

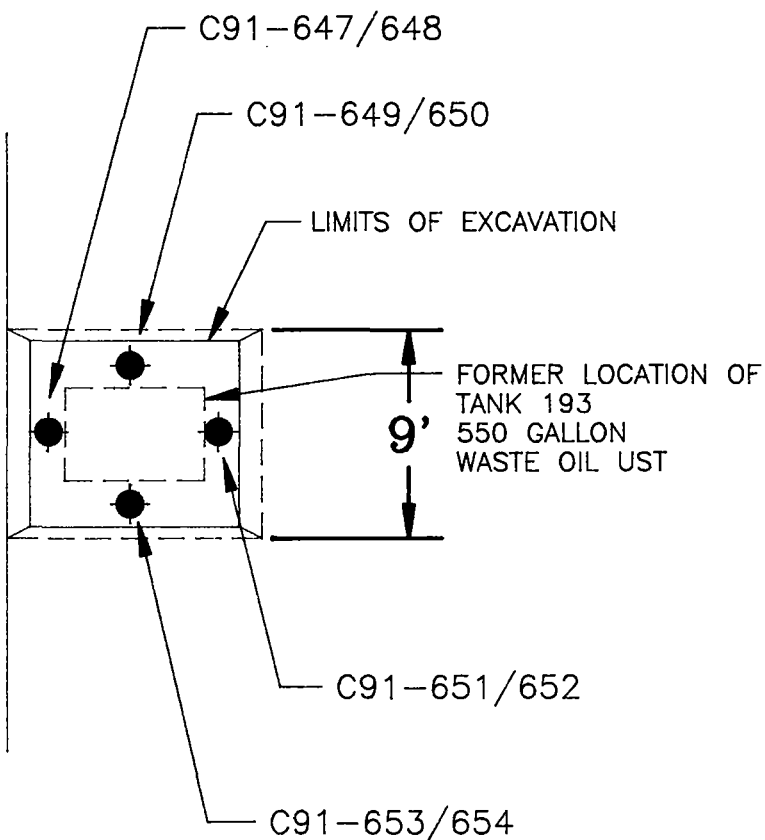
**SUMMARY OF POST-EXCAVATION SAMPLING ACTIVITIES
UST REGISTRATION NO. 81533-193
BUILDING NO. 290
FORT MONMOUTH, NEW JERSEY**

Sample I.D No.	Date of Collection	Matrix	Sample Type	Analytical Parameters	Sampling Method
C91-647/648	12/17/91	Soil	Post-Excavation	TPHC, PP+40	Stainless Steel Scoop
C91-649/650	12/17/91	Soil	Post-Excavation	TPHC, PP+40	Stainless Steel Scoop
C91-651/652	12/17/91	Soil	Post-Excavation	TPHC, PP+40	Stainless Steel Scoop
C91-653/654	12/17/91	Soil	Post-Excavation	TPHC, PP+40	Stainless Steel Scoop

TPHC - Total Petroleum Hydrocarbons.

PP+40 - Priority pollutants list plus 40 non-targeted organic compounds.

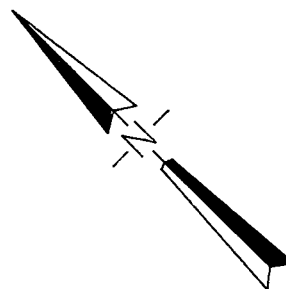
BLDG. 290



0' 4' 8'



SCALE: 1" = 8'



C91-647/648

● — POST EXCAVATION SAMPLE LOCATION

REVISION #:
FILE NAME: DEH-290.DWG
DATE: 10-29-93
DRAWN BY: A. MANSUR



PROJECT NAME:
**UNDERGROUND STORAGE TANK CLOSURE
AND SITE INVESTIGATION REPORT
BUILDING 290 - TANK 193**
FORT MONMOUTH, NEW JERSEY
CLIENT NAME: **U.S. ARMY-DEH
FORT MONMOUTH**

**POST-EXCAVATION
SAMPLE LOCATIONS**
FACILITY REGISTRATION
NO's 0081533-193

DATE: **10-07-93**

FIGURE #: **2-1**

SECTION 3.0

CONCLUSIONS AND RECOMMENDATIONS

3.1 Soil Sampling Results

To evaluate soils conditions following removal of the UST and associated soils, analytical results from the post-excavation samples were compared to proposed NJDEPE subsurface cleanup criteria (NJAC 7:26D and revisions dated 8 March 1993). A summary of the analytical results and comparison to proposed NJDEPE subsurface cleanup criteria is provided in Table 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 C. The full data package, including associated quality control and chromatograph data is on file at U.S. Army Fort Monmouth, DPW.

TPHC were detected in samples C91-649/650 and C91-651/652 at concentrations of 490 mg/kg and 20 mg/kg, respectively. All other samples contained non-detectable concentrations of TPHC. No subsurface cleanup criterion has been proposed for TPHC by NJDEPE, however the proposed NJDEPE subsurface cleanup criterion for total organic compounds is 10,000 mg/kg. The concentrations of total organic compounds detected in all samples was below the proposed NJDEPE subsurface cleanup criterion of 10,000 mg/kg. Di-n-butylphthalate, and bis(2-Ethylhexyl) phthalate were detected in sample C91-649/650; however, at concentrations well below the proposed NJDEPE subsurface cleanup criteria. Bis(2-Ethylhexyl)phthalate was tentatively identified in sample C91-651/652 at a concentration of .61 mg/kg, which is below the proposed NJDEPE subsurface cleanup criterion of 100 mg/kg. Several tentatively identified base neutral compounds were detected in samples C91-647/648 and C-91 649/650; however, at concentrations well below proposed NJDEPE subsurface cleanup criteria. Methylene chloride, a common laboratory contaminant, was detected in all samples, however at concentrations well below the proposed NJDEPE subsurface cleanup criterion of 10 mg/kg. Several metals were detected in the samples, however no subsurface cleanup criteria have been proposed for these analytes by NJDEPE.

3.2 Conclusions and Recommendations:

On 17 December 1991, DPW successfully closed UST No. 81533-193 at Building 290 in the Main Post area of Fort Monmouth. Based on visual inspection of the UST and field screening of the soils adjacent to the UST, it was determined that no discharges had historically occurred from the UST. Analytical results of the post-excavation samples confirm that no soils are present with concentrations of contaminants exceeding proposed NJDEPE subsurface cleanup criteria.

✓ No further action is proposed at Building 290 in reference to UST No. 81533-193.

TABLE 3-1

**SUMMARY OF ANALYTICAL RESULTS
UST REGISTRATION NO. 81533-193
BUILDING NO. 290
FORT MONMOUTH, NEW JERSEY**

Sample ID No.		C91-647/648	C91-649/650	C91-651/652	C91-653/654	Proposed NJDEPE Subsurface Cleanup Criteria
Lab ID No.		6985.1/2	6985.3/4	6985.5/6	6985.7/8	
Matrix		Soil	Soil	Soil	Soil	
Sample Type		PE	PE	PE	PE	
Date of Collection		12/17/91	12/17/91	12/17/91	12/17/91	
Analytical Parameter	Units					mg/kg
TPHC	mg/kg	ND	490	20	ND	NC*
Base Neutral Compounds	mg/kg					
Di-n-butylphthalate		ND	.15J	ND	ND	100
Bis(2-Ethylhexyl) phthalate		ND	.36J	.61	ND	100
Volatile Organic Compounds						
Methylene Chloride	mg/kg	.067	.087	.083	.099	10

TABLE 3-1

SUMMARY OF ANALYTICAL RESULTS (CONTINUED)
UST REGISTRATION NO. 81533-193
BUILDING NO. 290
FORT MONMOUTH, NEW JERSEY

Sample ID No.		C91-647/648	C91-649/650	C91-651/652	C91-653/654	Proposed NJDEPE Subsurface Cleanup Criteria
Lab ID No.		6985.1/2	6985.3/4	6985.5/6	6985.7/8	
Matrix		Soil	Soil	Soil	Soil	
Sample Type		PE	PE	PE	PE	
Date of Collection		12/17/91	12/17/91	12/17/91	12/17/91	
Priority Pollutant Metals	mg/kg					
Arsenic		3.4	5.0	3.5	3.9	NC
Beryllium		0.63	0.55	0.55	0.38	NC
Cadmium		0.040	0.019	0.012	0.019	NC
Chromium		44.4	69.1	71.2	63.1	NC
Copper		6.88	6.20	5.00	6.30	NC
Lead		2.88	3.30	1.80	2.40	NC
Mercury		0.040	ND	0.038	0.038	NC
Nickel		ND	8.6	8.1	9.4	NC
Silver		ND	ND	ND	10.0	NC
Zinc		28.1	29.0	21.3	25.0	NC

Notes:

TPHC: - Total Petroleum Hydrocarbons.

PE: - Post-Excavation.

NC*: - No cleanup criterion has been proposed for TPHC by NJDEPE; however, the proposed NJDEPE subsurface cleanup criterion for total organic compounds is 10,000 mg/kg.

NC: - No subsurface cleanup criterion has been proposed for this analyte by NJDEPE.

NA: - Not analyzed.

mg/kg: - Milligrams per Kilogram.

J: - Indicates an estimated value.

TABLE 3-2

**ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE
UST REGISTRATION NO. 81533-193
BUILDING NO. 290
FORT MONMOUTH, NEW JERSEY**

Analytical Parameter	No. of Samples Collected	Matrix	Date Collected	Date Analysis Started	Preservation Method	USEPA SW-486 Analytical Method
TPHC	4	S	12/17/91	12/23/91	Cool to 4°	418.1
VOCs	4	S	12/17/91	12/24/91	Cool to 4°	8240
BNA	4	S	12/17/91	12/24/91	Cool to 4°	8270
PCBs	4	S	12/17/91	12/24/91	Cool to 4°	608
PP Metals	4	S	12/17/92	12/20/91	Cool to 4°	6010,7060,7470 7740, 7841

Notes:

- PCBs - Poly Chlorinated Biphenyls
- PP Metals - Priority Pollutant Metals
- VOCs - Volatile Organic Compounds
- TPHC - Total Petroleum Hydrocarbons
- 608 - PCB samples were analyzed using method 608 cited in 40 CFR Part 36

APPENDIX A

NJDEPE-DHWM CONDITIONAL CLOSURE APPROVAL LETTER



State of New Jersey
Department of Environmental Protection and Energy
Office of Enforcement Policy
CENTRAL BUREAU OF WATER AND HAZARDOUS WASTE ENFORCEMENT
FIELD OPERATIONS

Scott A. Weiner
Commissioner

Edward M. Neafsey
Director

September 20, 1991

James Ott, Deputy Director
Directorate of Engineering and Housing
U.S. Army Communications-Electronic Command
Building 167 SELHI-FE
Fort Monmouth, NJ 07003

Dear Mr. Ott

The Department of Environmental Protection & Energy has completed its review of your submitted closure plans for six underground waste oil tanks. It has been determined that the plan is acceptable conditioned on the following revision/modifications:

1. In addition to the total petroleum hydrocarbon (TPHC) analysis for each sample taken, the total priority pollutant analysis (PP+40 or TCL) should be utilized for an initial screening. These analyses would be helpful for the remediation of tank number 68 which is known to contain 1000 ppm of hydrogenated chlorides.

2. A detailed description of the steps needed to decontaminate the tanks should be included.

3. An indication of whether the tanks will be disposed off-site as hazardous waste. If not the tanks must be decontaminated and a final rinse water sample and a washwater blank sample must be analyzed for total petroleum hydrocarbons (TPHC) concentration to determine the adequacy of decontamination. The decontamination procedure may have to be repeated to achieve a concentration acceptable to the Department or until the TPHC results of two consecutive samples do not show an appreciable change.

Please submit these changes in an addendum to your submitted closure plans prior to beginning any closure activities. This writer should be notified 2 weeks in advance of initiation of closure activities.

If you have any questions regarding these requirements, please contact me at (609) 584-4200.

Yours truly,

Douglas Greenfield
Sr. Environmental Engineer
Hazardous Waste Enforcement
CBW&HWEFO

APPENDIX B
NJDEPE UST SITE ASSESSMENT SUMMARY FORM

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

UST #	_____
Date Rec'd	_____
TMS #	_____
State	_____

**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 _____

0081533-193

FACILITY REGISTRATION #

I. FACILITY NAME AND ADDRESS

U.S. Army Fort Monmouth New Jersey
Directorate of Engineering and Housing Building 167
Fort Monmouth, NJ 07703 County Monmouth
Telephone No. 908-532-6224

OWNER'S NAME AND ADDRESS, if different from above

Telephone No. _____

II. DISCHARGE REPORTING REQUIREMENTS

- A. Was contamination found? ☐ Yes ☒ No If Yes, Case No. _____
(Note: All discharges must be reported to the Environmental Action Hotline (609) 292-7172)
- B. The substance(s) discharged was(were) N/A
- C. Have any vapor hazards been mitigated? ☐ Yes ☐ No ☒ N/A

III. DECOMMISSIONING OF TANK SYSTEMS

Closure Approval No. N/A

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? ☒ Yes ☐ No ☐ N/A
2. Were soil borings taken at the tank system closure site as prescribed? ☐ Yes ☐ 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? Yes X 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. 0 ppb total BTEX, N/A ppb total non-targeted VOC
 2. 610 ppb total B/N, N/A ppb total non-targeted B/N
 3. 490 ppm TPHC
 4. N/A ppb N/A (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 Yes X 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 No X N/A

E. Does soil contamination intersect ground water? Yes No X 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 X N/A
2. The number of these wells identified is N/A

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 N/A 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 N/A feet from the source and its screening begins at a depth of N/A 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 N/A feet below grade. This well is located N/A 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 N/A feet from the source. This well is N/A feet deep and screening begins at a depth of N/A 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 X 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 N/A
2. The plume is suspected to continue off the property at concentrations greater than MCLs.
Yes No N/A
3. Off property access (circle one): is being sought has been approved has been denied

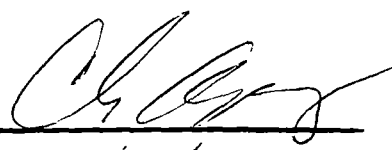
N/A

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 

COMPANY NAME U.S. Army Fort Monmouth
(Preparer of Site Assessment Plan)

DATE 10/29/93

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 10/29/93
(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)11].

"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, P.E. SIGNATURE [Signature]
COMPANY NAME U.S. Army Fort Monmouth DATE 10/29/93

B. The following certification shall be signed as follows (according to the requirements of N.J.A.C. 7:14B-2.3(C)21):

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 _____

ATTACHMENT I

NO/NA RESPONSE EXPLANATION

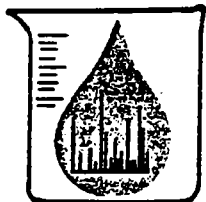
<u>SAS QUESTION #</u>	<u>RESPONSE</u>	<u>EXPLANATION</u>
IIA.	No	No contaminants were identified in soil samples at concentrations exceeding proposed NJDEPE cleanup criteria.
IIB.	N/A	Same as above.
IIC.	N/A	Same as above.
III.	N/A	Closure of Facility Registration No. 0081533-193 was conducted under verbal approval and on-site supervision of the NJDEPE Division of Hazardous Waste Management.
IV.C.2	N/A	No soil borings were required in the DHWM approval closure plan.
V.A	No	No contaminants were identified in soil samples at concentrations exceeding proposed NJDEPE cleanup criteria.
V.B.1-4	N/A	Same as above.
V.C.1-3	N/A	Same as above.
V.D	N/A	Same as above.
V.E	N/A	Same as above.
VI.A-G	No	No groundwater monitoring wells were installed as part of closure of Facility Registration No. 0081533-193; therefore, no groundwater samples were collected.

ATTACHMENT I

NO/NA RESPONSE EXPLANATION

<u>SAS QUESTION #</u>	<u>RESPONSE</u>	<u>EXPLANATION</u>
VI.B.1-6	N/A	Same as above.
VI.C.1-3	N/A	No release to groundwater has occurred from Facility Registration No. 0081533-193; therefore, no well search was performed as part of the site assessment.
VI.E	N/A	Same as above.
VI.F	N/A	Same as above.
VI.G.1-3	N/A	No groundwater contamination resulting from a release from Facility Registration No. 0081533-193 has been identified.

APPENDIX C
ANALYTICAL DATA PACKAGE



ENVIRONMENTAL PROFILE LABORATORIES

ROUTE 37 BUSINESS PARK
SUITE 13
TOMS RIVER, NJ 08755
OFFICE: (908) 244-6278
FAX: (908) 244-6372

REPORT OF ANALYSIS

REF: AIR
PT 20Y 369 C.D.B. 496
TOMMOLTY, NJ 07702

EPL# : 6985.1.1.2.5.7
SAMPLE RECEIVED: 12/23/91
ANALYSIS START : 12/23/91
ANALYSIS COMPD. : 12/23/91

MATRIX: SOIL

TEST PARAMETERS: PETROLEUM HYDROCARBONS

These samples were analyzed by Infrared Spectroscopy.

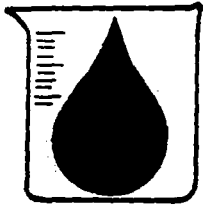
Method used: EPA METHOD 816-1 (Total Petroleum Hydrocarbons)

CLIENT ID	EPL#	RESULTS	AT %REC	MSD %REC	TEST LIMIT
EXTRACTION BLANK	NA	ND			10 mg/Kg
PT 20Y 369 WEST 091-6547	6985.1	ND			
PT 20Y 369 NORTH 091-6548	6985.2	490	75	86	20 mg/Kg
PT 20Y 369 EAST 091-6549	6985.5	20			10 mg/Kg
PT 20Y 369 SOUTH 091-6554	6985.7	ND			"

ND= NOT DETECTED

Donna K. Wright

LABORATORY DIRECTOR
EPL# 091-6554



ENVIRONMENTAL PROFILE LABORATORIES

ROUTE 37 BUSINESS PARK
SUITE 13
TOMS RIVER, NJ 08755
OFFICE: (908) 244-6278
FAX: (908) 244-6372

LABORATORY ANALYSIS REPORT

CLIENT :Serv-Air

PROJECT: Serv-Air
BNA+25

Report Number: 6985
Date Received: Dec, 23, 1991
Date Released: Dec, 30, 1991
Data Released By:

Daniel K. Wright
Laboratory Director

CLIENT: Serv-Air

SAMPLE LOCATION AND IDENTIFICATION

LAB ID NUMBER	SAMPLE IDENTIFICATION	MATRIX
-----	-----	-----
6985.2	B290A T	Soil
6985.4	B290B NORTH	Soil
6985.6	B290C EAST	Soil
6985.8	B290D SOUTH	Soil

Environmental
Profile
Laboratories

CUSTOMER PURCHASE ORDER NO:

CHAIN OF CUSTODY RECORD

PROJECT NO.:		SAMPLER (SIGNATURE):		DATE / TIME		ANALYSIS PARAMETERS											
CUSTOMER (NAME/ADDRESS) Serv-Air POB 369 Bldg 490 Ft. Monmouth, NJ 07703		SITE NAME:				TPHLC PPF-20											
PHONE NO: 542 - 4359		FAX NO:															
LAB SAMPLE ID NUMBER	DATE/TIME	SAMPLE MATRIX	CUSTOMER SAMPLE LOCATION/ID NUMBER	NUMBER OF CONTAINERS	PRESERVATION METHOD												
					REMARKS												
6985, 1	12/17	soil	B290A west (C91-647)	1	X												ice
2			B290A west (C91-648)														
3			B290B North (C91-649)		X												
4			B290B North (C91-650)														
5			B290C East (C91-651)		X												
6			B290C East (C91-652)														
7			B290D South (C91-653)		X												
8			B290D South (C91-654)		X												
Relinquished By (Signature)		DATE / TIME		Received By (Signature)		METHOD OF SHIPPING:											
		12/22/91 930		John F. K...		C.O.V.											
Relinquished By (Signature)		DATE / TIME		Received By (Signature)		SHIPPED BY (Signature):											
						John F. K...											
Relinquished By (Signature)		DATE / TIME		Received for Lab by (Signature):		DATE / TIME											
				John F. K...		12/22/91 930											
NOTE: A DRAWING DEPICTING SAMPLE LOCATION SHOULD BE ATTACHED OR DRAWN ON THE REVERSE SIDE OF THIS CHAIN OF CUSTODY.																	

LABORATORY CHRONICLE

SAMPLE NUMBER	6985.2	6985.4	6985.6	6985.8			
Received & Refrigerated Date	12/23/91	12/23/91	12/23/91	12/23/91			
Organics Extraction Date							
BN/ABN	12/24/91	12/24/91	12/24/91	12/24/91			
PCB's	NA	NA	NA	NA			
Analysis Date							
BN/ABN	12/26/91	12/26/91	12/26/91	12/26/91			
PCB's	NA	NA	NA	NA			
Volatiles	NA	NA	NA	NA			
TPHC's	NA	NA	NA	NA			
Metals	NA	NA	NA	NA			
Total Solids	12/23/91	12/23/91	12/23/91	12/23/91			
Organic Supervisor Review & Approval	Brian K. McKee <i>B.K. McKee</i>						12/31/91
Inorganic Supervisor Review & Approval							

6

METHOD SUMMARY

• Base Neutrals / Acid Extractables

The semivolatile samples in this report have been analyzed using the method cited in the USEPA-CLP-IFB version 2/88. The CLP semivolatile method is based on USEPA Method 625 and SW-846 method 8270.

Three acid and/or three base/neutral surrogates are added to each sample. Aqueous samples are extracted with methylene chloride; soil samples are extracted with a 1 to 1 solution of methylene chloride and acetone. The extracts are then concentrated and the internal standards are added. An Hewlett Packard 5890 GC coupled to the HP 5970 MSD was used for the analysis and data collection.

GC/MS

ORGANIC NON-CONFORMANCE SUMMARY

GC/MS TUNE FREQUENCY:- All samples, blanks, standards and matrix spikes were analyzed within the respective 12 hour tune periods.

INITIAL CALIBRATION REQUIREMENTS:

No CCC or SPCC compound was outside of QC limits.

CONTINUING CALIBRATION REQUIREMENTS:

No CCC or SPCC compound was outside of QC limits

DETECTION LIMITS:- Detection limits and search results were modified by dilution or percent solid.*

* All values reported on a DRY WEIGHT basis where applicable

MATRIX SPIKE RECOVERY:- No matrix spike compound was outside QC limits

INTERNAL STANDARD AREA:-

CLIENT ID #	NUMBER OF INTERNAL STANDARD AREA(S)
NONE	0

SURROGATE RECOVERY:-

Client ID #	Surrogates outside QC limits
NONE	0

ANALYSIS TIME:- All samples were extracted and analyzed within the prescribed holding times.

DATA REPORTING QUALIFIERS

For reporting results to EPA, the following "results qualifiers" are used:

VALUE - If the result is a value greater than or equal to the detection limit, report the value.

U - Indicates the compound was analyzed for but was not detected. Report the minimum detection limit for the sample with the U, "10U". This is not necessarily the instrument detection limit. The figure represents the minimum detection limit attainable for this particular sample based on any concentration or dilution that may have been required.

J - Indicates an estimated value. This flag is used:

- 1) When estimating a concentration for tentatively identified compounds (library search hits) where a 1:1 response is assumed.
- 2) When the mass spectral data indicated the identification criteria, however, the result was less than the specified detection limit but greater than zero. If the detection limit was 10ug/L and a concentration of 3ug/L was calculated, report as "3J".

B - Indicates the analyte was found in the blank as well as the sample; report as "12B".

E - Indicates the analyte concentration exceeds the calibrated range of the GC/MS instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

Environmental Profile Laboratories
BASE/NEUTRAL/ACID ANALYSIS DATA

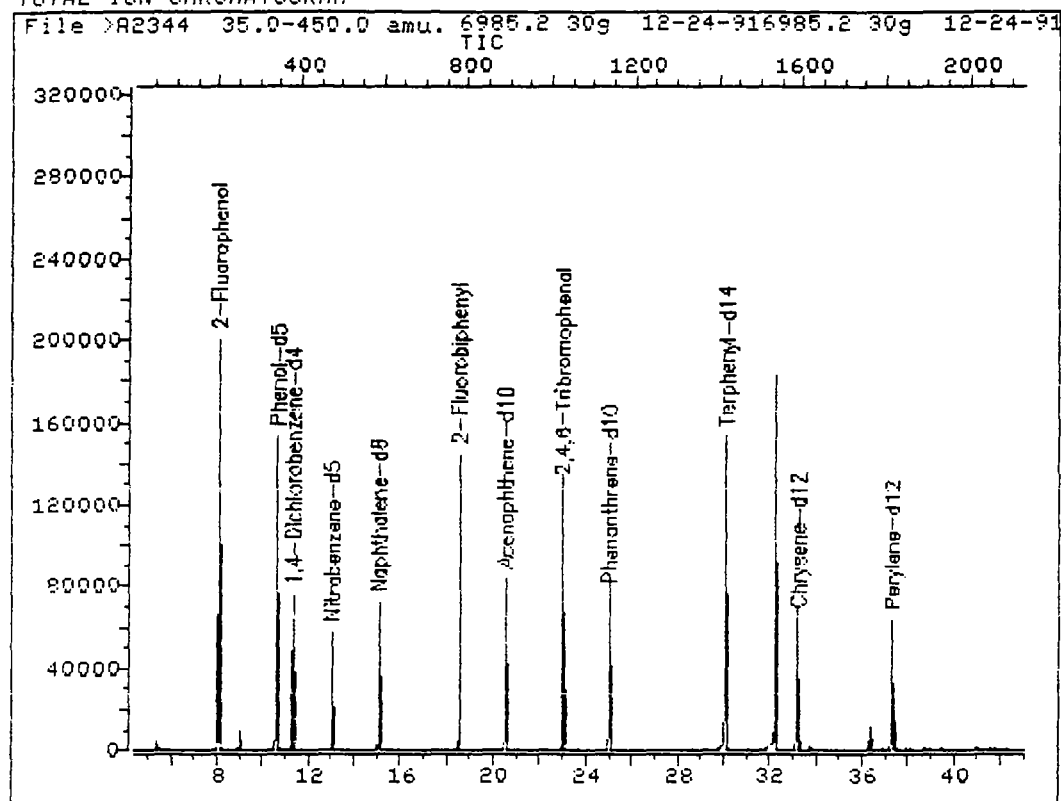
JOB NUMBER		MATRIX	Soil
SAMPLE NAME	6985.2 30g 12-24-91	DILUTION FACTOR	1.00
CLIENT ID		QA BATCH	
DATA FILE	>A2344	DATE ANALYZED	12/26/91

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
N-nitroso-dimethylamine	ND	410	Acenaphthene	ND	410
Phenol	ND	410	2,4-Dinitrophenol	ND	2100
Aniline	ND	410	4-Nitrophenol	ND	410
Bis(2-Chloroethyl)Ether	ND	410	Dibenzofuran	ND	410
2-Chlorophenol	ND	410	2,4-Dinitrotoluene	ND	410
1,3-Dichlorobenzene	ND	410	2,6-Dinitrotoluene	ND	410
1,4-Dichlorobenzene	ND	410	Diethylphthalate	ND	410
Benzyl alcohol	ND	410	4-Chlorophenyl-phenylether	ND	410
1,2-Dichlorobenzene	ND	410	Fluorene	ND	410
2-Methylphenol	ND	410	4-Nitroaniline	ND	410
Bis(2-chloroisopropyl)ether	ND	410	4,6-Dinitro-2-methylphenol	ND	410
4-Methylphenol	ND	410	N-Nitrosodiphenylamine	ND	410
N-Nitroso-Di-n-propylamine	ND	410	1,2-Diphenylhydrazine	ND	410
Hexachloroethane	ND	410	4-Bromophenyl-phenylether	ND	410
Nitrobenzene	ND	410	Hexachlorobenzene	ND	410
Isophorone	ND	410	Pentachlorophenol	ND	410
2-Nitrophenol	ND	410	Phenanthrene	ND	410
2,4-Dimethylphenol	ND	410	Anthracene	ND	410
Benzoic Acid	ND	410	Di-n-butylphthalate	ND	410
Bis(2-Chloroethoxy)methane	ND	410	Fluoranthene	ND	410
2,4-Dichlorophenol	ND	410	Benzidine	ND	410
1,2,4-Trichlorobenzene	ND	410	Pyrene	ND	410
Naphthalene	ND	410	Butylbenzylphthalate	ND	410
4-Chloroaniline	ND	410	3,3'-Dichlorobenzidine	ND	410
Hexachlorobutadiene	ND	410	Benzo(a)anthracene	ND	410
4-Chloro-3-methylphenol	ND	410	bis(2-Ethylhexyl)phthalate	ND	410
2-Methylnaphthalene	ND	410	Cnrysene	ND	410
Hexachlorocyclopentadiene	ND	410	Di-n-octylphthalate	ND	410
2,4,6-Trichlorophenol	ND	410	Benzo(b)fluoranthene	ND	410
2,4,5-Trichlorophenol	ND	410	Benzo(k)fluoranthene	ND	410
2-Chloronaphthalene	ND	410	Benzo(a)pyrene	ND	410
2-Nitroaniline	ND	410	Indeno(1,2,3-cd)pyrene	ND	410
Dimethylphthalate	ND	410	Dibenz(a,h)anthracene	ND	410
Acenaphthylene	ND	410	Benzo(g,h,i)perylene	ND	410
3-Nitroaniline	ND	410			0

Percent Solid of 80.0 is used for all Target compounds.

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

TOTAL ION CHROMATOGRAM



Data File: >A2344::D3

Quant Output File: ^A2344::DB

Name: 6985.2 30g 12-24-91

Misc: 6985.2 30g 12-24-91

BTL# 4

Id File: IDBNA::D4

Title: Semivolatile Organics (EPA Methods 625/8270) by GC/MS

Last Calibration: 911226 12:14

Operator ID: MARK

Quant Time: 911226 15:43

Injected at: 911226 14:59

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LAB SAMPLE NO.

6985.2 30g

Lab Sample ID: 6985.2 30g

Lab File ID: >A2344

Date Received: 12-23-91

Date Extracted: 12-24-91

Date Analyzed: 12/26/91

Dilution Factor: 30

Number of TICs found: 3

ug/Kg

[illegible]

Ms data file header from : >A2344

Sample: 6985.2 30g 12-24-91 Operator: MARK SUPER GRP. 12/26/91 14:59
Misc : 6985.2 30g 12-24-91 BTL# 4
Svs. #: 2 MS model: 70 SW/HW rev.: IA ALS # : 0
Method file: BNARUN Tuning file: MTUNE2 No. of extra records: 2
Source temp.: 0 Analyzer temp.: 280 Transfer line temp.: 0

Chromatographic temperatures : 35. 300. 0. 0. 0.
Chromatographic times, min. : 3.0 6.9 0.0 0.0 0.0
Chromatographic rate, deg/min: 8.0 0.0 0.0 .2 0.0

A2344 6985.2 30g 12-24-91 6985.2 30g 12-24-91
15.01 450.0 CLP TIC

Upslope: .20 Area Reject: 17738. Max Peaks: 3 Bunching: 1
Envelope: 0.00 Results File IA2344 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	8.84	248	251	256	9613	21613	21613	4.67	4.238
2	32.18	1529	1532	1541	182516	464100	463040	100.00	90.791
3	36.33	1758	1761	1765	11272	28607	25351	5.47	4.971

Sum of corrected areas: 510004.

Summary of Unknowns PBM Library Search and Quantitation

Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	179214.	11.30	4.41 - 13.17
2	40.0	177376.	15.04	13.17 - 17.76
3	40.0	237542.	20.49	17.76 - 22.75
4	40.0	251187.	25.01	22.75 - 29.10
5	40.0	236165.	33.19	29.10 - 35.24
6	40.0	241494.	37.29	35.24 - 43.05

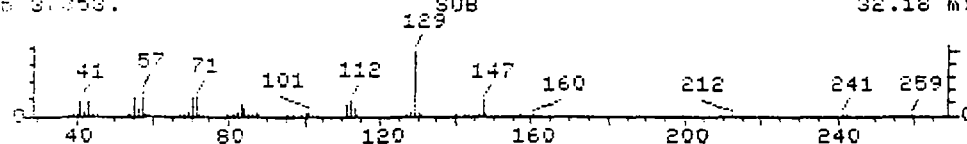
Dilution Factor = 1.00 U dilf = 1.00
Method called for 1000.000 g or mL This sample was 1000.000 g or mL

Correction Factor = 1.00

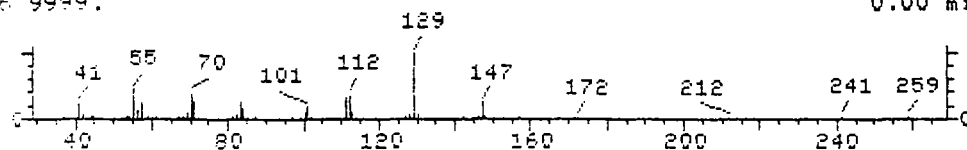
Unknown Concentration = $\frac{\text{Conc Int Std}}{\text{Area Int Std}} \times \text{Area Unknown} \times \text{Correction Factor}$

4:33 PM SUN., 29 DEC., 1991

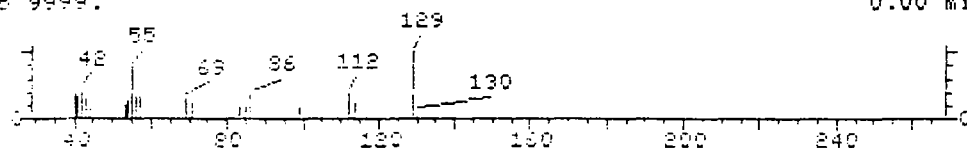
file A2344 6985.2 30g 12-24-91 6985.2 30g 12-24-91 Scan 1532
 PK AD 37053. SUB 32.18 min.



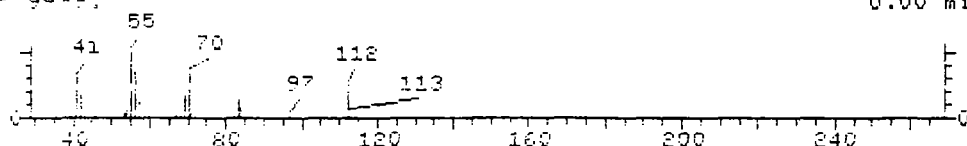
file NBS49K HEXANEDIOIC ACID, MONO(2-ETHYLHEXYL)ESTER Scan 28340
 PK AD 9999. 0.00 min.



file NBS49K 2,6-Piperazinedione, monooxime Scan 4477
 PK AD 9999. 0.00 min.



file NBS49K 2-Octene Scan 2364
 PK AD 9999. 0.00 min.



UNKNOWN #,2

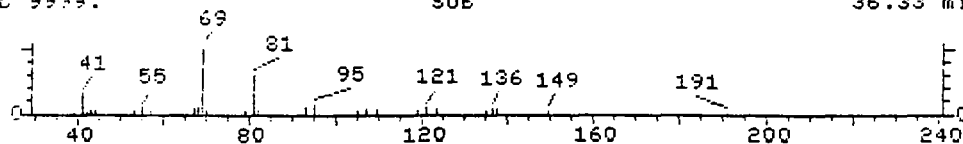
REA = 463040.0 TENTATIVE CONCENTRATION IS 78.00

- | | |
|--|--------------|
| 1. HEXANEDIOIC ACID, MONO(2-ETHYLHEXYL)ESTER | 258 C14H26O4 |
| 2. 2,6-Piperazinedione, monooxime | 129 C4H7N3O2 |
| 3. 2-Octene | 112 C8H16 |
| 4. Octane, 3,6-dimethyl- | 142 C10H22 |
| 5. Hexanedioic acid, dioctyl ester | 370 C22H42O4 |

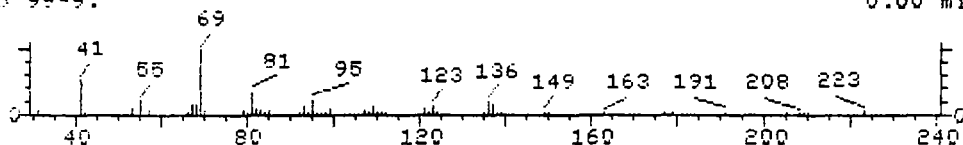
Sample file: >A2344 Spectrum #: 1532
 Search speed: 1 Tilting option: F No. of ion ranges searched: 43

Prob.	CAS #	CON #	ROOT	K	DK	#ELG	TILT	%	CON	C_I	R_IO
41	4337659	15463	NBS49K	61	64	0	0	42	40	17	30
26*	56700846	15393	NBS49K	23	99	3	0	100	36	10	12
25*	111671	12035	NBS49K	35	51	0	-3	31	46	7	19
25*	15869940	12333	NBS49K	37	37	1	1	30	48	7	13
21	123795	15479	NBS49K	83	62	1	1	37	60	5	30

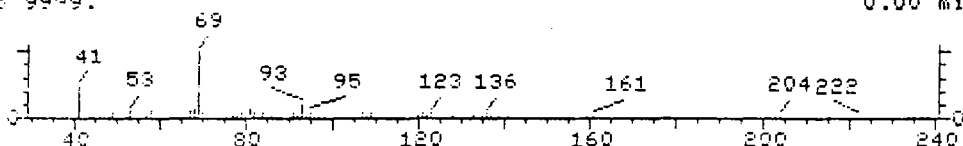
File: A2344 6985.2 30g 12-24-91 6985.2 30g 12-24-91 Scan 1761
Bpk Ab 9999. SUB 36.33 min.



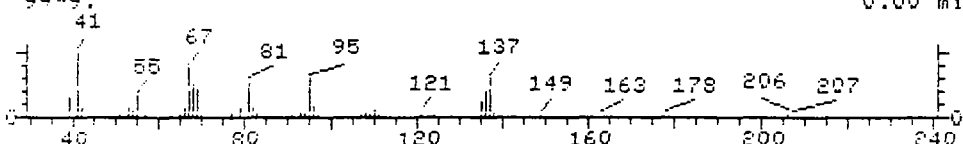
File NBS49K 6,10,14-Hexadecatrien-1-ol, 3,7,11,15-tetramethyl Scan 32962
Bpk Ab 9999. 0.00 min.



File NBS49K 2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl- Scan 22744
Bpk Ab 9999. 0.00 min.



File NBS49K 1,1':3',1''-Tercyclopentane Scan 19860
Bpk Ab 9999. 0.00 min.



UNKNOWN #,3
AREA = 25351.00 TENTATIVE CONCENTRATION IS 4.00

1. 6,10,14-Hexadecatrien-1-ol, 3,7,11,15-tetramethyl-, 292 C20H36O
[R-(E,E)]-
2. 2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl- 222 C15H26O
3. 1,1':3',1''-Tercyclopentane 206 C15H26
4. 3,7,11-Tridecatrienenitrile, 4,8,12-trimethyl- 231 C16H25N
5. Ethanone, 1-(3-hydroxyphenyl)- 136 C8H8O2
6. Phosphonous dichloride, (1,7,7-trimethylbicyclo[2.2.1]hept-2-yl)- 238 C10H17Cl2P

Sample file: A2344 Spectrum #: 1761
Search speed: 1 Tilting option: F No. of ion ranges searched: 44

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	70	36237668	16885	NBS49K	75	72	2	2	76	9	42	12
2.	63*	4602840	3787	NBS49K	60	57	2	0	100	17	30	37
3.	52*	6051407	17051	NBS49K	47	51	3	2	22	17	20	12
4.	52*	6006015	16861	NBS49K	48	63	2	2	100	17	20	13
5.	47*	121711	16611	NBS49K	43	26	1	1	12	25	17	18
6.	43*	74630163	17088	NBS49K	55	64	2	1	50	33	16	26

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

LAB SAMPLE NO.

Lab Name: Environmental Profile Lab NJDEP Cert.# 15526

6985.4 30g

Matrix: Soil

Lab Sample ID: 6985.4 30g

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

Lab File ID: >A2350

Level: (Low/med) Low

Date Received: 12-23-91

Date Extracted: 12-24-91

Extraction: (Sepf/Cont/Sonc) Sonicator

Date Analyzed: 12/26/91

GPC Cleanup: (Y/N) N

Dilution Factor: 30

CONCENTRATION UNITS:

Number of TICs found: 22

ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	57556 1,2-Propanediol	4.85	870	60
2	90437 [1,1'-Biphenyl]-2-ol	21.06	90	76
3	4486593 12,6-Octadiene-4,5-diol	22.26	90	68
4	10544500 Sulfur, mol. (S8)	28.67	1860	95
5	Unknown	31.58	90	
6	Unknown	31.76	90	
7	Unknown	32.01	300	
8	123795 Hexanedioic acid, dioctyl es	32.23	7500	72
9	Unknown	34.19	60	
10	17301303 Undecane, 3,8-dimethyl-	35.12	120	60
11	Unknown	36.03	90	
12	286180 17-Azabicyclo[4.1.0]heptane	36.40	330	26
13	629787 Heptadecane	36.94	540	60
14	Unknown	38.44	90	
15	1569502 13-Penten-2-ol	39.07	390	25
16	Unknown	39.89	870	
17	Unknown	40.02	360	
18	Unknown	40.37	150	
19	52474847 Cholestane, 14-methyl-	40.62	600	30
20	51973274 14-BROMOMETHYL-2,2,5,5-TETRAM	41.09	90	27
21	Unknown	41.35	90	
22	5516665 Aspidospermidin-17-ol, 16-me	41.88	720	56

data file header from : >A2350

Sample: 6985.4 30g 12-24-91 Operator: MARK SUPER GRP. 12/26/91 20:07
 disc : 6985.4 30g 12-24-91 BTL#10
 Sys. #: 2 MS model: 70 SW/HW rev.: IA ALS #: 0
 Method file: BNARUN Tuning file: MTUNE2 No. of extra records: 2
 Source temp.: 0 Analyzer temp.: 280 Transfer line temp.: 0

Chromatographic temperatures : 35. 300. 0. 0. 0.
 Chromatographic times, min. : 3.0 6.9 0.0 0.0 0.0
 Chromatographic rate, deg/min: 8.0 0.0 0.0 .2 0.0

A2350 6985.4 30g 12-24-91 6985.4 30g 12-24-91

35.01 450.0 CLP TIC

slope: .20 Area Reject: 14569. Max Peaks: 22 Bunching: 1
 nslope: 0.00 Results File IA2350 Sorted by Time/Area INT

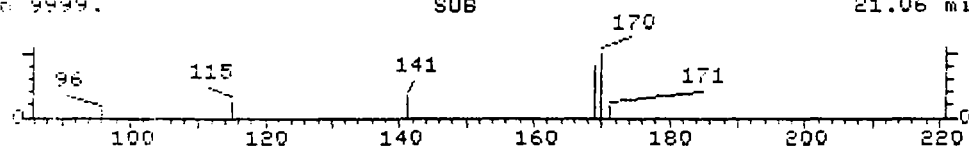
peak #	R.T. min.	First scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	4.85	23	25	37	32222	105552	105552	5.82	3.102
2	21.06	911	919	922	3485	18201	18201	1.00	.535
3	22.26	983	985	990	8399	19914	18191	1.00	.535
4	28.67	1333	1338	1345	98941	468430	431428	23.78	12.681
5	31.58	1489	1498	1500	3058	59256	18647	1.03	.548
6	31.76	1503	1508	1510	4536	54183	22182	1.22	.652
7	32.01	1510	1522	1523	8667	187887	73424	4.05	2.158
8	32.23	1530	1534	1538	644502	1930127	1813988	100.00	53.318
9	34.19	1638	1642	1645	5000	80032	14958	.82	.440
10	35.12	1690	1693	1698	11473	132560	31118	1.72	.915
11	36.03	1740	1743	1748	5648	165080	16630	.92	.489
12	36.40	1759	1763	1767	20542	208106	65058	3.59	1.912
13	36.94	1789	1793	1801	23049	321936	109028	6.01	3.205
14	38.44	1873	1875	1878	5707	99651	18076	1.00	.531
15	39.07	1906	1910	1912	21037	170106	76124	4.20	2.237
16	39.89	1950	1955	1960	31192	321016	173502	9.56	5.100
17	40.02	1960	1962	1972	14314	234457	70111	3.87	2.061
18	40.37	1978	1981	1987	7144	155102	30082	1.66	.884
19	40.62	1988	1995	2003	19918	329300	117398	6.47	3.451
20	41.09	2019	2021	2026	4557	99761	20674	1.14	.608
21	41.35	2032	2035	2038	3085	83690	15686	.86	.461
22	41.88	2058	2064	2073	18091	309236	142144	7.84	4.178

Sum of corrected areas: 3402202.

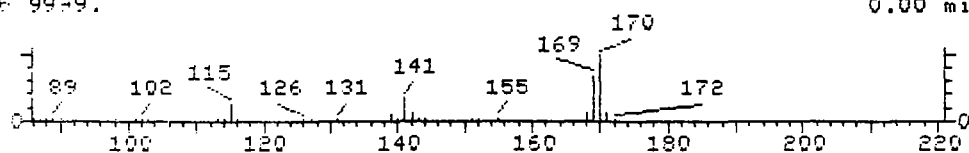
Summary of Unknowns PBM Library Search and Quantitation

Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	145687.	11.38	4.41 - 13.24
2	40.0	149403.	15.09	13.24 - 17.82
3	40.0	232215.	20.54	17.82 - 22.80
4	40.0	280176.	25.07	22.80 - 28.16

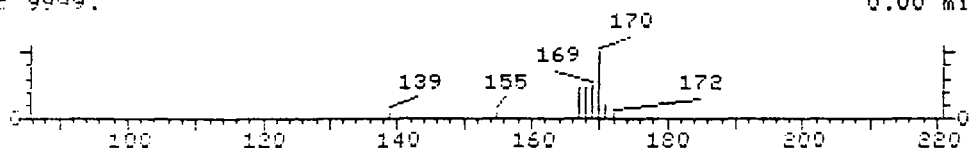
File A2350 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 919
 At 9999. SUB 21.06 min.



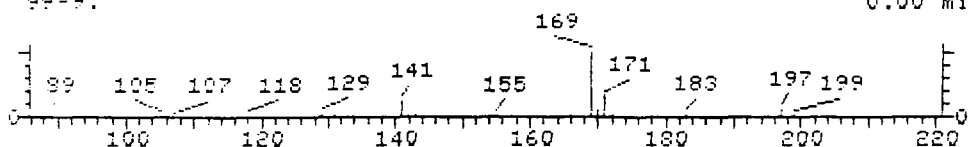
File NBS49K [1,1'-Biphenyl]-2-ol Scan 12774
 At 9999. 0.00 min.



File NBS49K 1-SILAACENAPHTHENE Scan 12746
 At 9999. 0.00 min.



File NBS19K Phenol, 2-chloro-4-(1,1-dimethylpropyl)- Scan 18226
 At 9999. 0.00 min.



UNKNOWN #.2

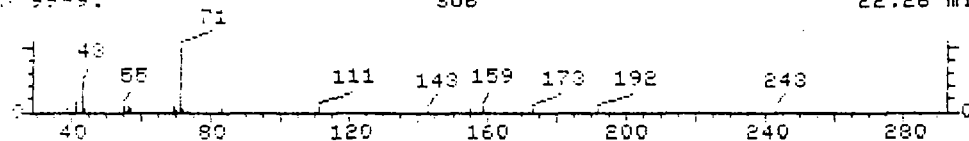
AREA = 18201.00 TENTATIVE CONCENTRATION IS 3.00

- | | |
|---|---------------|
| 1. [1,1'-Biphenyl]-2-ol | 170 C12H10O |
| 2. 1-SILAACENAPHTHENE | 170 C11H10Si |
| 3. Phenol, 2-chloro-4-(1,1-dimethylpropyl)- | 198 C11H15ClO |
| 4. 1H-Dipyrido[2,3-b:3',2'-d]pyrrole | 169 C10H7N3 |

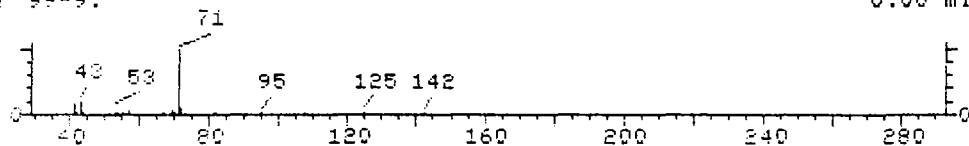
Sample file: >A2350 Spectrum #: 919
 Arch speed: 1 Tilting option: F No. of ion ranges searched: 99

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
76*	90437	22923	NBS49K	50	56	2	0	98	8	45	23
26*	209121	22920	NBS49K	28	49	2	0	96	43	8	14
24*	5323659	22780	NBS49K	43	71	1	0	53	54	7	21
11*	17966006	22751	NBS49K	33	55	1	0	78	64	2	18

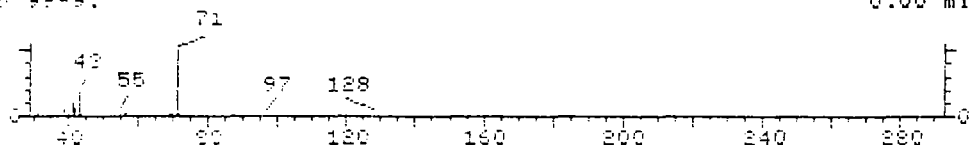
File A2350 6995.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 985
 on Ar 9999. SUB 22.26 min.



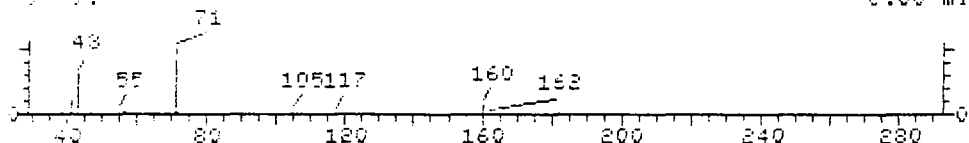
File NBS49K 2,6-Octadiene-4,5-diol Scan 6754
 on Ar 9999. 0.00 min.



File NBS49K Furan, 2-butyltetrahydro- Scan 4348
 on Ar 9999. 0.00 min.



File NBS49K Butanethioic acid, 9-butyl ester Scan 10354
 on Ar 9999. 0.00 min.



UNKNOWN #.3

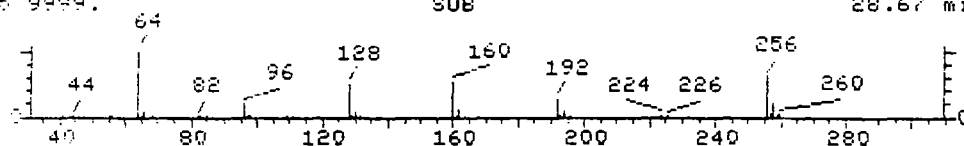
REA = 13191.00 TENTATIVE CONCENTRATION IS 3.00

- | | |
|---|-------------|
| 1. 2,6-Octadiene-4,5-diol | 142 C8H14O2 |
| 2. Furan, 2-butyltetrahydro- | 128 C8H16O |
| 3. Butanethioic acid, 9-butyl ester | 160 C8H16OS |
| 4. Furan, tetrahydro-2-(methoxymethyl)- | 116 C6H12O2 |
| 5. Ethane, isocyanato- | 71 C3H5NO |
| 6. Azetidine, 2-methyl- | 71 C4H9N |

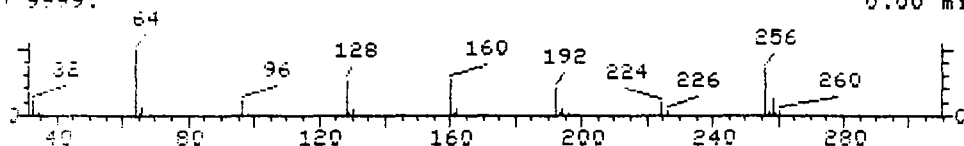
Sample file: >A2350 Spectrum #: 985
 Search speed: 1 Tilting option: F No. of ion ranges searched: 42

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
68*	4486593	4321	NBS49K	55	24	1	0	69	25	30	52
48*	1004291	4301	NBS49K	36	40	1	0	77	25	17	19
43	2432522	4367	NBS49K	40	44	1	0	75	25	17	14
43*	19354279	4294	NBS49K	36	44	3	0	82	25	17	14
43*	109900	4251	NBS49K	24	49	2	0	129	25	17	14
42*	19812498	4253	NBS49K	23	39	2	0	100	25	17	13

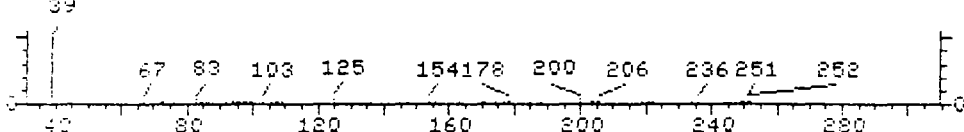
File 03350 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 1338
 0.00 min. 28.67 min.



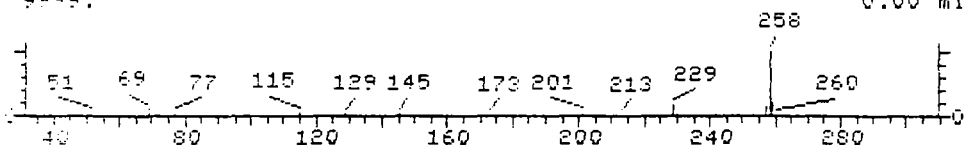
File NBS49K Sulfur, mol. (S8) Scan 28139
 0.00 min.



File NBS49K 4-BROMOMETHYL-2,2,5,5-TETRAMETHYL-3-IMIDAZOLINE-3 Scan 26923
 0.00 min.



File NBS49K 9H-Xanthen-9-one, 1,3,6-trihydroxy-8-methyl- Scan 28305
 0.00 min.



UNKNOWN #.4

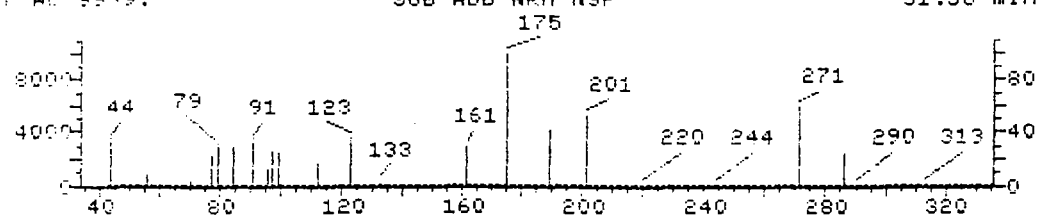
REA = 431428.0 TENTATIVE CONCENTRATION IS 62.00

- | | |
|--|-----------------|
| 1. Sulfur, mol. (S8) | 256 S8 |
| 2. 4-BROMOMETHYL-2,2,5,5-TETRAMETHYL-3-IMIDAZOLINE-3-OXIDE-1-OXILE | 249 C8H14BrN2O2 |
| 3. 9H-Xanthen-9-one, 1,3,6-trihydroxy-8-methyl- | 258 C14H10O5 |
| 4. 6H-Dibenzo[b,d]pyran-6-one, 3,7,9-trihydroxy-1-methyl- | 258 C14H10O5 |

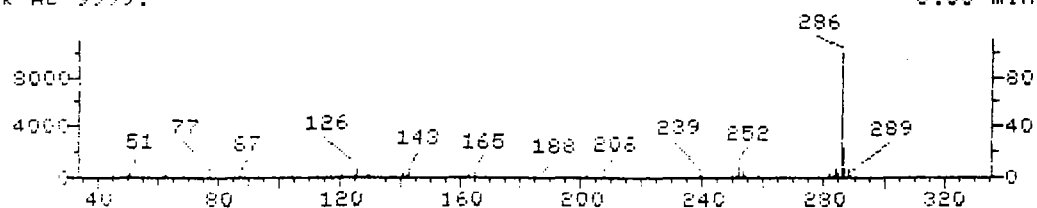
Sample file: >A2350 Spectrum #: 1338
 Scan speed: 1 Tilting option: F No. of ion ranges searched: 45

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
95*	10544500	2930	NBS49K	115	43	2	0	73	4	72	93
40*	51973274	209	NBS49K	78	13	2	-1	13	50	12	49
36*	20716987	34708	NBS49K	51	50	2	4	37	31	12	19
20*	641383	34705	NBS49K	40	77	1	1	25	52	5	15

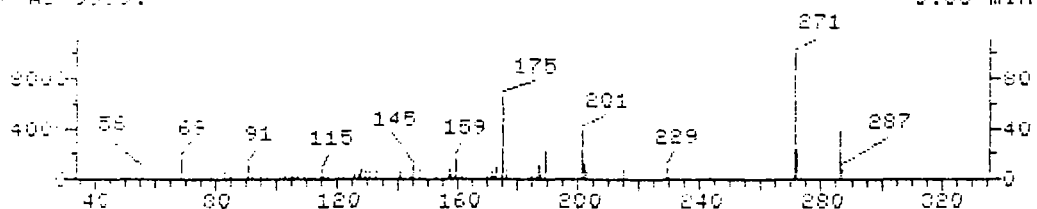
File 32250 5985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 1498
Bp: At 9549. SUB ADD NRM NSP 31.58 min.



File NBS49K Benzoflthiophene, 1,3-diphenyl- Scan 32225
Bp: At 9999. 0.00 min.



File NBS49K 2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-octahydro-4b. Scan 32236
Bp: At 9999. 0.00 min.



UNKNOWN #.5

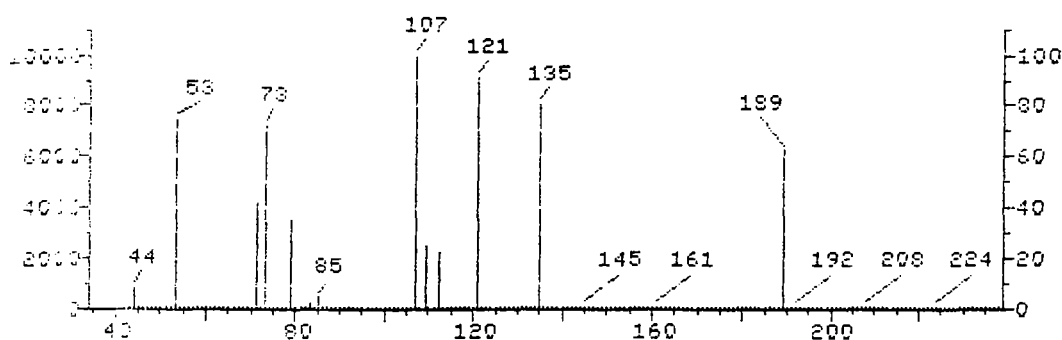
AREA = 18647.00 TENTATIVE CONCENTRATION IS 3.00

1. Benzoflthiophene, 1,3-diphenyl- 286 C20H14S
2. 2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-octahydro-4b,8,8a-trimethyl-1-(1-methylethyl)-, (4bS-trans)- 286 C20H30O

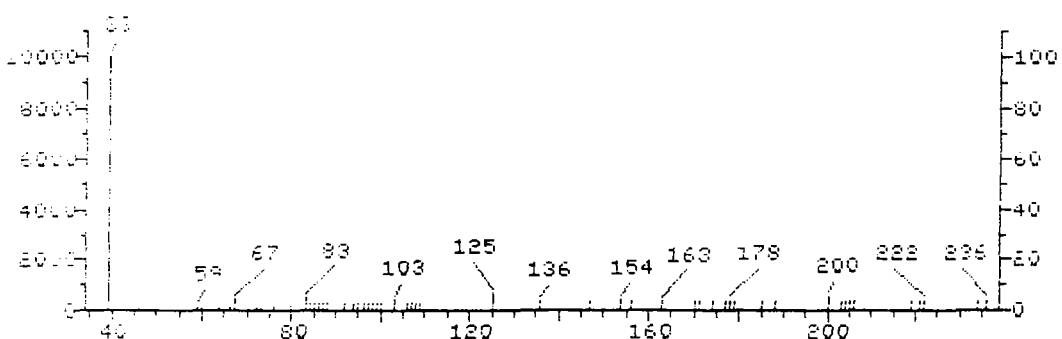
Sample file: >A2350 Spectrum #: 1498
Search speed: 1 Tilting option: F No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	25*	18587396	37993	NBS49K	48	62	2	2	46	45	8	13
2.	20*	511159	36394	NBS49K	37	124	3	0	60	51	5	13

File: A2350 6995.4 30g 12-24-91 6995.4 30g 12-24-91 Scan 1508
 At: 9999. SUB ADD NRM NSP 31.76 min.



File: NBS49K 4-BROMOMETHYL-2,2,5,5-TETRAMETHYL-3-IMIDAZOLINE-3 Scan 26923
 At: 9999. 0.00 min.



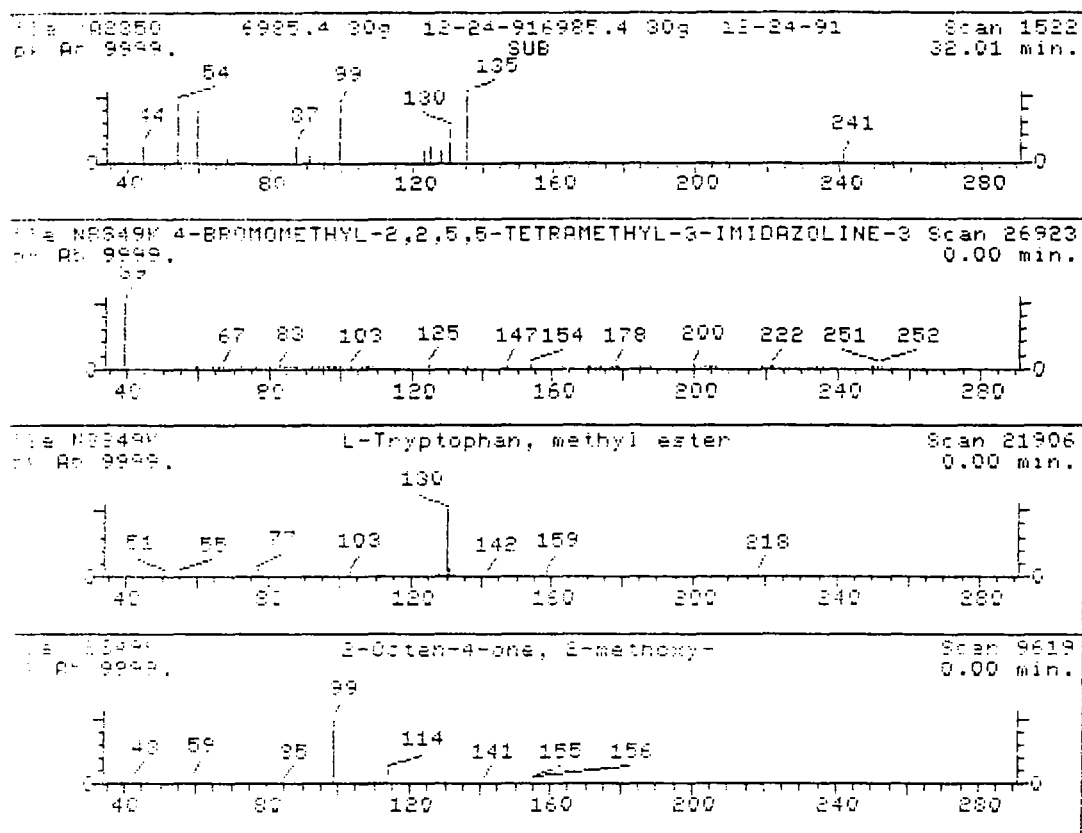
UNKNOWN #.6

AREA = 22182.00 TENTATIVE CONCENTRATION IS 3.00

1. 4-BROMOMETHYL-2,2,5,5-TETRAMETHYL-3-IMIDAZOLINE-3-OX 249 C8H14BrN2O2
 IDE-1-OXILE

Sample file: >A2350 Spectrum #: 1508
 Search speed: 1 Tilting option: F No. of ion ranges searched: 47

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
37	51973274	209	NBS49K	77	34	3	3	33	29	14	14



UNKNOWN #17

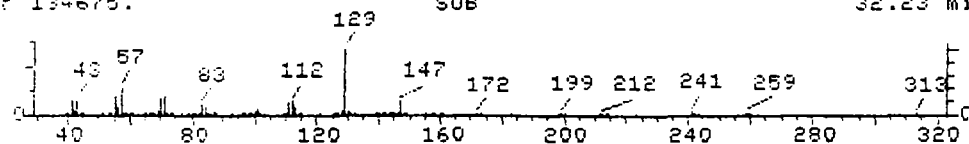
REA = 73424.00 TENTATIVE CONCENTRATION IS 10.00

- | | | |
|--|-----|-------------|
| 1. 4-BROMOMETHYL-2,2,5,5-TETRAMETHYL-3-IMIDAZOLINE-3-OXIDE-1-OXIDE | 249 | C8H14BrN2O2 |
| 2. L-Tryptophan, methyl ester | 218 | C12H14N2O2 |
| 3. 2-Octen-4-one, 2-methoxy- | 156 | C9H16O2 |
| 4. 1,4-Dioxaspiro[4.5]decane, 8-chloro- | 176 | C8H13ClO2 |
| 5. Mercury, diethyl- | 260 | C4H10Hg |
| 6. Tryptophan, 1-(1,1-dimethylallyl)-, L- | 272 | C16H20N2O2 |

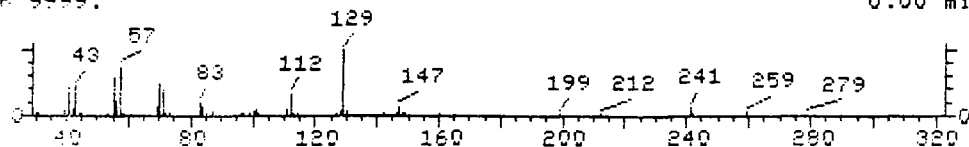
sample file: A2350 Spectrum #: 1522
 arc speed: 1 Tilting option: F No. of ion ranges searched: 47

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
88*	51973274	209	NBS49K	101	10	1	2	29	34	50	92
31*	4299701	15667	NBS49K	44	43	1	3	49	45	8	19
29*	24985486	9783	NBS49K	42	44	1	1	76	44	8	17
27*	55724033	9836	NBS49K	43	49	2	2	67	44	8	15
26*	627441	71	NBS49K	40	60	2	3	33	43	8	13
25*	20880686	15702	NBS49K	44	78	2	2	50	47	7	12

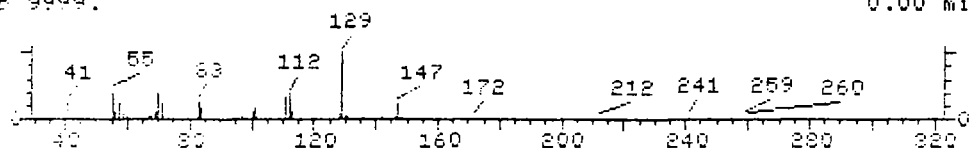
File: 02350 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 1534
 Ref: 134675. SUB 32.23 min.



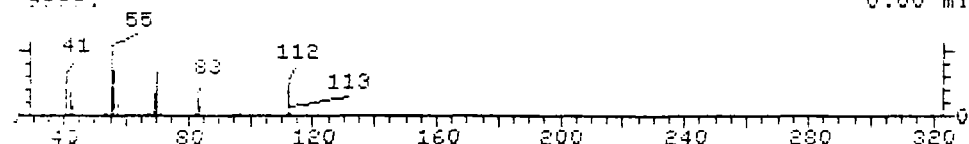
File: NBS49K Hexanedioic acid, dioctyl ester Scan 40566
 Ref: 9999. 0.00 min.



File: NBS49K HEXANEDIOIC ACID, MONO(2-ETHYLHEXYL)ESTER Scan 28340
 Ref: 9999. 0.00 min.



File: 134675 2-Octene Scan 2364
 Ref: 9999. 0.00 min.



UNKNOWN # 8

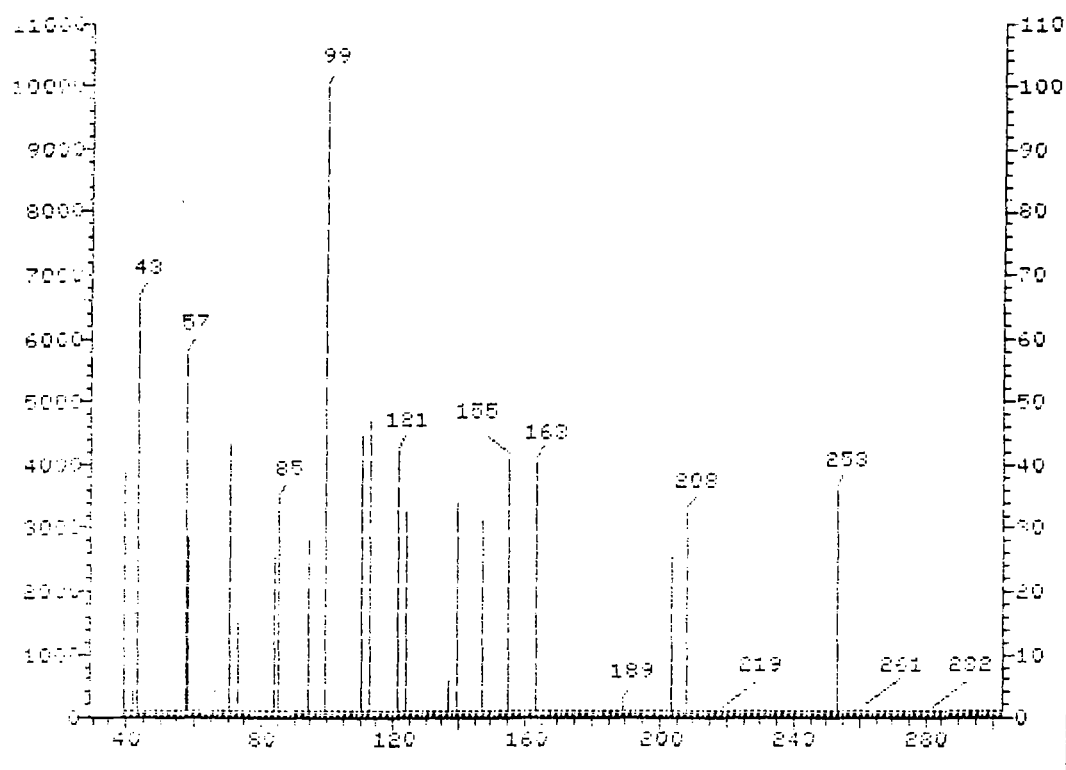
REA = 1813988. TENTATIVE CONCENTRATION IS 250.00

- | | |
|--|--------------|
| 1. Hexanedioic acid, dioctyl ester | 370 C22H42O4 |
| 2. HEXANEDIOIC ACID, MONO(2-ETHYLHEXYL)ESTER | 258 C14H26O4 |
| 3. 2-Octene | 112 C8H16 |
| 4. 2,6-Piperazinedione, monooxime | 129 C4H7N3O2 |

Sample file: >A2350 Spectrum #: 1534
 Search speed: 1 Tilting option: F No. of ion ranges searched: 43

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
72	123795	15479	NBS49K	107	38	0	0	43	40	28	76
54	4337659	15463	NBS49K	96	49	1	-2	55	38	19	45
49*	111671	12035	NBS49K	44	42	0	-4	33	40	19	40
26*	56700846	15393	NBS49K	23	99	3	0	100	37	10	12

File: A2350 4995.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 1642
 At: 94.09. SUB ADD NRM NSP 34.19 min.



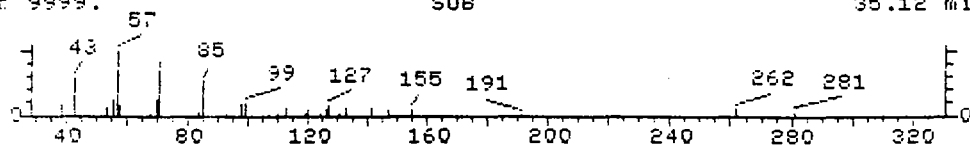
UNKNOWN #.9

EA = 14958.00 TENTATIVE CONCENTRATION IS 2.00

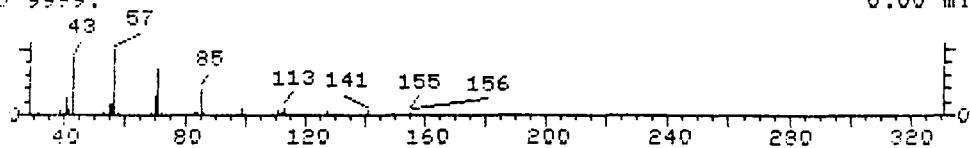
sample file: >A2350 Spectrum #: 1642

data base entries were retrieved.

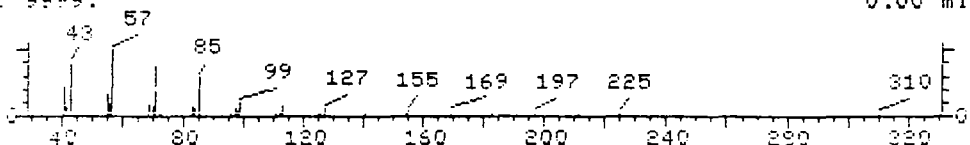
File A2350 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 1693
 Bp At 9999. SUB 35.12 min.



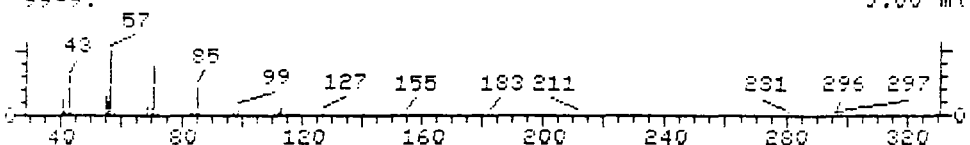
File NBS49K Undecane, 3,8-dimethyl- Scan 15604
 Bp At 9999. 0.00 min.



File NBS49K Docosane Scan 35051
 Bp At 9999. 0.00 min.



File NBS49K Heptadecane, 2,6,10,15-tetramethyl- Scan 33486
 Bp At 9999. 0.00 min.



UNKNOWN #,10

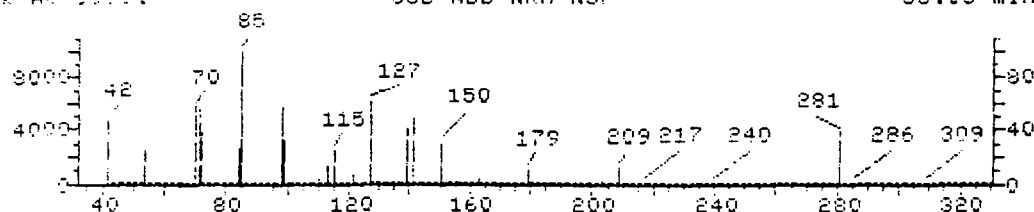
AREA = 31118.00 TENTATIVE CONCENTRATION IS 4.00

- | | |
|--|------------|
| 1. Undecane, 3,8-dimethyl- | 184 C13H28 |
| 2. Docosane | 310 C22H46 |
| 3. Heptadecane, 2,6,10,15-tetramethyl- | 296 C21H44 |
| 4. Tridecane, 6-propyl- | 226 C16H34 |
| 5. Dotriacontane | 450 C32H66 |
| 6. Hexadecane, 7-methyl- | 240 C17H36 |

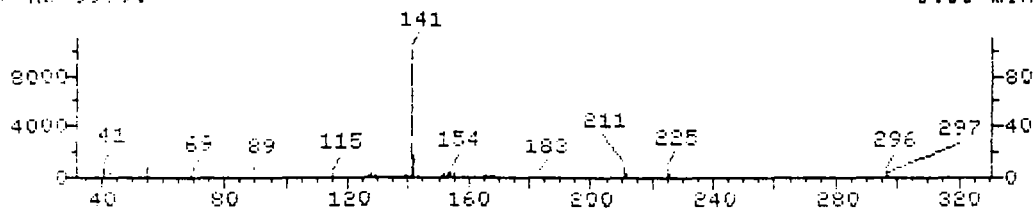
Sample file: >A2350 Spectrum #: 1693
 Search speed: 1 Tilting option: F No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	60	17301303	6766	NBS49K	69	39	1	-3	72	11	30	14
2.	59*	629970	6886	NBS49K	60	89	2	1	100	25	27	31
3.	59*	54833486	6878	NBS49K	52	83	1	0	100	22	27	35
4.	43*	55045108	6834	NBS49K	38	91	2	0	76	25	17	14
5.	43	544854	6910	NBS49K	96	69	3	1	100	23	17	14
6.	41*	26730201	4433	NBS49K	55	69	1	1	98	43	14	35

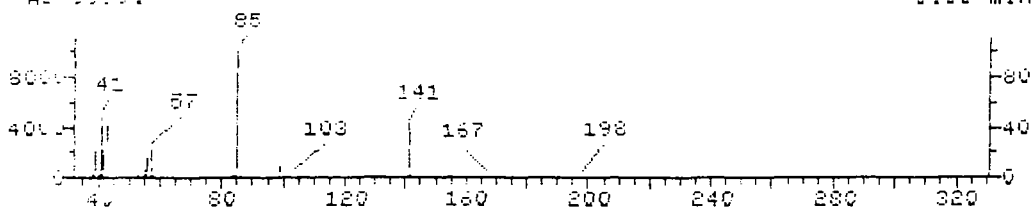
File 02350 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 1743
 ok At 9999. SUB ADD NRM NSP 36.03 min.



File NBS49K Naphthalene, 2,3-dihexyl- Scan 33432
 ok At 9999. 0.00 min.



File NBS49K Aluminum, tris(2-methylpropyl)- Scan 18318
 ok At 9999. 0.00 min.



UNKNOWN # 11

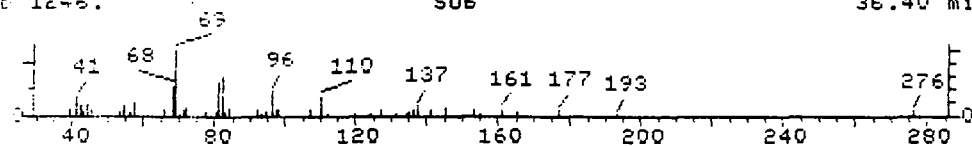
RFA = 16630.00 TENTATIVE CONCENTRATION IS 3.00

- | | |
|------------------------------------|--------------|
| 1. Naphthalene, 2,3-dihexyl- | 296 C22H32 |
| 2. Aluminum, tris(2-methylpropyl)- | 198 C12H27Al |

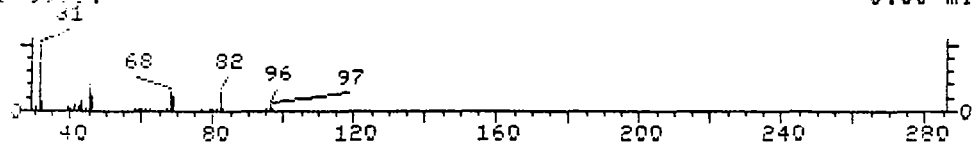
Sample file: >A2350 Spectrum #: 1743
 Arch speed: 1 Tilting option: F No. of ion ranges searched: 46

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
24*	74646303	17988	NBS49K	38	60	2	3	29	43	8	12
11*	100992	17926	NBS49K	28	81	3	0	100	64	2	13

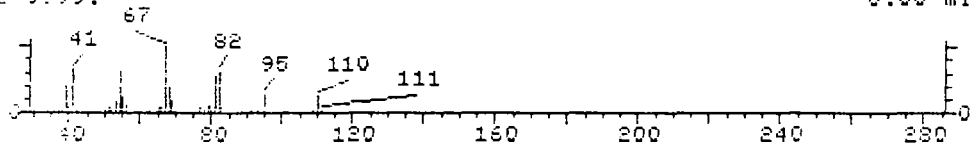
File: 003350 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 1763
 100% At 1248. SUB 36.40 min.



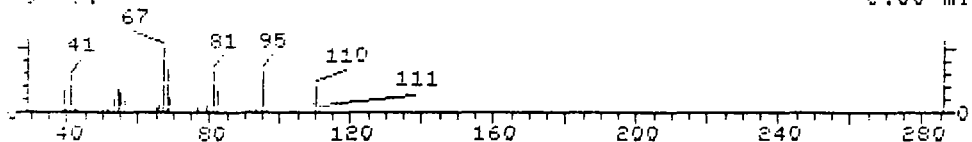
File: NBS49K 7-Azabicyclo[4.1.0]heptane Scan 1067
 100% At 9999. 0.00 min.



File: NBS49K Bicyclo[5.1.0]octane Scan 2126
 100% At 9999. 0.00 min.



File: NBS49K Cycloheptene, methyl- Scan 2112
 100% At 9999. 0.00 min.



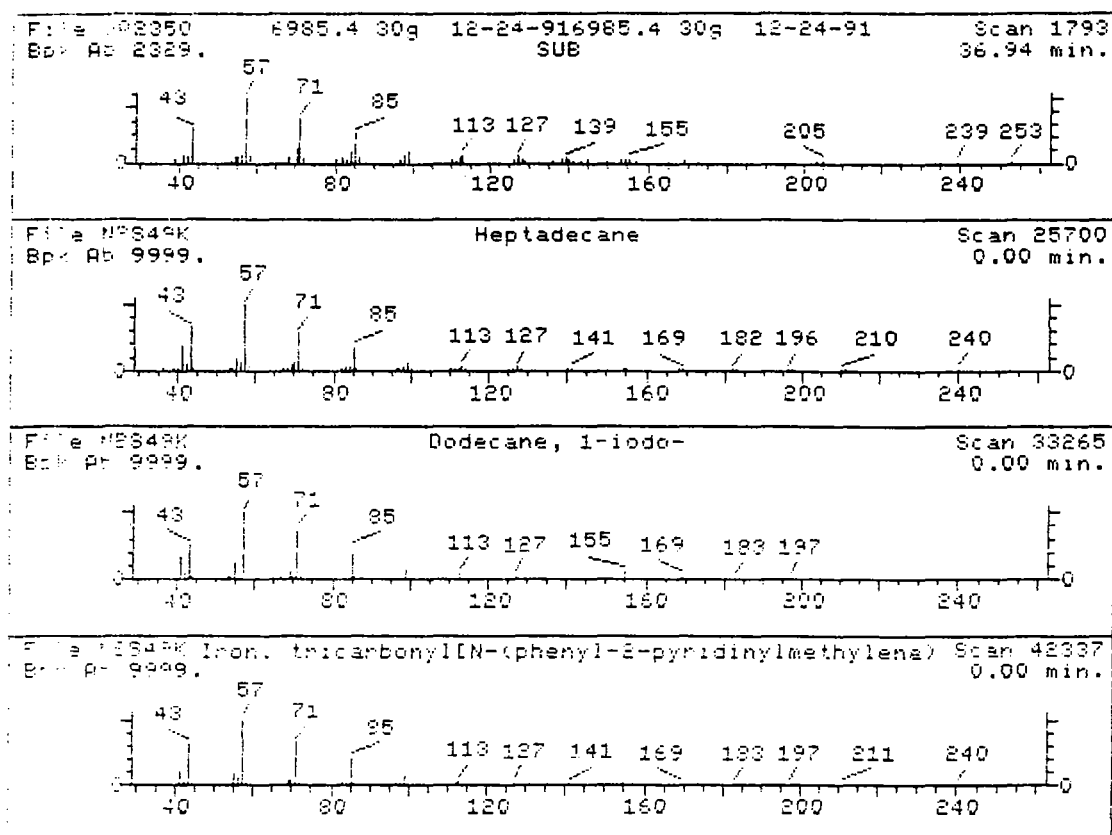
UNKNOWN #,12

REA = 55058.00 TENTATIVE CONCENTRATION IS 11.00

- | | |
|-------------------------------|-------------------------------------|
| 1. 7-Azabicyclo[4.1.0]heptane | 97 C ₆ H ₁₁ N |
| 2. Bicyclo[5.1.0]octane | 110 C ₈ H ₁₄ |
| 3. Cycloheptene, methyl- | 110 C ₈ H ₁₄ |
| 4. Oxazole | 69 C ₃ H ₃ NO |

Sample file: >A2350 Spectrum #: 1763
 Search speed: 1 Tilting option: F No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	26*	286180	5861	NBS49K	24	72	2	0	168	45	8	14
2.	20*	286431	5881	NBS49K	37	77	3	0	91	54	5	13
3.	11*	55308208	11691	NBS49K	36	79	3	0	68	65	2	13
4.	11*	288426	3733	NBS49K	23	22	2	0	100	64	2	13



UNKNOWN #.13

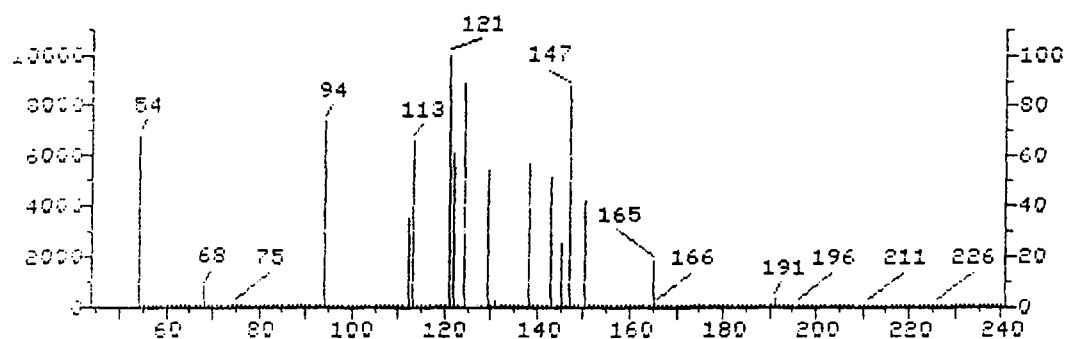
AREA = 109028.0 TENTATIVE CONCENTRATION IS 18.00

- | | |
|--|------------------|
| 1. Heptadecane | 240 C17H36 |
| 2. Dodecane, 1-iodo- | 296 C12H25I |
| 3. Iron, tricarbonyl[N-(phenyl-2-pyridinylmethylene)benzenamine-N,N']- | 398 C21H14FeN2O3 |
| 4. Tetracosane | 338 C24H50 |
| 5. Hexane, 2,3,4-trimethyl- | 128 C9H20 |
| 6. Heptane, 2,4-dimethyl- | 128 C9H20 |

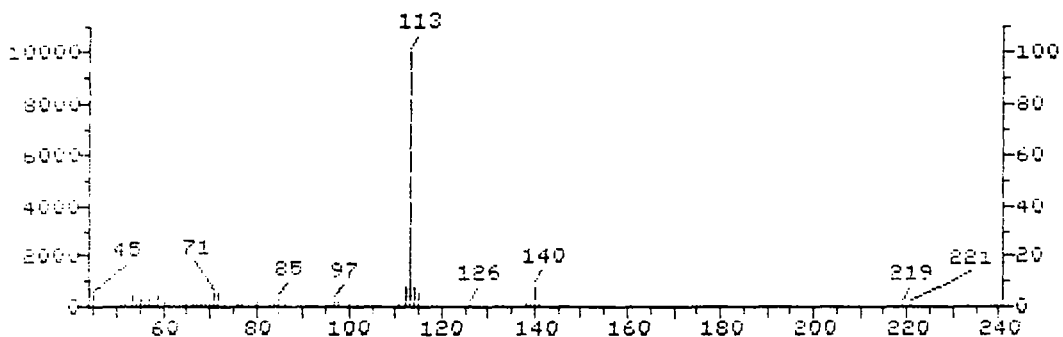
Sample file: H2350 Spectrum #: 1793
Search speed: 1 Tilting option: F No. of ion ranges searched: 44

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_10
1.	60	629787	6846	NBS49K	69	52	2	0	100	14	30	15
2.	48	4292197	6876	NBS49K	76	53	2	0	95	21	17	19
3.	43	74764117	6907	NBS49K	67	70	2	0	100	21	17	14
4.	41	646311	6891	NBS49K	60	85	2	0	78	21	17	12
5.	29*	921471	6601	NBS49K	34	56	2	0	111	42	8	17
6.	25*	2213232	6599	NBS49K	26	61	3	0	141	42	8	13

File: A2350 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 1875
 Ref: Ab 9999. SUB ADD NRM NSP 38.44 min.



File: NBS49K Pyrrolo[1,2-b]isothiazole, 5,6-dihydro-2-methyl-, Scan 22004
 Ref: Ab 9999. 0.00 min.



UNKNOWN #.14

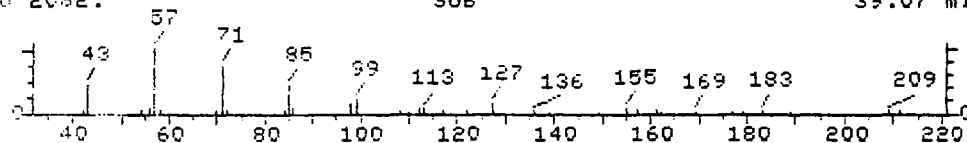
AREA = 18076.00 TENTATIVE CONCENTRATION IS 3.00

Pyrrolo[1,2-b]isothiazole, 5,6-dihydro-2-methyl-, hy 219 C7H10BrNS
 drebromide

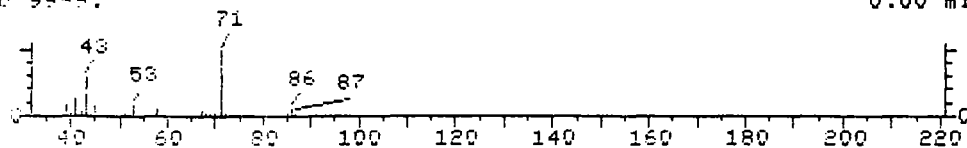
Sample file: >A2350 Spectrum #: 1875
 Search speed: 1 Tilting option: F No. of ion ranges searched: 61

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	11*	69796072	12476	NBS49K	48	59	1	1	64	64	2 19

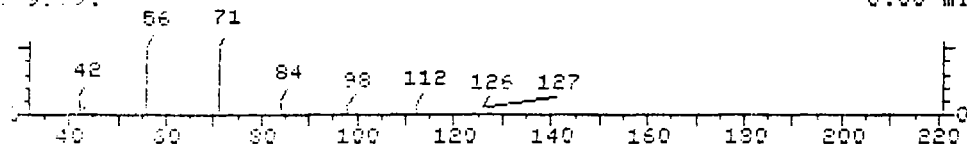
File A2350 6995.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 1910
 PK Ab 2052. SUB 39.07 min.



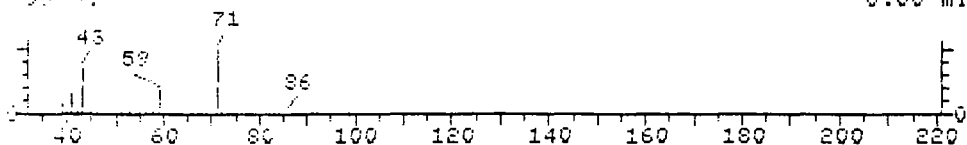
File NBS49K 3-Penten-2-ol Scan 670
 PK Ab 9999. 0.00 min.



File NBS49K Methylamine, N-(1-methylhexylidene)- Scan 4177
 PK Ab 9999. 0.00 min.



File NBS49K 3-Buten-2-ol, 2-methyl- Scan 675
 PK Ab 9999. 0.00 min.



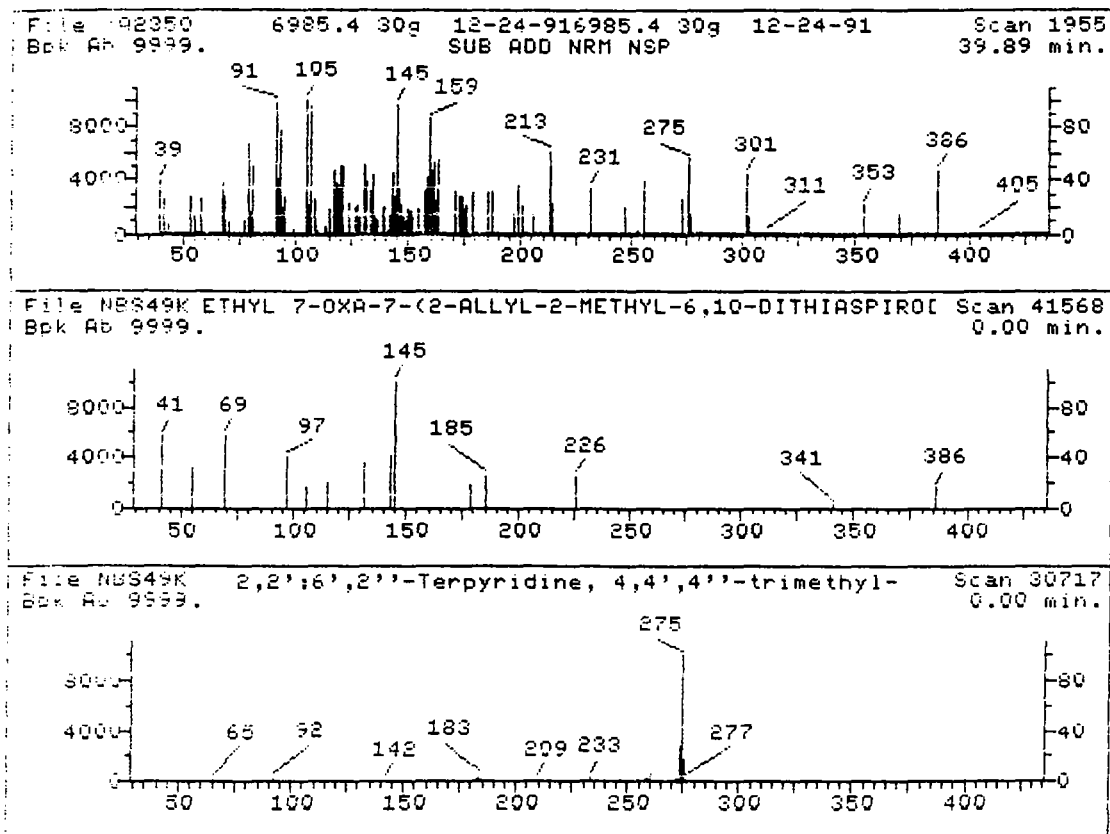
UNKNOWN #.15

REA = 76124.00 TENTATIVE CONCENTRATION IS 13.00

- | | |
|---|---------------|
| 1. 3-Penten-2-ol | 86 C5H10O |
| 2. Methylamine, N-(1-methylhexylidene)- | 127 C8H17N |
| 3. 3-Buten-2-ol, 2-methyl- | 86 C5H10O |
| 4. Butanoic acid, 4-nitrophenyl ester | 209 C10H11NO4 |
| 5. Butyric acid, ester with p-hydroxybenzonitrile | 189 C11H11NO2 |

Sample file: A2350 Spectrum #: 1910
 Search speed: 1 Tilting option: F No. of ion ranges searched: 48

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_10
25*	1569502	4257	NBS49K	31	56	3	0	74	50	7	13
20*	22058715	4298	NBS49K	23	65	3	0	74	54	5	12
15*	115184	4258	NBS49K	29	60	3	0	63	56	3	13
15*	2635849	4418	NBS49K	29	69	2	0	62	56	3	14
15*	29052106	4405	NBS49K	23	70	3	0	74	57	3	12



UNKNOWN #,16

AREA = 173502.0 TENTATIVE CONCENTRATION IS 29.00

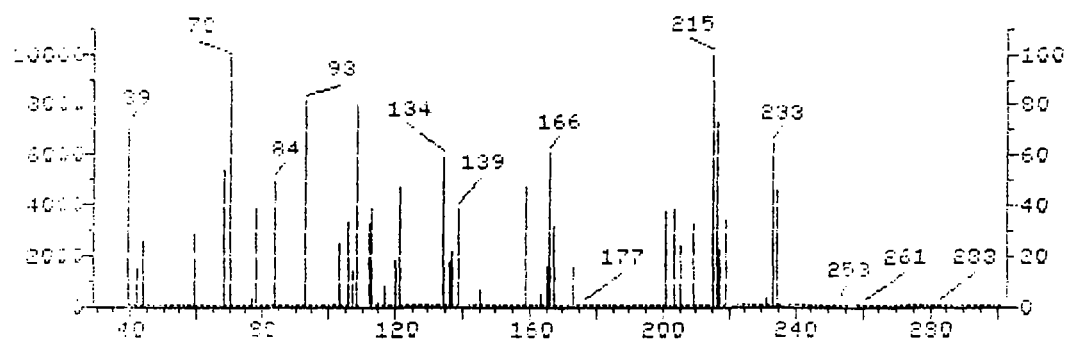
1. ETHYL 7-OXA-7-(2-ALLYL-2-METHYL-6,10-DITHIASPIRO[1.5]DECAN-1-YL)HEPTANOATE 386 C20H34O3S2
2. 2,2':6',2''-Terpyridine, 4,4',4''-trimethyl- 275 C18H17N3

Sample file: >A2350 Spectrum #: 1955
Search speed: 1 Tilting option: F No. of ion ranges searched: 43

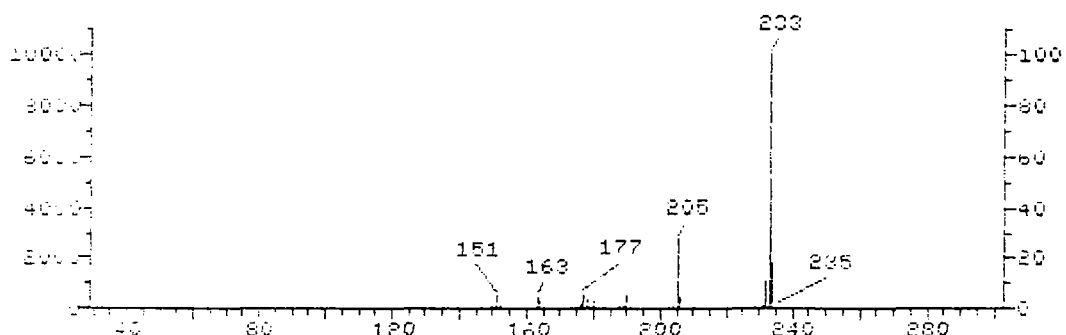
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	31*	92640658	44826	NBS49K	70	44	3	-1	81	45	8	19
2.	25*	33354755	36846	NBS49K	52	57	1	-1	30	49	7	19

10

File # 423350 6985.4 30g 12-24-91 12-24-91 Scan 1962
 Exp. At 9999. SUB ADD NRM NSP 40.02 min.



File # NBS49K 1H-Phenanthro[9,10-d]imidazol-2-amine Scan 24513
 Exp. At 9999. 0.00 min.



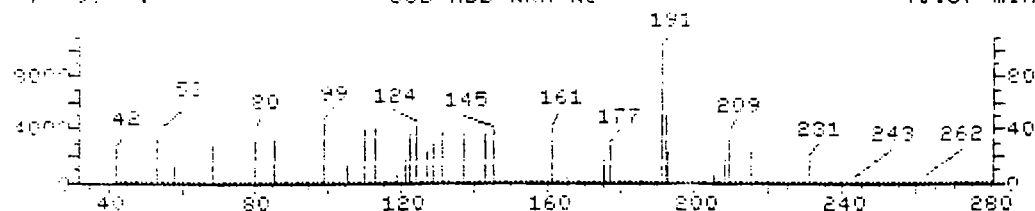
UNKNOWN #.17
 AREA = 70111.00 TENTATIVE CONCENTRATION IS 12.00

1. 1H-Phenanthro[9,10-d]imidazol-2-amine 233 C15H11N3

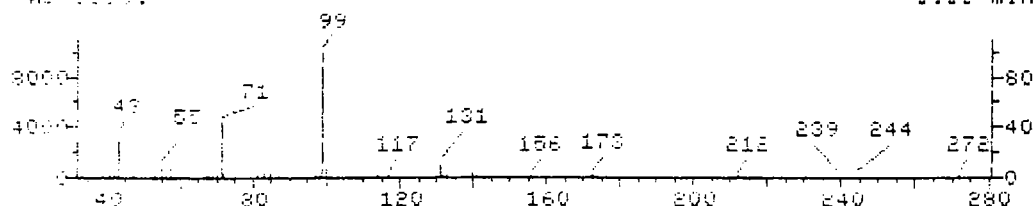
Sample file: 423350 Spectrum #: 1962
 Search speed: 1 Tilting option: F No. of ion ranges searched: 43

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_10
1.	26*	37052134	32302	NBS49K	46	53	1	-1	37	50	7 12

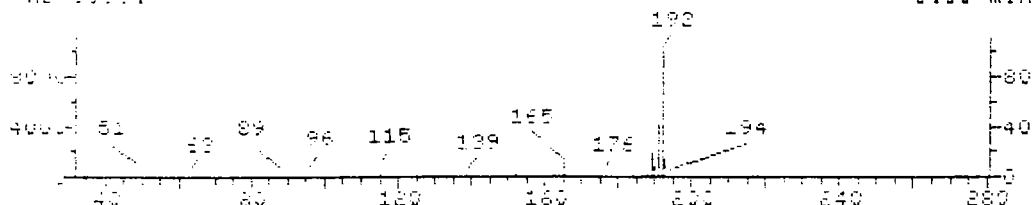
File: 02350 0905.4 30s 18-24-91:925.4 30s 18-24-91 Scan 1981
 Sp. Ad: 9942. SUB ADD NRM NBP 40.37 min.



File: NBS49K Hexanethiolic acid, S-decyl ester Scan 30316
 Sp. Ad: 9999. 0.00 min.



File: NBS49K 1H-Indene, 2-phenyl- Scan 17079
 Sp. Ad: 9999. 0.00 min.



UNKNOWN # 18

AREA = 30082.00 TENTATIVE CONCENTRATION 13 5.00

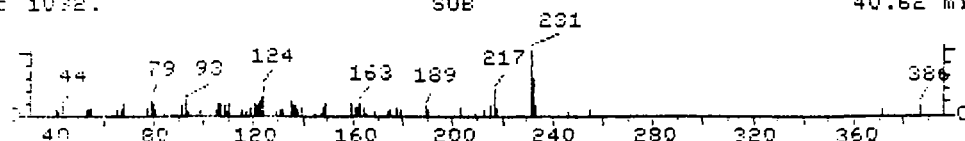
1. Hexanethiolic acid, S-decyl ester
2. 1H-Indene, 2-phenyl-

272 C16H32O3
 192 C15H12

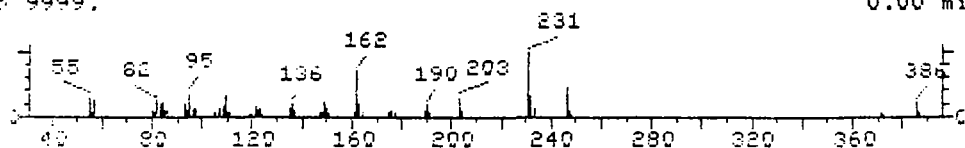
Sample file: 02350 Spectrum #: 1981
 Search speed: 1 Tilting options: F No. of ion ranges searched: 50

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IQ
1.	15*	2432812	9936	NBS49K	45	52	2	1	32	57	3	17
2.	12*	4565480	26335	NBS49K	48	43	1	1	41	61	2	28

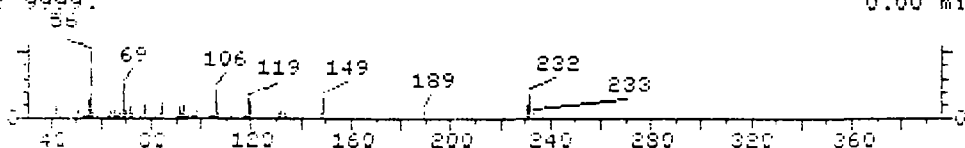
FI # 199950 6995.4 30g 12-24-91 6995.4 30g 12-24-91 Scan 1995
 BP: Ab 1092. SUB 40.62 min.



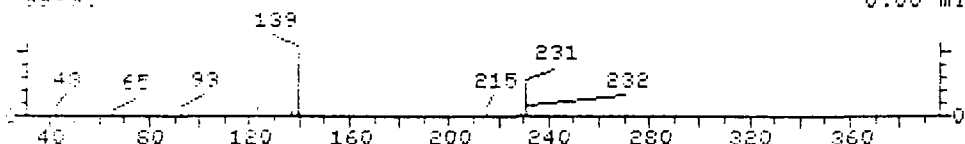
FI # NBS49K Cholestane, 14-methyl- Scan 41671
 BP: Ab 9999. 0.00 min.



FI # NBS49K 3,4,4,6-TETRAMETHYL-2-PHENYLIMINOTETRAHYDRO-1,3-O Scan 24382
 BP: Ab 9999. 0.00 min.



FI # NBS49K 3-Furancarboxamide, 2-(hydroxymethyl)-5-methyl-N- Scan 24201
 BP: Ab 9999. 0.00 min.



UNKNOWN #.19

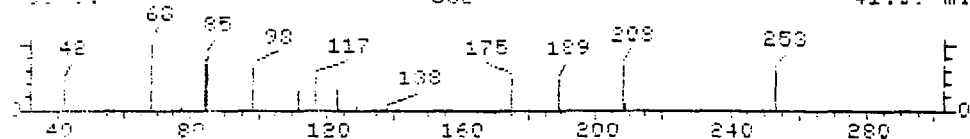
AREA = 117398.0 TENTATIVE CONCENTRATION IS 20.00

- | | | |
|---|-----|-----------|
| 1. Cholestane, 14-methyl- | 386 | C28H50 |
| 2. 3,4,4,6-TETRAMETHYL-2-PHENYLIMINOTETRAHYDRO-1,3-OXAZINE | 232 | C14H20N2O |
| 3. 3-Furancarboxamide, 2-(hydroxymethyl)-5-methyl-N-phenyl- | 231 | C13H13NO3 |
| 4. Furan, 2-[(2-ethoxy-3,4-dimethyl-2-cyclohexen-1-ylidene)methyl]- | 232 | C15H20O2 |

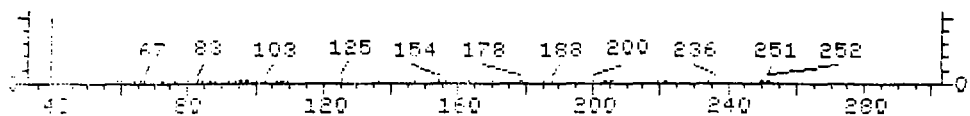
Sample file: >A2350 Spectrum #: 1995
 Search speed: 1 Tilting option: F No. of ion ranges searched: 45

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1	30*	52474847	44871	NBS49K	58	141	3	1	100	39	10	16
2	20*	53004298	32194	NBS49K	63	86	3	-4	73	55	5	14
3	15*	34356962	32062	NBS49K	23	90	3	0	204	60	3	12
4	13*	55162497	32205	NBS49K	64	82	3	0	44	62	3	31

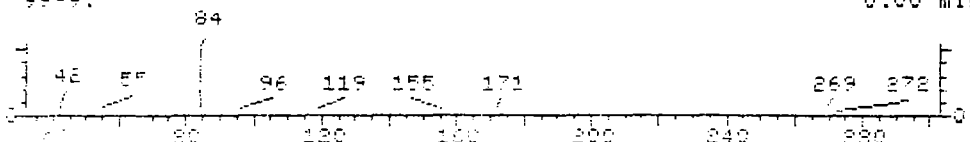
File: NBS49K 4-BROMOMETHYL-2,2,5,5-TETRAMETHYL-3-IMIDAZOLINE-3-Scan 2021
 Exp. P: 9999, 41.09 min.



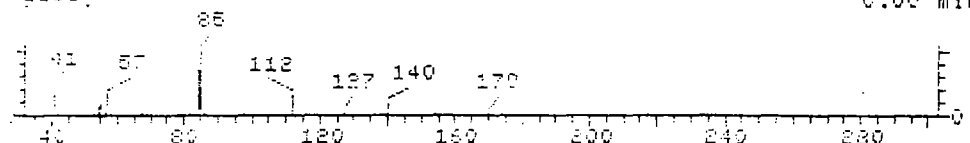
File: NBS49K 4-BROMOMETHYL-2,2,5,5-TETRAMETHYL-3-IMIDAZOLINE-3-Scan 26923
 Exp. P: 9999, 0.00 min.



File: NBS49K Pyrrolidine, 1-[2-(4-bromophenoxy)ethyl]-Scan 29969
 Exp. P: 9999, 0.00 min.



File: NBS49K Ethylamine, N-(1-butylpentylidene)-Scan 12479
 Exp. P: 9999, 0.00 min.



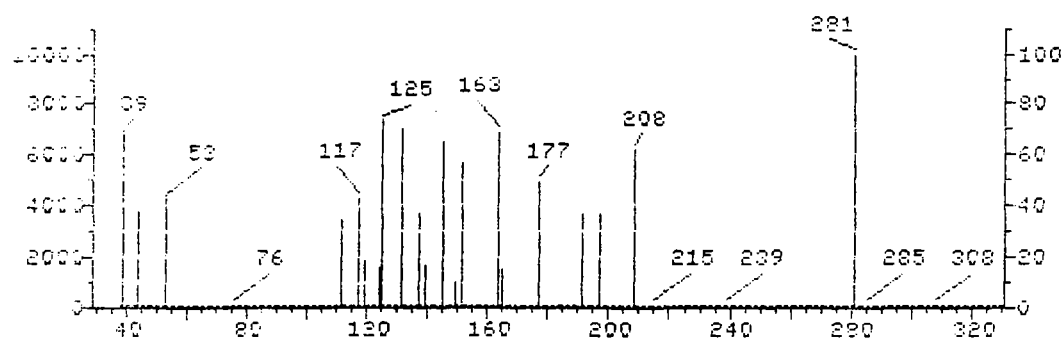
UNKNOWN #.20
 AREA = 20574.00 TENTATIVE CONCENTRATION IS 3.00

- | | |
|--|-----------------|
| 1. 4-BROMOMETHYL-2,2,5,5-TETRAMETHYL-3-IMIDAZOLINE-3-OXIDE-1-OXIDE | 249 C8H14BrN2O2 |
| 2. Pyrrolidine, 1-[2-(4-bromophenoxy)ethyl]- | 269 C12H16BrNO |
| 3. Ethylamine, N-(1-butylpentylidene)- | 189 C11H23N |
| 4. Pyrrolidine, 3-methyl- | 85 C5H11N |
| 5. 4-Heptenal, (Z)- | 112 C7H12O |

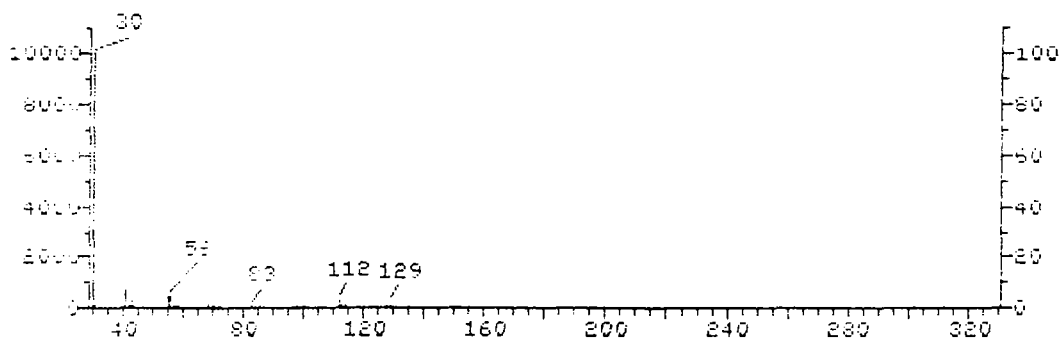
Sample file: JAI350 Spectrum #: 2021
 Search speed: 1 Tilting option: F No. of ion ranges searched: 48

	Prod.	CAS #	CON #	ROOT	K	DK	#PLG	TILT	%	CON	C_I	R_IU
1.	27*	51973274	209	NBS49K	101	10	1	1	26	71	6	92
2.	12*	1081738	6478	NBS49K	52	38	1	-1	71	64	2	27
3.	11*	10599823	6722	NBS49K	37	64	2	0	64	61	2	14
4.	11*	34375898	6516	NBS49K	21	59	1	0	368	63	2	14
5.	11*	6728310	3589	NBS49K	23	89	3	0	143	64	2	12

File: A2350 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 2035
 Ref: 9999. SUB ADD NRM NSP 41.35 min.



File: NBS49K 1-Hexanamine, 2-ethyl- Scan 4538
 Ref: 9999. 0.00 min.



UNKNOWN #.21
 AREA = 15686.00 TENTATIVE CONCENTRATION IS 3.00

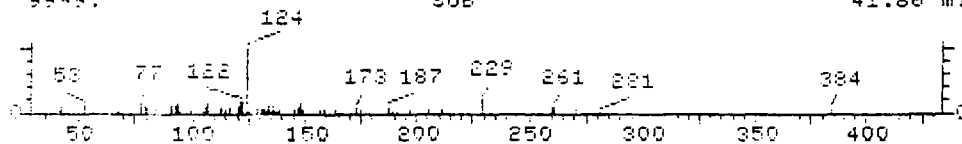
1. 1-Hexanamine, 2-ethyl-

129 C8H19N

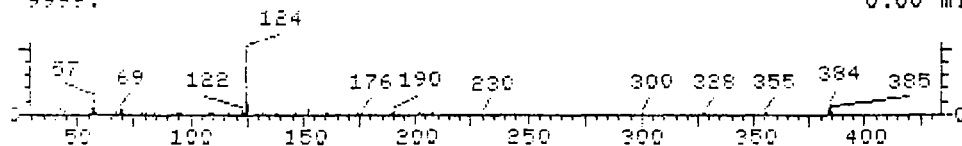
Sample file: A2350 Spectrum #: 2035
 Search speed: 1 Tilting option: F No. of ion ranges searched: 42

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	12*	104756	102	NBS49K	50	14	2	1	29	63	2 25

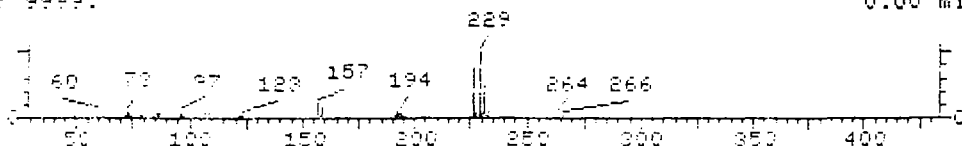
File: 002050 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 2064
 Sp. At: 9999. SUB 41.88 min.



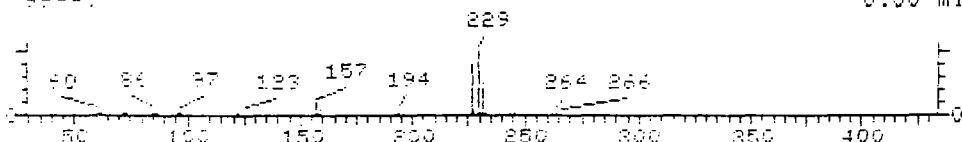
File: NBS49K Aspidospermidin-17-ol, 16-methoxy-1-(1-oxopropyl) Scan 41458
 Sp. At: 9999. 0.00 min.



File: NBS49K Benzene, 2,4-dichloro-1-(trichloromethyl)- Scan 28805
 Sp. At: 9999. 0.00 min.



File: NBS49K Benzene, 1,2-dichloro-4-(trichloromethyl)- Scan 28806
 Sp. At: 9999. 0.00 min.



UNKNOWN # 22

AREA = 142144.0 TENTATIVE CONCENTRATION IS 24.00

- | | |
|--|----------------|
| 1. Aspidospermidin-17-ol, 16-methoxy-1-(1-oxopropyl)- | 384 C23H32N2O3 |
| 2. Benzene, 2,4-dichloro-1-(trichloromethyl)- | 262 C7H3Cl5 |
| 3. Benzene, 1,2-dichloro-4-(trichloromethyl)- | 262 C7H3Cl5 |
| 4. 4H-Pyran-4-one, 2,6-dimethyl- | 124 C7H8O2 |
| 5. Cyclopropane, 1,1-dimethyl-2-(2-methyl-1-propenyl)- | 124 C8H16 |
| 6. 2-CYCLOPROPYLTHIOPHENE | 124 C7H8S |

Sample file: >A2350 Spectrum #: 2064
 Search speed: 1 Tilting option: F No. of ion ranges searched: 42

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	58*	5516665	44725	NBS49K	78	60	1	1	82	50	14	66
2.	39*	13014181	31912	NBS49K	58	68	3	1	29	28	14	16
3.	30*	13014249	31913	NBS49K	58	69	3	2	42	36	10	16
4.	27*	1004360	14204	NBS49K	29	63	3	0	100	38	10	13
5.	27*	33422321	14250	NBS49K	30	72	3	0	196	38	10	13
6.	27*	29481229	14213	NBS49K	26	75	3	0	100	38	10	13

LAB SAMPLE NO.

6985.6 30g

Lab Sample ID: 6985.6 30g

Lab File ID: XA2345

Date Received: 12-23-91

Date Extracted: 12-24-91

Date Analyzed: 12/26/91

Dilution Factor: 30

CONCENTRATION UNITS:
ug/Kg

[illegible]

THE SAMPLE IS

6985.5 309

Lab Sample ID: 6985.8 30g

Lab File ID: A2343

Date Received: 12-23-91

Date Extracted: 12-24-91

Date Analyzed: 11/26/91

Dilution Factor: 50

CONCENTRATION UNITS:
ug/kg

[illegible]

5B
SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Environmental Profile Lab Contract: Serv-Air

Lab Code: 15526

Lab File ID: >A2339

DFTPP Injection Date: 12/26/91

Instrument ID: 5970 GC/MS #2

DFTPP Injection Time: 10:57

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	38.9
68	Less than 2.0% of mass 69	0.40 0.001
69	Mass 69 relative abundance	48.1
70	Less than 2.0% of mass 69	0.00 0.001
127	40.0 - 60.0% of mass 198	44.3
137	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.1
199	5.0 - 9.0% of mass 198	6.5
275	10.0 - 30.0% of mass 198	17.8
385	Greater than 1.00% of mass 198	1.53
441	Present, but less than mass 443	6.7
442	Greater than 40.0% of mass 198	46.8
443	17.0 - 23.0% of mass 442	8.70 18.702

1-Value is % mass 69

2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCC/SPCC	>A2340	12/26/91	11:23
02	BNA S1 B1k	>A2341	12/26/91	12:19
03	BNA S1 BMS	>A2342	12/26/91	13:12
04	6985.8 30g	>A2343	12/26/91	14:05
05	6985.2 30g	>A2344	12/26/91	14:59
06	6985.6 30g	>A2345	12/26/91	15:51
07	6980.4 MS	>A2346	12/26/91	16:42
08	6980.4 MSD	>A2347	12/26/91	17:34
09	6985.4 30g	>A2350	12/26/91	20:07
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

49

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 12/26/91
Contractor: E.P.L. _____ Time: 11:23
Contract No: _____ Laboratory ID: >A2340
Instrument ID: No. 2: Semivolatiles _____ Initial Calibration Date: 12/26/91

Minimum RF for SPCC is 0.05 Maximum % Diff for CCC is 25.0%

Compound	RF	RF	%Diff	CCC	SPCC
Pyridine	2.05598	1.62012	21.20		
N-nitroso-dimethylamine	.76590	.69974	8.64		
2-Fluorophenol	1.39470	1.28603	7.79		
Phenol-d5	1.52098	1.39248	8.45		
Phenol	2.28368	1.99875	12.48	*	
Aniline	1.96651	1.64773	16.21		
bis(2-Chloroethyl)Ether	1.58567	1.42902	9.88		
2-Chlorophenol	1.63391	1.54225	5.61		
1,3-Dichlorobenzene	1.70442	1.66801	2.14		
1,4-Dichlorobenzene	1.73753	1.73653	.06	*	
Benzyl alcohol	.75533	.64516	14.59		
1,2-Dichlorobenzene	1.82729	1.84726	1.09		
2-Methylphenol	1.23477	1.11629	9.60		
bis(2-chloroisopropyl)ether	2.47525	1.98031	20.00		
4-Methylphenol	1.22976	1.09906	10.63		
N-Nitroso-Di-n-propylamine	1.12185	.92304	17.72		**
Hexachloroethane	.60003	.60850	1.41		
Nitrobenzene-d5	.35212	.33278	5.49		
Nitrobenzene	.34687	.32472	6.39		
Isophorone	.77637	.73349	5.52		
2-Nitrophenol	.24653	.23853	3.25	*	
2,4-Dimethylphenol	.37093	.36951	.38		
Benzoic Acid	.18791	.13185	29.83		
bis(2-Chloroethoxy)methane	.52254	.50341	3.66		
2,4-Dichlorophenol	.40039	.40463	1.06	*	
1,2,4-Trichlorobenzene	.34399	.35510	3.23		
Naphthalene	1.06286	1.09859	3.36		
4-Chloroaniline	.44025	.42791	2.80		
Hexachlorobutadiene	.18606	.19584	5.26	*	
4-Chloro-3-methylphenol	.43475	.42926	1.26	*	
2-Methylnaphthalene	.62337	.63561	1.96		
Hexachlorocyclopentadiene	.26177	.26699	1.99		**

RF - Response Factor from daily standard file at 50.00 ng/uL

RF - Average Response Factor from Initial Calibration Form U1

%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: 12/26/91
Contractor: E.P.L. _____ Time: 11:23
Contract No: _____ Laboratory ID: >A2340
Instrument ID: No. 2: Semivolatiles _____ Initial Calibration Date: 12/26/91

Minimum RF for SPCC is 0.05

Maximum % Diff for CCC is 25.0%

Compound	RF	RF	%Diff	CCC	SPCC
2,4,6-Trichlorophenol	.51693	.54134	4.72	*	
2,4,5-Trichlorophenol	.46092	.46531	.95		
2-Chloronaphthalene	1.07551	1.13614	5.64		
2-Fluorobiphenyl	1.29061	1.36694	5.91		
2-Nitroaniline	.36726	.37833	3.01		
Dimethylphthalate	1.37344	1.51495	10.30		
Acenaphthylene	1.85982	2.02271	8.76		
3-Nitroaniline	.33003	.33069	.20		
Acenaphthene	1.20142	1.24614	3.72	*	
2,4-Dinitrophenol	.10880	.08808	19.04	**	
4-Nitrophenol	.32770	.34528	5.37	**	
Dibenzofuran	1.67389	1.84573	10.27		
2,6-Dinitrotoluene	.27637	.28808	4.24		
2,4-Dinitrotoluene	.41098	.44150	7.43		
Diethylphthalate	1.49753	1.65831	10.74		
4-Chlorophenyl-phenylether	.60486	.65390	8.11		
Fluorene	1.29041	1.43727	11.38		
4-Nitroaniline	.33399	.33445	.14		
4,6-Dinitro-2-methylphenol	.15009	.13608	9.34		
N-Nitrosodiphenylamine	.46396	.46088	.66	*	
1,2-Diphenylhydrazine	.93101	.82596	11.28		
2,4,6-Tribromophenol	.12399	.11203	9.65		
4-Bromophenyl-phenylether	.20424	.19627	3.90		
Hexachlorobenzene	.25548	.24245	5.10		
Pentachlorophenol	.19605	.17449	11.00	*	
Phenanthrene	1.13007	1.12743	.23		
Anthracene	.91920	.94936	3.28		
Di-n-butylphthalate	1.40183	1.39963	.16		
Fluoranthene	1.08826	1.11807	2.74	*	
Benzidine	.86059	.67315	21.78		
Pyrene	1.60003	1.59347	.41		
Terphenyl-d14	1.01304	1.08317	6.92		

RF - Response Factor from daily standard file at 50.00 ng/uL

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: 12/26/91
Contractor: E.P.L. _____ Time: 11:23
Contract No: _____ Laboratory ID: A2340
Instrument ID: No. 2: Semivolatiles _____ Initial Calibration Date: 12/26/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC SPCC
Butylbenzylphthalate	.75718	.70233	7.24	
3,3'-Dichlorobenzidine	.51441	.38179	25.78	
Benzo(a)anthracene	1.39069	1.34090	3.58	
bis(2-Ethylhexyl)phthalate	1.07257	1.07844	.55	
Chrysene	1.17091	1.15540	1.33	
Di-n-octylphthalate	2.13358	2.13055	.14	*
Benzo(b)fluoranthene	1.51763	1.45646	4.03	
Benzo(k)fluoranthene	1.16262	1.31063	12.73	
Benzo(a)pyrene	1.27593	1.32883	4.15	*
Indeno(1,2,3-cd)pyrene	1.50379	1.53534	2.10	
Dibenz(a,h)anthracene	1.11397	1.12957	1.40	
Benzo(g,h,i)perylene	1.24787	1.27202	1.93	

RF - Response Factor from daily standard file at 50.00 ng/uL

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

%Diff - % Difference from original average or curve

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

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: No. 2: Semivolatiles

Contractor: E.P.L. Calibration Date: 12/26/91

Contract No: _____

Minimum RF for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >A2330 >A2329 >A2331 >A2332 >A2333					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
	20.00	50.00	80.00	120.00	160.00					
pyridine	1.80270	1.96184	2.09003	2.10240	2.32290	.431	2.05598	9.342		
4-nitroso-dimethylamine	.74597	.81704	.71825	.77746	.77078	.433	.76590	4.815		
4-Fluorophenol	1.32056	1.46848	1.37243	1.42028	1.39175	.718	1.39470	3.943		
phenol-d5	1.31900	1.43056	1.52126	1.65294	1.68112	.939	1.52098	9.973		
phenol	2.12704	2.20983	2.32951	2.37689	2.37511	.942	2.28368	4.853	*	
aniline	1.70411	1.83613	1.95816	2.13948	2.19467	.935	1.96651	10.418		
is(2-Chloroethyl)Ether	1.41986	1.49745	1.57428	1.72360	1.71315	.955	1.58567	8.383		
4-Chlorophenol	1.54124	1.59264	1.60521	1.71055	1.71990	.959	1.63391	4.778		
1,3-Dichlorobenzene	1.69290	1.71434	1.66299	1.75160	1.70024	.990	1.70442	1.899		
1,4-Dichlorobenzene	1.70373	1.73098	1.70928	1.78770	1.75596	1.004	1.73753	2.002	*	
benzyl alcohol	.56700	.63354	.78429	.89247	.89936	1.048	.75533	19.935		
1,2-Dichlorobenzene	1.83562	1.73370	1.84392	1.88888	1.83435	1.049	1.82729	3.114		
4-Methylphenol	1.01185	1.07362	1.25961	1.37997	1.44882	1.086	1.23477	15.322		
is(2-chloroisopropyl)ether	2.04504	2.27323	2.45610	2.83466	2.76724	1.090	2.47525	13.410		
4-Methylphenol	1.03588	1.06806	1.24414	1.39987	1.40084	1.124	1.22976	14.210		
4-Nitroso-Di-n-propylamine	.89860	.97379	1.15797	1.28738	1.29149	1.126	1.12185	16.023	**	
1,1-dichloroethane	.59523	.63411	.58630	.61091	.57360	1.125	.60003	3.900		
1,3-dibromobenzene-d5	.31155	.35974	.34923	.37268	.36742	.866	.35212	6.912		
1,3-dibromobenzene	.31964	.36414	.34004	.36043	.35010	.870	.34687	5.159		
4-phosphorone	.72335	.79024	.76924	.81746	.78157	.917	.77637	4.448		
4-Nitrophenol	.20870	.25432	.23747	.27823	.25393	.932	.24653	10.408	*	
4,4-Dimethylphenol	.36954	.36799	.36958	.39314	.35442	.949	.37093	3.760		
benzoic Acid	.10687	.17301	.19398	.22893	.23676	.976	.18791	27.775		
is(2-Chloroethoxy)methane	.47213	.51953	.52337	.56003	.53761	.968	.52254	6.189		
4-Dichlorophenol	.40055	.38412	.39505	.41757	.40467	.980	.40039	3.076	*	
2,4-Trichlorobenzene	.35434	.34898	.33075	.34938	.33649	.994	.34399	2.880		
phthalene	1.06690	1.04566	1.04426	1.09164	1.06585	1.004	1.06286	1.819		
Chloroaniline	.40042	.43996	.44295	.46823	.44968	1.026	.44025	5.640		
1,2-dichlorobutadiene	.18164	.18302	.18334	.19465	.18763	1.045	.18606	2.849	*	
Chloro-3-methylphenol	.46571	.43939	.40542	.44187	.42136	1.130	.43475	5.233	*	

- Response Factor (Subscript is amount in ng/uL)

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

- Average Response Factor

SD - Percent Relative Standard Deviation

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

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: No. 2: Semivolatiles

Contractor: E.P.L. Calibration Date: 12/26/91

Contract No: _____

Minimum RF for SPCC is 0.05

Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >A2330 >A2329 >A2331 >A2332 >A2333					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
	20.00	50.00	80.00	120.00	160.00					
-Methylnaphthalene	.63606	.60946	.58485	.67094	.61555	1.145	.62337	5.175		
exachlorocyclopentadiene	.16888	.22493	.26833	.31896	.32777	.877	.26177	25.379		**
,4,6-Trichlorophenol	.49368	.49426	.49963	.54572	.55138	.891	.51693	5.615	*	
,4,5-Trichlorophenol	.42795	.44278	.42974	.45275	.55138	.895	.46092	11.189		
-Chloronaphthalene	1.01438	1.04924	1.06623	1.12635	1.12136	.914	1.07551	4.459		
-Fluorobiphenyl	1.23210	1.22908	1.26946	1.36496	1.35742	.904	1.29061	5.147		
-Nitroaniline	.29079	.36883	.37991	.39724	.39952	.939	.36726	12.139		
imethylphthalate	1.34907	1.43295	1.37539	1.37860	1.33121	.975	1.37344	2.808		
enaphthylene	1.77554	1.87388	1.85015	1.92903	1.87052	.976	1.85982	2.982		
-Nitroaniline	.29563	.34699	.32846	.34287	.33618	1.002	.33003	6.203		
enaphthene	1.20587	1.21558	1.15118	1.23573	1.19875	1.005	1.20142	2.608	*	
,4-Dinitrophenol	.05061	.08618	.11313	.13962	.15444	1.018	.10880	38.312		**
-Nitrophenol	.30190	.35757	.31027	.33995	.32879	1.033	.32770	6.846		**
benzofuran	1.63596	1.68678	1.66054	1.73862	1.64755	1.029	1.67389	2.439		
6-Dinitrotoluene	.22316	.28648	.28027	.29944	.29250	.983	.27637	11.065		
4-Dinitrotoluene	.36009	.43089	.41823	.43480	.41087	1.041	.41098	7.306		
ethylphthalate	1.52976	1.60316	1.48183	1.46459	1.40829	1.083	1.49753	4.895		
Chlorophenyl-phenylether	.59704	.62791	.59924	.60546	.59463	1.086	.60486	2.232		
uorene	1.27936	1.33627	1.28563	1.30610	1.24467	1.081	1.29041	2.624		
Nitroaniline	.29319	.35801	.34744	.33112	.34020	1.095	.33399	7.440		
6-Dinitro-2-methylphenol	.10081	.13312	.15760	.17099	.18795	.902	.15009	22.699		
Nitrosodiphenylamine	.39914	.46500	.47659	.48098	.49811	.906	.46396	8.220	*	
2-Diphenylhydrazine	.80112	.89531	.95151	.99003	1.01706	.908	.93101	9.217		
4,6-Tribromophenol	.10671	.11104	.12850	.13570	.13802	.918	.12399	11.552		
Bromophenyl-phenylether	.17623	.19405	.20781	.22007	.22303	.949	.20424	9.496		
xachlorobenzene	.24357	.23413	.25657	.27066	.27250	.963	.25548	6.547		
ntachlorophenol	.16334	.17676	.20158	.21512	.22343	.987	.19605	12.971	*	
enanthrene	1.05243	1.10537	1.16843	1.19212	1.13203	1.003	1.13007	4.839		
thracene	.95108	.95933	.88747	.90793	.89021	1.008	.91920	3.690		
-n-butylphthalate	1.37718	1.47320	1.44217	1.24705	1.46953	1.089	1.40183	6.755		

- Response Factor (Subscript is amount in ng/uL)

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

- Average Response Factor

D - Percent Relative Standard Deviation

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

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: No. 2: Semivolatiles
Contractor: E.P.L. Calibration Date: 12/26/91
Contract No: _____

Minimum RF for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID: >A2330 >A2329 >A2331 >A2332 >A2333

Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	RRT	RF	% RSD	CCC	SPCC
Fluoranthene	1.13434	1.11456	1.03501	1.09914	1.05825	1.150	1.08826	3.752	*	
Benidine	.65602	.86354	.87332	.95086	.95921	.883	.86059	14.219		
Pyrene	1.54142	1.55653	1.63432	1.63724	1.63065	.887	1.60003	2.936		
Terphenyl-d14	1.00723	.91779	.96242	1.01020	1.16755	.907	1.01304	9.306		
Butylbenzylphthalate	.69278	.76163	.73092	.80643	.79413	.959	.75718	6.141		
3,3'-Dichlorobenzidine	.37531	.43494	.52353	.61057	.62772	1.001	.51441	21.258		
Benzo(a)anthracene	1.36315	1.35305	1.40466	1.40367	1.42891	.999	1.39069	2.274		
Diis(2-Ethylhexyl)phthalate	.94734	1.04789	1.05289	1.12955	1.18518	1.016	1.07257	8.418		
Chrysene	1.07950	1.12519	1.13245	1.28740	1.23003	1.002	1.17091	7.271		
Di-n-octylphthalate	1.79661	2.28831	1.94154	2.33970	2.30177	.952	2.13358	11.603	*	
Benzo(b)fluoranthene	1.29025	1.60939	1.56682	1.70413	1.41757	.972	1.51763	10.794		
Benzo(k)fluoranthene	1.22396	1.16112	1.01752	1.06722	1.34330	.974	1.16262	11.096		
Benzo(a)pyrene	1.18857	1.27596	1.24695	1.33152	1.33664	.996	1.27593	4.839	*	
Indeno(1,2,3-cd)pyrene	1.33097	1.48820	1.47234	1.60441	1.62301	1.097	1.50379	7.829		
Dibenz(a,h)anthracene	1.02346	1.13013	1.09777	1.16886	1.14963	1.100	1.11397	5.117		
Benzo(g,h,i)perylene	1.13301	1.25978	1.20801	1.31423	1.32433	1.125	1.24787	6.357		

- Response Factor (Subscript is amount in ng/uL)

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

- Average Response Factor

- Percent Relative Standard Deviation

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

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

ab Name: Environmental Profile Lab

ab Code: 15526

atrix Spike - EPL Sample No.: 6980.4 30g

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	200.00	0.00	81.20	40	26- 90
2-Chlorophenol	200.00	0.00	106.00	52	25-102
1,4-Dichlorobenzene	100.00	0.00	64.50	64	28-104
N-Nitroso-di-n-prop.(1)	100.00	0.00	74.70	74	41-126
1,2,4-Trichlorobenzene	100.00	0.00	87.00	86	38-107
4-Chloro-3-methylphenol	200.00	0.00	129.00	64	26-103
Acenaphthene	100.00	0.00	80.70	80	31-137
4-Nitrophenol	200.00	0.00	132.00	65	11-114
2,4-Dinitrotoluene	100.00	0.00	84.60	84	28- 89
Pentachlorophenol	200.00	0.00	85.00	42	17-109
Pyrene	100.00	0.00	98.20	98	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
Phenol	200.00	104.00	52	26	35 26- 90
2-Chlorophenol	200.00	138.00	68	26	50 25-102
1,4-Dichlorobenzene	100.00	84.30	84	27	27 28-104
N-Nitroso-di-n-prop.(1)	100.00	94.20	94	23	38 41-126
1,2,4-Trichlorobenzene	100.00	104.00	104	18	23 38-107
4-Chloro-3-methylphenol	200.00	152.00	75	15	33 26-103
Acenaphthene	100.00	95.60	95	17	19 31-137
4-Nitrophenol	200.00	166.00	82	23	50 11-114
2,4-Dinitrotoluene	100.00	116.00	115 *	30	47 28- 89
Pentachlorophenol	200.00	147.00	73	53 *	47 17-109
Pyrene	100.00	102.00	101	3	36 35-142

N-Nitroso-di-n-propylamine

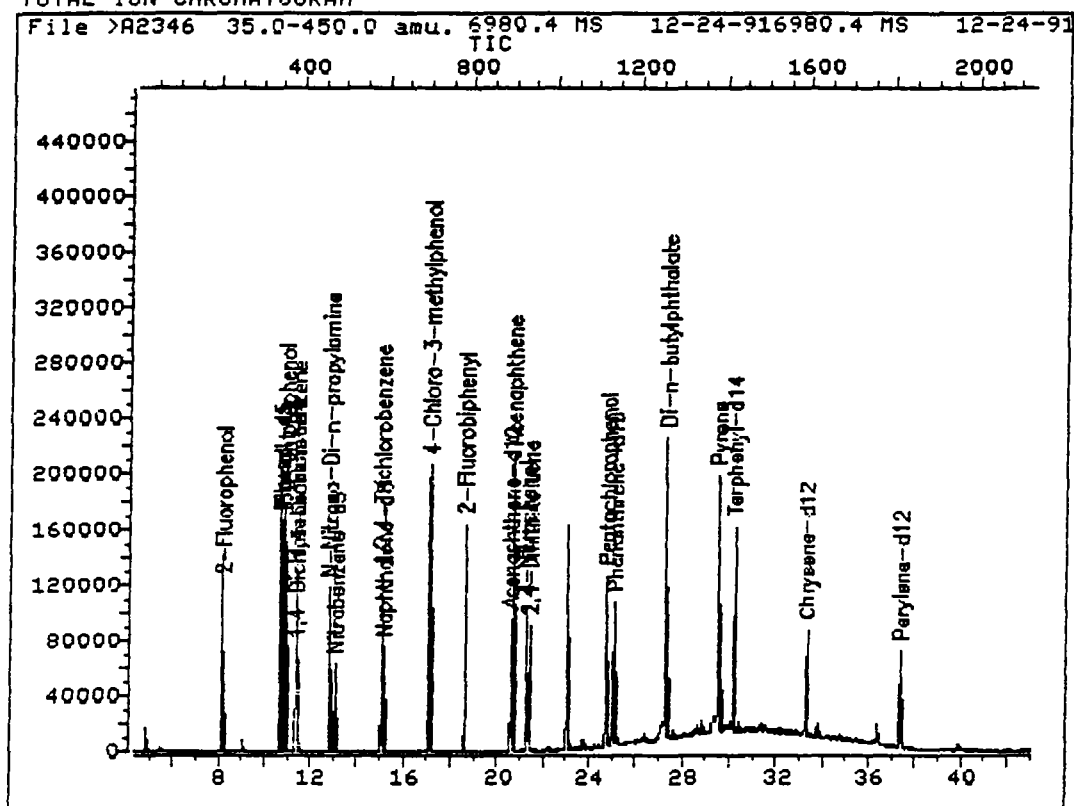
Column to be used to flag recovery and RPD values with an asterisk
 Values outside of qc limits

RPD: 1 out of 11 outside limits
 Spike Recovery: 1 out of 22 outside limits

REMARKS:

56

TOTAL ION CHROMATOGRAM



Data File: >A2346::D3

Quant Output File: ^A2346::DB

Name: 6980.4 MS 12-24-91

Misc: 6980.4 MS 12-24-91

BTL# 6

Id File: IDBNA::D4

Title: Semivolatile Organics (EPA Methods 625/8270) by GC/MS

Last Calibration: 911226 12:14

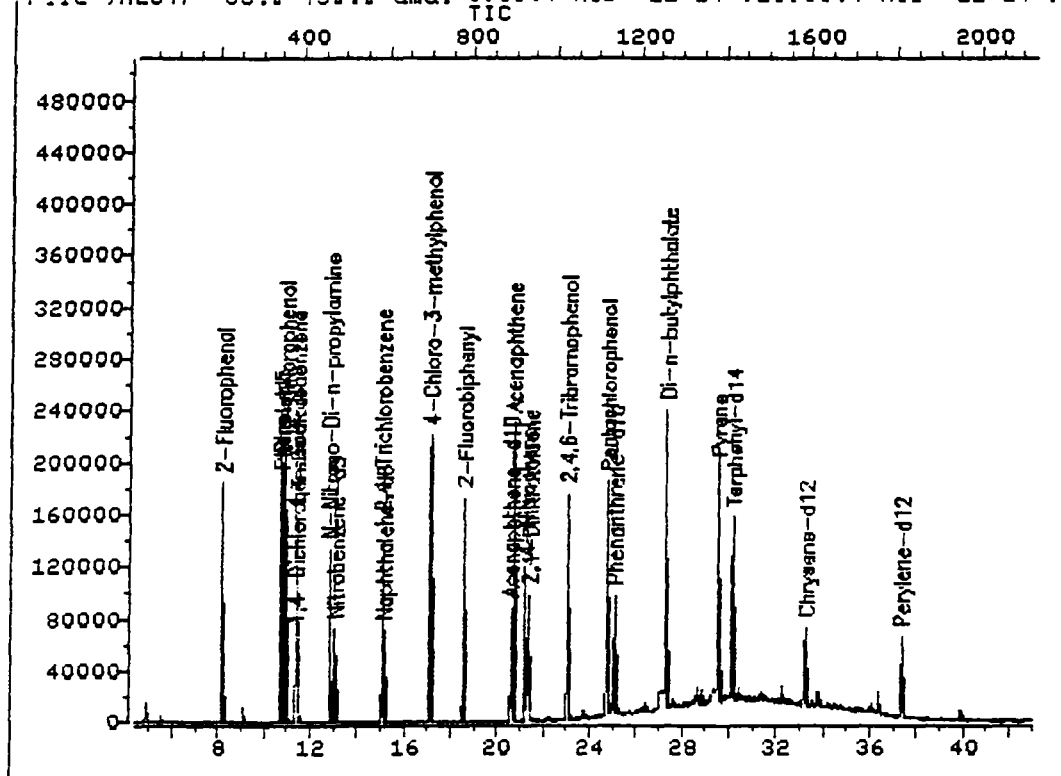
Operator ID: MARK

Quant Time: 911226 17:26

Injected at: 911226 16:42

TOTAL ION CHROMATOGRAM

File >A2347 35.0-450.0 amu. 6980.4 MSD 12-24-91 6980.4 MSD 12-24-91



Data File: >A2347::D3

Quant Output File: ^A2347::DB

Name: 6980.4 MSD 12-24-91

Misc: 6980.4 MSD 12-24-91

BTL# 7

Id File: IDBNA::D4

Title: Semivolatile Organics (EPA Methods 625/8270) by GC/MS

Last Calibration: 911226 12:14

Operator ID: MARK

Quant Time: 911226 18:17

Injected at: 911226 17:34

nl

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Environmental Profile Lab

Lab Code: 15526

Matrix Spike - EPL Sample No.: BNA S1 Blk

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	200.00	0.00	111.00	55	26- 90
2-Chlorophenol	200.00	0.00	144.00	72	25-102
1,4-Dichlorobenzene	100.00	0.00	85.40	85	28-104
N-Nitroso-di-n-prop.(1)	100.00	0.00	71.60	71	41-126
1,2,4-Trichlorobenzene	100.00	0.00	105.00	104	38-107
4-Chloro-3-methylphenol	200.00	0.00	172.00	85	26-103
Acenaphthene	100.00	0.00	93.20	93	31-137
4-Nitrophenol	200.00	0.00	170.00	84	11-114
2,4-Dinitrotoluene	100.00	0.00	84.00	84	28- 89
Pentachlorophenol	200.00	0.00	174.00	87	17-109
Pyrene	100.00	0.00	98.40	98	35-142

) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
 Values outside of qc limits

like Recovery: 0 out of 11 outside limits

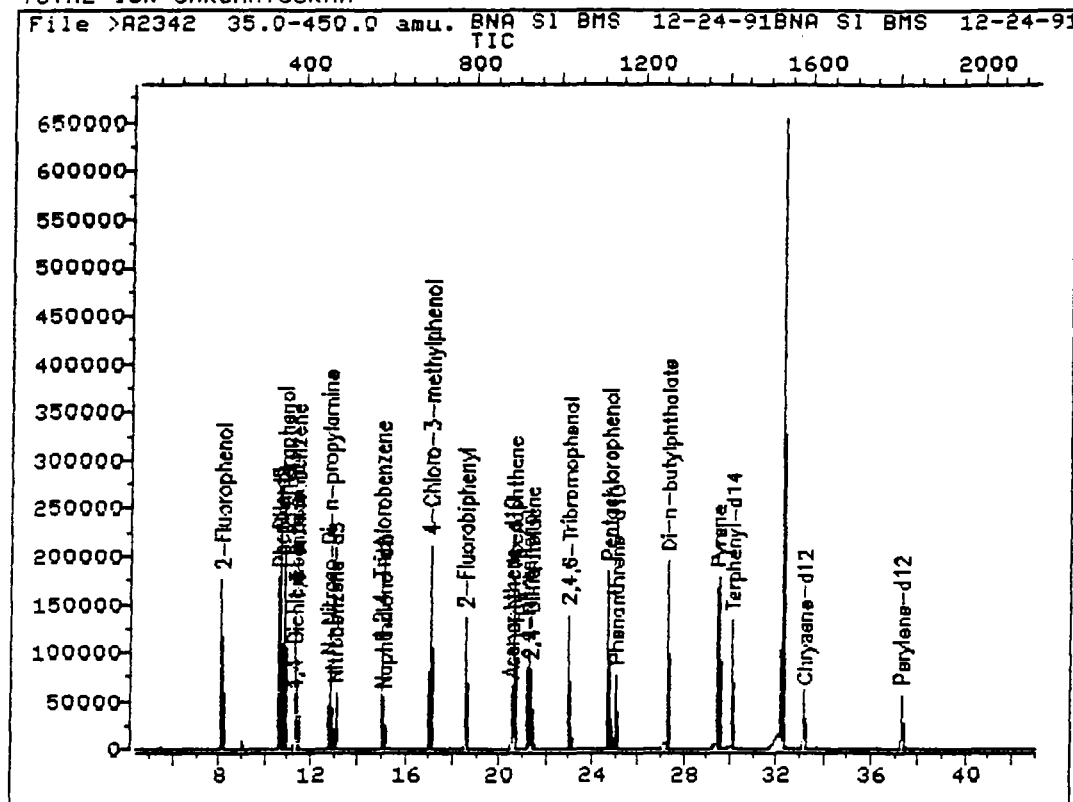
REMARKS:

FORM III SU-2

1/87 Rev.

59

TOTAL ION CHROMATOGRAM



Data File: >A2342::D3

Quant Output File: ^A2342::DB

Name: BNA S1 BMS 12-24-91

Misc: BNA S1 BMS 12-24-91

BTL# 2

Id File: IDBNA::D4

Title: Semivolatile Organics (EPA Methods 625/8270) by GC/MS

Last Calibration: 911226 12:14

Operator ID: MARK

Quant Time: 911226 13:56

Injected at: 911226 13:12

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Environmental Profile Lab

Contract: Serv-Air

Lab Code: 15526

Lab File ID: >A2341

Lab Sample ID: BNA S1 Blk

Date Extracted: 12/24/91

Extraction: Sonic

Date Analyzed: 12/26/91

Time Analyzed: 12:19

Matrix: Soil

Instrument ID: GC/MSD 5970 #2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPL SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	CCC/SPCC	CCCSPCC	>A2340	12/26/91
02	BNA S1 BMS	BNA S1 BMS	>A2342	12/26/91
03	6985.8 30g	6985.8 30g	>A2343	12/26/91
04	6985.2 30g	6985.2 30g	>A2344	12/26/91
05	6985.6 30g	6985.6 30g	>A2345	12/26/91
06	6980.4 MS	6980.4 MS	>A2346	12/26/91
07	6980.4 MSD	6980.4 MSD	>A2347	12/26/91
08	6985.4 30g	6985.4 30g	>A2350	12/26/91
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
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26				
27				
28				
29				
30				

COMMENTS:

Environmental Profile Laboratories
BASE/NEUTRAL/ACID ANALYSIS DATA

JOB NUMBER		MATRIX	Soil
SAMPLE NAME	BNA S1 Blk 12-24-91	DILUTION FACTOR	1.00
CLIENT ID		QA BATCH	
DATA FILE	A2341	DATE ANALYZED	12/26/91

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
N-nitroso-dimethylamine	ND	330	Acenaphthene	ND	330
Phenol	ND	330	2,4-Dinitrophenol	ND	1600
Aniline	ND	330	4-Nitrophenol	ND	330
bis(2-Chloroethyl)Ether	ND	330	Dibenzofuran	ND	330
2-Chlorophenol	ND	330	2,4-Dinitrotoluene	ND	330
1,3-Dichlorobenzene	ND	330	2,6-Dinitrotoluene	ND	330
1,4-Dichlorobenzene	ND	330	Diethylphthalate	ND	330
Benzyl alcohol	ND	330	4-Chlorophenyl-phenylether	ND	330
1,2-Dichlorobenzene	ND	330	Fluorene	ND	330
2-Methylphenol	ND	330	4-Nitroaniline	ND	330
bis(2-chloroisopropyl)ether	ND	330	4,6-Dinitro-2-methylphenol	ND	330
4-Methylphenol	ND	330	N-Nitrosodiphenylamine	ND	330
N-Nitroso-Di-n-propylamine	ND	330	1,2-Diphenylhydrazine	ND	330
Hexachloroethane	ND	330	4-Bromophenyl-phenylether	ND	330
Nitrobenzene	ND	330	Hexachlorobenzene	ND	330
Isophorone	ND	330	Pentachlorophenol	ND	330
2-Nitrophenol	ND	330	Phenanthrene	ND	330
2,4-Dimethylphenol	ND	330	Anthracene	ND	330
Benzoic Acid	ND	330	Di-n-butylphthalate	ND	330
bis(2-Chloroethoxy)methane	ND	330	Fluoranthene	ND	330
2,4-Dichlorophenol	ND	330	Benzidine	ND	330
1,2,4-Trichlorobenzene	ND	330	Pyrene	ND	330
Naphthalene	ND	330	Butylbenzylphthalate	ND	330
4-Chloroaniline	ND	330	3,3'-Dichlorobenzidine	ND	330
Hexachlorobutadiene	ND	330	Benzo(a)anthracene	ND	330
4-Chloro-3-methylphenol	ND	330	bis(2-Ethylhexyl)phthalate	ND	330
2-Methylnaphthalene	ND	330	Chrysene	ND	330
Hexachlorocyclopentadiene	ND	330	Di-n-octylphthalate	ND	330
2,4,6-Trichlorophenol	ND	330	Benzo(b)fluoranthene	ND	330
2,4,5-Trichlorophenol	ND	330	Benzo(k)fluoranthene	ND	330
2-Chloronaphthalene	ND	330	Benzo(a)pyrene	ND	330
2-Nitroaniline	ND	330	Indeno(1,2,3-cd)pyrene	ND	330
Dimethylphthalate	ND	330	Dibenz(a,h)anthracene	ND	330
Acenaphthylene	ND	330	Benzo(g,h,i)perylene	ND	330
3-Nitroaniline	ND	330			0

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

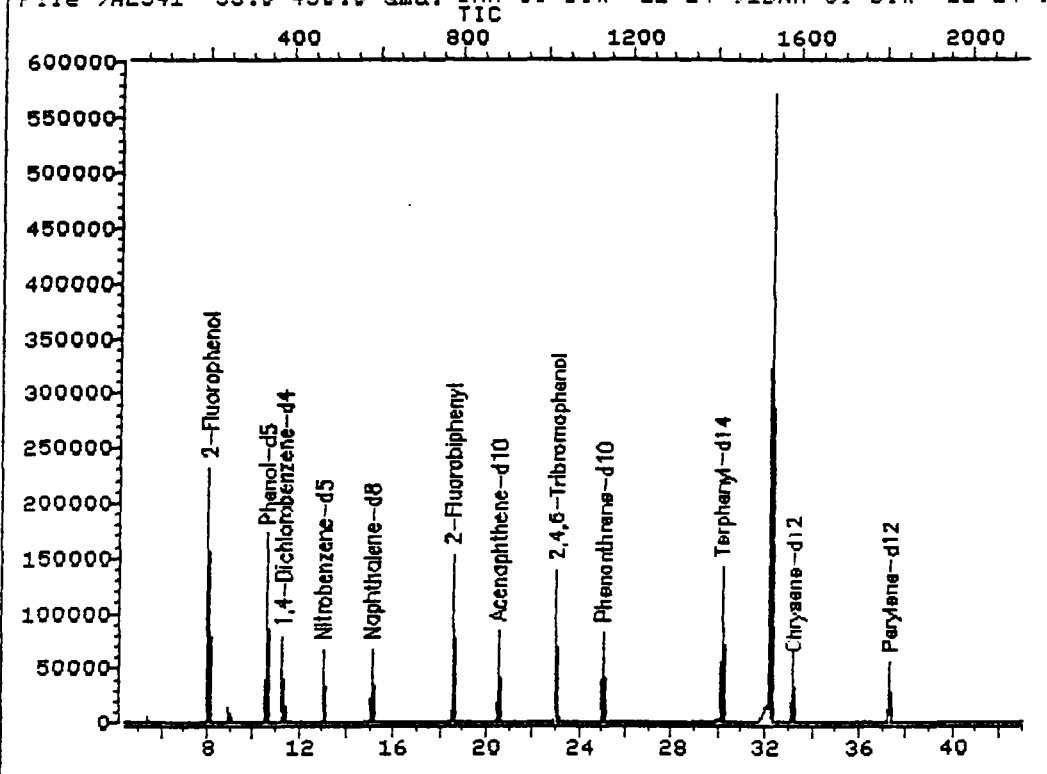
(J) Indicates detected below MDL

(B) Indicates also present in blank

(ND) Indicates compound not detected

TOTAL ION CHROMATOGRAM

File >A2341 35.0-450.0 amu. BNA S1 Blk 12-24-91 BNA S1 Blk 12-24-91



Data File: >A2341::D3

Quant Output File: ^A2341::DB

Name: BNA S1 Blk 12-24-91

Misc: BNA S1 Blk 12-24-91

BTL# 1

Id File: IDBNA::D4

Title: Semivolatile Organics (EPA Methods 625/8270) by GC/MS

Last Calibration: 911226 12:14

Operator ID: MARK

Quant Time: 911226 13:03

Injected at: 911226 12:19

LAB SAMPLE NO.

ENA S1 Blk

Lab Sample ID: BNA S1 Blk

Lab File ID: >A2341

Date Received: NA

Date Extracted: 12-24-91

Date Analyzed: 12/26/91

Dilution Factor: 30

Number of TICs found: 3

uq/Kq

[illegible]

MS data file header from : >A2341

Sample: BNA S1 Blk 12-24-91 Operator: MARK SUPER GRP. 12/26/91 12:19
Misc : BNA S1 Blk 12-24-91 BTL# 1
Sys. #: 2 MS model: 70 SW/HW rev.: IA ALS # : 0
Method file: BNARUN Tuning file: MTUNE2 No. of extra records: 2
Source temp.: 0 Analyzer temp.: 280 Transfer line temp.: 0

Chromatographic temperatures : 35. 300. 0. 0. 0.
Chromatographic times, min. : 3.0 6.9 0.0 0.0 0.0
Chromatographic rate, deg/min: 8.0 0.0 0.0 .2 0.0

A2341 BNA S1 Blk 12-24-91 BNA S1 Blk 12-24-91
35.01 450.0 CLP TIC
Upslope: .20 Area Reject: 17311. Max Peaks: 3 Bunching: 1
Dnslope: 0.00 Results File IA2341 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	8.93	248	250	254	14513	31774	31774	2.25	1.900
2	32.05	1498	1524	1527	16076	230525	227365	16.09	13.598
3	32.18	1527	1531	1534	564332	1476320	1412927	100.00	84.502

Sum of corrected areas: 1672066.

Summary of Unknowns PBM Library Search and Quantitation

Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	186302.	11.29	4.42 - 13.16
2	40.0	173108.	15.03	13.16 - 17.76
3	40.0	228632.	20.49	17.76 - 22.75
4	40.0	244867.	25.01	22.75 - 29.09
5	40.0	218548.	33.17	29.09 - 35.23
6	40.0	213675.	37.29	35.23 - 43.05

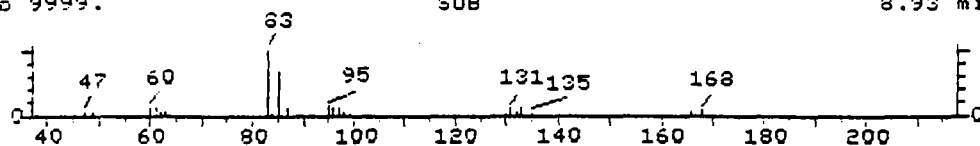
Dilution Factor = 1.00 U dilf = 1.00
Method called for 1000.000 g or mL This sample was 1000.000 g or mL

Correction Factor = 1.00

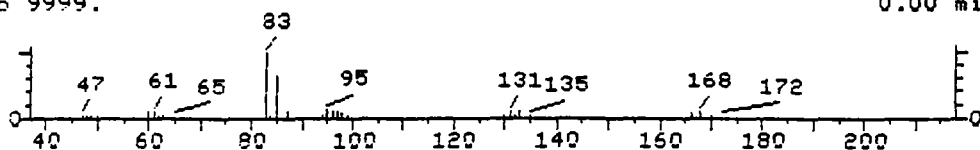
Unknown Concentration = $\frac{\text{Conc Int Std}}{\text{Area Int Std}} * \text{Area Unknown} * \text{Correction Factor}$

4:22 PM SUN., 29 DEC., 1991

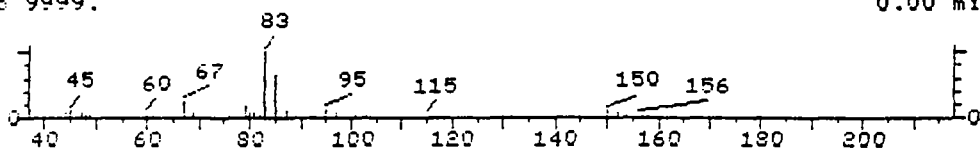
file A2341 SNA S1 B1k 12-24-91 SNA S1 B1k 12-24-91 Scan 250
pk Ab 9999. SUB 8.93 min.



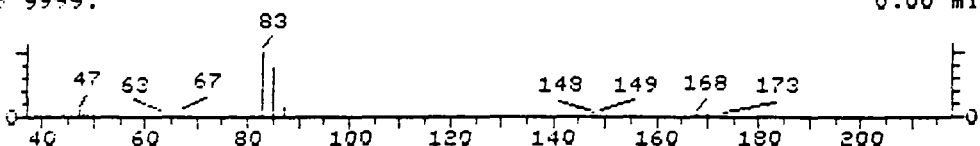
file NBS49K Ethane, 1,1,2,2-tetrachloro- Scan 11545
pk Ab 9999. 0.00 min.



file NBS49K Ethane, 1,1,2-trichloro-2-fluoro- Scan 8077
pk Ab 9999. 0.00 min.



file NBS49K Ethane, 1,2,2-trichloro-1,1-difluoro- Scan 11978
pk Ab 9999. 0.00 min.



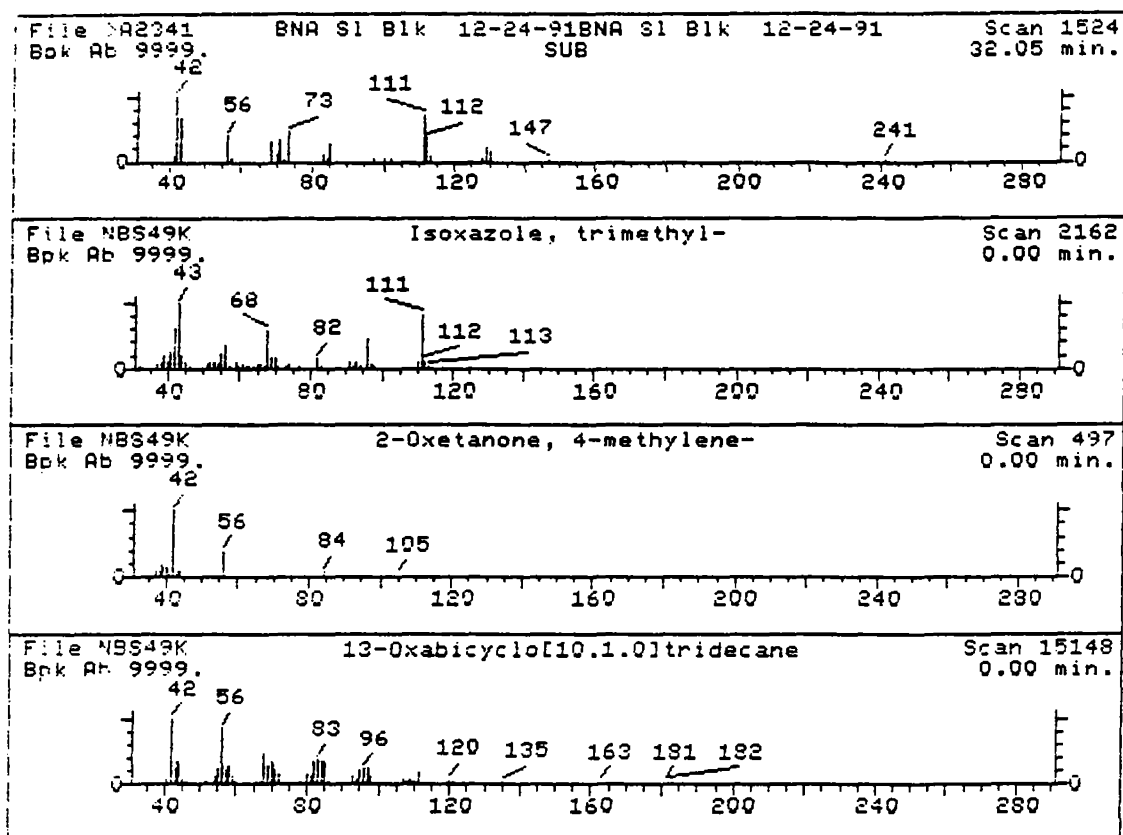
UNKNOWN #,1

REA = 31774.00 TENTATIVE CONCENTRATION IS 7.00

- | | |
|---|--------------|
| 1. Ethane, 1,1,2,2-tetrachloro- | 166 C2H2C14 |
| 2. Ethane, 1,1,2-trichloro-2-fluoro- | 150 C2H2C13F |
| 3. Ethane, 1,2,2-trichloro-1,1-difluoro- | 168 C2HC13F2 |
| 4. Acetic acid, trichloro- | 162 C2HC13O2 |
| 5. Methane, bromodichloro- | 162 CHBrC12 |
| 6. Indeno[3a,4-b]oxiren-2-ol, octahydro-4a-methyl-5-[(t
etrahydro-2H-pyran-2-yl)oxyl]-, (1a.alpha.,2.beta.,4a
.beta.,5.beta.,7aS*)- (9CI) | 268 C15H24O4 |

sample file: >A2341 Spectrum #: 250
arch speed: 1 Tilting option: F No. of ion ranges searched: 52

Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
81*	79345	6716	NBS49K	76	27	1	0	100	20	45	74
44	359284	6659	NBS49K	57	48	1	0	100	22	17	15
43	354212	6717	NBS49K	50	52	1	0	68	21	17	14
43*	76039	6705	NBS49K	27	79	2	0	137	22	17	14
42*	75274	6704	NBS49K	30	79	3	0	100	22	17	13
30	67920654	6862	NBS49K	58	48	1	2	67	35	12	13

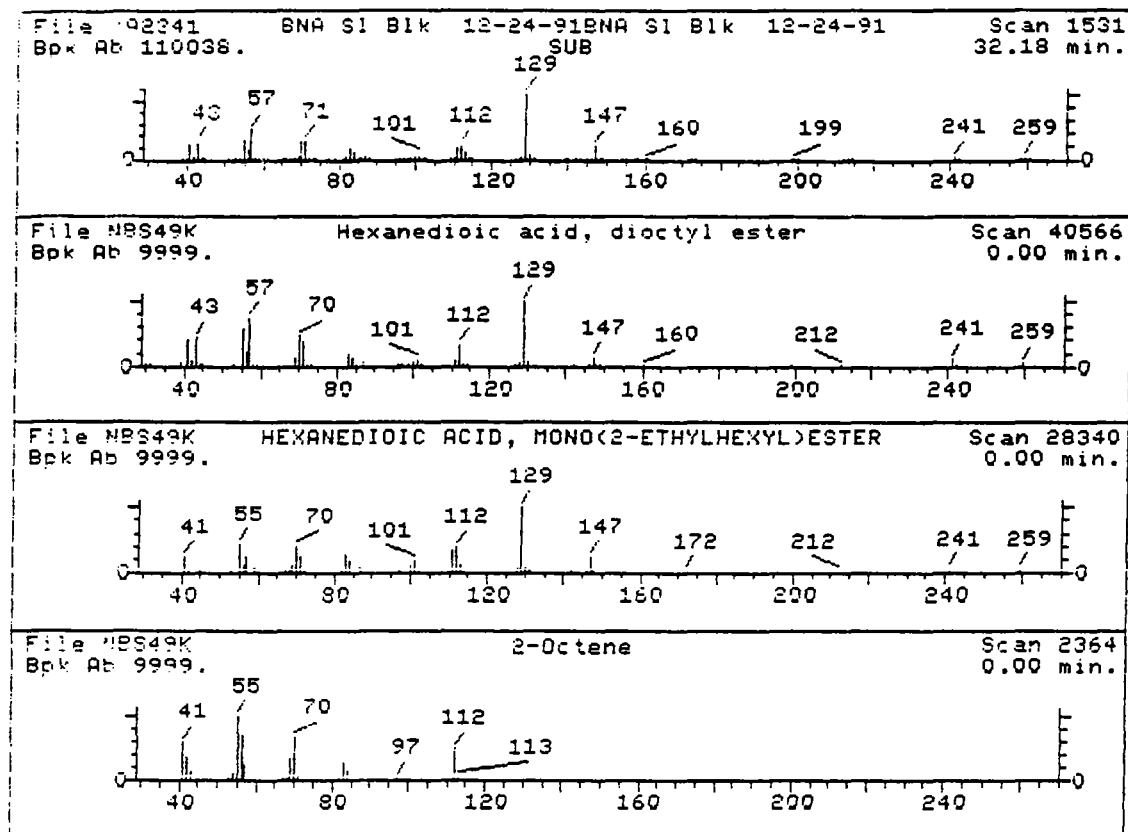


UNKNOWN #,2
AREA = 227365.0 TENTATIVE CONCENTRATION IS 42.00

- | | |
|---|--------------|
| 1. Isoxazole, trimethyl- | 111 C6H9NO |
| 2. 2-Oxetanone, 4-methylene- | 84 C4H4O2 |
| 3. 13-Oxabicyclo[10.1.0]tridecane | 182 C12H22O |
| 4. Cyclopentafurpyran-4-carboxylic acid, 1,4a,5,6,7,7a-hexahydro-6-hydroxy-1-methoxy-7-methyl-, methyl ester, [1R-(1.alpha.,4a.alpha.,6.alpha.,7.alpha.)] | 242 C12H18O5 |
| 5. 1,3-Cyclohexanedione | 112 C6H8O2 |
| 6. 2-Propanol, 1-(cyclohexylamino)- | 157 C9H19NO |

Sample file: >A2341 Spectrum #: 1524
Search speed: 1 Tilting option: F No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	25*	10557821	11817	NBS49K	28	88	3	0	66	50	7	13
2.	20*	674828	1010	NBS49K	21	56	1	0	97	52	5	14
3.	20*	286997	3696	NBS49K	22	98	3	0	47	54	5	12
4.	18*	68736834	6848	NBS49K	34	16	0	2	27	58	4	27
5.	15*	504029	11992	NBS49K	32	51	2	0	85	57	3	16
6.	15*	103004	12135	NBS49K	38	61	2	4	52	57	3	12



UNKNOWN #,3
AREA = 1412927. TENTATIVE CONCENTRATION IS 260.00

- | | |
|--|--------------|
| 1. Hexanedioic acid, dioctyl ester | 370 C22H42O4 |
| 2. HEXANEDIOIC ACID, MONO(2-ETHYLHEXYL)ESTER | 258 C14H26O4 |
| 3. 2-Octene | 112 C8H16 |
| 4. 2,6-Piperazinedione, monooxime | 129 C4H7N3O2 |

Sample file: >A2341 Spectrum #: 1531
Search speed: 1 Tilting option: F No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	59	123795	15479	NBS49K	110	35	1	1	43	39	21	59
2.	51	4337659	15463	NBS49K	87	58	1	-1	53	32	20	35
3.	47*	111671	12035	NBS49K	44	42	0	-4	34	41	16	40
4.	26*	56700846	15393	NBS49K	23	99	3	0	100	38	10	12

18

2D
SOIL SEMI-VOLATILE SURROGATE RECOVERY

Lab Name: Environmental Profile Lab Contract: Serv-Air

Lab Code: 15526

	EPA	S1	S2	S3	S4	S5	S6	OTHER	TOT
	SAMPLE NO.	(NBZ)#	(FBP)#	(TPH)#	(PHL)#	(2FP)#	(TBP)#		OUT
01	BNA S1 Blk	70	74	93	69	68	85		0
02	BNA S1 BMS	68	80	89	66	70	87		0
03	6985.8 30g	58	73	79	54	58	78		0
04	6985.2 30g	56	71	87	56	57	84		0
05	6985.6 30g	48	63	72	52	52	86		0
06	6980.4 MS	58	70	77	52	50	85		0
07	6980.4 MSD	72	81	86	64	66	107		0
08	6985.4 30g	67	75	90	56	61	94		0
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

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 (2FP) = 2-Fluorophenol (25-121)
 S6 (TBP) = 2,4,6-Tribromophenol (19-122)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogates diluted out

67

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Environmental Profile Lab Contract: Serv-Air

Lab Code: 15526

Lab File ID (Standard): >A2340

Date Analyzed: 12/26/91

Instrument ID: GC/MSD 5970 #2

Time Analyzed: 11:23

	IS1(DCB)		IS2(NPT)		IS3(ANT)	
	AREA #	RT	AREA #	RT	AREA #	RT
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	26515.	11.32	90552.	15.04	53587.	20.49
=====	=====	=====	=====	=====	=====	=====
UPPER LIMIT	53030.		181104.		107174.	
=====	=====	=====	=====	=====	=====	=====
LOWER LIMIT	13258.		45276.		26794.	
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE						
NO.						
=====	=====	=====	=====	=====	=====	=====
01 BNA S1 Blk	32991.	11.29	88893.	15.03	58150.	20.49
02 BNA S1 BMS	24764.	11.31	72445.	15.05	48434.	20.48
03 6985.8 30g	32999.	11.29	85043.	15.04	52705.	20.49
04 6985.2 30g	33791.	11.30	93297.	15.03	60445.	20.49
05 6985.6 30g	33023.	11.33	93586.	15.09	61532.	20.53
06 6980.4 MS	30610.	11.38	98354.	15.09	67953.	20.54
07 6980.4 MSD	27699.	11.38	89735.	15.10	63402.	20.54
08 6985.4 30g	27947.	11.38	78359.	15.09	58843.	20.54
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d8

UPPER LIMIT = + 100%
of internal standard area..
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Environmental Profile Lab Contract: Serv-Air

Lab Code: 15526

Lab File ID (Standard): >A2340

Date Analyzed: 12/26/91

Instrument ID: GC/MSD 5970 #2

Time Analyzed: 11:23

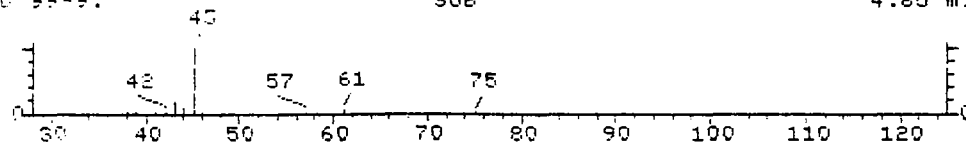
	IS4(PHN)		IS5(CRY)		IS3(PRY)	
	AREA #	RT	AREA #	RT	AREA #	RT
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	109973.	25.01	78718.	33.20	70321.	37.28
=====	=====	=====	=====	=====	=====	=====
UPPER LIMIT	219946.		157436.		140642.	
=====	=====	=====	=====	=====	=====	=====
LOWER LIMIT	54986.		39359.		35160.	
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE						
NO.						
=====	=====	=====	=====	=====	=====	=====
01 BNA S1 Blk	107242.	25.01	81030.	33.17	77570.	37.29
02 BNA S1 BMS	98751.	25.01	75490.	33.18	75389.	37.28
03 6985.8 30g	98309.	25.02	79741.	33.18	75536.	37.28
04 6985.2 30g	111685.	25.01	88072.	33.19	90246.	37.29
05 6985.6 30g	116409.	25.06	101585.	33.24	99075.	37.33
06 6980.4 MS	132862.	25.06	78999.	33.24	92558.	37.35
07 6980.4 MSD	122492.	25.06	67996.	33.25	83031.	37.34
08 6985.4 30g	117227.	25.07	91344.	33.25	69745.	37.36
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

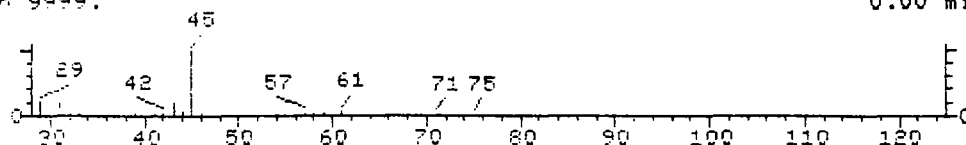
UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

* Column used to flag internal standard area values with an asterisk

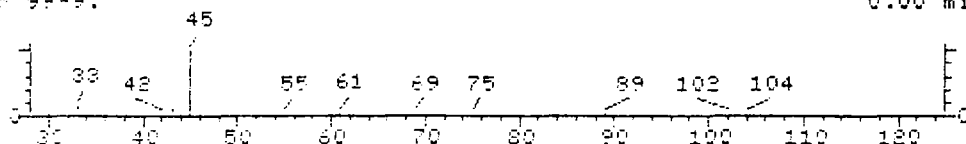
File 00350 6985.4 30g 12-24-91 6985.4 30g 12-24-91 Scan 25
 PK AB 9999. SUB 4.85 min.



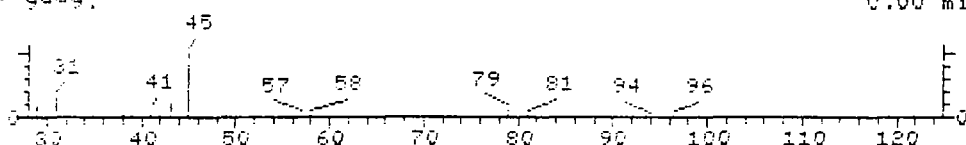
File NBS49K 1,2-Propanediol Scan 353
 PK AB 9999. 0.00 min.



File NBS49K Propanoic acid, 2-hydroxy-, methyl ester Scan 1672
 PK AB 9999. 0.00 min.



File NBS49K 2-Propanol, 1-chloro- Scan 911
 PK AB 9999. 0.00 min.



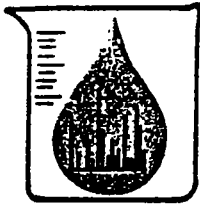
UNKNOWN #.1

REA = 105552.0 TENTATIVE CONCENTRATION IS 29.00

- | | |
|--|------------|
| 1. 1,2-Propanediol | 76 C3H8O2 |
| 2. Propanoic acid, 2-hydroxy-, methyl ester | 104 C4H8O3 |
| 3. 2-Propanol, 1-chloro- | 94 C3H7ClO |
| 4. Propanenitrile, 3-methoxy- | 85 C4H7NO |
| 5. Propanamide, 2-hydroxy- | 89 C3H7NO2 |
| 6. Propanoic acid, 2-hydroxy-, methyl ester, (+-)- | 104 C4H8O3 |

Sample file: >A2350 Spectrum #: 25
 Search speed: 1 Tilting option: F No. of ion ranges searched: 42

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	60	57556	336	NBS49K	37	46	1	0	80	13	30	14
2.	60*	547648	157	NBS49K	26	52	1	0	100	11	30	14
3.	60*	127004	347	NBS49K	28	61	2	0	100	13	30	14
4.	52*	110678	338	NBS49K	25	46	1	0	100	20	20	14
5.	52*	2043438	2198	NBS49K	21	42	2	0	91	20	20	13
6.	52*	2155308	156	NBS49K	27	51	1	0	100	16	20	15



ENVIRONMENTAL PROFILE LABORATORIES

ROUTE 37 BUSINESS PARK
SUITE 13
TOMS RIVER, NJ 08755
OFFICE: (908) 244-6278
FAX: (908) 244-6372

LABORATORY ANALYSIS REPORT

CLIENT : Serv-Air

PROJECT: Serv-Air
VOA+15

Report Number: 6985
Date Received: Dec, 23, 1991
Date Released: Dec, 26, 1991
Data Released By:

Daniel K. Wright
Laboratory Director

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CLIENT: Serv-Air

SAMPLE LOCATION AND IDENTIFICATION

LAB ID NUMBER	SAMPLE IDENTIFICATION	MATRIX
-----	-----	-----
6985.2	B290A WEST	SOIL
6985.4	B290B NORTH	SOIL
6985.6	B290C EAST	SOIL
6985.8	B290D SOUTH	SOIL

CHAIN OF CUSTODY RECORD

PROJECT NO.:		SAMPLER (SIGNATURE):		DATE / TIME		ANALYSIS PARAMETERS											
CUSTOMER (NAME/ADDRESS)		SITE NAME:		NUMBER OF CONTAINERS		TPHLC PP1-40											
PHONE NO:		FAX NO:															
LAB SAMPLE ID NUMBER	DATE / TIME	SAMPLE MATRIX	CUSTOMER SAMPLE LOCATION/ID NUMBER	PRESERVATION METHOD													
				REMARKS													
6985, 1	12/17	SP. V	B290 A west (C91-647)	1	X												ice
2			B290 A west (C91-648)			X											
3			B290 B North (C91-649)		X												
4			B290 B North (C91-650)			X											
5			B290 C East (C91-651)		X												
6			B290 C East (C91-652)			X											
7			B290 D South (C91-653)		X												
8			B290 D South (C91-654)			X											

Relinquished By (Signature) _____

DATE / TIME 12/23/81 930

Received By (Signature) *John F. K...*

DATE / TIME _____

METHOD OF SHIPPING: C.O.V.

Relinquished By (Signature) _____

DATE / TIME _____

Received By (Signature) _____

DATE / TIME _____

SHIPPED BY (Signature): *John F. K...*

Relinquished By (Signature) _____

DATE / TIME _____

Received for Lab by (Signature): *John F. K...*

DATE / TIME 12/23/81 930

NOTE: A DRAWING DEPICTING SAMPLE LOCATION SHOULD BE ATTACHED OR DRAWN ON THE REVERSE SIDE OF THIS CHAIN OF CUSTODY.

LABORATORY CHRONICLE

SAMPLE NUMBER	6985.2	6985.4	6985.6	6985.8			
Received & Refrigerated Date	12/23/91	12/23/91	12/23/91	12/23/91			
Organics Extraction Date							
BN/ABN	NA	NA	NA	NA			
PCB's	NA	NA	NA	NA			
Analysis Date							
BN/ABN	NA	NA	NA	NA			
PCB's	NA	NA	NA	NA			
Volatiles	12/24/91	12/24/91	12/24/91	12/24/91			
TPHC's	NA	NA	NA	NA			
Metals	NA	NA	NA	NA			
Total Solids	NA	NA	NA	NA			
Organic Supervisor Review & Approval	Brian K. McKee <i>B. K. McKee</i>						12/30/91
Inorganic Supervisor Review & Approval							

METHOD SUMMARY

Volatiles

The volatile samples in this report have been analyzed using the method cited in the USEPA-CLP-IFB version 2/88. The CLP volatile method is based on USEPA Method 624 and SW-846.

The method is based on 5 milliliters of an aqueous, or 5 grams of a non-aqueous sample spiked with a known concentration of surrogate and internal standard. The samples and standards are the purged onto a trap using a Tekmar LSC 2 and desorbed onto a packed glass column installed in a Hewlett Packard 5890 GC coupled via a jet separator a the HP 5970 MSD. The data was then collected and reduced via a HP 1000 RTE data svstem.

GC/MS

ORGANIC NON-CONFORMANCE SUMMARY

GC/MS TUNE FREQUENCY:- All samples, blanks, standards and matrix spikes were analyzed within the respective 12 hour tune periods.

INITIAL CALIBRATION REQUIREMENTS:

No CCC or SPCC compound was outside of QC limits.

CONTINUING CALIBRATION REQUIREMENTS:

No CCC or SPCC compound was outside of QC limits.

DETECTION LIMITS:- Detection limits and search results were modified by dilution or percent solid.*

* All values reported on a DRY WEIGHT basis where applicable

MATRIX SPIKE RECOVERY:- No matrix spike compound was outside QC limits.

INTERNAL STANDARD AREA:-

CLIENT ID #	NUMBER OF INTERNAL STANDARD AREAS
NONE	0

SURROGATE RECOVERY:-

Client ID #	Surrogates outside QC limits
NONE	0

ANALYSIS TIME:- All samples were extracted and analyzed within the prescribed holding times.

DATA REPORTING QUALIFIERS

For reporting results to EPA, the following "results qualifiers" are used:

VALUE - If the result is a value greater than or equal to the detection limit, report the value.

U - Indicates the compound was analyzed for but was not detected. Report the minimum detection limit for the sample with the U, "10U". This is not necessarily the instrument detection limit. The figure represents the minimum detection limit attainable for this particular sample based on any concentration or dilution that may have been required.

J - Indicates an estimated value. This flag is used:

- 1) When estimating a concentration for tentatively identified compounds (library search hits) where a 1:1 response is assumed.
- 2) When the mass spectral data indicated the identification criteria, however, the result was less than the specified detection limit but greater than zero. If the detection limit was 10ug/L and a concentration of 3ug/L was calculated, report as "3J".

B - Indicates the analyte was found in the blank as well as the sample; report as "12B".

E - Indicates the analyte concentration exceeds the calibrated range of the GC/MS instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

Environmental Profile Laboratories
VOLATILE ORGANIC ANALYSIS DATA

JOB NUMBER		MATRIX	Soil
SAMPLE NAME	6985.2 1g	DILUTION FACTOR	5.00
CLIENT ID		QA BATCH	
DATA FILE	>U2265	DATE ANALYZED	12/24/91

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
Chloromethane	ND	63	Trichloroethene	ND	31
Bromomethane	ND	63	Dibromochloromethane	ND	31
Vinyl Chloride	ND	63	1,1,2-Trichloroethane	ND	31
Chloroethane	ND	63	Benzene	ND	31
Methylene Chloride	67	31	trans-1,3-Dichloropropene	ND	31
Acrolein	ND	310	2-Chloroethylvinyl ether	ND	31
Acrylonitrile	ND	310	Bromoform	ND	31
Acetone	ND	31	2-Hexanone	ND	31
Carbon Disulfide	ND	31	4-Methyl-2-Pentanone	ND	31
1,1-Dichloroethene	ND	31	Tetrachloroethene	ND	31
1,1-Dichloroethane	ND	31	1,1,2,2-Tetrachloroethane	ND	31
trans-1,2-Dichloroethene	ND	31	Toluene	ND	31
Trichlorofluoromethane	ND	31	Chlorobenzene	ND	31
Chloroform	ND	31	Ethylbenzene	ND	31
1,2-Dichloroethane	ND	31	Styrene	ND	31
2-Butanone	ND	31	o-Xylene	ND	31
1,1,1-Trichloroethane	ND	31	m + p-Xylenes	ND	31
Carbon Tetrachloride	ND	31	1,3-Dichlorobenzene	ND	31
Bromodichloromethane	ND	31	1,2-Dichlorobenzene	ND	31
Vinyl Acetate	ND	31	1,4-Dichlorobenzene	ND	31
1,2-Dichloropropane	ND	31	tert-Butyl Alcohol	ND	310
cis-1,3-Dichloropropene	ND	31	Methyl tert-Butyl Ether	ND	31

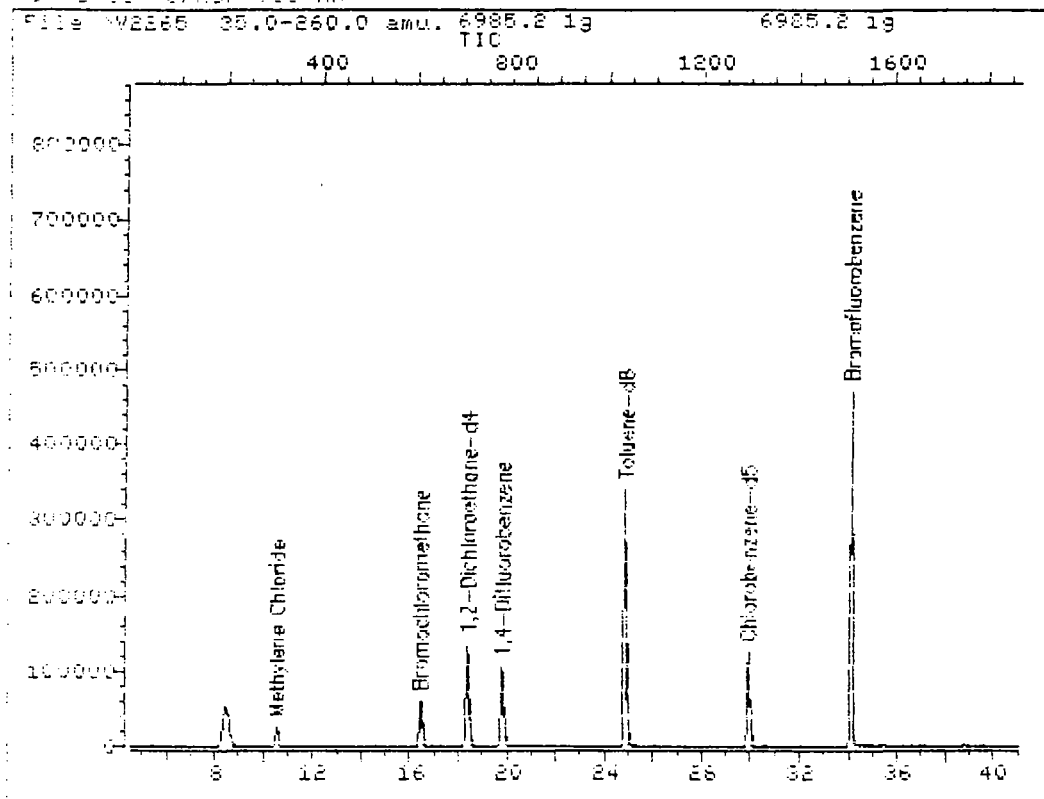
Percent Solid of 80.0 is used for all Target compounds.

(J) Indicates detected below MDL

(B) Indicates also present in blank

(ND) Indicates compound not detected

TOTAL ION CHROMATOGRAM



Data File: >Q2265::D1

Quant Output File: ^Q2265::DB

Name: 6985.2 1g

Misc: 6985.2 1g

Id File: IDUOA::D4

Title: HSL VOLATILE ORGANICS

Last Calibration: 911224 13:28

Operator ID: MARK

Quant Time: 911224 18:34

Injected at: 911224 17:52

Environmental Profile Laboratories
VOLATILE ORGANIC ANALYSIS DATA

JOB NUMBER		MATRIX	Soil
SAMPLE NAME	6985.4 1g	DILUTION FACTOR	5.00
CLIENT ID		QA BATCH	
DATA FILE	>U2266	DATE ANALYZED	12/24/91

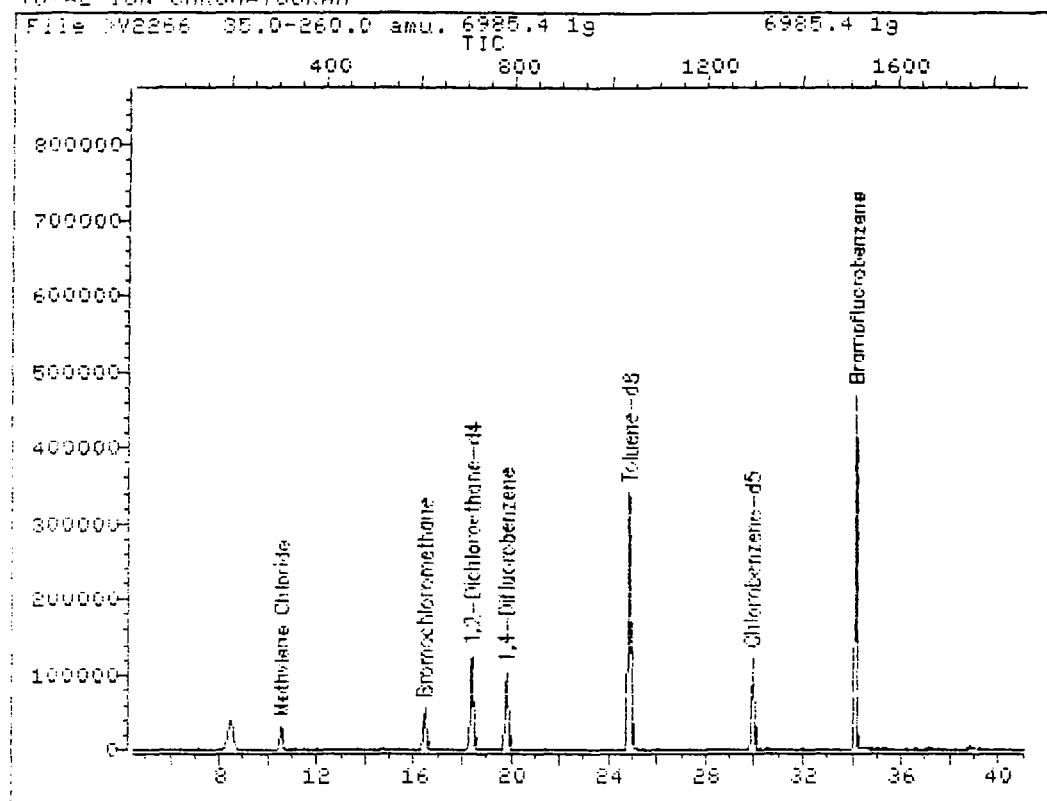
COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
Chloromethane	ND	62	Trichloroethene	ND	31
Bromomethane	ND	62	Dibromochloromethane	ND	31
Vinyl Chloride	ND	62	1,1,2-Trichloroethane	ND	31
Chloroethane	ND	62	Benzene	ND	31
Methylene Chloride	87	31	trans-1,3-Dichloropropene	ND	31
Acrolein	ND	310	2-Chloroethylvinyl ether	ND	31
Acrylonitrile	ND	310	Bromoform	ND	31
Acetone	ND	31	2-Hexanone	ND	31
Carbon Disulfide	ND	31	4-Methyl-2-Pentanone	ND	31
1,1-Dichloroethene	ND	31	Tetrachloroethene	ND	31
1,1-Dichloroethane	ND	31	1,1,2,2-Tetrachloroethane	ND	31
trans-1,2-Dichloroethene	ND	31	Toluene	ND	31
Trichlorofluoromethane	ND	31	Chlorobenzene	ND	31
Chloroform	ND	31	Ethylbenzene	ND	31
1,2-Dichloroethane	ND	31	Styrene	ND	31
2-Butanone	ND	31	o-Xylene	ND	31
1,1,1-Trichloroethane	ND	31	m + p-Xylenes	ND	31
Carbon Tetrachloride	ND	31	1,3-Dichlorobenzene	ND	31
Bromodichloromethane	ND	31	1,2-Dichlorobenzene	ND	31
Vinyl Acetate	ND	31	1,4-Dichlorobenzene	ND	31
1,2-Dichloropropane	ND	31	tert-Butyl Alcohol	ND	310
cis-1,3-Dichloropropene	ND	31	Methyl tert-Butyl Ether	ND	31

Percent Solid of 81.0 is used for all Target compounds.

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

10

TOTAL ION CHROMATOGRAM



Data File: 002266::D1

Quant Output File: 002266::DB

Name: 6985.4 1g

Misc: 6985.4 1g

Id File: ID004::D4

Title: HSL VOLATILE ORGANICS

Last Calibration: 911224 13:28

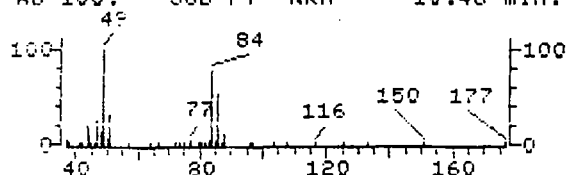
Operator ID: MARK

Quant Time: 911224 19:20

Injected at: 911224 18:38

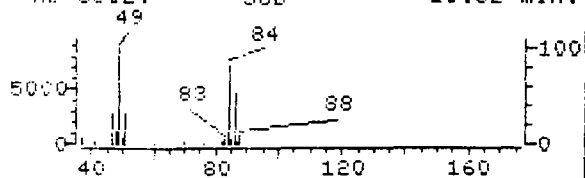
REFERENCE STANDARD SPECTRUM

File >V2089 Methylene Chloride Scan 294
Bp: Ab 100. SUB PT NRM 10.46 min.



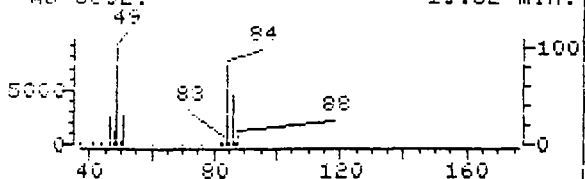
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

File >V2266 6985.4 1g Scan 308
Bp: Ab 8802. SUB 10.52 min.

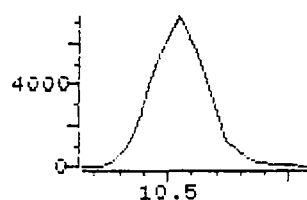


SAMPLE SPECTRUM (UNALTERED)

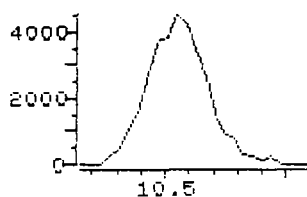
File >V2266 6985.4 1g Scan 308
Bp: Ab 8802. SUB 10.52 min.



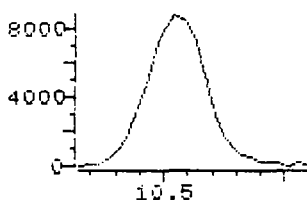
File >V2266 83.7-84.7 am



File >V2266 85.7-86.7 am



File >V2266 48.7-49.7 am



Data File: >V2266::D1
Name: 6985.4 1g
Misc: 6985.4 1g
Quant Time: 911224 19:20
Injected at: 911224 18:38

Quant Output File: >V2266::DB

Quant ID File: IDUGA::D4
Last Calibration: 911224 13:28

Compound No: 7
Compound Name: Methylene Chloride
Scan Number: 308
Retention Time: 10.52 min.
Quant Ion: 84.0
Area: 58827
Concentration: 14.15 ppb
q-value: 98

Environmental Profile Laboratories
VOLATILE ORGANIC ANALYSIS DATA

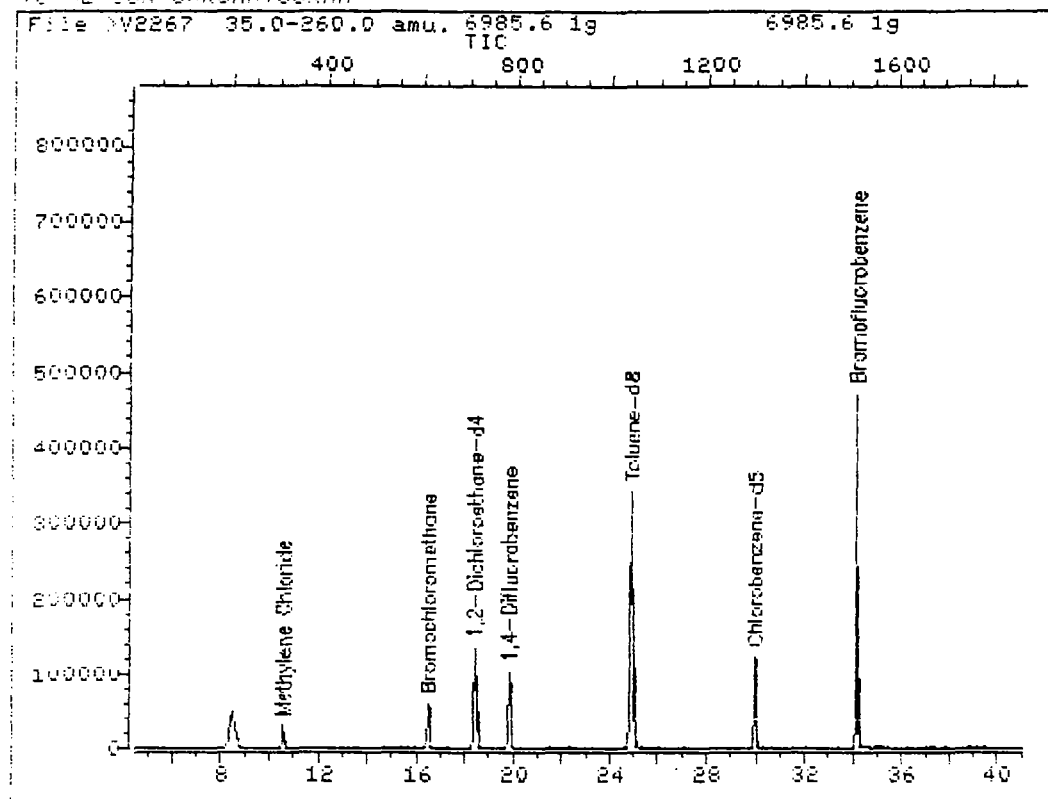
JOB NUMBER	MATRIX
SAMPLE NAME	DILUTION FACTOR
CLIENT ID	QA BATCH
DATA FILE	DATE ANALYZED

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
Chloromethane	ND	63	Trichloroethene	ND	31
Bromomethane	ND	63	Dibromochloromethane	ND	31
Vinyl Chloride	ND	63	1,1,2-Trichloroethane	ND	31
Chloroethane	ND	63	Benzene	ND	31
Methylene Chloride	83	31	trans-1,3-Dichloropropene	ND	31
Acrolein	ND	310	2-Chloroethylvinyl ether	ND	31
Acrylonitrile	ND	310	Bromoform	ND	31
Acetone	ND	31	2-Hexanone	ND	31
Carbon Disulfide	ND	31	4-Methyl-2-Pentanone	ND	31
1,1-Dichloroethene	ND	31	Tetrachloroethene	ND	31
1,1-Dichloroethane	ND	31	1,1,2,2-Tetrachloroethane	ND	31
trans-1,2-Dichloroethene	ND	31	Toluene	ND	31
Trichlorofluoromethane	ND	31	Chlorobenzene	ND	31
Chloroform	ND	31	Ethylbenzene	ND	31
1,2-Dichloroethane	ND	31	Styrene	ND	31
2-Butanone	ND	31	o-Xylene	ND	31
1,1,1-Trichloroethane	ND	31	m + p-Xylenes	ND	31
Carbon Tetrachloride	ND	31	1,3-Dichlorobenzene	ND	31
Bromedichloromethane	ND	31	1,2-Dichlorobenzene	ND	31
Vinyl Acetate	ND	31	1,4-Dichlorobenzene	ND	31
1,2-Dichloropropane	ND	31	tert-Butyl Alcohol	ND	310
cis-1,3-Dichloropropene	ND	31	Methyl tert-Butyl Ether	ND	31

Percent Solid of 80.0 is used for all Target compounds.

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

TOTAL ION CHROMATOGRAM



Data File: >V2267::D1

Quant Output File: ^V2267::DB

Name: 6985.6 1g

Misc: 6985.6 1g

Id File: ID00A::D4

Title: HSL VOLATILE ORGANICS

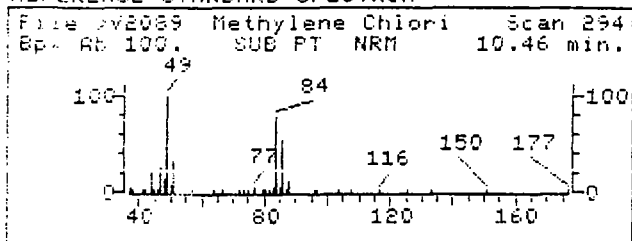
Last Calibration: 911224 13:28

Operator ID: MARK

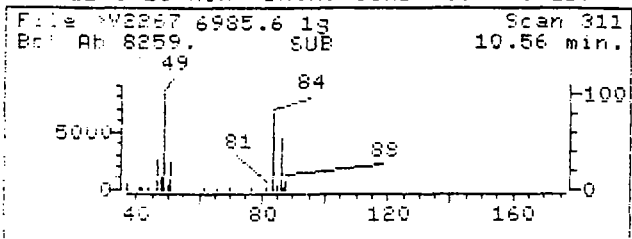
Quant Time: 911224 20:05

Injected at: 911224 19:24

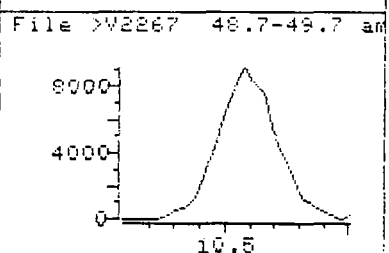
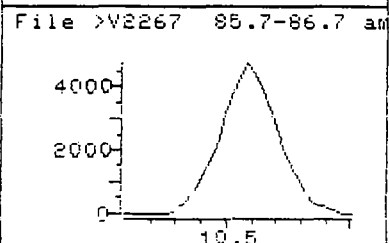
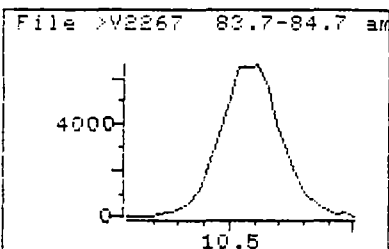
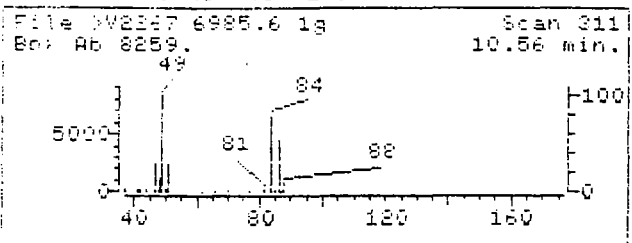
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >V2267::D1
Name: 6985.6 lg
Misc: 6985.6 lg
Quant Time: 911224 20:05
Injected at: 911224 19:24

Quant Output File: >V2267::DB

Quant ID File: IDU0A::D4
Last Calibration: 911224 13:28

Compound No: 7
Compound Name: Methylene Chloride
Scan Number: 311
Retention Time: 10.56 min.
Quant Ion: 84.0
Area: 57157
Concentration: 13.23 ppb
q-value: 93

Environmental Profile Laboratories
VOLATILE ORGANIC ANALYSIS DATA

JOB NUMBER		MATRIX	Soil
SAMPLE NAME	6985.8 1g	DILUTION FACTOR	5.00
CLIENT ID		QA BATCH	
DATA FILE	>U2268	DATE ANALYZED	12/24/91

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
Chloromethane	ND	63	Trichloroethene	ND	31
Bromomethane	ND	63	Dibromochloromethane	ND	31
Vinyl Chloride	ND	63	1,1,2-Trichloroethane	ND	31
Chloroethane	ND	63	Benzene	ND	31
Methylene Chloride	99	31	trans-1,3-Dichloropropene	ND	31
Acrolein	ND	310	2-Chloroethylvinyl ether	ND	31
Acrylonitrile	ND	310	Bromoform	ND	31
Acetone	ND	31	2-Hexanone	ND	31
Carbon Disulfide	ND	31	4-Methyl-2-Pentanone	ND	31
1,1-Dichloroethene	ND	31	Tetrachloroethene	ND	31
1,1-Dichloroethane	ND	31	1,1,2,2-Tetrachloroethane	ND	31
trans-1,2-Dichloroethene	ND	31	Toluene	ND	31
Trichlorofluoromethane	ND	31	Chlorobenzene	ND	31
Chloroform	ND	31	Ethylbenzene	ND	31
1,2-Dichloroethane	ND	31	Styrene	ND	31
2-Butanone	ND	31	o-Xylene	ND	31
1,1,1-Trichloroethane	ND	31	m + p-Xylenes	ND	31
Carbon Tetrachloride	ND	31	1,3-Dichlorobenzene	ND	31
Bromodichloromethane	ND	31	1,2-Dichlorobenzene	ND	31
Vinyl Acetate	ND	31	1,4-Dichlorobenzene	ND	31
1,2-Dichloropropane	ND	31	tert-Butyl Alcohol	ND	310
cis-1,3-Dichloropropene	ND	31	Methyl tert-Butyl Ether	ND	31

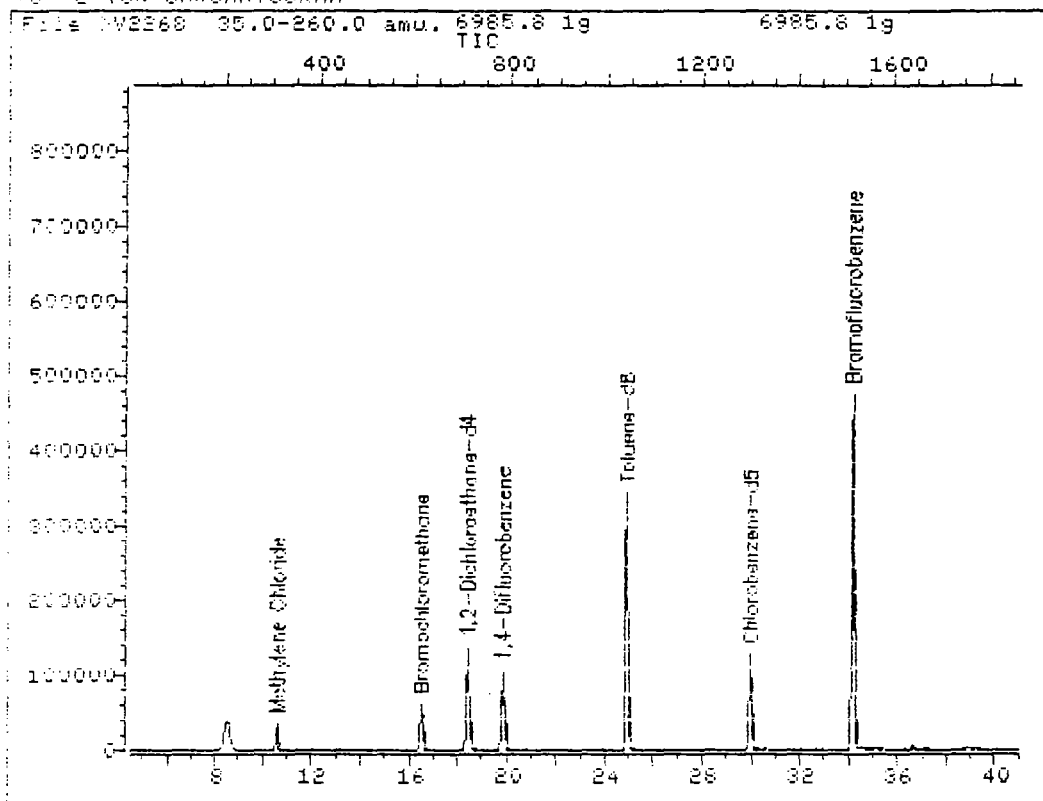
Percent Solid of 80.0 is used for all Target compounds.

(J) Indicates detected below MDL

(B) Indicates also present in blank

(ND) Indicates compound not detected

TOTAL ION CHROMATOGRAM



Data File: >02268::D1

Quant Output File: ^02268::DB

Name: 6985.8 1g

Misc: 6985.8 1g

Id File: IDUOA::D4

Title: HSL VOLATILE ORGANICS

Last Calibration: 911224 13:28

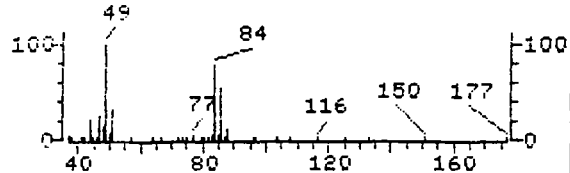
Operator ID: MARK

Quant Time: 911224 20:52

Injected at: 911224 20:09

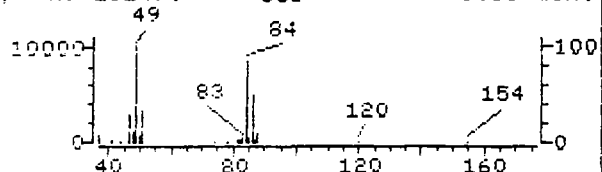
REFERENCE STANDARD SPECTRUM

File >V2089 Methylene Chloride Scan 294
BpK Ab 100. SUB PT NRM 10.46 min.



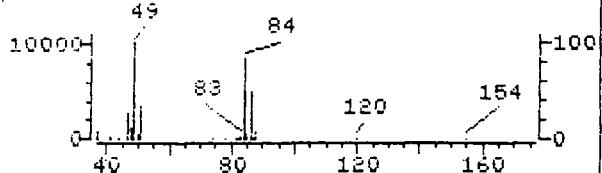
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

File >V2268 6985.8 1g Scan 310
BpK Ab 10147. SUB 10.56 min.

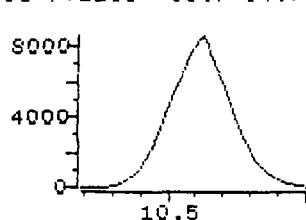


SAMPLE SPECTRUM (UNALTERED)

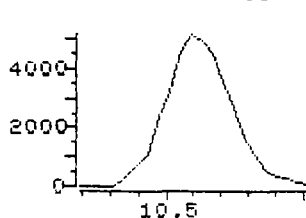
File >V2268 6985.8 1g Scan 310
BpK Ab 10147. SUB 10.56 min.



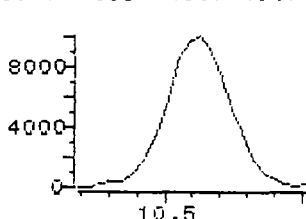
File >V2268 83.7-84.7 am



File >V2268 85.7-86.7 am



File >V2268 48.7-49.7 am



Data File: >U2268::D1
Name: 6985.8 1g
Misc: 6985.8 1g
Quant Time: 911224 20:52
Injected at: 911224 20:09

Quant Output File: ^U2268::DB

Quant ID File: IDUOA::D4
Last Calibration: 911224 13:28

Compound No: 7
Compound Name: Methylene Chloride
Scan Number: 310
Retention Time: 10.56 min.
Quant Ion: 84.0
Area: 67593
Concentration: 15.77 ppb
q-value: 97

LAB SAMPLE NO.

6985.2 iq

Matrix: Soil

Sample wt/vol: 1.0 (g/mL) g

Level: (Low/med) Low

Date Received: 12-23-91

Date Analyzed: 12/24/91

column: Capillary

Dilution Factor: 5

Number of TICs found: 0

CONCENTRATION UNITS:
ug/Kg

[illegible]

LAB SAMPLE NO.

6985.4 ig

Matrix: Soil

Lab Sample ID: 6985.4 1g

Sample wt/vol: 1.0 (g/mL) g

Lab File ID: >02266

Level: (Low/med) Low

Date Received: 12-23-91

Date Analyzed: 12/24/91

Column: Capillary

Dilution Factor: 5

Number of TICs found: 0

CONCENTRATION UNITS:
ug/Kg

[illegible]

20

LAB SAMPLE NO.

6985.6 1q

Lab Sample ID: 6985.6 1g

Lab File ID: >02267

Date Received: 12-23-91

Date Analyzed: 12/24/91

Dilution Factor: 5

CONCENTRATION UNITS:
ug/Kg

[illegible]

LAB SAMPLE NO.

6985.8 1q

Lab Sample ID: 6985.8 1g

Lab File ID: >02268

Date Received: 12-23-91

Date Analyzed: 12/24/91

Dilution Factor: 5

Number of TICs found: 0

ug/Kg[illegible]

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Environmental Profile Lab Contract: Serv-Air

Lab Code: 15526

Lab File ID: >U2257

BFB Injection Date: 12/24/91

Instrument ID: GC/MSD 5970 #1

BFB Injection Time: 11:02

Matrix: Soil

Column: Capillary

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	25.4
75	30.0 - 80.0% of mass 95	52.9
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	.90 1.101
174	Greater than 50.0% of mass 95	78.7
175	5.0 - 9.0% of mass 174	5.40 6.901
176	Greater than 95.0%, but less than 101.0% of mass 174	76.90 97.801
177	5.0 - 9.0% of mass 176	5.40 7.002

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCC/SPCC	>U2258	12/24/91	11:26
02	UOA Blank	>U2259	12/24/91	12:39
03	6968.1 MS	>U2260	12/24/91	13:51
04	6968.1 MSD	>U2261	12/24/91	14:40
05	6985.2 1g	>U2265	12/24/91	17:52
06	6985.4 1g	>U2266	12/24/91	18:38
07	6985.6 1g	>U2267	12/24/91	19:24
08	6985.8 1g	>U2268	12/24/91	20:09
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

Continuing Calibration Check
HSL Compounds

Case No:	_____	Calibration Date: 12/24/91
Contractor: E.P.L.	_____	Time: 11:26
Contract No:	_____	Laboratory ID: >U2258
Instrument ID: No. 1: Volatiles	_____	Initial Calibration Date: 12/23/91

Minimum RF for SPCC is 0.30

Maximum % Diff for CCC is 25%

Compound	RF	RF	%Diff	CCC	SPCC
Chloromethane	1.62187	1.21350	25.18	**	
Bromomethane	3.80896	3.69473	3.00		
Vinyl Chloride	2.50057	2.09665	16.15	*	
Chloroethane	1.91228	2.09776	9.70		
Methyl tert-Butyl Ether	4.76083	5.21459	9.53		
Methylene Chloride	3.29217	3.17088	3.68		
Acrolein	.14627	.15307	4.65		(Conc=500.00)
Acrylonitrile	.28616	.30329	5.99		(Conc=500.00)
Acetone	.39947	.45424	13.71		
Carbon Disulfide	7.79831	7.29710	6.43		
1,1-Dichloroethene	2.65708	2.44458	8.00	*	
1,1-Dichloroethane	5.99511	6.04724	.87	**	
tert-Butyl Alcohol	.10506	.09162	12.79		(Conc=500.00)
trans-1,2-Dichloroethene	4.57581	4.84823	5.95		
Trichlorofluoromethane	7.92001	6.60976	16.54		
Chloroform	7.65483	7.70239	.62	*	
1,2-Dichloroethane-d4	3.14570	3.59472	14.27		(Conc=100.00)
1,2-Dichloroethane	4.43801	4.90515	10.53		
2-Butanone	.11846	.13428	13.35		
1,1,1-Trichloroethane	1.36447	1.33489	2.17		
Carbon Tetrachloride	1.40979	1.24478	11.70		
Bromodichloromethane	1.21508	1.28195	5.50		
Vinyl Acetate	.13598	.14462	6.35		
1,2-Dichloropropane	.57414	.58261	1.47	*	
cis-1,3-Dichloropropene	1.54009	1.57876	2.51		
Trichloroethene	.86175	.77457	10.12		
Dibromochloromethane	1.09193	.95873	12.20		
1,1,2-Trichloroethane	.45562	.43102	5.40		
Benzene	1.32840	1.39042	4.67		
trans-1,3-Dichloropropene	.30534	.31489	3.13		
2-Chloroethylvinyl ether	.24275	.24410	.56		
Bromoform	.69093	.61377	11.17	**	

RF - Response Factor from daily standard file at 50.00 ppb

RF - Average Response Factor from Initial Calibration Form UI

%Diff - % Difference from original average or curve

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

24

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 12/24/91
 Contractor: E.P.L. _____ Time: 11:26
 Contract No: _____ Laboratory ID: >U2258
 Instrument ID: No. 1: Volatiles _____ Initial Calibration Date: 12/23/91

Minimum $\overline{RF}$ for SPCC is 0.30

Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
4-Methyl-2-Pentanone	.67541	.73578	8.94		
2-Hexanone	.25558	.27103	6.05		
Tetrachloroethene	1.50563	1.21968	18.99		
1,1,2,2-Tetrachloroethane	.56254	.65027	15.60	**	
Toluene	2.37846	2.30949	2.90	*	
Chlorobenzene	1.92824	1.71113	11.26	**	
Ethylbenzene	3.01377	3.03784	.80	*	
Styrene	1.84573	1.84713	.08		
m + p-Xylenes	2.39476	2.81712	17.64		(Conc=100.00)
o-Xylene	2.65110	2.70396	1.99		
1,3-Dichlorobenzene	1.47034	1.44756	1.55		
1,4-Dichlorobenzene	1.34284	1.34586	.22		
1,2-Dichlorobenzene	.96086	1.16106	20.83		
Toluene-d8	1.92676	1.97637	2.57		(Conc=100.00)
Bromofluorobenzene	1.12556	1.26089	12.02		(Conc=100.00)

RF - Response Factor from daily standard file at 50.00 ppb

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

%Diff - % Difference from original average or curve

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

25

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: No. 1: Volatiles
Contractor: E.P.L. Calibration Date: 12/23/91
Contract No: _____

Minimum RF for SPCC is 0.30 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >V2243 >V2244 >V2245 >V2246 >V2247					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
	20.00	50.00	100.00	150.00	200.00					
Chloromethane	1.48857	1.54149	1.55138	1.70984	1.81809	.311	1.62187	8.467		**
Bromomethane	3.35799	3.80244	3.88337	3.90142	4.09958	.382	3.80896	7.213		
Vinyl Chloride	2.22779	2.50506	2.56993	2.56849	2.63156	.325	2.50057	6.355	*	
Chloroethane	1.70894	1.91662	1.94070	1.93637	2.05879	.391	1.91228	6.626		
Methyl tert-Butyl Ether	4.77604	4.80627	4.72818	4.63867	4.85497	.678	4.76083	1.730		
Methylene Chloride	3.64075	2.81809	3.06329	3.12488	3.81385	.637	3.29217	12.696		
Acrolein	.15508	.13689	.14086	.14588	.15264	.499	.14627	5.246		(Conc=200.0,500.0,1000
Acrylonitrile	.30241	.26442	.27766	.28957	.29673	.666	.28616	5.335		(Conc=200.0,500.0,1000
Acetone	.50667	.36572	.36559	.36725	.39215	.511	.39947	15.263		
Carbon Disulfide	8.33274	7.38034	7.81889	7.49824	7.96135	.634	7.79831	4.872		
1,1-Dichloroethene	2.99184	2.61024	2.59985	2.47485	2.60864	.537	2.65708	7.363	*	
1,1-Dichloroethane	6.81015	5.79459	5.83838	5.61930	5.91314	.801	5.99511	7.810		**
tert-Butyl Alcohol	.11666	.09990	.09505	.10426	.10942	.553	.10506	7.977		(Conc=200.0,500.0,1000
trans-1,2-Dichloroethene	5.25474	4.39670	4.46188	4.25592	4.50982	.705	4.57581	8.553		
Trichlorofluoromethane	8.76626	7.80264	7.77178	7.43384	7.82554	.430	7.92001	6.304		
Chloroform	8.70836	7.41899	7.46782	7.16870	7.51028	.967	7.65483	7.886	*	
1,2-Dichloroethane-d4	3.31253	3.24922	3.07875	2.98908	3.09893	1.119	3.14570	4.198		(Conc=100.0,100.0,100.0
1,2-Dichloroethane	4.99883	4.39285	4.28110	4.16572	4.35152	1.139	4.43801	7.326		
2-Butanone	.14772	.10604	.10825	.11445	.11587	.742	.11846	14.234		
1,1,1-Trichloroethane	1.50102	1.30131	1.34511	1.31842	1.35648	.874	1.36447	5.816		
Carbon Tetrachloride	1.52908	1.32385	1.39769	1.37993	1.41841	.917	1.40979	5.347		
Bromodichloromethane	1.30321	1.12394	1.18807	1.21417	1.24600	1.121	1.21508	5.484		
Vinyl Acetate	.14036	.12809	.12910	.13653	.14582	.669	.13598	5.527		
1,2-Dichloropropane	.62628	.54239	.56258	.56456	.57488	1.084	.57414	5.475	*	
cis-1,3-Dichloropropene	1.65407	1.43300	1.49176	1.54677	1.57484	1.218	1.54009	5.437		
Trichloroethene	.94582	.82794	.84957	.83827	.84717	1.052	.86175	5.542		
Dibromochloromethane	1.16319	1.03937	1.05203	1.10404	1.10103	1.413	1.09193	4.501		
1,1,2-Trichloroethane	.51757	.43056	.43005	.44683	.45307	1.330	.45562	7.916		
Benzene	1.42798	1.25287	1.30403	1.31209	1.34505	.946	1.32840	4.873		
trans-1,3-Dichloropropene	.32205	.28227	.29431	.30939	.31868	1.306	.30534	5.499		

RF - Response Factor (Subscript is amount in ppb)

RRT - Average Relative Retention Time (RT Std/RT Ist)

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: No. 1: Volatiles
Contractor: E.P.L. Calibration Date: 12/23/91
Contract No: _____

Minimum RF for SPCC is 0.30 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >U2243 >U2244 >U2245 >U2246 >U2247					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
	20.00	50.00	100.00	150.00	200.00					
2-Chloroethylvinyl ether	.26997	.22500	.22915	.24103	.24860	1.183	.24275	7.364		
Bromoform	.77963	.68554	.66084	.70029	.62835	1.681	.69093	8.190		**
4-Methyl-2-Pentanone	.74759	.60278	.63584	.68893	.70190	.782	.67541	8.420		
2-Hexanone	.30655	.23048	.23683	.25268	.25134	.883	.25558	11.748		
Tetrachloroethene	1.66613	1.42152	1.49218	1.46382	1.48452	.912	1.50563	6.231		
1,1,2,2-Tetrachloroethane	.73570	.57567	.52325	.50471	.47337	1.133	.56254	18.430		**
Toluene	2.53970	2.17093	2.34858	2.36548	2.46761	.839	2.37846	5.874	*	
Chlorobenzene	2.11676	1.79517	1.87617	1.90594	1.94714	1.004	1.92824	6.181		**
Ethylbenzene	3.42271	2.88690	3.07003	2.84256	2.84665	1.013	3.01377	8.191	*	
Styrene	2.03664	1.76921	1.81113	1.82021	1.79146	1.075	1.84573	5.879		
m + p-Xylenes	3.17746	2.69483	2.43000	1.83850	1.83299	1.022	2.39476	24.069		(Conc=40.0,100.0,200.0)
o-Xylene	3.04073	2.56831	2.64729	2.52003	2.47915	1.071	2.65110	8.548		
1,3-Dichlorobenzene	2.05368	1.61288	1.31250	1.29627	1.07636	1.269	1.47034	25.697		
1,4-Dichlorobenzene	1.89795	1.47830	1.16466	1.19533	.97795	1.282	1.34284	26.673		
1,2-Dichlorobenzene	1.17622	1.18710	.80572	.82605	.80923	1.324	.96086	20.996		
Toluene-d8	1.91575	1.90690	1.92284	1.92654	1.96177	.830	1.92676	1.088		(Conc=100.0,100.0,100.0)
Bromofluorobenzene	1.20530	1.17122	1.12064	1.10991	1.02072	1.141	1.12556	6.236		(Conc=100.0,100.0,100.0)

RF - Response Factor (Subscript is amount in ppb)

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

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

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

3B
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Environmental Profile Lab

Lab Code: 15526

Matrix Spike for EPL Sample Number: 6968.1 1g

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	100.00	0.00	75.80	75	59-172
Trichloroethene	100.00	0.00	102.00	102	62-137
Benzene	100.00	0.00	111.00	111	66-142
Toluene	100.00	0.00	108.00	108	59-139
Chlorobenzene	100.00	0.00	106.00	106	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	100.00	79.30	79	5	22 59-172
Trichloroethene	100.00	97.60	97	5	24 62-137
Benzene	100.00	122.00	121	8	21 66-142
Toluene	100.00	107.00	106	1	21 59-139
Chlorobenzene	100.00	105.00	104	1	21 60-133

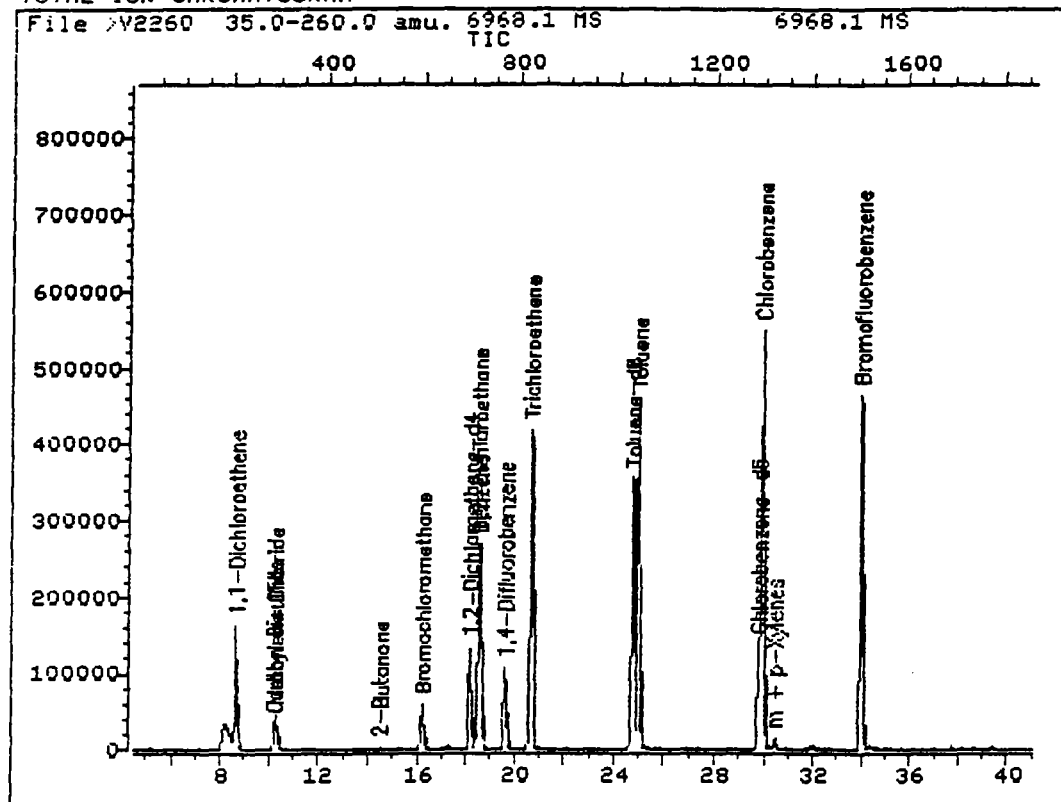
Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

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

COMMENTS: _____

TOTAL ION CHROMATOGRAM



Data File: >V2260::D1

Quant Output File: ^V2260::DB

Name: 6968.1 MS

Misc: 6968.1 MS

Id File: IDVOA::D4

Title: HSL VOLATILE ORGANICS

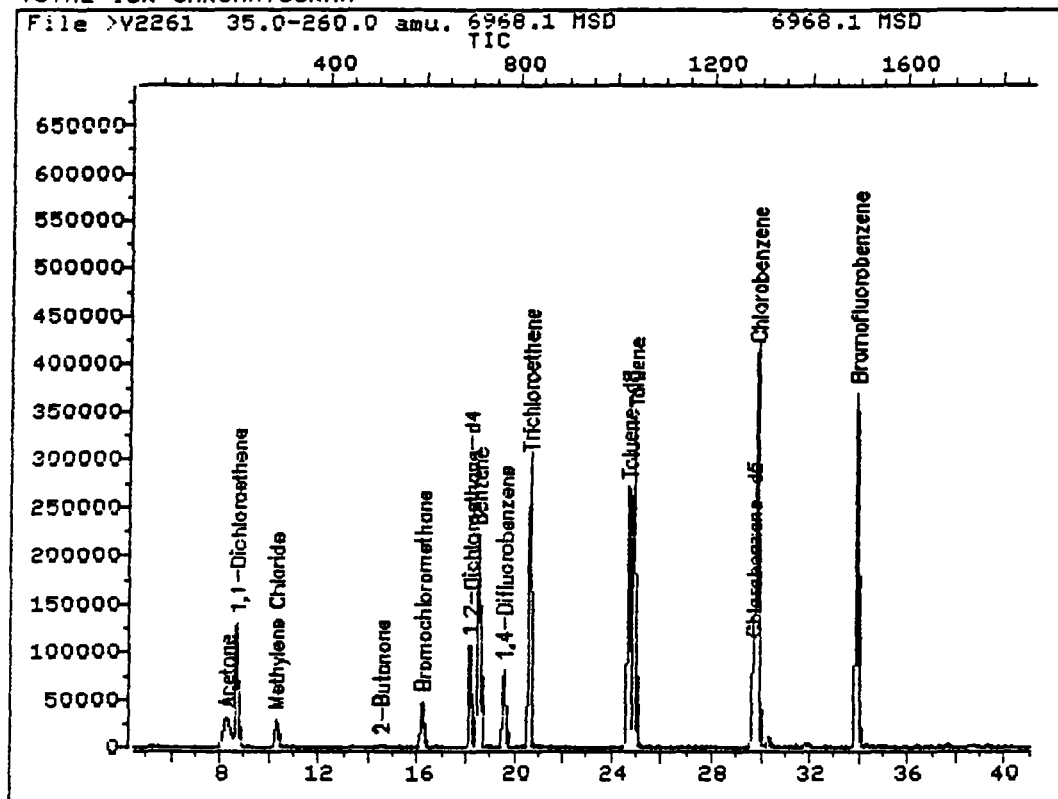
Last Calibration: 911224 13:28

Operator ID: MARK

Quant Time: 911224 14:33

Injected at: 911224 13:51

TOTAL ION CHROMATOGRAM



Data File: >U2261::D1

Quant Output File: ^U2261::DB

Name: 6968.1 MSD

Misc: 6968.1 MSD

Id File: IDVOA::D4

Title: HSL VOLATILE ORGANICS

Last Calibration: 911224 13:28

Operator ID: MARK

Quant Time: 911224 15:22

Injected at: 911224 14:40

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: Environmental Profile Lab Contract: Serv-Air
 Lab Code: 15526
 Lab File ID: >U2259 Lab Sample ID: VOA Blank
 Date Analyzed: 12/24/91 Time Analyzed: 12:39
 Matrix: Soil
 Instrument ID: GC/MSD 5970 #1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	CCC/SPCC	CCC/SPCC	>U2258	11:26
02	6968.1 MS	6968.1 MS	>U2260	13:51
03	6968.1 MSD	6968.1 MSD	>U2261	14:40
04	6985.2 1g	6985.2 1g	>U2265	17:52
05	6985.4 1g	6985.4 1g	>U2266	18:38
06	6985.6 1g	6985.6 1g	>U2267	19:24
07	6985.8 1g	6985.8 1g	>U2268	20:09
08				
09				
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REMARKS: _____

Environmental Profile Laboratories
VOLATILE ORGANIC ANALYSIS DATA

JOB NUMBER		MATRIX	Soil
SAMPLE NAME	VOA Blank	DILUTION FACTOR	5.00
CLIENT ID		QA BATCH	
DATA FILE	U2259	DATE ANALYZED	12/24/91

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
Chloromethane	ND	50	Trichloroethene	ND	25
Bromomethane	ND	50	Dibromochloromethane	ND	25
Vinyl Chloride	ND	50	1,1,2-Trichloroethane	ND	25
Chloroethane	ND	50	Benzene	ND	25
Methylene Chloride	ND	25	trans-1,3-Dichloropropene	ND	25
Acrolein	ND	250	2-Chloroethylvinyl ether	ND	25
Acrylonitrile	ND	250	Bromoform	ND	25
Acetone	ND	25	2-Hexanone	ND	25
Carbon Disulfide	ND	25	4-Methyl-2-Pentanone	ND	25
1,1-Dichloroethene	ND	25	Tetrachloroethene	ND	25
1,1-Dichloroethane	ND	25	1,1,2,2-Tetrachloroethane	ND	25
trans-1,2-Dichloroethene	ND	25	Toluene	ND	25
Trichlorofluoromethane	ND	25	Chlorobenzene	ND	25
Chloroform	ND	25	Ethylbenzene	ND	25
1,2-Dichloroethane	ND	25	Styrene	ND	25
2-Butanone	ND	25	o-Xylene	ND	25
1,1,1-Trichloroethane	ND	25	m + p-Xylenes	ND	25
Carbon Tetrachloride	ND	25	1,3-Dichlorobenzene	ND	25
Bromodichloromethane	ND	25	1,2-Dichlorobenzene	ND	25
Vinyl Acetate	ND	25	1,4-Dichlorobenzene	ND	25
1,2-Dichloropropane	ND	25	tert-Butyl Alcohol	ND	250
cis-1,3-Dichloropropene	ND	25	Methyl tert-Butyl Ether	ND	25

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

LAB SAMPLE NO.

VOA Blank

Lab Sample ID: VOA Blank

Lab File ID: >U2259

Dilution Factor: 5

Number of TICs found: 0

CONCENTRATION UNITS:
ug/Kg

[illegible]

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: Environmental Profile Lab Contract: Serv-Air

Lab Code: 15526

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	CCC/SPCC	103	112	114		0
02	VOA Blank	104	115	114		0
03	6968.1 MS	95	93	92		0
04	6968.1 MSD	96	101	104		0
05	6985.2 1g	93	93	90		0
06	6985.4 1g	93	90	87		0
07	6985.6 1g	93	90	89		0
08	6985.8 1g	92	89	90		0
09						
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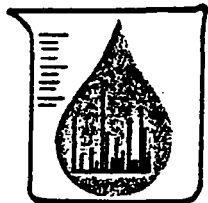
QC LIMITS

S1 (TOL) = Toluene-d8 (70-137)
 S2 (BFB) = Bromofluorobenzene (74-120)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out



ENVIRONMENTAL PROFILE LABORATORIES

ROUTE 37 BUSINESS PARK

SUITE 13

TOMS RIVER, NJ 08755

OFFICE: (908) 244-6278

FAX: (908) 244-6372

REPORT OF ANALYSIS

CEMV-AIR
PO BOX 369, BLDG. 490
FT. MONMOUTH, NJ 07703

SAMPLE ID NO : 6985.2.4.6.
SAMPLE RCD : 12/23/91
ANALYSIS START : 12/30/91
MATRIX : SOIL

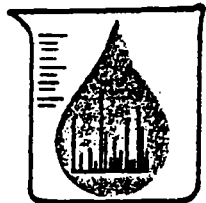
THIS ANALYSES ON SOIL WAS PERFORMED BY GAS CHROMATOGRAPHY (EPA METHOD 608)
THIS SYSTEM IS EQUIPPED WITH AN ELECTRON CAPTURE DETECTOR.
RESULTS AND DETECTION LIMITS ARE EXPRESSED IN $\mu\text{g}/\text{kg}$ (ppb)

PARAMETERS	EXT.	6985.2	6985.4	6985.6	6985.8	DET. LIMIT
PARAMETERS	BLANK	091-548	091-550	091-552	091-554	
CHLORDANE	ND	ND	ND	ND	ND	0.07
ALPHA-BHC	ND	ND	ND	ND	ND	0.07
BETA-BHC	ND	ND	ND	ND	ND	0.07
DELTA-BHC	ND	ND	ND	ND	ND	0.07
GAMMA-BHC (LINDANE)	ND	ND	ND	ND	ND	0.07
HEPTACHLOR	ND	ND	ND	ND	ND	0.07
DLDRI	ND	ND	ND	ND	ND	0.07
HEPTACHLOR EPOXIDE	ND	ND	ND	ND	ND	0.07
ENDOSULFAN I	ND	ND	ND	ND	ND	0.07
DIELDRIN	ND	ND	ND	ND	ND	0.07
4-4-ODE	ND	ND	ND	ND	ND	0.07
DNDRI	ND	ND	ND	ND	ND	0.07
ENDOSULFAN II	ND	ND	ND	ND	ND	0.07
4-4-ODD	ND	ND	ND	ND	ND	0.07
ENDOSULFAN SULFATE	ND	ND	ND	ND	ND	0.07
4-4-ODT	ND	ND	ND	ND	ND	0.07
METHOXYCHLOR	ND	ND	ND	ND	ND	0.7
DNDRI ALDEHYDE	ND	ND	ND	ND	ND	0.07
TOXAPHENE	ND	ND	ND	ND	ND	0.7
813-1216	ND	ND	ND	ND	ND	2.6
813-1221	ND	ND	ND	ND	ND	2.6
808-1232	ND	ND	ND	ND	ND	2.6
808-1242	ND	ND	ND	ND	ND	2.6
808-1248	ND	ND	ND	ND	ND	2.6
808-1254	ND	ND	ND	ND	ND	2.6
808-1260	ND	ND	ND	ND	ND	2.6

ND = NONE DETECTED

Paul K. Winkler

LABORATORY DIRECTOR



ENVIRONMENTAL PROFILE LABORATORIES

ROUTE 37 BUSINESS PARK
SUITE 13
TOMS RIVER, NJ 08755
OFFICE: (908) 244-6278
FAX: (908) 244-6372

REPORT OF ANALYSIS

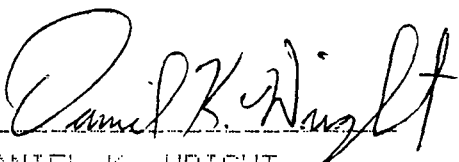
SERV-AIR
PO BOX 365 BLDG. 490
FT. MONMOUTH, NJ 07703

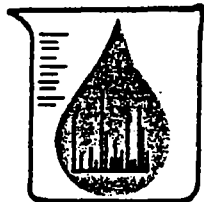
SAMPLE RECEIVED: 12/22/91
SAMPLE MATRIX: WATER
EPL SAMPLE ID: 6985

QUALITY CONTROL DATA

PRIORITY POLLUTANT METALS		Results expressed in mg/L (ppm)			
	MATRIX SPIKE (REC.)	MATRIX SPIKE DUP (REC.)	EXTRACTION	DETECTION	
			BLANK	LIMIT	
Arsenic (As)	88	90	ND	0.012	
Antimony (Sb)	96	96	ND	0.01	
Beryllium (Be)	94	105	ND	0.0005	
Cadmium (Cd)	109	108	ND	0.0002	
Chromium (Cr)	102	98	ND	0.2	
Copper (Cu)	94	96	ND	0.03	
Lead (Pb)	96	96	ND	0.004	
Mercury (Hg)	120	120	ND	0.0005	
Nickel (Ni)	104	108	ND	0.05	
Selenium (Se)	98	96	ND	0.01	
Silver (Ag)	104	106	ND	0.03	
Zinc (Zn)	102	102	ND	0.03	
Thallium (Tl)	104	106	ND	0.003	

ND= NOT DETECTED


DANIEL K. WRIGHT
LABORATORY DIRECTOR



ENVIRONMENTAL PROFILE LABORATORIES

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REPORT OF ANALYSIS

SERV-AIR
PO BOX 369, BLDE. 490
ST. MONMOUTH, NJ 07703

SAMPLE RECEIVED: 10/08/01
SAMPLE MATRIX: WATER
EPL SAMPLE ID: 6985.2..4..6..

INORGANICS: PRIORITY POLLUTANT METALS

EPL #	6985.2	6985.4	6985.6	6750.8	
CLIENT ID	C91-648	C91-650	C91-652	C91-654	
	RESULTS	RESULTS	RESULTS	RESULTS	DETECTION LIMITS
Arsenic (As)	3.40	5.0	3.5	3.9	2.5
Antimony (Sb)	ND	ND	ND	ND	0.5
Beryllium (Be)	0.63	0.55	0.55	0.38	0.025
Cadmium (Cd)	0.040	0.019	0.012	0.019	0.01
Chromium (Cr)	44.4	59.1	71.2	63.4	12.5
Copper (Cu)	6.88	5.2	5.0	6.3	1.5
Lead (Pb)	2.88	3.3	1.8	2.4	0.2
Mercury (Hg)	0.040	ND	0.038	0.038	0.025
Nickel (Ni)	ND	8.6	8.1	9.4	3.0
Selenium (Se)	ND	ND	ND	ND	0.5
Silver (Ag)	ND	ND	ND	10.0	1.5
Zinc (Zn)	28.1	29.0	21.3	25.0	0.4
Thallium (Tl)	ND	ND	ND	ND	0.15

DETECTION LIMITS AND RESULTS EXPRESSED IN mg/Kg
ND= NONE DETECTED

Daniel K. Wright

DANIEL K. WRIGHT
LABORATORY DIRECTOR

All < Cat. 3
all OK CA

