COPY

United States Army
Fort Monmouth, New Jersey

Underground Storage Tank Closure and Site Investigation Report

Building 744
Main Post-West Area

NJDEP UST Registration No. 0081533-118

DECEMBER 1998

UNDERGROUND STORAGE TANK
CLOSURE AND SITE INVESTIGATION REPORT

BUILDING 744

MAIN POST-WEST AREA
NJDEP UST REGISTRATION NO. 0081533-118

DECEMBER 1998

PREPARED FOR:

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

PREPARED BY:

VERSAR
1900 FROST ROAD
BRISTOL, PA 19007

PROJECT NO. 2491-308

744.DOC

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EXECUTIVE SUMMARY

UST Closure

On July 17, 1998, a fiberglass underground storage tank (UST) was closed by removal in accordance with the New Jersey Department of Environmental Protection (NJDEP) underground storage tank procedures at the Main Post-West area of the U.S. Army Fort Monmouth, Fort Monmouth, New Jersey. The UST, NJDEP Registration No. 0081533-118 (Fort Monmouth ID No. 744), was located southeast of Building 744. UST No. 0081533-118 was a 550-gallon No. 2 fuel oil UST.

Site Assessment

The site assessment was performed by U.S. Army personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) and the NJDEP *Field Sampling Procedures Manual*. The sampling and laboratory analysis conducted during the site assessment were performed in accordance with Section 7:26E-2.1 of the *Technical Requirements for Site Remediation*. Soils surrounding the tank were screened visually and with air monitoring equipment for evidence of contamination. Following removal, the UST was inspected for corrosion holes or punctures. No holes or punctures were noted in the UST. Groundwater was encountered at a depth of 6.0 feet bgs. No evidence of potentially contaminated soil or groundwater was observed surrounding the tank. Samples contained non-detectable level of TPHC.

Site Restoration

Following receipt of all post-excavation soil sampling results, the excavation was backfilled to grade with crushed stone, sand, and native backfill and restored to its original condition.

Conclusions and Recommendations

Based on the post-excavation soil sampling results, soils with TPHC concentrations exceeding the NJDEP soil cleanup criteria for total organic contaminants of 10,000 mg/kg, do not exist in the former location of the UST or associated piping.

No further action is proposed in regard to the closure and site assessment of UST No. 0081533-118 at Building 744.

1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

One underground storage tank (UST), New Jersey Department of Environmental Protection (NJDEP) Registration No. 0081533-118, was closed at Building 744 at the Main Post-West area of U.S. Army Fort Monmouth, Fort Monmouth, New Jersey on July 17, 1998. Refer to site location map on Figure 1. This report presents the results of the Department of Public Works= (DPW) implementation of the UST Decommissioning/Closure Plan approved by the NJDEP. The UST was a fiberglass 550-gallon tank containing No. 2 fuel oil.

Decommissioning activities for UST No. 0081533-118 complied with all applicable Federal, State and Local laws and ordinances in effect at the date of decommissioning. These laws included but were not limited to N.J.A.C. 7:14B-1 et seq., N.J.A.C. 5:23-1 et seq., and Occupational Safety and Health Administration (OSHA) 1910.146 & 1910.120. All permits including but not limited to the NJDEP-approved Decommissioning/Closure Plan were posted onsite for inspection. The decommissioning activities were conducted by DPW personnel who are registered and certified by the NJDEP for performing UST closure activities. Closure of UST No. 0081533-118 proceeded under the approval of the NJDEP Bureau of Underground Storage Tanks (NJDEP-BUST). The Standard Reporting Form and signed Site Assessment Summary form for UST No. 0081533-118 are included in Appendices A and B, respectively.

Based on inspecting the UST, field screening of subsurface soils and groundwater, and reviewing analytical results of collected soil samples, the DPW has concluded that no significant historical discharges are associated with the UST or associated piping.

This UST Closure and Site Investigation Report has been prepared by Versar, to assist the United States Army Directorate of Public Works (DPW) in complying with the NJDEP-BUST regulations. The applicable NJDEP-BUST regulations at the date of closure were the *Interim Closure Requirements for Underground Storage Tank Systems* (N.J.A.C. 7:14B-1 et seq. October 1990 and revisions dated November 1, 1991).

This report was prepared using information collected at the time of closure. Section 1 of this UST Closure and Site Investigation Report provides a summary of the UST 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 744 is located in the Main Post-West area of the Fort Monmouth Army Base. UST No. 0081533-118 was located southeast of Building 744 and appurtenant copper piping ran approximately eleven (11) feet northwest from the excavation to Building 744. A site map is provided on Figure 2.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of the area surrounding Building 744. 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, 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 (Zapecza, 1989). These sediments, predominantly derived from deltaic, shallow marine, and continental shelf environments, date from Cretaceous through the Quaternary Periods. The mineralogy ranges from quartz to glauconite.

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

Local Geology

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the 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 that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark gray 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).

Hydrogeology

The water table aquifer in 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 of wells drilled in the Main Post area, water is typically encountered at depths of 2 to 9 feet below ground surface (bgs). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may produce 2 to 25 gallons per minute (gpm). Some well owners have reported acidic water that requires treatment to remove iron.

Due to the proximity of the Atlantic Ocean to Fort Monmouth, shallow groundwater may be tidally influenced and may flow toward creeks and brooks as the tide goes out, and away from creeks and brooks as the tide comes in. However, an abundance of clay lenses and sand deposits were noted in borings installed throughout Fort Monmouth. Therefore, the direction of shallow groundwater should be determined on a case-by-case basis.

Shallow groundwater is locally influenced within the Main Post area by the following factors:

- tidal influence (based on proximity to the Atlantic Ocean, rivers, and tributaries)
- topography
- nature of the fill material within the Main Post area
- presence of clay and silt lenses in the natural overburden deposits
- local groundwater recharge areas (i.e., streams, 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 gravel silt and/or clay.

Building 744 is located approximately 300 feet north of Husky Brook, the nearest water body. Based on the Main Post topography, the groundwater flow in the area of Building 744 is anticipated to be to the south.

1.3 HEALTH AND SAFETY

Before, during, and after all decommissioning 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 an organic vapor analyzer (OVA). The 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 identified 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 visually examined and screened with an OVA for evidence of contamination. Potentially contaminated soils were identified and logged during closure activities.
- Surface materials (i.e., asphalt, concrete, etc.) were excavated and staged separately from all soil and recycled in accordance with all applicable regulations and laws.
- A Sub-Surface Evaluator from the DPW was present during all site assessment activities.

1.4.2 Underground Storage Tank Excavation and Cleaning

Prior to UST decommissioning activities, surficial soil was removed to expose the UST and associated piping. All free product present in the piping was drained into the UST, and the UST was purged to remove vapors prior to cutting and removal of the piping. After removal of the associated piping, a manway was made in the UST to allow for proper cleaning. The UST was completely emptied of all liquids prior to removal from the ground. LORCO Petroleum Services transported approximately 50 gallons of liquid from the UST and its associated piping to LORCO Petroleum Services facility, a NJDEP-approved petroleum recycling and disposal company located in Old Bridge, New Jersey. Refer to Appendix C for the waste manifest.

The UST was cleaned prior to removal from the excavation in accordance with the NJDEP-BUST regulations. After the UST was removed from the excavation, it was staged on polyethylene sheeting and examined for holes. No holes or punctures were observed during the inspection by the Sub-Surface Evaluator. Soils surrounding the UST were screened visually and with an OVA for evidence of contamination. No evidence of contamination was observed. Soil screening was also performed along the piping run associated with the UST closure. No contamination was noted anywhere along the piping length. Groundwater was encountered at a depth of 6.0 feet bgs and no sheen was observed. See Figure 3 for a cross-sectional view of the excavated area.

1.5 UNDERGROUND STORAGE TANK TRANSPORTATION AND DISPOSAL

The tank was transported to Mazza and Sons, Inc., Metal Recyclers. See Appendix D for a copy of the UST disposal certificate and Appendix F for photographs of the UST. The transportation of the UST was in compliance with all applicable regulations and laws.

The UST was labeled prior to transport with the following information:

- Site of origin
- Contact person
- NJDEP UST Facility ID number
- Former contents

1.6 MANAGEMENT OF EXCAVATED SOILS

Based on OVA air monitoring and TPHC analysis results from the post-excavation soil samples, no soils exhibited signs of contamination. Therefore, the excavated soils were used as backfill following removal of the UST.

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 U.S. Army Fort Monmouth Environmental Laboratory, a NJDEP-certified testing laboratory. All sampling was performed under the direct supervision of a NJDEP Certified Sub-Surface Evaluator according to the methods described in the NJDEP *Field Sampling Procedures Manual* (1992). Sampling frequency and parameters analyzed complied with the NJDEP-BUST document *Interim Closure Requirements for Underground Storage Tank Systems* (October 1990 and revisions dated November 1, 1991) which was the applicable regulation at the date of the closure. All records of the Site Investigation activities are maintained by the Fort Monmouth DPW Environmental Office.

The following Parties participated in Closure and Site Investigation Activities:

- Subsurface Evaluator: Dinker DeSai
  Employer: U.S. Army, Fort Monmouth
  Phone Number: (732) 532-6224
  NJDEP Certification No.: 0010173

- Analytical Laboratory: U.S. Army Fort Monmouth Environmental Laboratory
  Contact Person: Daniel K. Wright
  Phone Number: (908) 532-4359
  NJDEP Company Certification No.: 13461

- Hazardous Waste Hauler: LORCO Petroleum Services
  Contact Person: Douglas Van Pelt
  Phone Number: (908) 721-0900

2.2 FIELD SCREENING/MONITORING

Field screening was performed by a NJDEP Certified Sub-Surface Evaluator using an OVA and visual observations to identify potentially contaminated material. Soil excavated from around the tank and appurtenant piping, as well as the UST excavation sidewalls and bottom, did not exhibit any evidence of potential contamination. Groundwater was encountered at a depth of 6.0 feet bgs and no sheen was observed.

2.3 SOIL SAMPLING

On July 17, 1998, following the removal of the UST, post-excavation soil samples A, B, C, D, E, F, and DUP C were collected from a total of six (6) locations of the UST excavation. Sample A was collected along the excavation floor at a depth of 8.5 feet bgs. Sidewall samples B, C, D, and E were collected at a depth of 5.5 feet bgs. Piping sample F was collected at a depth of 1.0 feet bgs. All samples were analyzed for total petroleum hydrocarbons (TPHC) and total solids.

U.S. Army personnel in accordance with the NJDEP Technical Requirements and the NJDEP Field Sampling Procedures Manual performed the site assessment. A summary of sampling activities including parameters analyzed is provided in Table 1. The post-excavation soil samples were collected using NJDEP *Field Sampling Procedures Manual* (1992) standard sampling procedures. Following soil sampling activities, the samples were chilled and delivered to U.S. Army Fort Monmouth Environmental Laboratory located in Fort Monmouth, New Jersey, for analysis.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

To evaluate soil conditions following removal of the UST, post-excavation soil samples were collected on July 17, 1998, from a total of six (6) locations. All samples were analyzed for TPHC and total solids. The post-excavation sampling results were compared to the NJDEP residential direct contact total organic contaminants soil cleanup criteria of 10,000 mg/kg (N.J.A.C. 7:26D and revisions dated February 3, 1994). A summary of the analytical results and comparison to the NJDEP soil cleanup criteria is provided in Table 2 and the soil sampling locations are shown on Figure 4. The analytical data package is provided in Appendix E.

All post-excavation soil samples collected on July17, 1998, from the UST excavation and from below piping associated with the UST contained concentrations of TPHC below the NJDEP soil cleanup criteria. Samples contained non-detectable levels of TPHC.

3.2 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for all post-excavation soil samples collected from the UST closure excavation at Building 744 were below the NJDEP soil cleanup criteria for total organic contaminants.

Based on the post-excavation sampling results, soils with TPHC concentrations exceeding the NJDEP soil cleanup criteria for total organic contaminants of 10,000 mg/kg, do not exist in the former location of the UST or associated piping.

No further action is proposed in regard to the closure and site assessment of UST No. 0081533-118 at Building 744.

TABLES

TABLE 1

SUMMARY OF POST-EXCAVATION SAMPLING ACTIVITIES
BUILDING 744, MAIN POST-WEST AREA
FORT MONMOUTH, NEW JERSEY

Sample ID	Date of Collection	Date Analysis Started	Matrix	Sample Type	Analytical Parameters*	Analysis Method
A	7/17/98	7/20/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
B	7/17/98	7/20/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
C	7/17/98	7/20/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
D	7/17/98	7/20/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
E	7/17/98	7/20/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
F	7/17/98	7/20/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
DUP C	7/17/98	7/20/98	Soil	Post-Excavation	TPHC	OQA-QAM-025

Note:
* TPHC Total Petroleum Hydrocarbons

TABLE 2

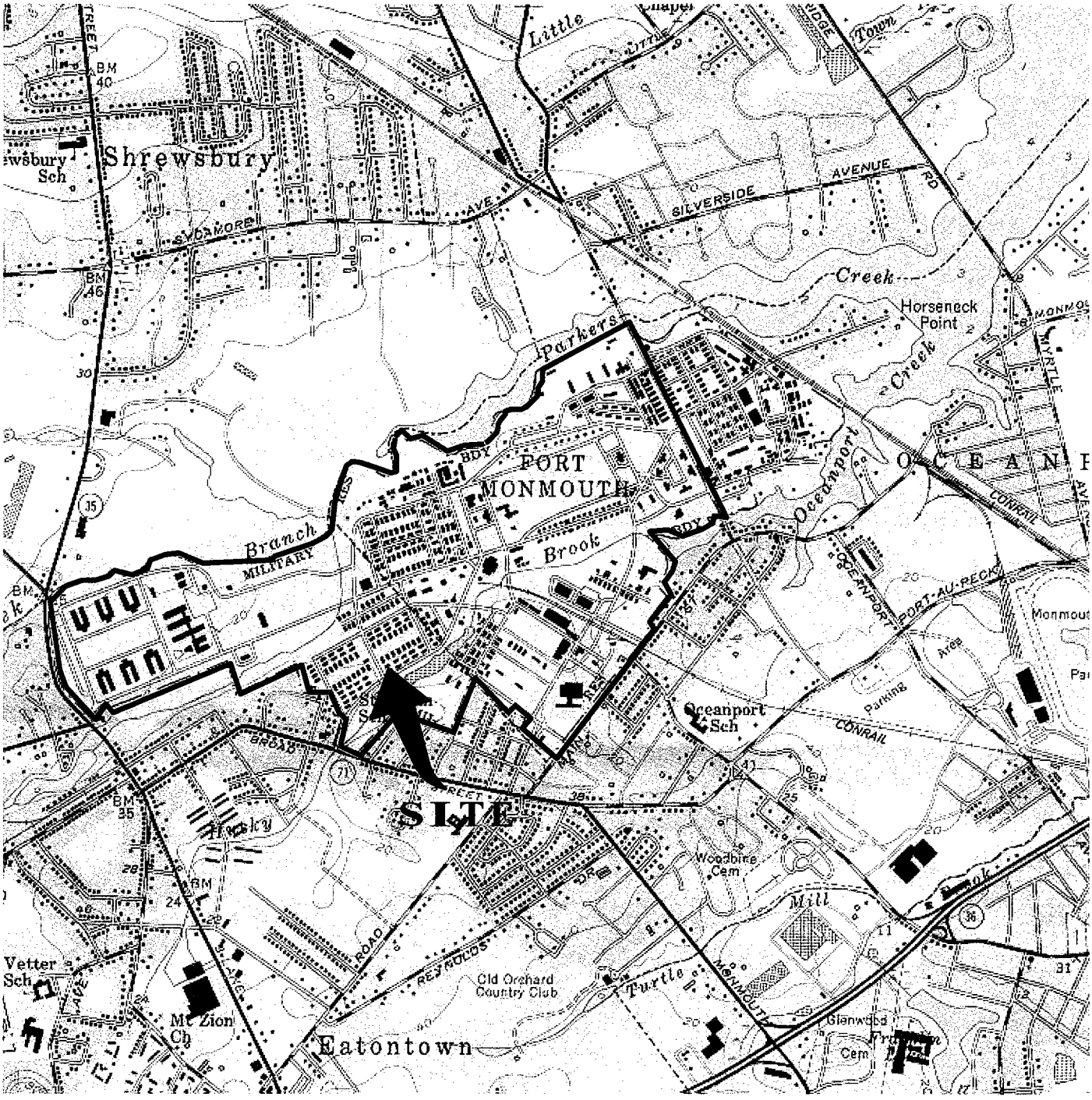
POST-EXCAVATION SOIL SAMPLING RESULTS
BUILDING 744, MAIN POST-WEST AREA
FORT MONMOUTH, NEW JERSEY

Sample ID/ Depth	Sample Laboratory ID	Sample Date	Analysis Date	Analytical Method Used	Method Detection Limit (mg/kg)	Compound of Concern	Result (mg/kg) *	NJDEP Soil Cleanup Criteria ** (mg/kg)	Exceeds Cleanup Criteria
A/8.5=	3737.01	7/17/98	7/20/98	Total Solid	--	--	68.66	--	--
				TPHC	227	Yes	ND	10,000	No
B/5.5=	3737.02	7/17/98	7/20/98	Total Solid	--	--	75.56	--	--
				TPHC	199	Yes	ND	10,000	No
C/5.5=	3737.03	7/17/98	7/20/98	Total Solid	--	--	79.78	--	--
				TPHC	190	Yes	ND	10,000	No
D/5.5=	3737.04	7/17/98	7/20/98	Total Solid	--	--	67.87	--	--
				TPHC	225	Yes	ND	10,000	No
E/5.5=	3737.05	7/17/98	7/20/98	Total Solid	--	--	81.29	--	--
				TPHC	189	Yes	ND	10,000	No
F/1.0=	3737.06	7/17/98	7/20/98	Total Solid	--	--	88.08	--	--
				TPHC	175	Yes	ND	10,000	No
DUP C /5.5=	3737.07	7/17/98	7/20/98	Total Solid	--	--	87.23	--	--
				TPHC	177	Yes	ND	10,000	No

Note:

*	Total Solid results are expressed as a percentage.
**	NJDEP Residential Direct Contact soil cleanup criteria for total organics
--	Not detected above stated sample quantitation limit
TPHC	Total Petroleum Hydrocarbons

FIGURES



LONG BRANCH, N. J.

40073-C8-TF-024

1954

PHOTOREVISED 1981

DMA 6164 I SE-SERIES V822

NEW JERSEY

QUADRANGLE LOCATION

Mapped, edited and published by the Geological Survey

FIGURE 1

SITE LOCATION MAP
Building 744
Main Post-West
Fort Monmouth Army Base
Monmouth County, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & Planners
BRISTOL, PA.

SCALE: 1"= 2000'

DATE: JULY 1998

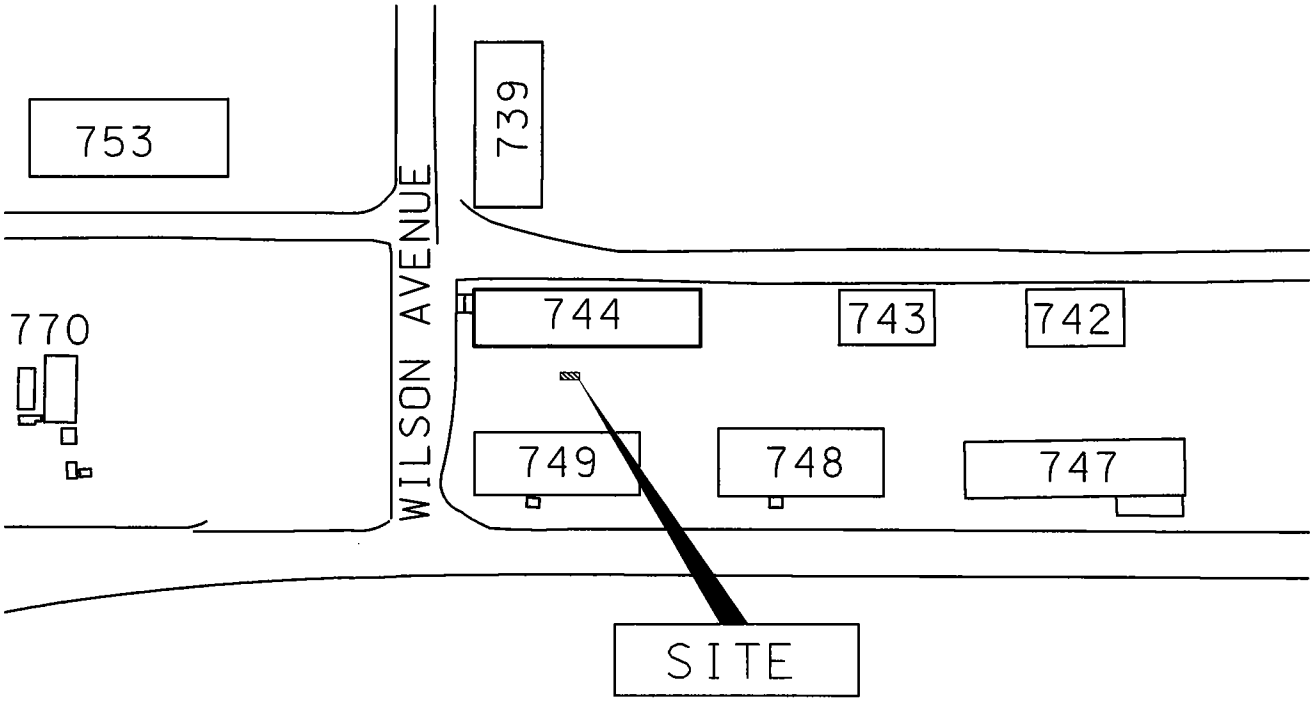


FIGURE 2
SITE MAP
BUILDING 744
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=100'

DATE: JULY 1998

744 2429 FIG2

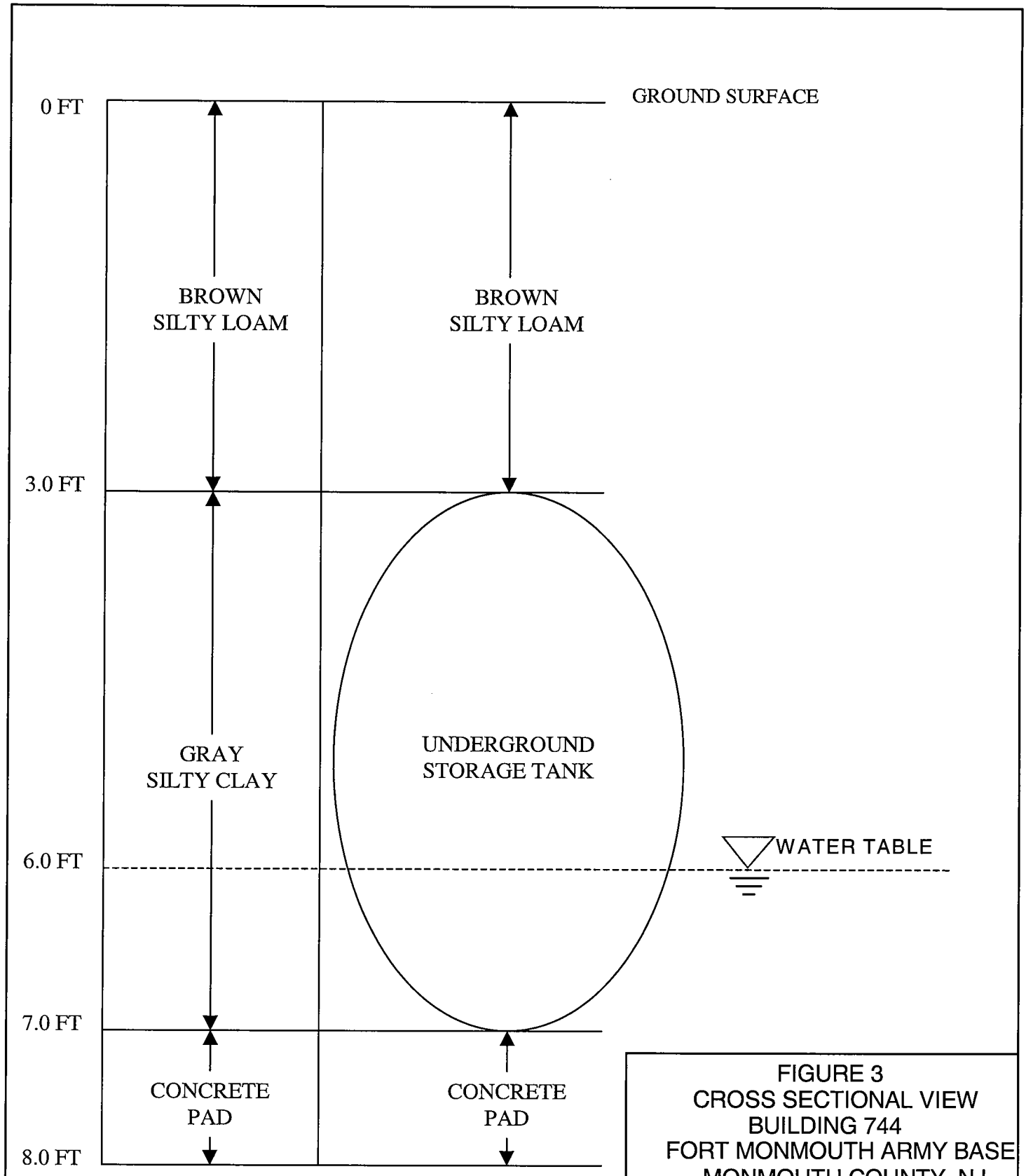
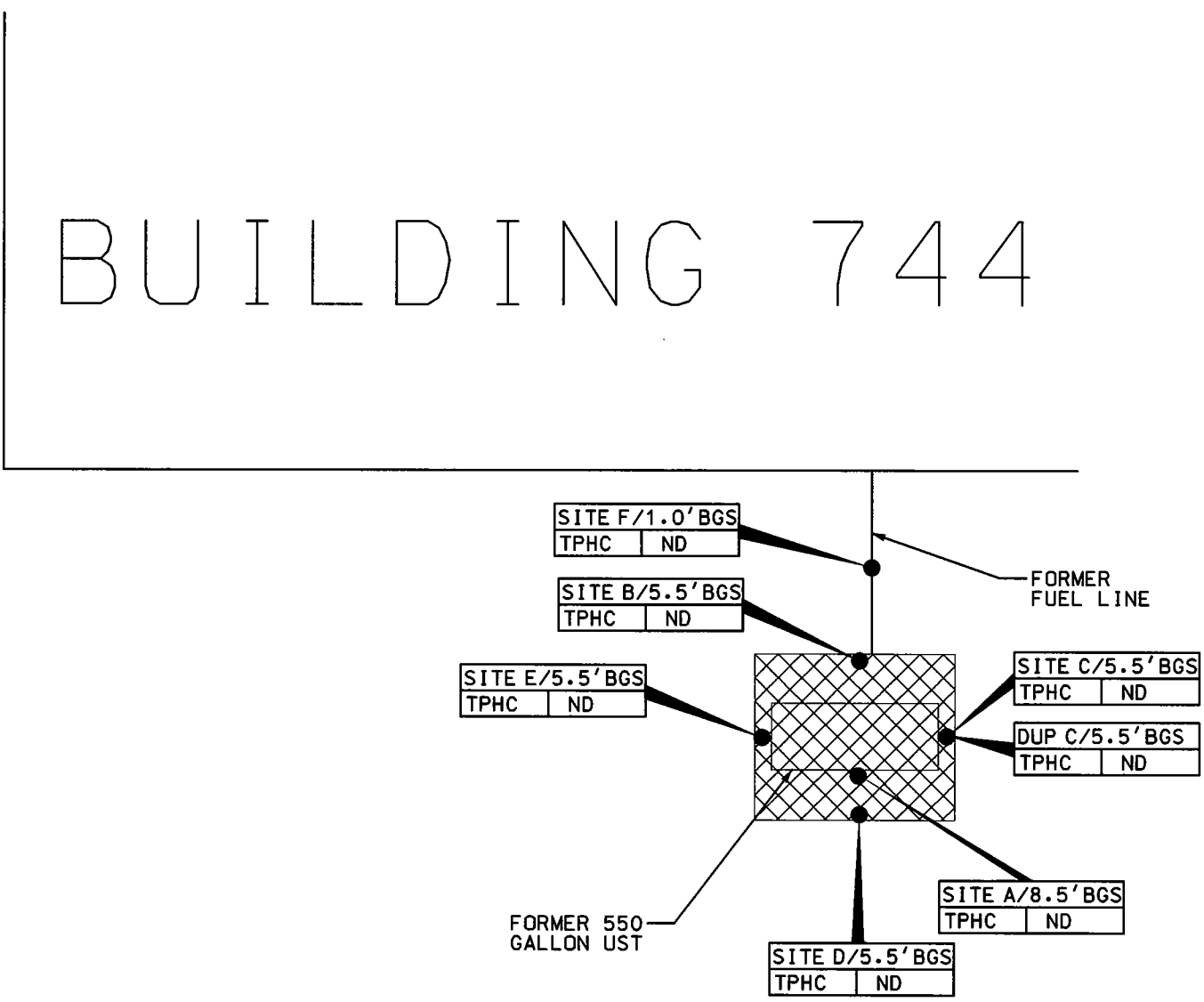


FIGURE 3
CROSS SECTIONAL VIEW
BUILDING 744
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
Engineers, Managers, Scientists & Planners
Bristol, PA

SCALE: NTS | DATE: JULY 1998



LEGEND

- SOIL SAMPLE LOCATION (JULY 17, 1998)
- LIMIT OF EXCAVATION (JULY 17, 1998)

NOTES:

1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS = BELOW GROUND SURFACE

FIGURE 4
SOIL SAMPLING LOCATION MAP
BUILDING 744
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10'

DATE: JULY 1998

744 2429 FIG4

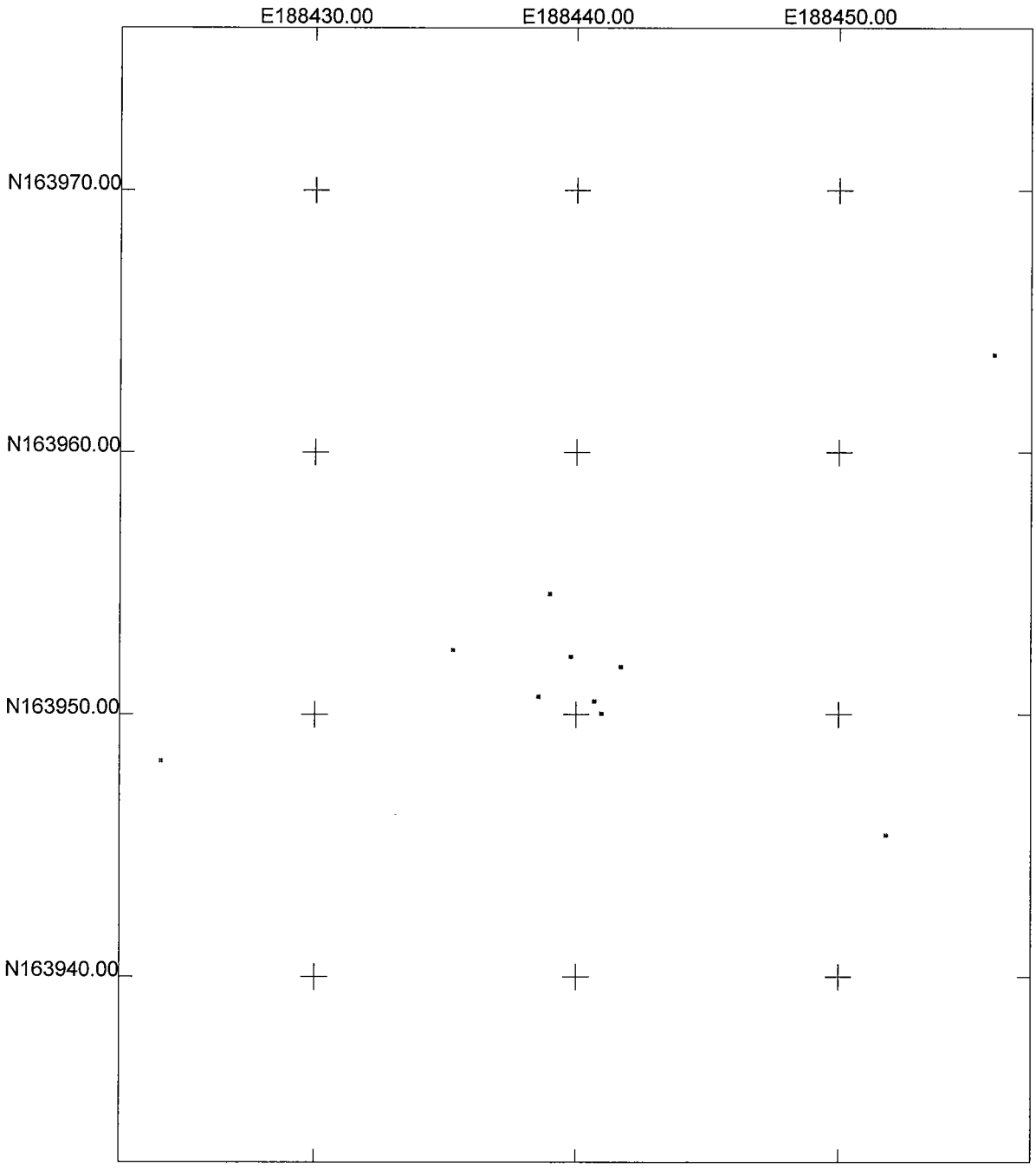


Figure 4 GPS Sampling Location Map

US State Plane 1983
New Jersey (NY East) 2900
NAD 1983 (Conus)

N

Scale 1:250
0 7.500
Meters

r102618a.cor
12/11/1998
Pathfinder Office
Trimble

Figure 4 GPS Sampling Location Point Data

US State Plane 1983 NJ (NY East) 2900 Nad 1983 (Conus)

Reference Points

Location	Y Coord. (Northing)	X Coord. (Easting)
744 BLDG SE CORNER	163963.743	188455.881
744 BLDG SW CORNER	163948.278	188424.114
749 BLDG NE CORNER	163945.446	188451.774
CONCRETE STEPS SE CORNER	163952.473	188435.271

Sample Points

Location	Y Coord. (Northing)	X Coord. (Easting)
744 A	163950.524	188440.66
744 B	163952.232	188439.764
744 C	163951.838	188441.677
744 D	163950.063	188440.945
744 E	163950.706	188438.525
744 F	163954.622	188438.965

APPENDIX A

NJDEP-STANDARD REPORTING FORM

File Copy

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF APPLICABILITY AND COMPLIANCE
Registration and Billing Unit
CN 028, Trenton, N.J. 08625-0028
1-609-984-3156

FOR STATE USE ONLY

Check In ☐ Yes ☐ N

STATUS Active ☐ Inactive ☐ COMCODE ☐☐☐☐

UNDERGROUND STORAGE TANK FACILITY QUESTIONNAIRE

FACILITY UST # 0081533 BLDG. 744

Completion of this Registration Questionnaire will satisfy the registration requirements of the Underground Storage of Hazardous Substances Act, N.J.S.A. 58:10A-21, and the Registration and Billing Regulations N.J.A.C. 7:14B-2.

[Check appropriate box(es)]

A. ☐ Is this a registration of a proposed or newly installed underground storage tank? (This form must be filed at least 30 days prior to operation)
B. ☐ Is this a registration of an existing underground storage tank not presently registered?
C. ☑ Is this a correction or amendment to an existing facility registration? UST # 0081533
D. ☐ There have been no changes to the facility registration since last submittal. UST #_____ (Go to certification page for signatures)

If "C" is checked above, please check the appropriate type of change(s) below

- ☐ Facility Name and/or Address Change
- ☐ Owner Name and/or Address Change
- ☐ Facility Operator and/or Address Change
- ☐ Owner Contact Person Change
- ☐ Type of Product(s) Stored
- ☐ Spills, Leaks, Releases
- ☐ Tank(s) and/or Piping Changes
- ☑ Closure (Complete Question #13)
- ☐ Financial Responsibility Change
- ☐ Substantial Modification(s)
- ☐ Sale or Transfer (Complete Questions 4,5,6 & 13D)
- ☐ Other *(please specify)*

SECTION A - GENERAL FACILITY INFORMATION

1. Facility Name: MAIN POST WEST

2. Facility Location: FORT MONMOUTH
NUMBER AND STREET
CITY OR MUNICIPALITY
COUNTY | STATE: NJ | ZIP CODE | BLOCK | LOT

3. Facility Operator
PERSON OR TITLE
Contact Tele. No. (Area Code) (Extension)

Operator Address (if different than #2)
NUMBER AND STREET
CITY OR MUNICIPALITY
STATE | ZIP CODE

4. Tank Owner

5. Tank Owner Address
NUMBER AND STREET
CITY OR MUNICIPALITY
STATE | ZIP CODE

Contact Person (Tank Owner): CHARLES APPLEBY
Contact Tele. No. (Area Code): 7325326224 (Extension)

7. EPA ID # ☐☐☐☐☐☐☐☐☐☐☐☐

8. Total number of regulated underground storage tanks at facility ☐☐☐☐ *(Complete Section B for each tank)*

Bldg. 744

9. Total regulated underground storage tank capacity at facility (gallons) [| | | | | |]

10. Facility Type: A ☐ State; B ☐ Commercial/ Industrial; C ☐ County/Municipal; D ☐ Federal; E ☐ Charitable / Public School; F ☐ Residence; G ☐ Other; H ☐ Farm (as defined in N.J.S.A. 54:4-23.1 et seq.)

11. Is a copy of the facility site plan submitted with this registration pursuant to N.J.A.C. 7:14B-2? ☐ YES ☐ NO

SECTION B - SPECIFIC TANK INFORMATION

ALL underground tanks, including those taken out of operation (UNLESS THE TANK WAS REMOVED FROM THE GROUND PRIOR TO 9/3/86) must be registered. Report all tank/piping status changes unless previously submitted.

	TANK NO.	TANK NO.	TANK NO.	TANK NO.	TANK NO.
1. Tank Identification Number					
2. CAS Number (hazardous substances only)					
3. Date Tank Installed (Month/Day/Year)	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year
4. Tank Size (gallons)					
5. Tank Contents (Mark one "X" for each tank)					
A. Leaded gasoline					
B. Unleaded gasoline					
C. Alcohol enriched gasoline					
D. Light diesel fuel (No. 1-D)					
E. Medium diesel fuel (No. 2-D)					
F. Waste Oil					
G. Kerosene (No. 1)					
H. Home heating oil (No. 2)					
J. Heating oil (No. 4)					
K. Heavy heating oil (No. 6)					
L. Aviation fuel					
M. Motor oil					
N. Lubricating oil					
P. Sewage					
Q. Sewage sludge					
R. Other hazardous substances (specify)					
S. Hazardous waste (specify ID number)					
T. Mixtures (please specify)					
U. Emergency spill tank (specify substance)					
V. Other petroleum products (please specify)					
W. Other (please specify)					
6. Tank & Piping Construction (Mark one each for both tank & piping)	Tank Piping	Tank Piping	Tank Piping	Tank Piping	Tank Piping
A. Bare Steel					
B. Cathodically protected steel					
C. Fiberglass-coated steel					
D. Fiberglass-reinforced plastic					
E. Internally lined					
F. Other (please specify)					
7. Tank & Piping Structure (Mark one each for both tank & piping)	Tank Piping	Tank Piping	Tank Piping	Tank Piping	Tank Piping
A. Single wall					
B. Double wall					
C. Other (please specify)					
8. Type of Monitoring/Detection System (Mark all that apply for both tank & piping)	Tank Piping	Tank Piping	Tank Piping	Tank Piping	Tank Pipin
A. Statistical Inventory Reconciliation					
B. Manual Tank Gauging					
C. Inventory Control					
D. Interstitial					
E. Precision Test					
F. Ground water observation wells					
G. Vapor observation wells					
H. In-tank (automatic) monitoring gauge					
J. Periodic Tank Test					

Tank Identification Number	TANK NO.	TANK NO.	TANK NO.	TANK NO.	TANK NO.
8. Type of Monitoring/Detection System K. None	Tank ☐ Piping ☐	Tank ☐ Piping ☐	Tank ☐ Piping ☐	Tank ☐ Piping ☐	Tank ☐ Piping ☐
L. Other (please specify)					
9. Overfill Protection (tank only) (Mark one X for each tank)					
A. Yes	☐	☐	☐	☐	☐
B. No					
10. Spill Containment Around Fill Pipe (Mark one X for each tank)					
A. Yes	☐	☐	☐	☐	☐
B. No					
11. Tank Status (Mark one X for each tank) A. In-use	Tank ☐ Piping ☐	Tank ☐ Piping ☐	Tank ☐ Piping ☐	Tank ☐ Piping ☐	Tank ☐ Piping ☐
B. Empty less than 12 months					
C. Empty 12 months or more					
D. Emergency spill tank (sump)					
E. Emergency backup generator tank					
F. Abandoned in Place					
G. Removed					
H. Other (please specify)					
12. If box 11B, C, or D above has been marked, indicate the estimated date last used (month/day/year)	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year
13. Closure Information - Tank ID No.	BLDG. 744 TANK NO. 1 1 8	TANK NO.	TANK NO.	TANK NO.	TANK NO.
	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year
A. Date abandoned in place					
B. Date taken temporarily out of service					
C. Date removed	07 17 1998				
D. Date of Sale or Transfer					
E. TMS # (if applicable)					
F. ISRA # (if applicable)					

SECTION C - FINANCIAL RESPONSIBILITY

Does this facility have a Financial Responsibility Assurance Mechanism as required in 40 CFR 280? ☐ YES ☐ NO
Please list the appropriate financial information below:

_____ Type

_____ Carrier / Issuing Agency

____/____/____ Effective Date

____/____/____ Expiration Date

_____ Policy Number

$_____ Amount

SECTION D - MONITORING SYSTEMS

Does this facility have a release detection monitoring system which is in compliance with N.J.A.C. 7:14B-6? ☐ YES ☐ NO
If "No", please be aware that the facility must meet the appropriate deadline. (See "Dates to Know" on Page 4)

SECTION E - RECORDKEEPING/COMPLIANCE

Please answer all the questions in this section on a facility basis. Any one tank not in compliance requires a "NO" answer for the entire facility.

1. Does this facility have cathodic protection systems for all steel tanks and piping? ☐ YES ☐ NO
   If "Yes", are the systems properly operated and maintained pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO
2. Are the performance claims and documentation of monitoring systems maintained by the owner or operator pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO
3. Are the proper monitoring, testing, sampling, repair and inventory records kept on-site pursuant to N.J.A.C. 7:14B-5 and 6? ☐ YES ☐ NO
4. Is the proper Release Response Plan kept on-site pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO
5. Does the facility have spill and over fill protection systems pursuant to N.J.A.C. 7:14B-4? ☐ YES ☐ NO
6. Have all Fill Ports been permanently marked as per API #1637 pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO

IMPORTANT INFORMATION

FEE:	Please make checks payble to: **"Treasurer, State of New Jersey"**. Use of the enclosed return envelope will expedite processing. Registration and Billing Schedule can be found in N.J.A.C. 7:14B. All Initial Registration fees are $100 per facility.
PENALTY:	Failure by owner or operator of a regulated underground storage tank to comply with any requirement of the State UST Act or regulations may result in the penalties set forth in N.J..S.A. 58:10A-10.
EMERGENCY:	If a discharge or spill occurs, the NJDEP Hotline at (609) 292-7172 must be called IMMEDIATELY - 24 hours a day.
UPGRADE EXEMPTION:	Residential heating oil underground storage tanks are exempt from all upgrade requirements.

DATES TO KNOW (critical deadlines)

December 22, 1988	—	All new federally regulated tank systems must have cathodic protection and spill/overfill protection.
September 4, 1990	—	All new State-only regulated tank systems must have cathodic protection and spill/overfill protection.
December 22, 1990	—	All federally regulated piping must have begun leak detection.
February 19, 1993	—	All federally regulated tank systems must maintain financial responsibility assurance.
December 22, 1993	—	All federally regulated tank systems must have begun leak detection.
December 22, 1998	—	All regulated tanks shall install cathodic protection and spill/overfill protection.

CERTIFICATIONS

NOTE: IF THE PERSON SIGNING CERTIFICATION NO. 2 IS THE SAME AS THE PERSON SIGNING CERTIFICATION NO. 1, THEN CERTIFICATION NO. 2 NEED NOT BE SIGNED. (If different persons are required to sign No. 1 and No. 2, then they must do so.)

CERTIFICATION NO. 1:

Must be signed by the highest ranking individual at the facility with overall responsibility

"I certify under penalty of law that the information provided in this document is true, accurate and complete to the best of my knowledge, information and belief. I am aware that there are significant civil and criminal penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

JAMES CIT — (Typed / Printed Name)

(Signature)

DIRECTOR, PUBLIC WORKS — (Title)

7/23/98 — (Date)

CERTIFICATION NO. 2:

Must be signed as follows:
- For a corporation, by a principal executive officer of at least the level of vice president
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively
- For a municipality, State, Federal or other public agency, by either a principal executive officer or ranking elected official
- For persons other than indicated above, by the person with legal responsibility for the site

"I certify under penalty of law that I have personally examined and am familiar with the information submitted herein 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 civil and criminal penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

N/A — (Typed / Printed Name)

(Signature)

(Title)

(Date)

CERTIFICATION NO. 3:

If applicable, must be signed by the individual who is certified to perform services.

"I certify under penalty of law that the information provided in this document is true, accurate and complete to the best of my knowledge, information and belief. I am aware that there are significant civil and criminal penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

CHARLES APPLEBY — (Typed / Printed Name)

ENV. PROTECTION SPECIALIST — (Title)

7/24/98 — (Date)

U.S. ARMY — (Name of Firm, if applicable)

2056 — (N.J. Certification Number)

UST-021 (9/94)

APPENDIX B

SITE ASSESSMENT SUMMARY

(12/97) **New Jersey Department of Environmental Protection**

Site Remediation Program

UST Site/Remedial Investigation Report Certification Form

A. Facility Name : U.S. Army Fort Monmouth New Jersey

Facility Street Address : Directorate of Public Works Building 173

Municipality: Eatontown County : Monmouth

Block: Lot(s): Telephone Number : 732-532-6224

B. Owner (RP)'s Name:

Street Address: City :

State: Zip: Telephone Number :

C. (Check as appropriate)

___ Site Investigation Report (SIR) $500 Fee

___ Remedial Investigation Report (RIR) $1000 Fee

_X_ NA – Federal Agreement

D. (Complete all that apply)

- Assigned Case Manager : Ian Curtis, Federal Case Manager
- UST Registration Number : 81533-118 (7 digits)
- Incident Report Number ___ • ___ • ___ • _____ • ___ (10 or 12 digits)
  ___ • ___ • ___ • _____ • ___
- Tank Closure Number : Federal Case Manager

E. Certification by the Subsurface Evaluator:

The attached report conforms to the specific reporting requirements of N.J.A.C. 7:26E ..... (Yes) No

Name: Dinker DeSai Signature: UST Cert. No.: 10173

Firm: U.S. Army Fort Monmouth Firm's UST Cert. Number: NA - U.S. Army

Firm Address: Directorate of Public Works Building 173 City: Fort Monmouth

State: New Jersey Zip: 07703 Telephone Number : 732-532-6224

(NOTE: Certification numbers required only if work was conducted on USTs regulated per N.J.S.A. 58:10A-21 et seq.)

F. Certification by the Responsible Party(ies) of the Facility:

The following certification shall be signed [according to the requirements of N.J.A.C. 7:14B-1.7(b)]as follows:

1. For a Corporation by a person authorized by a resolution of the board of directors to sign the document. A copy of the resolution, certified as a true copy by the secretary of the corporation, shall be submitted along with the certification; or
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 a principal executive officer or ranking elected Official.

"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 responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate, or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

Name (Print or Type): James Ott Title: Directorate of Public Works

Signature: James Ott

Company Name: U.S. Army Fort Monmouth Date: 1/7/99

APPENDIX C

WASTE MANIFEST

LORCO
PETROLEUM SERVICES

RD. 1, BOX 5A - OLD BRIDGE, NJ 08857

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NJ321000205497
Manifest Document No.: 151781
2. Page 1 of 1

NHZ 009784

3. Generator's Name and Mailing Address
U.S. ARMY COMMUNICATIONS ELECTRONICS COMMAND
BLDG #173 ATTN: [illegible]
FORT MONMOUTH NJ 07703
4. Generator's Phone (732) 532 [illegible]

5. Transporter 1 Company Name: LIONETTI OIL RECOVERY CO INC
6. US EPA ID Number: [illegible]
A. Transporter's Phone: 908 721-0900

7. Transporter 2 Company Name:
8. US EPA ID Number:
B. Transporter's Phone:

9. Designated Facility Name and Site Address
LIONETTI OIL RECOVERY CO INC DBA LORCO PETROLEUM SVCS
[illegible] CHEESEQUAKE RDS
OLD BRIDGE, NJ 08857
10. US EPA ID Number: [illegible]
C. Facility's Phone: 908 721-0900

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. PETROLEUM OIL (PETROLEUM OIL) [illegible]	[illegible]	[illegible]	0547	G
b. NOTE: BLDG.'S 911, 718, 739, 744 & drums @ 1220, 912				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
[illegible]

E. Handling Codes for Wastes Listed Above
[illegible] FILTRATION

15. Special Handling Instructions and Additional Information
[illegible] EMERGENCY RESPONSE (908) 721-0900
[illegible] DEXSIL TEST KIT RESULTS_____PPM
[illegible] USED FOR TRACKING PURPOSES ONLY

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Joseph M. Fallon	Joseph M Fallon	01	02	98

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
[illegible] Van Pelt	[illegible] Van Pelt	01	02	98

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR / TRANSPORTER / FACILITY

GENERATOR'S COPY

APPENDIX D

UST DISPOSAL CERTIFICATE

MON UTH COUNTY
RECLAMATION CENTER
TINTON FALLS, NJ

MAILING ADDRESS: 6000 ASBURY AVE.
NEPTUNE, NJ 07753

CUSTOMER COPY

FACILITY I.D. NO. 1336F1SP01

RECEIPT DOCUMENT NUMBER

01713605

BILL TO
MARP508937
MARPAL COMPANY
PO BOX 188
LINCROFT NJ 07738

HAULER
MARP508937
MARPAL COMPANY
PO BOX 188
LINCROFT NJ 07738

Escrow Level: 2400.00

DATE	ENTRY TIME	OPER.	EXIT TIME	OPER.	GROSS WEIGHT	TARE WEIGHT	NET WEIGHT
08/17/98	11:42	KRW	11:52	EEB	(43920 LB) Scale 02 (21.96 T)	(36140 LB) Scale 03 (18.07 T)	(7780 LB) (3.89 T)
00864004	Scale 02		Scale 03				

VEHICLE NUMBER	VEHICLE TYPE	PLATE NUMBER	TRANSACTION TYPE
2065ZZ	Rolloff Open 20	XX77PH	

QUANTITY	WC	DESCRIPTION/ORIGIN	UNITS	UNIT PRICE	AMOUNT
3.8900	13	Bulky Waste - (MRF) MONMOUTH COUNTY EATONTOWN BOROUGH	Tons 100.00%	88.15	342.90

Normal

TVS
312166
773779

I hereby certify that the information provided on this form is true to the best of my knowledge.

*** Prepayment Balance Remaining: 177625.16

DRIVER NAME PRINT _____ SIGNATURE _____

DOCUMENT TOTAL $342.90

APPENDIX E

SOIL ANALYTICAL DATA PACKAGE

US ARMY FT. MONMOUTH ENVIRONMENTAL LABORATORY
NJDEPE # 13461

REPORT OF ANALYSIS

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Project: Total Petroleum Hydrocarbons
98-0001
Bldg. 744

Project # 3737
Date Rec. 07/17/98
Date Compl. 07/20/98
Released by:

Daniel K. Wright Date: 7/21/98
Laboratory Director

Table of Contents

Method Summary

NJDEP Method OQA-QAM-025-10/97

Gas Chromatographic Determination of Total Petroleum Hydrocarbons in Soil

Fifteen grams (15g)(wet weight) of a soil sample is added to a 125 mL acid cleaned, solvent rinsed, capped Erlenmeyer flask. 15g anhydrous sodium sulfate is added to dry sample. Surrogate standard spiking solution is then added to the flask.

Twenty five milliliters(25mL) Methylene Chloride is added to the flask and it is secured on a gyrotory shaker table. The agitation rate is set to 400rpm and the sample is shaken for 30 minutes. The flask is the removed from the table and the particulate matter is allowed to settle. The extract is transferred to a Teflon capped vial. A second 25mL of Methylene Chloride is added to the flask and shaken for an additional 30 minutes. The flask is again removed and allowed to settle. The extracts are combined in the vial then transferred to a 1mL autosampler vial.

The extract is then injected directly into a GC-FID for analysis. The sample is analyzed for petroleum hydrocarbons covering a range of C8-C42 including pristane and phytane. Total Petroleum Hydrocarbon concentration is determined by integrating between 5 minutes and 22 minutes. The baseline is established by starting the integration after the end of the solvent peak and stopping after the last peak.

The final concentration of Total Petroleum Hydrocarbons is calculated using percent solid, sample weight and concentration.

PHC Conformance/Non-conformance Summary Report

	No	Yes
1. Method Detection Limits provided.	__	✓
2. Method Blank Contamination - If yes, list the sample and the corresponding concentrations in each blank	✓	__
3. Matrix Spike Results Summary Meet Criteria. (If not met, list the sample and corresponding recovery which falls outside the acceptable range).	__	✓
4. Duplicate Results Summary Meet Criteria. (If not met, list the sample and corresponding recovery which falls outside the acceptable range).	__	✓
5. IR Spectra submitted for standards, blanks, & samples	__	NA __
6. Chromatograms submitted for standards, blanks, and samples if GC fingerprinting was conducted.	__	✓
7. Analysis holding time met. (If not met, list number of days exceeded for each sample)	__	✓

Additional Comments:_____

Laboratory Authentication Statement

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

Daniel K. Wright
Laboratory Manager

Fort Monmouth Environmental Testing Laboratory

Bldg. 173, SELFM-PW-EV, Fort Monmouth, NJ 07703
Tel (732)532-4359 Fax (732)532-3484 EMail:appleby@doim6.monmouth.army.mil
NJDEP Certification #13461

Chain of Custody Record

Customer: Charles Appleby
Phone #: X26224
( )DERA (X)OMA UST Assessment

Project No: 98-0001
Location: B 744
UST# 81533-118

Samplers Name / Company : Gary DiMartinis TVS

Lab Sample I.D.	Sample Location	Date	Time	Sample Type	# bottles	TPHC	% SOLIDS	VOA+15	VOA ID Number	OVA	Remarks / Preservation Method
3737. 01	744-A	7-17-98	1349	SOIL	1	X	X			ND	EXC. FLOOR @ 8.5' *
02	B	↓	1346	↓	↓	↓	↓			ND	SIDEWALL @ 5.5'
03	C		1338							ND	↓
04	D		1342							ND	
05	E		1344							ND	
06	F		1337							ND	Piping Run @ 1.0'
07	DUP	↓	—	↓	↓	↓	↓			—	FIELD DUPLICATE ↓

Comments:
* = Samples Kept <4 Celsius

Note: OVA(#A51903) Calibrated With 95 ppm Methane & Zero Air @ 1330 on 7-17-98 by Gary DiMartinis

Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
[signature]	7-17-98 1430	[signature]			
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
		[signature]			

Report Type: (_)Full, (X)Reduced, (_)Standard, (_)Screen / non-certified
Turnaround time: (X)Standard 4 wks, (_)Rush ____ Days, (_)ASAP Verbal ____Hrs.

Remarks: **Dedicated Sampling Tools Used**

print legibly

USTcoc6/30/98

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

Client :	U.S. Army	**Lab. ID # :**	3737
	DPW. SELFM-PW-EV	**Date Rec'd:**	17-Jul-98
	Bldg. 173	**Analysis Start:**	20-Jul-98
	Ft. Monmouth, NJ 07703	**Analysis Complete:**	20-Jul-98
Analysis:	OQA-QAM-025	**UST Reg. #:**	
Matrix:	Soil	**Closure #:**	
Analyst:	D.DEINHARDT	**DICAR #:**	
Ext. Meth:	Shake	**Location #:**	B. 744

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
3737.01	744-A	**1.00**	15.10	68.66	227	**ND**
3737.02	744-B	**1.00**	15.61	75.56	199	**ND**
3737.03	744-C	**1.00**	15.53	79.78	190	**ND**
3737.04	744-D	**1.00**	15.37	67.87	225	**ND**
3737.05	744-E	**1.00**	15.30	81.29	189	**ND**
3737.06	744-F	**1.00**	15.22	88.08	175	**ND**
3737.07	744-DUP	**1.00**	15.23	87.23	177	**ND**
METHOD BLANK	TBLK 137	**1.00**	15.00	100.00	157	**ND**

ND = Not Detected

MDL = Method Detection Limit

Daniel K. Wright
Laboratory Director

Response Factor Report GC/MS Ins

Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998

Calibration Files
100 =T05959.D 50 =T05960.D 20 =T05961.D
10 =T05962.D 5 =T05963.D

	Compound	100	50	20	10	5	Avg	%RSD
1)	tC C8	2.277	2.425	2.559	2.711	2.206	2.436 E4	8.43
2)	tC C10	2.499	2.664	2.791	2.930	2.534	2.684 E4	6.68
3)	TC C12	2.776	2.935	3.075	3.239	2.766	2.958 E4	6.83
4)	tC C14	2.896	3.070	3.238	3.430	2.928	3.112 E4	7.18
5)	tC C16	2.966	3.159	3.344	3.568	3.053	3.218 E4	7.49
6)	tC C18	3.349	3.613	3.893	4.085	3.562	3.701 E4	7.82
7)	tC C20	3.258	3.475	3.672	3.915	3.342	3.533 E4	7.50
8)	tC C22	3.199	3.420	3.607	3.844	3.278	3.469 E4	7.51
9)	tC C24	3.264	3.487	3.671	3.904	3.333	3.532 E4	7.37
10)	tC C26	3.255	3.476	3.650	3.866	3.319	3.513 E4	7.10
11)	tC C28	3.293	3.512	3.674	3.893	3.318	3.538 E4	7.11
12)	tC C30	3.401	3.623	3.790	3.976	3.375	3.633 E4	7.05
13)	tC C32	3.431	3.658	3.825	4.024	3.434	3.674 E4	6.97
14)	tC C34	3.521	3.812	4.027	4.220	3.564	3.829 E4	7.80
15)	tC C36	3.385	3.858	4.127	4.279	3.664	3.863 E4	9.25
16)	tC C38	3.166	3.924	4.329	4.459	3.853	3.946 E4	12.84
17)	tC C40	2.828	3.816	4.405	4.438	3.846	3.867 E4	16.86
18)	tC c42	2.580	3.759	4.424	4.447	3.820	3.806 E4	19.91
19)	TC Pristane	3.105	3.345	3.551	3.726	3.255	3.397 E4	7.21
20)	TC Phytane	3.270	3.492	3.694	3.945	3.369	3.554 E4	7.59
21)	sC o-terphenyl	3.907	4.169	4.410	4.703	4.034	4.245 E4	7.46
22)	tC TPHC - total	3.313	3.705	4.003	4.287	3.910	3.844 E4	9.44

(#) = Out of Range MEAN AVERAGE RSD% = 8.79

TPH43.M Tue Jul 07 08:38:13 1998

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\980720\T06221.D
Acq On : 20 Jul 98 10:07 am
Sample : 50 PPM STANDARD
Misc :
IntFile : TPHCINT.E

Vial: 2
Operator: Deinhardt
Inst : GC/MS Ins
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	tC	C8	24.358	25.634 E3	-5.2	116	0.00
2	tC	C10	26.836	29.553 E3	-10.1	124	0.00
3	TC	C12	29.584	32.906 E3	-11.2	125	0.00
4	tC	C14	31.125	33.821 E3	-8.7	122	0.00
5	tC	C16	32.180	34.356 E3	-6.8	121	0.00
6	tC	C18	37.007	39.085 E3	-5.6	118	0.00
7	tC	C20	35.326	37.784 E3	-7.0	120	0.00
8	tC	C22	34.694	37.127 E3	-7.0	119	0.00
9	tC	C24	35.318	37.880 E3	-7.3	120	0.00
10	tC	C26	35.130	37.807 E3	-7.6	121	0.00
11	tC	C28	35.380	38.134 E3	-7.8	124	0.00
12	tC	C30	36.331	39.665 E3	-9.2	129	0.00
13	tC	C32	36.742	39.673 E3	-8.0	129	0.00
14	tC	C34	38.289	42.004 E3	-9.7	131	0.00
15	tC	C36	38.627	44.643 E3	-15.6	140	0.00
16	tC	C38	39.462	47.501 E3	-20.4	149	0.00
17	tC	C40	38.666	45.676 E3	-18.1	151	0.00
18	tC	c42	38.058	42.210 E3	-10.9	149	0.02
19	TC	Pristane	33.965	36.094 E3	-6.3	120	0.00
20	TC	Phytane	35.539	38.083 E3	-7.2	120	0.00
21	sC	o-terphenyl	42.449	45.324 E3	-6.8	120	0.00
22	tC	TPHC - total	38.436	41.515 E3	-8.0	125	0.00

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\980720\T06232.D
Acq On : 20 Jul 98 8:21 pm
Sample : 50 PPM STANDARD
Misc :
IntFile : TPHCINT.E

Vial: 13
Operator: Deinhardt
Inst : GC/MS Ins
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	tC C8	24.358	24.326 E3	0.1	110	0.00
2	tC C10	26.836	28.726 E3	-7.0	120	0.00
3	TC C12	29.584	31.920 E3	-7.9	121	0.00
4	tC C14	31.125	32.827 E3	-5.5	119	0.00
5	tC C16	32.180	33.512 E3	-4.1	118	0.00
6	tC C18	37.007	38.141 E3	-3.1	115	0.00
7	tC C20	35.326	36.786 E3	-4.1	117	0.00
8	tC C22	34.694	36.146 E3	-4.2	116	0.00
9	tC C24	35.318	37.128 E3	-5.1	117	0.01
10	tC C26	35.130	37.146 E3	-5.7	119	0.01
11	tC C28	35.380	37.636 E3	-6.4	123	0.01
12	tC C30	36.331	38.732 E3	-6.6	126	0.00
13	tC C32	36.742	39.108 E3	-6.4	127	0.00
14	tC C34	38.289	41.695 E3	-8.9	130	0.00
15	tC C36	38.627	45.136 E3	-16.9	141	0.01
16	tC C38	39.462	50.260 E3	-27.4#	158	0.02
17	tC C40	38.666	51.338 E3	-32.8#	170	0.03
18	tC c42	38.058	49.520 E3	-30.1#	175	0.04
19	TC Pristane	33.965	34.644 E3	-2.0	115	0.00
20	TC Phytane	35.539	36.928 E3	-3.9	117	0.00
21	sC o-terphenyl	42.449	44.155 E3	-4.0	117	0.00
22	tC TPHC - total	38.436	41.546 E3	-8.1	125	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 3

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

Surrogate Recovery Report

Lab. ID # : 3737

Location #: B. 744

Sample		Surrogate Added (ppm)	Amount Recovered (ppm)	Percent Recovery
3737.01		10.00	8.78	**87.82**
3737.02		10.00	8.64	**86.40**
3737.03		10.00	8.84	**88.41**
3737.04		10.00	8.52	**85.24**
3737.05		10.00	9.05	**90.45**
3737.06		10.00	9.28	**92.83**
3737.07		10.00	9.59	**95.85**
METHOD BLANK	TBLK 137	10.00	9.14	**91.38**

Surrogate Added : **o-Terphenyl**

7/21/98

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

Matrix Spike Recovery Report

Lab. ID # : 3737

Location #: B. 744

Sample	Spike Amount Added (ppm)	Sample Amount (ppm)	Matrix Spike Amount (ppm)	Percent Recovery	QC Limits %
3737.01MS	1000	0.00	840.88	84.09	75-125
3737.01MSD	1000	0.00	771.27	77.13	75-125

RPD	**8.64**	**20.00**

7/21/98

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

Blank Spike Recovery Report

Lab. ID # : 3737

Location #: B. 744

Sample	Date Extracted	Spike Amount Added (ppm)	Matrix Spike Amount (ppm)	Percent Recovery	QC Limits %
Blank Spike	20-Jul-98	1000	881.44	88.14	75-125

7/21/98

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980720\T06231.D Vial: 12
Acq On : 20 Jul 98 7:29 pm Operator: Deinhardt
Sample : 3737.01 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:07 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Initial Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	372770	8.782 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	87.82%#
Target Compounds			

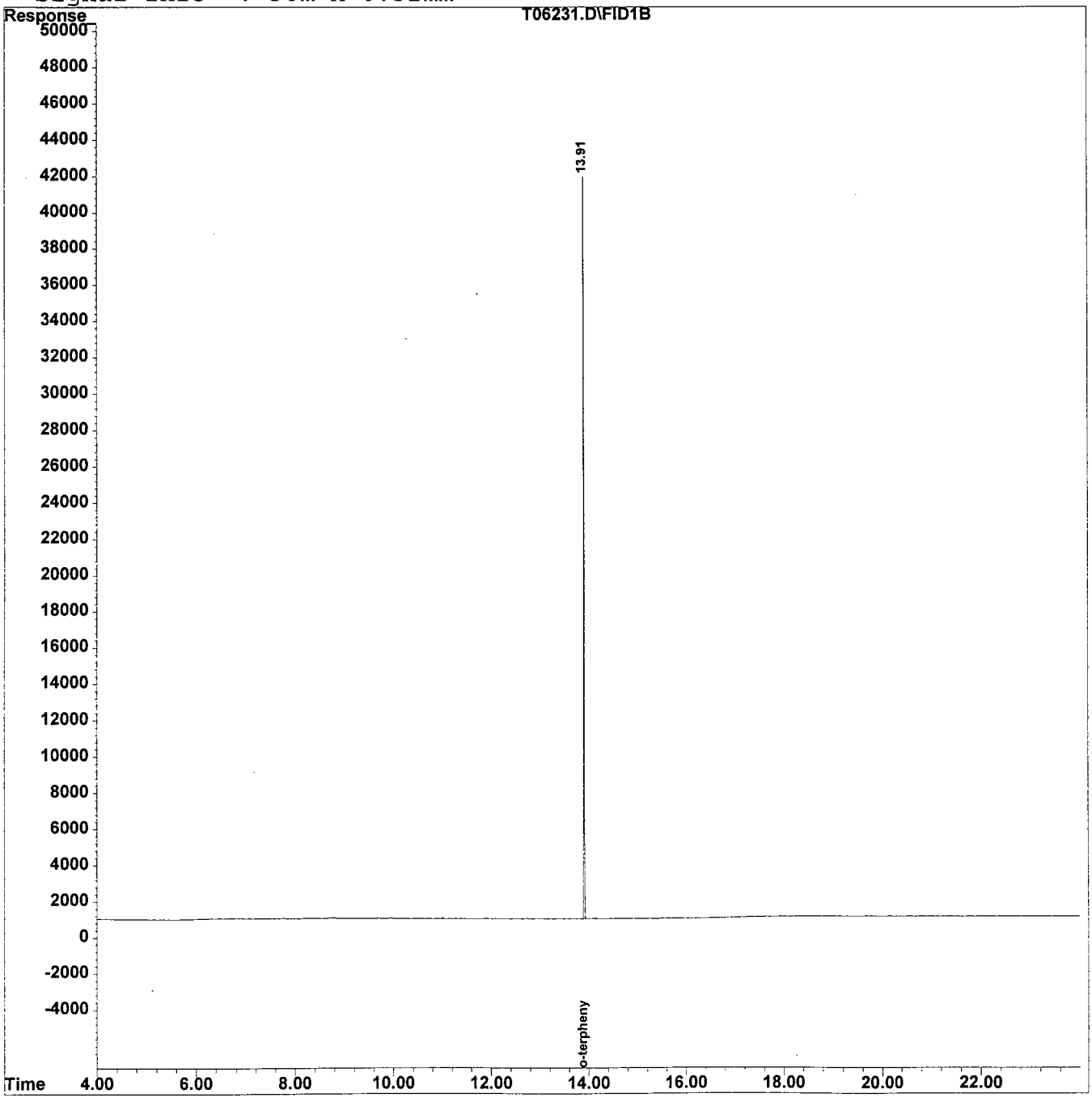
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980720\T06231.D Vial: 12
Acq On : 20 Jul 98 7:29 pm Operator: Deinhardt
Sample : 3737.01 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:07 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980720\T06235.D Vial: 16
Acq On : 20 Jul 98 10:52 pm Operator: Deinhardt
Sample : 3737.02 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:10 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Initial Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	366748	8.640 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	86.40%#
Target Compounds			

(f)=RT Delta > 1/2 Window (m)=manual int.

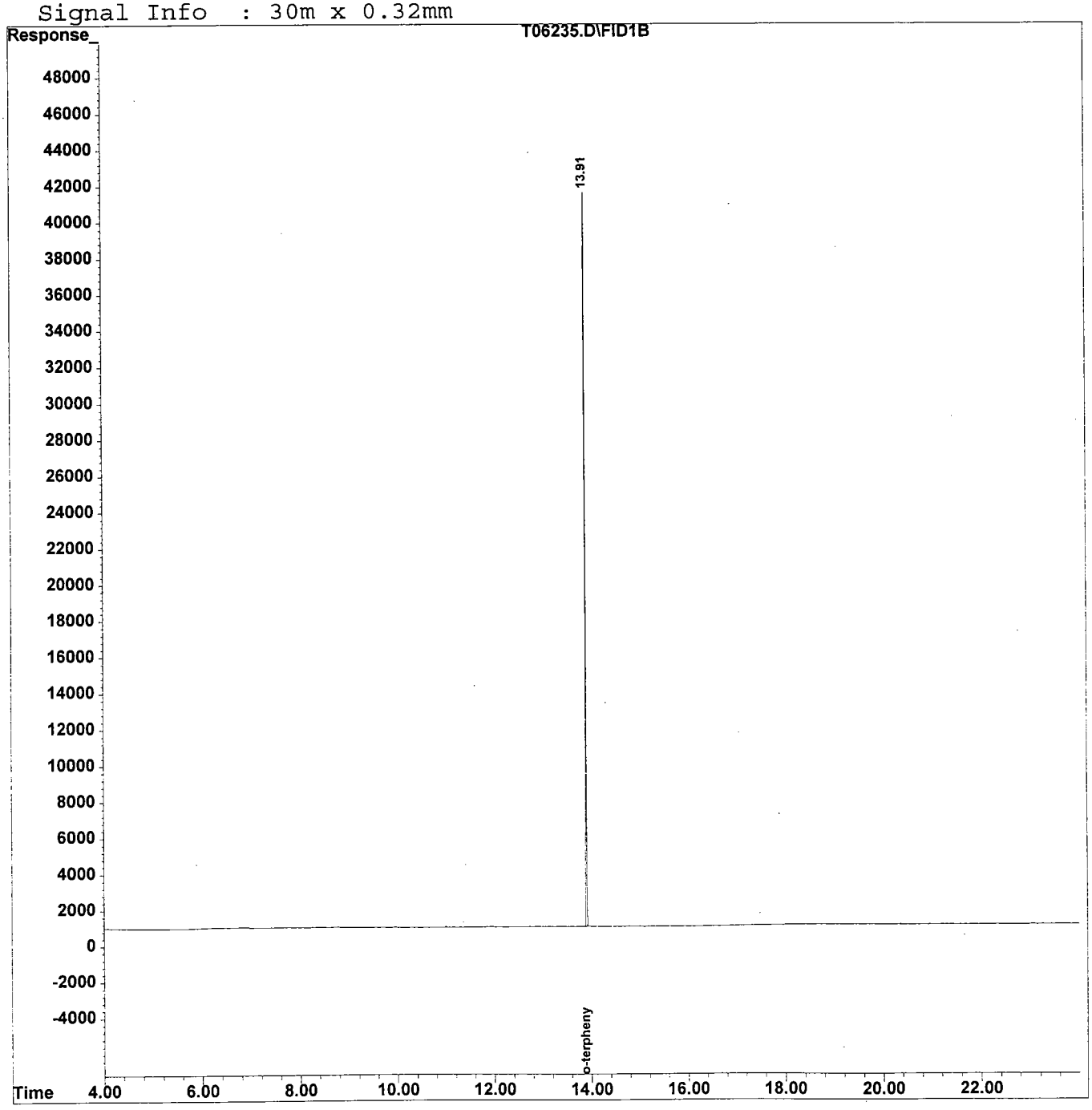
Quantitation Report

Data File : C:\HPCHEM\1\DATA\980720\T06235.D
Acq On : 20 Jul 98 10:52 pm
Sample : 3737.02
Misc :
IntFile : TPHCINT.E
Quant Time: Jul 21 8:10 1998 Quant Results File: TPH43.RES

Vial: 16
Operator: Deinhardt
Inst : GC/MS Ins
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980720\T06236.D Vial: 17
Acq On : 20 Jul 98 11:42 pm Operator: Deinhardt
Sample : 3737.03 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:10 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Initial Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	375272	8.841 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	88.41%#
Target Compounds			

(f)=RT Delta > 1/2 Window (m)=manual int.

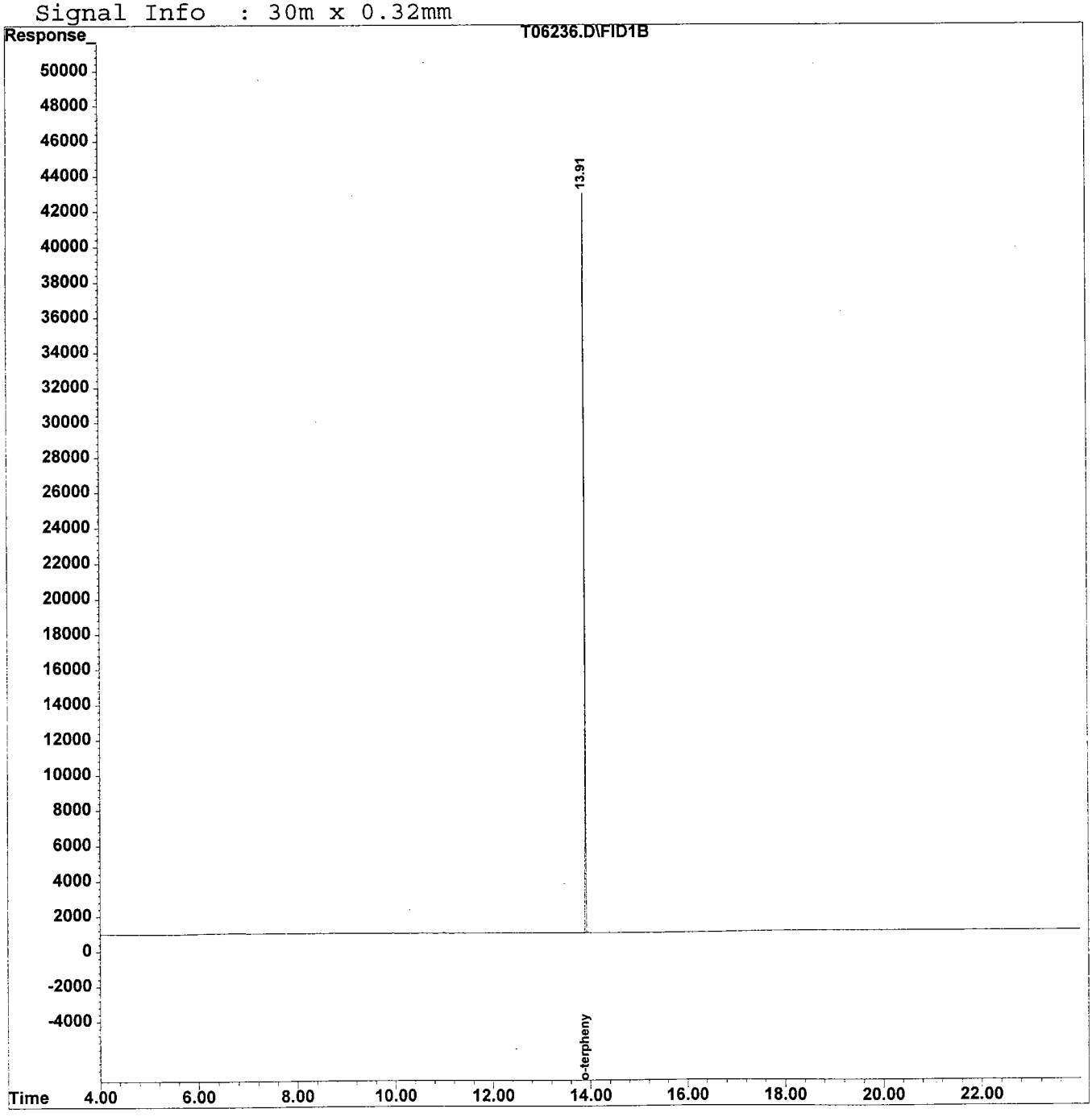
Quantitation Report

Data File : C:\HPCHEM\1\DATA\980720\T06236.D
Acq On : 20 Jul 98 11:42 pm
Sample : 3737.03
Misc :
IntFile : TPHCINT.E
Quant Time: Jul 21 8:10 1998 Quant Results File: TPH43.RES

Vial: 17
Operator: Deinhardt
Inst : GC/MS Ins
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980720\T06237.D Vial: 18
Acq On : 21 Jul 98 12:31 am Operator: Deinhardt
Sample : 3737.04 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:10 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Initial Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	361843	8.524 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	85.24%#
Target Compounds			

(f)=RT Delta > 1/2 Window (m)=manual int.

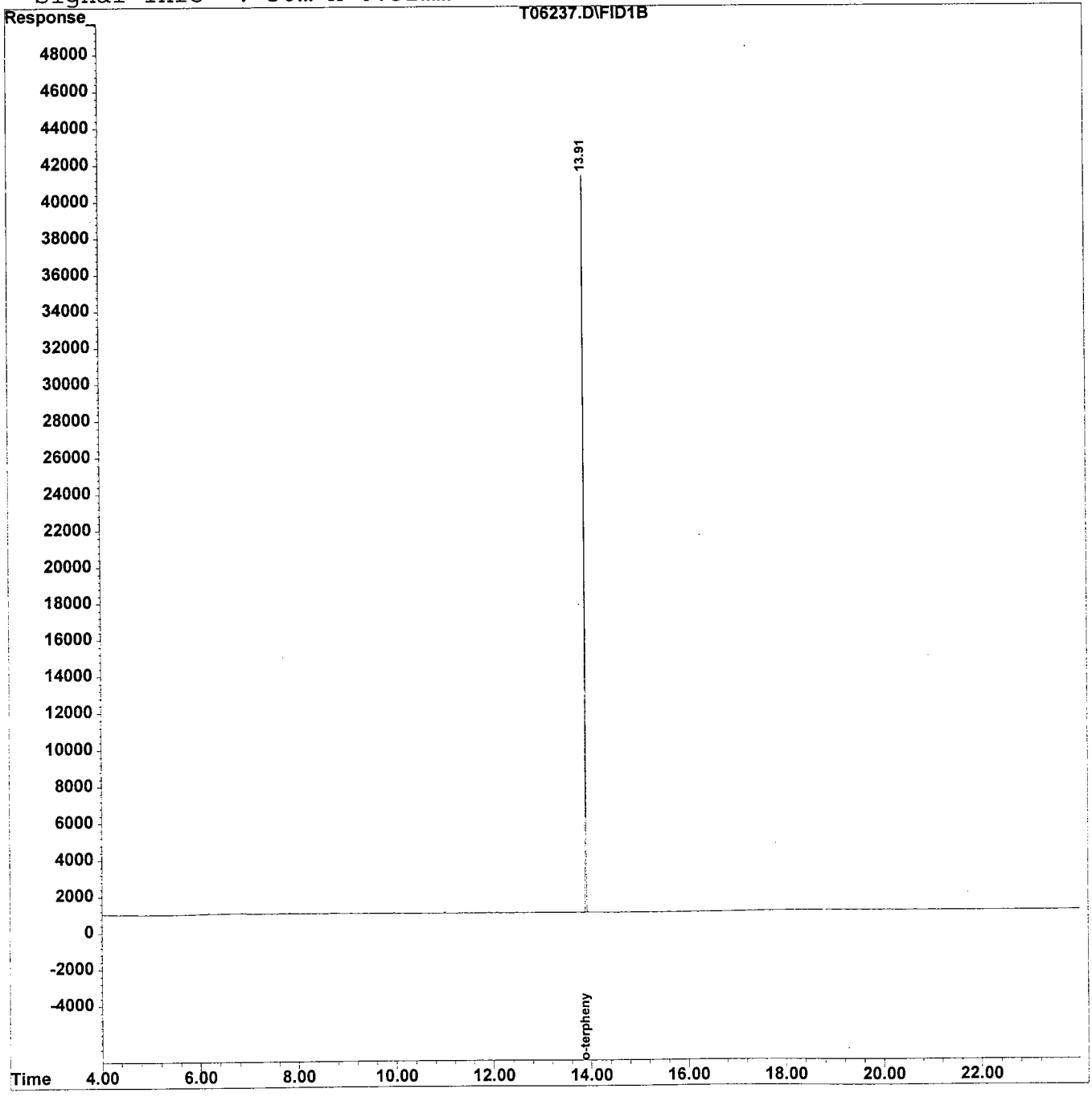
Quantitation Report

Data File : C:\HPCHEM\1\DATA\980720\T06237.D
Acq On : 21 Jul 98 12:31 am
Sample : 3737.04
Misc :
IntFile : TPHCINT.E
Quant Time: Jul 21 8:10 1998 Quant Results File: TPH43.RES

Vial: 18
Operator: Deinhardt
Inst : GC/MS Ins
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980720\T06238.D Vial: 19
Acq On : 21 Jul 98 1:19 am Operator: Deinhardt
Sample : 3737.05 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:11 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Initial Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	383932	9.045 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	90.45%#
Target Compounds			

(f)=RT Delta > 1/2 Window (m)=manual int.

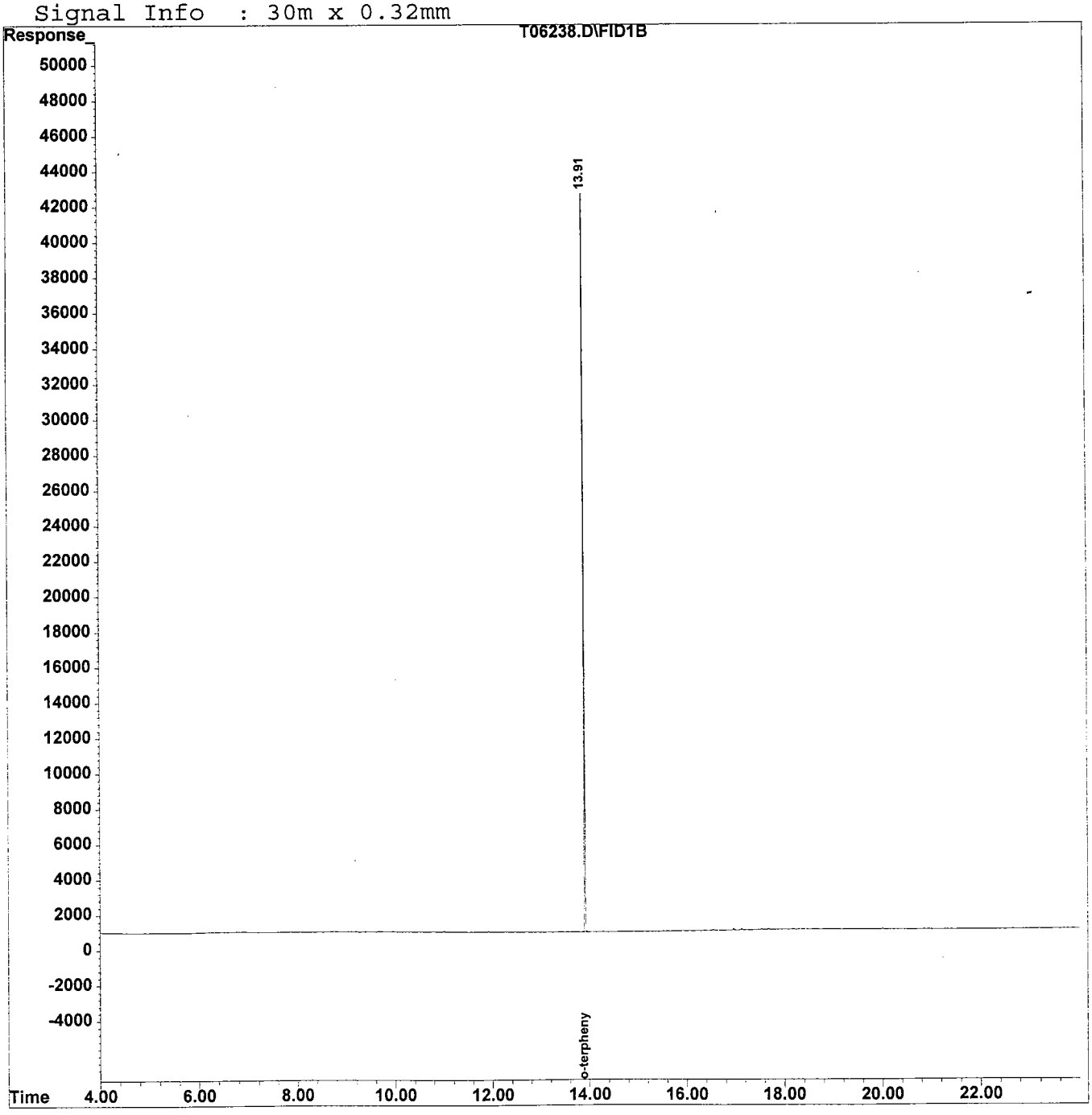
Quantitation Report

Data File : C:\HPCHEM\1\DATA\980720\T06238.D
Acq On : 21 Jul 98 1:19 am
Sample : 3737.05
Misc :
IntFile : TPHCINT.E
Quant Time: Jul 21 8:11 1998 Quant Results File: TPH43.RES

Vial: 19
Operator: Deinhardt
Inst : GC/MS Ins
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980720\T06239.D Vial: 20
Acq On : 21 Jul 98 2:07 am Operator: Deinhardt
Sample : 3737.06 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:11 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Initial Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	394057	9.283 mg/L
Spiked Amount 10.000 Range 8 - 13		Recovery =	92.83%#
Target Compounds			
9) tC C24	15.04	1368	0.039 mg/L
12) tC C30	16.96	2960	0.081 mg/L
13) tC C32	17.54	1090	0.030 mg/L
15) tC C36	18.66	1777	0.046 mg/L
22) tC TPHC - total	13.91	1171535	30.480 mg/L m

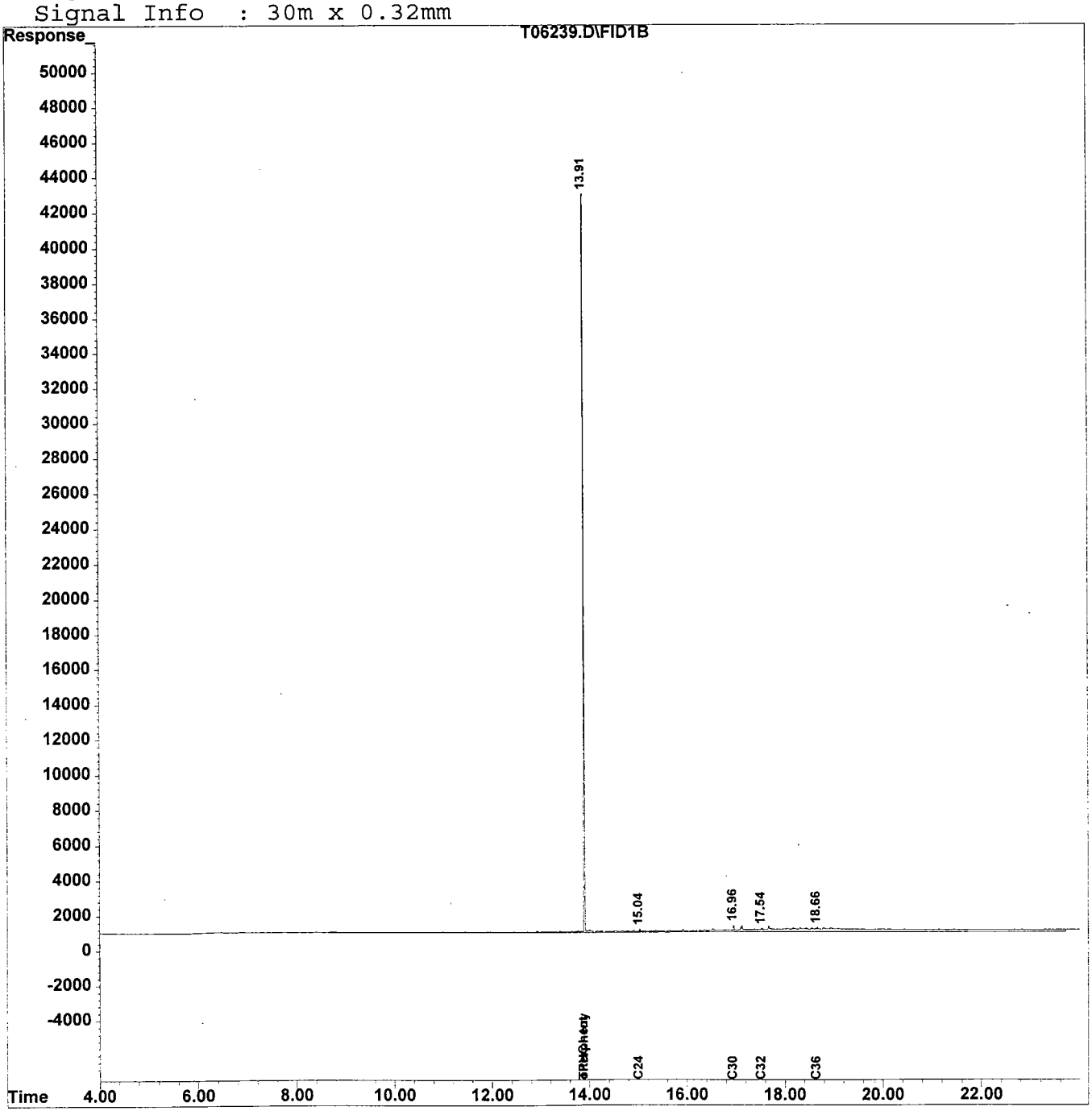
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980720\T06239.D Vial: 20
Acq On : 21 Jul 98 2:07 am Operator: Deinhardt
Sample : 3737.06 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:11 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980720\T06240.D Vial: 21
Acq On : 21 Jul 98 2:54 am Operator: Deinhardt
Sample : 3737.07 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:12 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Initial Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	406882	9.585 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	95.85%#
Target Compounds			

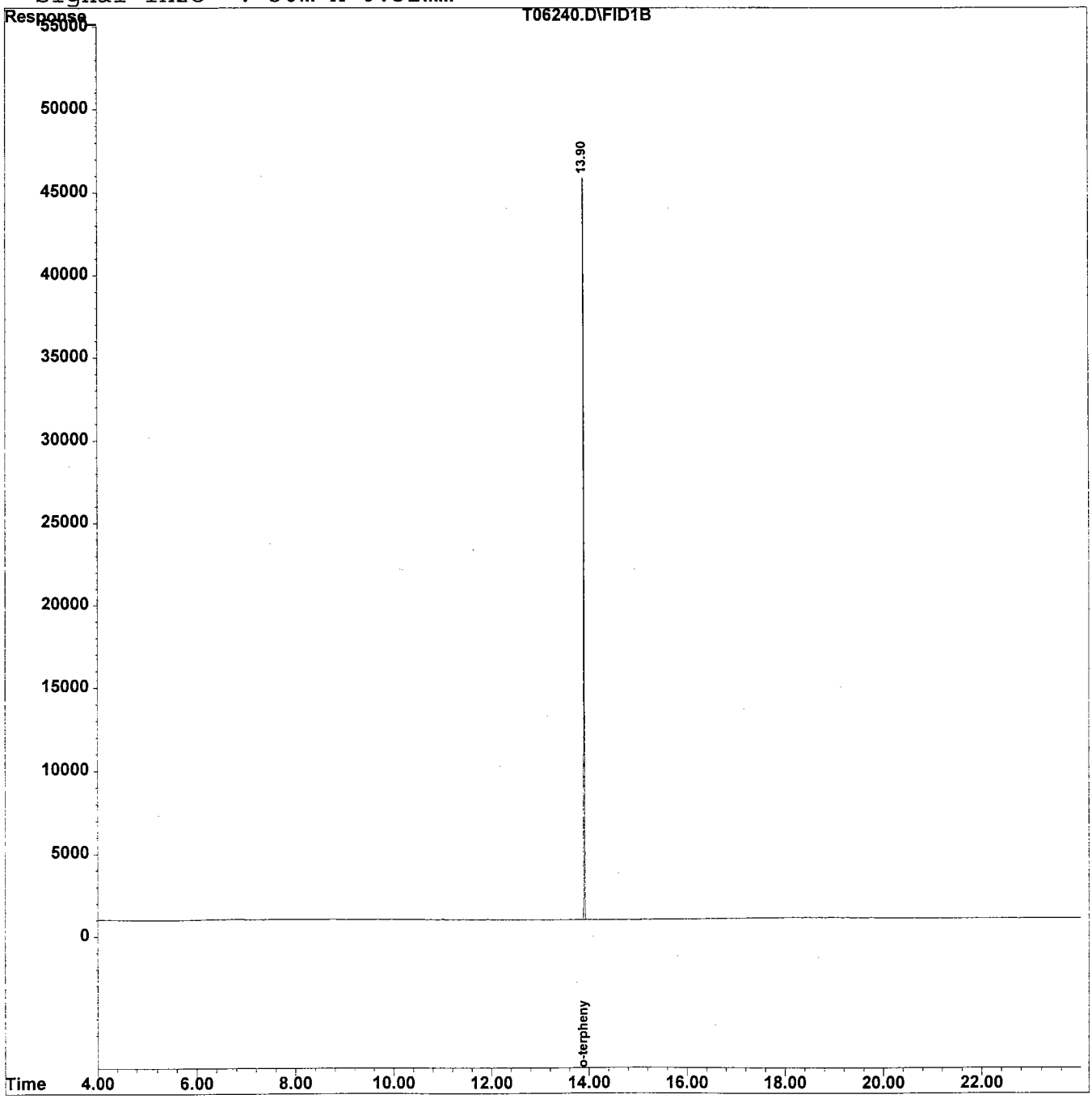
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980720\T06240.D Vial: 21
Acq On : 21 Jul 98 2:54 am Operator: Deinhardt
Sample : 3737.07 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jul 21 8:12 1998 Quant Results File: TPH43.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH43.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jul 09 13:23:26 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH43.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



LABORATORY DELIVERABLES CHECKLIST AND NON-CONFORMANCE SUMMARY

THIS FORM MUST BE COMPLETED BY THE LABORATORY OR ENVIRONMENTAL CONSULTANT AND ACCOMPANY ALL DATA SUBMISSIONS

The following Laboratory Deliverables checklist and Non-Conformance Summary shall be included in the data submission. All deviations from the accepted methodology and procedures, of performance values outside acceptable ranges shall be summarized in the Non-Conformance Summary. The Technical Requirements for Site Remediation, effective June 7, 1993, provides further details. The document shall be bound and paginated, contain a table of contents, and all pages shall be legible. Incomplete packages will be returned or held without review until the data package is completed.

It is recommended that the analytical results summary sheets listing all targeted and non-targeted compounds with the method detection limits, practical quantitation limits, and the laboratory and/or sample numbers be included in one section of the data package <u>and</u> in the main body of the report.

1. Cover page, Title Page listing Lab Certification #, facility name and address, & date of report submitted ✓
2. Table of Contents submitted ✓
3. Summary Sheets listing analytical results for all targeted and non-targeted compounds submitted ✓
4. Document paginated and legible ✓
5. Chain of Custody submitted ✓
6. Samples submitted to lab within 48 hours of sample collection ✓
7. Methodology Summary submitted ✓
8. Laboratory Chronicle and Holding Time Check submitted ✓
9. Results submitted on a dry weight basis ✓
10. Method Detection Limits submitted ✓
11. Lab certified by NJDEP for parameters of appropriate category of parameters or a member of the USEPA CLP ✓

Laboratory Manager or Environmental Consultant's Signature _____

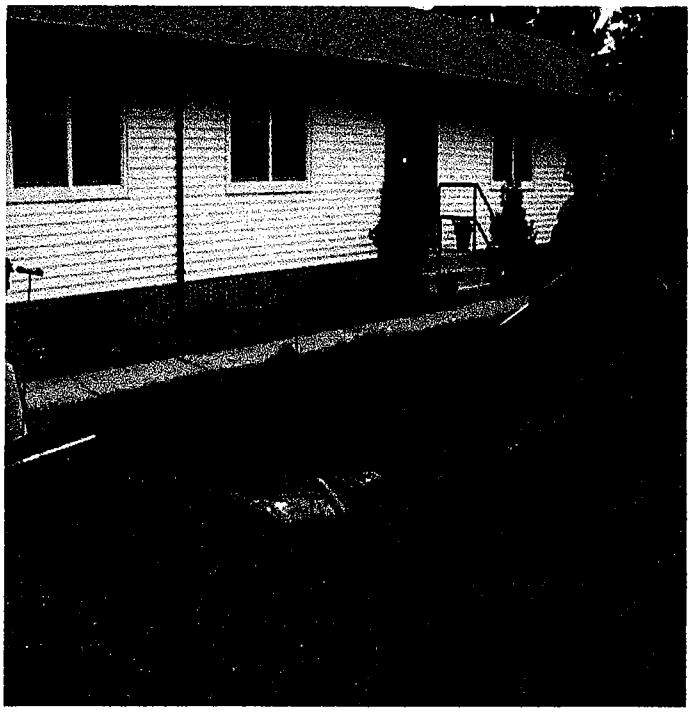
Date __/__/__

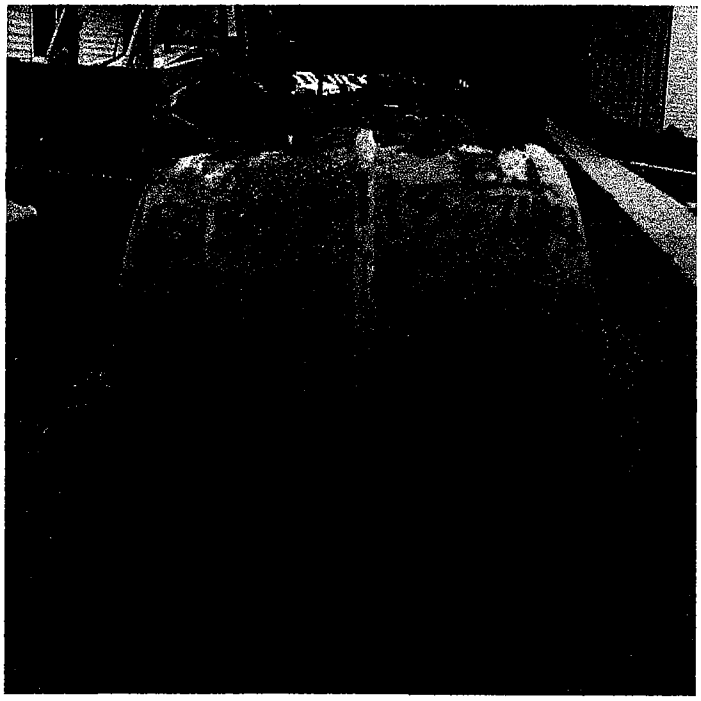
Laboratory Certification #13461

*Refer to NJAC 7:26E - Appendix A, Section IV - Reduced Data Deliverables - Non-USEPA/CLP Methods for further guidance.

APPENDIX F

PHOTOGRAPHS





JULY 17, 1998

PHOTOGRAPHIC LOG

UST NO. 81533-118

BUILDING 744
Main Post-West
Fort Monmouth

VERSAR
Engineers, Managers, Scientists & Planners
Bristol, PA