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Final

Remedial Investigation Report
Area of Concern (AOC) E

Former Naval Ammunition Support Detachment
Vieques, Puerto Rico

Prepared for

Department of the Navy
NAVFAC ATLANTIC

Contract No. N62470-02-D-3052
CTO-007

Appendix 1 of 2

July 2008

Prepared by

CH2MHILL

Appendix A
UST Closure Plan and Report

Appendix A
1995 UST Closure Plan

CLOSURE PLAN FOR
UNDERGROUND STORAGE TANKS (UST) SYSTEMS
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

Contract Number N62470-93-D-4034

DAMES & MOORE

2807 N. Parham Road, Suite 114, Richmond, Virginia 23294

July 6, 1995

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1.0 INTRODUCTION

1.1 SITE LOCATION AND DESCRIPTION

Thirty USTs and their distribution systems located at Naval Station Roosevelt Roads in Puerto Rico shall be permanently removed from service. Roosevelt Roads is located 45 miles southeast of San Jaun and two miles south of Ceiba, Puerto Rico. A map indicating the locations of the sites is presented in Figure 1. Table 1 lists the systems to be permanently closed and the remaining figures show the approximate UST system locations. The tanks and piping shall be permanently closed following the procedures outlined in Section 2.0.

1.2 PURPOSE AND SCOPE OF CLOSURE PLAN

The purpose of this closure plan is to outline general procedures used during the permanent closure activities of the USTs and their underground fuel distribution systems (see Table 1). These procedures were prepared in accordance with 40CFR 280 Subpart G, and the Puerto Rico Environmental Quality Board (EQB) regulations for the control of underground storage tank Part VII.

2.0 TANK CLOSURE ACTIVITIES

2.1 TANK AND PIPING CLOSURE

Tank or piping closure activities shall be conducted by a contractor selected by the Navy. The Navy will provide the selected contractor with the tank or piping removal drawings and specifications. This closure is part of the specifications. Table 1 indicates the closure procedure for each UST area.

American Petroleum Institute (API) publications to be followed by the contractor during removal operations include "Removal and Disposal of Used Underground Petroleum Storage Tank" (API2015). Contractor personnel used during tank or piping removal operations shall have completed the 40 hour Health and Safety course and participate in a medical surveillance program as required by the Occupational Safety and Health Administration OSHA in 29CFR 1910.120. The contractor shall inform EQB at least 30 days prior to the intended permanent closure.

2.2 EMPTYING OF USTS

The pavement/concrete overlying the tank, (if any) shall be sawcut and removed. The top of each of the tank shall be excavated to expose the top of the tank. The opening used to fill the tank shall be located. Product piping shall be drained into the tank. All possible fuel will be pumped or otherwise removed from the tank by the Contractor. The remaining contents shall be considered as contaminated fuel or waste fuel. Contents shall be pumped into 55 gallon drums or other suitable containers for disposal in accordance with approved procedures meeting local, and Federal regulations. Remaining fuel emulsions shall be disposed in accordance with applicable local, and Federal regulations. Drums or tank used for containerizing waste fuel shall be furnished by the Contractor. Contractor shall pump or otherwise remove water and/or sand from the tank. Drums or tanks used for containerizing water and sand shall be furnished by the Contractor. Waste fuel/sludge shall be containerized in clean 55 gallon drums or other suitable containers for proper disposal in accordance with Federal and local applicable regulations. Drainage of lines into the tank shall be conducted without spillage into the excavation area.

The tank shall be grounded to minimize the possibility of static electricity build-up. Electrical connections, if present, shall be removed. Fill pipe, gauge pipe, vapor recovery truck connection, submersible pumps and other tank fixtures (as applicable) except vent lines shall be removed using non-sparking tools. The atmosphere within the tank shall be checked with an explosimeter for flammability. All openings except the vent lines shall be temporarily plugged so that vapors shall exit through the vent lines during the degassing process. Liquids and residues shall be removed from the tank by using explosion-proof or air driven pumps. Pump motors and suction hoses shall be bonded to the tank or otherwise grounded to minimize the possibility of electrostatic ignition hazards. A hand pump shall be used, if necessary, to remove the last few inches of liquid from the bottom of the tank. Liquids and residues left in the tank shall be stored temporarily in clean 55 gallon drums or suitable containers. The containers shall be properly covered and labeled and shall be used later to store the water and sludge generated (if any) during the cleaning process.

All fuel storage shall have a temporary secondary containment that meets the requirements of 40 CFR 112.7.

2.3 DEGASSING ACTIVITIES

Flammable vapors shall be purged following Section 4.2 "purging" of API 1604. Upon purging the tank of flammable vapors and before initiating any work in the areas in or on the tank, an explosimeter shall be used to assess vapor concentrations inside the tank and in the work areas. The contractor shall verify with the explosimeter that the areas are free from sources of ignition as described in Section 1.3.2 of API 1604.

2.4 REMOVAL OF TANK AND ASSOCIATED PIPING

After the tanks are freed of vapors and before they are removed from their respective excavations, all accessible holes shall be plugged or capped. One plug shall have an 1/8-inch vent hole to prevent the tank from being subjected to excessive differential pressure caused by the temperature changes.

Excavations shall occur around the tank as required by the specifications to uncover them for removal. Place soil removed from the excavation in a temporary containment area. The excavated soils removed from the excavation area shall be placed over a 6 mil thick

(minimum) polyethylene liner and covered with 6 mil polyethylene sheeting for protection against rain. The tank shall be removed from the excavation and placed on a level surface.

Associated piping (if any is found) shall also be excavated and removed as indicated by the applicable drawings & specifications. Excessive dirt shall be removed from around the tank. Tank sides, bottom and ends shall be visually inspected. A scribe (small metal instrument shaped like a pencil) or similar instrument shall be used to flake away corroded layers of metal and to press against metal to check for perforations. Photographs showing the condition of the tank shall be taken. After visual inspection of the tank the cleaning procedures will proceed.

2.5 TANK CLEANING

The contractor shall ensure that properly trained personnel are used for tank cleaning operations. The contractor shall assign a supervisor who is competent to handle the tank cleaning operations. The supervisor shall ensure that the hazards normally encountered while cleaning petroleum storage tank are controlled by proper planning, training of crew, and conducting the required inspections (tank, equipment and working area). Tank cleaning operations shall be conducted following the general guidelines of API 2015 "Cleaning Petroleum Storage Tanks". Test the tank atmosphere and the excavation area for flammable or combustible vapor concentrations with a combustible gas indicator until the tank is removed from the excavation and from the site.

Some of the major steps that shall be followed by the removal contractor during this operation are:

- External inspection of tank and visual assessment of immediate area;
- Training of crew and inspection of equipment;
- Determination that the work area is free of flammable materials before personnel are permitted to enter the area;
- Controlling sources of ignition in, around, and on the tank;
- Emptying of the tank;
- Blinding of the tank and de-energizing electrical circuits attached to the system;

- Degassing of the tank;
- Periodic testing of the tank for flammable vapors using an explosimeter;
- Opening of the tank for entry and removal of sludge; and
- Removal and collection of any free product found.

3.0 MANAGEMENT OF AFFECTED MATERIALS

3.1 STORAGE AND DISPOSAL OF PRODUCT AND SLUDGE

Product and sludge generated during the emptying and cleaning of the tank shall be accumulated in 55 gallon drums or appropriate containers. The drums shall be properly labeled and temporarily stored at the facility until proper disposal by the contractor. The contractor will ensure that characterization and disposal shall be conducted by an EQB approved disposal facility. The contractor shall obtain proper certification/manifesting from the disposal facility.

3.2 CUTTING AND DISPOSAL OF TANK

After degassing and cleaning the tank the contractor shall render the tank unsuitable for future use as storage tank by puncturing, cutting, or drilling numerous holes in all sections of the tank. The contractor shall dispose of the tank as scrap metal. The contractor shall obtain proper certification (Bill of Sale) from the disposal facility and shall provide a copy to the designated ROICC Officer.

3.3 PROTECTION OF EXCAVATION SITE

The excavation site shall be protected from the rain with a polyethylene liner (as allowed by excavation size) and against run-on by placing berms around the excavated site. The berms will be made of sand packs and polyethylene liners. This protection shall be maintained from the time the USTs or piping are removed until such time as appropriate materials are backfilled into the excavation site. If appropriate, absorbent materials shall be used in the excavation site to collect residual concentrations of petroleum hydrocarbons

present (if any). Hydrocarbon affected absorbent material shall be disposed with other hydrocarbon affected materials in accordance with applicable Federal and local regulations.

3.4 STORAGE AND DISPOSAL OF EXCAVATED SOILS

Excavated soils as described in Section 2.4 shall be temporarily stored over a polyethylene liner. A second liner shall be used to cover the soil for protection against rain. Excavated soils shall be sampled as described in Section 4.0 of this plan. If excavated soils are determined to have a total petroleum hydrocarbons (TPH) concentration greater than or equal to 100 milligrams/kilogram (mg/kg) or benzene, toluene, ethylbenzene, xylene (BTEX) concentrations greater than 10 mg/kg, the soils shall be disposed at a disposal facility approved by the Puerto Rico EQB.

If excavated soils are determined to have a TPH concentration of less than 100 mg/kg and BTEX concentration less than 10 mg/kg, then the soil shall be disposed of as non-contaminated material by the contractor or used as backfill material. If soils are disposed of, the contractor shall be responsible for obtaining any necessary regulatory permits to dispose of the hydrocarbon affected material and obtain the corresponding manifests.

3.5 EXCAVATION BACKFILLING

The pit areas shall be backfilled with suitable material. Backfill material shall be placed in thin lifts and compacted with conventional equipment until pre-removal surface grade is attained. The excavated layer shall be finished according to specifications.

4.0 SOIL SAMPLING

4.1 SAFETY AND DECONTAMINATION PROCEDURES

Prior to initiating soil sampling activities,, three safety zones shall be established at the project site. The purpose of these zones will be to provide a proper Quality Assurance/Quality Control (QA/QC) mechanism at the site during sampling activities. This mechanism will help minimize possible cross-contamination between sampling locations.

The three safety zones shall be identified in the field. These areas will be defined as follows:

- Sampling Location: The sampling locations are the tank pit areas and pipe trench excavations where sampling and QA/QC procedures are to be followed.
- Decontamination Zone: Area where most decontamination activities will be performed (i.e. sampling equipment, personnel and safety equipment).
- Field Analysis and Support Zone: Area where necessary field analysis (surrogate screening) will be performed and support personnel and equipment will be located.

All sampling equipment shall be decontaminated by the following procedure (decontamination should not have been performed more than 48 hours from the time of sampling):

- First wash with Alconox (phosphate free detergent)
- Successive rinse with clean tap water
- Rinse with distilled water
- Rinse with isopropanol
- Air dry

Basic safety personnel equipment shall consist of hard hat, safety glasses or goggles, boots and latex gloves (gloves are to be changed prior to each sample collection). Each member of the sampling team must use this basic equipment. This equipment will not only serve for personnel protection, but also be part of the QA/QC procedures to minimize the possibility of cross-contamination between sampling points.

4.2 SOIL SAMPLING

The contractor shall use qualified personnel to conduct sampling activities. Before beginning to obtain the soil samples, the necessary safety and decontamination procedures described in Section 4.1 shall be followed. Necessary containers and equipment shall be at hand before sampling. The guidelines provided below shall be followed:

4.2.1 Removed Tank Pits Sampling

If tank is 20 feet or less in length, two samples shall be taken. Each sample shall be collected 2 feet from each end of the tank and 2 feet below the bottom of the excavation. If the tank is greater than 20 feet, three samples shall be taken. Two samples shall be taken 2 feet from each end of the tank and 2 feet below the bottom of the excavation. A third sample shall be taken from the middle of the tank area and 2 feet below the bottom of the excavation. A minimum of one sample per excavation wall shall also be collected. Samples shall be analyzed for TPH following Method 418.1 and BTEX following SW846 Method 8020. Soils with concentrations greater than 100 mg/kg TPH or greater than 10 mg/kg BTEX are considered contaminated materials. Soils with concentrations of less than 100 mg/kg TPH or 10 mg/kg BTEX, may be used as clean fill. Results shall be furnished to the Contracting Officer within 24 hours after the results are obtained. Along with the

results, a sketch showing underground tank, sampling location, and extent of excavations shall be furnished.

4.2.2 Stockpiled Soils Sampling

For stockpiled soils, a minimum of one test shall be provided for every 100 cubic yards or for each excavation whichever is less, for TPH and BTEX. Soils with concentrations greater than 100 mg/kg TPH or 10 mg/kg BTEX are considered contaminated materials. Soils which are less than the above may be used as clean fill. Results shall be furnished to the Contracting Officer within 24 hours after the results are obtained. Contaminated soils shall be disposed of in accordance with Federal and local regulations.

4.2.3 Piping Trench Sampling

For every 25 linear feet of product delivery piping, for every change in direction, and at every mechanical joint one soil sample shall be collected and analyzed for TPH and BTEX.

All sampling results shall be furnished to the Contracting Officer within 24 hours after the results are obtained. Along with the results, a sketch shall be furnished showing the underground tank, sampling locations, and extent of excavations.

4.3 CHAIN-OF-CUSTODY CONTROL

The following procedures shall be followed to provide adequate sample traceability. Sample containers shall be pre-labeled before sample collection. The pre-labeled information shall include sample identification number, name of collector, date and time of collection, phase of collection and parameters requested. A chain of custody record shall

be completed by sampling personnel and others handling the sample between the time the sample is taken and the time it is delivered to the laboratory for analysis. The chain of custody record shall include necessary information for traceability of the samples.

4.4 FIELD QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Improper sample handling may alter the analytical results of the sample. Consequently, the samples to be collected shall be obtained by using disposable latex gloves. At each sampling point, new pairs of gloves shall be worn by the sampling personnel. Samples shall be carefully transferred in the field from the sampling equipment directly into the containers provided by the laboratory. QA/QC procedures shall be used to increase the reliability and validity of field and analytical laboratory data. Field QA/QC will consist of obtaining trip blanks, and instrument blanks. Any contaminants found in the trip blanks or instrument blanks could be attributed to:

- Interaction between the sample and the container;
- Contaminated rinse water, or;
- A handling procedure that may alter the samples analysis.

The concentration level of any contaminants found in the blank samples shall not be used to correct the collected sample data reported by the laboratory. Trip blanks shall be provided by the contractor selected laboratory. A one liter amber glass bottle shall be filled with deionized water originated from the laboratory. This sample shall be transported to the site, and returned to the laboratory for analysis. Trip blanks are not to be opened during sampling or transportation. For this project, one trip blank for each shipment of samples sent to the laboratory shall be analyzed.

To verify the effectiveness of sampling equipment cleaning procedures, the sampling equipment shall be flushed with deionized water. This water shall be collected in the approximate laboratory containers and sent to the laboratory for analyses. For this project, one instrument blank shall be obtained from each of the five excavation site areas.

4.5 LABORATORY ANALYSIS

Samples and QA/QC blanks shall be sent to the laboratory to be analyzed for TPH following EPA Method 418.1 and BTEX following SW846 Method 8010. All chemical analyses shall be certified as per Puerto Rico UST Regulation Part X, Rule 1002B.

If test results indicate the presence of hydrocarbons in the soils in excess or equal to 100 mg/kg TPH, or 10 mg/kg BTEX, or free product is discovered, the contractor shall notify the Contracting Officer in writing within 24 hours of this knowledge. Along with the results, a sketch shall be furnished showing the underground tank, sampling location, and extent of excavations.

4.6 LABORATORY QA/QC

Reliability and validity of laboratory analysis shall be increased by using standard and duplicate samples. Results from a standard sample and duplicate samples shall be used as a measure of the laboratory performance or as an indicator of potential sources of cross-contamination. Ten percent of the soil samples selected for laboratory analysis shall be split to obtain duplicate samples for laboratory QA/QC verification.

5.0 CLOSURE/SITE ASSESSMENT REPORT

The contractor shall prepare a "Closure/Site Assessment Report" which shall contain a collection of all reports, records, inspections, documentation and data such as the following:

a. Executive Summary with a summary of the test results for each UST in tabular form.

b. General location and description of the facility;

c. General USTs site locations and description of work including removal procedures, number of tank removed, cubic yards of excavated soil, location of disposal sites, dates of excavation, linear feet of piping, etc. UST site location shall be clear enough to identify main roads, drainage, buildings and structures near the site;

d. Soil sampling procedures and laboratory analyses reports; including QA/QC data;

e. Description of excavation site backfilling activities;

f. Description of management of affected materials;

g. Photographs documenting different phases of closure activities;

h. Disposal manifests of affected materials and tank; (disposal documents and manifests for disposal of tank, contaminated soil and contaminated water);

i. Conclusions and recommendations;

j. Permits, notifications, and inspection reports;

k. Completed UST Notification Form sent to EQB, receipt of fees paid to EQB correspondence between contractor and EQB if any; and

l. Certifications required by regulatory agency.

The report shall have a table of contents and shall be tabbed for easy following. Three copies of the closure report will be provided to the ROICC Officer, Navy Engineer in charge (EIC) and the Navy activity.

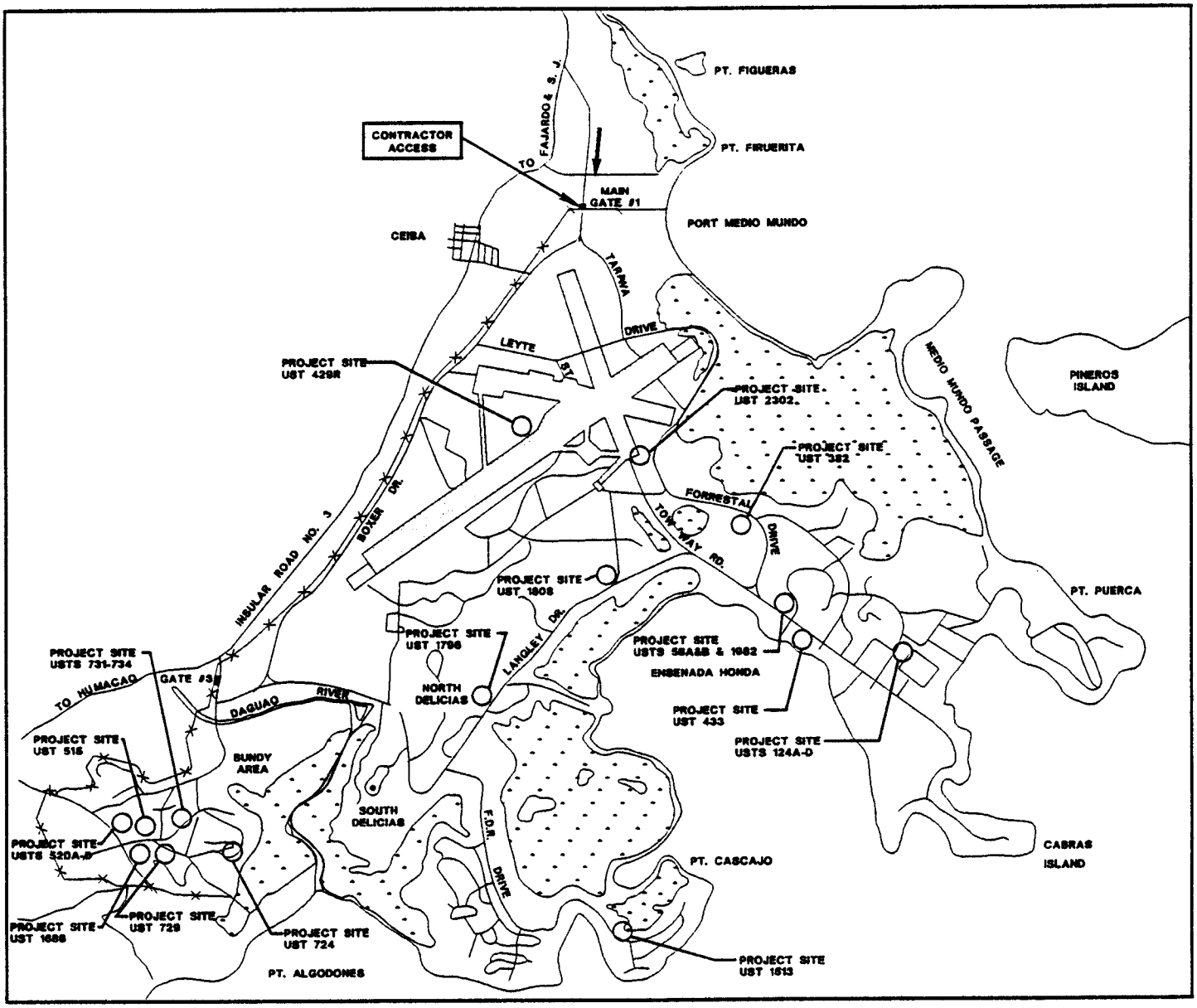
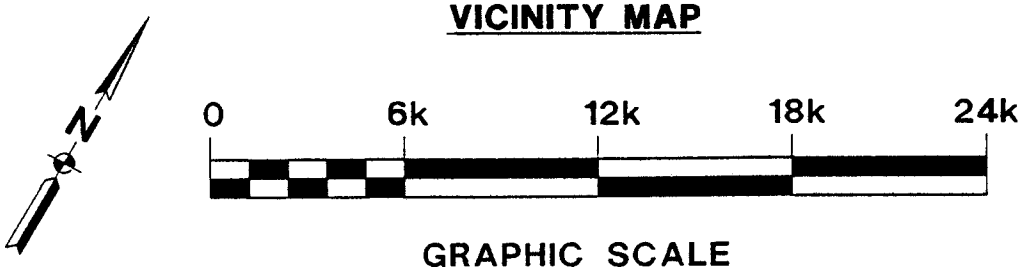


FIGURE 1

VICINITY MAP



GRAPHIC SCALE

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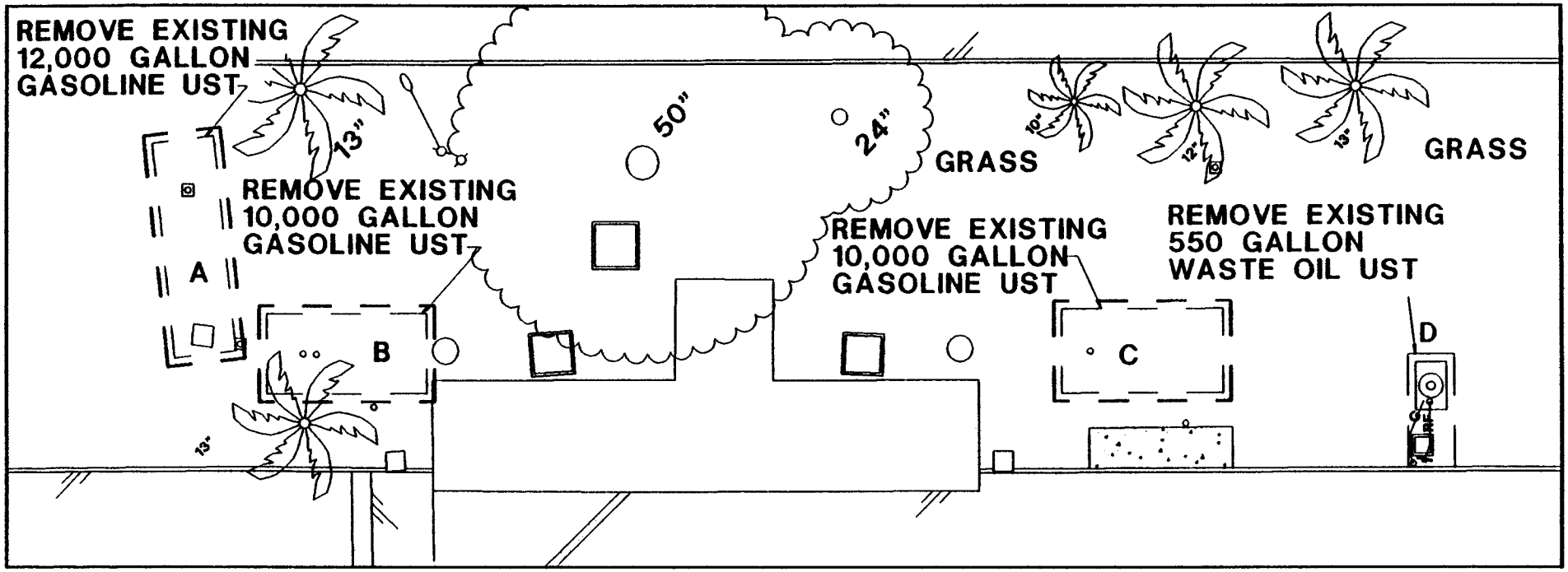

FIGURE 2

USTS 520 A,B,C, & D

N

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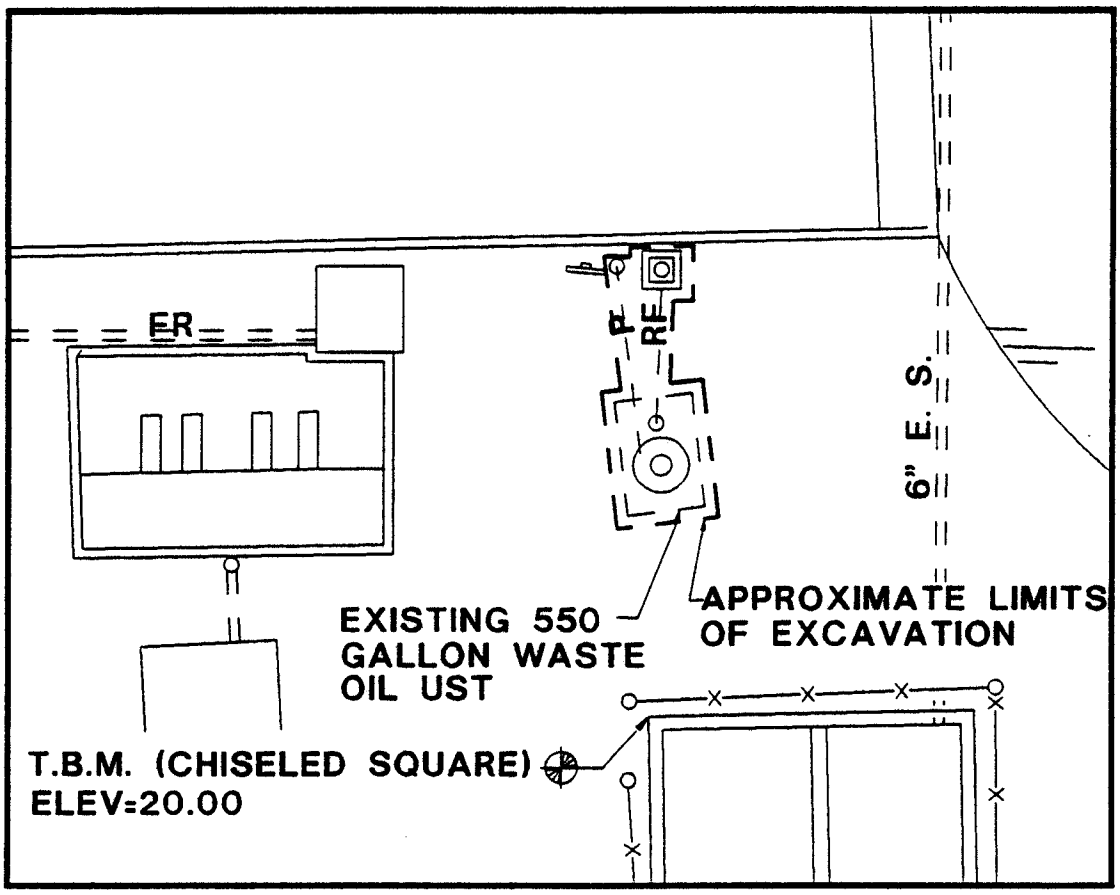

N

FIGURE 3

UST 382

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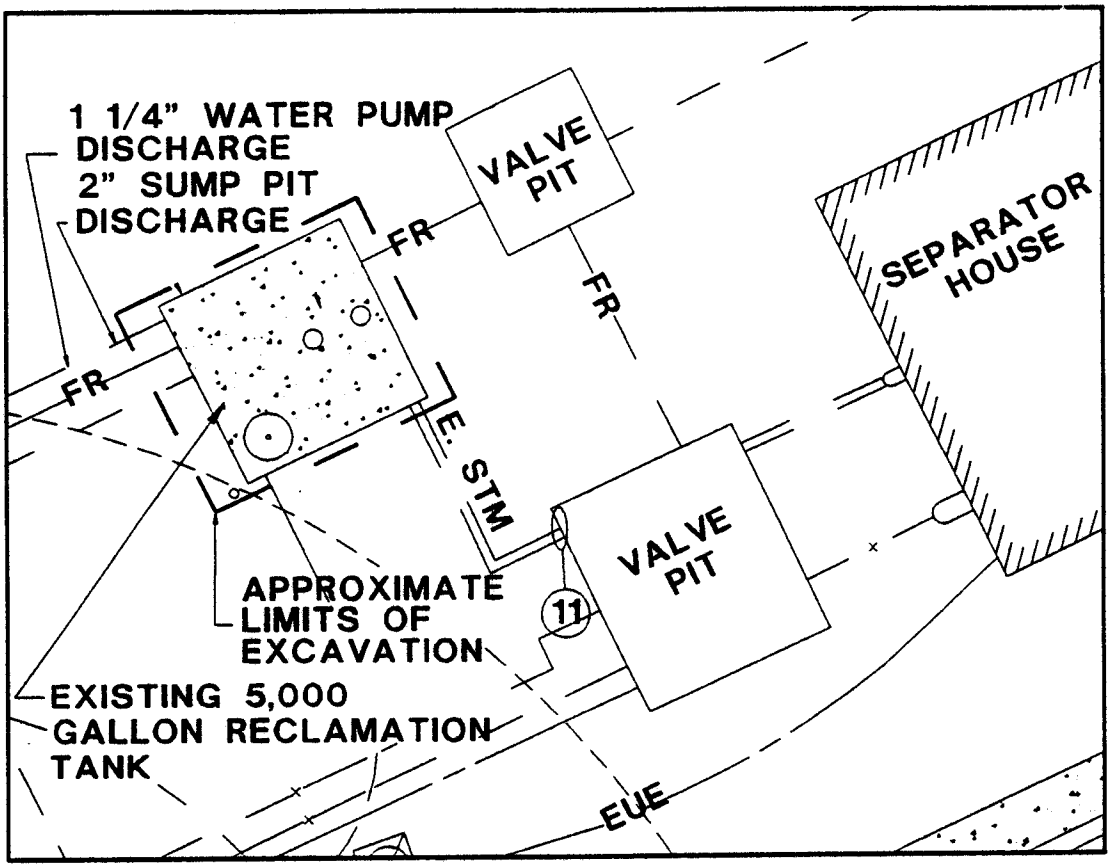
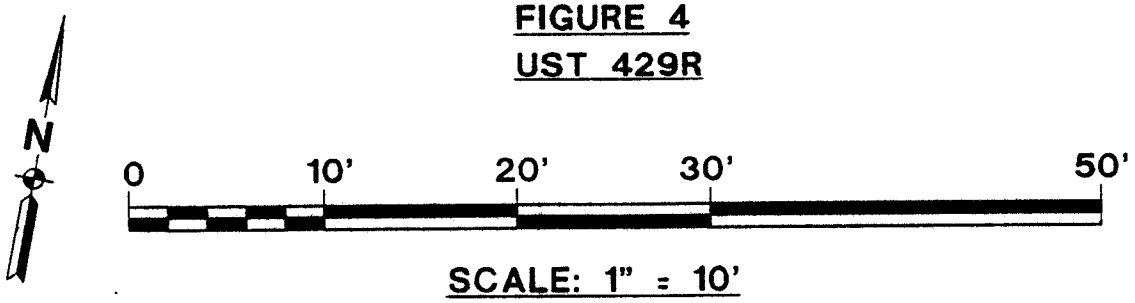


FIGURE 4
UST 429R



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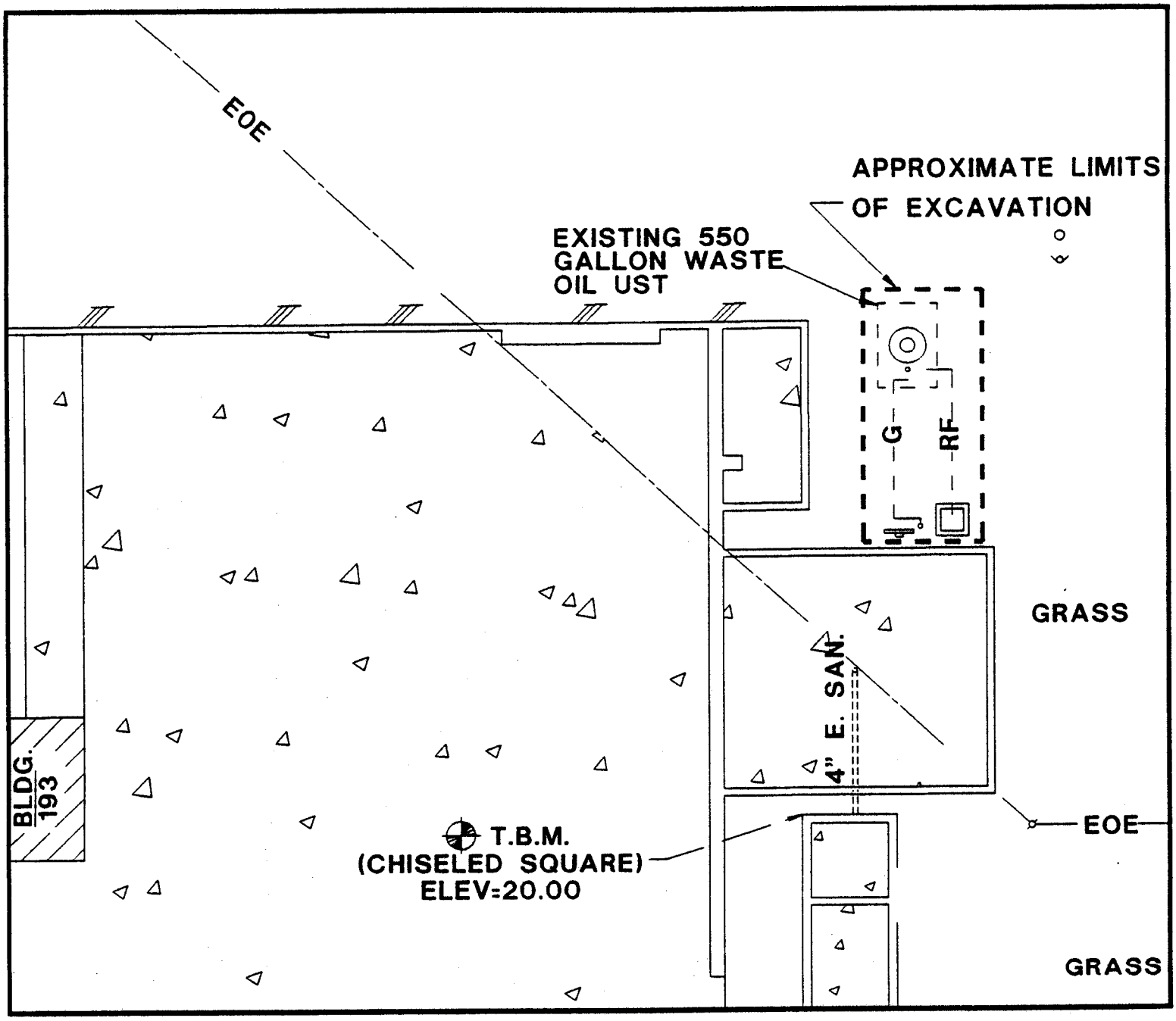
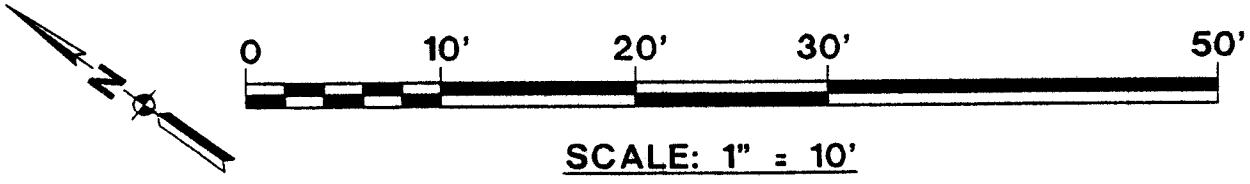


FIGURE 5

UST 443



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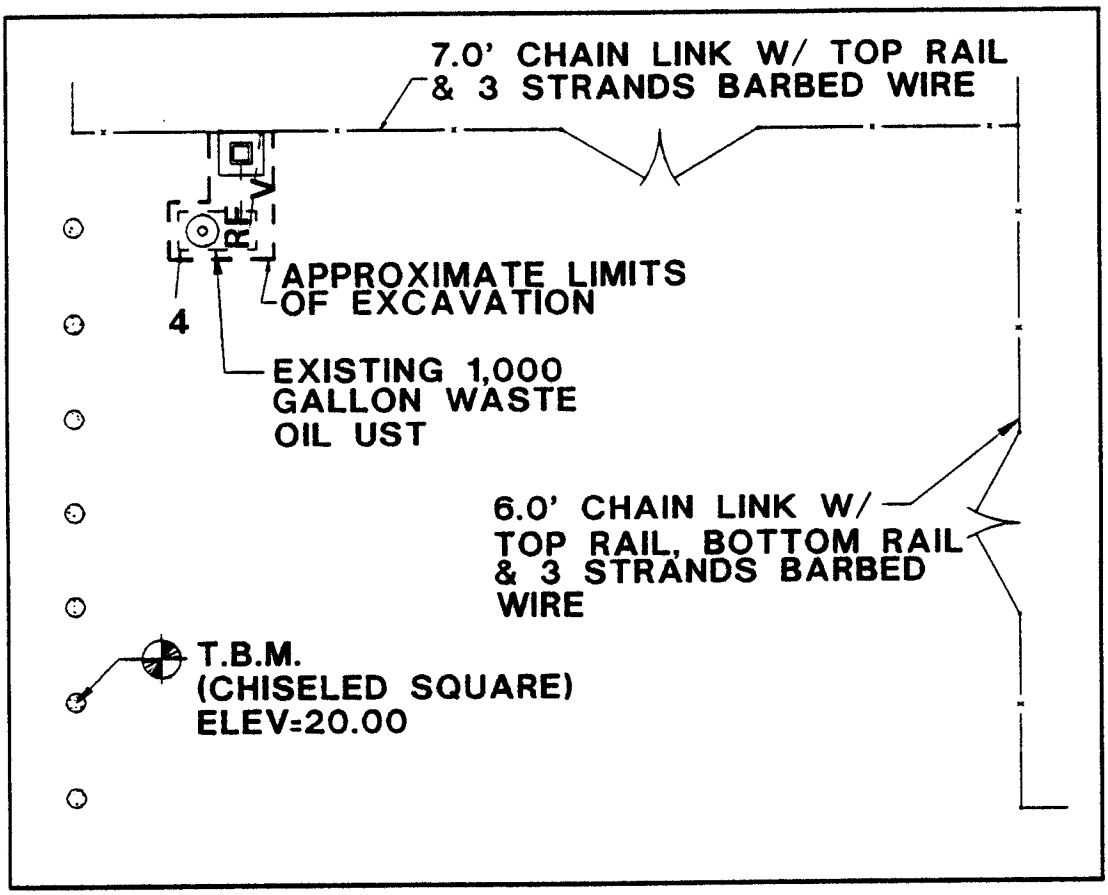
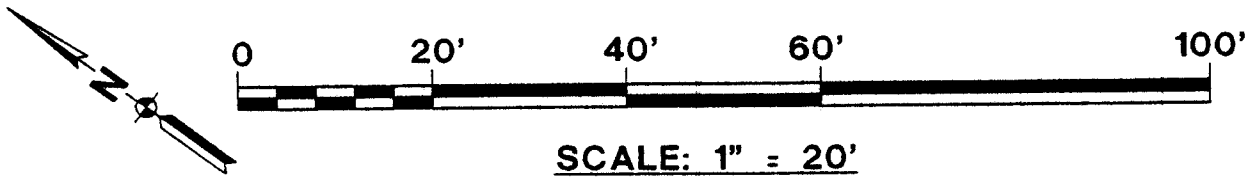


FIGURE 6

UST 515



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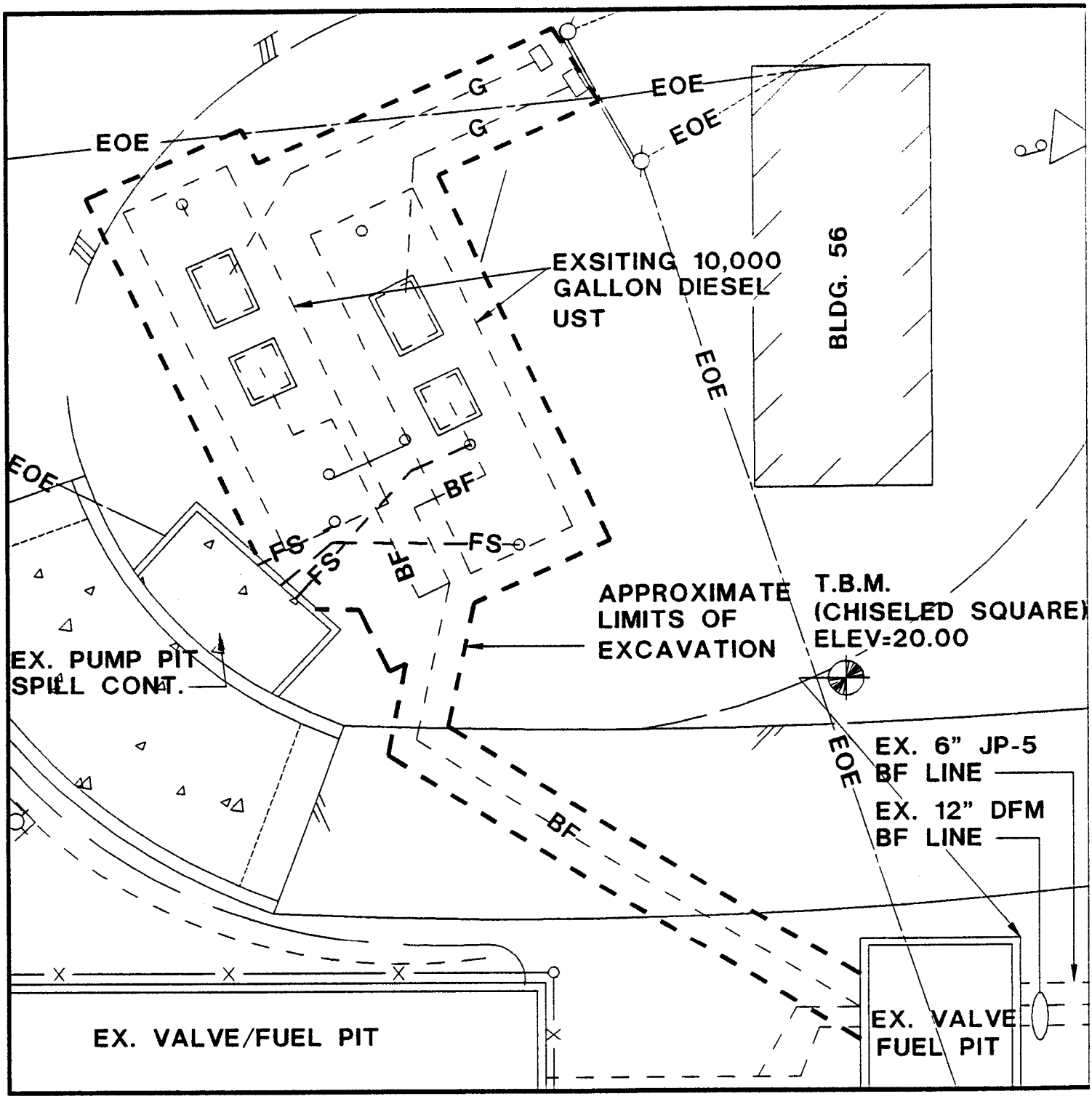
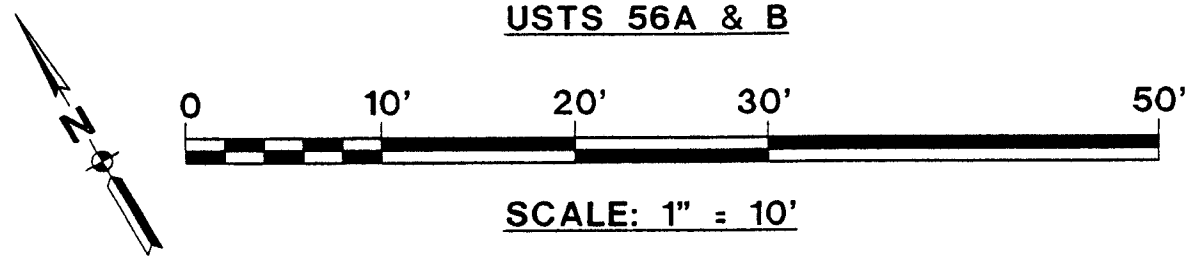


FIGURE 7

USTS 56A & B



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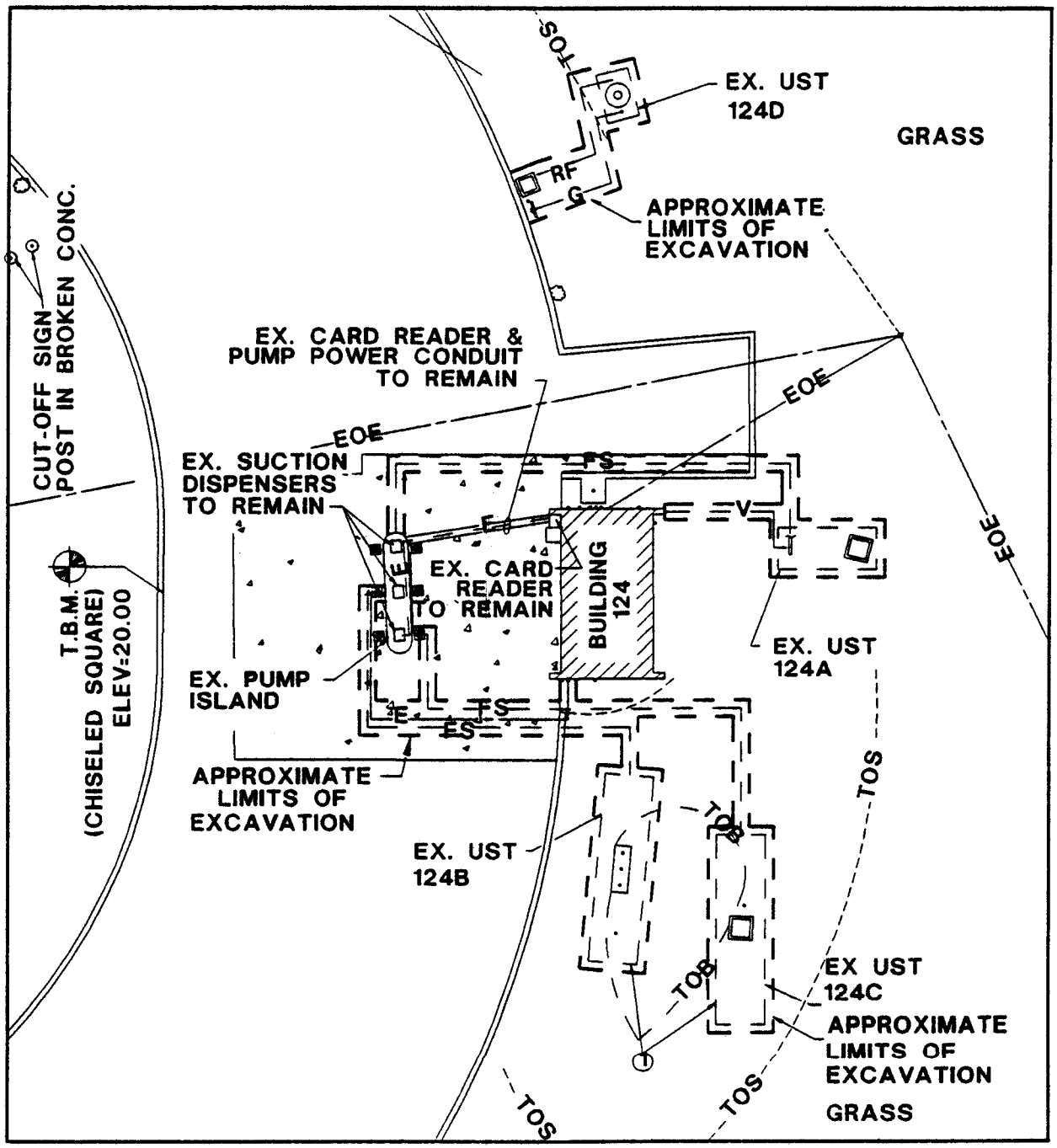
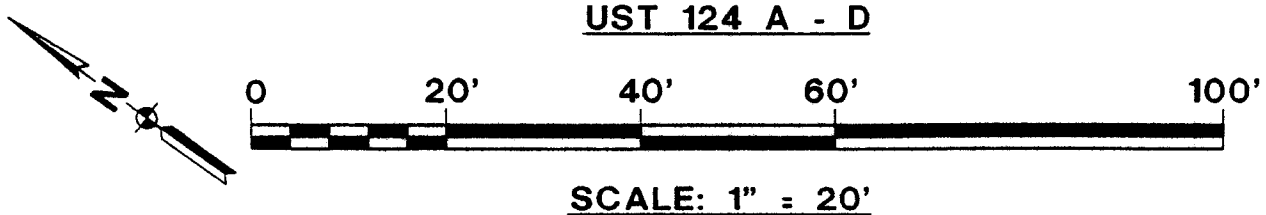


FIGURE 8

UST 124 A - D



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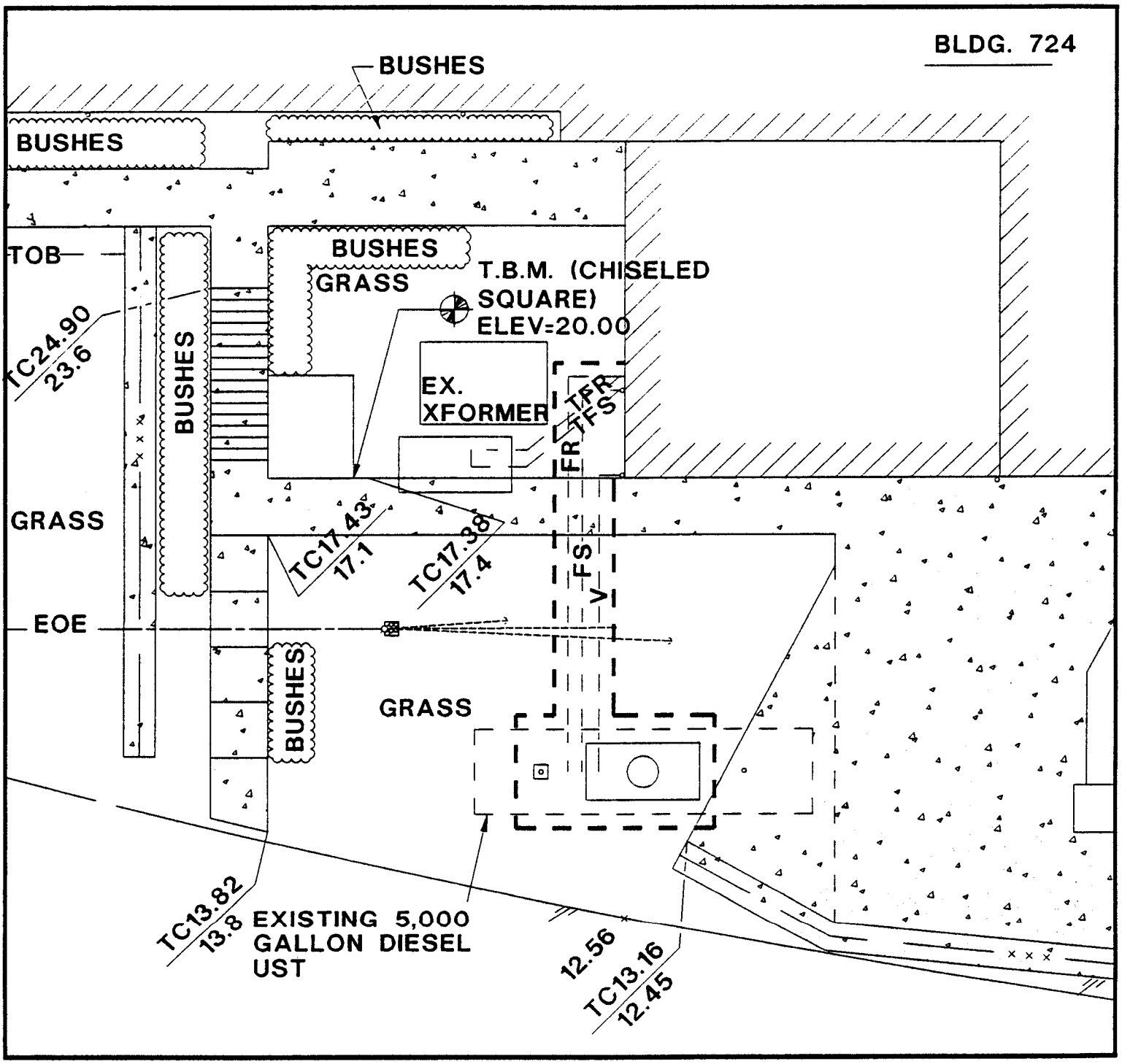
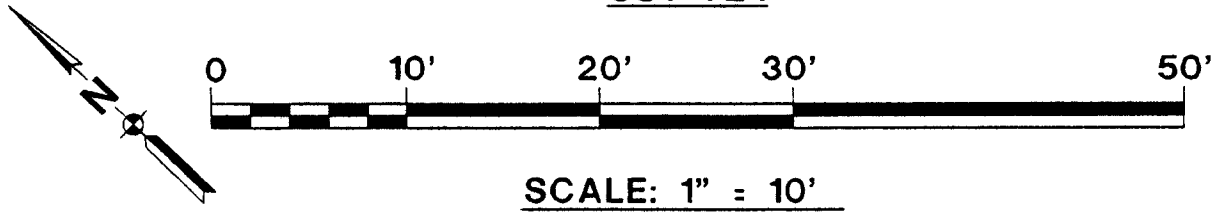


FIGURE 9
UST 724



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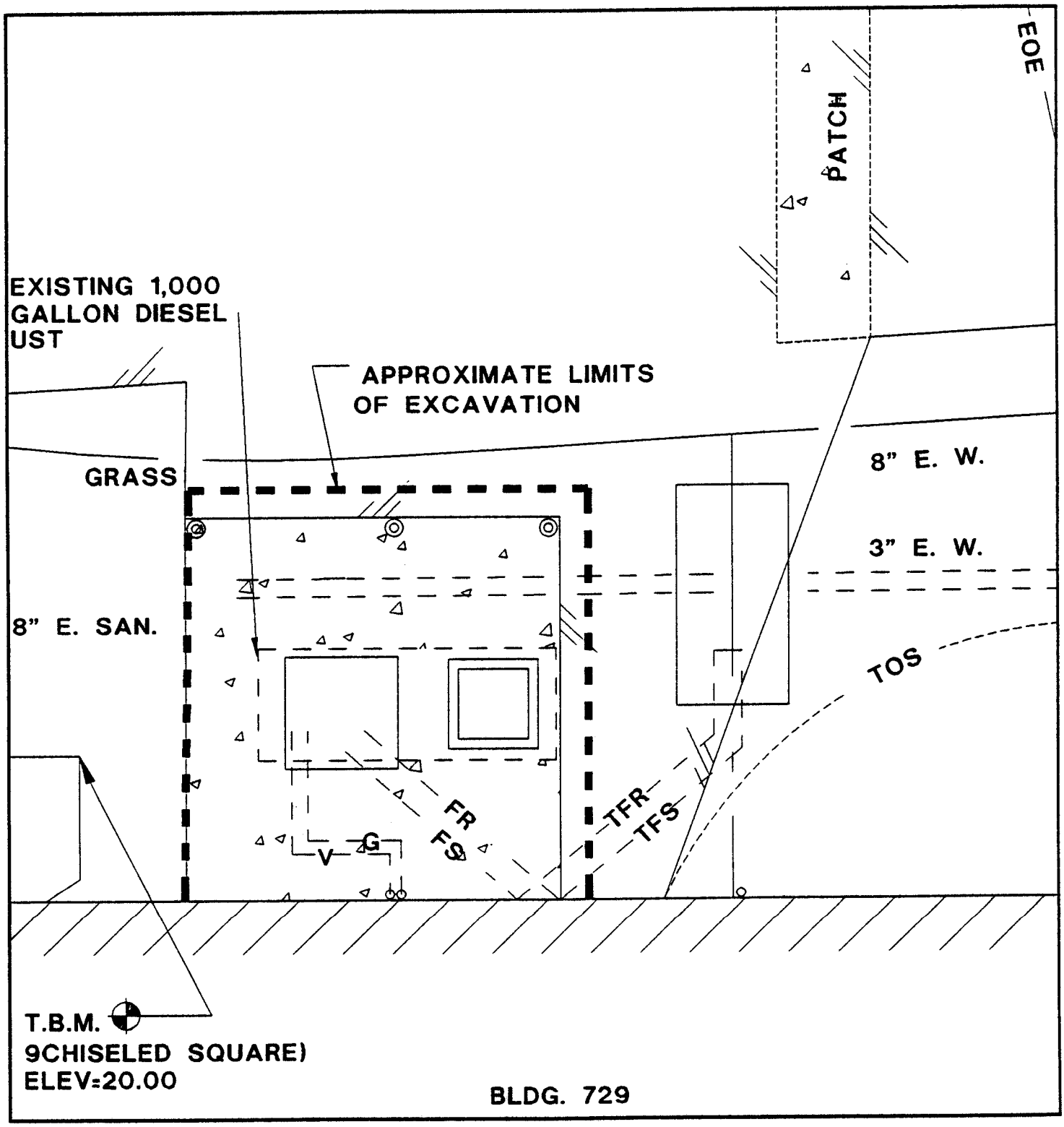

FIGURE 10

UST 729

0 5' 10' 15' 25'

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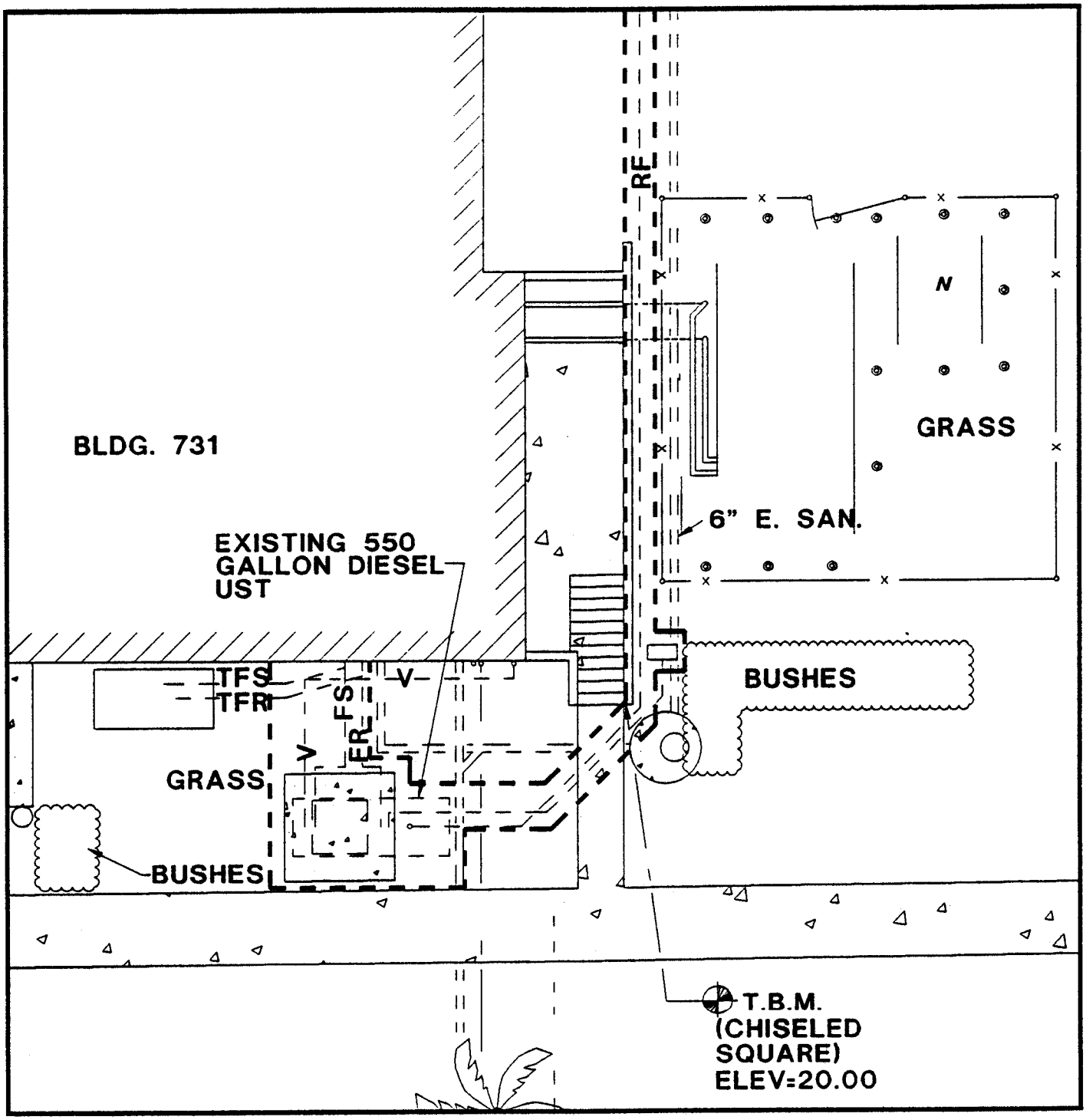


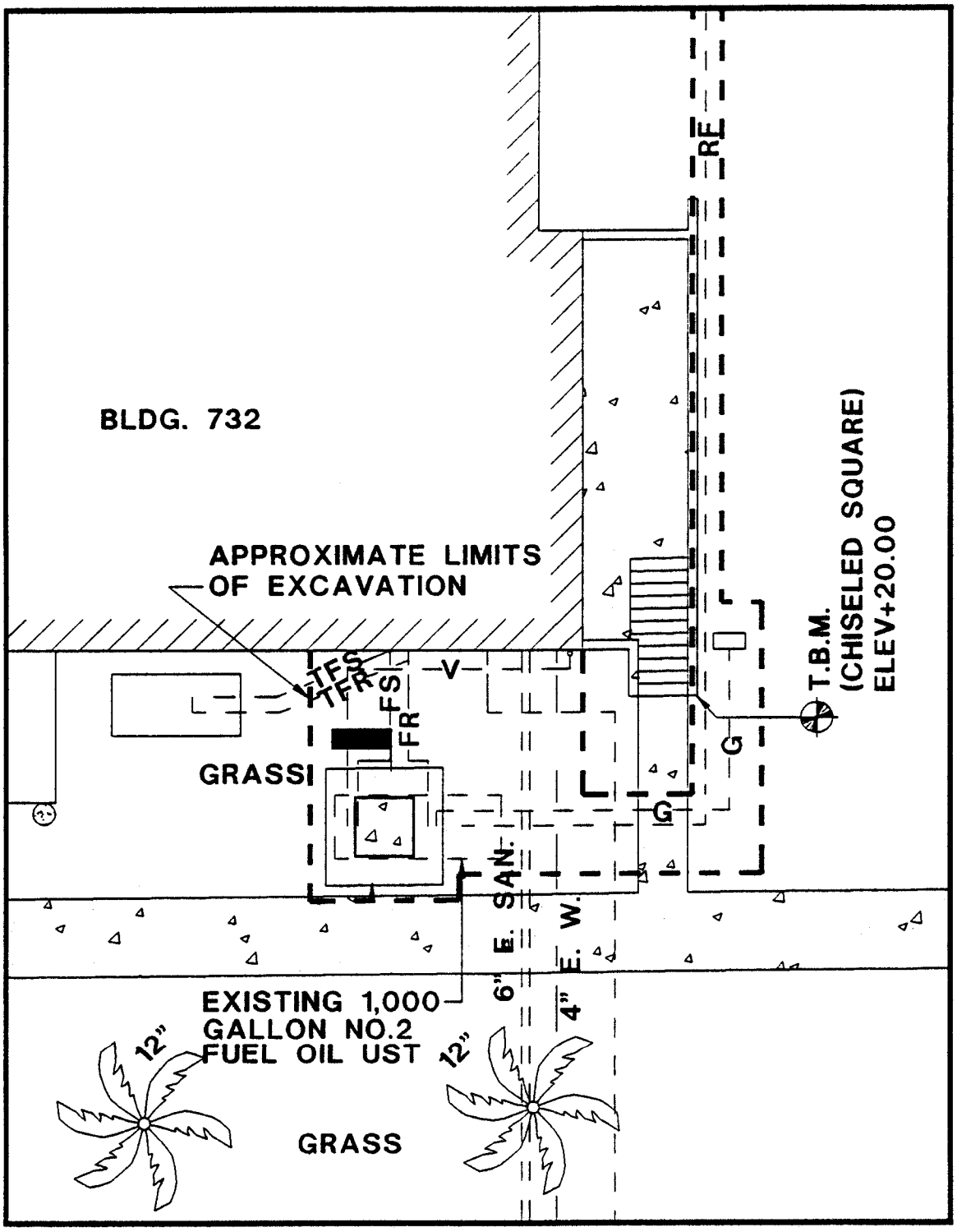
N

0 10' 20' 30' 50'

FIGURE 11

UST 731

SCALE: 1" = 10'



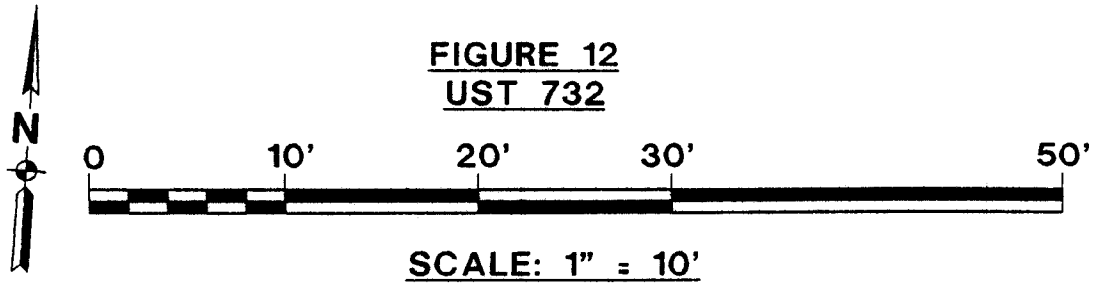


FIGURE 12
UST 732

SCALE: 1" = 10'

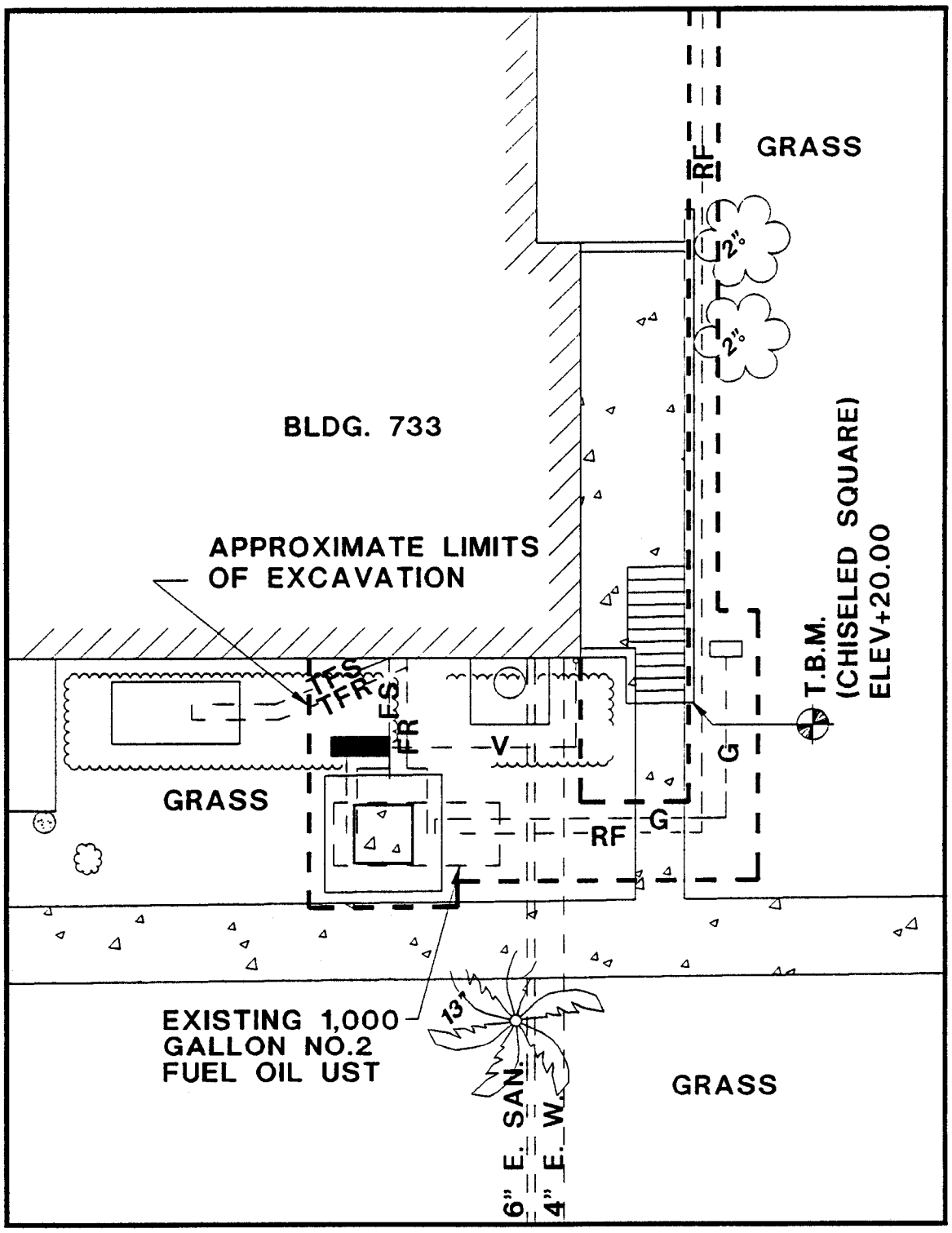


FIGURE 13
UST 733

N

0 10' 20' 30' 50'

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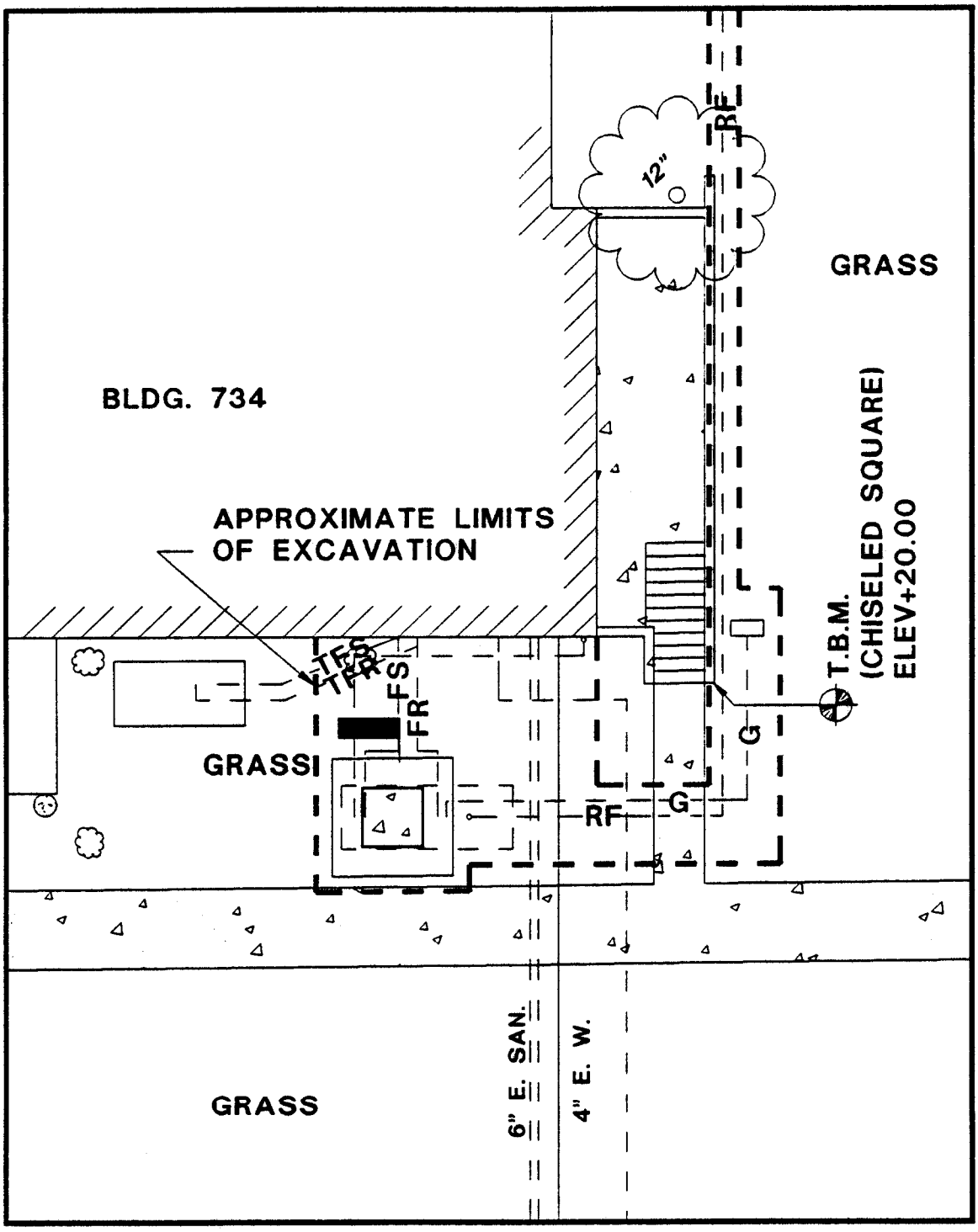

FIGURE 14
UST 734

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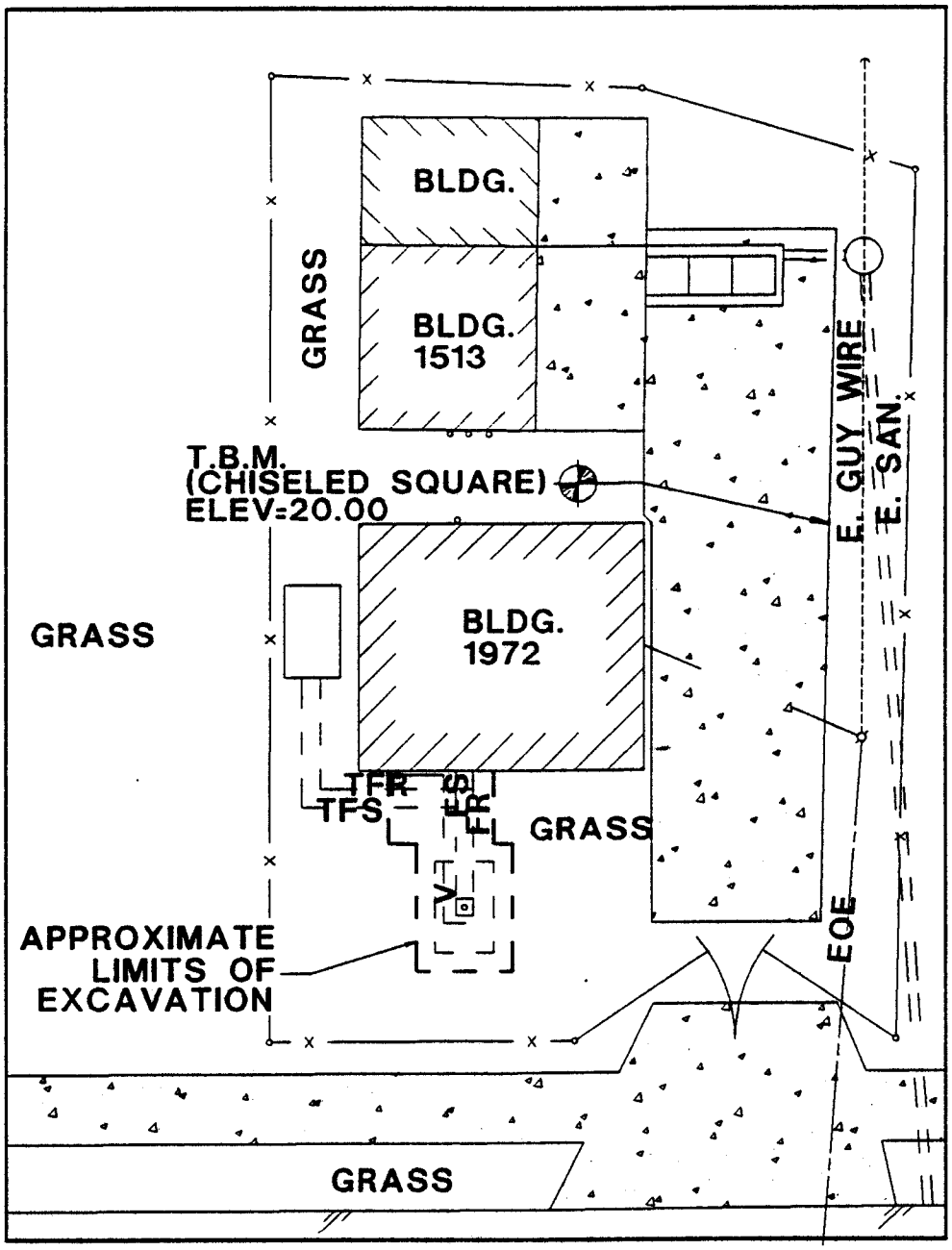

FIGURE 15
UST 1513

N

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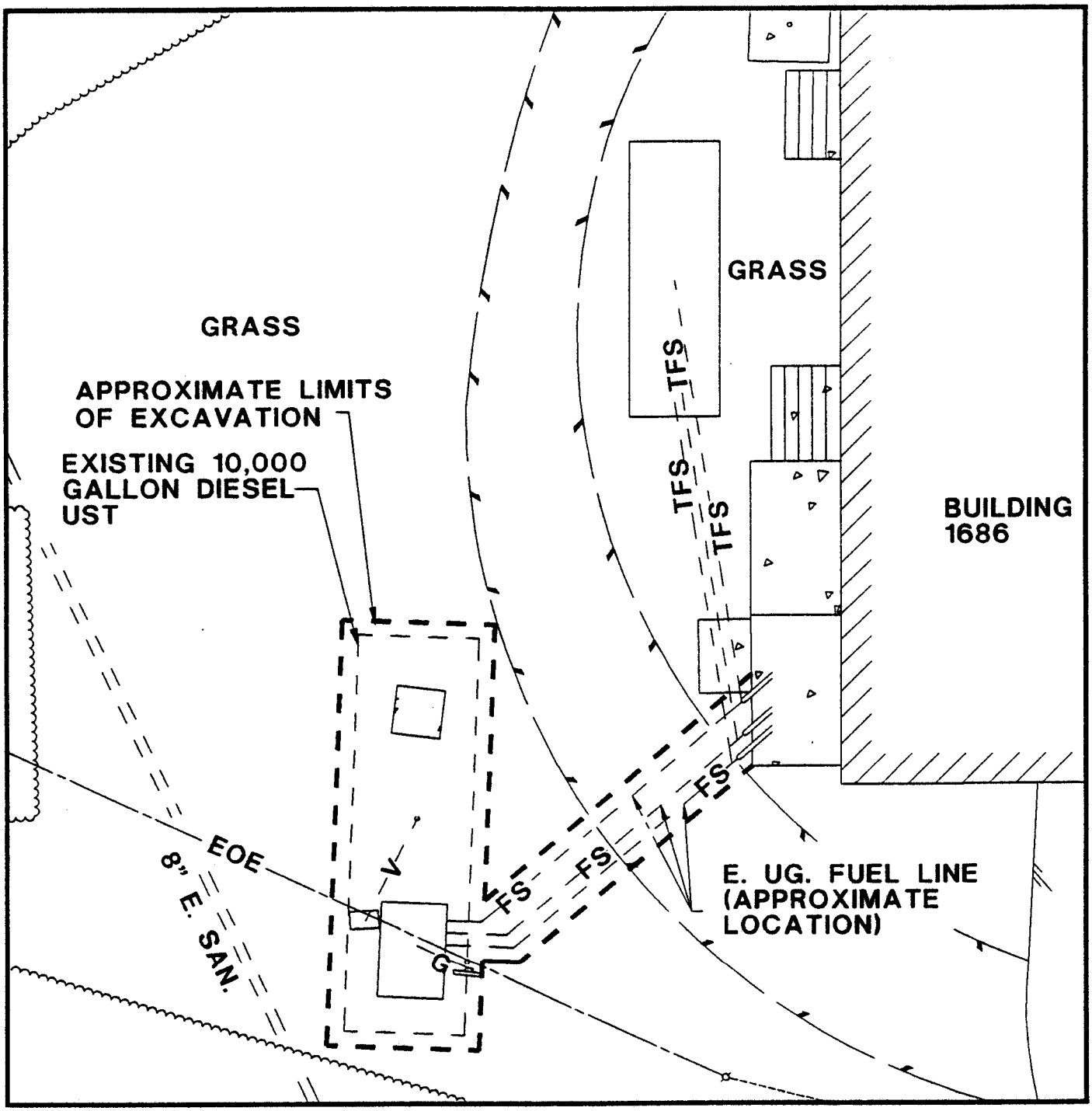

FIGURE 16
UST 1686

N

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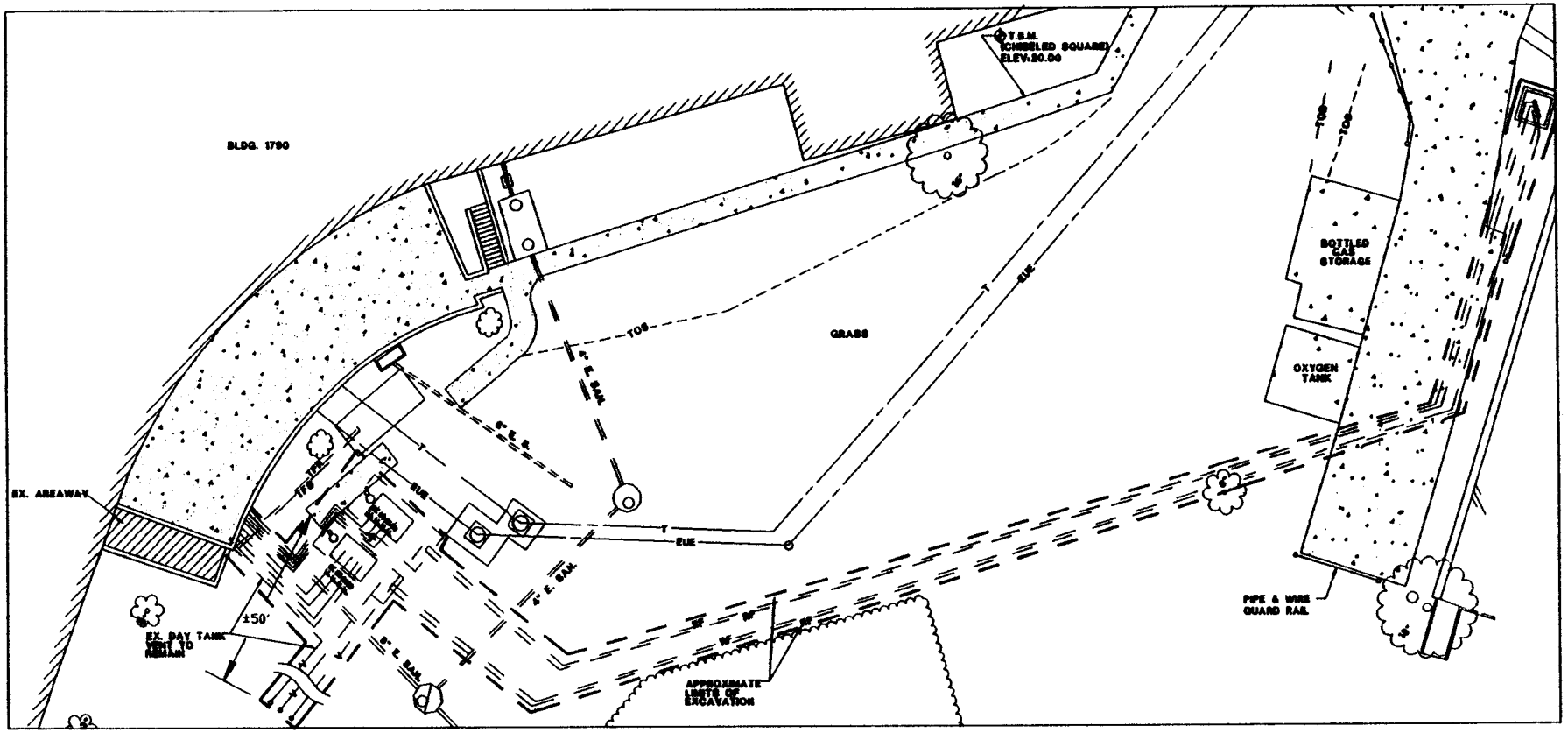


FIGURE 17
UST 1790A & B

SCALE: 1" = 30'

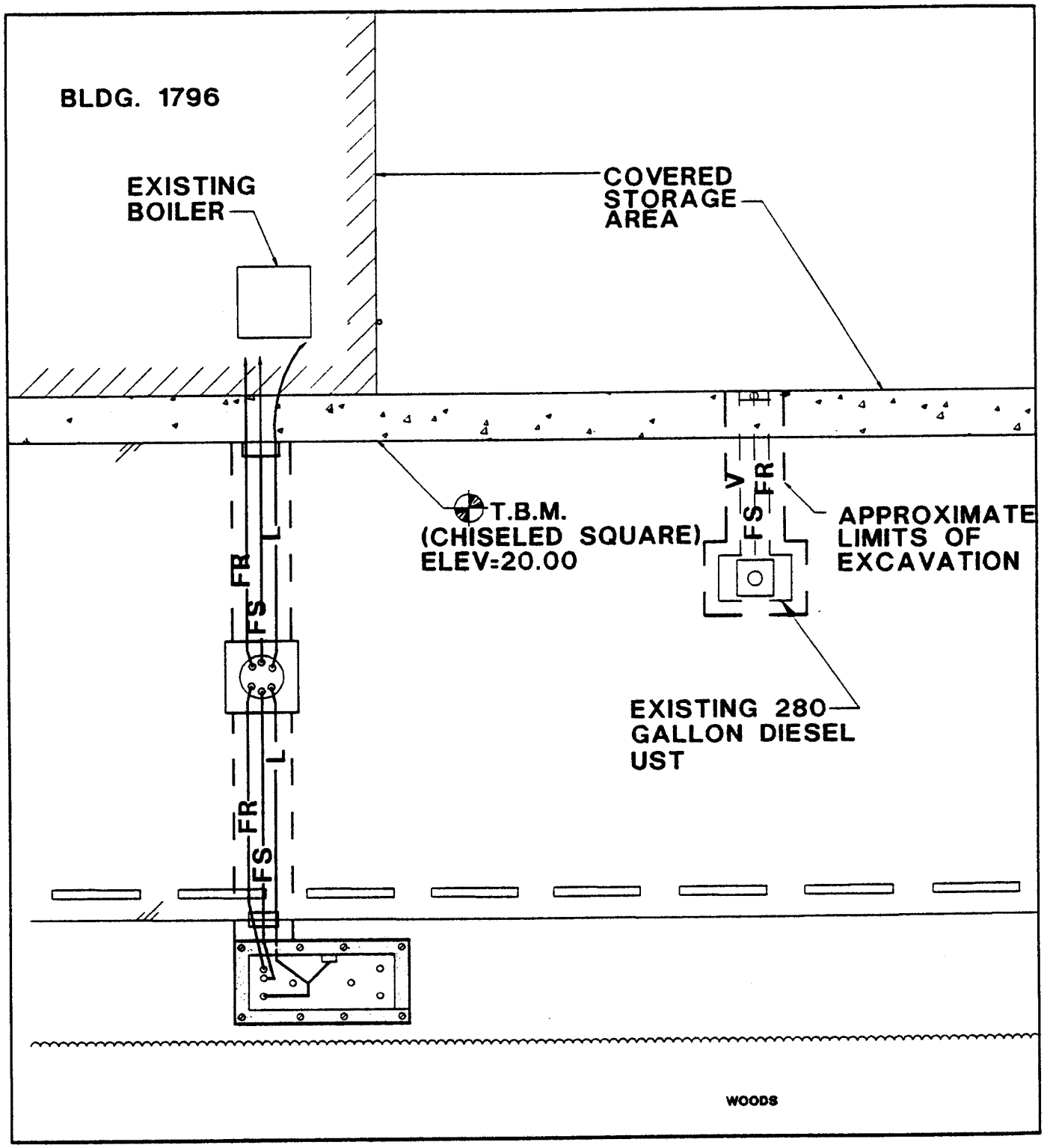
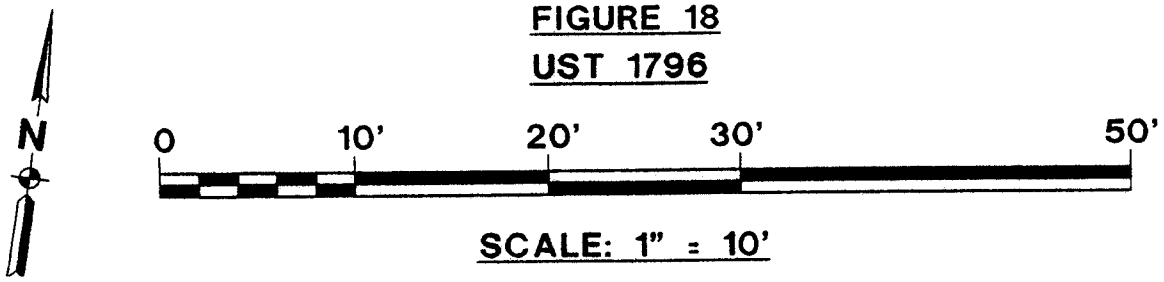


FIGURE 18

UST 1796



SCALE: 1" = 10'

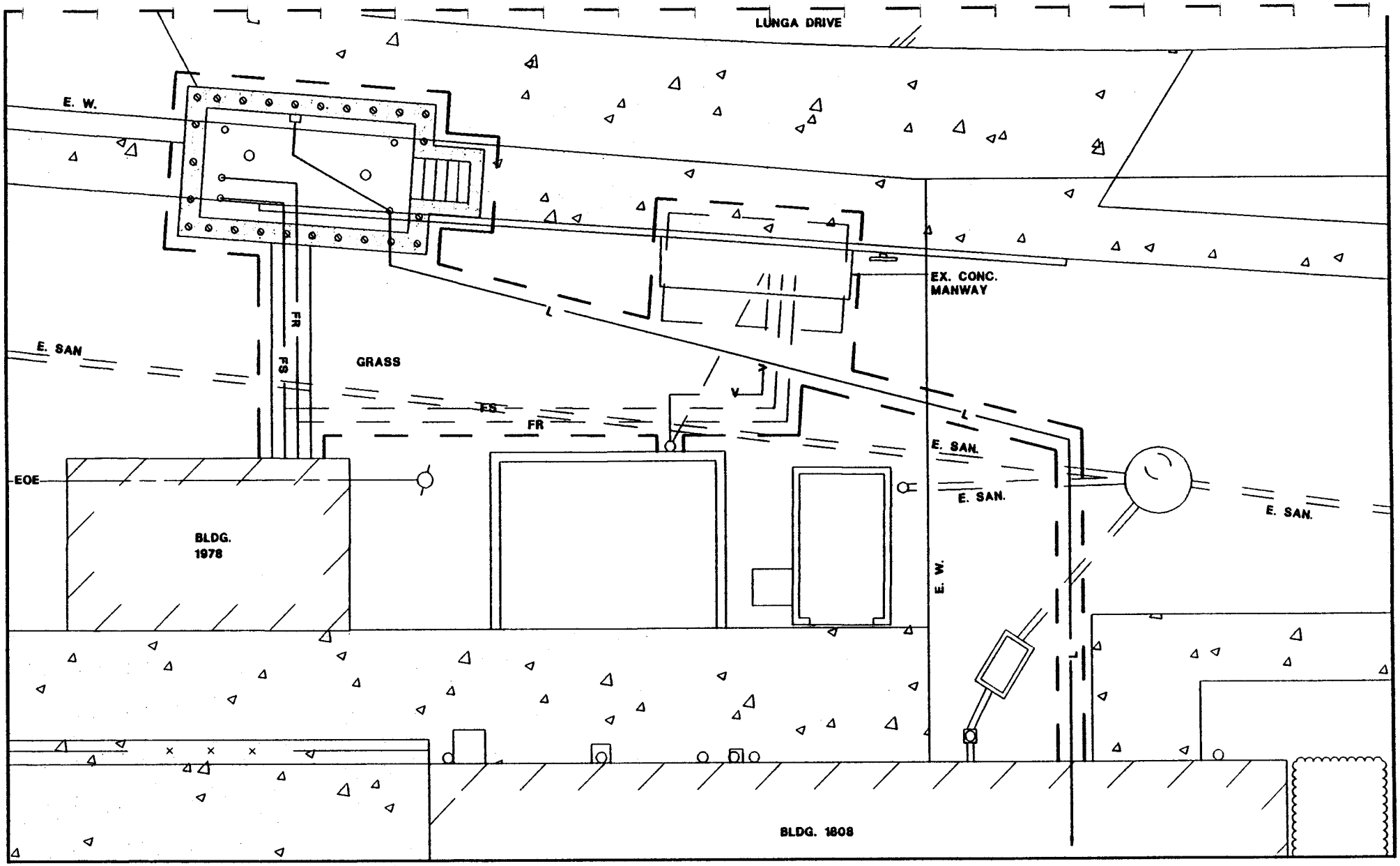


FIGURE 19
UST 1808

N

0 10' 20' 30' 50'

SCALE: 1" = 10'

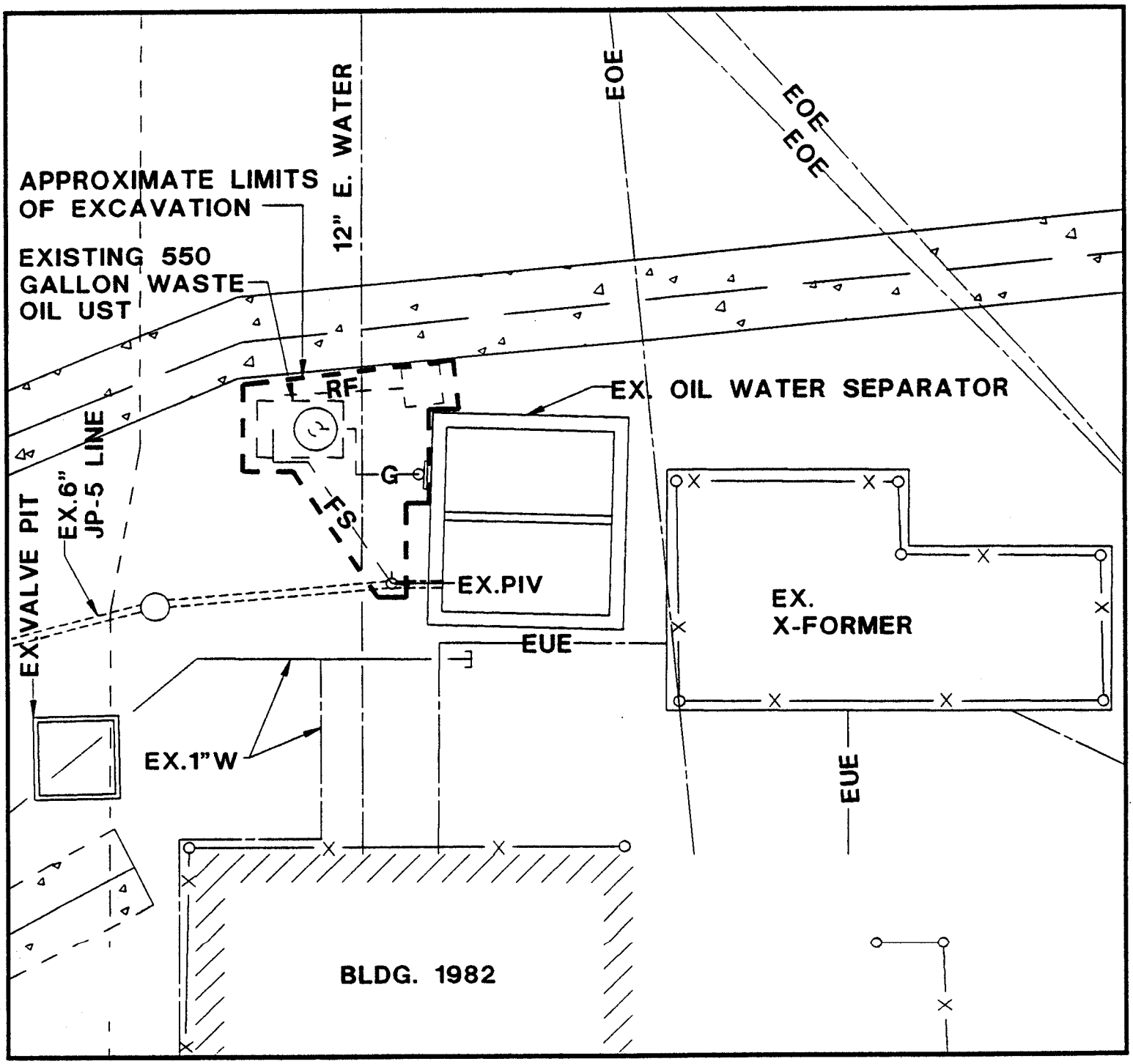


FIGURE 20
UST 1982

N

0 10' 20' 30' 50'

SCALE: 1" = 10'

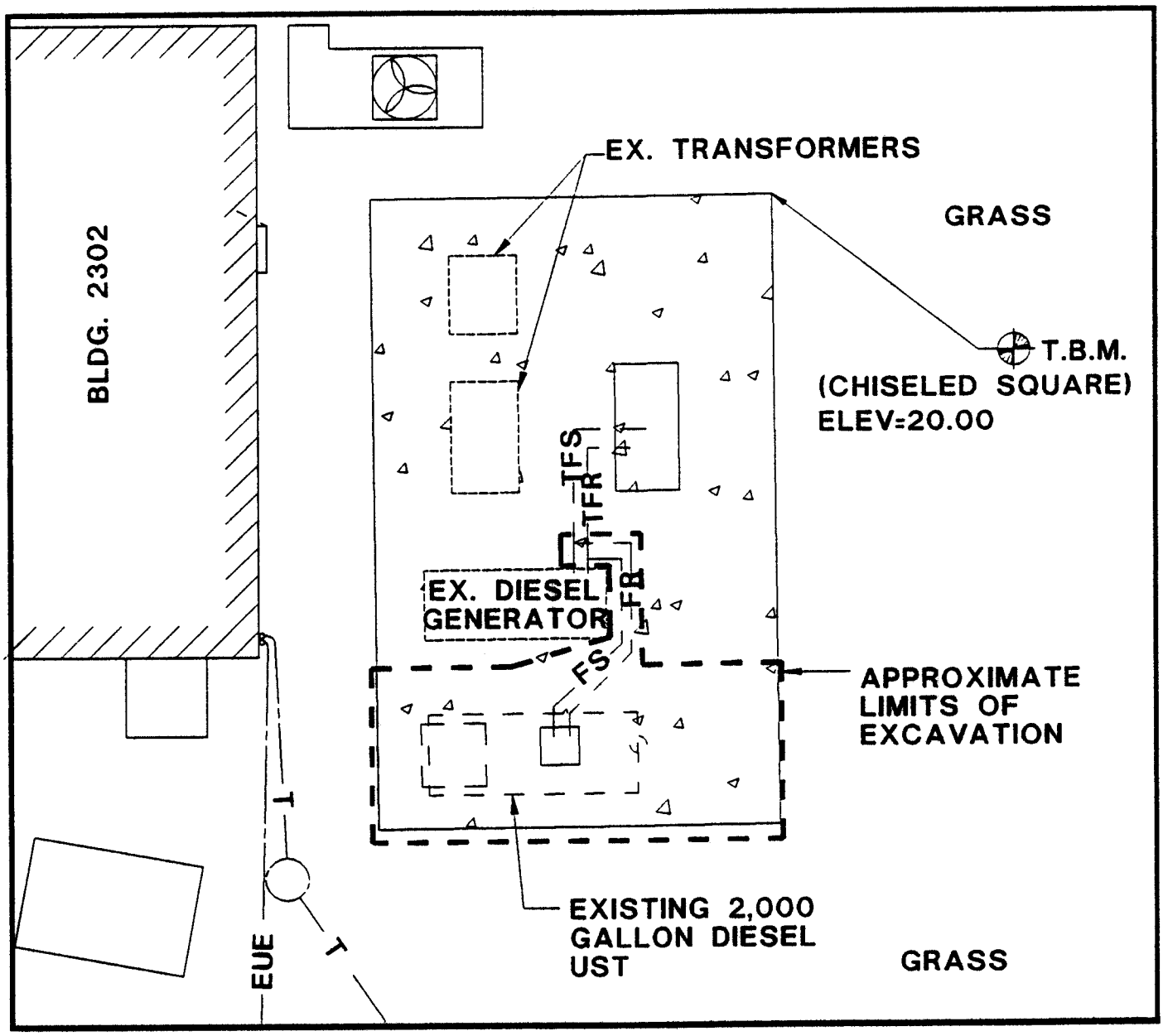
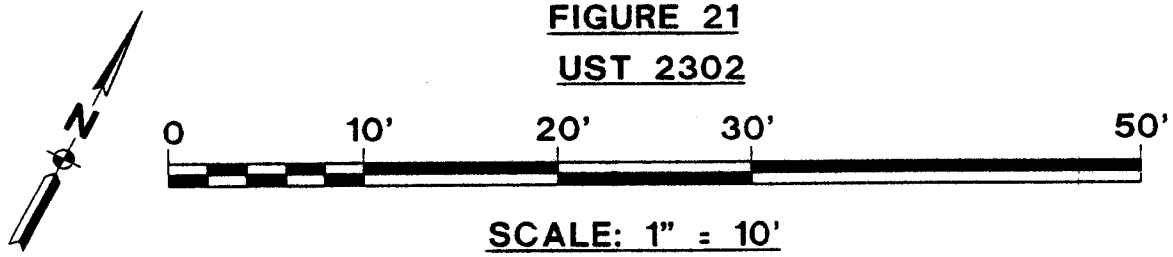
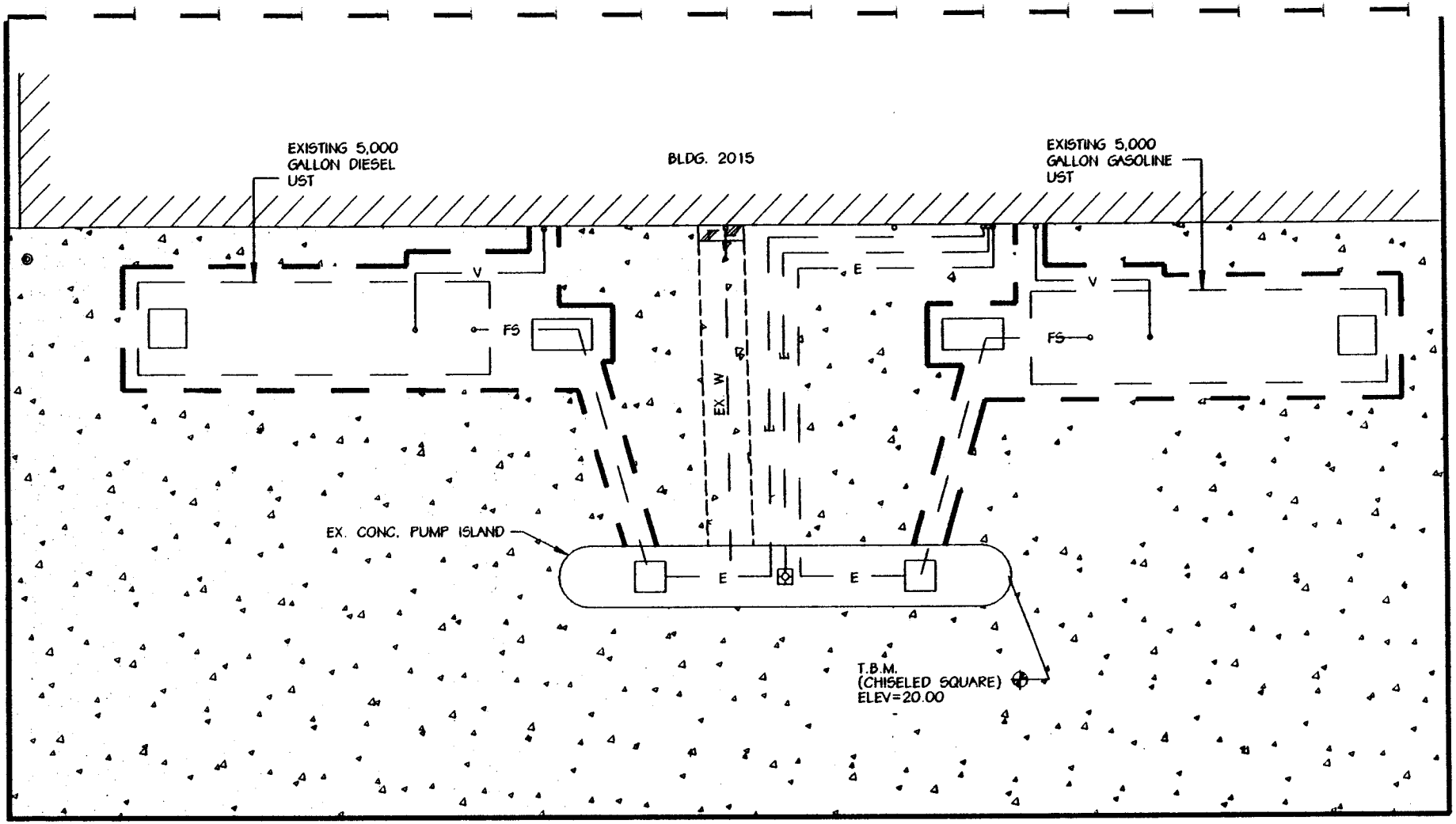


FIGURE 21

UST 2302



SCALE: 1" = 10'



N

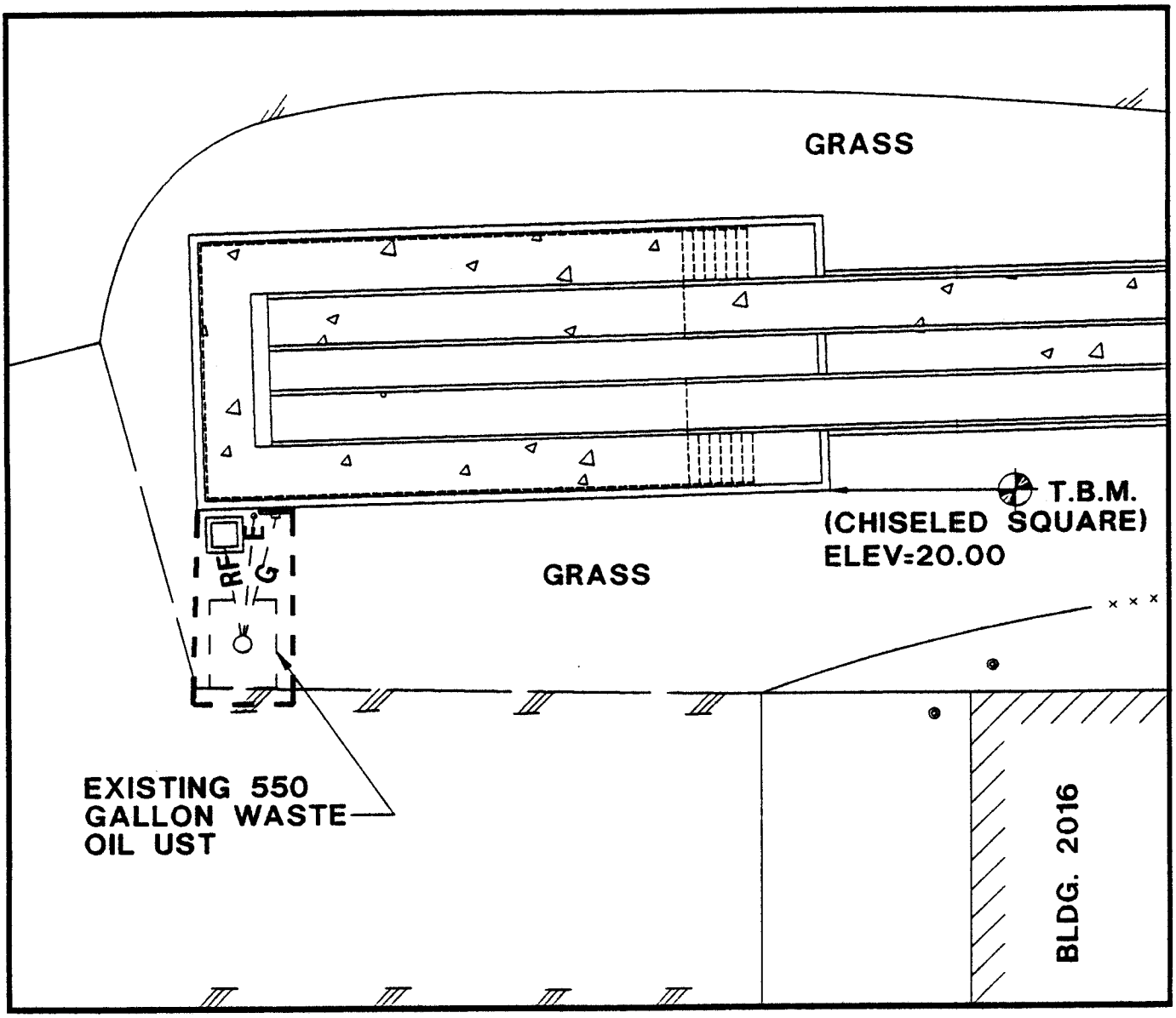
FIGURE 22

USTS 2015-1 & 2

VIEQUES ISLAND, PUERTO RICO

0 20' 40' 60' 100'

SCALE: 1" = 20'



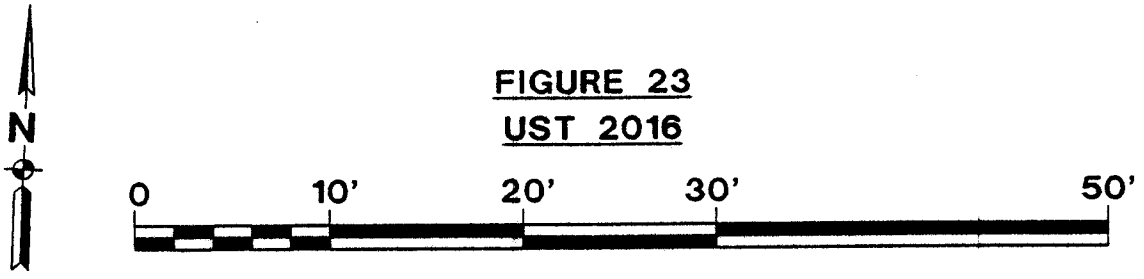


FIGURE 23
UST 2016

SCALE: 1" = 10'

TABLE 1
UNDERGROUND STORAGE TANK
TANKS TO BE CLOSED
NAVAL STATION – ROOSEVELT ROADS

UST ID	LOCATION	NOMINAL CAPACITY (gal)	PRODUCT STORED	DATE CONSTRUCTED	CLOSURE METHOD
520A	Bldg. 520	550	Waste Oil	1984	Remove
520B	Bldg. 520	12,000	Unleaded Gas.	1958	Remove
520C	Bldg. 520	12,000	Unleaded Gas.	1944	Remove
520D	Bldg. 520	10,000	Diesel	1979	Remove
382	Bldg. 382	550	Waste Oil	NA	Remove
429R	Flightline	5,000	Waste JP–5	1959	Remove
443	Former Bldg. 443	550	Waste Oil	1984	Remove
515	Former Bldg. 515	500	Waste Oil	NA	Remove
56A	Bldg. 56	10,000	Diesel	1984	Remove
56B	Bldg. 56	10,000	Diesel	1984	Remove
124A	Bldg. 124	2,000	Diesel	1958	Remove
124B	Bldg. 124	5,000	Unleaded Gas.	1976	Remove
124C	Bldg. 124	5,000	Unleaded Gas.	1959	Remove
124D	Bldg. 124	550	Waste Oil	984	Remove
724	Bldg. 724	5,000	Diesel	1972	Abandon
729	Bldg. 729	1,000	Diesel	1985	Remove
731	Bldg. 731	1,000	Diesel	1985	Remove
733	Bldg. 733	1,000	Diesel	1985	Remove
734	Bldg. 734	1,000	Diesel	1985	Remove
1513	Bldg. 1513	280	Diesel	1977	Remove
1686	Bldg. 1686	10,000	Diesel	1971	Remove
1790A	Bldg. 1790	6,000	Diesel	1966	Remove
1790B	Bldg. 1790	6,000	Diesel	1966	Remove
1796	Bldg. 1796	280	Diesel	1977	Remove
1808	Bldg. 1808	5,000	Diesel	1977	Remove
1982	Bldg. 1982	550	Waste Oil	NA	Remove
2302	Bldg. 2302	2,000	Diesel	NA	Remove
2015–1	Bldg. 2015	5,000	Diesel	1970	Remove
2015–2	Bldg. 2015	5,000	Unleaded Gas.	1970	Remove
2016	Bldg. 2016	500	Waste Oil	1970	Remove

Appendix A
1997 UST Closure Report

RELIABLE MECHANICAL INC. 13035 Middletown Industrial Blvd. Louisville, KY 40223

May 20, 1996 — possibly incorrect date should be 1997

Gobierno de Puerto Rico
Officina del Gobernador
Junta de Calidad Ambiental
Area Calidad de Agua
Apartado 1148S
Santurce, P.R. 00911

Attn: Directora L. Ghigliotty

Subject: Closure report of area 2016, registration #02-86-1935

Dear Ms. Ghigliotty:

I wish to submit the following information and documents concerning this underground tank closure at the U.S. Naval Station, Roosevelt Roads, Ceiba, P. R.:

1. a. History: The U.S. Navy has been the only owner of this area for at least 40 years. The U.S.T. located at Building 2016 is being replaced by a Concrete Vaulted A.S.T.
   b. Testing and Repair: Records are on file at Mason Technology Inc. located on the Naval Station at Roosevelt Roads, P.R.

2. Closure narrative

3. Maps
   a. Area location
   b. Site location
   c. Tank location

4. Registration of U.S.T.

5. Chain of custody
   a. Waste products
   b. Tanks and piping disposal
   c. Contaminated soil

6. Laboratory results from T.E.G. Labs, Box 29030, Caguas, P.R.
   a. Soil sampling location
   b. Soil sample results
   c. Waste water sample results
   d. Certification of contaminated soil and water treatment

7. Tank and piping disposal

a. Steel tanks - Recovery and Recycling Export Co., Ponce De Playa, P.R.

b. Fiberglass tanks - Browning Ferris Landfills, Ponce, P.R.

Ken Thickstun
Project Superintendent
Reliable Mechanical Inc.
13035 Middletown Rd.
Louisville, Ky. 40223

CLOSURE NARRATIVE - 2016

This 500 gallon U.S.T. was located underground outside of the building and was filled by a 3" remote fill line from a concrete spill containment. Both the remote fill and fuel supply lines have been removed and the soil sampled.

The U.S.T. was emptied by transferring the waste oil into a 55 gallon drum for disposal by On Site Environmental Corp.

Contaminated soil excavated during tank removal was placed upon diked plastic to be transferred to B.F.I. landfill. Other contaminated soil remained in excavation for future disposal by others. The new 500 gallon A.S.T. has electronic overfill protection, leak detection and gauging with audible alarms when filling to 90% capacity.

Ken Thickstun

Ken Thickstun
Project Superintendent
Reliable Mechanical Inc.
13035 Middletown Rd.
Louisville, Ky. 40223

CHAIN OF CUSTODY - 2016

A. Tank Contents - Tank waste oil transferred to 55 gallon drum for disposal by on Site Environmental.

B. Fiberglass tank - Tank removed from ground, cleaned, capped and transported to R.S. Oil Equipment Ponce yard by R.S. Oil personnel. Tank then cleaned, crushed and sent to B.F.I.
Piping - Flushed, cleaned, cut up and sold for scrap to Export.

C. Contaminated soil removed during tank excavation, placed on diked plastic and then transported to B.F.I. Landfill at Ponce, P.R.

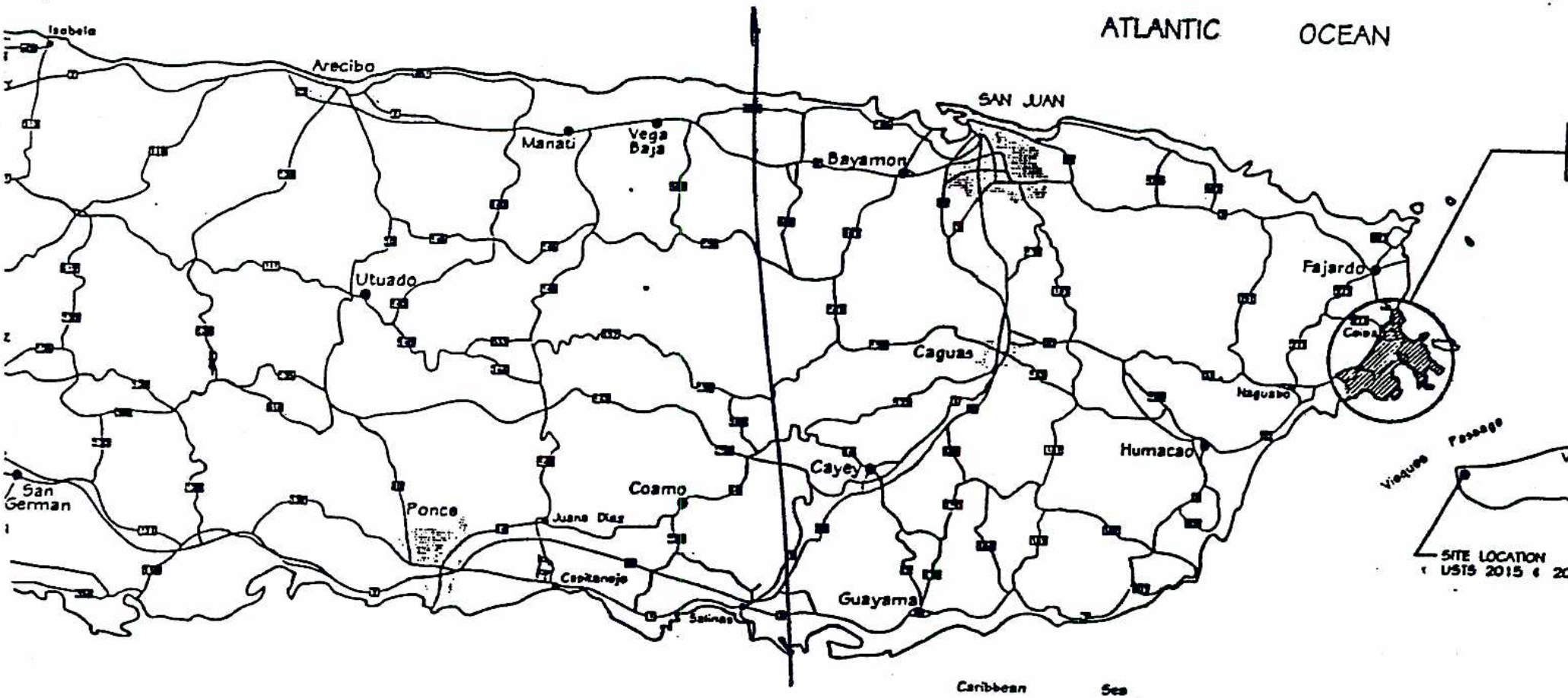
Ken Thickstun

Ken Thickstun
Project Superintendent
Reliable Mechanical Inc.
13035 Middletown Rd.
Louisville, Ky. 40223

REMOVE/REPLACE VARIOUS NDERGROUND STORAGE TANK (UST) SYSTEMS

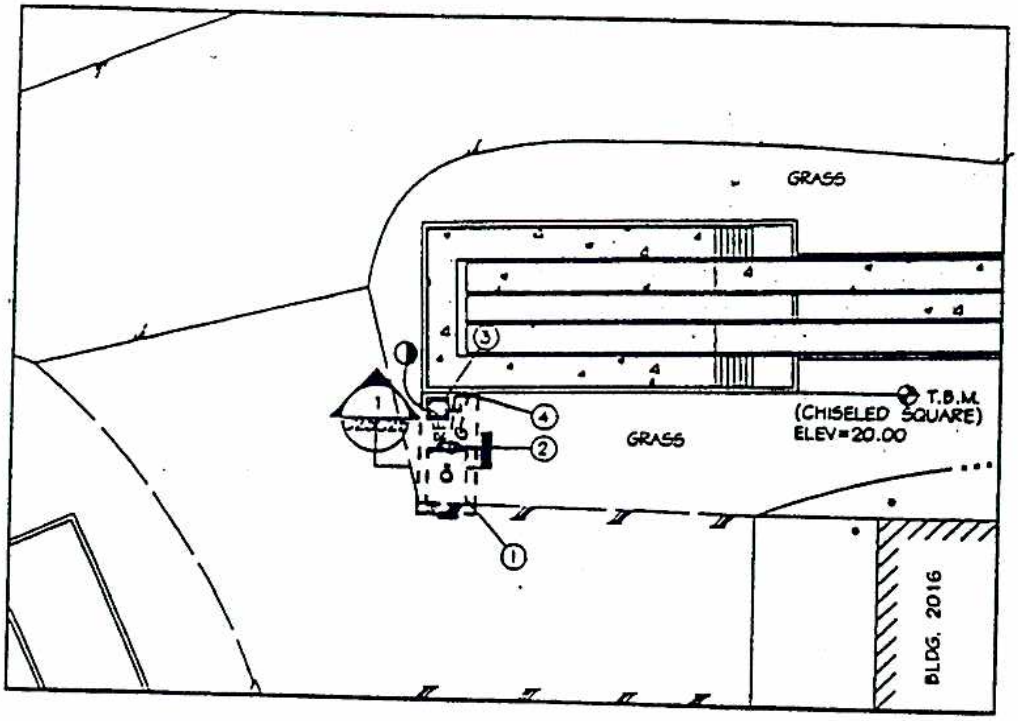
U.S. NAVAL STATION ROOSEVELT ROADS

PUERTO RICO



LOCATION MAP

0 5 10 15 25 MILES



N

SITE PLAN - UST 2016 - DEMOLITION

0 10' 20' 30' 50'

SCALE: 1" = 10'

CONSTRUCTION NOTES

1. REMOVE EXISTING 550 GALLON WASTE OIL UST.
2. REMOVE 3/8" PNEUMATIC GAUGE LINE AND 4" REMOTE FILL LINE.
3. REMOVE EXISTING CONCRETE SPILL CONTAINMENT.
4. REMOVE EXISTING PNEUMATIC LEVEL GAUGE.
5. PROVIDE NEW 500 GALLON NOMINAL CAPACITY VAULTED AST. NEW AST SHALL BE CONSTRUCTED AS SHOWN ON (A, B / C23 M6). NEW PIPING SHALL BE CONFIGURED AS SHOWN ON (C / C23 M6).
6. PROVIDE NEW REINFORCED CONCRETE SLAB AS SHOWN ON (E / C23 24).
7. PROVIDE NEW 3/4" CONDUIT FOR LEAK DETECTION SYSTEM.

NOTIFICACION PARA TANQUES DE ALMACENAMIENTO SOTERRADOS

JUNTA DE CALIDAD AMBIENTAL
APARTADO 11488
SANTURCE, PUERTO RICO 00910

Tel. (809) 767-8181 Ext. 2428

TIPO DE NOTIFICACION

____ A. Facilidad Nueva ____ B. Enmienda _/_ C. Cierre

_/_ Núm. de Tanques en la Facilidad ____ Núm. de Hojas de Continuación Adjuntas

PARA USO DE LA JCA

Número identificación:

Fecha recibida:

A. Fecha entrada a la computadora:
B. Nombre de técnico que entró información en la computadora:
C. Dueño/operador llamado para clarificar respuestas:

Comentarios:

INSTRUCCIONES

Favor de llenar a maquinilla o en letra de molde (en tinta) todos los incisos, excepto "firma" en la sección V. Este formulario deberá ser cumplimentado para cada facilidad que posea tanques de almacenamiento soterrados. Si posee más de cinco (5) tanques en esta facilidad, favor de fotocopiar las siguientes hojas de continuación y grápelos con el formulario.

INFORMACION GENERAL

Esta notificación es requerida por la Ley Federal para todos los tanques de almacenamiento soterrados (TAS) que hayan sido utilizados para almacenar sustancias requeridas desde el 1ro. de enero de 1984, o que estén soterrados desde el 8 de mayo de 1986. La información solicitada es requerida por la Sección 9002 de la Ley de Conservación y Recuperación de Recursos (RCRA, por sus siglas en inglés, según enmendada.

El propósito principal de este programa de notificación es el de localizar y evaluar aquellos tanques soterrados que almacenan o han almacenado productos de petróleo o sustancias peligrosas. Se espera que la información que usted provea esté basada en documentación razonablemente disponible, o en cuentas de ella, en su mejor conocimiento o recuerdo.

¿Quién deberá notificar? La Sección 9002 de RCRA, según enmendada, requiere que a no ser que estén exentos, los dueños de tanques soterrados que almacenan sustancias requeridas deberán notificar a la Junta de Calidad Ambiental (JCA) la existencia de sus tanques. Dueño significa:

a) en el caso de un tanque de almacenamiento soterrado puesto en servicio el 8 de noviembre de 1984, o después de esa fecha, cualquier persona que posea un TAS utilizado para el almacenamiento, uso o dispensación de sustancias requeridas;

b) en el caso de un TAS en uso antes del 8 de noviembre de 1984, pero que no estaba en uso para esa fecha, cualquier persona que posea tal tanque inmediatamente antes de dejarse fuera de servicio; y

c) si la Junta de Calidad Ambiental así lo requiere, cualquier facilidad que haya tenido cualquier derrame en su alrededor o en el estatus del TAS.

¿Cuáles tanques están incluidos? Un TAS se define como cualquier tanque o combinación de tanques que (1) se utilice para contener una acumulación de "sustancias requeridas" y (2) cuyo volumen (incluyendo la tubería soterrada conectada a este) sea diez percientos (10%) o más por debajo de la superficie del terreno. Algunos ejemplos de tanques soterrados son los que almacenan: 1. gasolina, aceite usado, o diesel y 2. solventes usados, plaguicidas, herbicidas, o fertilizantes para fumigar.

¿Cuáles tanques están excluidos? Los tanques removidos del terreno no están sujetos a notificación. Otros tanques excluidos del requisito de notificación son:

1. tanques para uso agrícola o residencial con capacidad de 1,100 galones o menos que sean utilizados para el almacenamiento de combustible de motor con propósitos no comerciales;
2. tanques sépticos;
3. facilidades con oleoductos (incluyendo las líneas de recolección) regulados bajo la Ley de Seguridad en los Oleoductos de Gas Natural de 1968 o la Ley de Seguridad en los Oleoductos de Líquidos Peligrosos de 1979;
4. embalses, fosas, estanques o lagunas;
5. sistemas para recolección de aguas de escorrentía o aguas usadas;
6. tanques de flujo continuo para procesos;
7. trampas de grasa o sus sistemas de líneas de recolección directamente relacionadas con la producción y recolección de petróleo o gas; y
8. tanques de almacenamiento utilizados en áreas bajo el nivel del terreno, tales como sótanos, bodegas, túneles o minas, si los mismos se encuentran situados en o sobre el piso de las mismas.

¿Cuáles sustancias están requeridas? Los requisitos de notificación aplican a tanques soterrados que almacenan sustancias requeridas. Esto incluye cualquier sustancia definida como peligrosa por la Sección 101(14) de la Ley Federal Abarcadora de Emergencias Ambientales, Compensación y Responsabilidad de 1980 (CERCLA, por sus siglas en inglés) a excepción de aquellas sustancias requeridas catalogadas como desperdicios peligrosos bajo el Subtítulo C de RCRA. Además, se incluye petróleo, es decir, aceite crudo o cualquier fracción de aceite que sea líquido a temperatura y presión estándar (60 grados Fahrenheit y 14.7 lbs. por pulgada cuadrada absoluta).

¿A dónde notificar? Envíe las notificaciones debidamente cumplimentadas a:

Junta de Calidad Ambiental
Programa Comité Tanques de Almacenamiento Soterrados
Apartado Postal 11488
Santurce, Puerto Rico 00910

¿Cuándo notificar?

1. Los dueños cuyos TAS estén en servicio o hayan sido puestos fuera de operación después del 1ro de enero de 1974, pero que aún permanezcan soterrados, deberán notificar estos tanques en o antes del 8 de mayo de 1986.
2. Los dueños de TAS puestos en servicio después del 8 de mayo de 1986, deberán notificar dentro de un mínimo de treinta (30) días antes de poner en servicio los tanques.
3. Los dueños de TAS que realicen cualquier enmienda o cambio en la facilidad, deberán notificarlo a la JCA a la mayor brevedad posible.

SANCIONES

Cualquier dueño de tanque que con conocimiento no cumpla con el proceso de notificación o someta información falsa estará sujeto a una penalidad civil máxima de DIEZ MIL DOLARES ($10,000) por cada tanque que no haya notificado o para el cual se haya sometido información falsa.

III. TYPE OF OWNER

- [X] Federal Government
- [ ] State Government
- [ ] Local Government
- [ ] Commercial
- [ ] Private

IV. INDIAN LANDS

Tanks are located on land within an Indian Reservation or on other trust lands. [ ]

Tanks are owned by native American nation, tribe, or individual. [ ]

Tribe or Nation:

V. TYPE OF FACILITY

Select the Appropriate Facility Description

- ____ Gas Station
- ____ Petroleum Distributor
- ____ Air Taxi (Airline)
- ____ Aircraft Owner
- ____ Auto Dealership
- ____ Railroad
- ____ Federal - Non-Military
- [X] Federal - Military
- ____ Industrial
- ____ Contractor
- ____ Trucking/Transport
- ____ Utilities
- ____ Residential
- ____ Farm
- ____ Other (Explain) _____

VI. CONTACT PERSON IN CHARGE OF TANKS

Name	Job Title	Address	Phone Number (Include Area Code)
PEDRO RUIZ	BASE ENVIRONMENTALIST	U S NAVAL STATION ROOSEVELT ROADS	(809) 865-4488

VII. FINANCIAL RESPONSIBILITY

I have met the financial responsibility requirements in accordance with 40 CFR Subpart H [ ]

Check All that Apply

- [ ] Self Insurance
- [ ] Commercial Insurance
- [ ] Risk Retention Group
- [ ] Guarantee
- [ ] Surety Bond
- [ ] Letter of Credit
- [ ] State Funds
- [ ] Trust Fund
- [ ] Other Method Allowed Specify

_____

VIII. CERTIFICATION (Read and sign after completing all sections)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this 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.

Name and official title of owner or owner's authorized representative (Print)	Signature	Date Signed

EPA estimates public reporting burden for this form to average 30 minutes per response including time for reviewing instructions; gathering and maintaining the data needed and completing and reviewing the form. Send comments regarding this burden estimate to Chief, Information Policy Branch PM-223, U.S. Environmental Protection Agency, 401 M Street, Washington D.C. 20460, marked "Attention Desk Officer for EPA." This form amends the previous notification form as printed in 40 CFR Part 280, Appendix I. Previous editions of this notification form may be used while supplies last.

Número de Identificación de Facilidad 02-86-1935 Núm. Página 2

I. PROPIETARIO DE TANQUE (S)

Nombre del Dueño (Corporación, Individuo, Agencia Pública u otra entidad)
U.S. NAVY

Dirección Postal U.S. NAVAL STATION
ROOSEVELT STATION
CEIBA P.R.

Ciudad P.O. Box 3021 Zip Code 00735

Nombre del Teniente Ingeniero Cuerpo de Ares
ING. PEDRO RUIZ

II. UBICACION DE TANQUE (S)

Nombre de la Facilidad o Compañía (Si es la misma que en la Sección I marque aquí)
U.S. NAVY

Dirección física (no se aceptará dirección postal en este inciso)
ROOSEVELT RD.

Barrio/Urbanización TANK 2016

Ciudad CEIBA Zip Code P.R. 00735

Provea la ubicación geográfica de los tanques por grados, minutos y segundos
Ej. lat. 42 28 12N long. 38 24 17W
Latitud 65°22'30" Longitud 18°15'

III. TIPO DE DUEÑO

X Gobierno Federal — Comercial
— Gobierno Estatal — Privado
— Gobierno Municipal — Otro (explique) _____

IV. RESERVADO

V. TIPO DE FACILIDAD

Seleccione la descripción que mejor describa su facilidad:

___ Estación de Gasolina
___ Distribuidor de Petróleo
___ Aerolínea
___ Dueño de Aviones
___ Distribuidor de Automóviles
___ Ferrocarril
___ Gobierno Estatal
___ Gobierno Municipal
X Federal Militar
___ Federal No Militar
___ Comercial
___ Industrial
___ Contratista
___ Compañía de Transporte/ Camiones
___ Corporaciones Públicas
___ Residencial
___ Agrícola
___ Otro (explique) _____

VI. PERSONA CONTACTO RESPONSABLE DE TANQUE (S)

Nombre	Título o Posición	Dirección	Teléfono
ING. PEDRO RUIZ	BASE ENVIRONMENTALIST	U.S. NAVAL STATION ROOSEVELT ROADS	(809) 865-4458

VII. RESPONSABILIDAD FINANCIERA

YO HE CUMPLIDO CON LOS REQUISITOS DE RESPONSABILIDAD FINANCIERA EN CONFORMIDAD CON EL TITULO 40 DEL CODIGO DE REGLAMENTOS FEDERALES SUBPARTE H ____.

Seleccione todas las que apliquen:

___ Seguro Propio
___ Seguro Comercial
___ Póliza de Cubierta Grupal Contra Riesgo
___ Garantía o Fianza
___ Carta de Crédito
___ Otro método permitido
Especifique _____
___ Fondos Estatales
___ Fondo de Fideicomiso

VIII. CERTIFICACION (LEA Y FIRME DESPUES DE HABER COMPLETADO TODAS LAS SECCIONES)

Certifico, bajo penalidad de perjurio, que personalmente he revisado y estoy familiarizado con la información suministrada en esta notificación y con todo documento adjunto y que basado en mi investigación de aquellos individuos inmediatamente responsables de obtener la información, que la información aquí suministrada es cierta, precisa y completa.

Nombre y título oficial del dueño o su representante autorizado:	Firma:	Fecha:

Número de Identificación de Facilidad 02-86-1935 Núm. Página 3

IX. DESCRIPCION DE TANQUES DE ALMACENAMIENTO SOTERRADOS
(CUMPLIMENTAR PARA CADA TANQUE UBICADO EN ESTA FACILIDAD)

Núm. Identificación del Tanque	Tanque #1	Tanque #2	Tanque #3	Tanque #4	Tanque #5
1. Estatus del Tanque (marque una solamente) En uso					
Temporeramente fuera de uso (Requisitos Ref. a Sección IX)					
Permanentemente fuera de uso (Requisitos Ref. a Sección IX)	X				
Enmienda de información					
2. Fecha de instalación	1970				
3. Capacidad total estimada (en galones)	550				
4. Material de Construcción (Marque todos los que apliquen)					
Revestido con asfalto o acero sencillo	X				
Acero protegido catódicamente					
Acero revestido con "epoxy"					
Compuesto(acero revestido con fibra de vidrio - "fiberglass")					
Plástico reforzado con fibra de vidrio					
Forro interior					
Doble pared					
Tanques con cubierta de polietileno					
Concreto					
Excavación con revestimiento					
Desconocido					
Otro. Por favor, especifique					
¿Ha sido el tanque reparado?	No				
5. Tubería (material) (Marque todos los que apliquen)					
Acero sencillo	X				
Acero galvanizado					
Plástico reforzado con fibra de vidrio					
Cobre					
Protegida catódicamente					
Doble pared					
Contenedor secundario					
Desconocido					
Otro. Por favor, especifique					

Número de Identificación de Facilidad 02-86-1935 Núm. Página 4

IX. DESCRIPCION DE TANQUES DE ALMACENAMIENTO SOTERRADOS
(CUMPLIMENTAR PARA CADA TANQUE UBICADO EN ESTA FACILIDAD)

Núm. Identificación del Tanque	Tanque #1	Tanque #2	Tanque #3	Tanque #4	Tanque #5
6. Tubería (Tipos) (marque todos los que apliquen)					
Succión: sin válvula en el tanque					
Succión: con válvula en el tanque					
Por presión					
Por gravedad	X				
¿Ha sido la tubería reparada?					
7. Sustancia almacenada o que fuera almacenada por última vez en mayor cantidad por volumen.					
Gasolina					
Diesel					
Gasohol					
Kerosén					
Aceite de calefacción					
Aceite usado	X				
Otra. Por favor especifique					
Sustancia peligrosa. Nombre bajo CERCLA y/o número de CAS	No				
Mezcla de sustancias. Por favor especifique.	No				

X. TANQUES FUERA DE USO, O CAMBIO EN SERVICIO

1. Cierre de tanque					
A. Fecha estimada de último uso (mes.día.año)	11/8/96				
B. Fecha estimada del cierre del tanque (mes.día.año)	11/8/96				
C. Tanque fue removido del terreno	11/8/96				
D. Tanque clausurado en el terreno	NA				
E. Tanque rellenado con material inerte. Describa	NA				
F. Cambio de servicio	NA				
2. Estudio Ambiental ("Site Assessment") completado	yes				
Evidencia de un derrame detectado	no				

NEW ABOVEGROUND TANK

PAGE 6

XI. CERTIFICATION OF COMPLIANCE (COMPLETE FOR ALL NEW AND UPGRADED TANKS AT THIS LOCATION)

Tank Identification Number	Tank No. 1	Tank No. ___	Tank No. ___	Tank No. ___	Tank No. ___
1. Installation	500				
A. Installer certified by tank and piping manufacturers	X				
B. Installer certified or licensed by the implementing agency					
C. Installation inspected by a registered engineer	X				
D. Installation inspected and approved by implementing agency					
E. Manufacturer's installation check-lists have been completed	X				
F. Another method allowed by State agency. Please specify.					

2. Release Detection (Mark all that apply)	TANK	PIPING	TANK	PIPING	TANK	PIPING	TANK	PIPING	TANK	PI
A. Manual tank gauging										
B. Tank tightness testing	X									
C. Inventory controls	X									
D. Automatic tank gauging	X									
E. Vapor monitoring										
F. Groundwater monitoring										
G. Interstitial monitoring double walled tank/piping										
H. Interstitial monitoring/secondary containment										
I. Automatic line leak detectors										
J. Line tightness testing										
K. Other method allowed by Implementing Agency. Please specify.										

3. Spill and Overfill Protection					
A. Overfill device installed					
B. Spill device installed					

OATH: I certify the information concerning installation that is provided in section X is true to the best of my belief and knowledge.

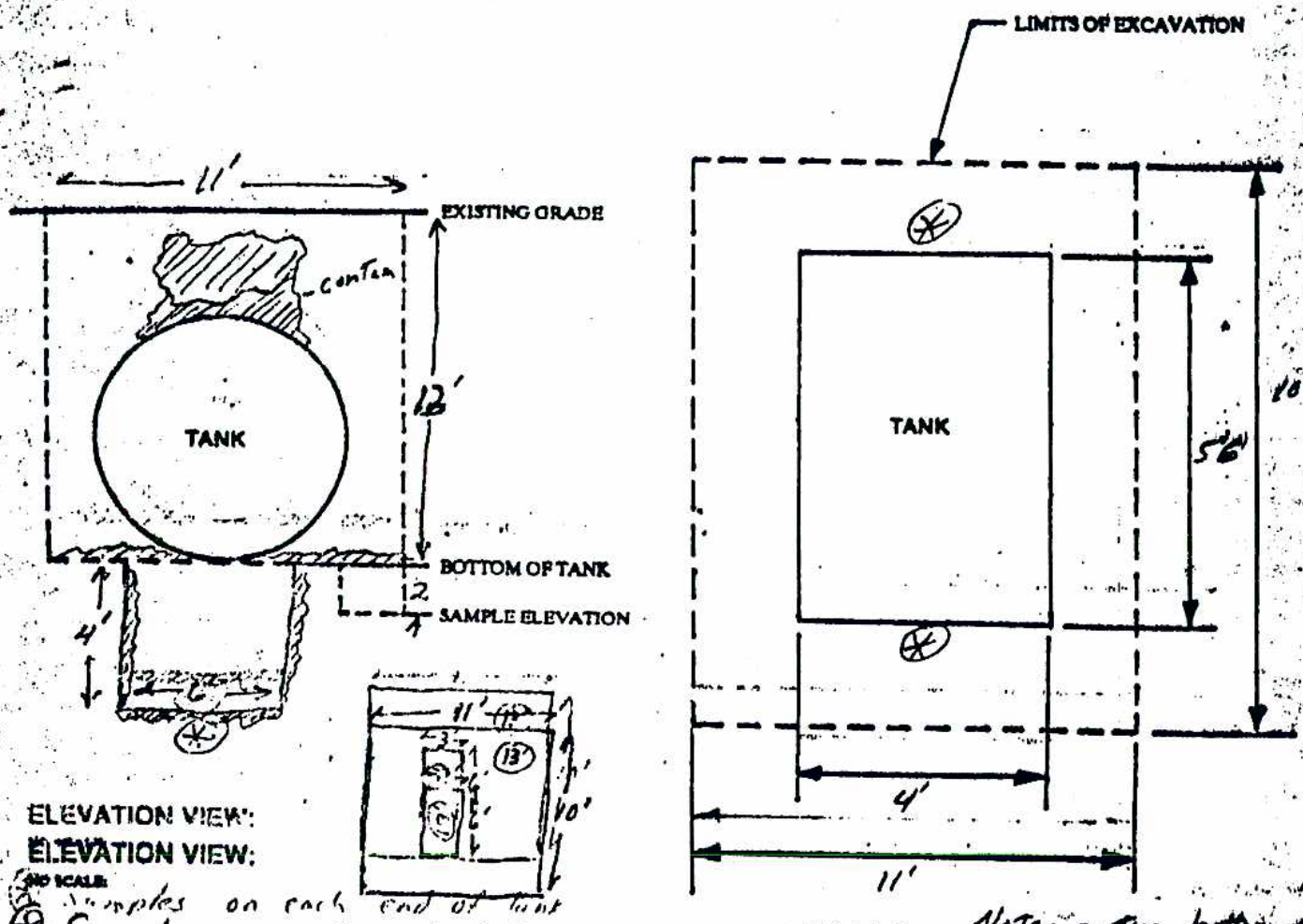
Installer: Kenneth Thickston (Name) Ken Thickston (Signature) 11/15/96 (Date)

Project Supt (Position) Reliable Mechanical (Company)

LOCATION TANK NO. Site 2016	CONTRACTOR, EXCAVATION QUANITY REPORT (USE SEPARATE REPORT PER SITE PER TANK)	DATE: 11/8/96
PROJECT: UPGRADE USTS, U.S. NAVAL STATION ROOSEVELT ROADS		CONTRACT NO. N62470-95-C-5603

Viegues Island - Waste Oil Tank

N



ELEVATION VIEW:
NO SCALE

ELEVATION VIEW:
NO SCALE

Samples on each end of tank

Additional sample Taken from under area of pad after pad was removed

PLAN VIEW:
NO SCALE

Note: entire bottom of hole and under pad was contaminated

REMARKS: Kevin Shelburne with TEC took samples on both ends of Tank and under area of pad.

I, the undersigned, certify that this report is complete and correct and the [illegible] On behalf of the contractor, I certify that this report is complete and correct and the [illegible]

[illegible] AUTHORIZED CONTRACTOR'S REPRESENTATIVE

[illegible] AUTHORIZED GOVERNMENT ENVIRONMENTAL AGENT - NICASIO ALVAREZ CANTELLOPE — DATE 11/8/96

ROICC/ ENVIRONMENTAL OFFICE DIRECTION — DATE

QUANITY OF CONTAMINATED SOILS TO BE REMOVED AND/ OR EXCEPTIONS TO THE REPORT:

[illegible] AUTHORIZED GOVERNMENT ENVIRONMENTAL AGENT/ ROICC — DATE

teg

World Leader In On-Site Sampling and Analysis

November 21, 1996
TEG Project #96I0321TB-8

Mr. Ken Thickstun
Reliable Mechanical
13035 Middletown Industrial Boulevard
Louisville, Kentucky 40223

SUBJECT: DATA REPORT - VIEQUES SITE #2016

Dear Mr. Thickstun:

Please find enclosed the data report for samples collected by TEG staff from the above referenced project site and delivered to TEG's laboratory under the proper chain-of-custody protocol. All samples were analyzed by TEG's California Department of Health Services (DOHS) certified mobile laboratory. TEG's Puerto Rico-certified chemist conducted the following analyses:

- 7 soil samples analyzed for TRPH by EPA test method 418.1.
- 7 soil samples analyzed for BTEX by modified EPA test method 8020.
- 1 trip, 1 field and 1 equipment blank water sample analyzed for TRPH and BTEX.
- Laboratory QA/QC analyses for TRPH and BTEX.

The results of the analyses are summarized in the attached table. Based on the analytical results, the excavation and stockpile samples [redacted] to the specification requirements. Applicable detection limits, QA/QC data, chromatograms, chain-of-custody and an invoice are also included as attachments.

TEG appreciates the opportunity to provide analytical services for this project. If you have any questions relating to the data or report, please do not hesitate to contact us.

Sincerely,
TEG

Kevin Shelburne
Principal

Attachments

TEG-PUERTO RICO • PMB 627, HC-01 Box 29030, Caguas, PR 00725 • Phone (787) 720-0329 • Fax (787) 789-3858 • Pager 759-1255 Unit 217-4053

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The World Leader In On-Site Sampling and Analysis

RELIABLE MECHANICAL PROJECT SITE #2016
VIEQUES, PR

TEG Project #96I0321TB-8

TRPH (EPA Method 418.1) and BTEX (Mod. EPA Method 8020) ANALYSES OF SOIL

SAMPLE NUMBER	DATE ANALYZED	TRPH (mg/kg)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL-BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
METHOD BLANK	11/18/96	ND	ND	ND	ND	ND
2016 PIPE TRENCH	11/18/96	**289**	ND	ND	ND	ND
2016 STOCK PILE	11/18/96	**1,328**	ND	ND	ND	ND
2016 UNDER SLAB	11/18/96	**1,790**	ND	ND	ND	ND
2016 - E	11/18/96	**568**	ND	ND	ND	ND
2016 - E (dup)	11/18/96	**808**	ND	ND	ND	ND
2016 - W	11/18/96	**289**	ND	ND	ND	ND
DETECTION LIMIT (mg/kg)		10	0.05	0.05	0.05	0.05

TRPH (EPA Method 418.1) and BTEX (Mod. EPA Method 8020) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	TRPH (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL-BENZENE (ug/L)	TOTAL XYLENES (ug/L)
METHOD BLANK	11/18/96	ND	ND	ND	ND	ND
FIELD BLANK	11/18/96	ND	ND	ND	ND	ND
TRIP BLANK	11/18/96	ND	ND	ND	ND	ND
EQUIPMENT BLANK	11/18/96	ND	ND	ND	ND	ND
DETECTION LIMIT (ug/L)		500	0.50	0.50	0.50	0.50

SAMPLING PERFORMED BY TEG-PUERTO RICO PERSONNEL
"ND" INDICATES NOT DETECTED AT LISTED DETECTION LIMIT
mg/kg = MILLIGRAMS PER KILOGRAM
ug/L = MICROGRAMS PER LITER

DOHS LABORATORY CERTIFICATION NO. 2115
ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN L. SHELBURNE

Marco A. Pedraza
Laboratory Manager

Kevin Shelburne
Principal

TEG-PUERTO RICO • PMB 627, HC-01 Box 29030, Caguas, PR 00725 • Phone (787) 720-0329 • Fax (787) 789-3858 • Pager 759-1255 Unit 217-4053

QA/QC REPORT - CALIBRATION DATA

TEG Project #9610321TB-8
DAILY CALIBRATION DATE : 11/18/96

RELIABLE MECHANICAL 2016
PROJECT NAME: VIEQUES

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
TRPH	IR	10 - 1,000	577.4	18.20%	0.866	577.4	0.0%	0.869	575.4	0.3%
BENZENE	PID #1	0.100 - 10.000	3.15	11.0%	42.03	2.80	11.0%	43.16	2.88	8.7%
TOLUENE	PID #1	0.100 - 10.000	3.48	12.8%	59.67	3.98	14.3%	59.44	3.96	13.9%
ETHYLBENZENE	PID #1	0.100 - 10.000	2.89	6.0%	48.42	3.23	11.7%	48.04	3.20	10.8%
m&p-XYLENES	PID #1	0.100 - 10.000	3.51	6.7%	120.37	4.01	14.3%	119.76	3.99	13.7%
o-XYLENES	PID #1	0.100 - 10.000	3.12	5.0%	53.31	3.55	13.9%	53.26	3.55	13.8%
BENZENE	PID #2	0.100 - 10.000	2.45	7.0%	31.25	2.08	15.0%	32.50	2.17	11.6%
TOLUENE	PID #2	0.100 - 10.000	2.77	12.1%	45.55	3.04	9.6%	44.73	2.98	7.6%
ETHYLBENZENE	PID #2	0.100 - 10.000	2.44	5.4%	36.19	2.41	1.1%	35.51	2.37	3.0%
m&p-XYLENES	PID #2	0.100 - 10.000	2.92	6.2%	93.26	3.11	6.5%	91.22	3.04	4.1%
o-XYLENES	PID #2	0.100 - 10.000	2.57	4.5%	40.09	2.67	4.0%	39.33	2.62	2.0%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppm
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 15% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY
PMB 627, HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (809) 720-0329 FAX 789-3858

teg

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD) FOR SOILS

TEG Project #9610321TB-8

PROJECT NAME: VIEQUES
RELIABLE MECHANICAL 2016

DAILY CALIBRATION DATE : 11/18/96

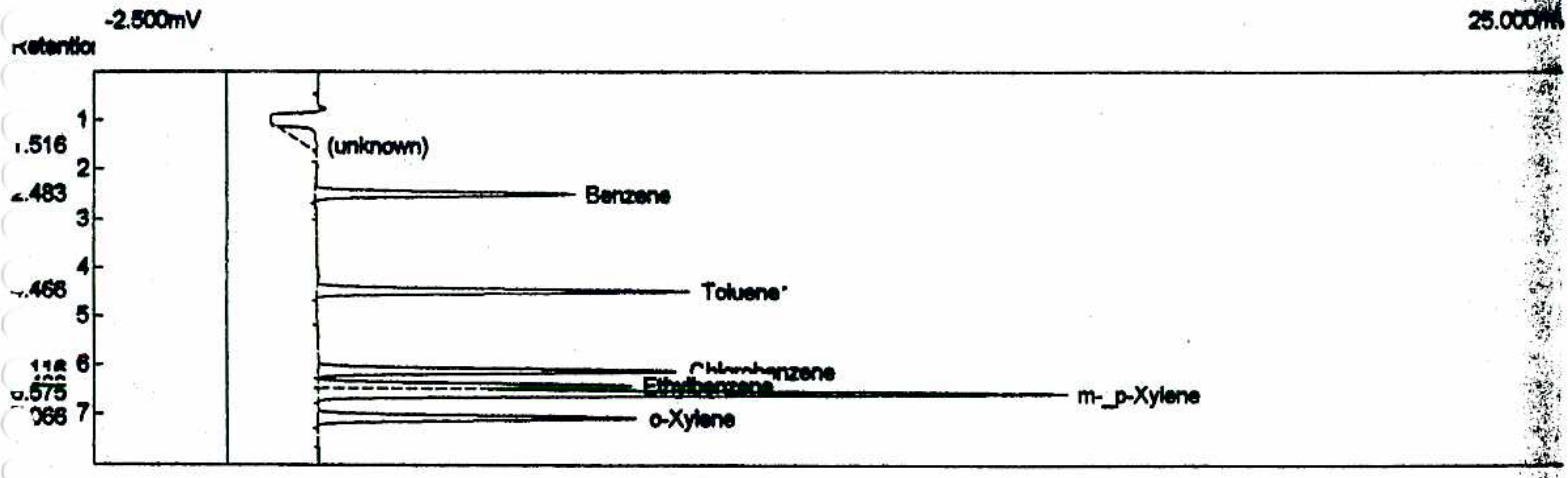
COMPOUND	SPK CONC (mg/kg)	MS CONC (mg/kg)	%REC MS	MSD CONC (mg/kg)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
TRPH	500	435	87%	441	88%	1%	15%	80% - 125%
BENZENE	5.000	4.15	83%	4.03	81%	3%	15%	77% - 109%
TOLUENE	5.000	5.41	108%	5.29	106%	2%	15%	75% - 112%
ETHYLBENZENE	5.000	4.86	97%	4.84	97%	0%	15%	65% - 115%
TOTAL XYLENES	15.000	15.63	104%	15.21	101%	3%	15%	70% - 115%

mg/kg = MILLIGRAMS PER KILOGRAM
SPK CONC - CONCENTRATION SPIKED INTO MATRIX
MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE
% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX
RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

ANALYSES PERFORMED BY: MARCO A . PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

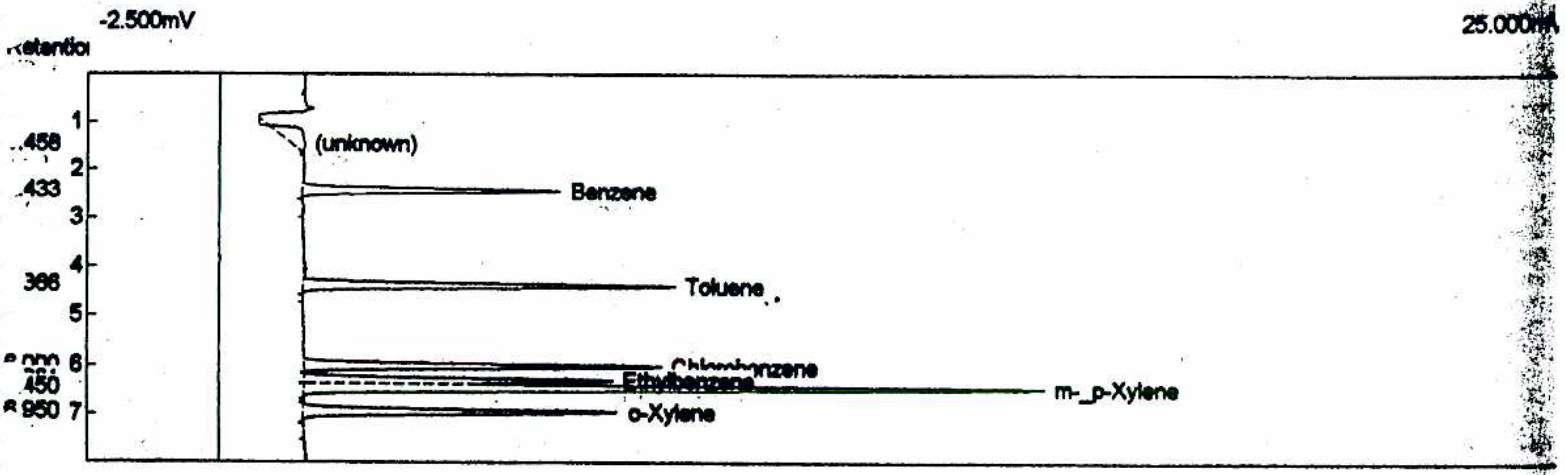
TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY
PMB 627, HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (809) 720-0329 FAX 789-3858

Analysis date: 11/18/1996 10:43:02
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB1.CHR ()
Sample: 5 ppm BTEX OPEN STD
Operator: Pedraza



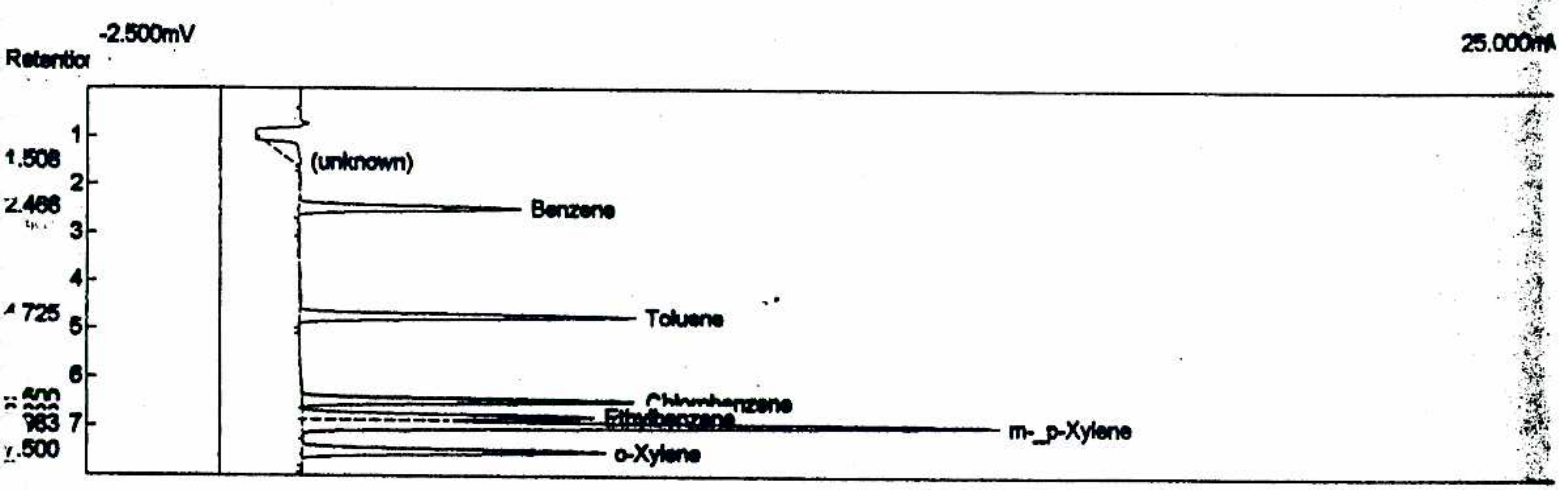
Component	Retention	Area	External	Internal	Units
_zene	2.483	31.248	4.25	4.2456	ppm
Toluene	4.466	45.645	5.49	5.4673	ppm
hlorobenzene	6.116	42.535	4.53	4.5346	ppm
thylbenzene	6.406	36.194	4.95	4.9513	ppm
m-_p-Xylene	6.575	93.260	10.64	10.6400	ppm
Xylene	7.066	40.087	5.20	5.1994	ppm
		289	35	35	

Analysis date: 11/18/1996 10:59:33
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB2.CHR ()
Sample: MS
Operator: Pedraza



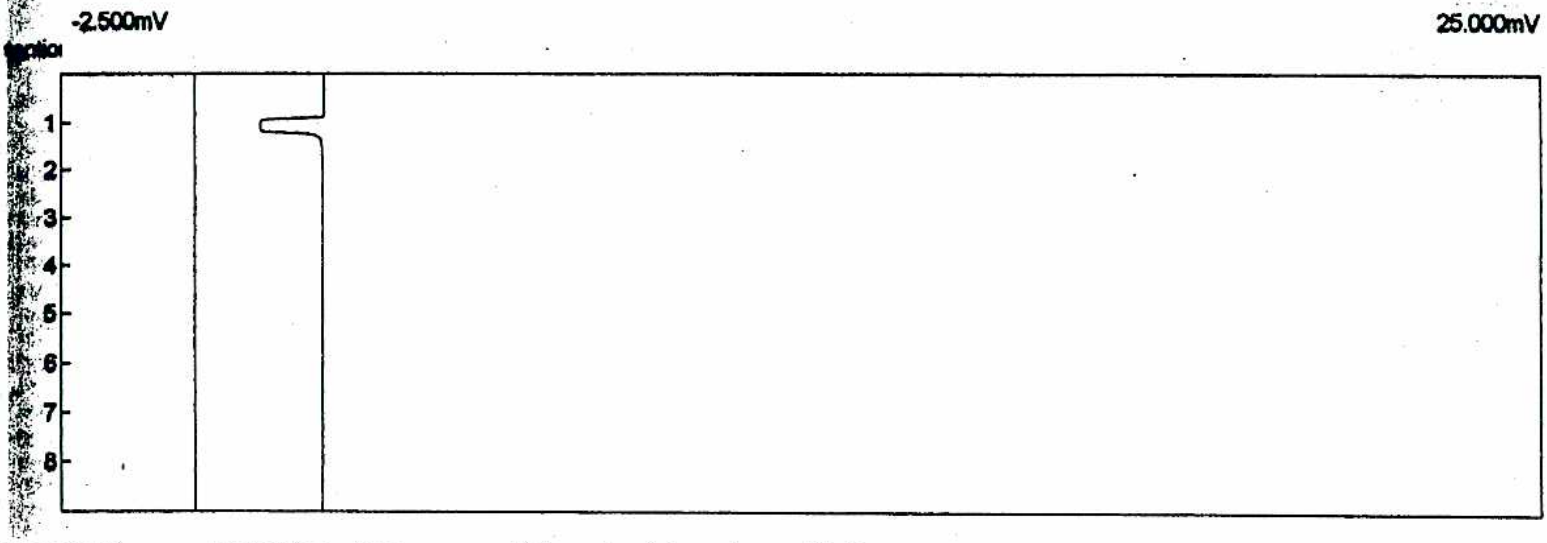
Component	Retention	Area	External	Units
Benzene	2.433	30.543	4.15	ppm
Toluene	4.366	44.916	5.41	ppm
Chlorobenzene	6.000	41.796	4.46	ppm
Ethylbenzene	6.291	35.560	4.86	ppm
m-_p-Xylene	6.450	91.993	10.50	ppm
o-Xylene	6.950	39.589	5.13	ppm
		284	35	

Analysis date: 11/18/1996 11:33:48
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB3.CHR ()
Sample: MSD
Operator: Pedraza



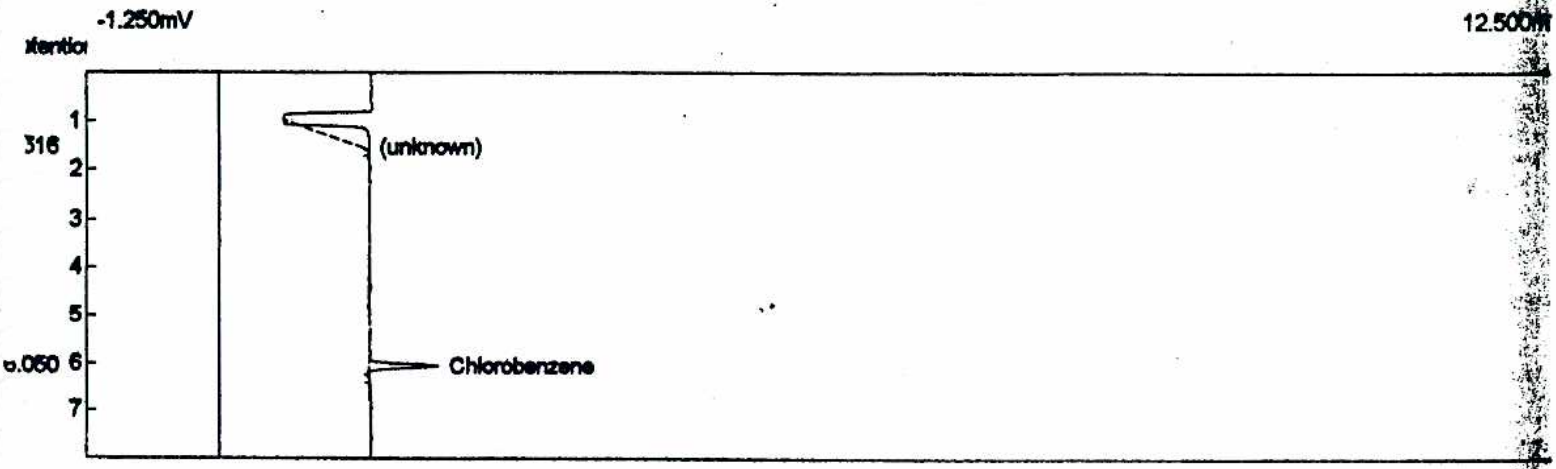
Component	Retention	Area	External	Units
Benzene	2.466	29.632	4.03	ppm
Toluene	4.725	43.940	5.29	ppm
Chlorobenzene	6.500	40.883	4.36	ppm
Ethylbenzene	6.808	35.410	4.84	ppm
m-_p-Xylene	6.983	89.296	10.19	ppm
o-Xylene	7.500	38.739	5.02	ppm
		278	34	

Analysis date: 11/18/1998 11:37:38
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 1
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PA4.CHR ()
Sample: BLANK
Operator: Pedraza



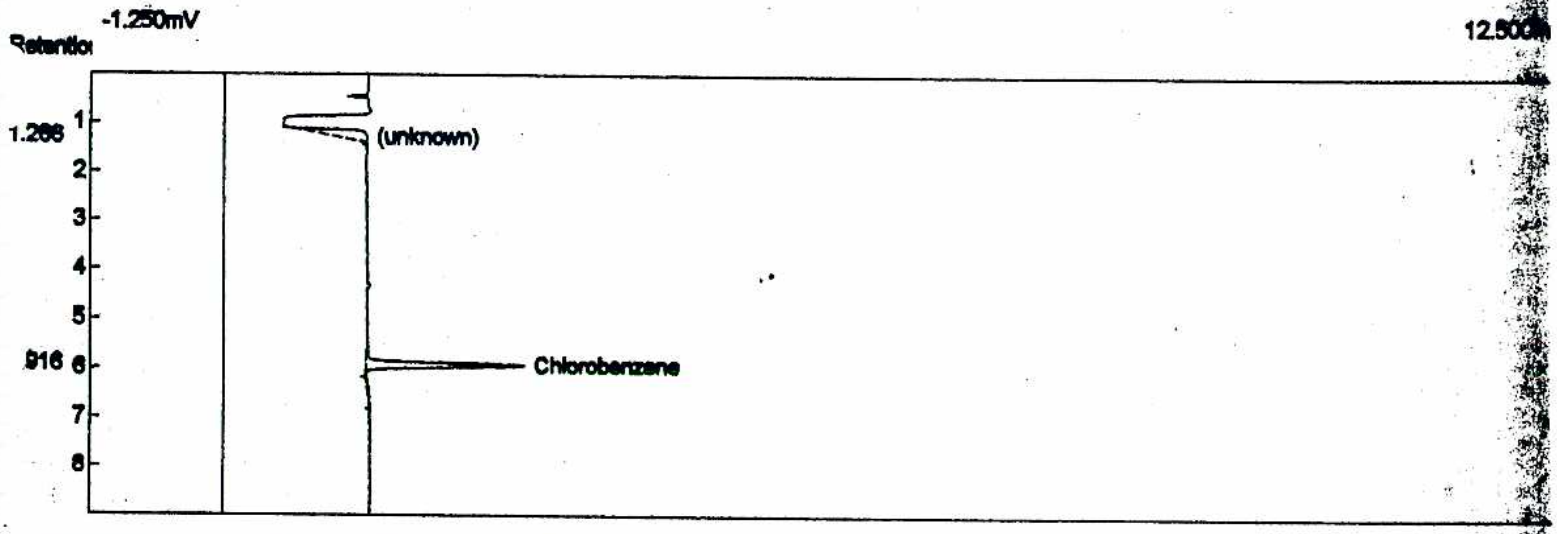
Component	Retention	Area	External	Internal	Units
		0	0	0	

Analysis date: 11/18/1998 12:13:56
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB5.CHR ()
Sample: trip blank
Operator: Pedraza



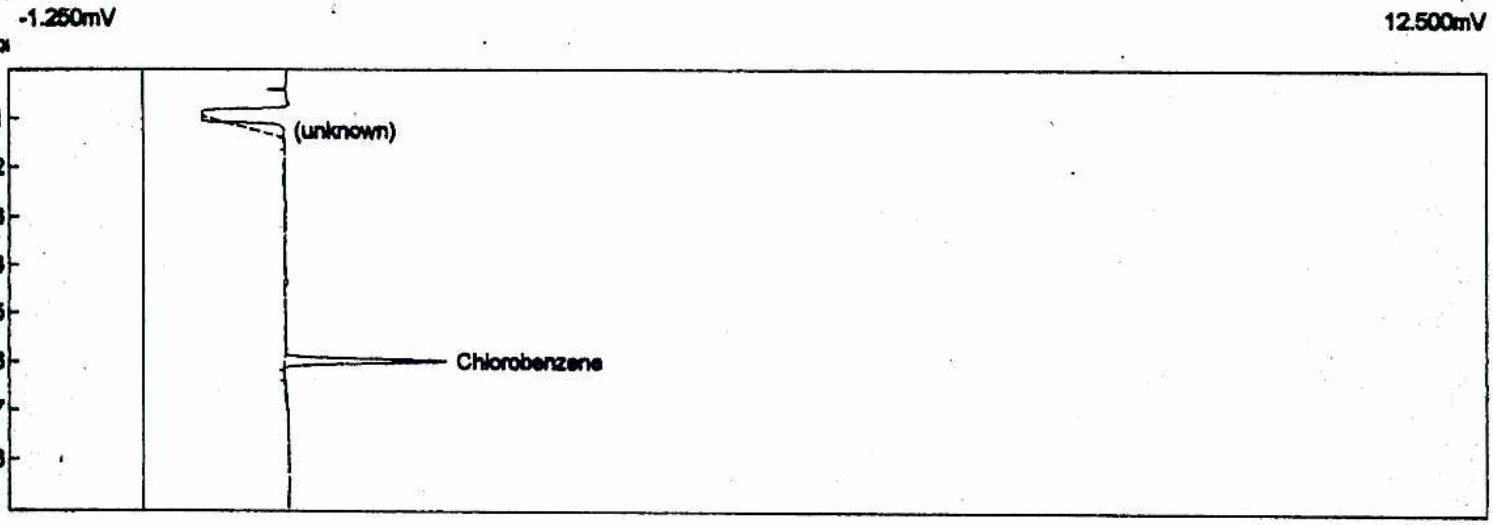
Component	Retention	Area	External	Internal	Units
robenzene	6.050	4.098	0.44	0.4369	ppm
		4	0	0	

Analysis date: 11/18/1996 12:53:14
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118P87.CHR ()
Sample: 2016-E (duplicate)
Operator: Pedraza



nponent	Retention	Area	External	Internal	Units
hlorobenzene	5.916	9.664	1.03	1.0302	ppm
		10	1	1	

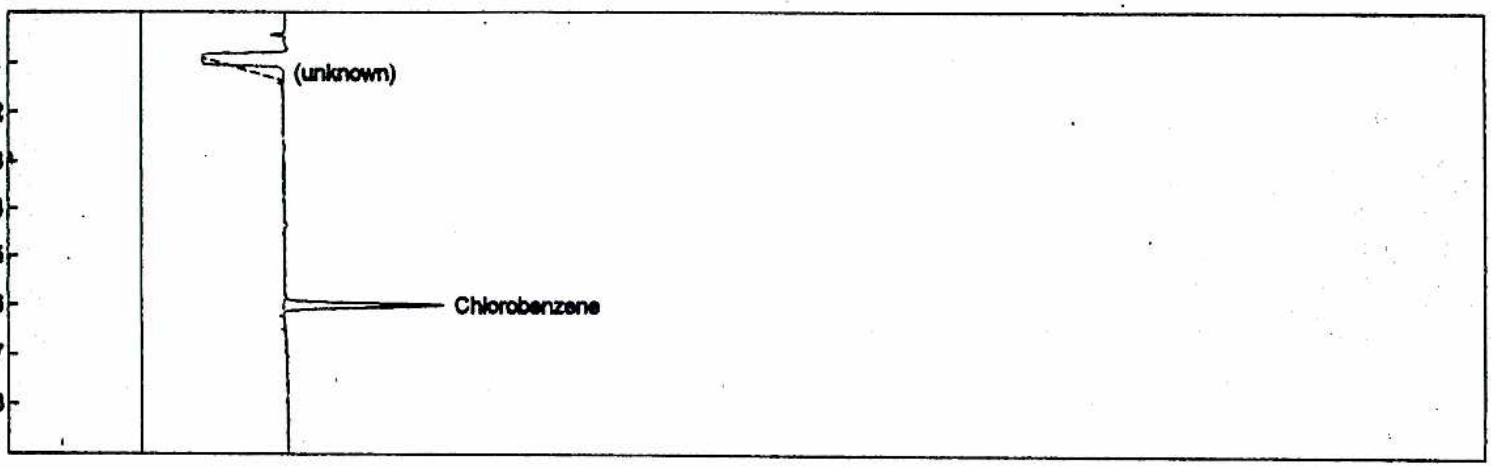
Analysis date: 11/18/1998 15:06:07
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB8.CHR ()
Sample: 2016 under slab
Operator: Pedraza



Component	Retention	Area	External	Internal	Units
Chlorobenzene	5.991	9.632	1.03	1.0268	ppm
		10	1	1	

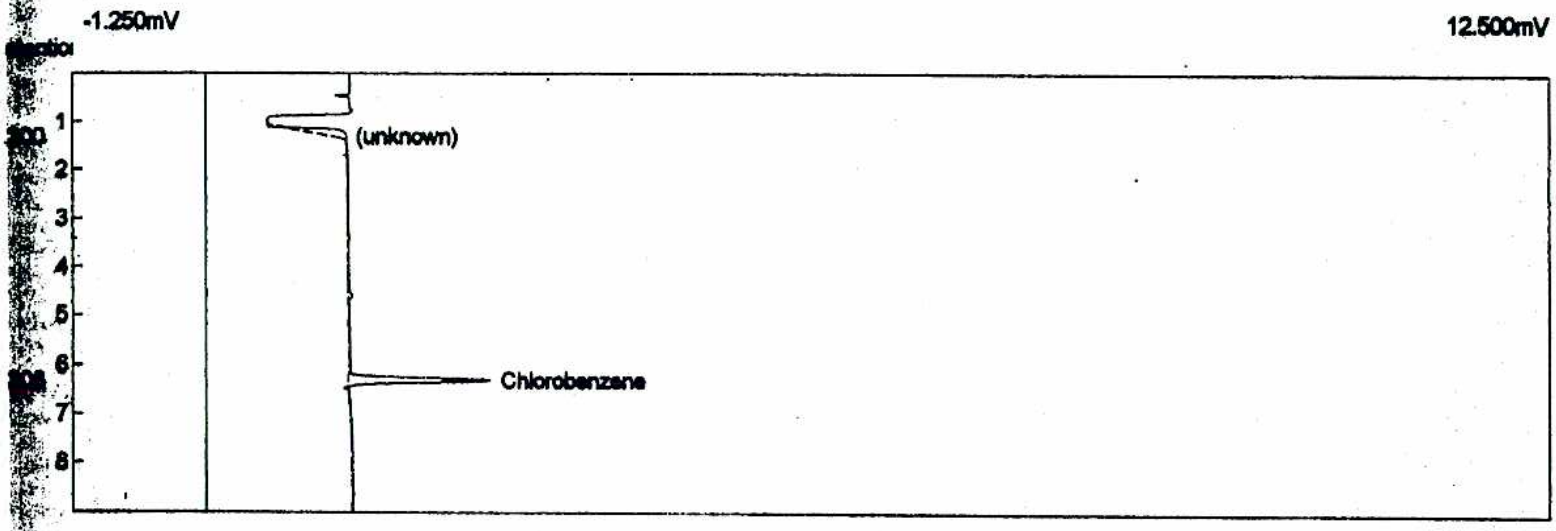
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB10.CHR ()
Sample: 2016 -W
Operator: Pedraza

-1.250mV 12.500mV



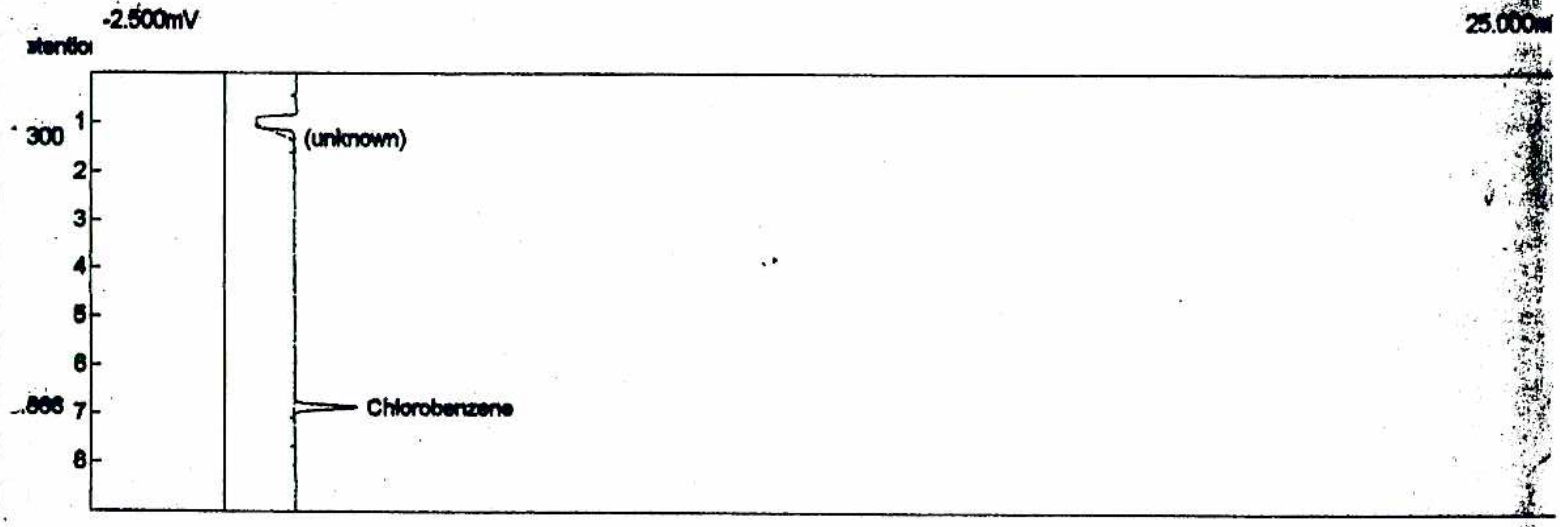
omponent	Retention	Area	External	Internal	Units
lorobenzene	6.025	9.559	1.02	1.0191	ppm
		10	1	1	

Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB11.CHR ()
Sample: 2016 - STOCK PILE
Operator: Pedraza



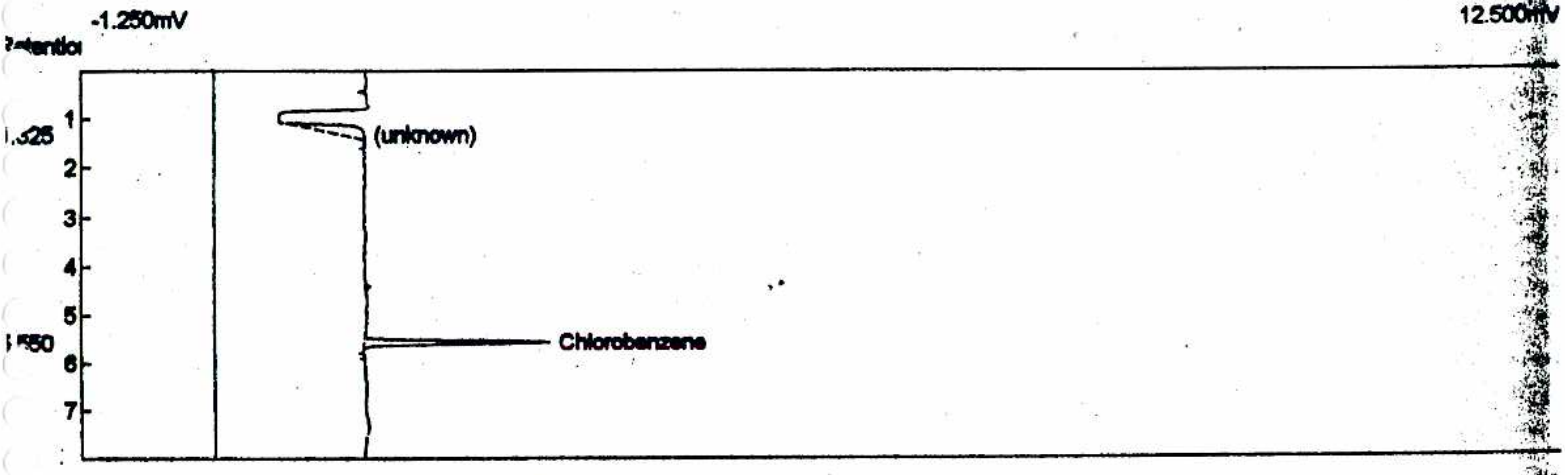
Component	Retention	Area	External	Internal	Units
Chlorobenzene	6.308	8.861	0.94	0.9447	ppm
		9	1	1	

Lab name: TEG Puerto Rico
Analysis date: 11/18/1996 14:08:12
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB12.CHR ()
Sample: 2016 (pipe trench)
Operator: Pedraza



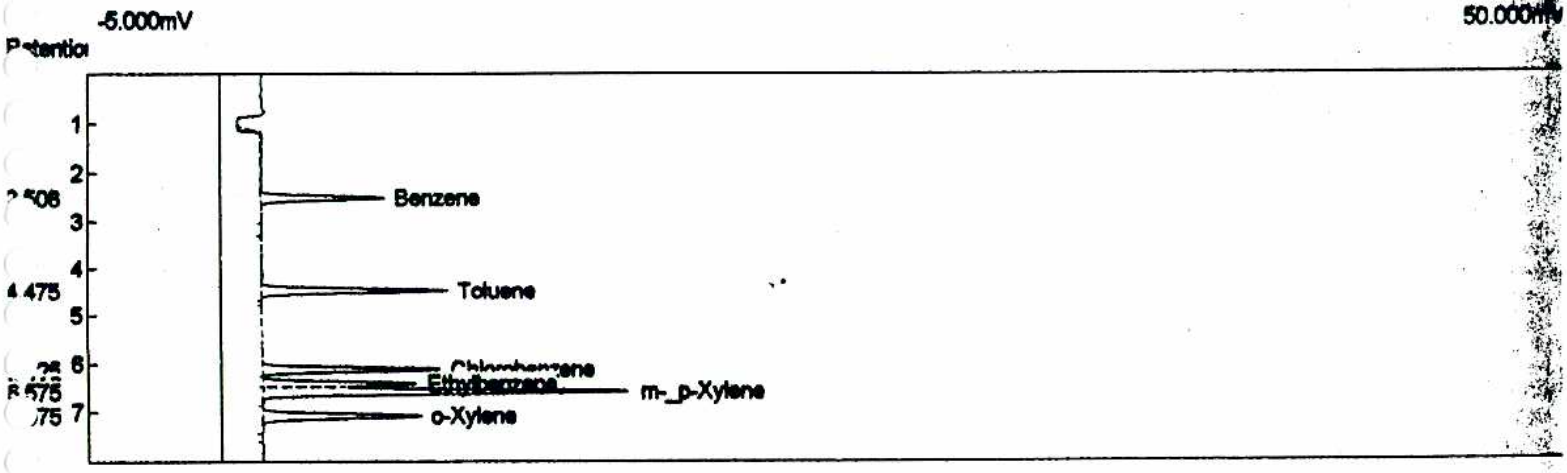
Component	Retention	Area	External	Units
Chlorobenzene	6.866	7.968	0.85	ppm
		8	1	

Analysis date: 11/18/1996 16:00:50
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB18.CHR ()
Sample: EQUIPMENT BLANK
Operator: Pedraza



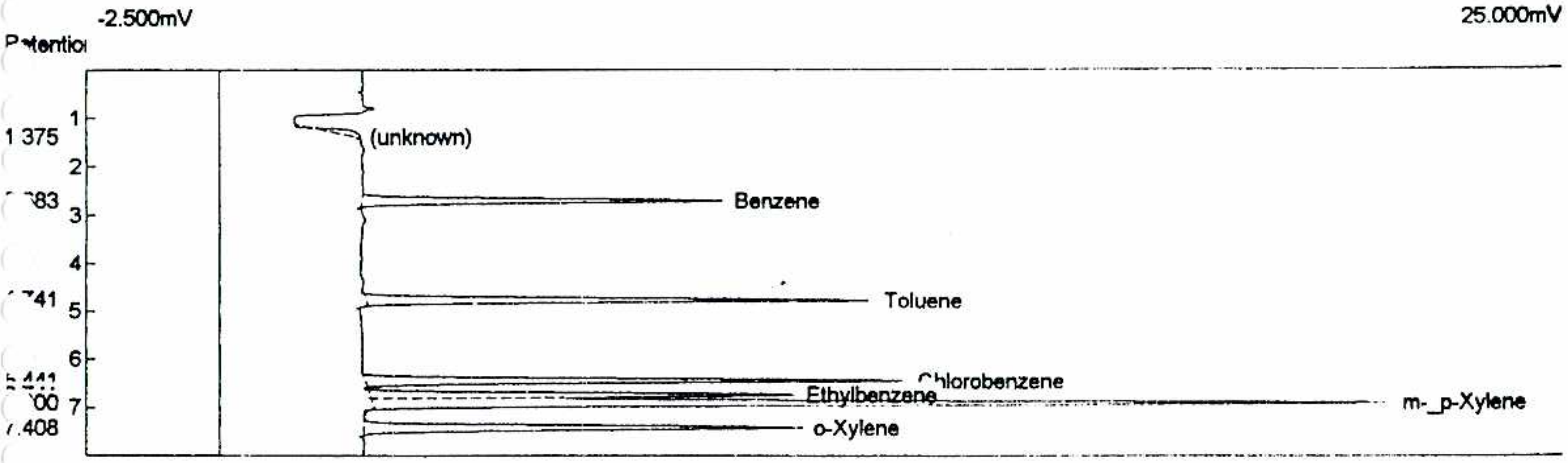
mponent	Retention	Area	External	Internal	Units
orobenzene	5.550	8.841	0.94	23.5634	ug/L
		9	1	24	

Analysis date: 11/18/1996 17:16:04
Method: EPA 602/8020
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Temp. prog:
Data file: 1118PB22.CHR ()
Sample: 5 ppm BTEX CLOSE STD
Operator: Pedraza



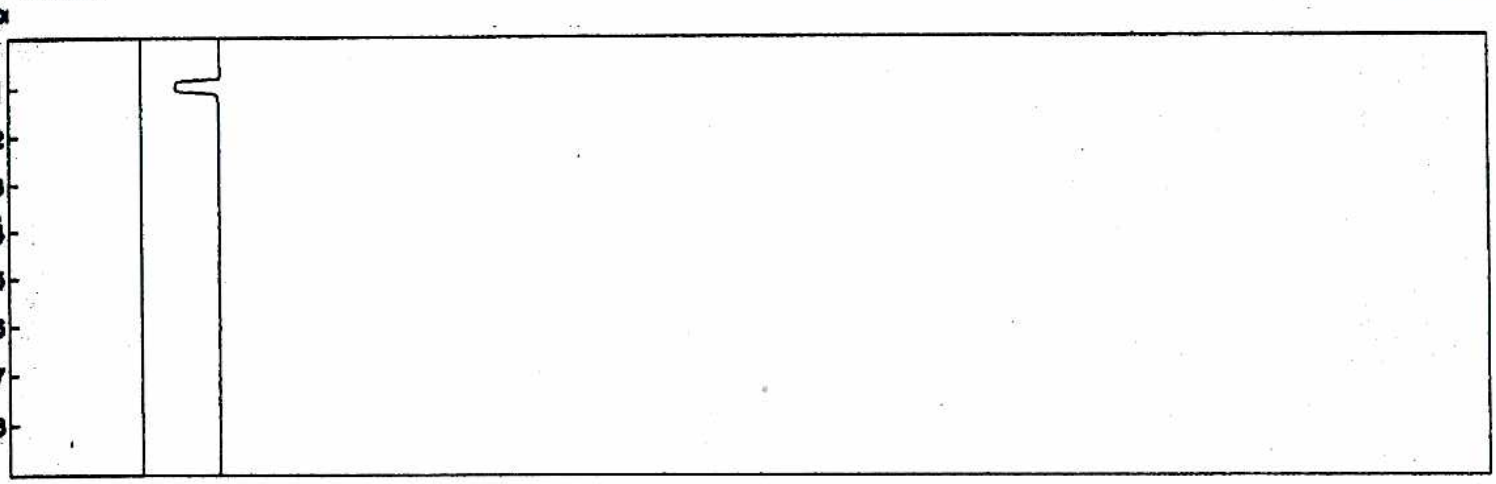
mponent	Retention	Area	External	Units
zene	2.508	32.497	4.42	ppm
luene	4.475	44.725	5.39	ppm
nlorobenzene	6.125	41.228	4.40	ppm
hylbenzene	6.416	35.514	4.86	ppm
_p-Xylene	6.575	91.222	10.41	ppm
-Xylene	7.075	39.334	5.10	ppm
		285	35	

Lab name: TLC Pacific
Analysis date: 11/18/1996 10:43:02
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 1
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PA1.CHR ()
Sample: 5 ppm BTEX OPEN STD
Operator: Pedraza



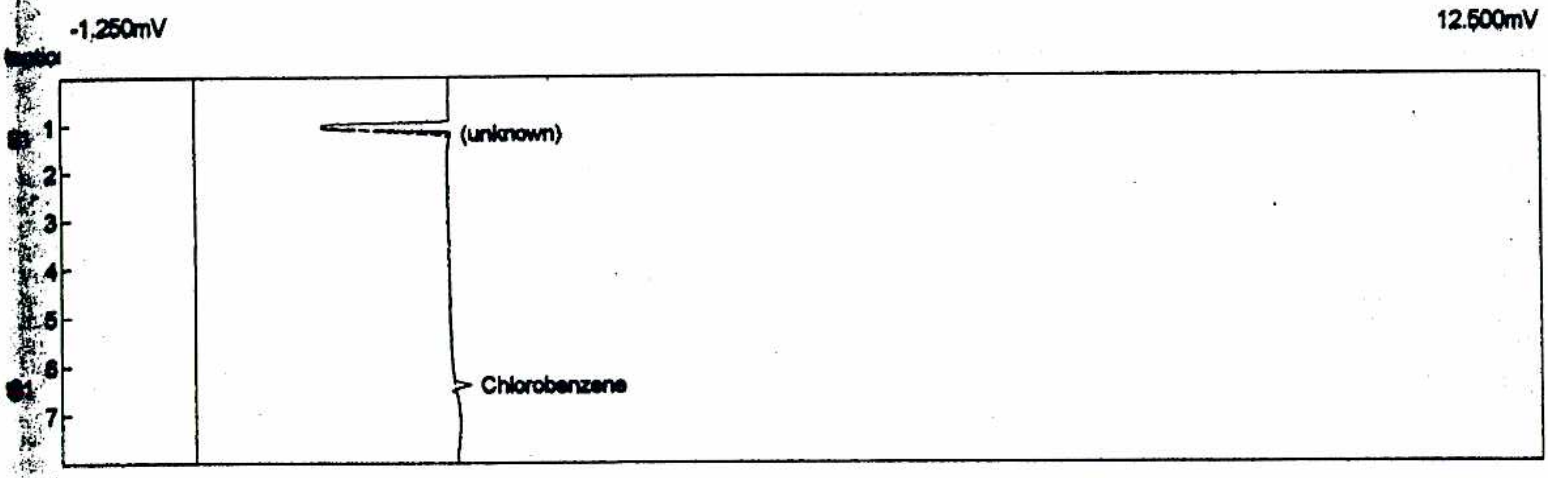
Component	Retention	Area	External	Internal	Units
Benzene	2.683	42.033	4.45	4.4480	ppm
Toluene	4.741	59.670	5.71	5.7100	ppm
Chlorobenzene	6.441	61.439	5.10	5.1029	ppm
Ethylbenzene	6.741	48.416	5.58	5.5843	ppm
m-_p-Xylene	6.900	120.374	11.42	11.4206	ppm
o-Xylene	7.408	53.307	5.70	5.6952	ppm
		385	38	38	

Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 2
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PB4.CHR ()
Sample: BLANK
Operator: Pedraza



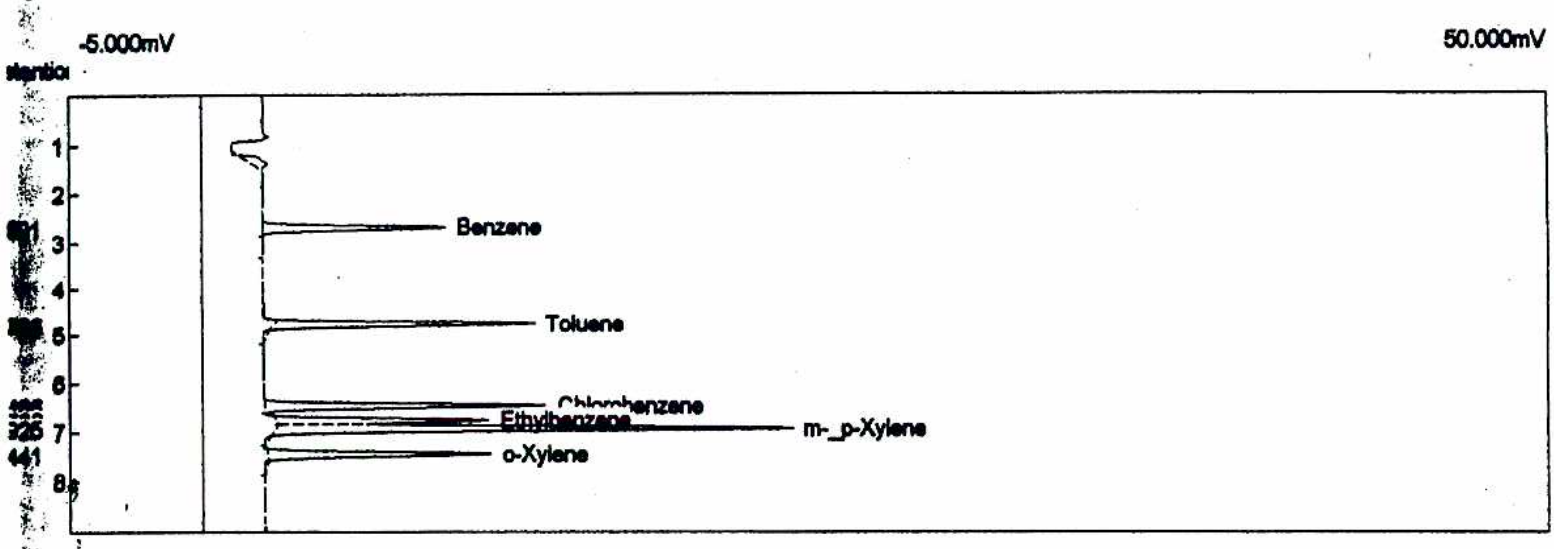
ponent	Retention	Area	External	Internal	Units
			0	0	0

Analysis date: 11/18/1998 12:16:00
Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 1
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PA5.CHR ()
Sample: field blank
Operator: Pedraza



Component	Retention	Area	External	Internal	Units
Chlorobenzene	6.391	0.875	0.07	0.0727	ppm
		1	0	0	

Method: EPA 602/8020
Lab ID: GC-2
Description: Pid 1
Column: RTX5 107455(30x.53x5.0
Carrier: He 1.2 kg/cm2
Data file: 1118PA20.CHR ()
Sample: 5 ppm BTEX CLOSE STD
Operator: Pedraza



omponent	Retention	Area	External	Internal	Units
nzene	2.691	43.155	4.57	4.5667	ppm
oluene	4.766	59.438	5.69	5.6878	ppm
hlorobenzene	6.466	63.890	5.31	5.3065	ppm
thylbenzene	6.766	48.044	5.54	5.5414	ppm
-_p-Xylene	6.925	119.760	11.36	11.3624	ppm
Xylene	7.441	53.257	5.69	5.6898	ppm
		388	38	38	

teg Transglobal Environmental Geochemistry — Chain of Custody Record

Client: RELIABLE MECHANICAL — Date: 11/8/96 — Page 2 Of 2

Address: — TEG Project #: 96T032/TB-8 — Outside Lab #:

Phone: — FAX: — Location: VIEQUES

Client Project #: — Project Manager: K. THICKSTUN — Collector: KLS — Date of Collection: 11/8/96

Sample #	Depth	Time	Sample Type	Container Type	VOA 8010	VOA 8020	VOA 8240	Semi Vol 8270	TRPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	PNA 610/8100	PEST/PCB's 8080	HEX Chrome	Organic Lead	Total Lead	pH	Metals						Field Notes	Total # of containers
TRIP BLANK			H_2O	40ml		X			X																	1
EQUIPMENT BLANK			↓	VOA		X			X																	1
FIELD BLANK			↓	VIAL		X			X																	1
2016-UNDER	SLAB		SOIL	VIAL		X			X																	1

Relinquished by: (signature) K E Samuels — Date / Time 1140A 11/8/96 — Received by: (signature) T Shellhammer — Date / Time 1140A 11/8/96

Relinquished by: (signature) — Date / Time — Received by: (signature) — Date / Time

Total # of containers: 10
Chain of Custody seals Y/N/NA: NA
Seals intact? Y/N/NA: NA
Received good condition/cold: Y

Notes: 4°C

Turn around time: 8 days

teg Transglobal Environmental Geochemistry **Chain of Custody Record** PO #: _____

Client: RELIABLE MECHANICAL
Address: _____
Phone: _____ FAX: _____
Client Project #: _____ Project Manager: K. THICKSTUN

Date: 11-8-96 Page 1 Of 2
TEG Project #: 96I0321TB-8 Outside Lab #: _____
Location: Vieques
Collector: KLS Date of Collection: 11/8/96

Sample #	Depth	Time	Sample Type	Container Type	VOA 8010	VOA 8020	VOA 8240	Semi Vol 8270	TRPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	PNA 610/8100	PEST/PCB's 8080	HEX Chrome	Organic Lead	Total Lead	pH	Metals						Field Notes	Total # of containers
2015A-W			SOIL	GL		X			X																	1
2015A-M			SOIL			X			X																	1
2015A-M dup						X			X																	1
2015A-E						X			X																	1
2015-Stockpile						X			X																	1
2015-Pipe Trench						X			X																	1
2015B-W						X			X																	1
2015B-M						X			X																	1
2015B-E						X			X																	1
2015B-E dup						X			X																	1
2016-W						X			X																	1
2016-E						X			X																	1
2016-E dup						X			X																	1
2016 Stockpile						X			X																	1
2016 Pipe Trench			VOA	VIAL		X			X																	1

Relinquished by: (signature) K E Samuels Date / Time 4/8/96 1:40pm
Received by: (signature) K Shelburne Date / Time 4/8/96 1:40pm
Relinquished by: (signature) Date / Time
Received by: (signature) Date / Time

Total # of containers: 17
Chain of Custody seals Y/N/NA: NA
Seals intact? Y/N/NA: NA
Received good condition/cold: Y

Notes: 4°C. ice bath.

Turn around time: 8 days

Roque Schmidt
Oil Equipment Contractors
BOX 58 PLAYA STATION - AVE. HOSTOS 112. PLAYA DE PONCE
PONCE, P. R. 00734
TELS. (809) 84
84

December 23th, 1996

To whom it may concern:

We removed a 500 gallons fiber glass tank at Building 2016, at U.S. Naval Base, Roosevelt Roads, Ceiba, Puerto Rico.

This tank was cleaned, crushed and delivered to B.F.I facilities in Ponce, for disposal.

Héctor Moné

HM/os

BFI Waste Systems™
BROWNING-FERRIS INDUSTRIES

No. 120926

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name: U.S. Navy
Address: Roosvelt Roads
Ceiba P.R.
Phone No.: 787 - 865 4488

Generating Location (Name): Same
Address: Roosvelt Roads
Ceiba P.R.
Phone No.: 787 - same

WASTE DESCRIPTION	B. F. I. CODE	QUANTITY	UNIT	FOR B.F.I. USE ONLY
Waste oil/Diesel Fuel	PR / 233 /980218 /251486	30	yds	3
Contaminateds Soil	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			DISP. CODE

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 26, or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, If the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Pedro J. Ruiz — Generator Authorized Agent Name - Print
Signature
02 20 97 — Shipment Date

TRANSPORTER

Transporter Name: Trecons Inc.
Address: P.O.Box 10075
Ponce P.R. 00732
Phone No.: 787 - 841-8907
Driver Name (Print): M.Garcia
Vehicle License No. /State: Mack 89 R.P. 1753
Container id:

I hereby certify that the above named material was picked up at the generator site listed above.

Miguel Cotareta — Driver Signature
02 20 97 — Shipment Date

I hereby certify that above named material was delivered without incident to the destination listed below.

M. Cotareta — Driver Signature
02 20 97 — Delivery Date

DESTINATION

Site Name: Ponce Sanitary Landfill
Phone No.: 787 - 841 7775
Address: Bo. La Cotorra Ponce, P.R. 00731

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Isain Ramirez — Name of Authorized Agent
Signature
02 20 97 — Receipt Date

PASS CODE

01/90

PEL-DESTINATION-RETAIN

** TOTAL PAGE.05 **

BFI Waste Systems
BROWNING-FERRIS INDUSTRIES

No. 235771

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name: U.S. Navy
Address: Roosevelt Roads
Ceiba P.R.
Phone No. 787 865-4408

Generating Location (Name): Same
Address: Roosevelt Road
Ceiba P.R.
Phone No. 787 · 865-4408

WASTE DESCRIPTION	B. F. I. CODE	QUANTITY	UNIT	FOR B.F.I. USE ONLY
Waste oil / Diesel contaminated soil	PR / 233 / 980218 / 251480	30	yds	3
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			DISP. CODE

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 26, or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, If the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Pedro Rv. — Generator Authorized Agent Name - Print
Signature
02 21 97 — Shipment Date

TRANSPORTER

Transporter Name: Trecom Enc.
Address: P.O. Box 10075
Ponce, P.R.
Phone No. 787 · 841-6972
Driver Name (Print): J. Granda
Vehicle License No. /State: RP-1753
Container id: 93338-A

I hereby certify that the above named material was picked up at the generator site listed above.
Driver Signature
02 21 97 — Shipment Date

I hereby certify that above named material was delivered without incident to the destination listed below.
Driver Signature
02 21 97 — Delivery Date

DESTINATION

Site Name: Ponce Sanitary Landfill
Phone No. 787 · 841-7775
Address: Bo. La Cotorra Ponce, P.R. 00731

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Walter Maldonado — Name of Authorized Agent
Signature
02 21 97 — Receipt Date

PASS CODE

01/90 — BFI DESTINATION RETAIN

111,700

BFI Waste Systems™
BROWNING-FERRIS INDUSTRIES

No. 220925

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name: U.S. Navy
Address: Roosevelts Roads
Ceiba P.R.
Phone No.: 787 - 8654488

Generating Location (Name): Same
Address: Roosvelt Roads
Ceiba P.R.
Phone No.: 787 - Same

WASTE DESCRIPTION	B. F. I. CODE	QUANTITY	UNIT	FOR B.F.I. USE ONLY
Waste oil/Diesel Fuel	PR / 233 / 980218 / 251486	30	yds	3
Contaminated Soil	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			DISP. CODE

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 26, or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Pedro J. Ruiz — Generator Authorized Agent Name - Print
Signature
02 20 97 — Shipment Date

TRANSPORTER

Transporter Name: Trecons Inc.
Address: P.O.Box 10075
Ponce P.R. 00732
Phone No.: 787 - 841-8907
Driver Name (Print): J. Garcia
Vehicle License No. /State: Mack 82 R.P. 4183
Container id: 24/35-A

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature
02 20 97 — Shipment Date

I hereby certify that above named material was delivered without incident to the destination listed below.

Driver Signature
02 20 97 — Delivery Date

DESTINATION

Site Name: Ponce Sanitary Landfill
Phone No.: 787 - 8417775
Address: Bo. La Cotorra Ponce, P.R. 00731

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Juan Ramirez — Name of Authorized Agent
Signature
02 20 97 — Receipt Date

PASS CODE

BFI DESTINATION RETAIN

RS out

110,500 #

BFI Waste Systems
BROWNING-FERRIS INDUSTRIES

No. 235129

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name: U S Navy
Address: Roosevelt Road
Ceiba P.R.
Phone No.: 787 - 865-4488

Generating Location (Name): US Navy
Address: Roosvelt Road
Ceiba PR
Phone No.: 787 - 865-4488

WASTE DESCRIPTION	B. F. I. CODE	QUANTITY	UNIT	FOR B.F.I. USE ONLY
Waste Oil & Diesel Fuel w/ Contaminated Soil.	PR / 233 1980218 / 251486	30	yds.	3
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			DISP. CODE

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 26, or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, If the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Peter J. Ruiz — Generator Authorized Agent Name - Print
Signature
02 20 97 — Shipment Date

TRANSPORTER

Transporter Name: Ben Powers Transporte
Address: Cto Rancul PR
Phone No.: 787 - 844-4405
Driver Name (Print): Luis Vazquez
Vehicle License No. /State: RP 116 K
Container id:

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature
02 20 97 — Shipment Date

I hereby certify that above named material was delivered without incident to the destination listed below.

Driver Signature
02 25 97 — Delivery Date

DESTINATION

Site Name: Ponce Sanitary Landfill
Phone No.: 787 - 841-7775
Address: Bo. La Cotorra Ponce, P.R. 00731

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent
Signature
02 20 97 — Receipt Date

PASS CODE

BFI DESTINATION RETAIN

Appendix B
Boring Logs

Appendix B
AOC E – 1998 Site Characterization Soil Boring Logs Surface/Subsurface

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB1/MW1	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : approx. 42.1 feet bls START : 0815 (8/4/98) END : 1600 (8/10/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm):	Breathing Zone	Headspace (total-filter=actual)
	0-2	- - -	PH	Posthole	Clay (CL), brown 7.5YR5/4, semi-soft to stiff, fine qtz, some rocks, friable, dry.		0	0-0=0
	2-4	- - -	PH	Posthole	Clay (CL), as above PH, dry to damp.		0	0-0=0
5	4-6	20	S-1	4-4-7-6 (13)	Clay (CL), as above PH, dry to damp.		0	0-0=0
	6-8	18	S-2	2-1-1-2 (2)	Clay (CL), as above PH, less sand, moist.		0	0-0=0
	8-10	12	S-3	4-2-2-3 (4)	Clay (CL), as above with dark gray zones N4/0, stiff, minor rocks.		0	40-12=28
10						odor		
	10-12	18	S-4	2-2-3-2 (5)	Clay (CL) as above S-3, dry.		0	20-0=20
	12-14	24	S-5	2-1-2-2 (3)	Clay (CL), as above S-3, bottom 4"-Sandy Clay (SC), dark greenish gray 10Y4/1, semi-plastic, moist.		0	>1000-30=>970
						strong odor		
15	14-16	20	S-6	3-2-3-1 (5)	Sand (SP), dark greenish gray 10Y4/1, loose, fine to med qtz, soft, dry.		0	>1000-50=>950
						very strong odor		
	16-18	24	S-7	4-3-3-3 (6)	Sand (SP), as above S-6.		0	>1000-18=>982
						very strong odor		
	18-20	18	S-8	4-4-4-6 (8)	Sand (SP), grayish brown 8.5Y5/2, very loose, fine to med qtz and shell, dry.		0	400-0=400
20						strong odor		
				Drill	No drill cuttings		0	
	23-25	18	S-9	7-7-7-8 (14)	Sand (SP), as above S-8.		0	>1000-20=>980
25						strong odor		
				Drill	No drill cuttings		0	

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB1/MW1	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : 120.833 feet above msl DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : approx. 42.5 feet bls START : 0815 (8/4/98) END : 1600 (8/10/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm)	Breathing Zone	Headspace (total-filter=actual)
					Hard drilling			
30	28-30	6	S-10	23-16-14-20 (30)	Clay (CL), brown 7.5YR5/4, very stiff, non-plastic, rocks, minor sand, dry.	hard drilling high odor	0	>1000-25=>975
	31-33	18	S-11	6-8-14-19 (22)	Clay (CL), brown 7.5YR5/4, very stiff, nonplastic, minor rocks, friable, dry.		0	>1000-20=>980
35	33-35	20	S-12	14-16-22-24 (38)	Clay (CL) to Saprolite, brown 7.5YR5/4 with greensh gray (5G5/4) spots, very stiff to hard, dry.		0	580-20=560
	35-37	12	S-13	35-50 (R)	Clay (CL), as above S-12, very hard to friable, dry.		0	>1000-0=>1000
40								
	40-42	12	S-14	48-42-31-35 (73)	Clay (CL) as above S-13.		0	>1000-5=>995
45								
	45-47	10	S-15	40-50 (R)	Clay (CL), as above S-13, wet at spoon tip.		0	>1000-15=>985
	47-49	10	S-16	50 (R)	Clay (CL), as above S-13, some rocks, wet.		0	>1000-30=>970
50					Hard drilling	Well set to 50 feet bls	0	
					Total Depth= 53 feet bls			

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB2/MW2	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : approx. 42.23 feet bls START : 1120 (8/4/98) END : 1200 (8/20/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm): Breathing Zone	Headspace (total-filter=actual)
	0-2	- - -	PH	Posthole	Sandy Clay (CL), brown 7.5YR5/4, semi-soft to stiff, fine qtz, some rocks, friable, dry.	0	0-0=0
	2-4	- - -	PH	Posthole	Sandy Clay (CL), as above PH, dry.	0	0-0=0
5	4-6	18	S-1	4-5-6-9 (11)	Sandy Clay (CL), as above PH, clay content increases towards bottom, dry.	0	0-0=0
	6-8	20	S-2	8-13-22-16 (35)	Clay (CL), as above S-1, less sand, moist.	0	0-0=0
	8-10	20	S-3	9-10-10-13 (20)	Clay (CL), as above S-2, moist.	0	0-0=0
10	10-12	24	S-4	5-6-8-8 (14)	Sandy Clay (CL), yellowish red 5YR4/6, fine to med qtz, semi-loose, dry.	0	0-0=0
	12-14	20	S-5	5-5-5-5 (10)	Sandy Clay (CL), as above S-4, dry.	0	0-0=0
15	14-16	20	S-6	5-7-6-6 (13)	Sandy Clay (CL), as above S-4, dry.	0	0-0=0
	16-18	18	S-7	5-5-6-7 (11)	Silty Sand (SM), yellowish red 5YR4/6, very fine to fine qtz, very loose, dry.	0	0-0=0
	18-20	20	S-8	7-7-10-11 (17)	Silty Sand (SM), as above S-7, fine to coarse qtz, loose, dry.	0	0-0=0
20				Drill	No drill cuttings		
	23-25	22	S-9	3-4-5-4 (9)	Sandy Clay (CL), yellowish red 5YR4/6, fine to med qtz, semi-stiff to loose (some high qtz content zones), dry to moist.	0	0-0=0
25				Drill	No drill cuttings		

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB2/MW2	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : 120.833 feet above msl DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : approx. 42.5 feet bls START : 1120 (8/4/98) END : 1200 (8/20/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm)	Breathing Zone	Headspace (total-filter=actual)
				Drill	No drill cuttings			
	28-30	10	S-10	8-14-28-50 (42)	Clay (CL), reddish yellow 7.5YR6/6, very stiff, non-plastic, rocks, minor sand, dry.	hard drilling	0	0-0=0
30								
	33-35	5	S-11	50 (R)	Clay (CL), as above S-10.		0	0-0=0
35								
	38-40	4	S-12	50 (R)	Clay (CL), as above S-10.		0	3-1=2
40								
	43-45	10	S-13	42-50 (R)	Clay (CL), yellowish red 5YR4/6, stiff, some iron content, non-plastic, minor sand, dry.		0	4-1=3
45								
					Drill out		0	
50								
					Total Depth= 50 feet bls	Well set to 50 feet bls		

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB3	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : dry START : 1030 (8/5/98) END : 1545 (8/5/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm):	Breathing Zone	Headspace (total-filter=actual)
	0-2	- - -	PH	Posthole	Sandy Clay (CL), brown 7.5YR5/4, semi-soft to stiff, fine qtz, some rocks, friable, dry.		0	0-0=0
	2-4	- - -	PH	Posthole	Sandy Clay (CL), as above PH, dry.		0	0-0=0
5	4-6	18	S-1	9-9-8-12 (17)	Clay (CL), strong brown 7.5YR5/6, very stiff, non-plastic, minor sand, dry.		0	0-0=0
	6-8	15	S-2	6-9-7-8 (16)	Clay (CL), as above S-1.		0	0-0=0
	8-10	18	S-3	6-8-7-7 (14)	Clay (CL), as above S-1.		0	0-0=0
10	10-12	24	S-4	2-6-8-12 (14)	Clay (CL), as above S-1, hard.		0	0-0=0
	12-14	18	S-5	7-8-10-9 (18)	Clay (CL), as above S-4, mor friable.		0	0-0=0
15	14-16	18	S-6	9-6-6-6 (12)	Sandy Clay (SC), yellowish red 5YR4/6, semi-stiff to loose, friable, minor sand content, dry.		0	0-0=0
	16-18	20	S-7	4-4-3-4 (7)	Sandy Clay (SC), yellowish red 5YR4/6, loose, fine to med qtz, dry.		0	0-0=0
	18-20	24	S-8	5-8-6-4 (14)	Sandy Clay (SC), as above S-7.		0	0-0=0
20				Drill	No drill cuttings			
	23-25	20	S-9	6-8-8-8 (16)	Sandy Clay (SC), as above S-7.		0	0-0=0
25				Drill	No drill cuttings			

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB3	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : 120.833 feet above msl DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : approx. 42.5 feet bls START : 1030 (8/5/98) END : 1545 (8/5/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm):	Breathing Zone	Headspace (total-filter=actual)
				Drill	No drill cuttings			
30	28-30	18	S-10	15-10-17-17 (27)	Clay (CL), reddish yellow 7.5YR6/6 and white 7.5YR8/1, very stiff, non-plastic, rocks, minor sand, dry.	hard drilling	0	0-0=0
					Total Depth= 30 feet bls			
35								
40								
45								
50								

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB4	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : dry START : 0730 (8/6/98) END : 1505 (8/6/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm):	Breathing Zone	Headspace (total-filter=actual)
	0-2	- - -	PH	Posthole	Clay (CL), yellowish red 5YR4/6, stiff semi-plastic, minor qtz, dry.		0	0-0=0
	2-4	- - -	PH	Posthole	Clayey Sand (SC), yellowish red 5YR4/6, semi-loose to loose, dry.		0	0-0=0
5	4-6	20	S-1	5-5-7-10 (12)	Clayey Sand (SC) to Sandy Clay (CL), yellowish red 5YR4/6, loose and friable to stiff and semi-plastic, fine to med qtz, dry.		0	0-0=0
	6-8	20	S-2	14-15-13-11 (28)	Sandy Clay (CL), yellowish red 5YR4/6, stiff to semi-plastic, dry.		0	0-0=0
	8-10	20	S-3	3-4-5-3 (9)	Clayey Sand (SC), yellowish red 5YR4/6, loose to semi-stiff towards bottom, fine to coarse qtz, dry.		0	0-0=0
10	10-12	18	S-4	4-7-13-15 (20)	Sandy Clay (CL), yellowish red 5YR4/6, stiff to hard, minor qtz, dry.		0	0-0=0
	12-14	16	S-5	8-10-12-11 (22)	Clay (CL), yellowish red 5YR4/6, very stiff, semi-plastic, dry.		0	0-0=0
15	14-16	18	S-6	3-7-9-10 (16)	Clay (CL), as above S-5.		0	0-0=0
	16-18	20	S-7	5-8-11-13 (19)	Clay (CL), as above S-5.		0	0-0=0
	18-20	18	S-8	18-40-48-50 (88)	Clay (CL), reddish yellow 7.5YR6/6 and white 7.5YR8/1, very stiff, nonplastic, minor rocks, hard, dry.		0	0-0=0
20				Drill	Minimal to no drill cuttings			
	23-25	20	S-9	5-8-10-9 (18)	Clay (CL) to Silt (SM), strong brown 7.5YR5/6, slightly plastic to friable, white spots, dry.		0	0-0=0
25				Drill	No drill cuttings			

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB4	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : 120.833 feet above msl DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : approx. 42.5 feet bls START : 0730 (8/6/98) END : 1505 (8/6/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm):	Breathing Zone	Headspace (total-filter=actual)
				Drill	No drill cuttings			
	28-30	24	S-10	3-11-13-16 (24)	Clay (CL), strong brown 7.5YR5/6, hard plastic, minor friability, dry.	hard drilling	0	0-0=0
30					Total Depth= 30 feet bls			
35								
40								
45								
50								

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB5/MW3	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : approx. 41.08 feet bls START : 0740 (8/7/98) END : 1100 (8/18/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm):	Breathing Zone	Headspace (total-filter=actual)
	0-2	- - -	PH	Posthole	Clay (CL), yellowish red 5YR4/6, semi-stiff, minor sand, fine to med qtz, dry.		0	0-0=0
	2-4	- - -	PH	Posthole	Clay (CL), as above PH 0'-2'.		0	0-0=0
5	4-6	- - -	HA	Hand Auger	Clay (CL), as above PH 0'-2'.		0	0-0=0
	6-8	- - -	HA	Hand Auger	Clay (CL), yellowish red 5YR4/6, stiff, no sand, dry.		0	0-0=0
	8-10	20	S-1	10-13-14-11 (27)	Clay (CL), as above PH 6'-8'.		0	0-0=0
10	10-12	18	S-2	5-8-8-4 (16)	Silty Sand (SM), brown 7.5YR5/3, fine to coarse qtz, very loose, dry.		0	0-0=0
	12-14	20	S-3	4-4-6-7 (10)	Silty Sand (SM), yellowish red 5YR4/6, fine qtz, loose, dry.		0	0-0=0
15	14-16	20	S-4	9-7-9-9 (16)	Silty Sand (SM), as above S-3.		0	0-0=0
	16-18	12	S-5	9-9-9-9 (18)	Silty Sand (SM), as above S-3.		0	0-0=0
	18-20	18	S-6	11-10-12-11 (22)	Sandy Clay (CL), yellowish red 5YR4/6, stiff to hard, friable zones, dry.		0	0-0=0
20				Drill	Minimal to no drill cuttings			
	23-25	18	S-7	9-8-12-16 (20)	Clay (CL), brown 7.5YR4/4, very hard to friable, nonplastic, dry.		0	0-0=0
25				Drill	No drill cuttings			

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
146801.US.SC	2016-SB5/MW3	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

ELEVATION : 120.833 feet above msl DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS : approx. 42.5 feet bls START : 0740 (8/7/98) END : 1100 (8/18/98) LOGGER : Michael Weatherby

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: HEALTH AND SAFETY MONITORING, SOIL TESTS, AND COMMENTS. OVA (ppm):	Breathing Zone	Headspace (total-filter=actual)
				Drill	No drill cuttings			
	28-30	18	S-10	23-27-30-47 (57)	Clay (CL, as above S-7.	hard drilling	0	0-0=0
30								
	33-35	12	S-9	31-33-50 (R)	Clay (CL), brownish yellow 10YR6/8, slightly plastic to nonplastic, friable, stiff, dry.	hard drilling	0	0-0=0
35								
	38-40	18	S-10	24-49-50 (R)	Clay (CL), as above S-9.	hard drilling	0	0-0=0
40								
45								
	45-47	5	S-11	50 (R)	Clay (CL) to Saprolite, brown 7.5YR5/4, with white spots 7.5YR8/1, semi-hard, friable, dry.		0	0-0=0
50								
					Total Depth= 50 feet bls	Well set to 50 feet bls		

Appendix B
AOC E – 2000 (PA/SI) Soil Boring Logs
Surface/Subsurface

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
139322.FI.60	AOC-E-MW-4	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : VIEQUES, PA/SI, NASD LOCATION : NASD-AOC-E

ELEVATION : DRILLING CONTRACTOR : GEOWORK INC.

DRILLING METHOD AND EQUIPMENT USED : AIR ROTARY HAMMER

WATER LEVELS : START : 4/13/00 END : 4/17/00 LOGGER : K. KARVAZY

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone	Above Hole
	0-1				0-6" ROAD BASE-ROCK 6" SANDY SILT, LIGHT BROWN, SLIGHTLY MOIST	0-4' POST HOLE	
5	5-6				SANDY CLAY (CL), MODERATE BROWN	0.0	0.0
10	10-11				SANDY SILT (ML), MODERATE BROWN	0.0	0.0
15	15-16				SILTY SANDY (SM), MODERATE BROWN	0.0	0.0
20	20-21				WELL GRADED SILTY SAND (SM), MODERATE BROWN	0.0	0.0
25	25-26				SAME AS ABOVE	0.0	0.0

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
139322.FI.60	AOC-E-MW-4	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : VIEQUES, PA/SI, NASD LOCATION : NASD-AOC-E

ELEVATION : DRILLING CONTRACTOR : GEOWORK INC.

DRILLING METHOD AND EQUIPMENT USED : AIR ROTARY HAMMER

WATER LEVELS : START : 4/13/00 END : 4/17/00 LOGGER : K. KARVAZY

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
	30-31				SAME AS ABOVE	0.0 / 0.0
	32-33				SANDY SILT (ML), LIGHT BROWN, SLIGHTLY MOIST, SOME ROCK - ROUNDED.	
35	35-36				SAME AS ABOVE, LESS ROCK	0.0 / 0.0
	38-39				GREYISH ORANGE SANDY SILT (ML) WITH SOME DAY FINES	
40	40-41				SILTY FINE SAND (ML) VERY PALE ORANGE	VERY DISTINCT COLOR CHANGE NO ODORS DETECTED
45	45-46				FINED SILTY SAND W/GRAVEL VERY PALE ORANGE	0.0 / 0.0
50	50-51				SAME AS ABOVE	STOPPED DRILLING
55						

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
139322.FI.60	AOC-E-MW-5	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : VIEQUES, PA/SI, NASD — LOCATION : DOWN GRADIENT

ELEVATION : — DRILLING CONTRACTOR : GEOWORK INC.

DRILLING METHOD AND EQUIPMENT USED : AIR ROTARY

WATER LEVELS : — START : 4/14/00 — END : 4/17/00 — LOGGER : G. SILVA

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
	0-1				SANDY SILT, LIGHT BROWN, SLIGHTLY MOIST	
5	5-6				SILTY CLAY WITH SAND (CL) GRAYISH BROWN, SLIGHTLY MOIST MED. DENSE	PID=4.3 PPM CUTTING PETRO ODOR PRESENT
10	10-11				SAME AS ABOVE	8.1 PPM 0.0
	12-13				SANDY CLAY (CL) OLIVE GRAY VERY MOIST	VERY DISCOLORED, STRONG PETRO ODOR, PID=17.3
15					SAME AS ABOVE	
					SILTY MED. SAND (ML) OLIVE GRAY, LOOSE MATERIAL	STRONG ODOR @ 18' BGS PID=34.2 PPM
20					SAME AS ABOVE	0.0 0.0
25					WELL GRADED SILTY SAND (SM) MODERATE BROWN.	0.0 0.0

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
139322.FI.60	AOC-E-MW-5	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : VIEQUES, PA/SI, NASD LOCATION : DOWN GRADIENT

ELEVATION : DRILLING CONTRACTOR : GEOWORK INC.

DRILLING METHOD AND EQUIPMENT USED : AIR ROTARY HAMMER

WATER LEVELS : START : 4/14/00 END : 4/17/00 LOGGER : G. SILVA

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone	Above Hole
	30-31				SAME AS ABOVE	0.0	0.0
					SANDY SILT (ML), LIGHT BROWN, SLIGHTLY MOIST, SOME ROCK - SOME ROUNDED ROCK		
35	35-36				SAME AS ABOVE, LESS ROCK	0.0	0.0
40	40-41				SILTY FINE SANDS (ML) VERY PALE ORANGE	0.0	0.0
45	45-46				FINED SILTY SAND W/GRAVEL VERY PALE ORANGE	0.0	0.0
50	50-51				SAME AS ABOVE	0.0	0.0
55							

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
139322.FI.60	AOC-E-MW-6	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : VIEQUES, PA/SI, NASD LOCATION : NASD AOC-E

ELEVATION : DRILLING CONTRACTOR : GEOWORK INC.

DRILLING METHOD AND EQUIPMENT USED : AIR ROTARY HAMMER

WATER LEVELS : 42 FT START : 4-17-00 END : 4-26-00 LOGGER : B. COLLOM

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm):	Breathing Zone	Above Hole
	0-	N/A		N/A	SILT W/SAND & GRAVEL MED. GREY BROWN, SAND FINE TO MED. GRAVEL 1/4" TO 1/2", ANGULAR DRY.	PID PPM=0	0	0
						0-4' DWG W/POST HOLE DIGGER		
5	5-6				SANDY SILT, (SM) LIGHT BROWN SLIGTLY MOIST	0	0	0
10	10-11				SILTY SAND, MEDIUM WELL GRADED (SM) SLIGHTLY MOIST	0	0	
15	15-16				SAME AS ABOVE	0	0	
20	20-21				SILT (ML) YELLOWS ORANGE DRY, WITH FINE GRAVEL	0	0	
25					SANDY SILT, WITH MEDIUM SAND (SM) SLIGHTLY MOIST	0.1	0	0

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
139322.FI.60	AOC-E-MW-6	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : VIEQUES, PA/SI, NASD LOCATION : AOC-E-MW6

ELEVATION : DRILLING CONTRACTOR : GEOWORK INC.

DRILLING METHOD AND EQUIPMENT USED : AIR ROTARY HAMMER

WATER LEVELS : 42 FT START : 4/17/00 END : 4/26/00 LOGGER : G. SILVA

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
	30-31				SILT W/ SOME MED SAND (SM) SLIGHTLY MOIST, LIGHT BROWN	0.0 0.0
35	35-36				LEAM CLAY, (CL) YELLOWIGH ORANGE, SLIGHTLY MOIST	0.0 0.0
	37-38				SANDY CLAY (CL) YELLOWISH ORANGE, SLIGHTLY MOIST	0.0 0.0
40	40-41				SILTY SAND WITH SOME FINE GRAVEL (SM) MOIST	0.0 0.0 @ 40' SOIL IS MORE MOIST NEW WATER TABLE INTERFACE
45	45-46				SILTY SAND WITH CLAY, MED SAND. (SM) VERY MOIST	0.0 0.0
50						
55						

Appendix B
AOC E – 2002 (RI) Soil Boring Logs
Subsurface

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180423	AOC E SB06/MW-07	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS Approx. 47 fbg START : May 21, 2002 END : May 21,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
5							
10							
	12-14	18	S-1	13-25-28-20	Top 14": Stiff to very Stiff moist clay (CL), strong brown, 7.5YR, 5/6, Very little silt, cohesive, slightly mois Bottom 4": Transitioning to fine to coarse grain sand, Yellowish brown 10YR, 5/8	0	0
15	14-16	25	S-2	10-13-19-19	Silty Clay (ML), Strong brown 7.5 YR 5/6, Stiff to very stiff, slighly moist and cohesive	4.4	0
	16-18	18	S-3	13-18-19-23	Medium Stiff to Stiff silty clay (CL), strong brown 7.5 YR, 5/6, Slightly moist and cohesive, no odor mostly clay <90%	0	0
20	18-20	24	S-4	10-10-15-12	Top 2": Med Stiff to Stiff clay (CL), Strong brown 7.5YR, 5/6, slightly moist and cohesive Bottom 22": Transitioning to fine to coarse grain, strong brown 7.5YR, 4/6, non cohesive sand	0	0
	20-22	21	S-5	25-32-32-38	Top 6": Transitioning back to a very stiff to hard clay (CL), <10% fine to coarse mix of weathered diorite Bottom 15": Very stiff clay 9CL), Strong brown 7.5 YR 4/6, Slightly moist and cohesive	0	0
	22-24	22	S-6	28-38-45-50/3	Top 16": Very Stiff Clay (CL), Strong brown 7.5YR, 4/6, Slightly moist and cohesive Bottom 6": Clay (SC), Yellowish brown 10YR, 5/8 Transitioning to fine to coarse mix of sand same angula	0	0
25	24-26	--	--	--	Mix of silty clay and rock fragments up to 2" in diameter, Strong brown 7.5YR, 4/6, no odor	0 0	0
	26-28	--	--	--	Same as above	0 0	0
	28-30	--	--	--	Same as above	0 0	0

CH2MHILL

PROJECT NUMBER	BORING NUMBER
180423	AOC E SB06/MW-07 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS Approx. 47 fbg START : May 21, 2002 END : May 21,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
30	30-32	--	--	--	Same as 24-26	0	0
	32-34	--	--	--	Same as 24-26	0	0
35	34-36	--	--	--	Same as 24-26	0	0
	36-38	--	--	--	Turning, Light Olive brown, 2.5YR, 5/4 no-odor	0	0
	38-40	--	--	--	Same as 36-38	0	0
40	40-42	--	--	--	Same as 38-40. Approx. 75% Rocks up to 2" in diameter, no odor, 25% fines , not cohesive	0	0
	42-44	--	--	--	Same as 40-42	0	0
45	44-46	--	--	--	Same as 42-44, more fines, approx. 50% water @ approx. 47 ft. bls. Cutings coming up rocks and moist mud	0	0
50							

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180423	AOC E - SB07	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill, 2" and 3" diameter ss spoons 24" long

WATER LEVELS Approx. 42 fbgs START : May 17, 2002 END : May 20,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
5	4-6	17	S-1	12-21-26-34	Medium Clay (CL), brown, 7.5 YR, 4/4 <5% Medium Grained Sand, Slightly Moist	4.2	4.2
	6-8	21	S-2	10-12-14-25	Very Stiff Clay (CL), brown 7.5YR 4/4, <5% fine to medium grained sand, slightly moist	4.2	4.2
	8-10	15	S-3	8-16-29-32	Stiff to hard Clay (CL), brown 10YR, 4/3, Slightly Moist, Cohesive	4.2	4.2
10	10-12	21	S-4	9-10-16-19	Bottom: 3,5", Sof Clay (CL), Strong brown, 7.5YR 5/8, <15% Fine to medium sand, Slightly moist Middle 8.5": Soft to stiff clay, strong brown 7.5 YR 5/8 Top 5": Soft Clay, Strong brown, 7.5YR 5/8, <5% F-M Sand	4.2	4.2
	12-14	15	S-5	10-10-8-8	Soft Clay (CL) , strong brown 7.5 YR, 5/8 Moist, no odor	4.2	4.2
15	14-16		S-6	6-10-14-14	Clay (SC), strong brown 7.5YR, 5/6, Slightly moist Fine to large grain sand, non-cohesive	4.2	4.2
	16-18	18	S-7	13-20-22-24	Bottom 7": Clay (CL), fine to coarse grain sand non-cohesive, slightly moist. Top 11": clayey sand (SC): Strong brown 7.5YR, 4/6, increasing clay content more cohesive, slightly mois, fine grained	1.8	1.8
	18-20	15	S-8	18-35-50/5	Silty Clay (CL), strong brown, 7.5 YR, 4/6, Slightly cohesive, no odor	1.8	1.8
20	20-22	--	S-9	30-44-50/5	Very stiff to hard silty clay (CL), Slightly cohesive <5% fine to medium grained sand. Slightly moist	1.8	1.8
	22-24	15	S-10	21-25-24-31	Very stiff to hard silty clay (CL), yellowish brown, 10YR, 5/6, slightly moist and slightly cohesive	1.8	1.8
25	24-26	22	S-11	21-24-31-41	Sandy Clay (CL), Yellowish brown, 10YR, 5/8, Fine to medium grained, slightly moist and cohesi	2	2
	26-28	17	S-12	30-45-50/3	Sandy Clay (CL), Yellowish brown 10YR, 5/8 Fine to medium grain, slightly moist and cohesive	0	0

CH2MHILL

PROJECT NUMBER	BORING NUMBER
180423	AOC E SB08/MW-08 SHEET 1 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS Approx. 42 fbg START : May 22, 2002 END : May 23,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
5							
10							
	12-14	22	S-1	6-9-9-10	Moist Clay (CL), strong brown, 7.5 YR, 4/6 Medium Stiff, cohesive	0	0
15	14-16	24	S-2	6-7-8-10	Top 6": Clay (CL), Strong brown 7.5YR, 4/6 Transitioning to a sandy clay, moist, fine grain medium stiff, cohesive	0	0
	16-18	18	S-3	6-8-9-10	Top: 14" Clay (CL), Strong brown 7.5YR, 4/6. Fine to Coarse mix of clay and sand.	0	0
	18-20	24	S-4	10-19-14-10	Top 6": Fine to coarse mix of clay and slightly (CL) Cohesive sand, moist Bottom 18": strong brown 7.5YR, 4/6, Weathered granodiorite fine to coarse mix with some fragments	0	0
20	20-22	24	S-5	16-13-15-12	Clay (CL), strong brown 7.5 YR, 4/6, Fine to coarse sand, clay, slightly cohesive and moist.	0	0
	22-24	21	S-6	12-19-25-29	Top 6": Clayey sand (SC), strong brown 7.5YR, 4/6 transitioning to a fine/medium moist clayey sand Bottom 15": Clay (CL), very stiff to hard clay, some subrounded fine to coarse sand (<10%)	0	0
25	24-26	22	S-7	12-19-25-33	Top 6": Clayey Sand (SC), strong brown 7.5YR 4/6, moist transitioning to fine to coarse grain clay sand (SC), slightly cohesive and moist.	0	0
	26-28	17	S-8	15-41-50/4	Sandy Clay (CL), Dark yellowish brown, 10YR, 4/4 Moist, <20% sand, fine to medium grain, cohesive	2	2
	28-30	12	S-9	25-45-50/5	Mottled weathered granodiorite, dark yellowish brown 10YR, 4/4, Slightly cohesive fine to medium, angular grains	2	2

PROJECT NUMBER	BORING NUMBER
180423	AOC E SB08/MW-08 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS Approx. 42 fbg START : May 22, 2002 END : May 23,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
30	30-32	12	S-10	25-41-50/5	Granodiorite (Weathered) and Clay (CL), Fine grained moist, slightly cohesive, getting close to refusal augers advance approx. 9" in 5".	2	2
	32-34	14	S-11	23-36-50/3	Same as above	0	0
35	34-36	--	--	--	Same as above	2	2
	36-38	--	--	--	Cutting (Aim Hammer)	2	2
	38-45	--	--	--	No material recovery from the boring. No hammering action from 38-45		
40							
45	45-46					2	2
	46-48				No rocks, small to coarse grain	2	2
50							

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180423	AOC E SB09	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS Approx. 42 fbg START : May 24, 2002 END : May 28,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
5							
10	12-14	24	--	9-3-3-5	Clay (CL), greenish blck 10YR, 2.5/1, Strong petro odor, saturated fine grained sandy.	1159	2.5
	12-14	22	S-1	4-3-2-2	Clay (CL), Greenish black 10Y, 2,5/1, Strong odor, stained soils, seems saturated very soft clay	305	4.4
15	14-16	19	S-2	1-1-1-1	Same as above	278	4.4
	16-18	20	S-3	3-8-10-12	Top 10": Same as S-2 Bottom 10": (SC) Transitioning to fine to coarse grain slightly cohesive sand clay, Dark greenish 4/1, seems saturated , petro odor	238	4.4
	18-20	24	S-4	3-8-12-15	(SC), Fine to coarse grain, slightly cohesive sand Clay, Dark greenish gray, 4/1, seems saturated, strong petro odor	233	4.4
20	20-22	19	S-5	11-17-12-10	Same as S-4, larger fragments	178	4.4
	22-24	24	S-6	13-18-13-13	Same as above, except fine to medium grain size transitioning to a fine to medium sandy clay (CL). Strong petro odor, medium stiff to stiff clay, saturated	215	4.4
25	24-26	24	S-7	13-14-15-18	Top 2":Clay (CL) ,weathered, strong petro odor. Bottom 4": Fine to medium grained sand, very dark grayish brown 10YR, 3/2, Saturated non cohesive	151	4.4
	26-28	17	S-8	15-30-50/5	Botton 10": (SC) Transitioning to a semicohesive fine to medium grained clayey sand, with 25% fragment, weathered granodiorite, some fragments up to 2" in Diam.	166.7	4.4
	28-30	--	S-9	20-40-50/4	Clay (CL), dark yellowish brown 10PR, 4/4, fine sandy clay, moderate petro odor, moist and cohesive	256.7	4.4

CH2MHILL

PROJECT NUMBER	BORING NUMBER
180423	AOC E SB09 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS Approx. 42 fbg START : May 24, 2002 END : May 28,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
30	30-32	--	--	--	Fine to medium grained, clayey sand (SC)	71.9	4.4
	34-36	--	--	--	Dark Grayish brown 2.5Y, 4/2, Slightly cohesive, moderated odor	272	2.5
35	36-38	--	--	--	Same as above	283	2.5
	38-40	--	--	--	Same above	194.7	2.5
40	40-42	--	--	--	Same as 38-40, moderate petroleum odor	241.5	2.5
	42-44	--	--	--	Dark grayish brown 2.5Y, 4/2, Fine to coarse grain cuttings. Larger, angular fragments of rock up to 1/2 " diameter, saprolite	293	2.5
45	44-46	--	--	--	Same 42-44, Dark grayish brown 2.5Y, 4/2 except rock fragments up to 1" in diameter slight petro odor, saprolite	272	2.5
	46-48	--	--	--	Petro odor, rock framents, <1/2" in diameter, fine to coarse grain, saprolite	101.3	2.5
50							

PROJECT NUMBER	BORING NUMBER	
180423	AOC E - SB10	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS Approx. 47 fbg START : May 19, 2002 END : May 21,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
5	4-6	12.5	S-1	4-4-7-10	Clay (CL), brown 7.5 YR 4/4, slight moist <5% medium grained sand	0	0
	6-8	11.5	S-2	11-14-16-17	Clay (CL), reddish brown 2.5 YR 4/4, slight moist <5% medium grained sand	0	0
	8-10	20	S-3	5-10-16-20	Clay (CL), brown 10YR 4/3, slight moist Hard to very stiff clay (all 20 inches)	0	0
10	10-12	24	S-4	7-12-15-18	Bottom 4": Soft Clay (CL), strong brown 7.5YR 5/8 Slightly moist, <10% fine to medium sand, cohesive Top 20": Hard to very stiff Clay (CL), brown 10YR 4/3, slightly moist	0	0
	12-14	13	S-5	3-8-8-5	Soft Clay (CL), strong brown, 7,5 YR, 4/6, slightly moist, Cohesive	0	0
15	14-16	20	S-6	6-5-5-5	Soft Fine Sandy Clay (CL), strong brown, 7.5 YR 4/6, sligthly moist, Cohesive.	0	0
	16-18	17	S-7	5-3-6-9	Very fine to coarse sand (SC) , strong brown 7.5 YR, 5/6, approximately 10% Clay, slightly cohesive	0	0
	18-20	16.5	S-8	9-4-9-8	Top 8": Soft Clay (CL) soft, brown 7,5 YR, 4/4, moist lens 3 inches thick. Bottom 6": (SC) very fine to coarse sand, strong		
20					brown 7.5 YR, 5/6, slight moist, slightly cohesive.		
	20-22	18	S-9	10-10-11-12	Top 6": Very fine to coarse sand (SP), brown, 7.5 YR, 5/6, slightly moist, slightly cohesive Bottom 12": Medium Stiff to stiff clay (CL), brown 7.5 YR, 4/4	0	0
	22-24	18	S-10	8-8-10-12	Top 5": Stiff Clay (CL), brown, 7,5 YR, 4/4 4" of sand, brown 7.5YR 5/6, very fine to coarse 4" Stiff Clay, brown 7.5 YR 4/4, slightly moist Bott 5":very fine to coarse,strong brown 7.5YR 5/6	0	0
25	24-26	18	S-11	13-15-13-18	Granodiorite (GM): Coarse Sand (75%), Same Fine (25%), yellowish brown, 10 YR, 5/8. Sligh moist, No cohesion	4.2	4.2
	26-28	19	S-12	22-18-26-51/5	(GM) Transition from weathered granodiorite, Yellowish brown, 10 YR, 5/8, Slightly moist, no Cohesion, 15" Fine to Coarse sand, transitioning to coarse gravel (3/4"), Approx. (40%)	4.5	4.2
	28-30	11	S-13	29-50/5	Hard Clay Rock (CL), strong brown 7,5 YR, 5/6, <15% Fine to medium sand, mostly clay with weathered	4.2	4.2

CH2MHILL

PROJECT NUMBER	BORING NUMBER
180423	AOC E - SB10 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS Approx. 47 fbg START : May 19, 2002 END : May 21,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample / Background
30	30-32	--	--	--	Sand (SP), yellowish brown, 10YR, 5/4, moist, no hydrocarbon odor	0 / 0
	32-34	--	--	--	Clay (CL)(50%), fine to coarse angular to subangular rock fragments, slightly moist, some cuttings up to 1" diameter, cohesive	0 / 0
35	34-36	--	--	--	50% Clay (CL), 50% rock fragments up to 1" diameter, slightly moist, no odor.	0 / 0
	36-38	--	--	--	50% rock fragments / 50% Clay (CL) no-odor	0 / 0
	38-40	--	--	--	Same as 36-38, except 75% rock / 25% Clay	0 / 0
40	40-42	--	--	--	75% angular rock fragments up to 1" in diameter	0 / 0
	42-44	--	--	--	25% rock fragments up to 3/4" in diameter 75% fines moist and cohesive	0 / 0
45	44-46	--	--	--	75% fine moist and cohesive 25% rock fragments up to 1/2" in diameter	0 / 0
	46-48	--	--	--	Water @ approx. 47 ft-bls. Angular rock (wet) (90%) of sample up to 1 1/2" diameter	0 / 0
50						

PROJECT NUMBER	BORING NUMBER	
180423	AOC E SB11	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS : START : May 29, 2002 END : May 30,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
5							
10							
	12-14	23	S-1	5-7-8-9	Top 6": Clay (CL), medium stiff, yellowish red moist 5YR, 4/6, cohesive Middle 10": Clay (<10%), strong brown 7.5YR,5/8 Botton 7": Clay (CL), Yellowish red, 5YR,4/6	2.2	2.2
15	14-16	20	S-2	5-4-4-6	Clay (CL), medium stiff, Yellowish red, 5YR, 4/6 moist and cohesive, no odor	2.2	2.2
	16-18	22	S-3	8-9-12-13	Top 5": Same as above, Loose to medium dense sand very little Clay (SC), strong brown 7.5YR, 5/8 moist, no odor, fine to coarse grain mix very little clay, non-cohesive	2.2	2.2
	18-20	19	S-4	6-7-10-12	Medium dense sand, some Clay (SC) (<10%), strong brown 7.5YR, 5/8, same as S-3, except some (10%) fine to coarse gravel. slightly moist, lose to medium dense sand	2.2	2.2
20	20-22	20	S-5	9-10-11-12	Fine to coarse sand (SC), brown, 7.5YR, 5/8 slightly moist, non cohesive, some clay (<10%)	2.2	2.2
	22-24	19	S-6	20-20-18-20	Top 9": same as S-5, transitioning to 7" of very stiff fine grained sandy clay (CL), brown 7.5YR 5/6, moist, cohesive, no odor	2.2	2.2
25	24-26	21	S-7	18-18-16-21	Sandy Clay (CL), strong brown 7.5YR,5/6, moist cohesive, no odor, transitioning to fine to medium grained medium dense sand, some large fragments of angular rock up to 1.5"	2.2	2.2
	26-28	20	S-8	20-45-41-50/4	Bottom 10": Transitioning to dense sand fine to coarse grain (SC) very little clay. Last 1": hard sandy clay (CL), strong brown 7.5YR, 5/8, no odor	2.2	2.2
	28-30	10	S-9	30-50/4	Hard Sand Clay (CL), strong brown 7.5YR, no odor	2.2	2.2

CH2MHILL

PROJECT NUMBER	BORING NUMBER
180423	AOC E SB11 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS : START : May 29, 2002 END : May 30,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
30	30-32	--	--	--	Mix of clay and rock fragments up to 1.5" in diameter	0	0
	32-34	--	--	--	80% clay (CL) / 20% fragmented rocks up to 3/4" in diameter, cohesive, slightly moist	0	0
35	34-36	--	--	--	More rock fragments 75%; clay 25%, slightly cohesive	0	0
	36-38	--	--	--	80% fines / 20% clumps of clay some rock fragments up to 1/4" in diameter	0	0
	38-40	--	--	--	90% Fines slightly cohesive, 10% clay clumps and rock fragments up to 1/4" diameter	0	0
40	40-42	--	--	--	Same as 38-40	0	0
	42-44	--	--	--	Sllightly cohesive, 10% small rock fragments <1/4" in diameter	0	0
45	44-46	--	--	--		0	0
	46-48	--	--	--	90% Fines slightly moist and cohesive no petro odor	0	0
	48-50	--	--	--	95% Fines and 5% fragments up to 1/4" in diameter, slightly moist and cohesive	0	0
50							

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180423	AOC E SB12	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS : START : May 29, 2002 END : May 29,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
5							
10	12-14	19	S-1	5-5-6-7	Fine graned sandy clay (CL), strong brown 7.5YR 5/6, no odor, cohesive, medium stiff to stiff, slightly moist	2.2	2.2
	14-16	22	S-2	5-5-6-8	Same as S-1	2.2	2.2
15	16-18	20	S-3	4-4-6-8	Transitioning to a medium stiff fine to coarse grained slightly cohesive sandy clay (CL). Strong brown 7.5 YR, 5/6, no petro odor	2.2	2.2
	18-20	21	S-4	6-10-11-13	Transitioning to fine to coarse grain sand (SC) very little clay , non cohesive, slightly moist, no petro odor	2.2	2.2
	20-22	19	S-5	15-15-16-16	Top 11": (SC), redish brown 5YR, 4/4, non cohesive Bottom 5": Sady clay (CL), strong brown 7.5YI 5/8, no petro-odor, slightly cohesive	2.2	2.2
20	22-24	22	S-6	13-15-18-24	(SP) sand, yellowish brown 10YR, 5/8, very little clay content, transitioning to fine to coarse slightly moist, non cohesive sand	2.2	2.2
	24-26	21	S-7	20-23-24-34	(SP) Sand, Yellowish brown 10YR, 5/8, fine to coarse, slightly moist, non cohesive sand, very little clay content, no petro odor	2.2	2.2
25	26-28	16	S-8	28-38-50/5	(SC), yellowish red 5YR, 5/8, fine to coarse mix of sand, some clay, moist, sight petroleum odor, slightly cohesive.	11.3	2.2
	28-30	12	S-9	28-50/6	(CL), yellowish brown, 10YR, 5/4, hard fine grained sandy clay, slight petro odor, moist, very cohesive	106.8	2.2

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180423	AOC E SB12	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : AOC E Remedial investigation LOCATION : AOC E Former NASD, Vieques

ELEVATION : TBD DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : H.S.A. and Air Hammer

WATER LEVELS : START : May 29, 2002 END : May 29,2002 LOGGER : H. Hernandez/NWF

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Sample	Background
30	30-32	--	--	--	As above Clay (CL)	61.3	2.2
	32-34	--	--	--	Less than 1/4 inch diameter cuttings clay (CL) and rock	79.5	2.2
35	34-36	--	--	--	As above, clay (CL) and rock	47.6	2.2
					As above, clay (CL) and rock		
	38-40	--	--	--	Very fine to 1/2" cutting, some cohesive Clay (CL) and rock	124.9	2.2
40	40-42	--	--	--	As above	152	2.2
	42-44	--	--	--	Small angular fragments of rock <1/4" diameter	202	2.2
45	44-46	--	--	--	Cuttings fragments subrounded to angular <1/2" in diameter	134	2.2
50							

Appendix B
AOC E – 2005 (Supplemental RI) Soil Boring Logs Surface/Subsurface

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB13	SHEET 1 OF 5

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 11/30/2005

WEATHER: Mostly sunny DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 11/30/2005 1200 END : 12/14/05 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
2	0 - 2'	NA	S1	NA	0-10" SANDY LEAN CLAY (CL); dark reddish brown (5 YR 3/4), moist, medium density, fine to coarse sand, bottom 6" grades quickly to SANDY LEAN CLAY (CL), dark reddish brown (5 YR 3/3), moist, stiff, fine to medium sand.	Sample headspace: 0 0 - 2' hand auger used to collect surface soil sample. **Collect WAE-SS13-0002 at 1215 on 11/30/05.**
4	2 - 4'	18"	-	7-6-10-11	Top 2" same as above then bottom 16" change abruptly to WELL GRADED SAND WITH SILT (SW-SM), brown (7.5 YR 4/4), moist, medium dense, fine to coarse sand.	Sample Head space: 0 Breathing zone: 0
6	4 - 6'	16"	S2	7-5-12-14	Top 4" same as above then bottom 12" grade quickly to SANDY LEAN CLAY (CL), dark yellowish brown (10YR 4/4), moist, very stiff, fine to coarse, sand, some black mottles.	Sample Head space: 32 Breathing zone: 0 **Collect WAE-SB13-0406R at 1115 hrs on 12/12/05.** **Duplicate: WAE-SB13P-0406R at 1120 hrs** Stop for today at 1425 hrs. on 12/12.
8	6- 8'	16"	-	8-12-11-12	Top 10" SANDY LEAN CLAY (CL), very dark grayish brown (2.5Y 3/2), slightly moist, very stiff, fine to medium sand, bottom 6" grade slightly sandier, still (CL), dark olive gray (5Y 3/2), dry, trace gravel 1/2" to 1", angular.	Sample Head space: 421 Breathing zone: 0
10	8 - 10'	14"	-	7-10-16-17	LEAN CLAY WITH SAND (CL); olive gray (5Y 4/2), slightly moist, very stiff, fine to medium sand.	Sample Head space: 76 Breathing zone: 0
12	10 - 12'	16"	-	4-5-5-7	SANDY LEAN CLAY (CL), dark gray (5 Y 4/1), moist, stiff, no mottling, fine to medium sand, sandier with depth.	Sample Head space: 679 Breathing zone: 0

Sampler Signature: B. Collom Date: 12/14/2005

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB13	SHEET 2 OF 5

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/14/2005

WEATHER: Mostly sunny DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 11/30/2005 1200 END : 12/14/05 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
12	12 - 14'	22"	-	3-4-3-4	Top 10" are LEAN CLAY WITH SAND (CL), dark gray (5Y 4/1), moist, fine sand, bottom 12" grade quickly to POORLY GRADED SAND WITH CLAY (SP-SC), dark gray (5 Y 4/1), wet, loose, sand fine to medium.	Sample Head space: 711 Breathing zone: 0
15	14 - 16'	18"	-	2-1-3-2	SILTY SAND (SM), olive gray (5Y 4/2), wet, very loose, poorly graded fine to medium, with few coarse grains, grades slightly siltier with depth.	Sample Head space: 492 Breathing zone: 0
18	16- 18'	14"	-	4-6-6-5	Similar to above, grades sandier again with depth to WELL GRADED SAND (SW), with trace silt olive (5 Y 4/3), moist, medium dense, fine to coarse sand.	Sample Head space: 208 Breathing zone: 0
	18 - 20'	18"	-	6-8-8-9	POORLY GRADED SAND (SP), with trace silt, olive (5Y 4/4), moist, medium dense, fine to medium sand, with few coarse grains.	Sample Head space: 88 Breathing zone: 0
21	20 - 22'	19"	-	8-7-10-9	Top 4" same as above, then grades quickly to WELL GRADED SAND (SW), trace fines, olive gray (5 Y 4/2), moist, medium dense, fine to coarse sand.	Sample Head space: 78 Breathing zone: 0
24	22 - 24'	19"	-	10-10-12-12	WELL GRADED SAND (SW), trace fines, olive gray (5Y 4/2), moist, medium dense, fine to coarse sand, some coarse grains are off-white in color.	Sample Head space: 208 Breathing zone: 0

Sampler Signature: B. Collom Date: 12/14/2005

CH2MHILL	PROJECT NUMBER 180357.FI.FK.AE	BORING NUMBER WAE-SS/SB13	SHEET 3 OF 5

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/14/2005

WEATHER: Mostly sunny DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 11/30/2005 1200 END : 12/14/05 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
24	24 - 26'	16"	-	10-12-12-12	Top 11" are WELL GRADED SAND (SW), trace fines, olive gray (5Y 4/2), slightly moist, medium dense, fine to coarse sand, bottom 5" change abruptly to SANDY LEAN CLAY (CL), olive gray (5 Y 4/2), slightly moist, stiff, fine to medium sand, trace gravel (1 piece), 1/2",subangular.	Sample Head space: 400 bottom 3" Breathing zone: 0 Hydrocarbon odor.
27	26-28'	15"	-	5-12-17-22	Top 10" are POORLY GRADED SAND WITH SILT (SP-SM), olive (5Y 4/4), slightly moist, grading siltier with depth, medium dense, fine to medium sand, bottom 5" changed abruptly to SANDY LEAN CLAY (CL), (5Y 4/3), olive, very slightly moist, very stiff, fine to medium sand.	Sample Head space: 376 Breathing zone: 0 Hydrocarbon odor.
30	28-30'	6"	-	7-12-14-17	SANDY LEAN CLAY (CL), olive (5Y 4/4), very slightly moist, very stiff, fine to coarse sand, some coarse grains are off-white in color, some gray mottles.	Sample Head space: 395 Breathing zone: 0 Hydrocarbon odor.
	30-32'	20"	-	12-17-24-30	Similar to above, trace gravel 1/4" top 3/4", subangular.	Sample Head space: 507 Breathing zone: 0 Hydrocarbon odor.
33	32-34'	24"	S3	14-17-24-27	SANDY LEAN CLAY (CL), olive gray (5Y 4/2), very slightly moist, hard, fine to coarse sand, some coarse grains are off-white in color, some gray mottling, bottom 2" are SANDY LEAN CLAY (CL), gray (5Y 6/1), very slightly moist, very sitff, fine to medium sand.	Sample Head space: 1024 Breathing zone: 0 **Collect WAE-SB13-3234 at 1035 hrs. on 12/14/05**
36	34-36'	22"	S4	14-24-26-32	SANDY LEAN CLAY (CL), white (5Y 8/1), dry, hard, stiff, few orange-red mottling, fine to medium sand.	Sample Head space: 934 Breathing zone: 0 **Collect WAE-SB13-3436 at 1050 hrs. on 12/14/05**

Sampler Signature: B. Collom Date: 12/14/2005

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB13	SHEET 4 OF 5

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/14/2005

WEATHER: Mostly sunny DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 11/30/2005 1200 END : 12/14/05 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
36	36-38'	22"	-	26-38-42-31	Top 6" as above, next 11" are LEAN CLAY WITH SAND (CL), olive (5 Y 4/2), dry, hard, fine sand, some black mottles, bottom 4" are LEAN CLAY WITH SAND (CL), light yellowish brown (2.5Y 6/4), very slightly moist, fine to medium sand, few orange mottles.	Sample Head space: 174 Breathing zone: 0 Drilling rig is down, stop drilling for today at 1120 hrs.
39	38-40'	16"	-	20-27-50/3	LEAN CLAY WITH SAND (CL), reddish yellow (7.5YR 6/8), dry, hard, fine to medium sand, some gray and black mottles.	Sample Head space: 50 Breathing zone: 0
42	40-42'	17"	-	35-50-50/4	LEAN CLAY WITH SAND (CL), yellowish brown (10YR 5/8), dry, hard, fine to medium sand.	Sample Head space: 2 Breathing zone: 0
	42-44'	15"	-	50/4	LEAN CLAY (CL), yellowish brown (10 YR 5/6), dry, hard, trace fine sand, some orange mottles.	Sample Head space: 104 Breathing zone: 0
45	44 - 46'	6"	-	50/4	Similar to above, slightly moist at very tip of drive shoe.	Sample Head space: 30 Breathing zone: 0
48	46 - 48'	5"	-	50/3	Top 2" WELL GRADED GRAVEL WITH SANI (GW), dark yellowish brown (10YR 4/6), moist, hard, fine to coarse sand, gravel is very weathered, flat and angular, bottom 3" are LEAN CLAY WITH SAND (CL), dark yellowish brown (10YR 4/6), dry, hard, fine sand.	Sample Head space: 19 Breathing zone: 0

Sampler Signature: B. Collom Date: 12/14/2005

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB13	SHEET 5 OF 5

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/14/2005

WEATHER: Sunny, 85 F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 11/30/2005 1200 END : 12/14/05 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
48	48 - 50'	15"	-	32-28-33-50/2	SILTY GRAVEL WITH SAND (GM), dark yellowish brown (10YR 4/6), moist, wet in top 2" only, very dense, fine to medium sand, orange and black mottles, gravel is very weathered, flat and angular.	Sample Head space: 30 Breathing zone: 0
51					END OF BORING AT 50 feet bls.	Note: Three borings were drilled at this location. Boring logs combined into one. Boring one - 28' deep, 11/30 through 12/2 surface soil sample WAE-SS13-0002 collected. Boring two - 50' deep, 12/12 through 12/13 subsurface soil sample WAE-SB13-0406 collected Boring three - 38' deep, 12/13 through 12/14 two subsurface soil samples WAE-SB13-3234 collected WAE-SB13-3436 collected
54						
57						
60						

Sampler Signature: B. Collom Date: 12/14/2005

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB14	SHEET 1 OF 4

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/12/2005

WEATHER: Overcast, showers, 70 F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 11/30/2005 1135 END : 12/12/05 0920 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
2	0 - 2'	-	S1	NA	LEAN CLAY WITH SAND (CL), moist, reddish brown (5YR 4/4), very stiff, fine to coarse sand.	Sample Head space: 0 Breathing zone: 0 0 - 2' hand augered collect surface soil **WAE-SS14-0002 at 1140 on 11/30/05.** **Grain size collected at 0740 12/9.**
4	2 - 4'	8"	-	5-6-4-7	LEAN CLAY WITH SAND (CL), reddish brown (5YR 4/4), slightly moist, stiff, trace fines, fine to coarse sand.	Sample Head space: 0 Breathing zone: 0
6	4 - 6'	17"	S2	3-3-3-4	Similar to above, slightly softer, slightly higher sand content.	**Collect WAE-SB14-0406 at 0820 on 12/1/2005** **Grain size sample collected on 12/9/05.** Sample Head space: 0 Breathing zone: 0
8	6- 8'	16"	-	4-5-7-10	LEAN CLAY WITH SAND (CL), dark reddish brown (5YR 3/4), slightly moist, stiff, sand fine to coarse.	Sample Head space: 0 Breathing zone: 0
10	8 - 10'	19"	-	3-3-5-4	Similar to above. Slightly higher moisture content.	Sample Head space: 0 Breathing zone: 0
12	10 - 12'	14"	-	1-2-2-2	Top 7" as above, bottom 7" change abruptly brown, medium stiff, no mottling, v. sl. Moist, sand fine to medium. due to contamination.	Sample Head space: 0 Breathing zone: 0 Hydrocarbon odor.

Sampler Signature: B. Collom Date: 12/9/2005

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB14	SHEET 2 OF 4

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/12/2005

WEATHER: Overcast, showers, 70 F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 11/30/2005 1135 END : 12/12/05 0920 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
12	12 - 14'	18"	-	1-1-1-6	Top 4" as above then grades to LEAN CLAY WITH SAND (CL); very dark gray (10YR 3/1), moist, very soft, fine to medium sand, bottom 5" grades back to a CLAYEY SAND (SC), same color, moist, very soft, fine to medium sand.	Sample Head space: 180 Breathing zone: 0 Hydrocarbon odor Stop for rain at 0830 hrs.
15	14 - 16'	24"	-	21-27-17-12	Top 16" WELL GRADED SAND WITH CLAY (SW-SC), dark grayish brown (10YR 4/2), slightly moist, dense, fine to coarse, bottom 8" change abruptly to WELL GRADED SAND (SW), brown (7.5YR 4/4), slightly moist, medium dense, fine to coarse.	Sample Head space: 80 Breathing zone: 0 Continue augering at 0915 hrs Hydrocarbon odor.
18	16- 18'	17"	-	11-9-6-8	SILTY SAND (SM), brown (7.5 YR 4/4), slightly moist, medium dense, fine to coarse sand.	Sample Head space: 5 Top 4" Breathing zone: 0
	18 - 20'	18"	-	7-6-9-6	top 4" are SANDY LEAN CLAY (CL), dark gray (7.5YR 4/1), moist, stiff, fine to medium sand, bottom 14" change abruptly to POORLY GRADED SAND (SP), strong brown (7.5 YR 4/6), moist, loose, fine to medium, trace gravel, 1/2" (1 piece), angular.	Sample Head space: 7.5 Top 4" Breathing zone: 0 Hydrocarbon odor.
21	20 - 22'	19"	-	3-14-16-20	WELL GRADED SAND (SW), strong brown (7.5 YR 4/6), slightly moist, dense, trace silt, fine to medium sand with few coarse grains, trace gravel (one piece), 1" angular.	Sample Head space: 0 Breathing zone: 0
24	22 - 24'	19"	-	15-14-13-16	Top 10" are WELL GRADED SAND (SW), strong brown (7.5YR 4/6), slightly moist, medium dense, trace fines, fine to coarse sand, bottom 9" grades quickly to SILTY SAND (SM), very dark grayish brown (2.5Y 3/2), some clay.	Hard drilling at 22 feet bls. Sample Head space: 0 Breathing zone: 0

Sampler Signature: B. Collom Date: 12/9/2005

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB14	SHEET 3 OF 4

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/12/2005

WEATHER: Overcast, showers, 70 F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 11/30/2005 1135 END : 12/12/05 0920 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
24	24 - 26'	17"	-	14-15-15-16	Top 11" are SILTY SAND (SM), brown (7.5YR 4/4), moist, dense, some clay, fine to coarse sand.	Sample Head space: 28 Breathing zone: 0
27	26-28'	24"	-	20-23-34-30	Top 10" are SANDY LEAN CLAY (CL), olive brown (2.5Y 4/4), slightly moist, hard, fine to coarse sand, bottom 14" grades to less sand to yellowish brown (10YR 5/6), still SANDY LEAN CLAY (CL), slightly moist, hard, fine to medium sand with trace gravel, (1 piece),angular, 1" black and green mottles.	Sample Head space: 71 Breathing zone: 0
30	28-30'	24"	-	8-20-30-45	SANDY LEAN CLAY (CL), olive brown (2.5Y 4/4), slightly moist, hard, fine to medium sand, grades sandier with depth, trace gravel (2 pieces), 1/2" to 3/4", angular, black, and green mottles.	Sample Head space: 220 Breathing zone: 0
	30-32'	14"	-	25-50/6	LEAN CLAY (CL), olive (5Y 5/3), very slightly moist, hard, trace fine to medium sand, grades drier with depth, some red-brown mottles.	Sample Head space: 142 Breathing zone: 0
33	32-34'	12"	-	23-50/5	CLAYEY SAND (SC), olive (5Y 5/3), very slightly moist to dry, very dense, fine to coarse sand, few black mottles.	Sample Head space: 706 Breathing zone: 0
36	34-36'	17"	-	30-50-50/5	CLAYEY SAND (SC), olive (5Y 5/3), very slightly moist, very dense, no mottling, fine to medium sand.	Sample Head space: 83 Breathing zone: 0

Sampler Signature: B. Collom Date: 12/9/2005

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB14	SHEET 4 OF 4

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/12/2005

WEATHER: Overcast, showers, 70 F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 11/30/2005 1135 END : 12/12/05 0920 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
36	36-38'	6"	-	50/5	Top 3" are SANDY LEAN CLAY (CL), olive (5Y 4/4), moist, hard, fine to coarse sand, bottom 3" grade sandier to CLAYEY SAND (SC), olive (5Y 4/4), dry, hard, fine to medium sand, some light gray mottles.	Sample Head space: 414 bottom 3" Breathing zone: 0 Stop drilling for today at 1255.
39	38-40'	6"	-	50/5	WELL GRADED GRAVEL WITH CLAY AND SAND (GW-GC), olive (5Y 5/4), moist to wet in top below, very dense, gravel 1 1/2" to 1/4" , flat and angular, very weathered appearance - can be broken manually, fine to coarse sand.	Sample Head space: 1 Breathing zone: 0 12/12/2005 0755 continue augering Driller reports 10' of water in borehole.
42	40-42'	5"	-	50/5	SANDY LEAN CLAY (CL); olive (5Y 4/3), very slightly moist, hard, fine to coarse sand, trace gravel 1/4" to 1", flat angular, weathered as above.	Sample Head space: 1460 Breathing zone: 0
	42-44'	6"	S3	50/5	SANDY CLAY (CL); olive (5 Y 4/4), slightly moist to moist, hard, sand fine to coarse, trace gravel (1 piece), 3/4", flat and angular, weathered.	Sample Head space: 1668 Breathing zone: 0 **Collect WAE-SB14-4244 at 0840 hrs on 12/12/05.**
45	44 - 46'	5" 5"	S4	50/3 2nd spoon = 50/3	Top 3" are CLAYEY SAND (SC), olive (5Y 4/4), wet, very dense, fine to coarse sand, trace gravel as above, 3/4", flat and angular. 2nd spoon: Top 2" as above, bottom 3" are weathered rock, yellowish brown (10YR 5/6), dry, hard, very weathered appearance, some orange-red mottles, it looks like we cored into rock.	Sample Head space: 51 2nd Spoon: 21 Breathing zone: 0 Drive 2nd split spoon for additional sample volume. **Collect WAE-SB14-4446 at 0915 hrs on 12/12/05.**
48					END OF BORING AT 46' bls.	Note: Two borings were drilled at this location. Boring logs combined into one. Boring one - 26' deep, 11/30 through 12/1 surface and subsurface soil samples WAE-SS14-0002 collected on 11/30. WAE-SB14-0406 collected on 12/1. Boring two - 46' deep, 12/9 through 12/12 WAE-SB14-4244 collected on 12/12 WAE-SB14-4446 collected on 12/12.

Sampler Signature: B. Collom Date: 12/12/2005

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB15	SHEET 1 OF 4

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/7/2005

WEATHER: Mostly cloudy, 75-85F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 12/1/2005 END : 12/8/05 1125 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
2	0 - 2'	-	S1	NA	0-2' is LEAN CLAY WITH SAND (CL), dark reddish brown (5YR 3/4), slightly moist, medium stiffness, medium to coarse sand.	Sample Head space: 0 Breathing zone: 0 0-2' hand augered, collect SS sample **WAE-SS15-0002 at 0715 12/1/2005**
4	2 - 4'	12"	-	6-8-12-13	SANDY CLAY (CL), yellowish red (5YR 4/6), slilghtly moist, very stiff, grades slightly clayier with depth, fine to coarse sand.	Sample Head space: 0 Breathing zone: 0
6	4 - 6'	21"	S2	7-8-11-12	SANDY CLAY (CL), brown (7.5YR 4/4), slightly moist, very stiff, harder material at last 4", fine to medium sand.	Sample Head space: 1.5 Breathing zone: 0 **Collect WAE-SB15-0406R at 1009 hrs 12/5/05.**
8	6- 8'	6"	-	3-2-4-4	LEAN CLAY WITH SAND (CL), brown (7.5YR 4/4), slightly moist, medium stiffness, fine to medium sand.	Sample Head space: 0 Breathing zone: 0
10	8 - 10'	17"	-	6-12-15-20	LEAN CLAY WITH SAND (CL), strong brown (7.5YR 4/6), slightly moist, very stiff, fine to medium sand.	Sample Head space: 0 Breathing zone: 0
12	10 - 12'	16"	-	5-10-11-15	Top 10" similar to above then grades quickly to light brown, very stiff, no mottling, slightly moist, fine to medium sand.	Sample Head space: 0 Breathing zone: 0 Stop drilling for today at 1140 hrs at 12' bgs.

Sampler Signature: B. Collom Date: 12/7/2005

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB15	SHEET 2 OF 4

SOIL BORING LOG

PROJECT : NAVFAC - ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/8/2005

WEATHER: Partly cloudy, 75F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 12/1/2005 END : 12/8/05 1125 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
12	12 - 14'	17"	-	11-12-7-8	Top 3' similar to above, next 10" changes abruptly to WELL GRADED SAND (SW), strong brown (7.5YR 5/6), slightly moist, medium dense, trace silt, fine to coarse, bottom 3" changes abruptly to CLAYEY SAND (SC), strong brown (7.5YR 4/6), slightly moist, medium dense, fine to medium sand.	Sample Head space: 0 Breathing zone: 0 Continue augering at 0728 hrs 12/8/2005
15	14 - 16'	14"	-	4-6-5-6	CLAYEY SAND (SC), brown (7.5 YR 4/4), slightly moist, medium dense, fine to coarse sand.	Sample Head space: 0 Breathing zone: 0
18	16- 18'	18"	-	6-5-5-5	Top 3" similar to above, bottom 15" changes abruptly to WELL GRADED SAND (SW), slightly moist, loose, trace silt, fine to coarse.	Sample Head space: 0 Breathing zone: 0
	18 - 20'	17"	-	8-8-8-8	WELL GRADED SAND (SW), yellowish red (5YR 5/6), slightly moist, medium dense, trace gravel, 1/2" to 3/4", angular, (3 pieces), fine to coarse sand.	Sample Head space: 0 Breathing zone: 0
21	20 - 22'	18"	-	9-9-8-6	WELL GRADED SAND (SW), strong brown (7.5YR 5/6), slightly moist, medium dense, fine to coarse sand, trace gravel, 2 pieces, 1/2", angular.	Sample Head space: 0 Breathing zone: 0
24	22 - 24'	20"	-	9-9-11-12	WELL GRADED SAND (SW), strong brown (7.5YR 5/6), moist, medium dense, fine to coarse sand.	Sample Head space: 0 Breathing zone: 0

Sampler Signature: B. Collom Date: 12/8/2005

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB15	SHEET 3 OF 4

SOIL BORING LOG

PROJECT : NAVFAC - ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/8/2005

WEATHER: Partly cloudy, 75F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 12/1/2005 END : 12/8/05 1125 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
24	24 - 26'	22"	-	1-4-10-10	POORLY GRADED SAND (SP), slightly moist, medium dense, fine to coarse sand, trace silt, grading slightly clayier with depth, trace gravel, 1/4" to 1/2", subangular.	Sample Head space: 0 Breathing zone: 0
27	26-28'	20"	-	20-21-26-23	SANDY CLAY (CL), yellowish red (5YR 4/6), slightly moist, hard, fine to coarse sand, some black mottles, few green mottles.	Sample Head space: 0 Breathing zone: 0
30	28-30'	22"	-	20-25-36-50/4	Top 16" are SANDY CLAY (CL), yellowish red (5YR 5/8), slightly moist, hard, fine to coarse sand, coarse grains often off-white, bottom 6" grades less sandy to LEAN CLAY WITH SAND (CL), strong brown (7.5YR 5/8), slightly moist, hard, find to medium sand, some black mottles.	Sample Head space: 0 Breathing zone: 0
	30-32'	8"	-	15-50/3	LEAN CLAY WITH SAND (CL), strong brown (7.5YR 5/8), dry, hard, off-white mottling throughout, fine to medium sand.	Sample Head space: 0 Breathing zone: 0
33	32-34'	7"	-	50-50/2	LEAN CLAY WITH SAND (CL), yellowish brown (10 YR 5/8), dry, hard, fine to medium sand, black, red and off-white mottles.	Sample Head space: 0 Breathing zone: 0
36	34-36'	4"	-	50/4	POORLY GRADED SAND WITH CLAY (SP-SC), yellowish brown (10YR 5/8), slightly moist, very dense, no mottling, fine to medium sand.	Sample Head space: 0 Breathing zone: 0

Sampler Signature: B. Collom Date: 12/8/2005

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB15	SHEET 4 OF 4

SOIL BORING LOG

PROJECT : NAVFAC - ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/8/2005

WEATHER: Sunny, 80-85 F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 12/1/2005 END : 12/8/05 1125 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
36	36-38'	3"	-	50/2	SANDY LEAN CLAY (CL), yellowish brown (10YR 5/8), dry, hard, fine to medium sand, some black and off-white mottles.	Sample Head space: 0 Breathing zone: 0
39	38-40'	5"	-	50/4	POORLY GRADED GRAVEL WITH CLAY AND SAND (GP-GC), brown (7.5YR 4/4), wet in top 1", slightly moist below, very dense, gravel 1/4" to 1", flat and angular, highly weathered appearance - can break with hands, fine to medium sand. Cuttings from 40' appear slightly moist. Interior of rock is dark brown to black.	Sample Head space: 1 Breathing zone: 0
42	40-42'	9"	-	45-50/4	SANDY LEAN CLAY (CL), yellowish brown (10YR 5/4), slightly moist, hard, fine to coarse sand, trace gravel similar to above, 1/4" to 1/2".	Sample Head space: 0 Breathing zone: 0
	42-44'	6"	-	50/5	Highly weathered rock, olive (5Y 5/4), it appears we cored directly into rock, top 2" are wet, with decreasing moisture with depth.	Sample Head space: 100 Breathing zone: 0 Hydrocarbon odor.
45					END OF BORING AT 44 ft. bls.	Note: Three borings were drilled at this location. Boring logs combined into one. Boring one - 28' deep, 12/1 through 12/5. surface soil sample WAE-SS15-0002 collected. Boring two - 6' deep, 12/5 through 12/5. subsurface soil sample WAE-SB15-0406 collected Boring three - 44' deep, 12/7 through 12/8 No samples collected.
48						

Sampler Signature: B. Collom Date: 12/8/2005

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB16	SHEET 1 OF 4

SOIL BORING LOG

PROJECT : NAVFAC-ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/1/2005

WEATHER: Sunny, 75-85F, windy DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 12/1/2005 END : 12/7/05 0905 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
2	0 - 2'	NA	S1	NA	Top 1.1' is POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), bottom 0.9' changes abruptly to LEAN CLAY WITH SAND (CL), dark reddish brown (5YR 3/4), slightly moist, medium stiff, medium to course sand, trace silt.	0-2' hand augeres **Collected WAE-SS16-0002 at 0700.** FID headspace not done
4	2 - 4'	12"	--	9 - 7 - 7 - 8	WELL GRADED SAND WITH CLAY (SW-SC), strong brown (7.5YR 4/6), slightly moist, medium dense, fine to course sand.	Sample Head space: 0 Breathing zone: 0 12-5-05 begin augering @ 1047
6	4 - 6'	18"	S2	6 - 4 - 9 - 12	top 6" similar to above, then grades quickly to clayier w/ depth. Bottom 12" are SANDY LEAN CLAY (CL), slightly moist, dark brown, stiff, fine to coarse sand, grades clayier with depth.	Sample Head space: 0 Breathing zone: 0 **Collected WAE-SB16-0406**
8	6- 8'	18"	--	8 - 10 - 13 - 14	SANDY LEAN CLAY (CL), dark reddish brown (5YR 3/4), slightly moist, very stiff, some black mottles, fine to coarse sand.	Sample Head space: 0 Breathing zone: 0
10	8 - 10'	17"	--	5 - 9 - 13 - 15	LEAN CLAY WITH SAND (CL), dark reddish brown (5YR 3/3), slightly moist, very stiff, fine to medium sand.	Sample Head space: 0 Breathing zone: 0
12	10 - 12'	21"	--	5 - 8 - 10 - 13	to 19" similar to above, bottom 2" grades quickly to SANDY LEAN CLAY (CL), strong brown (7.5YR 4/6), slightly moist, very stiff, fine to medium sand, micaceous, some black mottless.	Sample Head space: 0 Breathing zone: 0

Sampler Signature: B. Collom Date: 12/7/2005

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB16	SHEET 2 OF 4

SOIL BORING LOG

PROJECT : NAVFAC - ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/5/2005

WEATHER: Sunny, 80-85F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 12/1/2005 END : 12/7/05 0905 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
12	12 - 14'	24"	-	4-3-4-6	SANDY LEAN CLAY (CL), dark reddish brown (5YR 3/4), slightly moist, loose, very fine to fine sand, micaceous.	Sample Head space: 0 Breathing zone: 0
15	14 - 16'	22"	-	4-5-9-10	Top 16" similar to above, bottom 6" grades quickly to POORLY GRADED SAND WITH CLAY (SP-SC), strong brown (7.5YR 4/6), slighly moist, medium dense, very fine sand only.	Sample Head space: 0 Breathing zone: 0
18	16- 18'	17"	-	7-5-8-8	Top 11" similar to above, bottom 6" grades quickly to WELL GRADED SAND (SW), slightly moist, medium dense, fine to coarse sand, trace silt.	Sample Head space: 0 Breathing zone: 0 Stop augering for today at 18' at 1200 hrs.
	18 - 20'	19"	-	4-4-7-9	Top 4" similar to above, then bottom grades quickly to SANDY LEAN CLAY (CL), dark brown (7.5YR 3/4), sllightly moist, stiff, fine sand only.	Continue augering at SB16 at 0805 12/7/05 Sample Head space: 0 Breathing zone: 0
21	20 - 22'	16"	-	6-6-6-5	Top 12" similar to above then grades quickly to WELL GRADED SAND (SW), strong brown (7.5YR 4/6), slightly moist, medium dense, fine to coarse sand, trace silt.	Sample Head space: 0 Breathing zone: 0
24	22 - 24'	15"	-	10-13-10-9	Top 12" similar to above, bottomw 3" grades quickly to SANDY LEAN CLAY (CL), brown (7.5YR 4/4), slightly moist, very stiff, fne to medium sand.	Sample Head space: 0 Breathing zone: 0

Sampler Signature: B. Collom Date: 12/7/2005

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB16	SHEET 3 OF 4

SOIL BORING LOG

PROJECT : NAVFAC - ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/6/2005

WEATHER: Partly cloudy, 80F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 12/1/2005 END : 12/7/05 0905 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
24	24 - 26'	19"	-	8-4-18-22	Top 5"as above, next 6" change abruplty to LEAN CLAY WITH SAND (CL), strong brown (7.5YR 3/4), \sligthly moist, medium stiffness, white and red mottling, sand is fine to medium, bottom 8" change back to well graded sand as above.	Sample Head space: 0 Breathing zone: 0
27	26-28'	24"	-	18-14-23-32	Top 6" are well graded SAND with trace gravel (SW), (7.5YR 4/4), bottome 18" change abruptly to SANDY CLAY (CL), (7.5YR 5/6) strong brown, v.v. sl.moist, v. stiff with black mottles, sand is fine to medium.	Sample Head space: 0 Breathing zone: 0
30	28-30'	22"	-	16-21-28-35	SANDY LEAN CLAY(CL), dark yellowish brown (10YR 4/6), v.v. slightly moist, very stiff, sand is fine to medium, some black mottles.	Sample Head space: 0 Breathing zone: 0
	30-32'	24"	-	15-22-26-30	SANDY LEAN CLAY(CL), dark yellowish brown (10YR 4/6), v.v. slightly moist, very stiff, sand is fine to medium, some black mottles.	Sample Head space: 0 Breathing zone: 0
33	32-34'	15"	-	24-27-50-3	Top 16" as above with trace gravel, 3/4" to1", angular, bottom 6" change quickly to SILTY SANDY CLAY (CL), Strong brown (7.5YR 5/8), dry, medium stiffness, some black mottles, sand is fine to medium.	Sample Head space: 0 Breathing zone: 0 Drillers report hard drilling
36	34-36'	16"	-	36-47-50-4	CLAY WITH SAND(CL), yellowish brown (10YR 5/8),brown, medium stiff, no mottling, v. sl. Moist, sand fine to medium.	Sample Head space: 0 Breathing zone: 0 Continue augering at 1130, 12/6/05 1155 hrs done for today at 36'

Sampler Signature: B. Collom Date: 12/7/2005

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS/SB16	SHEET 4 OF 4

SOIL BORING LOG

PROJECT : NAVFAC - ATLANTIC (VIEQUES) LOCATION : **AOC-E** DATE: 12/7/2005

WEATHER: Partly cloudy, 80F DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile drill B-61 with 4 1/4" OD Hollow Stem Augers, 140 lb hammer and 2" split spoon.

WATER LEVELS : 28 - 29' (in MWs) START : 12/1/2005 END : 12/7/05 0905 LOGGER : B. Collom/CH2M HILL

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
36	36-38'	16"	-	20-40-50/4	CLAY WITH SAND(CL), yellowish brown (10YR5/8), dry, medium stiffness, few black mottles, sand is fine to medium.	Sample Head space: 0 Breathing zone: 0 Begin augering at 0745 hrs, 12/7/05
39	38-40'	6"	-	50/5	CLAY WITH SAND(CL), yellowish brown (10YR5/8), dry, medium stiffness, few black mottles, sand is fine to medium.	Sample Head space: 0 Breathing zone: 0
42	40-42'	5"	-	50/5	CLAY WITH SAND(CL), yellowish brown (10YR5/8), dry, medium stiffness, few black mottles, sand is fine to medium.	Sample Head space: 0 Breathing zone: 0
	42-44'	5"	-	50/5	As above- outside of sample core is wet, but interior is dry- water may be coming from above current depth. We may have missed sampling it because of refusal on samples.	Sample Head space: 0 Breathing zone: 0 Water on drill bit at 42'
45	44-46'	5"	-	50/5	As above, exterior of sample is wet, interior dry.	Sample Head space: 0 Breathing zone: 0 Pulled augers back 5' at 0905 hrs and measured water level in augers: 37.10' bgs at 0914 hrs.
48					End of boring at 46' 0905 hrs, 12/7/05	

Sampler Signature: B. Collom Date: 12/7/2005

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS17	SHEET 1 OF 1

SURFACE SOIL SAMPLING

PROJECT : NAVFAC - Atlantic (West Vieques) LOCATION : **AOC - E** DATE: 11/30/2005

WEATHER: Clear, high 85 F, 5 mph DRILLING CONTRACTOR : CH2M HILL

DRILLING METHOD AND EQUIPMENT USED : Hand auger

WATER LEVELS : NA START : 11/30/05 0845 END : 11/30/05 0945 LOGGER : Chris Hayslip

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
0					WELL GRADED SAND WITH GRAVEL (SW) Dark brown (7.5YR, 3/3) gravel appears to be road bed, very loose, dry,contains some organics.	
						Collected WAE-SS17-0002 at 0945.
					Dark brown fine sand, very loose, contains trace organics.	
1						
2						
					End of boring at 2.0' BGS	
3						
4						

Sampler Signature: Chris Hayslip Date: 11/30/2005

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS18	SHEET 1 OF 1

SURFACE SOIL SAMPLING

PROJECT : NAVFAC - Atlantic (West Vieques) LOCATION : **AOC - E** DATE: 11/30/2005

WEATHER: Clear, high 85 F, 10 mph DRILLING CONTRACTOR : CH2M HILL

DRILLING METHOD AND EQUIPMENT USED : Hand auger

WATER LEVELS : NA START : 11/30/05 1030 END : 11/30/05 1055 LOGGER : Chris Hayslip

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
0					WELL GRADED SAND WITH GRAVEL (SW) Dark brown (7.5YR, 3/3) gravel appears to be road, bed, very loose, dry,contains some organics.	Collect WAE-SS18-0002 at 1055.
1					Same as above.	
2					End of boring at 2.0' BGS	
3						
4						

Sampler Signature: Chris Hayslip Date: 11/30/2005

PROJECT NUMBER	BORING NUMBER	
180357.FI.FK.AE	WAE-SS19	SHEET 1 OF 1

SURFACE SOIL SAMPLING

PROJECT : NAVFAC - Atlantic (West Vieques) LOCATION : **AOC - E** DATE: 11/30/2005

WEATHER: Clear, high 85 F, 10 mph DRILLING CONTRACTOR : CH2M HILL

DRILLING METHOD AND EQUIPMENT USED : Hand auger

WATER LEVELS : NA START : 11/30/05 1100 END : 11/30/05 1120 LOGGER : Chris Hayslip

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
0					POORLY GRADED SAND WITH CLAY AND GRAVEL, (SW-SC) Dark Reddish Brown (5YR, 3/4)	
					LEAN CLAY WITH SAND (CL) Dark Reddish Brown (5YR, 3/4)	Collected WAE-SS19-0002 at 1120.
1						
2					End of boring at 2.0' BGS	
3						
4						

Sampler Signature: Chris Hayslip Date: 11/30/2005

Appendix C
Well Completion Diagrams

PROJECT NUMBER	WELL NUMBER		
146801.US.SC	2016-MW1	SHEET 1	OF 1

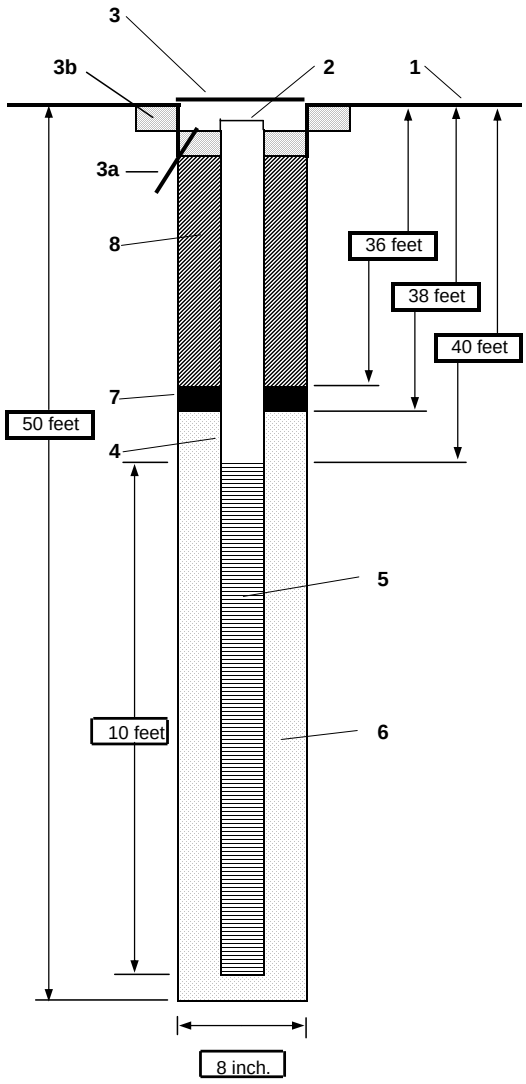
WELL COMPLETION DIAGRAM

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill

WATER LEVELS : 42.14 feet btoc START : 1020 (8/14/98) END : 0830 (8/17/98) LOGGER : Michael Weatherby



1-	Ground elevation at well	NA
2-	Top of casing elevation	43.93 feet above msl
3-	Wellhead protection cover	8-inch diameter flush mount steel manhole
	a) drain tube?	none
	b) concrete pad dimensions	3-feet by 3-feet by 4-inches
4-	Dia./type of well casing	2-inch diameter, schedule 40, PVC
5-	Type/slot size of screen	2-inch diameter, schedule 40, PVC, 10-slot
6-	Type screen filter	beach sand
	a) Quantity used	13 - 30 lbs bags
7-	Type of seal	Cetco Bentonite pellets
	a) Quantity used	1 1/2 - 5 gallon bucket
8-	Grout	
	a) Grout mix used	neat cement
	Development method	Teflon® bailer
	Development time	approximately 360 minutes
	Estimated purge volume	approximately 55 gallons
	Comments	Water has high brown turbidity

PROJECT NUMBER	WELL NUMBER		
146801.US.SC	2016-MW2	SHEET 1	OF 1

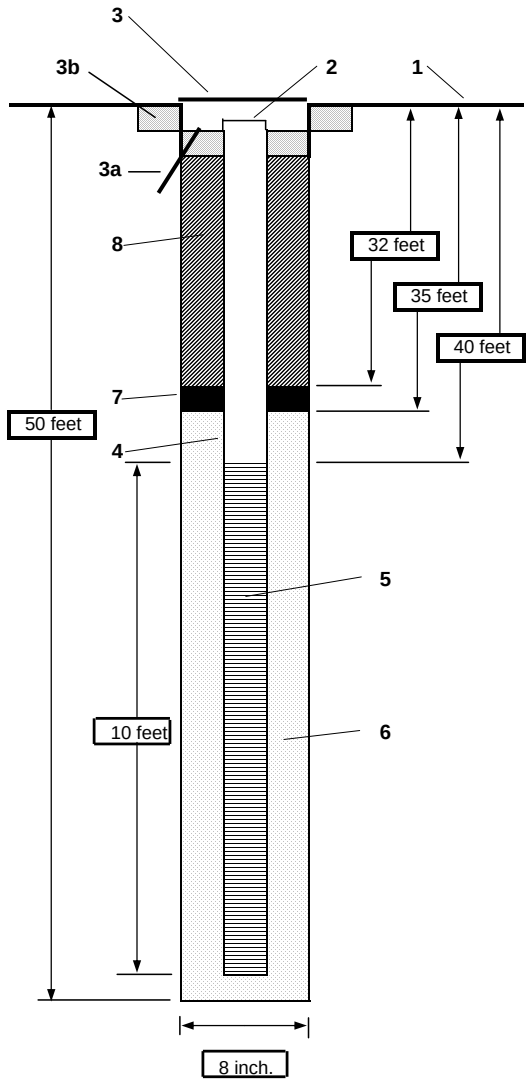
WELL COMPLETION DIAGRAM

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill

WATER LEVELS : 42.23 feet btoc START : 1110 (8/19/98) END : 0730 (8/20/98) LOGGER : Michael Weatherby



1-	Ground elevation at well	NA
2-	Top of casing elevation	42.68 feet above msl
3-	Wellhead protection cover	8-inch diameter flush mount steel manhole
	a) drain tube?	none
	b) concrete pad dimensions	3-feet by 3-feet by 4-inches
4-	Dia./type of well casing	2-inch diameter, schedule 40, PVC
5-	Type/slot size of screen	2-inch diameter, schedule 40, PVC, 10-slot
6-	Type screen filter	beach sand
	a) Quantity used	13 - 30 lbs bags
7-	Type of seal	Cetco Bentonite pellets
	a) Quantity used	1 1/2 - 5 gallon bucket
8-	Grout	
	a) Grout mix used	neat cement
	Development method	Teflon® bailer
	Development time	approximately 360 minutes
	Estimated purge volume	approximately 55 gallons
	Comments	Water has high brown turbidity

PROJECT NUMBER	WELL NUMBER		
146801.US.SC	2016-MW3	SHEET 1	OF 1

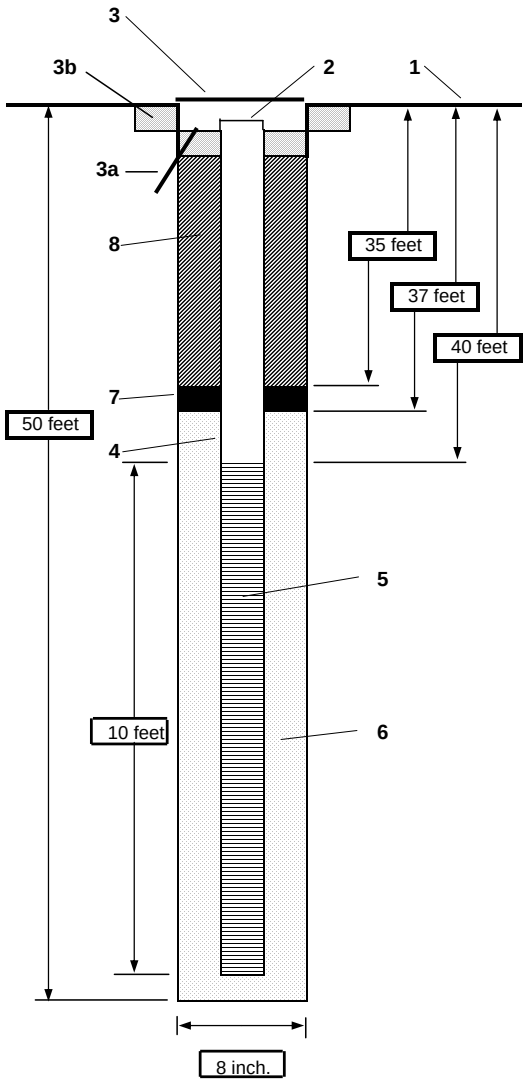
WELL COMPLETION DIAGRAM

PROJECT : Roosevelt Roads Naval Station UST Site Characterization LOCATION : Facility 2016 - One Waste Oil Tank (550 gallons)

DRILLING CONTRACTOR : GeoWorks, San Juan, Puerto Rico

DRILLING METHOD AND EQUIPMENT USED : 4 1/4-inch ID Hollow Stem Auger Mobile Drill

WATER LEVELS : 41.08 feet btoc START : 1230 (8/20/98) END : 1630 (8/20/98) LOGGER : Michael Weatherby



1- Ground elevation at well	NA
2- Top of casing elevation	44.06 feet above msl
3- Wellhead protection cover	8-inch diameter flush mount steel manhole
a) drain tube?	none
b) concrete pad dimensions	3-feet by 3-feet by 4-inches
4- Dia./type of well casing	2-inch diameter, schedule 40, PVC
5- Type/slot size of screen	2-inch diameter, schedule 40, PVC, 10-slot
6- Type screen filter	beach sand
a) Quantity used	13 - 30 lbs bags
7- Type of seal	Cetco Bentonite pellets
a) Quantity used	1 1/2 - 5 gallon bucket
8- Grout	
a) Grout mix used	neat cement
Development method	Teflon® bailer
Development time	approximately 360 minutes
Estimated purge volume	approximately 55 gallons

Comments Water has high brown turbidity

PROJECT NUMBER	WELL NUMBER	
139322.FI.70	AOC-E-MW-4	SHEET 1 OF 1

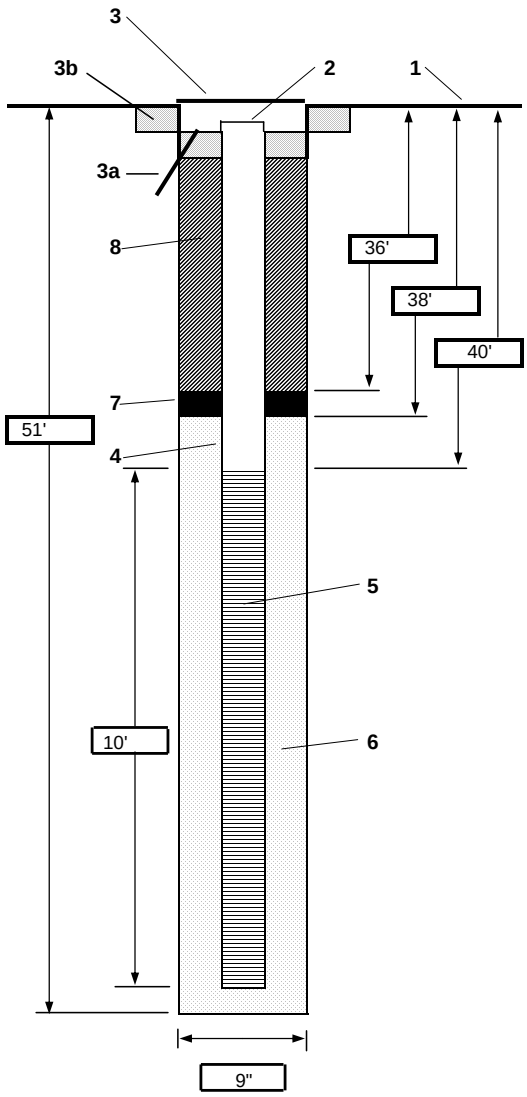
WELL COMPLETION DIAGRAM

PROJECT : VIEQUES (PA/SI) LOCATION : NEAR EXISTING WELL UST

DRILLING CONTRACTOR : GEOWORKS INC.

DRILLING METHOD AND EQUIPMENT USED : AIR ROTARY HAMMER

WATER LEVELS : 42' START : 900 Hr (4/13/2000) END : 1500 Hr (4/17/2000) LOGGER : G. SILVA



1- Ground elevation at well: NA

2- Top of casing elevation: 43.60 ft msl

3- Wellhead protection cover type: Flush Mounted
- a) drain tube?: None
- b) concrete pad dimensions: 4' X 4' X 3"

4- Dia./type of well casing: 2" DIA.

5- Type/slot size of screen: Sch 40 PVC/10 SLOT

6- Type screen filter: Cement Sand
- a) Quantity used: 5 Bags

7- Type of seal: Bentonite
- a) Quantity used: 3 Gallons

8- Grout
- a) Grout mix used: Cement
- b) Method of placement: Top Casing
- c) Vol. of well casing grout: 100 gallons

Development method: See Development Log

Development time: See Development Log

Estimated purge volume: See Development Log

Comments

PROJECT NUMBER	WELL NUMBER	
139322.FI.70	AOC-E-MW-5	SHEET 1 OF 1

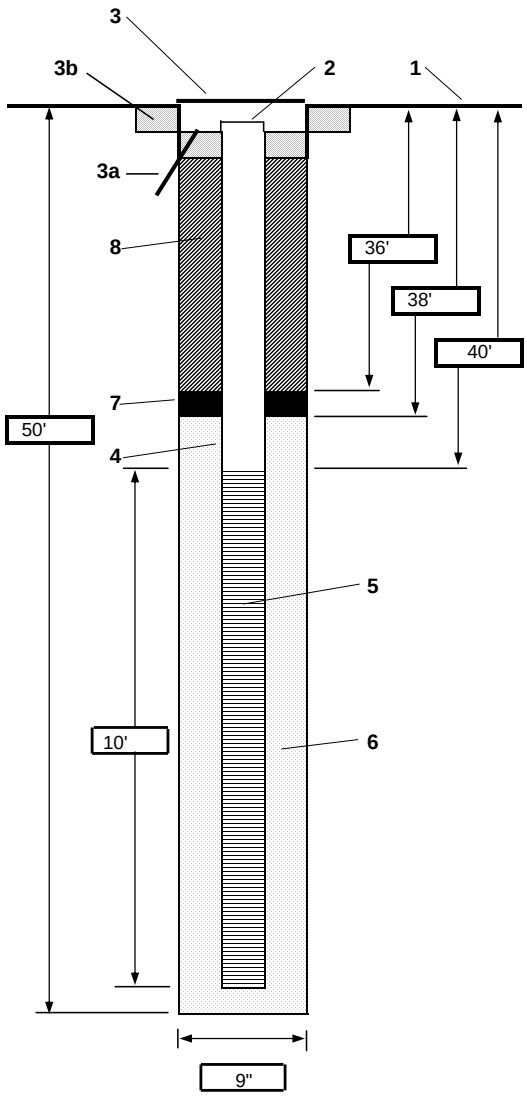
WELL COMPLETION DIAGRAM

PROJECT : VIEQUES (PA/SI) LOCATION : NEAR FORMER UST LOCATION

DRILLING CONTRACTOR : GEOWORKS INC.

DRILLING METHOD AND EQUIPMENT USED : AIR ROTARY HAMMER

WATER LEVELS : 42' START : 1100 Hr. (4/14/2000) END : 1430 Hr (4/17/2000) LOGGER : G. SILVA



1-	Ground elevation at well	NA
2-	Top of casing elevation	44.32 ft msl
3-	Wellhead protection cover type	Flush Mounted
	a) drain tube?	None
	b) concrete pad dimensions	4' X 4' X 3"
4-	Dia./type of well casing	2" DIA. Sch 40 PVC
5-	Type/slot size of screen	Sch 40 PVC/10 SLOT
6-	Type screen filter	Coarse Sand
	a) Quantity used	5 BAGS
7-	Type of seal	Bentonite Pellets
	a) Quantity used	3 Gallons
8-	Grout	
	a) Grout mix used	Cement Sand
	b) Method of placement	Top Casing
	c) Vol. of well casing grout	110 gallons
	Development method	See Development Log
	Development time	See Development Log
	Estimated purge volume	See Development Log

Comments

PROJECT NUMBER	WELL NUMBER	
139322.FI.70	AOC-E-MW-6	SHEET 1 OF 1

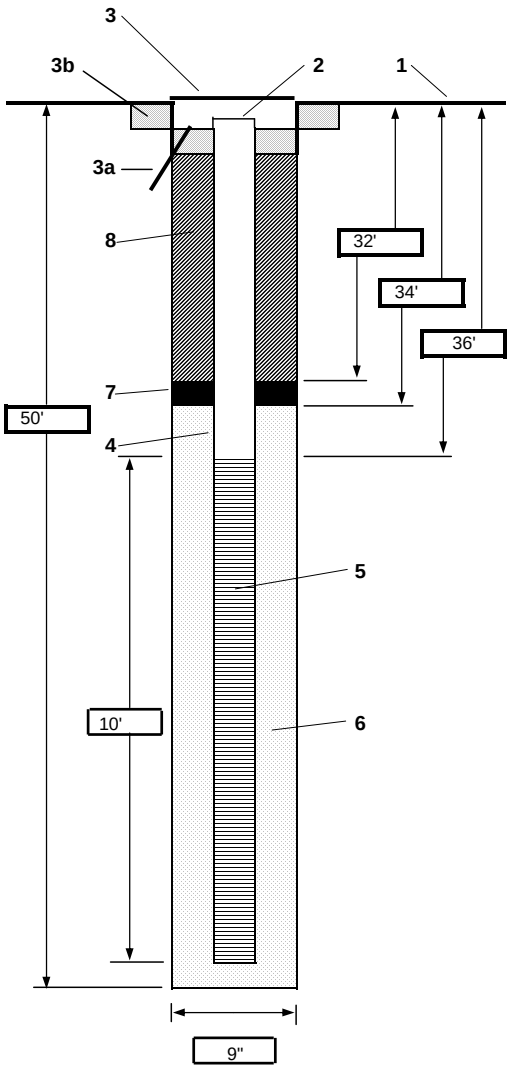
WELL COMPLETION DIAGRAM

PROJECT : VIEQUES LOCATION : NEAR FORMER UST NEAR CAR RACK

DRILLING CONTRACTOR : GEOWORKS INC.

DRILLING METHOD AND EQUIPMENT USED : AIR ROTARY HAMMER

WATER LEVELS : 38 ' START : 800 Hr (4/17/2000) END : 1500 Hr (4/26/2000) LOGGER : G. SILVA



1-	Ground elevation at well	NA
2-	Top of casing elevation	44.34 ft msl
3-	Wellhead protection cover type	Flush Mounted
	a) drain tube?	None
	b) concrete pad dimensions	4' X 4' X 3"
4-	Dia./type of well casing	2-inch/Sch 40 PVC
5-	Type/slot size of screen	Sch 40 PVC/10 slot
6-	Type screen filter	Coarse Sand
	a) Quantity used	5-40 LB. Bags
7-	Type of seal	Bentonite Pellets
	a) Quantity used	3 Gallons
8-	Grout	
	a) Grout mix used	Cement Sand
	b) Method of placement	Top Casing
	c) Vol. of well casing grout	115 gallons
	Development method	See Development Log
	Development time	See Development Log
	Estimated purge volume	See Development Log

Comments

PROJECT NUMBER	WELL NUMBER
180243	AOC E MW-7 SHEET 1 OF 1

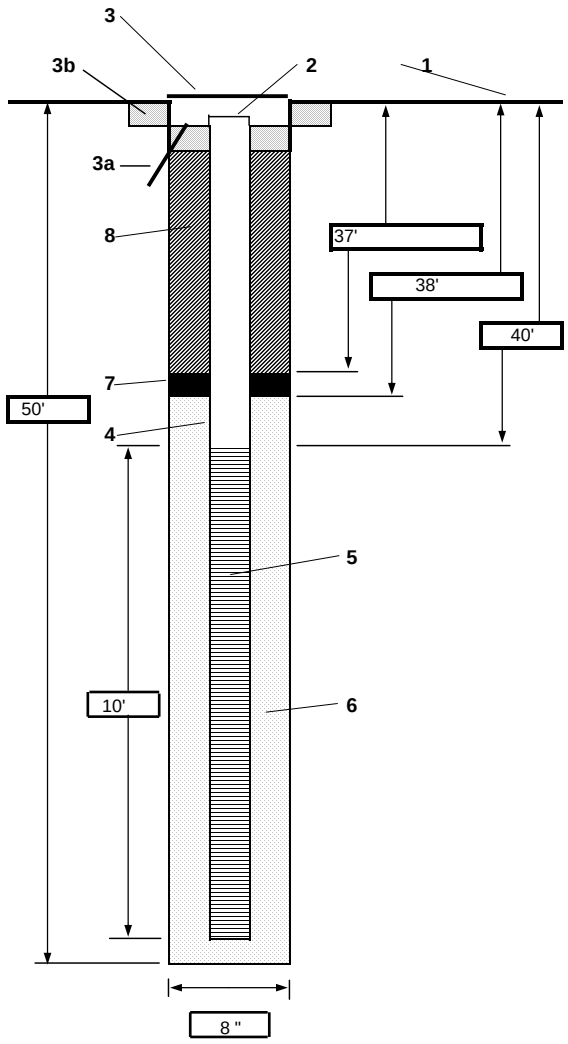
WELL COMPLETION DIAGRAM

PROJECT : NASD - VIEQUES P.R. LOCATION : AOC-E DOWNGRADIENT

DRILLING CONTRACTOR : GEOWORKS

DRILLING METHOD AND EQUIPMENT USED : MOBILE DRILL 8.25" DIA. HAS W/AIR HAMMER

WATER LEVELS : 40.85 START :5/21/2002 END : 05/21/2002 LOGGER : H. Hernandez



1-	Ground elevation at well	NA
2-	Top of casing elevation	43.41 FT AMSL
3-	Wellhead protection cover type	8" DIA. FLUSH MOUNT
	a) drain tube?	NO
	b) concrete pad dimensions	2.5' X 2.5' X 4"
4-	Dia./type of well casing	2" DIA. SCH 40 PVC
5-	Type/slot size of screen	2" DIA. SCH 40 PVC 10 SLOT
6-	Type screen filter	WASHED SAND AND GRAVEL
	a) Quantity used	10 - 30 # BAGS
7-	Type of seal	ENVIRO PLUG SODIUM BENTONITE
	a) Quantity used	1/2 50# BAG
8-	Grout	
	a) Grout mix used	5 gal/sack
	b) Method of placement	Tremie
	c) Vol. of well casing grout	
	Development method	Pumping and surging
	Development time	2 hrs
	Estimated purge volume	30 gallons

Comments

PROJECT NUMBER	WELL NUMBER
180243	AOC E MW-8 SHEET 1 OF 1

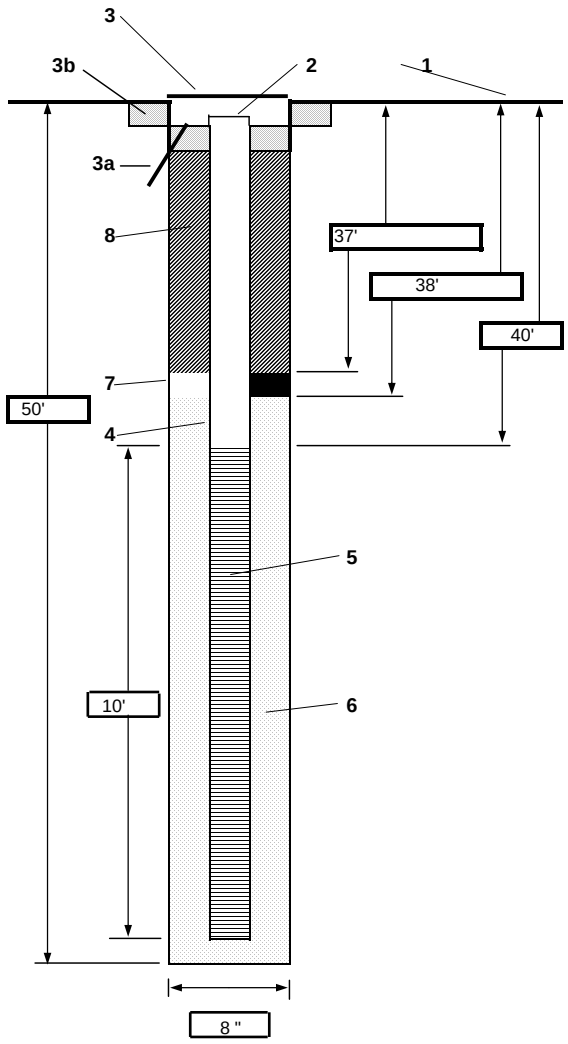
WELL COMPLETION DIAGRAM

PROJECT : NASD - VIEQUES P.R. LOCATION : AOC-E DOWNGRADIENT

DRILLING CONTRACTOR : GEOWORKS

DRILLING METHOD AND EQUIPMENT USED : MOBILE DRILL 8.25" DIA. HAS W/AIR HAMMER

WATER LEVELS : 40.39 START : 5/28/2002 END : 05/28/2002 LOGGER : H. Hernandez



1- Ground elevation at well: NA

2- Top of casing elevation: 43.04 FT AMSL

3- Wellhead protection cover type: 8" DIA. FLUSH MOUNT
- a) drain tube?: NO
- b) concrete pad dimensions: 2.5' X 2.5' X 4"

4- Dia./type of well casing: 2" DIA. SCH 40 PVC

5- Type/slot size of screen: 2" DIA. SCH 40 PVC 10 SLOT

6- Type screen filter: WASHED SAND AND GRAVEL
- a) Quantity used: 10 - 30 # BAGS

7- Type of seal: ENVIRO PLUG SODIUM BENTONITE
- a) Quantity used: 1/2 50# BAG

8- Grout
- a) Grout mix used: 5 gal/sack
- b) Method of placement: Tremie
- c) Vol. of well casing grout:

Development method: Pumping and surging

Development time: 2 hrs

Estimated purge volume: 30 gallons

Comments:

Appendix D
Well Development Logs

CH2MHILL

PROJECT NUMBER	WELL NUMBER AOC-E MW-01 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : NASD, VIEQUES, PUERTO RICO LOCATION : MW-01

DEVELOPMENT CONTRACTOR : CH2M HILL/GEOWORKS INC.

DEVELOPMENT METHOD AND EQUIPMENT USED : Surge with teflon bailer and pump with a peristaltic pump

START WATER LEVELS : START : END : 9/10/1998 LOGGER : M. Weatherby & R. Morales

MAXIMUM DRAWDOWN DURING PUMPING:

RANGE AND AVERAGE DISCHARGE RATE:

TOTAL QUANTITY OF WATER DISCHARGED: 55 Gallons

DISPOSITION OF DISCHARGE WATER: 55 GALS. DRUM

NOTES: This well was developed using a Teflon Bailer to surge the well and a Peristalic Pump to remove approximatly 55 gallons of purge water from the well.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
							No parameters collected.

CH2MHILL

PROJECT NUMBER	WELL NUMBER AOC-E MW-02 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : NASD, VIEQUES, PUERTO RICO LOCATION : MW-02

DEVELOPMENT CONTRACTOR : CH2M HILL/GEOWORKS INC.

DEVELOPMENT METHOD AND EQUIPMENT USED : Surge with teflon bailer and pump with a peristaltic pump

START WATER LEVELS : START : END : 9/10/1998 LOGGER : M. Weatherby & R. Morales

MAXIMUM DRAWDOWN DURING PUMPING:

RANGE AND AVERAGE DISCHARGE RATE:

TOTAL QUANTITY OF WATER DISCHARGED: 55 Gallons

DISPOSITION OF DISCHARGE WATER: 55 GALS. DRUM

NOTES: This well was developed using a Teflon Bailer to surge the well and a Peristalic Pump to remove approximatly 55 gallons of purge water from the well.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
							No parameters collected

CH2MHILL

PROJECT NUMBER	WELL NUMBER AOC-E MW-03 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : NASD, VIEQUES, PUERTO RICO LOCATION : MW-03

DEVELOPMENT CONTRACTOR : CH2M HILL/GEOWORKS INC.

DEVELOPMENT METHOD AND EQUIPMENT USED : Surge with teflon bailer and pump with a peristaltic pump

START WATER LEVELS : START : END : 9/10/1998 LOGGER : M. Weatherby & R. Morales

MAXIMUM DRAWDOWN DURING PUMPING:

RANGE AND AVERAGE DISCHARGE RATE:

TOTAL QUANTITY OF WATER DISCHARGED: 55 Gallons

DISPOSITION OF DISCHARGE WATER: 55 GALS. DRUM

NOTES: This well was developed using a Teflon Bailer to surge the well and a Peristalic Pump to remove approximatly 55 gallons of purge water from the well.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
							No parameters collected.

PROJECT NUMBER	WELL NUMBER	
139322.FI.60	AOC-E MW-04	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : NASD, VIEQUES, PUERTO RICO LOCATION : MW-04

DEVELOPMENT CONTRACTOR : CH2M HILL/GEOWORKS INC.

DEVELOPMENT METHOD AND EQUIPMENT USED : SURGE/PUMP WITH WHALE PUMP

START WATER LEVELS : 37.20' START : 4/26/00 1025 END: 4/26/00 1515 LOGGER : B. TREBBLE

MAXIMUM DRAWDOWN DURING PUMPING:

RANGE AND AVERAGE DISCHARGE RATE: 0.1 GPM

TOTAL QUANTITY OF WATER DISCHARGED: 18 Gallons

DISPOSITION OF DISCHARGE WATER: 55 GALS. DRUM

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
1025	2 GAL	40.00	>100	30.3	7.15	1473	PUMP OF BOTTOM TO CLEAN OUT SEDIMENTS @ 0.1 GPM
1035	3 GAL	43.18	>100	30.6	6.9	1477	
1045	5 GAL	45.20	>100	30.1	6.9	1459	
1050	8 GAL	DRY					PUMP OFF
1245			>100	29.3	6.94	1381	PUMP ON AT 49.5' AT APPROX. 0.25 GPM
1250	13	DRY					PUMP OFF-WATER GETTING SLIGHTLY CLEAR
1515	18		>100	29.4	6.67	1355	PUMP ON
15							

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
139322.FI.60	AOC-E MW-05	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : NASD, VIEQUES, PUERTO RICO (PA/SI) LOCATION : MW-05

DEVELOPMENT CONTRACTOR : CH2M HILL

DEVELOPMENT METHOD AND EQUIPMENT USED : SURGE/PUMP WITH WHALE PUMP

START WATER LEVELS : 37.73' START : 4/27/00 1030 END:4/27/00 LOGGER : B. TREBBLE

TD=50.40

MAXIMUM DRAWDOWN DURING PUMPING: 13.28' TO DRY

RANGE AND AVERAGE DISCHARGE RATE: 0.1 GPM

TOTAL QUANTITY OF WATER DISCHARGED: 8 Gallons

DISPOSITION OF DISCHARGE WATER: 55 GALS. DRUM

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
1103	3	42.90	>100	30.3	7.26	1251	PUMP ON BOTTOM 50' TO CLEAN OUT SEDIMENTS CLOUDY
1113	4	43.43	>100	31.6	7.07	1284	
1123	5	44.10	<100	31.6	7.03	1288	
1125	PUMP OFF						LET RECHARGE
1250	PUMP ON	38.42	>100	30.7	7.19	1279	PUMP AT 48.0'
1300	6	42.90	>100	30.5	6.96	1273	
1310	7	45.07	>100	31.0	7.00	1306	
1320	8	46.73	>100	31.0	6.97	1283	

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
139322.FI.60	AOC-E MW-06	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : NASD, VIEQUES, PUERTO RICO LOCATION : MW-06

DEVELOPMENT CONTRACTOR : CH2M HILL

DEVELOPMENT METHOD AND EQUIPMENT USED : SURGE/PUMP WITH WHALE PUMP

START WATER LEVELS : 37.66' START : 4/26/00 1332 END:4/26/00 1445 LOGGER : B. TREBBLE

TD=46.0

MAXIMUM DRAWDOWN DURING PUMPING: .29

RANGE AND AVERAGE DISCHARGE RATE: 0.45 GPM--0.69 GPM

TOTAL QUANTITY OF WATER DISCHARGED: 36 GALS

DISPOSITION OF DISCHARGE WATER: 55 GALS. DRUM

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
1345	4	37.95	>100	29.7	7.33	1055	PUMP OF BOTTOM TO CLEAN OUT 46'-45.5'
1358	8	37.90	>100	29.1	6.92	1022	45.5' Q UP TO 0.6 GPM CLEANING UP
1405	12	37.90	>100	29.1	6.87	1018	PUMP TO 44.0' slightly less cloudy
1412	20	37.93	>100	29.0	6.85	1016	MUVE PUMP TO 42.5' & PUMP
1418	24	37.93	>100	29.1	6.84	1017	MUVE PUMP TO 41.0'
1424	28	37.91	47	29.1	6.83	1018	MUVE PUMP TO 40.0'
1430	32	37.90	26	29.1	6.82	1019	MUVE PUMP TO 38.5'
1440	36	37.90	32	29.2	6.83	1021	MUVE PUMP TO 36.5'
1445	END DEVELOPMENT						MUVE PUMP TO BOTTOM

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
180243	AOC E MW-07	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : AOC E Remedial Investigation LOCATION : AOC E, Former NASD, Vieques

DEVELOPMENT CONTRACTOR : Geoworks Inc.

DEVELOPMENT METHOD AND EQUIPMENT USED : Surging and pumping with a grundfos pump

START WATER LEVEL: 42.61' BTOC START : 0745 5/23/02 END : 0936 LOGGER : H. Hernandez/NWF

MAXIMUM DRAWDOWN DURING PUMPING: Approximately 2 feet

RANGE AND AVERAGE DISCHARGE RATE: < 0.25 gpm

TOTAL QUANTITY OF WATER DISCHARGED: Approximately 30 gallons

DISPOSITION OF DISCHARGE WATER: Contained in 55-gallon IDW drum

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)		
7:45	start	42.61	>999	29.17	6.36	0.869	ORP 213	brown	no odor
7:50	1	42.71	>999	29.01	6.60	0.791	ORP 219	brown	no odor
7:55	2	42.30	>999	29.45	6.90	0.819	ORP 197	brown	no odor
7:59	3	42.91	>999	29.81	7.19	0.810	ORP 108	brown	no odor
8:03	4	43.90	>999	29.55	7.19	0.804	ORP 102	brown	no odor
8:08	5	43.40	495	29.43	7.29	0.825	ORP 136	lt gray	no odor
8:11	6	43.44	>999	29.60	7.25	0.853	ORP 80	gray	no odor
8:15	7	43.50	116	39.72	7.24	0.839	ORP 88	lt gray	no odor
8:19	8	43.81	>999	29.35	7.30	0.818	ORP 110	gray	no odor
8:24	9	43.68	150	29.87	7.29	0.857	ORP 97	lt gray	no odor
8:26	10	44.72	665	29.45	7.36	0.825	ORP 110	gray	no odor
8:29	11	45.00	>999	29.34	7.32	0.824	ORP 104	gray	no odor
8:54	12	42.23	>999	29.94	7.51	0.895	ORP 140	gray	no odor
8:58	13	42.59	>999	29.98	7.40	0.839	ORP 111	gray	no odor
9:01	14	42.85	311	29.98	7.46	0.840	ORP 129	gray	no odor
9:05	15	43.05	133	29.28	7.50	0.843	ORP 137	lt gray	no odor
9:08	16	43.45	>999	29.66	7.42	0.845	ORP 117	gray	no odor
9:10	17	43.82	>999	29.58	7.43	0.816	ORP 120	gray	no odor
9:12	18	43.98	512	29.40	7.42	0.836	ORP 118	gray	no odor
9:14	19	44.15	327	29.25	7.45	0.845	ORP 117	gray	no odor
9:16	20	44.20	133	29.35	7.47	0.850	ORP 117	lt gray	no odor
9:18	21	44.28	110	29.32	7.45	0.849	ORP 118	lt gray	no odor
9:20	22	44.32	82.5	29.46	7.46	0.853	ORP 121	gray tinge	no odor
9:22	23	44.34	77.5	29.25	7.46	0.850	ORP 120	gray tinge	no odor
9:24	24	44.40	78.2	29.23	7.43	0.852	ORP 121	gray tinge	no odor
9:26	25	44.40	58.5	29.25	7.52	0.858	ORP 131	gray tinge	no odor
9:28	26	44.40	50.5	29.34	7.45	0.855	ORP 125	gray tinge	no odor
9:30	27	44.41	57.8	29.47	7.44	0.858	ORP 126	gray tinge	no odor
9:32	28	44.48	55.6	29.43	7.44	0.851	ORP 131	gray tinge	no odor
9:34	29	44.49	59.8	29.45	7.42	0.854	ORP 123	gray tinge	no odor
9:36	30	44.50	56.1	29.47	7.42	0.857	ORP 127	gray tinge	no odor

PROJECT NUMBER	WELL NUMBER	
180243	AOC E MW-08	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : AOC E Remedial Investigation LOCATION : AOC E, Former NASD, Vieques

DEVELOPMENT CONTRACTOR : Geoworks, Inc.

DEVELOPMENT METHOD AND EQUIPMENT USED : Surging and pumping with a grundfos pump

START WATER LEVELS : 40.39 ft BTOC START : 0705 5/30/2002 END : 1042 LOGGER : H. Hernandez

MAXIMUM DRAWDOWN DURING PUMPING 3.49 ft

RANGE AND AVERAGE DISCHARGE RATE: (ml/min)

TOTAL QUANTITY OF WATER DISCHARGED: 23 gal

DISPOSITION OF DISCHARGE WATER: Contained in 55-gallon drum

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
705	0	41.42	999+	29.5	5.95	0.745	ORP 175 Light brown
711	1	42.31	167	30.6	6.88	0.747	ORP 119
740	Restart pump						
743	2	42.9	999+	31.2	7.53	0.829	ORP 130
758	3	43.04	689	31.4	7.07	0.829	ORP 146
804	4	43.09	213	30.9	7.09	0.815	ORP 149
806	Surge well						
810	5	42.72	999+	30.8	7.14	0.808	ORP 146
818	6	42.84	999+	32	7.04	0.832	ORP 96
826	Pump Stopped pumping again						
828	Restart pump						
832	7	NA	999+	31.1	7.1	0.829	ORP 128
838	8	43.13	999+	31.7	7.11	0.836	ORP 121
844	9	NA	438	31.8	7.08	0.84	ORP 106
846	Water is clearing up. Will surge well.						
858	Restart pump						
859	10	42.65	999+	31.8	7.12	0.816	ORP 99
903	11	42.86	999+	33	7.08	0.838	ORP 56
911	12	NA	999+	32.3	7.12	0.848	ORP 79
912	Pump Stopped pumping again						
914	Restart pump						
918	13	NA	491	32.1	7.1	0.846	ORP 82
923	Pump Stopped pumping again						
925	Restart pump						
926	14	NA	331	32.2	7.1	0.843	ORP 79
939	Switch pumps & resurge well						
942	15	42.22	728	29.9	7.39	0.829	ORP 116
947	16	42.74	999+	31.1	7.12	0.841	ORP 123
953	17	42.96	236	31.8	7.11	0.848	ORP 127
1000	18	43.05	86.2	31.7	7.11	0.848	ORP 130
1007	19	43.07	70.6	31.8	7.11	0.847	ORP 129
1013	Resurge well screen						

Appendix E
Groundwater Sampling Data Sheets

Appendix E
1998 Groundwater Sampling Data Sheets

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
146501.US.SC	2016-MW1	SHEET 1 OF 1

MONITOR WELL PURGE AND SAMPLING FIELD SHEET

PROJECT :

FIELD CREW: (leave blank if on previous page)

			CASING DIAMETER		GAL/FT OF CASING	
WELL DEPTH (ft):	50.00					
DEPTH to WATER (ft):	- 42.14		2 in.		0.1632	
WATER COLUMN (ft):	= 7.86		4 in.		0.6528	
GAL/FT of CASING	x 0.1632		6 in.		1.4688	
CASING VOLUME (gal):	= 1.28		8 in.		2.611	
No. of VOLUMES	x 3		10 in.		4.0797	
PURGE VOLUME (gal):	= 3.8		12 in.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.	OTHER:	BAILER : TEFLON, SS ,OTHER:
TIME ON:		BAILER VOL.. (gal) (.25) / .33
FLOW RATE (gpm):		REQUIRED PULLS: 6
PUMP TIME (min):		VOL. PURGED (gals): 4
VOL. PURGED (gals):		OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS					ACCEPTABLE RANGE (±)
	1st	2nd	3rd	4th	5th	
TIME						N/A
VOL. (gal)	1.3	2.6	3.9			N/A
pH (s.units)	NA	NA	NA			0.1
TEMP.(C)						10%
COND.(ms/cm)						3%
~~D.O. %~~						10%
~~ORP (mV)~~						10
~~TURB. (ntu)~~						10%

6 BAILS

SAMPLE PARAMETERS (GRAB OR COMPOSITE) :

FILTERED METALS COLLECTED: Y / (N) .0um,0.45um, OTHER:

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHEET Y / (N)

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS: 8020, 418.1, 8015m GRO/DRO, 8015m MOC, 610

SAMPLE DATE/ TIME: 9/11/98 @ 1000

SIGNED/SAMPLER: M. L. Washbeck

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
146801.US.SC	2016-MW2	SHEET 1 OF 1

MONITOR WELL PURGE AND SAMPLING FIELD SHEET

PROJECT :

FIELD CREW: (leave blank if on previous page)

		CASING DIAMETER		GAL/FT OF CASING	
WELL DEPTH (ft):	50.00				
DEPTH to WATER (ft): -	42.23	2 in.		0.1632	
WATER COLUMN (ft): =	7.77	4 in.		0.6528	
GAL/FT of CASING x	0.1632	6 in.		1.4688	
CASING VOLUME (gal): =	1.3	8 in.		2.611	
No. of VOLUMES x	3	10 in.		4.0797	
PURGE VOLUME (gal): =	3.8	12 in.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.	OTHER:	BAILER : TEFLON, SS ,OTHER:
TIME ON:		BAILER VOL.. (gal) (25) / .33
FLOW RATE (gpm):		REQUIRED PULLS: 6
PUMP TIME (min):		VOL. PURGED (gals): 4
VOL. PURGED (gals):		OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS					ACCEPTABLE RANGE (±)
	1st	2nd	3rd	4th	5th	
TIME						N/A
VOL. (gal)	1.3	2.6	3.9			N/A
pH (s.units)						0.1
TEMP.(C)						10%
COND.(ms/cm)						3%
D.O. %						10%
ORP (mV)						10
TURB. (ntu)						10%

SAMPLE PARAMETERS (GRAB OR COMPOSITE):

FILTERED METALS COLLECTED: Y / (N) .0um,0.45um, OTHER:

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHEET Y / (N)

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS: 8020, 418.1, 8015m GRO/DRO, 8015m OIL , 610

SAMPLE DATE/ TIME: 9/11/98 1 @

SIGNED/SAMPLER: N. L Weathers

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
146801.US.SC	2016-MW3	SHEET 1 OF 1

MONITOR WELL PURGE AND SAMPLING FIELD SHEET

PROJECT :

FIELD CREW: (leave blank if on previous page)

			CASING DIAMETER		GAL/FT OF CASING	
WELL DEPTH (ft):	50.00		2 in.		0.1632	
DEPTH to WATER (ft):	41.08	-	4 in.		0.6528	
WATER COLUMN (ft):	8.92	=	6 in.		1.4688	
GAL/FT of CASING	0.1632	x	8 in.		2.611	
CASING VOLUME (gal):	1.5	=	10 in.		4.0797	
No. of VOLUMES	3	x	12 in.		5.8748	
PURGE VOLUME (gal):	4.5	=				

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.	OTHER:	BAILER : TEFLON, SS ,OTHER:
TIME ON:		BAILER VOL.. (gal) (125) / .33
FLOW RATE (gpm):		REQUIRED PULLS: 6
PUMP TIME (min):		VOL. PURGED (gals): 4.5
VOL. PURGED (gals):		OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS					ACCEPTABLE RANGE (±)
	1st	2nd	3rd	4th	5th	
TIME						N/A
VOL. (gal)	1.5	3.0	4.5			N/A
pH (s.units)						0.1
TEMP.(C)						10%
COND.(ms/cm)						3%
D.O. %						10%
ORP (mV)						10
TURB. (ntu)						10%

SAMPLE PARAMETERS ((GRAB) OR COMPOSITE) :

FILTERED METALS COLLECTED: Y (N) 1.0um,0.45um, OTHER:

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHEET Y (N)

Q.C. SAMPLE TYPE: (DUPLICATE) , EQUIPMENT BLANK , OTHER : DUP#1

Q.C. PARAMETERS: 8020, 418.1, 8015m Geo/DRO, 8015m OIL, 610

SAMPLE DATE/ TIME: 9/11/98 1@

SIGNED/SAMPLER: M.L. Weatherly

Appendix E
2000 Groundwater Sampling Data Sheets

PROJECT# 139322.FI.60

WELL NUMBER:AOC-E MW-2	**SITE: AOC-E UST 2016 NASD VIEQUES**			
FIELD CREW:				(leave blank if on previous page)
DEPTH TO WATER (FT): =50.25	CASING DIA.		GAL/FT OF CASING	
WELL DEPTH (FT): -35.90	**2 IN.**		**0.1632**	
WATER COLUMN (FT): =14.35	**4 IN.**		**0.6528**	
GAL/FT OF CASING x 0.1632	**6 IN.**		**1.4688**	
CASING VOLUME (GAL) =2.34	**8 IN.**		**2.611**	
NO. OF VOLUMES min.(3) x 3	**10 IN.**		**4.0797**	
PURGE VOLUME (GAL) = 7	**12 IN.**		**5.8748**	

METHOD OF PURGING (circle one)			
PUMP: SUB. CENT. PERIST.	**OTHER:**	**BAILER** TEFLON SS ,OTHER:	
TIME ON:		BAILER VOL.. (gal)	.25 / 33
FLOW RATE (gpm):		REQUIRED PULLS:	21
PUMP TIME (min):		VOL. PURGED (gals):	
VOL. PURGED (gals):		OTHER:	

FIELD PARAMETERS	**FIELD MEASUREMENTS**					WITHIN10% Y / N
	1st	2nd	3rd	4th	5th	6th
TIME	1147	TDS=0.665 1230	1300			
VOL. (gal)	7	14	21			
pH (s.units)	7.44	7.18	6.98			
ORP (mV)	51.8	69.6	89.9			
TEMP.(C)	28.98	29.24	29.07			
Salinity (ppt)	0.49	0.50	0.50			
DO (mg/L)	1.75	3.11	3.53			
Turbidity (NTU)		992	795			
COND.(umhos/cm)	1080	1108	1099			

SAMPLE PARAMETERS (**GRAB** OR **COMPOSITE**) :

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

ODOR: NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY NONE , LOW , MEDIUM ~~, HIGH , VERY TURBID~~. HEAVY SILTS

COMMENTS:

PROJECT# 139322.FI.60

WELL NUMBER:AOC-E MW-3	**SITE: AOC-E UST 2016 NASD VIEQUES**			
FIELD CREW:				(leave blank if on previous page)
DEPTH TO WATER (FT): =49.52	CASING DIA.		GAL/FT OF CASING	
WELL DEPTH (FT): -36.14	**2 IN.**		**0.1632**	
WATER COLUMN (FT): =13.38	**4 IN.**		**0.6528**	
GAL/FT OF CASING x 0.1632	**6 IN.**		**1.4688**	
CASING VOLUME (GAL) =2.18	**8 IN.**		**2.611**	
NO. OF VOLUMES min.(3) x 3	**10 IN.**		**4.0797**	
PURGE VOLUME (GAL) = 6.5	**12 IN.**		**5.8748**	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.	**OTHER:**	**BAILER** : TEFLON, SS ,OTHER:	
TIME ON:		BAILER VOL.. (gal)	.25 / .33
FLOW RATE (gpm):		REQUIRED PULLS:	21
PUMP TIME (min):		VOL. PURGED (gals):	
VOL. PURGED (gals):		OTHER:	

FIELD PARAMETERS	**FIELD MEASUREMENTS**					WITHIN10% Y / N
	1st	2nd	3rd	4th	5th	6th
TIME	1435	TDS=0.665 1453	1506			
VOL. (gal)	2.5	5	7.5			
pH (s.units)	8.12	7.29	7.18			
ORP (mV)	70.7	90.5	98			
TEMP.(C)	28.87	28.76	28.7			
Salinity (ppt)	0.47	0.50	0.51			
DO (mg/L)	4.12	4.26	4.39			
Turbidity (NTU)	597	1133	1340			
COND.(umhos/cm)	958	1025	1031			

SAMPLE PARAMETERS (**GRAB** OR **COMPOSITE**) :

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

ODOR: NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

PROJECT# 139322

WELL NUMBER: AOC-E MW-4	**SITE: NASD VIEQUES**				
FIELD CREW: JENNIFER OTTOSON & KEITH COATS			(leave blank if on previous page)		
DEPTH TO WATER (FT): =38.05	CASING DIA.		GAL/FT OF CASING		
WELL DEPTH (FT): -50.80	**2 IN.**		**0.1632**		
WATER COLUMN (FT): =12.75	**4 IN.**		**0.6528**		
GAL/FT OF CASING x 0.1632	**6 IN.**		**1.4688**		
CASING VOLUME (GAL) =2.3	**8 IN.**		**2.611**		
NO. OF VOLUMES min.(3) x 3	**10 IN.**		**4.0797**		
PURGE VOLUME (GAL) = 6.5	**12 IN.**		**5.8748**		

METHOD OF PURGING (circle one)

PUMP: (SUB.) CENT. PERIST.	**OTHER:**	**BAILER** : TEFLON, SS ,OTHER:
TIME ON:		BAILER VOL.. (gal) .25 / .33
FLOW RATE (gpm):		REQUIRED PULLS: 21
PUMP TIME (min):		VOL. PURGED (gals):
VOL. PURGED (gals):		OTHER:

FIELD PARAMETERS	**FIELD MEASUREMENTS**					WITHIN10% Y / N
	1st	2nd	3rd	4th	5th	6th
TIME		TDS=0.665				
VOL. (gal)	0	2	4	6.5		
pH (s.units)						
ORP (mV)						
TEMP.(C)						
Salinity (ppt)						
DO (mg/L)						
Turbidity (NTU)						
COND.(umhos/cm)						

Pumped Dry

SAMPLE PARAMETERS (**GRAB** OR **COMPOSITE**) : VOC, SVOC, PEST/PCB, METALS (FILT & UNFILT)

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

ODOR: NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS: WELL PURGES DRY & VERY SLOW RECOVERY FROM DEVELOPMENT CREUS INFO. WE

PROJECT# 139322.FI.70

WELL NUMBER:AOC-E-MW-5	**SITE:NASD VIEQUES**			
FIELD CREW: JENNIFER OTTOSON & KEITH COATS			(leave blank if on previous page)	
DEPTH TO WATER (FT): =37.94	CASING DIA.		GAL/FT OF CASING	
WELL DEPTH (FT): -50.00	**2 IN.**		**0.1632**	
WATER COLUMN (FT): =12.06	**4 IN.**		**0.6528**	
GAL/FT OF CASING x 0.1632	**6 IN.**		**1.4688**	
CASING VOLUME (GAL) =1.97	**8 IN.**		**2.611**	
NO. OF VOLUMES min.(3) x 5.90	**10 IN.**		**4.0797**	
PURGE VOLUME (GAL) =	**12 IN.**		**5.8748**	

METHOD OF PURGING (circle one)			
PUMP: SUB. CENT. PERIST.	**OTHER:**	**BAILER** : TEFLON, SS ,OTHER:	
TIME ON: 1505		BAILER VOL.. (gal)	.25 / .33
FLOW RATE (gpm): 0.20		REQUIRED PULLS:	21
PUMP TIME (min):		VOL. PURGED (gals):	
VOL. PURGED (gals):		OTHER:	

FIELD PARAMETERS	**FIELD MEASUREMENTS**					WITHIN10% Y / N
	1st	2nd	3rd	4th	5th	6th
TIME	15:55	TDS=0.665 16:01	16:09	16:16	16:26	
VOL. (gal)	0.25	1.25	2.5	4	7	
pH (s.units)	6.06	6.95	7.04	6.98	6.92	
ORP (mV)						
TEMP.(C)	30.11	33.4	34.83	33.77	34.65	
Salinity (ppt)						
DO (mg/L)	1.8	1.97	2.36	2.48	2.93	
Turbidity (NTU)	730	660	450	430	220	
COND.(umhos/cm)	1237	1305	1383	1336	1328	

SAMPLE PARAMETERS (**GRAB** OR **COMPOSITE**) : VOC, SVOC, PEST/PCB, METALS (FILT & UNFILT)

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , (BROWN) , GREY , MILKY WHITE , OTHER:

ODOR: (NONE) , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY NONE , ~~LOW~~ , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

PROJECT# 139322

WELL NUMBER:AOC-E MW-06		**SITE: NASD VIEQUES**			
FIELD CREW: JENNIFER OTTOSON & KEITH COATS				(leave blank if on previous page)	
DEPTH TO WATER (FT): =37.84		CASING DIA.		GAL/FT OF CASING	
WELL DEPTH (FT): -46.70		**2 IN.**		**0.1632**	
WATER COLUMN (FT): = 8.86		**4 IN.**		**0.6528**	
GAL/FT OF CASING x 0.1632		**6 IN.**		**1.4688**	
CASING VOLUME (GAL) =1.5		**8 IN.**		**2.611**	
NO. OF VOLUMES min.(3) x 3		**10 IN.**		**4.0797**	
PURGE VOLUME (GAL) = 4.5		**12 IN.**		**5.8748**	

METHOD OF PURGING (circle one)

PUMP: (SUB.) CENT. PERIST.	**OTHER:**	**BAILER** : TEFLON, SS ,OTHER:
TIME ON: 0825		BAILER VOL.. (gal) .25 / .33
FLOW RATE (gpm): 0.25		REQUIRED PULLS: 21
PUMP TIME (min): 20		VOL. PURGED (gals):
VOL. PURGED (gals): 5		OTHER:

FIELD PARAMETERS	**FIELD MEASUREMENTS**					WITHIN10% Y / N
	1st	2nd	3rd	4th	5th	6th
TIME	8:25	TDS=0.665 8:31	8:37	8:43		
VOL. (gal)	0	1.5	3	4.5		
pH (s.units)	MISSED	7.14	7.14	7.14		
ORP (mV)	INITIAL	107.4	103.3	102.3		
TEMP.(C)	READINGS	30.46	30.54	30.58		
Salinity (ppt)		0.46	0.45	0.45		
DO (mg/L)						
Turbidity (NTU)		276	58	36		
COND.(umhos/cm)		1035	1030	1029		

SAMPLE PARAMETERS (**GRAB** OR **COMPOSITE**) : VOC, SVOC, PEST/PCB, METALS (FILT & UNFILT)

FILTERED METALS COLLECTED: (Y / N) 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: (CLEAR) , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

ODOR: (NONE) , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY NONE , ~~LOW~~ , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

Appendix E
2002 Groundwater Sampling Data Sheets

CH2M HILL, INC. Project Number: 180423

GROUNDWATER SAMPLING DATA SHEET

Client:	**US Navy**	Well ID:	**MW02**
Location:	**AOC E Former NASD Vieques**	Sample ID:	**NDAE-GWMW02-R01**
Event:	**Remedial Investigation**	MS/MSD	YES / NO
Date:	**21-May-02**	Sample Team:	**H. Hernandez/NWF**
Weather:	**Partly Sunny - 85 F.**		**K.L. Murphy/GNV**

Total Depth:	**49.78**	FT.(BTOC)	Measuring Device:	**Solinst Water Level**
Depth to water:	**40.01**	FT.(BTOC)	Date and Time:	**21-May-02**
Water Column:	**9.77**	FT.	WELL DIAMETER	
	x **0.163**	GAL/FT.	[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]	
Well Volume:	**1.59251**	GAL.	(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)	
Total Purge Volume:	**5**	GAL.		
Purge Device:	**Grundfos Low Flow Submersible Environmental Pump**			

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. ms/cm	Temp., °C	DO mg/L	Turbidity	ORP/Color/Odor
1213	**start**	**7.93**	**0.839**	**29.6**	**7.09**	**>999**	**58/green-gray/none noted**
1229	**1**	**7.34**	**0.832**	**30.1**	**4.2**	**53.4**	**88/trace gray tinge/none noted**
1248	**1.5**	**7.4**	**0.848**	**32.2**	**4.39**	**>999**	**91/green/gray/none noted**
1303	**2**	**7.25**	**0.869**	**32.4**	**3.91**	**68.3**	**100/light gray tinge/none noted**
1316	**2.5**	**7.21**	**0.882**	**32.1**	**3.85**	**30.3**	**103/light gray tinge/none noted**
1329	**3**	**7.2**	**0.890**	**32.2**	**3.82**	**23.3**	**103/light gray tinge/none noted**
1341	**4**	**7.18**	**0.896**	**32.1**	**3.81**	**19.7**	**103/light gray tinge/none noted**
1349	**5**	**7.17**	**0.901**	**32.6**	**3.76**	**20**	**109/light gray tinge/none noted**

Sample information: method, container number, size, and type, preservative used.

See chain-of-custody for May 21, 2002

Sample Time	**1402**
Sample Appearance	**Groundwater clear at sample time**

Notes:

Pump restarted at 1248.

Signed by: _____

Date and Time

CH2M HILL, INC. Project Number: 180423

GROUNDWATER SAMPLING DATA SHEET

Client:	**US Navy**	Well ID:	**MW03**
Location:	**AOC E Former NASD Vieques**	Sample ID:	**NDAE-GWMW03-R01**
Event:	**Remedial Investigation**	MS/MSD	YES / NO
Date:	**21-May-02**	Sample Team:	**H. Hernandez/NWF**
Weather:	**Partly Sunny - 85 F.**		**K.L. Murphy/GNV**

Total Depth: **48.91** FT.(BTOC) Measuring Device: **Solinst Water Level**

Depth to water: **40.89** FT.(BTOC) Date and Time: **21-May-02**

Water Column: **8.02** FT. WELL DIAMETER

x **0.163** GAL/FT. [(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]

Well Volume: **1.30726** GAL. (1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Total Purge Volume: **5** GAL.

Purge Device: **Grundfos Low Flow Environmental Submersible Pump**

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. µs/cm	Temp., °C	DO mg/l	Turbidity	ORP/Color/ Odor
0806	**start**	**6.34**	**1.04**	**29.26**	**4.30**	**>999**	**204/gray/none noted**
0831	**1.00**	**6.92**	**1.04**	**32.91**	**2.30**	**10.40**	**140/clear/no odor noted**
0935	**2.00**	**7.07**	**1.05**	**31.17**	**4.60**	**42.40**	**228/trace gray tinge/no odor**
1000	**3.00**	**6.95**	**1.05**	**32.77**	**4.10**	**22.50**	**176/clear/no odor**
1018	**4.00**	**6.94**	**1.06**	**32.96**	**3.10**	**13.20**	**171/Clear/none noted**
1039	**5.00**	**6.94**	**1.06**	**32.93**	**2.90**	**11.80**	**180/clear/no odor**

Sample information: method, container number, size, and type, preservative used.

Sample Time **1055**

Sample Appearance Sample clear, no petroleum odor noted in purge water

Notes:

Signed by: _____

Date and Time

CH2M HILL, INC. Project Number: 180423

GROUNDWATER SAMPLING DATA SHEET

Client:	**US Navy**	Well ID:	**MW04**
Location:	**AOC E Former NASD Vieques**	Sample ID:	**NDAE-GWMW04-R01**
Event:	**Remedial Investigation**	MS/MSD	YES / NO
Date:	**21-May-02**	Sample Team:	**H. Hernandez/NWF**
Weather:	**Partly Sunny 85 F.**		**K.L. Murphy/GNV**

Total Depth: **50.63** FT.(BTOC) Measuring Device: **Solinst Water Level**

Depth to water: **40.60** FT.(BTOC) Date and Time: **21-May-02**

Water Column: **10.03** FT. WELL DIAMETER

x **0.163** GAL/FT. [(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]

Well Volume: **1.63489** GAL. (1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Total Purge Volume: **5** GAL.

Purge Device: **Grundfos Environmental Low Flow Submersible Pump**

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. ms/cm	Temp., °C	DO	Turbidity	ORP /Color/Color
8:01	**start**	**6.75**	**1.37**	**29.7**	**2.66**	**>999**	minus 126/gray/green/pet. odor
8:25	**1**	**6.69**	**1.40**	**32.7**	**7.79**	**158**	minus 120/mod gray/pet. odor
8:51	**2**	**6.78**	**1.43**	**34.0**	**1.61**	**55.5**	minus 117/gray tinge/pet odor
9:26	**3**	**6.83**	**1.45**	**34.5**	**1.59**	**18.8**	minu 115/clear/pet. odor
9:53	**4**	**6.83**	**1.44**	**34.5**	**1.49**	**15.2**	minus 116/clear/pet. odor
10:24	**5**	**6.87**	**1.45**	**34.7**	**1.51**	**13.6**	minus 112/clear/pet. odor

Sample information: method, container number, size, and type, preservative used.

Sample Time **1040**

Sample Appearance Sampl e clear, slight petroleum odor

Notes:

Signed by: _____

Date and Time

CH2M HILL, INC. Project Number: 180423

GROUNDWATER SAMPLING DATA SHEET

Client:	**US Navy**	Well ID:	**MW06**
Location:	**AOC E Former NASD Vieques**	Sample ID:	**NDAE-GWMW06-R01**
Event:	**Remedial Investigation**	MS/MSD	**YES**
Date:	**20-May-02**	Sample Team:	**H. Hernandez/NWF**
Weather:	**Partly Cloudy, 85 F.**		**K.L. Murphy/GNV**

Total Depth: **45.05** FT.(BTOC) Measuring Device: **Solinst Water Level**

Depth to water: **41.08** FT.(BTOC) Date and Time: **May 20 2002**

Water Column: **3.97** FT.

x **0.163** GAL/FT.

Well Volume: **0.64711** GAL.

WELL DIAMETER

[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]

(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Total Purge Volume: **5** GAL.

Purge Device: **Grundfos Low Flow Environmental Submersible Pump**

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. ms/cm	Temp., °C	DO	Turbidity	ORP/Color/Odor
1645	**start**	**6.95**	**1.08**	**29.38**	**4.9**	**722**	**287/brown/no odor**
1648	**1**	**6.90**	**1.08**	**29.50**	**4.8**	**222**	**273/lt brown/no odor**
1658	**2**	**6.84**	**1.10**	**31.44**	**4.2**	**52.4**	**253/tan tinge/no odor**
1703	**3**	**6.88**	**1.10**	**30.60**	**4.2**	**29.9**	**236/gray tinge/no odor**
1708	**4**	**6.90**	**1.11**	**30.44**	**4.1**	**34.9**	**245/gray tinge/no odor**
1714	**5**	**6.92**	**1.12**	**30.58**	**4.1**	**31.1**	**250/gray tinge/no odor**

Sample information: method, container number, size, and type, preservative used.

See chain of custody

Sample Time **1730**

Sample Appearance **Clear with very slight gray tinge at sample time**

Notes:

Signed by: _____

Date and Time

CH2M HILL, INC. Project Number: 180423

GROUNDWATER SAMPLING DATA SHEET

Client:	**US Navy**	Well ID:	**MW07**
Location:	**AOC E Former NASD Vieques**	Sample ID:	**NDAE-GWMW07**
Event:	**Remedial Investigation**	MS/MSD	**NO**
Date:	**24-May-02**	Sample Team:	**H. Hernandez/NWF**
Weather:	**Partly Sunny, 85 F.**		**K.L. Murphy/GNV**

Total Depth:	**49.97**	FT.(BTOC)	Measuring Device:	**Solinst water level**
Depth to water:	**40.97**	FT.(BTOC)	Date and Time:	**May 24 2002**
Water Column:	**9**	FT.	WELL DIAMETER	
	x **0.163**	GAL/FT.	[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]	
Well Volume:	**1.467**	GAL.	(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)	
Total Purge Volume:	**5**	GAL.		
Purge Device:	**Grundfos Low Flow Environmental Submersible Pump**			

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. ms/cm	Temp., °C	DO	Turbidity	ORP/Color/Odor
6:59	**start**	**5.92**	**0.751**	**29.1**	**5.62**	**>999**	**131/brown/no odor**
7:16	**1**	**6.73**	**0.752**	**31.6**	**4.59**	**110**	**133/lt brown/no odor**
7:29	**2**	**6.75**	**0.774**	**32.3**	**4.39**	**25.2**	**132/tan tinge/no odor**
7:43	**3**	**6.74**	**0.768**	**32.2**	**4.28**	**13**	**113/gray tinge/no odor**
7:54	**4**	**6.25**	**0.789**	**32.1**	**4.2**	**9**	**107/clear/no odor**
8:05	**5**	**6.76**	**0.79**	**32.1**	**4.3**	**9**	**103/clear/no odor**

Sample information: method, container number, size, and type, preservative used.

Sample Time **8:20**

Sample Appearance **Clear at sample time**

Notes:

Signed by: _____

Date and Time

Appendix E
2003 Groundwater Sampling Data Sheets

PROJECT# 139322

WELL NUMBER: AOC-E MW-1	**SITE: AOC-E UST 2016 NASD VIEQUES**			
FIELD CREW:			(leave blank if on previous page)	
DEPTH TO WATER (FT): =50.33	CASING DIA.		GAL/FT OF CASING	
WELL DEPTH (FT): -36.66	**2 IN.**		**0.1632**	
WATER COLUMN (FT): =	**4 IN.**		**0.6528**	
GAL/FT OF CASING x	**6 IN.**		**1.4688**	
CASING VOLUME (GAL) =	**8 IN.**		**2.611**	
NO. OF VOLUMES min.(3) x	**10 IN.**		**4.0797**	
PURGE VOLUME (GAL) =	**12 IN.**		**5.8748**	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.	**OTHER:**	**BAILER** : TEFLON, SS ,OTHER:	
TIME ON:		BAILER VOL.. (gal)	.25 / .33
FLOW RATE (gpm):		REQUIRED PULLS:	
PUMP TIME (min):		VOL. PURGED (gals):	
VOL. PURGED (gals):		OTHER:	

FIELD PARAMETERS	**FIELD MEASUREMENTS**					WITHIN10% Y / N
	1st	2nd	3rd	4th	5th	6th
TIME	FREE PRODUCT (SEE COMMENTS)					
VOL. (gal)						
pH (s.units)						
ORP (mV)						
TEMP.(C)						
Salinity (ppt)						
DO (mg/L)						
Turbidity (NTU)						
COND.(umhos/cm)						

SAMPLE PARAMETERS (**GRAB** OR **COMPOSITE**) :

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

ODOR: NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS: OIL/WATER INTERFACE DTW = 36.60 DT PRODUCT = 36.15

Appendix E
2004 Groundwater Sampling Data Sheets

CH2M HILL, INC. Project Number: 180357

GROUNDWATER SAMPLING DATA SHEET

Client:	**US Navy**	Well ID:	**MW-08**
Location:	**AOC E Former NASD Vieques**	Sample ID:	**NDWAE-GW08-R01**
Event:	**Remedial Investigation**	MS/MSD	**NO**
Date:	**September 8, 2003**	Sample Team:	**Ameer & Isaac Lynch/GNV**
Weather:	**Rain off and on**		

Total Depth:	**49.5**	FT.(BTOC)	Measuring Device:	**Water level meter**
Depth to water:	**43.62**	FT.(BTOC)	Date and Time:	**September 8, 2003 11:15**
Water Column:	**5.88**	FT.	WELL DIAMETER	
x	**0.163**	GAL/FT.	[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]	
Well Volume:	**0.95844**	GAL.	(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)	
Total Purge Volume:	**16**	GAL.		
Purge Device:	**Grundfos Low Flow Environmental Submersible Pump**			

FIELD PARAMETERS

Purged Vol. (gals)	pH	Cond. ms/cm	Temp., °C	DO	ORP	Turbidity	DTW, ft	ORP/Color/Odor
2	7.16	917	32.1	4.76	29.9	776	44.60	
5	7.19	873	32.6	5.74	114	>1000	44.50	
8	7.13	866	30.9	5.33	179	>1000	44.75	
10	7.03	923	31.7	5.39	211	706	44.70	
12	7.02	926	31.7	5.36	224	137	44.70	
13	6.99	928	31.7	5.37	257	45.7	44.70	
14	6.98	929	31.9	5.40	267	34.7	44.70	
15	6.97	929	31.9	5.41	277	25.5	44.70	
16	6.98	928	31.9	5.40	279	23.2	44.70	

Sample information: method, container number, size, and type, preservative used.

Pump turned on at 09:15 and sample collected at 11:15.

Pumping rate of 500 ml/min attained during sampling event.

Sample Time **9/8/2003 11:15**

Sample Appearance

Notes:

Sampled for VOC's, Metals, Diss. Metals, SVOC, and CN.

Signed by: Isaac Lynch **9/8/2003 11:15**

Date and Time

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.ZZ

Client: U.S.Navy
Location: AOC E
Event:
Date: 9/1/2004
Weather: Hot, light wind

Well ID: MW-01 AOC E
Sample ID: NDAEGW01-R03
MS/MSD Taken: YES / (NO)
Sample Team: I. Lynch, M. Brown
B. Brice, M. Clausen

Total Depth: 50.00 FT.(BTOC)
Depth to water: (-) 40.90 FT.(BTOC)
Water Column: 9.10 FT.
(x) 0.163 GAL/FT.
Well Volume: 1.48 GAL.
Total Volume Purged: ~7.35 GAL.
Purge Device: 110V Grundfos Pump with 3/8" TFE Tubing
Sample Time 1235
Sample Appearance: Clear, spotty from product with strong petro odor
Flow Rate: Pump on at 1200 at 800 mL/min

Measuring Device: Elec. WLI
Date and Start Time: 9/1/2004

WELL DIAMETER
(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

FIELD PARAMETERS

Time	DTW BTOC	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp. °C	DO mg/L	ORP mV	Turbidity NTUs	Color / Odor / Comments
1212	41.60	2.5	6.91	1551	33.6	0.70	-44.3	7.90	Clear, spotty from product
1220	42.20	4.2	6.78	1547	32.7	0.55	-42.8	4.29	Strong petro odor
1225	42.57	5.25	6.86	1509	35.16	0.54	-45.1	5.52	
1230	43.70	6.30	6.93	1470	35.55	0.56	-59.9	3.38	
1235	43.70	-	9.96	1458	36.16	0.55	-59.9	3.38	

Notes: Bubbles hard to remove from VOC bottles. Dissolved gases in sample water.

Bailed out as much free product as possible with bailer. DTW=41.41 'BTOC, DTFP=40.75' BTOC, FP=0.66'

Signed by: I. Lynch
Date and Time: 9/1/2004

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.ZZ

Client: U.S.Navy
Location: AOC E
Event:
Date: 8/26/2004
Weather: hot, in the 90's, cloudy, humid

Well ID: MW-02 AOC E
Sample ID: NDAEGW02-R03
MS/MSD Taken: YES / NO
Sample Team: I. Lynch
M. Weatherby

Total Depth: 49.58 FT.(BTOC)
Depth to water: (-) 41.30 FT.(BTOC)
Water Column: 8.28 FT.
(x) 0.163 GAL/FT.
Well Volume: 1.35 GAL.
Total Volume Purged: 13.6 GAL.

Measuring Device: Elec. WLI
Date and Start Time: 8/26/04 1000

WELL DIAMETER
(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Purge Device: 110V Grundfos Pump with 3/8" TFE Tubing
Sample Time 1120
Sample Appearance: Clear with no odor
Flow Rate: Pump on at 1015 at 800 mL/min

FIELD PARAMETERS

Time	DTW BTOC	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp. °C	DO mg/L	ORP mV	Turbidity NTUs	Color / Odor / Comments
1017	41.6	0.40	6.86	1035	32.0	4.28	540	69.0	opaque grey, silty
1020	41.7	1.05	6.89	1041	31.8	4.26	470	20.3	Clear, no odor
1030	41.7	3.75	6.88	1041	31.8	4.25	478	18.0	Clear, no odor
1045	41.6	6.30	6.88	1040	31.7	4.21	471	14.3	Clear, no odor
1100	41.6	9.40	6.89	1042	31.7	4.20	469	12.2	Clear, no odor
1115	41.6	12.60	6.89	1041	31.7	4.21	453	8.60	Clear, no odor
1120	41.6	13.60	6.87	1040	31.7	4.21	451	8.21	Clear, no odor

Notes: Collected VOC's, SVOC's, Metal, Diss. Metals, CN-, DRO, GRO, Pest/PCB. Added Pest/PCB to this sample so we could collect Pest/PCB for MS/MSD

Signed by: I. Lynch
Date and Time: 8/26/2004

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.ZZ

Client: U.S.Navy
Location: AOC E
Event:
Date: 8/25/2004
Weather: Hot, clear

Well ID: MW-03 AOC E
Sample ID: NDAEGW03-R03
MS/MSD Taken: YES / NO
Sample Team: I. Lynch
M. Weatherby

Total Depth: 48.95 FT.(BTOC)
Depth to water: (-) 40.66 FT.(BTOC)
Water Column: 8.29 FT.
(x) 0.163 GAL/FT.
Well Volume: 1.35 GAL.
Total Volume Purged: 9.5 GAL.

Measuring Device: Elec. WLI
Date and Start Time: 8/25/2004 0930

WELL DIAMETER
(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Purge Device: 110V Grundfos Pump with 3/8" TFE Tubing
Sample Time 1040
Sample Appearance: Clear with no odor
Flow Rate: Pump on at 1000 at 900 mL/min

FIELD PARAMETERS

Time	DTW BTOC	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp. °C	DO mg/L	ORP mV	Turbidity NTUs	Color / Odor / Comments
1010	41.95	2.4	7.10	1128	31.8	2.39	291	1.0	Clear, no odor
1020	41.95	4.25	7.11	1149	31.7	2.20	304	0.56	Clear, no odor
1030	41.95	7.08	7.07	1147	31.6	2.21	304	0.56	Clear, no odor
1040	41.95	9.5	7.08	1148	31.7	2.19	311	0.61	Clear, no odor

Notes: Collected metals, diss metals, SVOC, VOC, DRO/GRO. MS/MSD had bottles collecter for same peramters as the native sample. Pest/PCB will be collected at a later date for MS/MSD.

Signed by: I. Lynch
Date and Time: 8/25/2004

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.ZZ

Client: U.S.Navy
Location: AOC E
Event:
Date: 8/30/2004
Weather: Hot, 90's Wind
Rain expected

Well ID: MW-04 AOC E
Sample ID: NDAEGW04-R03
MS/MSD Taken: YES / (NO)
Sample Team: I. Lynch, B. Brice
M. Brown

Total Depth: 50.61 FT.(BTOC)
Depth to water: (-) 41.05 FT.(BTOC)
Water Column: 9.56 FT.
(x) 0.163 GAL/FT.
Well Volume: 1.56 GAL.
Total Volume Purged: 5.46 GAL.

Measuring Device: Elec. WLI
Date and Start Time: 8/30/2004 1150

WELL DIAMETER
(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Purge Device: 110V Grundfos Pump with 3/8" TFE Tubing
Sample Time 1300
Sample Appearance: Clear with no odor
Flow Rate: Pump on at at mL/min

FIELD PARAMETERS

Time	DTW BTOC	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp. °C	DO mg/L	ORP mV	Turbidity NTUs	Color / Odor / Comments
1215	42.45	2.0	7.03	1450	37.1	2.94	-13.4	36	Clear, strong petro odor
1230	42.97	3.7	7.05	1454	36.2	7.04	-13.7	35.5	Clear, strong petro odor
1240	42.93	4.0	6.99	1476	38.18	1.53	118.7	20.1	Clear, strong petro odor
1250	42.93	4.7	6.99	1475	38.21	1.52	126.6	21.0	Clear, strong petro odor
1300	42.95	5.46	7.01	1477	38.4	1.51	138.2	18.3	Clear, strong petro odor

Signed by: I. Lynch
Date and Time: 8/30/2004

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.ZZ

Client: U.S.Navy
Location: AOC E
Event:
Date: 8/30/2004
Weather: Hot, 90's, light wind

Well ID: MW-05 AOC E
Sample ID: NDAEGW05-R03
MS/MSD Taken: YES / (NO)
Sample Team: I. Lynch
B. Brice

Total Depth: 50.61 FT.(BTOC)
Depth to water: (-) 41.25 FT.(BTOC)
Water Column: 9.36 FT.
(x) 0.163 GAL/FT.
Well Volume: 1.53 GAL.
Total Volume Purged: 6.63 GAL.

Measuring Device: Elec. WLI
Date and Start Time: 8/30/2004 1000

WELL DIAMETER
(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Purge Device: 110V Grundfos Pump with 3/8" TFE Tubing
Sample Time 1125
Sample Appearance: Clear with strong petro odor
Flow Rate: Pump on at 1000 at 300 mL/min

FIELD PARAMETERS

Time	DTW BTOC	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp. °C	DO mg/L	ORP mV	Turbidity NTUs	Color / Odor / Comments
1022	45.34	1.7	7.08	1298	31.7	2.52	-14.9	15.7	Clrea, strong petro odor
1041	45.60	3.2	7.13	1324	33.2	1.52	-1.8	-	Clrea, strong petro odor
1056	45.55	4.3	7.14	1319	33.9	1.21	39.8	-	Clrea, strong petro odor
1111	45.56	5.5	7.14	1320	34.55	1.11	59.6	6.78	Clrea, strong petro odor
1125	45.56	6.63	7.10	1324	32.6	0.93	-14.3	6.70	Clrea, strong petro odor

Signed by: I. Lynch
Date and Time: 8/30/2004

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.ZZ

Client: U.S.Navy
Location: AOC E
Event:
Date: 8/25/2004
Weather: Hot, in the 90's, light wind

Well ID: MW-06 AOC E
Sample ID: NDAEGW06-R03
MS/MSD Taken: YES / (NO)
Sample Team: I. Lynch
M. Weatherby

Total Depth: 45.73 FT.(BTOC)
Depth to water: (-) 40.95 FT.(BTOC)
Water Column: 4.78 FT.
(x) 0.163 GAL/FT.
Well Volume: 0.779 GAL.
Total Volume Purged: 10.3 GAL.
Purge Device: 110V Grundfos Pump with 3/8" TFE Tubing
Sample Time 1630
Sample Appearance: Clear with no odor
Flow Rate: Pump on at 1545 at 900 mL/min

Measuring Device: Elec. WLI
Date and Start Time: 8/25/04 1545

WELL DIAMETER
(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

FIELD PARAMETERS

Time	DTW BTOC	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp. °C	DO mg/L	ORP mV	Turbidity NTUs	Color / Odor / Comments
1600	41.20'	3.5	6.96	1070	30.45	2.29	437	14.3	Clear, no odor
1615	41.40'	6.9	6.95	1070	30.54	2.01	436	3.25	Clear, no odor
1620	41.40'	8.0	6.95	1077	30.56	2.02	438	3.22	Clear, no odor
1630	41.40'	10.3	6.93	1073	30.50	2.01	455	3.2	Clear, no odor

Notes: Collected Pest, VOC's, SVOC's, Metals, and Dissolved Metals.

Signed by: I. Lynch
Date and Time: 8/26/2004

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.ZZ

Client: U.S.Navy
Location: AOC E
Event:
Date: 8/26/2004
Weather: Hot, 90's, Rain off and on

Well ID: MW-07 AOC E
Sample ID: NDAEGW07-R03
MS/MSD Taken: YES / (NO)
Sample Team: I. Lynch
M. Weatherby

Total Depth: 49.96 FT.(BTOC)
Depth to water: (-) 40.85 FT.(BTOC)
Water Column: 9.11 FT.
(x) 0.163 GAL/FT.
Well Volume: 1.48 GAL.
Total Volume Purged: 12.6 GAL.

Measuring Device: Elec. WLI
Date and Start Time: 8/26/2004 1530

WELL DIAMETER
(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Purge Device: 110V Grundfos Pump with 3/8" TFE Tubing
Sample Time 1645
Sample Appearance: Clear with no odor
Flow Rate: Pump on at 1545 at 800 mL/min

FIELD PARAMETERS

Time	DTW BTOC	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp. °C	DO mg/L	ORP mV	Turbidity NTUs	Color / Odor / Comments
1600	41.14	3.1	7.11	796	30.8	5.00	391	161	Light orange, silty
1610	41.30	5.2	6.89	1011	31.2	4.11	362	19.5	clearing up
1620	41.30	7.3	6.89	905	31.2	4.00	377	11.0	opaque, no odor
1630	41.30	9.4	6.88	919	31.2	3.90	408	7.2	clear, no odor
1645	41.30	12.6	6.88	918	31.2	3.95	409	6.9	clear, no odor

Notes: Collected VOC's, SVOC's, DRO/GRO, Metals, Diss. Metals, & CN^-

Signed by: I. Lynch
Date and Time: 8.26/2004

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.ZZ

Client: U.S.Navy
Location: AOC E
Event:
Date: 8/26/2004
Weather: Hot, in the 90's, light wind
rain off and on

Well ID: MW-08 AOC E
Sample ID: NDAEGW08-R03
MS/MSD Taken: YES / (NO)
Sample Team: I. Lynch
M. Weatherby

Total Depth: 49.56 FT.(BTOC)
Depth to water: (-) 40.15 FT.(BTOC)
Water Column: 9.41 FT.
(x) 0.163 GAL/FT.
Well Volume: 1.53 GAL.
Total Volume Purged: 11.5 GAL.

Measuring Device: Elec. WLI
Date and Start Time: 8/26/04 0945

WELL DIAMETER
(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Purge Device: 110V Grundfos Pump with 3/8" TFE Tubing
Sample Time 1045
Sample Appearance: Clear with no odor
Flow Rate: Pump on at 0950 at 800 mL/min

FIELD PARAMETERS

Time	DTW BTOC	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp. °C	DO mg/L	ORP mV	Turbidity NTUs	Color / Odor / Comments
1000	40.80	2.1	6.85	1059	29.7	5.29	217	112	Light orange, silty
1010	40.90	4.2	6.88	1045	28.6	5.56	210	140	clearing up
1020	40.90	6.3	6.87	1060	28.4	5.10	300	62	opaque, no odor
1030	40.95	8.4	6.88	1060	28.4	5.00	409	22	clear, no odor
1040	41.00	10.5	6.88	1040	28.4	4.96	505	16.0	clear, no odor
1045	41.00	11.5	6.92	1029	29.0	4.51	511	10.3	clear, no odor

Notes: Collected VOC's, SVOC's, Metals, Diss. Metals, & CN^-

Signed by: I. Lynch
Date and Time: 8/26/2004

Appendix E
2005 Groundwater Sampling Data Sheets

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.FK.AE

Client: NAVFAC -Atlantic
Location: Vieques - AOC E
Event:
Date: 12/9/2005
Weather: Cloudy, light breeze, 78F

Well ID: NDAEMW02
Sample ID: WAE-GW02
MS/MSD Taken: YES
Sample Team: C. Hayslip
D. Livingston

Total Depth: 49.71 FT.(BTOC)
Depth to water: (-)28.87 FT.(BTOC)
Water Column: 20.84 FT.
(x) 0.163 GAL/FT.
Well Volume: 3.40 GAL.
Total Purge Volume: 10.19 GAL.
Purge Device: SS Monsoon
Sample Time 0900
Sample Appearance Clear

Measuring Device: Heron WLI
Date and Time: 12/9/05 0700

WELL DIAMETER
[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp., °C	DO	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Comments	
715	0	7.07	1070	28.37	3.81	227.3	999	0.49	Milky orange	
721	1	7.09	1078	28.8	3.47	234.5	999	0.49	Milky orange	29.46
726	1.75	7.07	1069	28.92	3.34	235.4	515	0.49	Milky orange	29.46
731	2.5	7.07	1067	28.94	3.28	236.3	250	0.49	Milky orange	29.50
736	3.25	7.06	1065	29.05	3.25	237.1	114	0.49	Cloudy	29.48
741	4	7.06	1064	29.00	3.25	237.6	80.1	0.48	Cloudy	29.48
746	4.5	7.05	1061	29.01	3.16	237.9	44.1	0.48	Clear	29.45
751	6.25	7.05	1063	29.04	3.23	238.1	35.9	0.48	Clear	29.45
756	7	7.05	1062	29.06	3.2	238	37.2	0.48	Clear	29.45
801	7.5	7.05	1061	29.08	3.19	237.3	22.3	0.48	Clear	29.40
806	8	7.05	1060	29.06	3.24	235	16.6	0.48	Clear	29.53
811	8.75	7.04	1057	29.02	3.22	236.3	13.7	0.48	Clear	29.50
816	9.25	7.04	1058	29.02	3.21	236	11.7	0.48	Clear	29.49
821	9.75	7.04	1058	29.05	3.25	235.3	9.73	0.48	Clear	29.60
826	10.5	7.04	1054	28.86	3.1	234.9	17.8	0.48	Clear	29.67
831	11.25	7.04	1050	28.71	3.08	232.6	12	0.48	Clear	29.58
836	12	7.03	1049	28.75	3.12	231	9.02	0.48	Clear	29.55
841	12.5	7.03	1050	28.81	3.11	230.6	7.62	0.48	Clear	29.52
846	13	7.03	1050	28.83	3.11	230.1	6.42	0.48	Clear	29.53

Signed by: Chris Hayslip
Date and Time: 12/9/2005

PAGE 2 **Well ID:** NDAEMW02

FIELD PARAMETERS										
Time	**Purged Vol. (gals)**	**pH**	**Cond. µmhos/cm**	**Temp., °C**	**DO**	**ORP mV**	**Turbidity NTUs**	**Salinity ppt**	**Color / Odor / Comments**	
851	13.5	7.03	1049	28.83	3.1	228.8	6.64	0.48	Clear	29.55
856	14.25	7.03	1049	28.78	3.09	227.8	6.38	0.48	Clear	29.55

Notes:

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.FK.AE

Client: NAVFAC -Atlantic
Location: Vieques - AOC E
Event:
Date: 12/9/2005
Weather: Clear, windy, 80F

Well ID: NDAEMW03
Sample ID: WAE-GW03-05D
MS/MSD Taken: NO
Sample Team: C. Hayslip
D. Livingston

Total Depth: 48.9 FT.(BTOC)
Depth to water: (-)28.48 FT.(BTOC)
Water Column: 20.42 FT.
(x) 0.163 GAL/FT.
Well Volume: 3.33 GAL.
Total Purge Volume: 9.99 GAL.
Purge Device: SS Monsoon
Sample Time 1550
Sample Appearance Clear

Measuring Device: Heron WLI
Date and Time: 12/9/05 1445

WELL DIAMETER
[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp., °C	DO	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Comments	
1456	0	7.03	1135	29.29	2.52	197.7	999	0.51	Milky orange	28.48
1501	1	6.99	1161	29.46	1.9	199.3	362	0.52	Milky orange	29.02
1506	1.5	6.99	1165	29.48	1.9	200.2	172	0.53	Milky	29.08
1511	2.25	6.98	1168	29.46	1.83	197.7	47.9	0.53	Slightly cloudy	29.10
1516	3	6.98	1167	29.43	1.76	193.2	22.9	0.53	Clear	29.11
1521	4	6.98	1165	29.48	1.84	184.4	12.2	0.53	Clear	29.08
1526	4.75	6.98	1166	29.54	1.83	178.5	8.66	0.53	Clear	29.08
1531	5.5	7.01	1165	29.71	2.2	172.7	6.6	0.52	Clear	28.88
1536	6	6.99	1172	29.89	2.11	171.3	5.35	0.53	Clear	28.88
1541	6.5	6.98	1173	29.77	1.91	170.5	4.83	0.53	Clear	29.85
1546	7	6.99	1168	29.63	1.84	171.8	4.41	0.53	Clear	29.85

Notes:

at 1531 reading parameters are off due to having to fix leak in flow through cell.

Signed by: Chris Hayslip Date and Time: 12/9/2005

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.FK.AE

Client: NAVFAC -Atlantic
Location: Vieques - AOC E
Event:
Date: 12/9/2005
Weather: Cloudy, light breeze, 78F

Well ID: NDAEMW04
Sample ID: WAE-GW04-05D
MS/MSD Taken: NO
Sample Team: C. Hayslip
D. Livingston

Total Depth: 50.57 FT.(BTOC)
Depth to water: (-)28.50 FT.(BTOC)
Water Column: 22.07 FT.
(x) 0.163 GAL/FT.
Well Volume: 3.60 GAL.
Total Purge Volume: 10.79 GAL.
Purge Device: SS Monsoon
Sample Time 1750
Sample Appearance Clear

Measuring Device: Heron WLI
Date and Time: 12/9/05 1610

WELL DIAMETER
[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp., °C	DO	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Comments	
1618	0	6.72	1509	29.14	1.57	-129.8	999	0.69	Milky grey	H/C odor
1623	0.75	6.73	1525	29.28	1.04	-132.6	999	0.70	Milky grey	30.63
1628	1	6.73	1530	29.35	0.83	-131.1	220	0.70	Milky grey	30.63
1633	1.25	6.73	1532	29.41	0.96	-124.4	139	0.70	Milky grey	30.63
1638	1.5	6.73	1542	29.80	0.72	-125.5	92.1	0.70	Milky grey	31.50
1643	1.75	6.73	1540	29.85	0.65	-133.2	62.8	0.70	Cloudy	32.12
1648	2.25	6.74	1528	29.81	0.73	-132.6	41.4	0.69	Cloudy	32.41
1653	2.5	6.74	1517	29.80	0.88	-132.2	31.4	0.69	Clear	32.34
1658	2.75	6.75	1508	29.82	0.89	-131.6	20.3	0.68	Clear	32.27
1703	3.25	6.75	1504	29.86	0.93	-132.8	16.9	0.68	Clear	32.50
1708	3.5	6.75	1500	29.84	0.69	-135.5	13.6	0.68	Clear	32.60
1713	3.75	6.75	1496	29.79	0.61	-128.2	11.4	0.68	Clear	32.38
1718	4	6.76	1487	29.76	0.62	-131.9	10.3	0.68	Clear	32.3
1723	4.5	6.76	1486	29.83	0.63	-130.8	8.38	0.68	Clear	32.40
1728	4.75	6.77	1480	29.76	0.64	-128	5.84	0.67	Clear	32.80
1733	5.25	6.75	1489	29.87	0.62	-138.5	7.87	0.67	Clear	34.33
1738	5.75	6.76	1478	29.63	0.61	-137.2	6.8	0.67	Clear	34.64
1743	6.25	6.76	1472	29.65	0.62	-138.7	6.7	0.67	Clear	34.52
1748	6.75	6.77	1462	29.65	0.63	-134.3	7.45	0.66	Clear	34.40

Signed by: Chris Hayslip
Date and Time: 12/9/2005

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.FK.AE

Client: NAVFAC -Atlantic
Location: Vieques - AOC E
Event:
Date: 12/9/2005
Weather: Clear, windy, 80F

Well ID: NDAEMW06
Sample ID: WAE-GW06-05D
MS/MSD Taken: NO
Sample Team: C. Hayslip
D. Livingston

Total Depth: FT.(BTOC)
Depth to water: (-)28.88 FT.(BTOC)
Water Column: FT.
(x) 0.163 GAL/FT.
Well Volume: GAL.
Total Purge Volume: GAL.
Purge Device: SS Monsoon
Sample Time 1430
Sample Appearance Clear

Measuring Device: Heron WLI
Date and Time: 12/9/05 1320

WELL DIAMETER
[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp., °C	DO	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Comments	
1326	0	7.00	1124	28.62	2.93	242.3	999	0.52	Milky orange	
1331	1	6.97	1124	28.76	3	244.1	411	0.51	Milky orange	28.91
1336	1.75	6.95	1124	28.96	2.97	245.8	95.5	0.51	Cloudy	28.91
1341	2.5	6.94	1123	28.96	3.07	245	48.0	0.51	Cloudy	28.92
1346	3.25	6.94	1123	29.09	3.01	244.5	33.9	0.51	Clear	28.92
1351	4	6.94	1123	29.10	2.95	243.9	33.5	0.51	Clear	28.92
1356	4.5	6.94	1123	29.11	2.94	243.9	31.8	0.51	Clear	28.91
1401	5	6.94	1123	29.13	3.05	244.3	27.2	0.51	Clear	28.91
1406	5.5	6.94	1123	29.21	2.99	244.3	24.3	0.51	Clear	28.91
1411	6	6.94	1119	29.01	2.96	244.3	20.4	0.51	Clear	28.91
1416	7	6.94	1118	29.01	3.03	243.6	17.0	0.51	Clear	28.91
1421	7.5	6.94	1119	28.98	3.02	243.9	16.6	0.51	Clear	28.91
1426	8	6.94	1117	28.97	3.06	243.2	17.1	0.51	Clear	28.91

Signed by: Chris Hayslip
Date and Time: 12/9/2005

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.FK.AE

Client: NAVFAC -Atlantic
Location: Vieques - AOC E
Event:
Date: 12/8/2005
Weather: Clear, Sunny, 85F, windy

Well ID: NDAEMW07
Sample ID: WAE-GW07-05D / WAE-GW07P-05D
MS/MSD Taken: NO
Sample Team: C. Hayslip
D. Livingston

Total Depth: 49.92 FT.(BTOC)
Depth to water: (-)29.71 FT.(BTOC)
Water Column: 20.21 FT.
(x) 0.163 GAL/FT.
Well Volume: 3.29 GAL.
Total Purge Volume: 9.88 GAL.
Purge Device: SS Monsoon
Sample Time 1620
Sample Appearance Clear

Measuring Device: Heron WLI
Date and Time: 12/8/05 1445

WELL DIAMETER
[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp., °C	DO	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Comments	
1457	0	6.99	963	29.21	4.18	218.8	999	0.43	Milky orange	29.71
1502	1	6.93	961	29.31	3.8	216.6	999	0.43	Milky orange	29.88
1507	1.75	6.92	964	29.39	4.16	213.6	262	0.43	Milky	30.00
1512	2.5	6.93	972	29.61	4.36	211	113	0.43	Cloudy	30.00
1517	3.25	6.93	973	29.57	4.36	209.9	53.6	0.44	Slightly cloudy	30.00
1522	4	6.93	974	29.57	4.39	209.2	30.6	0.44	Clear	30.00
1527	4.75	6.93	976	29.60	4.36	209.9	24.1	0.44	Clear	30.00
1558	7.75	7.01	992	29.27	4.92	232.1	4.36	0.45	Clear	
1603	8.25	6.95	990	29.28	4.01	225.7	3.51	0.45	Clear	
1608	9	6.94	991	29.17	3.86	208.1	2.72	0.45	Clear	
1613	9.75	6.95	997	29.33	3.74	199.9	2.05	0.45	Clear	
1618	10.5	6.95	996	29.30	3.71	198.6	2.00	0.45	Clear	

Notes:

Time delay between 1527 and1558 was due to discussion on sample requirements.

Signed by: Chris Hayslip

Date and Time: 12/8/2005

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Project Number: 180357.FI.FK.AE

Client: NAVFAC -Atlantic
Location: Vieques - AOC E
Event:
Date: 12/9/2005
Weather: Overcast, windy, 80F

Well ID: NDAEMW08
Sample ID: WAE-GW08-05D
MS/MSD Taken: NO
Sample Team: C. Hayslip
D. Livingston

Total Depth: 49.5 FT.(BTOC)
Depth to water: (-)28.75 FT.(BTOC)
Water Column: 20.75 FT.
(x) 0.163 GAL/FT.
Well Volume: 3.38 GAL.
Total Purge Volume: 10.15 GAL.
Purge Device: SS Monsoon
Sample Time 1115
Sample Appearance Clear

Measuring Device: Heron WLI
Date and Time: 12/9/05 0950

WELL DIAMETER
[(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]
(1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

FIELD PARAMETERS

Time	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp., °C	DO	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Comments	
957	0	6.97	1049	28.89	2.96	230.9	999	0.48	Milky orange	28.75
1002	1.25	6.96	1047	29.1	2.72	233.6	999	0.47	Milky orange	29.40
1007	2.25	6.96	1048	29.2	2.72	234.7	672	0.47	Milky orange	29.40
1012	3.25	6.96	1044	29.06	2.7	236.6	239	0.47	Cloudy orange	29.47
1017	4	6.96	1044	29.02	2.71	237.1	152	0.47	Cloudy	29.48
1022	5	6.96	1046	29.03	2.83	237.7	86.6	0.47	Cloudy	29.48
1027	6	6.95	1046	29.03	2.83	237.6	63.3	0.47	Cloudy	29.48
1032	6.75	6.95	1047	29.05	2.87	237.2	43.3	0.47	Clear	29.45
1037	7.25	6.95	1048	29.05	2.90	236.7	30.2	0.48	Clear	29.45
1042	8.5	6.95	1054	29.14	3.00	235.4	18.2	0.48	Clear	29.47
1047	9.25	6.95	1053	29.12	2.98	234.7	15.9	0.48	Clear	29.48
1052	10	6.95	1051	29.09	2.93	233.9	14	0.48	Clear	29.39
1057	10.5	6.95	1054	29.27	2.93	232.6	11.2	0.48	Clear	29.28
1102	10.75	6.95	1057	29.47	3.02	232	10.2	0.48	Clear	29.00
1107	11	6.95	1061	29.50	3.06	231.7	10.7	0.48	Clear	29.00
1112	11.25	6.95	1061	29.60	3.06	232	10.4	0.48	Clear	29.08

Notes:

Flow rate reduced at 1050 hours

Signed by: Chris Hayslip

Date and Time: 12/9/2005

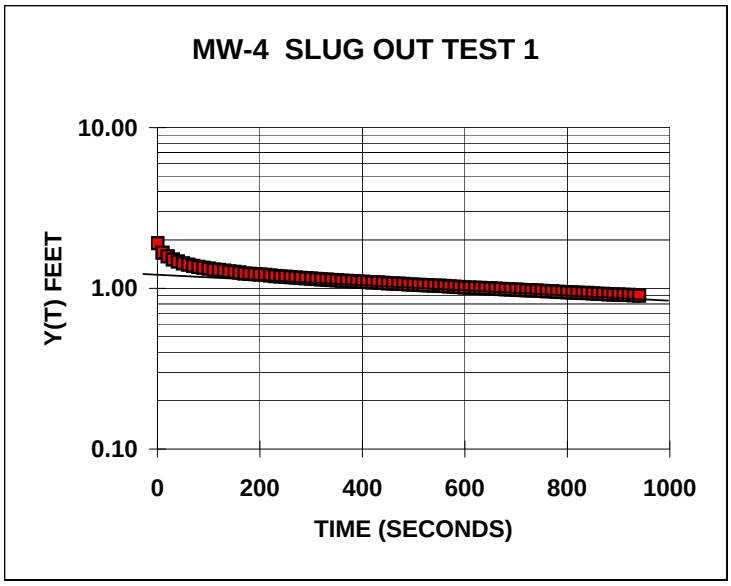
Appendix F
In-Situ Permeability Tests and Flow Velocities

Appendix F
In-Situ Permeability Test Data Sheets

CH2M HILL SLUG TEST DATA

PROJECT NO: Vieques (PA/SI) AOC-E
CLIENT: Navy Clean II
TEST DATE: 5/23/2002
WELL NO.: MW-4
COMPILED BY: M.L. Weatherby
TEST METHOD: Slug Out - Test 1
ANALYSIS METHOD: Bouwer and Rice - Partially Penetrating Well

ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)
0	41.96	1.91	260	41.22	1.17	520	41.09	1.05
10	41.71	1.67	270	41.21	1.17	530	41.09	1.05
20	41.63	1.58	280	41.21	1.16	540	41.08	1.04
30	41.56	1.51	290	41.20	1.16	550	41.08	1.04
40	41.51	1.47	300	41.19	1.15	560	41.08	1.03
50	41.47	1.43	310	41.19	1.14	570	41.07	1.03
60	41.45	1.40	320	41.18	1.14	580	41.07	1.02
70	41.42	1.38	330	41.18	1.13	590	41.06	1.02
80	41.40	1.36	340	41.17	1.13	600	41.06	1.01
90	41.39	1.34	350	41.17	1.12	610	41.05	1.01
100	41.37	1.33	360	41.16	1.12	620	41.05	1.01
110	41.35	1.31	370	41.16	1.11	630	41.05	1.01
120	41.35	1.30	380	41.15	1.11	640	41.05	1.00
130	41.33	1.29	390	41.15	1.10	Continous Data Collected		
140	41.32	1.27	400	41.14	1.10	840	40.98	0.94
150	41.31	1.27	410	41.14	1.09	850	40.97	0.93
160	41.30	1.26	420	41.13	1.09	860	40.97	0.93
170	41.28	1.24	430	41.13	1.09	870	40.97	0.92
180	41.28	1.23	440	41.13	1.08	880	40.96	0.92
190	41.27	1.23	450	41.12	1.07	890	40.96	0.92
200	41.26	1.22	460	41.12	1.07	900	40.96	0.91
210	41.26	1.21	470	41.11	1.07	910	40.95	0.91
220	41.25	1.20	480	41.11	1.07	920	40.95	0.91
230	41.24	1.19	490	41.10	1.06	930	40.95	0.91
240	41.23	1.19	500	41.10	1.05	940	40.95	0.90
250	41.23	1.18	510	41.09	1.05	End of Test		

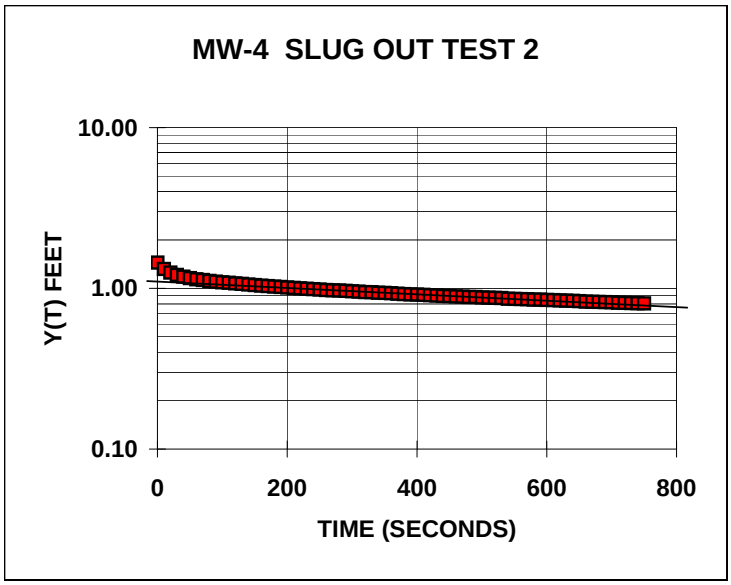


SLUG TEST CALCS. (Bouwer and Rice)		
Well Radius (Rw)=	0.5	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.2357	ft
Well Depth (Wd)=	50	ft
Depth to Water (Dtw)=	40.04	ft
Confinement Depth(Dtc)=	60	ft
Hsat (Dtc-Dtw)=	19.96	ft
Lw (Wd-Dtw)=	9.96	ft
Le (screen length)=	10	ft
ln[(Hsat-Lw)/Rw]=	3.00	
Le/Rw=	20	
A=	2.15	
B=	0.30	
ln(Re/Rw)=	1.92	
Yo=	1.3	ft
t=	1000	sec
Y(t)=	0.9	ft
Hydraulic Cond. (K)=	**0.17**	**ft/day**

CH2M HILL SLUG TEST DATA

PROJECT NO: Vieques (PA/SI) AOC-E
CLIENT: Navy Clean II
TEST DATE: 5/23/2002
WELL NO.: MW-4
COMPILED BY: M.L. Weatherby
TEST METHOD: Slug Out - Test 2
ANALYSIS METHOD: Bouwer and Rice - Partially Penetrating Well

ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)
0	41.83	1.45	260	41.36	0.98	520	41.25	0.87
10	41.70	1.32	270	41.35	0.97	530	41.25	0.87
20	41.63	1.25	280	41.35	0.97	540	41.24	0.86
30	41.59	1.21	290	41.35	0.96	550	41.24	0.86
40	41.56	1.18	300	41.34	0.96	560	41.24	0.86
50	41.54	1.16	310	41.33	0.95	570	41.24	0.86
60	41.52	1.14	320	41.33	0.95	580	41.23	0.85
70	41.51	1.13	330	41.33	0.95	590	41.23	0.85
80	41.49	1.11	340	41.32	0.94	600	41.23	0.85
90	41.48	1.10	350	41.32	0.94	610	41.23	0.84
100	41.47	1.09	360	41.31	0.93	620	41.22	0.84
110	41.46	1.08	370	41.31	0.93	630	41.22	0.84
120	41.45	1.07	380	41.30	0.92	640	41.22	0.84
130	41.45	1.07	390	41.30	0.92	650	41.21	0.83
140	41.44	1.06	400	41.30	0.91	660	41.21	0.83
150	41.43	1.05	410	41.29	0.91	670	41.21	0.82
160	41.42	1.04	420	41.29	0.91	680	41.20	0.82
170	41.41	1.03	430	41.28	0.90	690	41.20	0.82
180	41.41	1.03	440	41.28	0.90	700	41.20	0.82
190	41.40	1.02	450	41.28	0.89	710	41.19	0.81
200	41.39	1.01	460	41.27	0.89	720	41.19	0.81
210	41.39	1.01	470	41.27	0.89	730	41.19	0.81
220	41.38	1.00	480	41.26	0.88	740	41.19	0.81
230	41.37	0.99	490	41.26	0.88	750	41.19	0.81
240	41.37	0.99	500	41.26	0.88		End of Test	
250	41.36	0.98	510	41.26	0.88			

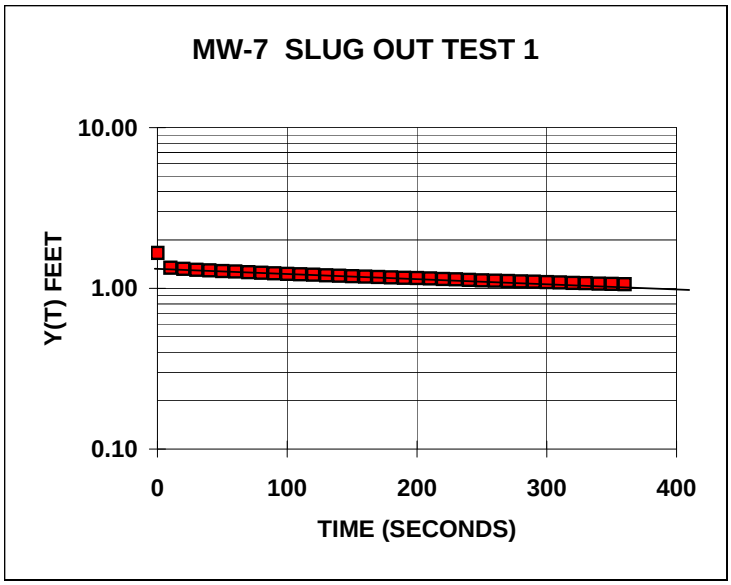


SLUG TEST CALCS. (Bouwer and Rice)	
Well Radius (Rw)=	0.5 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2357 ft
Well Depth (Wd)=	50 ft
Depth to Water (Dtw)=	40.38 ft
Confinement Depth(Dtc)=	60 ft
Hsat (Dtc-Dtw)=	19.62 ft
Lw (Wd-Dtw)=	9.62 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.00
Le/Rw=	20
A=	2.15
B=	0.30
ln(Re/Rw)=	1.91
Yo=	1.2 ft
t=	800 sec
Y(t)=	0.8 ft
Hydraulic Cond. (K)=	**0.23 ft/day**

CH2M HILL SLUG TEST DATA

PROJECT NO: Vieques (PA/SI) AOC-E
CLIENT: Navy Clean II
TEST DATE: 5/23/2002
WELL NO.: MW-7
COMPILED BY: M.L. Weatherby
TEST METHOD: Slug Out - Test 1
ANALYSIS METHOD: Bouwer and Rice - Partially Penetrating Well

ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)
0	33.84	1.66	260	33.29	1.12			
10	33.52	1.34	270	33.29	1.11			
20	33.50	1.32	280	33.28	1.11			
30	33.48	1.31	290	33.28	1.10			
40	33.47	1.29	300	33.27	1.09			
50	33.46	1.28	310	33.26	1.09			
60	33.45	1.27	320	33.26	1.08			
70	33.44	1.26	330	33.25	1.08			
80	33.43	1.25	340	33.25	1.07			
90	33.42	1.24	350	33.24	1.07			
100	33.41	1.23	360	33.24	1.06			
110	33.40	1.22		End of Test				
120	33.39	1.22						
130	33.38	1.21						
140	33.38	1.20						
150	33.37	1.19						
160	33.36	1.18						
170	33.35	1.18						
180	33.35	1.17						
190	33.34	1.16						
200	33.34	1.16						
210	33.33	1.15						
220	33.32	1.14						
230	33.31	1.14						
240	33.31	1.13						
250	33.30	1.12						

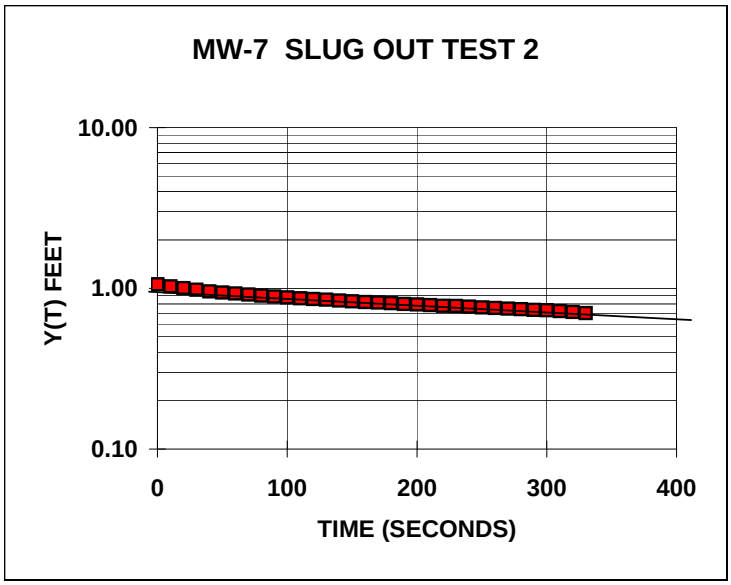


SLUG TEST CALCS. (Bouwer and Rice)	
Well Radius (Rw)=	0.5 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	50 ft
Depth to Water (Dtw)=	32.18 ft
Confinement Depth(Dtc)=	60 ft
Hsat (Dtc-Dtw)=	27.82 ft
Lw (Wd-Dtw)=	17.82 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.00
Le/Rw=	20
A=	2.15
B=	0.30
ln(Re/Rw)=	2.17
Yo=	1.4 ft
t=	400 sec
Y(t)=	1 ft
Hydraulic Cond. (K)=	**0.055 ft/day**

CH2M HILL SLUG TEST DATA

PROJECT NO: Vieques (PA/SI) AOC-E
CLIENT: Navy Clean II
TEST DATE: 5/23/2002
WELL NO.: MW-7
COMPILED BY: M.L. Weatherby
TEST METHOD: Slug Out - Test 2
ANALYSIS METHOD: Bouwer and Rice - Partially Penetrating Well

ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (sec)	TRANSDUCER READING (ft)	Y(t) (ft)
0	33.17	1.06	260	32.86	0.76			
10	33.14	1.03	270	32.86	0.75			
20	33.11	1.00	280	32.85	0.74			
30	33.09	0.98	290	32.84	0.74			
40	33.07	0.96	300	32.84	0.73			
50	33.05	0.94	310	32.83	0.72			
60	33.04	0.93	320	32.82	0.71			
70	33.02	0.92	330	32.81	0.70			
80	33.01	0.90		End of Test				
90	33.00	0.89						
100	32.99	0.88						
110	32.98	0.87						
120	32.97	0.86						
130	32.96	0.85						
140	32.95	0.84						
150	32.94	0.83						
160	32.93	0.82						
170	32.92	0.82						
180	32.92	0.81						
190	32.91	0.80						
200	32.90	0.79						
210	32.90	0.79						
220	32.89	0.78						
230	32.89	0.78						
240	32.88	0.77						
250	32.87	0.76						



SLUG TEST CALCS. (Bouwer and Rice)	
Well Radius (Rw)=	0.5 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	50 ft
Depth to Water (Dtw)=	32.11 ft
Confinement Depth(Dtc)=	60 ft
Hsat (Dtc-Dtw)=	27.89 ft
Lw (Wd-Dtw)=	17.89 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.00
Le/Rw=	20
A=	2.15
B=	0.30
ln(Re/Rw)=	2.17
Yo=	0.95 ft
t=	400 sec
Y(t)=	0.67 ft
Hydraulic Cond. (K)=	**0.057 ft/day**

Appendix F
Flow Velocity Calculations

AOC E Groundwater Flow Velocity Calculations

Groundwater Gradient (i): $\frac{\Delta h}{\Delta L}$ Groundwater Flow Velocity (V): $\frac{K\ i}{n}$

parameters: Δh= change in water level between points (feet)
ΔL= distance between points (feet)
K= hydraulic conductivity (Range: MW4=0.23 feet/day, MW7=0.055 feet/day)
n= porosity of the medium (percent)

Table of measured gradients, as measured between MW3 and MW2

Date	Gradient (ft/ft)
September 1998	0.038
May 2000	0.014
May 2002	0.009
August 2003	0.002
August 2004	0.009
November 2005	0.023
March 2006	0.021
Geometric mean	0.012

Table of measured hydraulic conductivities

Test	K (ft/day)
MW4 test 1	0.17
MW4 test 2	0.23
MW7 test 1	0.055
MW7 test 2	0.057
Geometric mean	0.105

The geometric mean of a data set (a_1, a_2,….a_n) is calculated as:
The n^{th} root of ($a_1 \times a_2 \times ..a_n$)

September 11, 1998

Gradient (i): $\frac{\Delta h}{\Delta L} = \frac{2.53 \text{ feet}}{67 \text{ feet}} = 0.038$ in north-northwestern direction

Velocity (V): $\frac{K\ i}{n} = \frac{(0.23 \text{ ft/d})(0.014)}{0.45} = 0.007$ feet/day using MW4 permeability test results (K)

Calculated Velocities
Highest gradient, highest K value
i=0.037 September 11, 1998
K=0.23 (MW4 test 2)

Velocity (V): $\frac{K\ i}{n} = \frac{(0.23 \text{ ft/d})(0.038)}{0.45} = 0.02$ feet/day = 7.1 ft/year

Lowest gradient, lowest K value
i=0.002 August 18, 2003
K=0.055 (MW7 test 1)

Velocity (V): $\frac{K\ i}{n} = \frac{(0.055 \text{ ft/d})(0.002)}{0.45} = 0.0002$ feet/day =0.07 ft/year

Velocity calculated from geometric mean of gradient and hydraulic conductivity
i=0.012
K=0.105

Velocity (V): $\frac{K\ i}{n} = \frac{(0.105 \text{ ft/d})(0.012)}{0.45} = 0.0.0028$ feet/day =1.0 ft/year

Appendix G
Grain Size Analysis Data

S 12252

SUBCONTRACT CHAIN-OF-CUSTODY RECORD

COMPUCHEM
a division of Liberty Analytical Corp.

501 Madison Avenue
Cary, NC 27513
1-800-833-5097

Project Name: CTO-007/180357.FI.FK.AE/AOCE
TAT: 21 calendar days
Report style: level IV (full deliverables)
Disk requirement: CH2M HILL format (csv)

Samples shipped to: ACCURA
Contact: Robert Semenak
Address: 3342 International Park Drive
Atlanta, GA 30316
Phone: (404) 241-8722 x16
Project Locale (state): Vieques, PR

CompuChem point-of-contact: (4) CATHY DOVER / MIKE PEARCE
Phone: (919) 379-4100 X 4089/4005
Fax: (919) 379-4050
Sampling complete? (Y) or N (see Note 1)
Project-specific (PS) or Batch (B) QC? per method

BOX #1 1. Surface Water 2. Ground Water 3. Leachate 4. Rinsate 5. Soil / Sediment / Sludge 6. Trip Blank 7. Oil 8. Waste 9. Other _____

BOX #2 A. HCl + Ice B. HNO_3 + Ice C. NaOH + Ice D. H_2SO_4 + Ice E. Unpreserved F. Ice Only G. Other _____ H. $NaHSO_4$ + Ice I. ZnAc+NaOH + Ice J. Methanol

BOX #3 F- Filtered U- Unfiltered

BOX #4 H- High M- Medium L- Low

BOX #5 C- CLP T- TCLP S- SW-846 W- CWA 600-series O- Other _____

Sample ID	Date / Year	Time	Box #1 Matrix	Box #2 Preservative	Box #3 Filtered / Unfiltered	Box #4 Expected Conc.	Box #5 Method	# of Bottles	Use for Lab QC (MS or DUP)	PARAMETERS: Grainsize D422 (sieve only)				CCN	Remarks / Comments (see Notes 2 & 3)
														G05-0060	
WAE-SS14-0002G	12/9/2005	0740	S	E	U			1		✓				869701	G12438
WAE-SS14-0406G	12/9	0750	↓	↓	↓			1		✓				869702	12439
WAE-SB13-3436	12/14	1050	↓	↓	↓			1		✓				869703	12440

Kelly Dover 12/15/05

Clients Special Instructions:

Temperature _____ °C

Lab: Received in good condition? Y or N **Describe any problems:**

#1 Relinquished by:(sig) Kelly Dover	Date: 12/15/05	#2 Relinquished by:(sig)	Date:	Relinquished by:(sig)	Date:
Company Name: CompuChem	Time: 1700	Company Name:	Time:	Company Name:	Time:
#1 Received by:(sig)	Date:	#2 Received by:(sig)	Date:	#2 Received by:(sig)	Date:
Company Name:	Time:	Company Name:	Time:	Company Name:	Time:

Note (1) If "N" lab should batch samples to await remainder of project - maximizing batch size and minimizing QC ratio; if "Y" lab should begin processing batches now.
Note (2) Samples should be stored 60 days after date report mailed at no extra charge.
Note (3) All lab copies of data should be retained for a minimum of 3 years.
Note (4) Please call point-of-contact to verify receipt of samples.

3342 International Park Drive Atlanta, GA 30316 Phone: (404) 241-8722 Fax: (404) 241-4577

ACCURA Engineering & Consulting Services, Inc.

ACCURA Geotechnical Laboratory

AASHTO R18

ASTM D422, D1140, C136, C117 / AASHTO T88, T27, T 11, T311
Standard Test Method for Particle-Size Analysis of Soils and Aggregates

PROJECT NUMBER	G05-0060-01	SAMPLE ID	G12438/WAE-SS14-0002G	TECH	VG
PROJECT NAME	CTO-007/180357.FI.FK.AE/AOCE	SAMPLE TYPE	JAR	DATE	12/22/05
SAMPLE LOCATION	-	SAMPLE DEPTH	-	CHECK	

AS-RECEIVED MOISTURE CONTENT

Mass of Wet Sample & Tare, g	740.60
Mass of Dry Sample & Tare, g	707.75
Mass of Tare, g	374.33
Moisture Content, %	9.9

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	NA

Mass of Wet Sample & Tare, g	740.60
Mass of Tare, g	374.33
Mass of Dry Sample, g	333.42

REMARKS

SIEVE ANALYSIS*

PORTION OF SAMPLE RETAINED ON # 4 SIEVE

Mass of Tare, g: 0.00

Sieve Size		Sample & Tare, g	% RETAINED	% PASSING
12"	COBBLES		0.0	100.0
3"	COARSE GRAVEL		0.0	100.0
2.5"			0.0	100.0
2"			0.0	100.0
1.5"			0.0	100.0
1"			0.0	100.0
.75"	FINE GRAVEL	0.00	0.0	100.0
.5"		10.57	3.2	96.8
.375"		13.08	3.9	96.1
#4	COARSE SAND	23.58	7.1	92.9

PORTION OF SAMPLE PASSING # 4 SIEVE

Sieve Size		Cumulative Mass retained, g	% PASSING
#10	MEDIUM SAND	42.83	87.2
#20		82.44	75.3
#40	FINE SAND	125.32	62.4
#60		158.69	52.4
#100		187.98	43.6
#200	FINES	216.76	35.0

* - ASTM Definitions of Classification
** - AASHTO Definitions of Classification

Oven ID #	109/399
Balance ID#	105/398/297
Sieve Shaker ID #	119/1529

PARTICLE-SIZE ANALYSIS*

% COBBLES	0.0	% MEDIUM Sand	24.7
% COARSE Gravel	0.0	% FINE Sand	27.4
% FINE Gravel	7.1	% FINES	35.0
% COARSE Sand	5.8	% TOTAL SAMPLE	100.0

PARTICLE-SIZE ANALYSIS**

% COBBLES	0.0	% COARSE Sand	24.7
% COARSE Gravel (Stone)	0.0	% FINE Sand	27.4
% MEDIUM Gravel (Stone)	3.9	% FINES (Silt-Clay)	35.0
% FINE Gravel (Stone)	8.9	% TOTAL SAMPLE	100.0

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA AASHTO (M 145): NA

3342 International Park Drive Atlanta, GA 30316 Phone: (404) 241-8722 Fax: (404) 241-4577

ACCURA Engineering & Consulting Services, Inc.

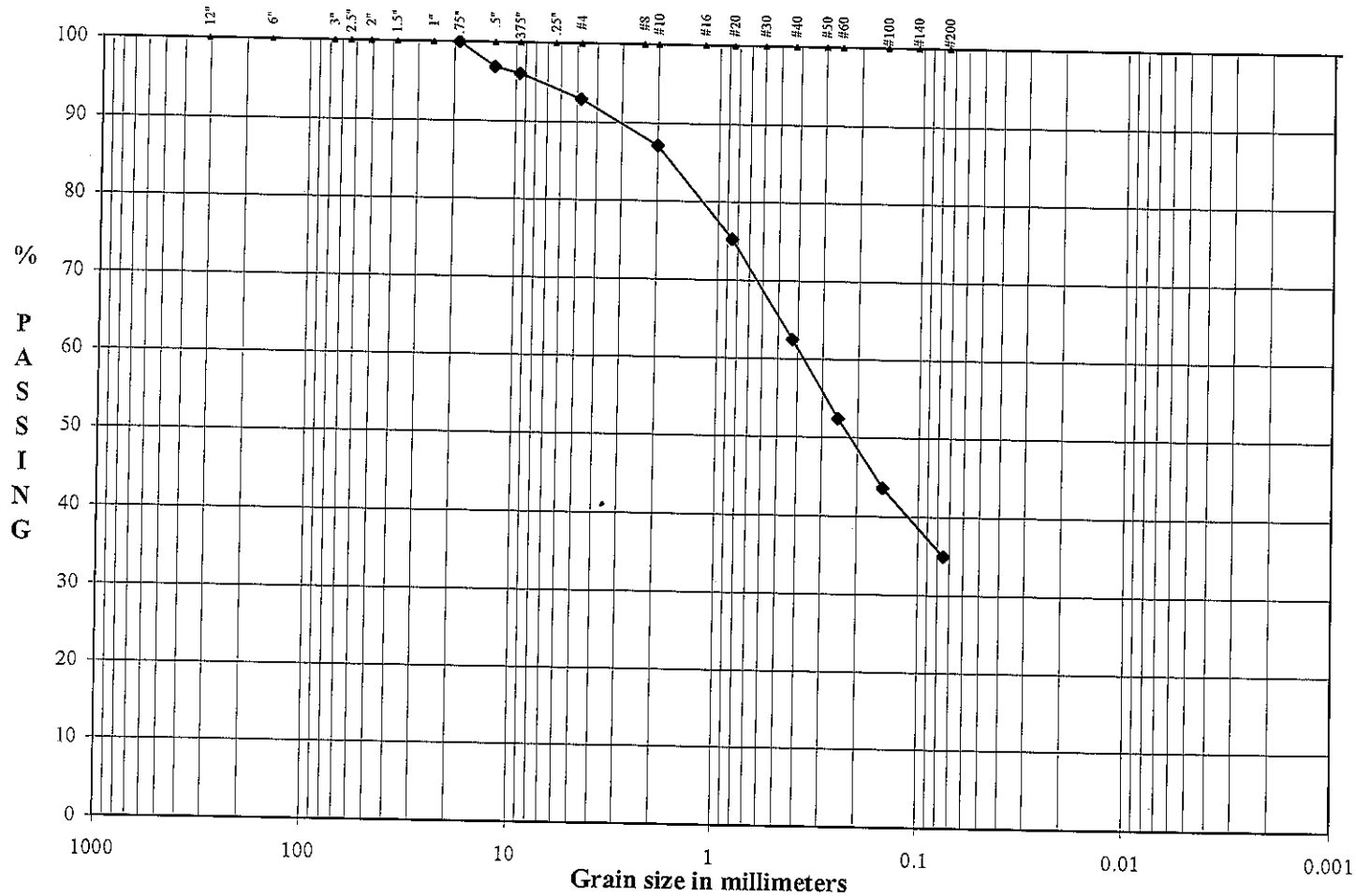
ACCURA Geotechnical Laboratory

AASHTO R18

ASTM D422, D1140, C136, C117 / AASHTO T88, T27, T 11, T311
Standard Test Method for Particle-Size Analysis of Soils and Aggregates

PROJECT #	G05-0060-01	SAMPLE ID	G12438/WAE-SS14-0002G	TECH	VG
PR. NAME	CTO-007/180357.FI.FK.AE/AOCE	SAMPLE TYPE	JAR	DATE	12/22/05
LOCATION	-	SAMPLE DEPTH	-	CHECK	

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Silt-Clay: Fines

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

SOIL 3.xls [Particle-Size Graph], REV. 2; 07/21/04

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ASTM D422, D1140, C136, C117 / AASHTO T88, T27, T 11, T311
Standard Test Method for Particle-Size Analysis of Soils and Aggregates

PROJECT NUMBER	G05-0060-01	SAMPLE ID	G12439/WAE-SS14-0406G	TECH	VG
PROJECT NAME	CTO-007/180357.FI.FK.AE/AOCE	SAMPLE TYPE	JAR	DATE	12/22/05
SAMPLE LOCATION	-	SAMPLE DEPTH	-	CHECK	

AS-RECEIVED MOISTURE CONTENT

Mass of Wet Sample & Tare, g	820.60
Mass of Dry Sample & Tare, g	764.55
Mass of Tare, g	366.39
Moisture Content, %	14.1

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	NA

Mass of Wet Sample & Tare, g	820.60
Mass of Tare, g	366.39
Mass of Dry Sample, g	398.16

REMARKS

SIEVE ANALYSIS*

PORTION OF SAMPLE RETAINED ON # 4 SIEVE

Mass of Tare, g: 0.00

Sieve Size		Sample & Tare, g	% RETAINED	% PASSING
12"	COBBLES		0.0	100.0
3"	COARSE GRAVEL		0.0	100.0
2.5"			0.0	100.0
2"			0.0	100.0
1.5"			0.0	100.0
1"			0.0	100.0
.75"	FINE GRAVEL		0.0	100.0
.5"			0.0	100.0
.375"		0.00	0.0	100.0
#4	COARSE SAND	6.52	1.6	98.4

PORTION OF SAMPLE PASSING # 4 SIEVE

Sieve Size		Cumulative Mass retained, g	% PASSING
#10	MEDIUM SAND	34.16	91.4
#20		88.42	77.8
#40	FINE SAND	144.66	63.7
#60		185.50	53.4
#100		219.01	45.0
#200	FINES	249.60	37.3

* - ASTM Definitions of Classification
** - AASHTO Definitions of Classification

Oven ID #	109/399
Balance ID#	105/398/297
Sieve Shaker ID #	119/1529

PARTICLE-SIZE ANALYSIS*

% COBBLES	0.0	% MEDIUM Sand	27.8
% COARSE Gravel	0.0	% FINE Sand	26.4
% FINE Gravel	1.6	% FINES	37.3
% COARSE Sand	6.9	% TOTAL SAMPLE	100.0

PARTICLE-SIZE ANALYSIS**

% COBBLES	0.0	% COARSE Sand	27.8
% COARSE Gravel (Stone)	0.0	% FINE Sand	26.4
% MEDIUM Gravel (Stone)	0.0	% FINES (Silt-Clay)	37.3
% FINE Gravel (Stone)	8.6	% TOTAL SAMPLE	100.0

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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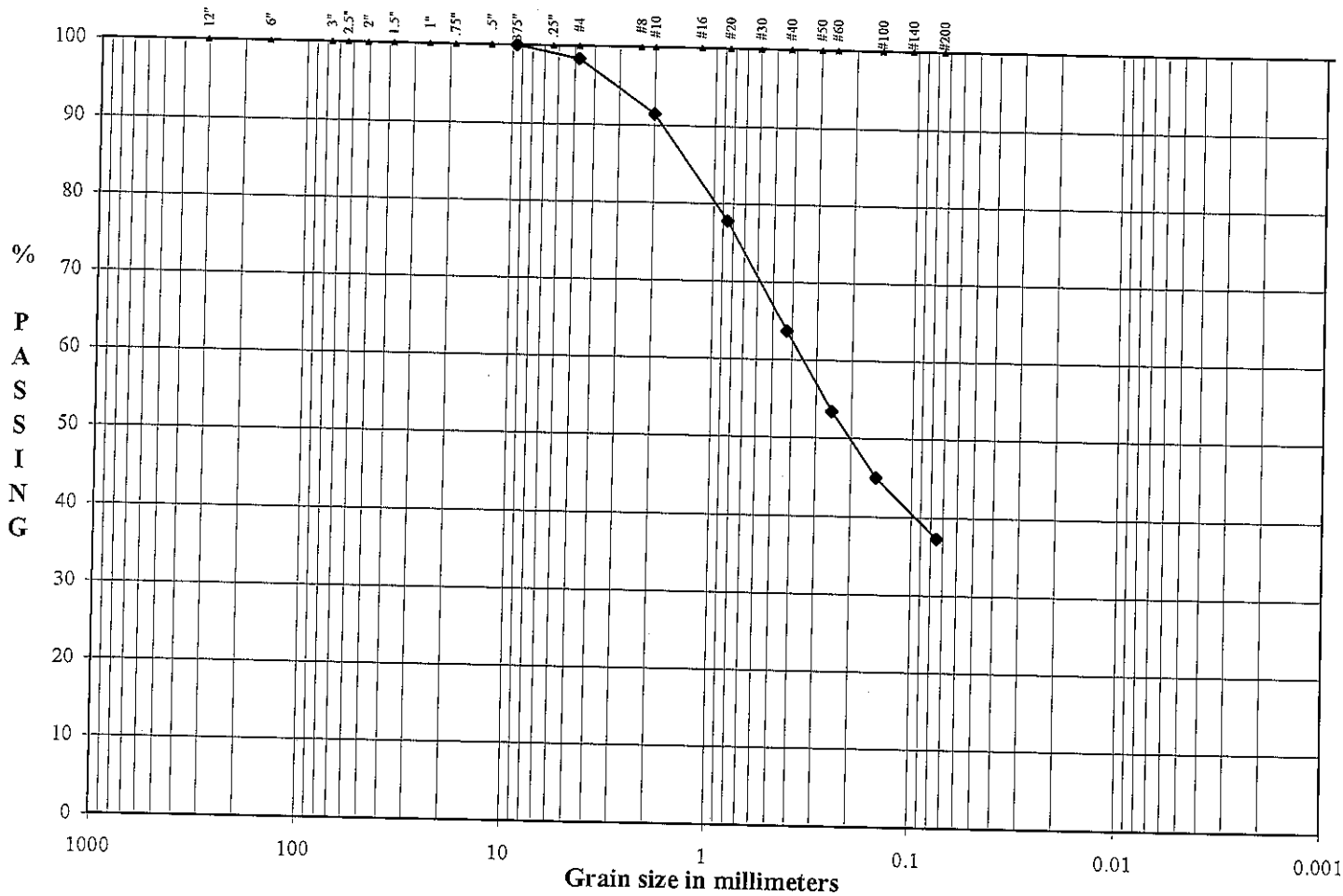
Standard Test Method for Particle-Size Analysis of Soils and Aggregates

PROJECT #	G05-0060-01	SAMPLE ID	G12439/WAE-SS14-0406G	TECH	VG
PR. NAME	CTO-007/180357.FI.FK.AE/AOCE	SAMPLE TYPE	JAR	DATE	12/22/05
LOCATION	-	SAMPLE DEPTH	-	CHECK	

Particle-Size Analysis



Boulders	Cobbles	Gravel		Sand			Silt-Clay Fines
		Coarse	Fine	Coarse	Medium	Fine	

D_{10}	NA	mm
D_{30}	NA	mm
D_{50}	NA	mm
Cu	NA	
Cc	NA	

SOIL 3.xls [Particle-Size Graph], REV. 2; 07/21/04

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Standard Test Method for Particle-Size Analysis of Soils and Aggregates

PROJECT NUMBER	G05-0060-01	SAMPLE ID	G12440/WAE-SB13-3436	TECH	VG
PROJECT NAME	CTO-007/180357.FI.FK.AE/AOCE	SAMPLE TYPE	JAR	DATE	12/22/05
SAMPLE LOCATION	-	SAMPLE DEPTH	-	CHECK	

AS-RECEIVED MOISTURE CONTENT

Mass of Wet Sample & Tare, g	654.83
Mass of Dry Sample & Tare, g	623.53
Mass of Tare, g	313.05
Moisture Content, %	10.1

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	NA

Mass of Wet Sample & Tare, g	654.83
Mass of Tare, g	313.05
Mass of Dry Sample, g	310.48

REMARKS

SIEVE ANALYSIS*

PORTION OF SAMPLE RETAINED ON # 4 SIEVE

Mass of Tare, g: 0.00

Sieve Size		Sample & Tare, g	% RETAINED	% PASSING
12"	COBBLES		0.0	100.0
3"	COARSE GRAVEL		0.0	100.0
2.5"			0.0	100.0
2"			0.0	100.0
1.5"			0.0	100.0
1"			0.0	100.0
.75"	FINE GRAVEL		0.0	100.0
.5"		0.00	0.0	100.0
.375"		1.78	0.6	99.4
#4	COARSE SAND	8.77	2.8	97.2

PORTION OF SAMPLE PASSING # 4 SIEVE

Sieve Size		Cumulative Mass retained, g	% PASSING
#10	MEDIUM SAND	34.92	88.8
#20		80.49	74.1
#40	FINE SAND	122.70	60.5
#60		155.78	49.8
#100		183.94	40.8
#200	FINES	208.16	33.0

* - ASTM Definitions of Classification
** - AASHTO Definitions of Classification

Oven ID #	109/399
Balance ID#	105/398/297
Sieve Shaker ID #	119/1529

PARTICLE-SIZE ANALYSIS*

% COBBLES	0.0	% MEDIUM Sand	28.3
% COARSE Gravel	0.0	% FINE Sand	27.5
% FINE Gravel	2.8	% FINES	33.0
% COARSE Sand	8.4	% TOTAL SAMPLE	100.0

PARTICLE-SIZE ANALYSIS**

% COBBLES	0.0	% COARSE Sand	28.3
% COARSE Gravel (Stone)	0.0	% FINE Sand	27.5
% MEDIUM Gravel (Stone)	0.6	% FINES (Silt-Clay)	33.0
% FINE Gravel (Stone)	10.7	% TOTAL SAMPLE	100.0

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA AASHTO (M 145): NA

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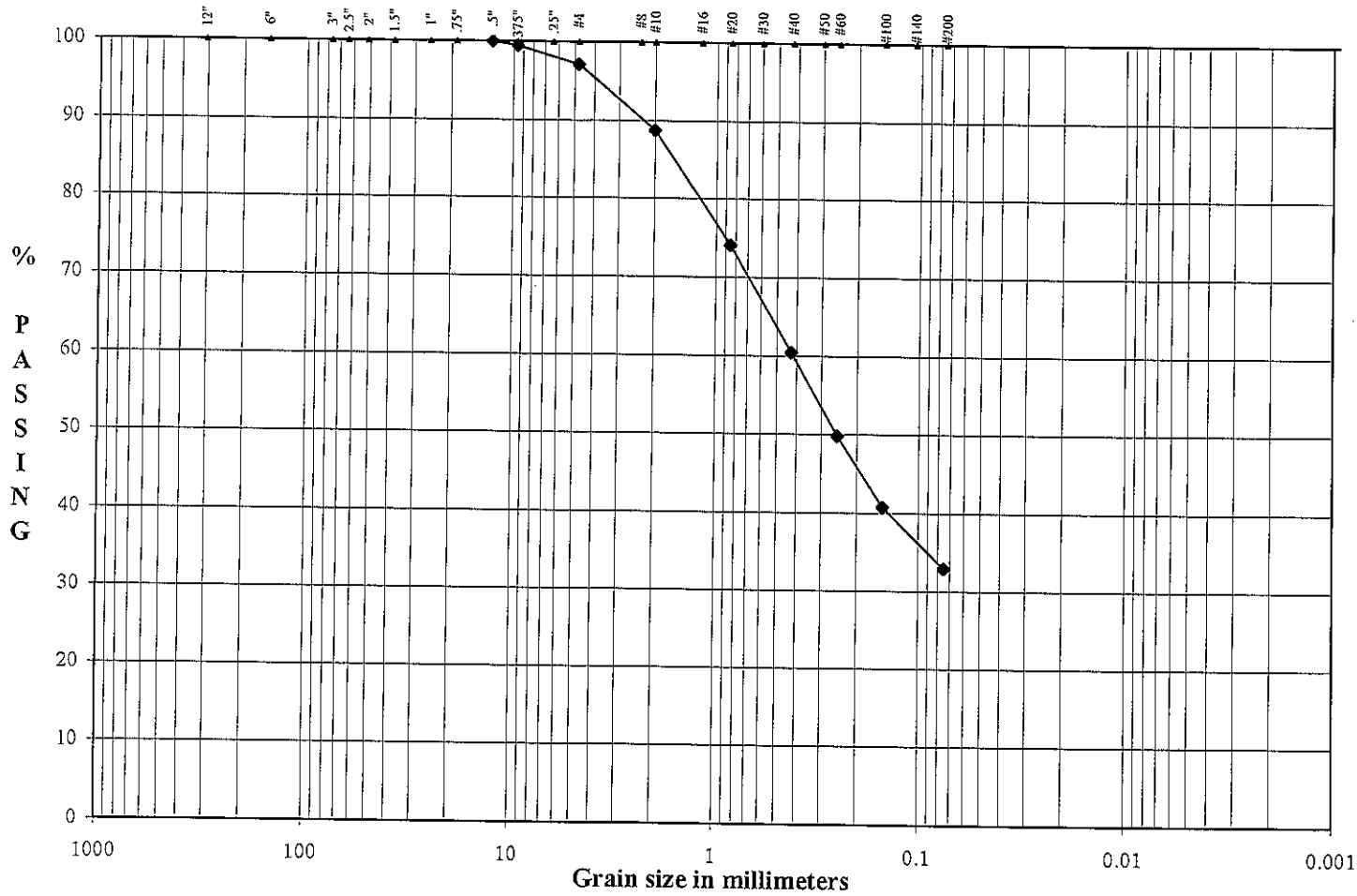
PROJECT #	G05-0060-01	SAMPLE ID	G12440/WAE-SB13-3436	TECH	VG
PR. NAME	CTO-007/180357.FI.FK.AE/AOCE	SAMPLE TYPE	JAR	DATE	12/22/05
LOCATION	-	SAMPLE DEPTH	-	CHECK	

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt-Clay
		Gravel		Sand			Fines

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

SOIL 3.xls [Particle-Size Graph], REV. 2; 07/21/04

Appendix H
Multi-Phase Extraction Pilot Test

1 Multi-Phase Vacuum Extraction Pilot Study

This section presents the results of the MPE pilot study at AOC E after implementation of the RI field investigations in 2002. The pilot-scale testing at AOC E, proposed during development of the RI work plans, was intended to provide quantitative performance, cost, and design information to evaluate the effectiveness of this technology in mitigating the free phase hydrocarbon product accumulation that has persisted over time in two site monitoring wells. The MPE pilot study was started in early June 2002 and completed in mid-August 2002 over a period of approximately 10 weeks of system operation.

1.1 Pilot Study Description

Due to the existing site conditions at AOC E (the presence of free product, the depth to water greater than 40 ft bls, the tight clayey formation at the site, and the low water yield), several presumptive remedial technologies and/or alternatives were unlikely to pass the screening process in the FS for technical and implementation reasons. Therefore, innovative technologies, including MPE, were evaluated as options for the pilot test since these type of technologies proved successful in remedial efforts at other sites with similar contaminants and site characteristics. The MPE system was eventually selected for the pilot test because the technology effectively mitigated free product at depth at other sites and recovered petroleum-contaminated groundwater and soil vapors at rates that exceeded the capability of other available technologies. In addition (and unlike conventional pump and treat technologies), MPE was expected to provide beneficial removal of contaminants present in the smear zone resulting from water table fluctuations expected during the test.

1.1.1 Product Volume and Mass Determinations

Free phase petroleum hydrocarbon in the subsurface is typically delineated and measured with the use of groundwater monitoring wells. The thickness of free phase hydrocarbon product in a monitoring well is determined by using an oil-water interface probe with accuracy to 0.01 ft. Product thickness gauging can be difficult when the product is highly emulsified or very viscous, often resulting in misleading readings within individual monitoring points.

While monitoring wells do provide valuable data as to the general extent and geometry of the free phase hydrocarbon pool, difficulties persist in determining the true thickness, and therefore the volume and ultimately the duration of free phase recovery and remediation. One difficult aspect of determining product volumes using monitoring wells is that accumulation in monitoring wells does not correspond directly to the actual or true thickness in the surrounding formation (Blake and Fryberger, 1983). The thickness of free petroleum hydrocarbons, as measured in a monitoring well, is an apparent thickness rather than a true formation thickness (Blake and Fryberger, 1983).

The measured or apparent free phase hydrocarbon thickness is not only dependent on the capillary fringe but also on the actual hydrocarbon thickness in the formation. Thus, the measured or apparent hydrocarbon thickness is greater for fine-grained formations and less for coarser-grained formations in which the measured thickness may be more representative

of the true thickness. In areas of relatively thin layers of free phase hydrocarbon accumulations such as AOC E, the error between the apparent well thickness and the actual formation can be more pronounced than at sites with thicker accumulations (Farmer, 1983). Free phase hydrocarbon thickness was documented on a number of occasions prior to and after the pilot study at the site and during the latter part of August 2003, as presented in *Table 1.*

Based on the above discussions on product thickness determinations, the true free phase hydrocarbon thickness at MW-01 and MW-05 would be expected to be less than the values presented in *Table 1,* in the range of up to a 70 percent reduction between the apparent and actual product thickness (Gruszczenski, 1987).

From these data, calculations were made to estimate the non-aqueous phase liquid (NAPL) mass at the site. *Table 2* provides an estimate of the NAPL mass at the site, as based on the following assumptions:

- Geometrical shape of outermost NAPL plume: Elliptical
- Geometrical shape of inner NSPL plume: Elliptical
- Effective porosity in capillary zone: 0.45
- Product density of diesel fuel: 7.17 lbs/gal
- Correction factor for clayey sands: 5

It is important to note that in addition to the uncertainty associated with the product thickness measurements, uncertainty also exists in assumed simplistic mass estimation. The free product present could be higher or lower than the estimated values presented in *Table* 2 if some of the product remains in the saturated soil zone above the water table during water level fluctuations. The water table fluctuations range up to 3 ft between the two water level measurements conducted, indicating that free product "smearing" could be occurring. However, it is difficult to estimate the amount of product retained in the soils above the water table in this smear-zone. Based on the soil sampling conducted at SB-09, the deepest sample at 42-44 ft bls had 2.3 mg/kg of the O&G range TPHs; this is the lowest observed concentrations at this soil boring location, where shallower depths above had higher TPH levels in this range (see Table 4-1 in the Draft AOC E RI report (CH2M HILL, 2004). Thus, some of the measured TPHs in soils at this boring location could be from the groundwater smear-zone effect; however, these soil TPH levels do not indicate soil saturation levels. Theoretically, it is possible that higher levels of free product may be trapped in soil pore spaces above the water table, although it is not apparent in the soil area at MW-05. Thus, there is some uncertainty in the estimated mass.

The calculations in *Table 2* helped define the approximate areal distribution of the free phase hydrocarbon pool at AOC E, as shown in *Figure 1.* This figure illustrates the path northward that the free phase hydrocarbon pool has taken over time as demonstrated by the free phase product recorded at MW-05, located approximately 10 to 12 ft north of the source area. *Figure 1* also shows that lateral migration of the free phase product is not occurring to any notable extent. This is confirmed by field observations and analytical soil data collected from RI soil borings advanced on all four sides of the source area, as presented in *Section 4.*

Figure 2 presents the approximate extent of the free phase hydrocarbon pool at AOC E remaining after implementation of the MPE pilot study. This figure was generated from a groundwater/product gauging event completed in August 2003 and shows that free phase

product is no longer present in MW-05, illustrating the long-term effectiveness of the MPE system in mitigating a portion of the free phase hydrocarbon pool at AOC E. Free phase product was not noted in any other site well gauged as part of the August 2003 event, further confirming the localized area onsite at which free phase product accumulation has persisted over the last 2 years.

1.1.2 MPE System Design

The MPE system was designed to perform groundwater and soil vapor extraction, and conduct off-gas treatment and groundwater treatment using a low-profile air stripper (LPAS). A simplified schematic of the MPE concept is shown in *Figure 3* and a detailed design drawing of the system used at AOC E is shown in *Figure 4*. The trailer-mounted MPE system was originally equipped with the following components:

- 15 horsepower (hp) liquid ring vacuum pump capable of 160 cubic feet per minute (cfm) at 25 inches of mercury (Hg)
- 150-gallon liquid/gas separator knockout tank
- 50-gallon product recovery tank
- Two 30-gallon per minute (gpm) transfer pumps
- 1-inch totalizing flow meter
- 300-gallon groundwater holding tank
- 150-gallon seal water tank
- 50-gpm shallow tray air stripping unit equipped with a 1,500-cfm blower
- Thermal catalytic oxidizer

After the equipment arrived onsite at AOC E, the following modifications to the original design were implemented:

- A higher power pump was used than originally planned to pull from two wells. A 20-hp liquid ring vacuum pump capable of 260 actual cubic feet per minute (acfm) at 24 inches of Hg was used to provide additional capacity to pull from two recovery wells instead of one well.
- A 50-gallon product recovery tank was added to the system to store free product.
- Two 1-inch totalizing flow meters were used—one to track the transferred water from the knockout tank to the air stripper unit and the other to document the volume of treated effluent water held in the aboveground storage tanks.
- The 300-gallon groundwater holding tank did not need to be included in the onsite system.
- Two 600-gallon holding tanks stored treated groundwater that was used to cool the liquid ring pump during operation. An onboard transfer pump moved the treated water between the two 600-gallon holding tanks and the liquid ring pump.

- An electric catalytic oxidizer was used on this pilot system. The electric oxidizer was chosen after determining that inconsistencies with receiving fuel deliveries would not be the preferred option since the unit was needed to be semi-automatic during the proposed 60-day pilot study period. With electrical service available to the trailer, the choice was made to proceed with the dependable choice of an electric catalytic oxidizer.

The MPE system was equipped with a vacuum pump that aggressively drew the contaminated groundwater and free product to the recovery wells by creating a low pressure point. The resultant rate of free product and dissolved contamination recovery was increased substantially above the rates possible using a gravity feed submersible or pneumatic pump system. In addition, the MPE system was configured to create a groundwater mound at the extraction point or to create a controlled cone of depression by using a drop tube placed within the recovery well.

1.1.3 Design Considerations

A number of considerations were made when designing the pilot study for AOC E. The depth to the free phase/water interface, the unknown dimensions of the free phase hydrocarbon pool, and the clayey geologic profile all made the test objective challenging.

To account for these challenges, the pilot test was designed to perform at incremental extraction wellhead vacuum settings (minimum of three) to determine the optimum extraction vacuum required to cost effectively design the full-scale system. Each vacuum setting was to be run until the induced vacuum and groundwater levels stabilized. Once stabilization was reached, the vacuum was increased to the next vacuum setting. Liquid levels and free product thickness were recorded at all monitoring wells prior to startup to develop baseline numbers.

To evaluate groundwater quality from MW-01 and MW-05 during the pilot test, influent and effluent samples were collected and submitted for laboratory analysis for BTEX, TPH-DRO, TPH-GRO, and TPH-O&G. An influent sample was also collected prior to the air stripper during the second and last pilot test vacuum setting (total of two influent samples). An effluent sample was collected after the air stripper during the second and last pilot test vacuum setting (total of two effluent samples).

1.1.4 MPE Operation

1.1.4.1 Groundwater Recovery and Treatment

Free product recovery was accomplished primarily by direct extraction and volatilization. The rate of liquid phase free product recovery was highest during the initial weeks of operation when free product or NAPL were physically extracted from the vicinity of the two recovery wells. Subsequently, the rate of liquid phase free product recovery dropped off once a steady-state condition was reached. The residual NAPL recovery after steady-state condition was accomplished primarily by volatilization.

Total fluid recovery was composed of free product, groundwater, and vapor. As a result, free product and groundwater were emulsified with entrained air. The knockout tank acted as a modified oil/water separator, allowing a small portion of the available free product to separate prior to groundwater treatment. The groundwater was treated using a LPAS, as

described in subsequent sections, and transferred to a series of treated groundwater storage tanks for storage prior to testing and proper disposal. Disposal of the treated groundwater is discussed in later sections.

1.1.4.2 Low Profile Air Stripper Operation

The contaminated groundwater, after separation from the free product within the knockout tank, was transferred to an LPAS for treatment. The LPAS operated by forcing air through perforated baffled trays filled with recovered groundwater cascading downward in a counter-current manner. The residence time of the contaminated groundwater in each tray provided extensive air-to-water contact, driving the dissolved volatile and semi-volatile contaminants from the water and into the air stream. The LPAS consisted of the following features:

- An air stripping unit with a sump and perforated baffled aeration trays providing an enhanced area of mass transfer between liquid and gas phase streams
- A blower, attached at the base of the tray aeration unit, to provide a counter-current air stream with the liquid phase influent

An automatic shutoff air flow switch fitted into the air stripper disabled the MPE recovery system in the event of blower failure or reduced air flow to the tray aerator. A centrifugal pump connected to the LPAS sump discharged the groundwater from the LPAS to the storage tanks. The LPAS sump was equipped with high and low water level sensors to control the discharge pump. A high water level sensor was installed in the air stripper sump to deactivate the recovery system should a high-level alarm condition be reached. An air pressure gauge was also installed to monitor for fouling effects and to enable air flow rate observations.

1.1.4.3 Vadose Zone Vapor Recovery

The soil matrix contaminant partitioning typically consists of immiscible contaminant liquids partitioned to the aqueous and vapor phases, aqueous to the vapor phase, and sorption to the soils. Airflow through the soil matrix induces volatilization of volatile or semi-volatile contaminants. By inducing a vacuum in the gaseous phase, an imbalance develops between the gas and liquid phases, disrupting the equilibrium forces and causing the contaminant in the liquid phase to partition to the gas phase. Subsequent removal of the contaminant from the soil gaseous phase occurs through the exiting air flow stream. In addition, the sorption phase contaminants partitioned to the soil particles are subsequently removed by the induced airflow, thus removing contaminant mass from the vadose zone or smear zone and reducing the residual NAPL. Therefore, vadose zone vapor recovery was expected to occur during the MPE operation.

The vapor flow rate estimates and radius of influence were determined on the basis of the results of the pilot study. The vacuum blower size can be modified during the design of a full-scale system, if warranted, to allow several recovery wells to be placed online to achieve the required radius of influence of soil vapor extraction (SVE).

1.1.4.4 Air Emission

Air emissions from the MPE system were treated with an electric catalytic oxidizer. The catalytic oxidizer burns VOCs to form carbon dioxide and water vapor. Air samples were collected from the MPE system at sampling ports prior to and after oxidation. *Table 5* presents laboratory results from this effort.

1.1.5 MPE System Controls

The MPE system was equipped with an air/liquid separator, liquid ring vacuum pump, LPAS, product recovery tank, water seal tank, and a product-holding tank. A vacuum relief valve to protect the pump was installed on the inlet to the blower per manufacturer recommendations.

The system control panel provides interlocking controls for the liquid ring vacuum pump, air stripper sump high water level alarm sensor, air stripper low pressure blower switch, air/liquid separator high level alarm, liquid ring water seal tank low level, product recovery tank high level alarm, and product tank high level alarm. If any of the high-level alarm sensors are activated, operation of the liquid ring vacuum pump will be shut down. The system can only be started manually after the problem has been identified and corrected. Pump system sensors and controls are summarized below.

The vapor flow rate, free product recovery rate and groundwater flow rate from each MPE recovery well was controlled by a gate valve position at each MPE recovery well. Air entrainment from the MPE recovery wells was monitored by a clear PVC sight tube.

The recovered product included free product, groundwater, and soil vapors. Conventional flow meters are unable to measure two-phase flows for individual recovery wells so total system groundwater flow was measured with a flow meter on the LPAS discharge line.

The air/liquid separator tank was equipped with various sensors. The air/liquid separator tank transfer pump is controlled by a float-type high-pump on and low-pump off sensor. In addition, the air/liquid separator tank was equipped with a float sensor capable of detecting the presence of free product and activating a solenoid valve to remove any accumulated free product.

The product recovery tank was equipped with a high level alarm (system shut down), and a high level pump-on and low level pump-off switch. The high level pump activates the product transfer pump to transfer free product from the product recovery tank to the product holding tank. The product holding tank was equipped with a high level full indication and a high-level alarm switch.

A pair of 600-gallon water seal tanks were plumbed directly to the liquid ring pump and continuously fed treated groundwater to the pump for cooling purposes. Periodically, water was transferred manually from the other treated groundwater storage tanks to replenish the water supply since potable water was not available onsite.

Vacuum and temperature gauges were installed at the inlet of the air/water separator tank and liquid ring vacuum pump. Pressure and temperature gauges were installed at the liquid ring vacuum pump outlet and were used to monitor the liquid ring pump performance**.**

Vacuum gauges were temporarily installed upstream of the air/water flow valves to monitor the vacuum induced at each of the MPE recovery wells and at the other monitoring wells onsite to determine the radius of influence of the recovery wells. These data are presented in *Table 3.*

Results presented in *Table* 3 confirm that a vacuum was induced approximately 60 and 70 feet from the MPE system at monitoring wells MW-02 and MW-07, respectively, which are well beyond the extent of the free product pool. These readings indicate that the MPE system induced a radius of influence out at least to MW-02 and MW-07, which are the two furthest monitoring points from the extraction system and MW-01.

1.2 Pilot Study Results

1.2.1 Start-up Procedures and Tests

Setup procedures included equipment and personnel mobilization to the site, installation and setup of the mobile treatment system, and installation of vacuum monitoring points. Groundwater levels and the depth of free product were recorded at all monitoring wells prior to startup. Upon completion of the system setup, a trial run was performed to verify the effluent water quality. This was performed prior to full-scale pilot operation because free product was detected and so treated groundwater effluent quality could be verified prior to the disposal of the treated groundwater. The samples were analyzed for BTEX, TPH-DRO, TPH-GRO, and O&G after startup, at the middle of the test, and prior to system shutdown.

A drop tube was inserted into the two source area monitoring wells (MW-01 and MW-05) used as the MPE system extraction points. Existing monitoring wells MW-02, MW-03, MW-04, MW-06, MW-07, and MW-08 were used as vacuum monitoring points later in the pilot test. The existing monitoring wells used as vacuum monitoring points are located at intervals of approximately 10, 15, 20, 40, and 60 ft from the extraction wells. The multi-phase mobile system was activated and, after treatment, the effluent was discharged into the groundwater holding tanks. The monitoring points were connected to water-filled magnehelic gauges to monitor the induced vacuum. The trial was run until the groundwater holding tanks reached their maximum capacity.

1.2.2 System Performance

When CH2M HILL's subcontractor, TSG Water Services, mobilized to the site on June 6, 2002, to perform the MPE system electrical connections, the service from the MOV was disconnected. After minor corrections to some electrical connections, the system came online and was fully functional by mid-day on June 13, 2002.

Water from Camp Garcia was delivered to the site on an as-needed basis throughout implementation of the MPE pilot study.

Once the MPE system was fully operational and a full vacuum was induced, the knockout tank began to fill with a mixture of emulsified free product and groundwater. The material had the appearance, texture, and odor of a diesel fuel/waste motor oil mixture. Effluent samples removed from the holding tank under the LPAS found relatively clear water with no apparent diesel odor, but the sample contained a light oil sheen on the surface after

sitting for a few minutes. Therefore, a 100-micron coalescing bag filter system was installed to remove the oil particles from the treated effluent.

The MPE unit went online on June 25, 2002, and groundwater accumulated in the knockout tank at a rate of approximately 0.25 to 0.5 gpm from the combined vacuum hoses connected to monitoring wells MW-01 and MW-05. The initial samples collected indicated that all constituents of concern, BTEX, DRO, and GRO were non-detect. The only analyte detected was O&G, which had values of 12.0 mg/L. Though O&G was not a COC with this site, the PREQB and the U.S. Navy opted to be conservative and not discharge groundwater effluent that contained O&G values of more than 10.0 mg/L. Field measurement estimates recorded during operations indicate that the MPE system recovered groundwater at an average rate of approximately 0.216 gpm over the study period. Following evaporation losses, approximately 11,000 gallons were left for disposal following treatment in the LPAS.

The treated water was discharged from the temporary holding tanks after a series of consistent laboratory results indicated that the stored water was sufficiently treated prior to discharge onsite. Treated water was discharged at the surface in a grassy area adjacent to the site over a period of 3 days under the supervision of field staff. No petroleum sheen or odor was noted during the discharge.

1.2.3 Pilot Study Analytical Data Summary

Analytical data were collected from three locations during execution of the MPE pilot study: oxidizer stack (before and after oxidizer), water tank (post treatment), and effluent water (for disposal purposes). Essential to the requirements for this study, sample data were examined from the water tank and are presented in *Table 4.*

According to the data collected, the MPE system successfully functioned according to the operating criteria set forth by PREQB. A summary of the results is as follows:

- DRO and GRO both were removed during the study period. A slight peak occurred with DRO in the midterm sample, but later was non-detect.
- BTEX compounds were essentially non-detect throughout the study period. These compounds were stripped and oxidized by the MPE unit.
- O&G was an unforeseen constituent, as mentioned in previous sections. Sample data were inconsistent although a coalescing bag filter was used to remove the O&G. Other sample results taken from tanks prior to discharge found actual O&G concentrations varying between 9 and 11 mg/L.

Air samples were collected to document the amount of free product stripped and consumed as it passed through the catalytic oxidizer. As *Table 5* illustrates, the LPAS unit on the MPE system was very effective in driving the dissolved volatile and semi-volatile contaminants from the water and into the air stream and in removing the BTEX compounds from the air stream prior to it passing through the final polishing in the catalytic oxidizer. A TPH C6-C10 (GRO) value of 15.9 mg/m^3 was noted in the air sample collected from the sampling port following oxidation and prior to discharge to the atmosphere. The TPH C6-C10 concentrations prior to oxidation was 38.8, indicating an approximate 59-percent concentration reduction for this analyte. All other sampled analytes were recorded as non-detect at the laboratory instrument method detection limit.

TABLE 1
Summary of Product Gauging Events at AOC E
Former NASD, Vieques, Puerto Rico

Location	Gauging Instrument	Product Thickness -May 2002 (pre Pilot Test)	Product Thickness – August 2002 post Pilot Test)	Product Thickness – August 2003
MW-01	Oil-water interface probe	0.48 ft	ND	Between 0.25 and 0.5 ft
MW-05	Oil-water interface probe	0.24 ft	ND	ND

ND Free phase hydrocarbon accumulation not detected

TABLE 2
Estimation of NAPL Mass at AOC E
Former NASD, Vieques, Puerto Rico

Plume Type	Length (ft)	Width (ft)	Geometric Shape	Estimated Area (ft2)	NAPL Thicknessa (ft)	Estimated Volume (gal)	Estimated Mass (lbs)
NAPL	20	15	Elliptical	236	0.36	57.0	409.0
Estimated Maximum Recoverable NAPL Mass (lbs) b							205.0

Volume = (Area)(Average NAPL Thickness)(porosity)(7.48 gal/ft3)/Correction factor based on soil type

Mass = [Volume (gal)] [Density (lb/gal)]

a Based on the observed average NAPL thickness in monitor wells MW-01 and MW-05

b Mass of recoverable NAPL is assumed to represent approximately 50 percent of total estimated NAPL mass; however, this could be higher or lower.

Reference: USEPA, September 1996

TABLE 3
MPE Pilot Study Vacuum Gauge Readings, August 13-14, 2002
AOC E Remedial investigation

Monitoring Well ID	Date	Time	Vacuum (inches of H2O)	Vacuum (mm of Hg)	Vacuum (psi)	Distance from MW 01 (ft)
01[a]	8/13/02	18:35	-	-	-	-
02	8/13/02	18:35	0.55	1.028	2.861	60
03[b]	8/14/02	10:00	0.00	0.000	0.000	18
04	8/13/02	20:00	0.47	0.878	2.445	15
05	8/14/02	09:50	0.43	0.804	2.237	9
06	8/14/02	08:30	0.06	0.112	0.312	43
07	8/14/02	10:40	0.02	0.037	0.104	70
08[c]	8/14/02	10:00	0.00	0.000	0.000	40

[a] Extraction well under vacuum, no reading collected
[b] Well head under water, no reading collected
[c] Actual gauge readings

TABLE 4
Analytical Results from Effluent Water Samples taken from the MPE System
Pilot Study, AOC E Remedial Investigation, Former NASD, Vieques, Puerto Rico

			MPE System Sampling Dates		
Analyte	**Units**	**Method**	**6/15/02**	**07/10/02**	**08/14//02[a]**
GRO TPH C6 – C10	mg/L	8015	ND	0.012 J	ND
DRO TPH C10 – C28	mg/L	8015	2.6	20.5 J	ND
O&G	mg/L	1664A	10.7	88.9	136
Benzene	µg/L	8260	ND	0.36	ND
Toluene	µg/L	8260	ND	1 U	ND
Ethylbenzene	µg/L	8260	ND	1 U	ND
O – Xylene	µg/L	8260	ND	2.2[b]	ND
p, m – Xylene	µg/L	8260	ND	--	ND

[a] BTEX 8/14/02 samples were analyzed by Method 8021.

[b] Value represents total xylenes.

J Indicates estimated value.

U Indicates the analyte was analyzed for but not detected.

ND Non-detect

TABLE 5
Analytical Results from Air Samples taken from the MPE System during the Pilot Study Startup
AOC E Remedial Investigation, Former NASD, Vieques, Puerto Rico

			Air Sampling Location	
Analyte	**Units**	**Method**	**Before Oxidizer**	**After Oxidizer**
TPH C6-C10	mg/m^3	18	38.8	15.9
Benzene	mg/m^3	18	ND	ND
Toluene	mg/m^3	18	ND	ND
Ethylbenzene	mg/m^3	18	ND	ND
o-Xylene	mg/m^3	18	ND	ND
p,m-Xylene	mg/m^3	18	2.4	ND

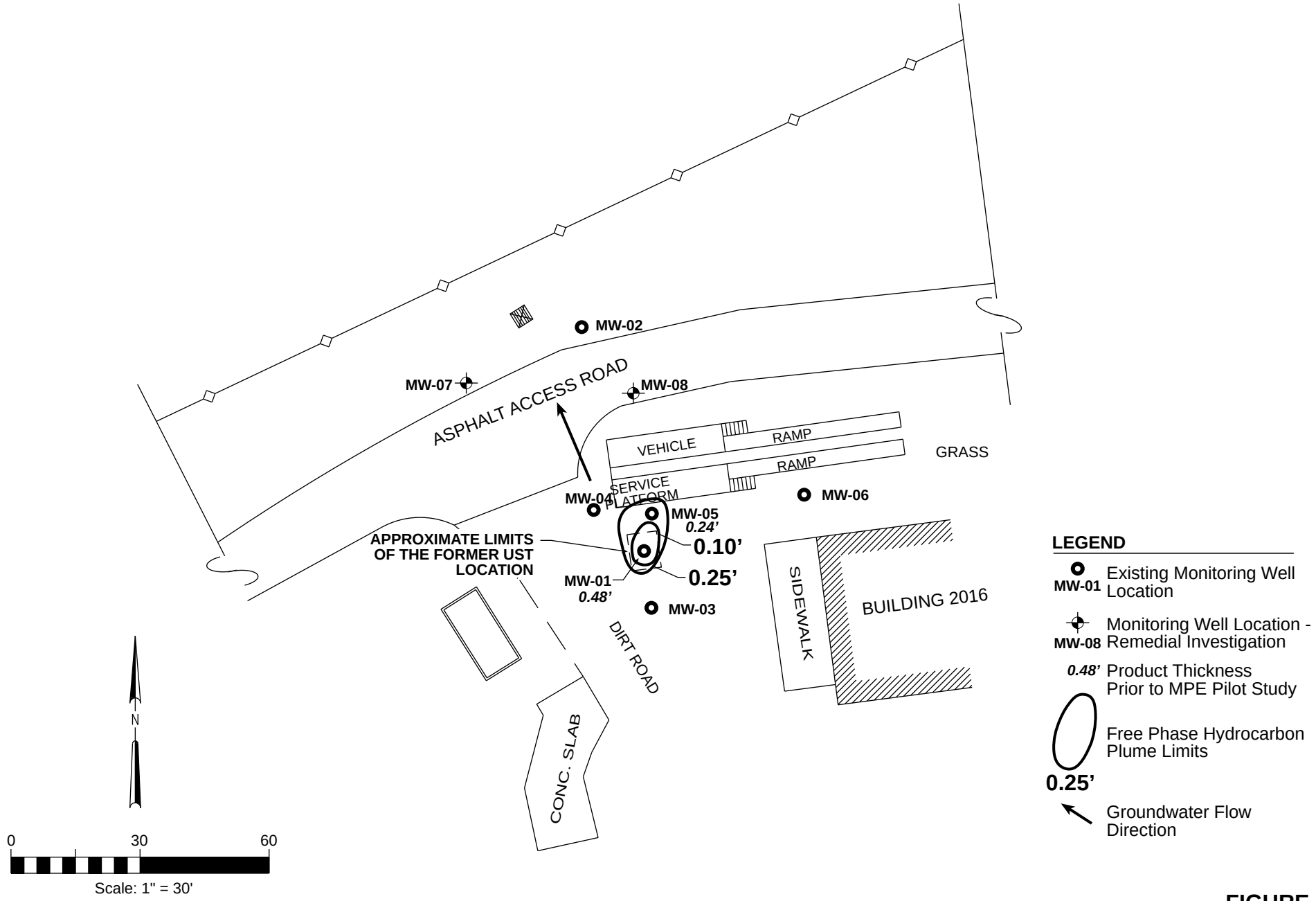


FIGURE 1

Free Phase Hydrocarbon Plume Map Prior to MPE Pilot Study, AOC E

Former NASD, Vieques, Puerto Rico

CH2MHILL

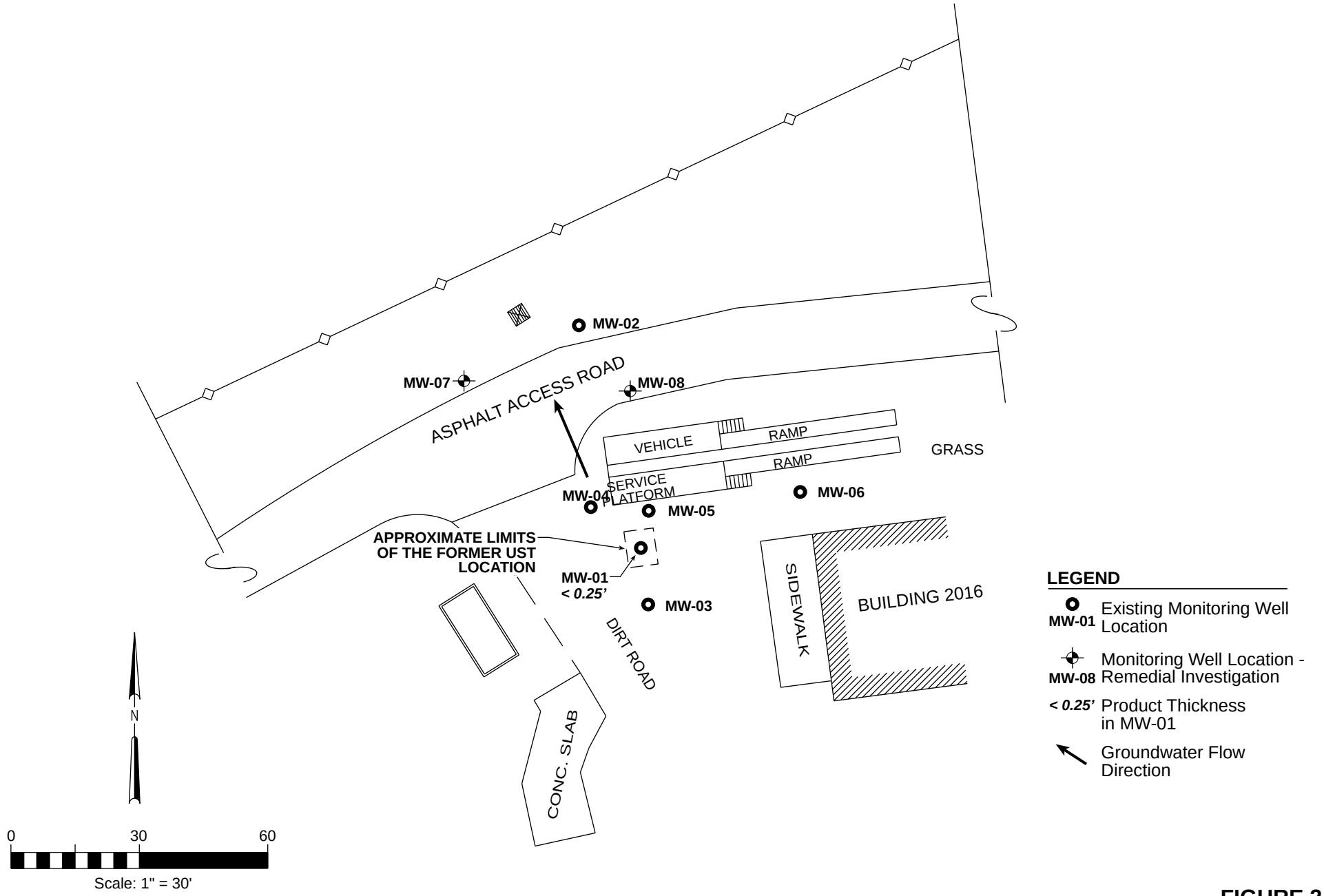


FIGURE 2

Free Phase Hydrocarbon Plume Map Post to MPE Pilot Study, AOC E

Former NASD, Vieques, Puerto Rico

CH2MHILL

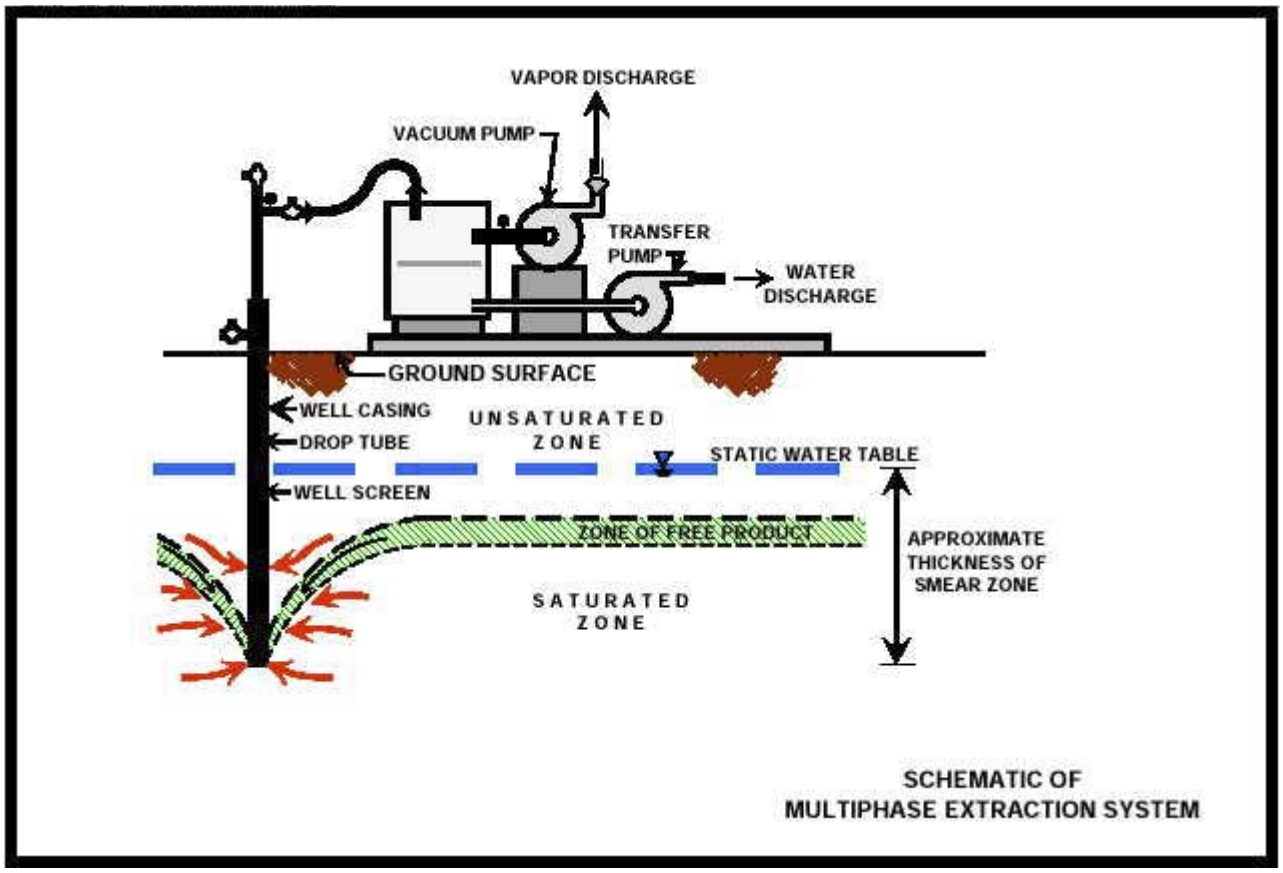


FIGURE 3
Simplified Schematic of MPE System
Former NASD, Vieques, Puerto Rico

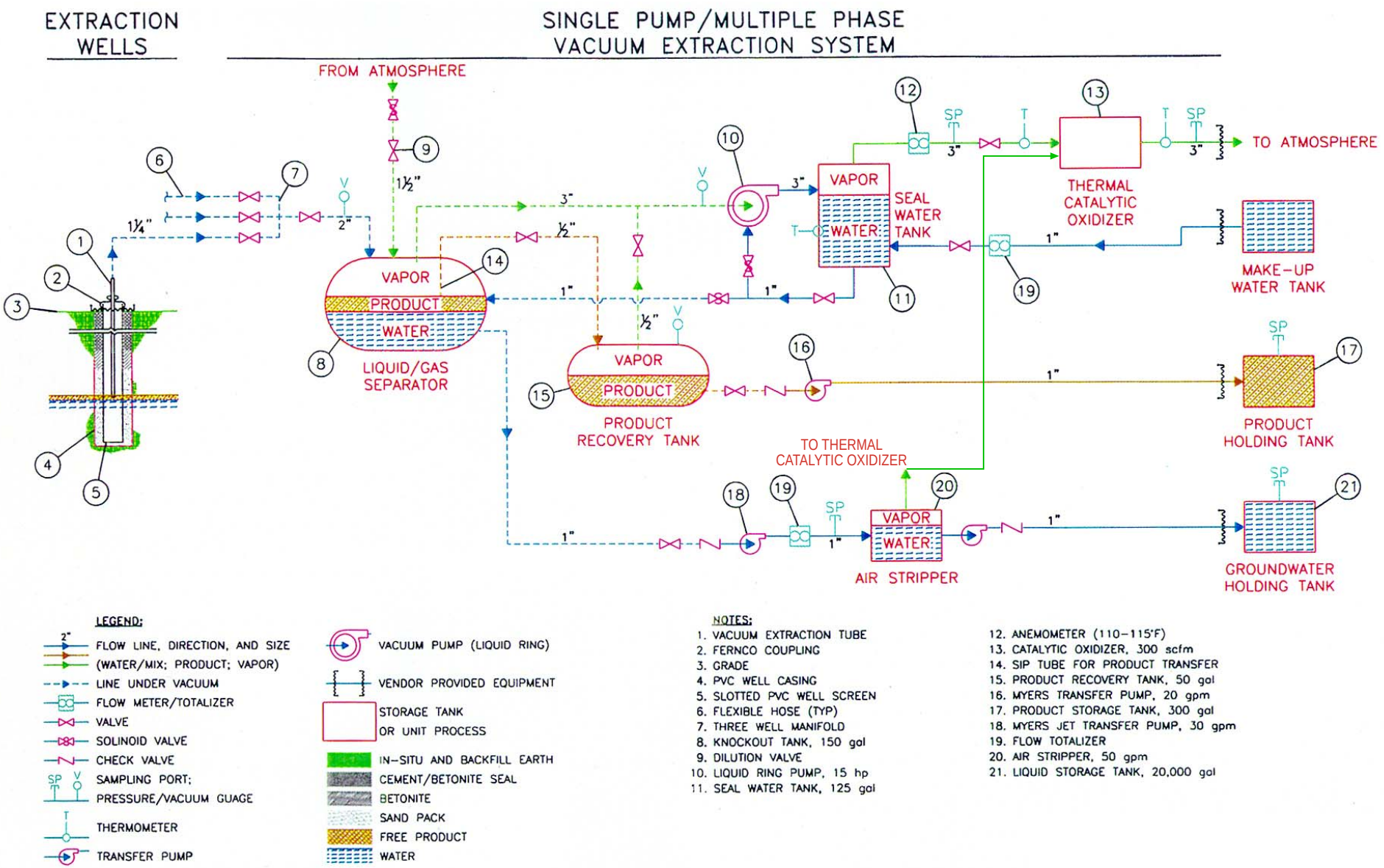


FIGURE 4
Detailed Design Drawing of Multi-Phase Extraction System
AOC E (UST Site 2016), Former NASD, Vieques, Puerto Rico

Appendix I
Survey Data

2000 (PA/SI) Field Investigation Survey Data - Surveyed 2000

Survey Data in UTM NAD 83 (m), Lat/Long, and Elevation in Meters and Feet

Location ID	Northing	Easting	Latitude	Longitude	Top of Casing Elevation (m)	Top of Casing Elevation (ft)
MW-01	232797.520	2005684.767	18 7' 24.702" N	65 31' 30.540" W	13.390	43.93
MW-02	232790.248	2005701.614	18 7' 25.247" N	65 31' 30.795" W	13.009	42.68
MW-03	232799.796	2005679.684	18 7' 24.538" N	65 31' 30.460" W	13.429	44.06
MW-04	232793.297	2005687.006	18 7' 24.773" N	65 31' 30.684" W	13.289	43.60
MW-05	232798.483	2005687.310	18 7' 24.785" N	65 31' 30.508" W	13.509	44.32
MW-06	232808.824	2005691.678	18 7' 24.932" N	65 31' 30.159" W	13.515	44.34

2002 (RI) Field Investigation Survey Data - Horizontal Coordinates Surveyed March 2007[1]

Survey Data in UTM NAD 83 (m), Lat/Long, and Elevation in Meters and Feet

Location ID	Northing	Easting	Latitude	Longitude	Top of Casing Elevation (m)	Top of Casing Elevation (ft)
MW-07	232778	2005704	18 7' 25.319" N	65 31' 31.212" W	13.231*	43.41*
MW-08	232792	2005698	18 7' 25.130" N	65 31' 30.734" W	13.119*	43.04*

Soil Boring Locations from 1998 Site Characterization, 2002 RI, and 2005 Supplemental RI

ArcGIS Data in UTM NAD 83 (m) and Lat/Long.

Location ID	Northing	Easting	Latitude	Longitude	Top of Casing Elevation (m)	Top of Casing Elevation (ft)
SB01	2005686	232797	18 7' 24.742" N	65 31' 30.558" W	NA	NA
SB02	2005702	232790	18 7' 25.259" N	65 31' 30.803" W	NA	NA
SB03	2005681	232789	18 7' 24.576" N	65 31' 30.828" W	NA	NA
SB04	2005691	232811	18 7' 24.911" N	65 31' 30.084" W	NA	NA
SB05	2005679	232800	18 7' 24.516" N	65 31' 30.453" W	NA	NA
SB06	2005697	232783	18 7' 25.093" N	65 31' 31.039" W	NA	NA
SB07	2005683	232800	18 7' 24.646" N	65 31' 30.455" W	NA	NA
SB08	2005696	232795	18 7' 25.066" N	65 31' 30.631" W	NA	NA
SB09	2005688	232797	18 7' 24.807" N	65 31' 30.559" W	NA	NA
SB10	2005684	232798	18 7' 24.678" N	65 31' 30.523" W	NA	NA
SB11	2005685	232796	18 7' 24.709" N	65 31' 30.591" W	NA	NA
SB12	2005686	232799	18 7' 24.743" N	65 31' 30.490" W	NA	NA
SS/SB13	2005689	232797	18 7' 24.840" N	65 31' 30.559" W	NA	NA
SS/SB14	2005687	232796	18 7' 24.774" N	65 31' 30.592" W	NA	NA
SS/SB15	2005688	232792	18 7' 24.805" N	65 31' 30.729" W	NA	NA
SS/SB16	2005695	232797	18 7' 25.035" N	65 31' 30.562" W	NA	NA
SS17	2005696	232817	18 7' 25.076" N	65 31' 29.883" W	NA	NA
SS18	2005689	232800	18 7' 24.841" N	65 31' 30.457" W	NA	NA
SS19	2005684	232806	18 7' 24.681" N	65 31' 30.251" W	NA	NA

Notes:

MW-01 thru MW-06 were surveyed by a license Surveyor in 2000.

[1] Horizontal coordinates were obtained by CH2M HILL in 2007 using a hand held GPS for MW-07 and MW-08.

* Elevation was surveyed by a CH2M HILL Licensed Surveyor in 2002.

Soil boring location horizontal coordinates obtained from an aerial using ArcGIS.

Appendix J
IDW Disposal Information

Appendix J
1996 IDW Disposal Information

Roque Schmidt
Oil Equipment Contractors
BOX 58 PLAYA STATION - AVE. HOSTOS 112. PLAYA DE PONCE
PONCE, P. R. 00734
TELS. (809) 84
84

December 23th, 1996

To whom it may concern:

We removed a 500 gallons fiber glass tank at Building 2016, at U.S. Naval Base, Roosevelt Roads, Ceiba, Puerto Rico.

This tank was cleaned, crushed and delivered to B.F.I facilities in Ponce, for disposal.

Héctor Moné

HM/os

teg Transglobal Environmental Geochemistry — Chain of Custody Record

Client: RELIABLE MECHANICAL — Date: 11/8/96 — Page 2 Of 2

Address: — TEG Project #: 96T032/TB-8 — Outside Lab #:

Phone: — FAX: — Location: VIEQUES

Client Project #: — Project Manager: K. THICKSTUN — Collector: KLS — Date of Collection: 11/8/96

Sample #	Depth	Time	Sample Type	Container Type	VOA 8010	VOA 8020	VOA 8240	Semi Vol 8270	TRPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	PNA 610/8100	PEST/PCB's 8080	HEX Chrome	Organic Lead	Total Lead	pH	Metals						Field Notes	Total # of containers
TRIP BLANK			H_2O	40ml		X			X																	1
EQUIPMENT BLANK			↓	VOA		X			X																	1
FIELD BLANK			↓	VIAL		X			X																	1
2016-UNDER	SLAB		SOIL	VIAL		X			X																	1

Relinquished by: (signature) K E Samuels — Date / Time 1140A 11/8/96 — Received by: (signature) T Shellhammer — Date / Time 1140A 11/8/96

Relinquished by: (signature) — Date / Time — Received by: (signature) — Date / Time

Total # of containers: 10
Chain of Custody seals Y/N/NA: NA
Seals intact? Y/N/NA: NA
Received good condition/cold: Y

Notes: 4°C

Turn around time: 8 days

teg Transglobal Environmental Geochemistry **Chain of Custody Record** PO #: _____

Client: RELIABLE MECHANICAL
Address: _____
Phone: _____ FAX: _____
Client Project #: _____ Project Manager: K. THICKSTUN

Date: 11-8-96 Page 1 Of 2
TEG Project #: 96I0321TB-8 Outside Lab #: _____
Location: Vieques
Collector: KLS Date of Collection: 11/8/96

Sample #	Depth	Time	Sample Type	Container Type	VOA 8010	VOA 8020	VOA 8240	Semi Vol 8270	TRPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	PNA 610/8100	PEST/PCB's 8080	HEX Chrome	Organic Lead	Total Lead	pH	Metals						Field Notes	Total # of containers
2015A-W			SOIL	GL		X			X																	1
2015A-M			SOIL			X			X																	1
2015A-M dup						X			X																	1
2015A-E						X			X																	1
2015-Stockpile						X			X																	1
2015-Pipe Trench						X			X																	1
2015B-W						X			X																	1
2015B-M						X			X																	1
2015B-E						X			X																	1
2015B-E dup						X			X																	1
2016-W						X			X																	1
2016-E						X			X																	1
2016-E dup						X			X																	1
2016 Stockpile						X			X																	1
2016 Pipe Trench			VOA	VIAL		X			X																	1

Relinquished by: (signature) K E Samuels Date / Time 4/8/96 1:40pm
Received by: (signature) K Shelburne Date / Time 4/8/96 1:40pm
Relinquished by: (signature) Date / Time
Received by: (signature) Date / Time

Total # of containers: 17
Chain of Custody seals Y/N/NA: NA
Seals intact? Y/N/NA: NA
Received good condition/cold: Y

Notes: 4°C. ice bath.

Turn around time: 8 days

BFI Waste Systems™
BROWNING-FERRIS INDUSTRIES

No. 120926

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name: U.S. Navy
Address: Roosvelt Roads
Ceiba P.R.
Phone No.: 787 - 865 4488

Generating Location (Name): Same
Address: Roosvelt Roads
Ceiba P.R.
Phone No.: 787 - same

WASTE DESCRIPTION	B. F. I. CODE	QUANTITY	UNIT	FOR B.F.I. USE ONLY
Waste oil/Diesel Fuel	PR / 233 /980218 /251486	30	yds	3
Contaminateds Soil	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			DISP. CODE

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 26, or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, If the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Pedro J. Ruiz — Generator Authorized Agent Name - Print
Signature
02 20 97 — Shipment Date

TRANSPORTER

Transporter Name: Trecons Inc.
Address: P.O.Box 10075
Ponce P.R. 00732
Phone No.: 787 - 841-8907
Driver Name (Print): M.Garcia
Vehicle License No. /State: Mack 89 R.P. 1753
Container id:

I hereby certify that the above named material was picked up at the generator site listed above.

Miguel Cotareta — Driver Signature
02 20 97 — Shipment Date

I hereby certify that above named material was delivered without incident to the destination listed below.

M. Cotareta — Driver Signature
02 20 97 — Delivery Date

DESTINATION

Site Name: Ponce Sanitary Landfill
Phone No.: 787 - 841 7775
Address: Bo. La Cotorra Ponce, P.R. 00731

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Isain Ramirez — Name of Authorized Agent
Signature
02 20 97 — Receipt Date

PASS CODE

01/90

PEL-DESTINATION-RETAIN

** TOTAL PAGE.05 **

BFI Waste Systems
BROWNING-FERRIS INDUSTRIES

No. 235771

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name: U.S. Navy
Address: Roosevelt Roads
Ceiba P.R.
Phone No. 787 865-4408

Generating Location (Name): Same
Address: Roosevelt Road
Ceiba P.R.
Phone No. 787 · 865-4408

WASTE DESCRIPTION	B. F. I. CODE	QUANTITY	UNIT	FOR B.F.I. USE ONLY
Waste oil / Diesel contaminated soil	PR / 233 / 980218 / 251480	30	yds	3
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			DISP. CODE

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 26, or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, If the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Pedro Rv. — Generator Authorized Agent Name - Print
Signature
02 21 97 — Shipment Date

TRANSPORTER

Transporter Name: Trecom Enc.
Address: P.O. Box 10075
Ponce, P.R.
Phone No. 787 · 841-6972
Driver Name (Print): J. Granda
Vehicle License No. /State: RP-1753
Container id: 93338-A

I hereby certify that the above named material was picked up at the generator site listed above.
Driver Signature
02 21 97 — Shipment Date

I hereby certify that above named material was delivered without incident to the destination listed below.
Driver Signature
02 21 97 — Delivery Date

DESTINATION

Site Name: Ponce Sanitary Landfill
Phone No. 787 · 841-7775
Address: Bo. La Cotorra Ponce, P.R. 00731

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Walter Maldonado — Name of Authorized Agent
Signature
02 21 97 — Receipt Date

PASS CODE

01/90 — BFI DESTINATION RETAIN

111,700

BFI Waste Systems™
BROWNING-FERRIS INDUSTRIES

No. 220925

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name: U.S. Navy
Address: Roosevelts Roads
Ceiba P.R.
Phone No.: 787 - 8654488

Generating Location (Name): Same
Address: Roosvelt Roads
Ceiba P.R.
Phone No.: 787 - Same

WASTE DESCRIPTION	B. F. I. CODE	QUANTITY	UNIT	FOR B.F.I. USE ONLY
Waste oil/Diesel Fuel	PR / 233 / 980218 / 251486	30	yds	3
Contaminated Soil	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			DISP. CODE

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 26, or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Pedro J. Ruiz — Generator Authorized Agent Name - Print
Signature
02 20 97 — Shipment Date

TRANSPORTER

Transporter Name: Trecons Inc.
Address: P.O.Box 10075
Ponce P.R. 00732
Phone No.: 787 - 841-8907
Driver Name (Print): J. Garcia
Vehicle License No. /State: Mack 82 R.P. 4183
Container id: 24/35-A

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature
02 20 97 — Shipment Date

I hereby certify that above named material was delivered without incident to the destination listed below.

Driver Signature
02 20 97 — Delivery Date

DESTINATION

Site Name: Ponce Sanitary Landfill
Phone No.: 787 - 8417775
Address: Bo. La Cotorra Ponce, P.R. 00731

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Juan Ramirez — Name of Authorized Agent
Signature
02 20 97 — Receipt Date

PASS CODE

BFI DESTINATION RETAIN

RS out

110,500 #

BFI Waste Systems
BROWNING-FERRIS INDUSTRIES

No. 235129

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name: U S Navy
Address: Roosevelt Road
Ceiba P.R.
Phone No.: 787 - 865-4488

Generating Location (Name): US Navy
Address: Roosvelt Road
Ceiba PR
Phone No.: 787 - 865-4488

WASTE DESCRIPTION	B. F. I. CODE	QUANTITY	UNIT	FOR B.F.I. USE ONLY
Waste Oil & Diesel Fuel w/ Contaminated Soil.	PR / 233 1980218 / 251486	30	yds.	3
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			
	PR / 233 / /			DISP. CODE

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 26, or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, If the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Peter J. Ruiz — Generator Authorized Agent Name - Print
Signature
02 20 97 — Shipment Date

TRANSPORTER

Transporter Name: Ben Powers Transporte
Address: Cto Rancul PR
Phone No.: 787 - 844-4405
Driver Name (Print): Luis Vazquez
Vehicle License No. /State: RP 116 K
Container id:

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature
02 20 97 — Shipment Date

I hereby certify that above named material was delivered without incident to the destination listed below.

Driver Signature
02 25 97 — Delivery Date

DESTINATION

Site Name: Ponce Sanitary Landfill
Phone No.: 787 - 841-7775
Address: Bo. La Cotorra Ponce, P.R. 00731

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent
Signature
02 20 97 — Receipt Date

PASS CODE

BFI DESTINATION RETAIN

Appendix J
2004 IDW Disposal Information

revd - 11/9/04

PEL Laboratories, Inc.

Florida Department of Health #E84207
July 1, 2004 - June 30, 2005

CWA - Extractable Organics, General Chemistry,Metals,
Pesticides-herbicides-PCB's, Volatile Organics
RCRA/CERCLS - Extractable Organics, General Chemistry, Metals
Pesticides-Herbicides-PCB's, Volatile Organics

- CERTIFICATE OF ANALYSIS -

Report Date: 11/01/2004

To: Kevin Sanders
CH2M Hill
3011 S.W. Williston Road
Gainesville, FL 326147009

W 352-335-5877

PROJECT ID: VIEQUES - IDW / 180357.FI.22
WORK ORDER: 2409211
DATE RECEIVED: Friday, October 22, 2004

Project Notes: For 8260 TCLP analysis, sample -01 required an additional 1:10 dilution due to excessive foaming upon the purge step. Heavy emulsions were encountered during the extraction of the 8270 samples. These emulsions may have contributed to the low surrogate recoveries in the samples. For the 8081 analysis, sample -01 had surrogate recoveries below criteria. The most probable cause for the variances is matrix effect. For the 8151 analysis, the surrogate was below criteria for the samples and QC. The samples and QC was re-extracted and re-analyzed out of hold. With acceptable criteria. Both sets of data is reported.

(†): Short Hold Time Analysis Date

Samples reported on dry weight basis

PEL Contact: Mark Gudnason / extension: 242

4420 Pendola Point Road • Tampa, Florida 33619
(813)247-2805 • FAX: (813)248-1537
Website: www.pelab.com

PEL Laboratories, Inc.

DATA QUALIFIER CODES

State of Florida, Department of Environmental Protection &
Department of Health & Rehabilitative Services / NELAC

J Estimated value; value not accurate. This code shall be used in the following instances:

1. Surrogate recovery limits have been exceeded.
2. No known quality control criteria exists for the component
3. The reported value failed to meet the established quality control criteria for either precision or accuracy
4. The sample matrix interfered with the ability to make an accurate determination
5. If the data is questionable because of improper laboratory or field protocols (e.g. composite sample was collected instead of a grab sample)

Note: a "J" value shall be accompanied by justification for it's use, and shall not be used if another code applies (e.g. L, V, Y, Q).

L Off-scale high. Actual value is known to be greater then the value given. To be used when the concentration of the analyte is above the acceptable limit for quantitation (exceeds the linear range of the highest calibration standard) and the calibration curve is known to exhibit a negative deflection.

Q Sample held beyond acceptable holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for the sample preparation or analysis.

U Indicates that the compound was analyzed for but not detected. This shall be used to indicate that the specified component was not detected. The value associated with the qualifier shall be the laboratory reporting limit. Unless requested by the client, values less than the reporting limit shall not be reported.

V Indicates that the analyte was detected in both the sample and the associated method blank.
Note: The value in the blank shall not be subtracted from associated samples.

Y The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211
PROJECT ID: VIEQUES - IDW / 180357.FI.22

PEL Lab# : 240921101
Client ID : WEST IDW I&E W
Matrix : GW

Collection Information:
Sample Date: 10/21/2004 9:00:00 AM
ND = Less than RL

Parameter	Method	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Flash Point	1010	ND	10/27/2004 9:03		Fahrenheit		1
pH	150.1	8.08	(†) 10/23/2004 12:22		pH		1
Sulfide	376.1	0.4	10/26/2004 12:05		mg/L	0.08	1
Arsenic	6010 TCLP	ND	10/27/2004 20:19	10/27/2004	mg/L	0.018	1
Barium	6010 TCLP	0.0814	10/27/2004 20:19	10/27/2004	mg/L	0.00491	1
Cadmium	6010 TCLP	ND	10/27/2004 20:19	10/27/2004	mg/L	0.00356	1
Chromium	6010 TCLP	ND	10/27/2004 20:19	10/27/2004	mg/L	0.013	1
Lead	6010 TCLP	ND	10/27/2004 20:19	10/27/2004	mg/L	0.022	1
Selenium	6010 TCLP	0.0565	10/27/2004 20:19	10/27/2004	mg/L	0.026	1
Silver	6010 TCLP	0.0137	10/27/2004 20:19	10/27/2004	mg/L	0.0065	1
Mercury	7470 TCLP	ND	10/28/2004 16:26	10/27/2004	mg/L	0.000162	1
Chlordane	8081 TCLP	ND	10/28/2004 19:29	10/28/2004	ug/L	0.1	1
Endrin	8081 TCLP	ND	10/28/2004 19:29	10/28/2004	ug/L	0.0036	1
gamma-BHC (Lindane)	8081 TCLP	ND	10/28/2004 19:29	10/28/2004	ug/L	0.0048	1
Heptachlor	8081 TCLP	ND	10/28/2004 19:29	10/28/2004	ug/L	0.0028	1
Heptachlor epoxide	8081 TCLP	ND	10/28/2004 19:29	10/28/2004	ug/L	0.0028	1
Methoxychlor	8081 TCLP	ND	10/28/2004 19:29	10/28/2004	ug/L	0.0036	1
Toxaphene	8081 TCLP	ND	10/28/2004 19:29	10/28/2004	ug/L	0.36	1
2,4,5,6-tetrachloro-m-xylene(SUR	8081 TCLP	41 J4	10/28/2004 19:29	10/28/2004	%	(45 - 125)	1
Decachlorobiphenyl(SURR)	8081 TCLP	1.9 J4	10/28/2004 19:29	10/28/2004	%	(34 - 133)	1
2,4,5-TP (Silvex)	8151 TCLP	ND	10/30/2004 17:09	10/28/2004	ug/L	0.076	1
2,4,5-TP (Silvex)	8151 TCLP	ND	10/29/2004 10:42	10/28/2004	ug/L	0.076	1
2,4'-D	8151 TCLP	ND	10/29/2004 10:42	10/28/2004	ug/L	0.3	1
2,4'-D	8151 TCLP	ND	10/30/2004 17:09	10/28/2004	ug/L	0.3	1
DCAA(SURR)	8151 TCLP	90.9	10/30/2004 17:09	10/28/2004	%	(60 - 130)	1
DCAA(SURR)	8151 TCLP	46 J3	10/29/2004 10:42	10/28/2004	%	(60 - 130)	1
1,1-Dichloroethene	8260 TCLP	ND	10/29/2004 9:18		ug/l	90	10
1,2-Dichloroethane	8260 TCLP	ND	10/29/2004 9:18		ug/l	29	10
2-Butanone	8260 TCLP	ND	10/29/2004 9:18		ug/l	85	10
Benzene	8260 TCLP	ND	10/29/2004 9:18		ug/l	15	10
Carbon tetrachloride	8260 TCLP	ND	10/29/2004 9:18		ug/l	37	10
Chlorobenzene	8260 TCLP	ND	10/29/2004 9:18		ug/l	32	10
Chloroform	8260 TCLP	ND	10/29/2004 9:18		ug/l	25	10
Tetrachloroethene	8260 TCLP	ND	10/29/2004 9:18		ug/l	50	10
Trichloroethene	8260 TCLP	ND	10/29/2004 9:18		ug/l	27	10
Vinyl chloride	8260 TCLP	ND	10/29/2004 9:18		ug/l	40	10
1,2-Dichloroethane-d4(SURR)	8260 TCLP	104	10/29/2004 9:18		%	(80 - 120)	10
4-Bromofluorobenzene(SURR)	8260 TCLP	100	10/29/2004 9:18		%	(86 - 115)	10
Dibromofluoromethane(SURR)	8260 TCLP	99.8	10/29/2004 9:18		%	(86 - 118)	10
Toluene d8(SURR)	8260 TCLP	96.8	10/29/2004 9:18		%	(88 - 110)	10
1,4-Dichlorobenzene	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.4	1
2,4,5-Trichlorophenol	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	6.8	1
2,4,6-Trichlorophenol	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	7.2	1
2,4-Dinitrotoluene	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.6	1
2-Methylphenol (o-Cresol)	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.2	1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211

PROJECT ID: VIEQUES - IDW / 180357.FI.22

PEL Lab# : 240921101

Client ID : WEST IDW I&E W

Matrix : GW

Collection Information:

Sample Date: 10/21/2004 9:00:00 AM

ND = Less than RL

Parameter	Method	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
4-Methylphenol	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	12.2	1
Hexachlorobenzene	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.2	1
Hexachlorobutadiene	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5	1
Hexachloroethane	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.2	1
Nitrobenzene	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.6	1
Pentachlorophenol	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.2	1
Pyridine	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	4.2	1
2,4,6-Tribromophenol(SURR)	8270 TCLP	4.2 J1	10/29/2004 0:00	10/28/2004	%	(10 - 122)	1
2-Fluorobiphenyl(SURR)	8270 TCLP	86	10/29/2004 0:00	10/28/2004	%	(43 - 116)	1
2-Fluorophenol(SURR)	8270 TCLP	4.8 J1	10/29/2004 0:00	10/28/2004	%	(21 - 120)	1
Nitrobenzene-d5(SURR)	8270 TCLP	80	10/29/2004 0:00	10/28/2004	%	(35 - 114)	1
Phenol-d5(SURR)	8270 TCLP	14.4	10/29/2004 0:00	10/28/2004	%	(10 - 94)	1
p-Terphenyl-d14(SURR)	8270 TCLP	94	10/29/2004 0:00	10/28/2004	%	(33 - 141)	1
Cyanide	9012	ND	10/27/2004 13:06	10/26/2004	ug/L	9.9	1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211

PROJECT ID: VIEQUES - IDW / 180357.FI.22

PEL Lab# : 240921102

Client ID : WEST IDW I&E S

Matrix : SO

Collection Information:

Sample Date: 10/21/2004 9:00:00 AM

ND = Less than RL

Parameter	Method	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Flash Point	1010	ND	10/27/2004 10:03		Fahrenheit		1
Sulfide	376.1	55.2	10/26/2004 11:35	10/26/2004	mg/Kg	11	1
Arsenic	6010 TCLP	0.131	10/27/2004 20:03	10/27/2004	mg/L	0.018	1
Barium	6010 TCLP	0.287	10/27/2004 20:03	10/27/2004	mg/L	0.00491	1
Cadmium	6010 TCLP	ND	10/27/2004 20:03	10/27/2004	mg/L	0.00356	1
Chromium	6010 TCLP	ND	10/27/2004 20:03	10/27/2004	mg/L	0.013	1
Lead	6010 TCLP	ND	10/27/2004 20:03	10/27/2004	mg/L	0.022	1
Selenium	6010 TCLP	ND	10/27/2004 20:03	10/27/2004	mg/L	0.026	1
Silver	6010 TCLP	0.0158	10/27/2004 20:03	10/27/2004	mg/L	0.0065	1
Mercury	7470 TCLP	ND	10/28/2004 16:14	10/27/2004	mg/L	0.000162	1
Chlordane	8081 TCLP	ND	10/28/2004 20:20	10/28/2004	ug/L	0.1	1
Endrin	8081 TCLP	ND	10/28/2004 20:20	10/28/2004	ug/L	0.0036	1
gamma-BHC (Lindane)	8081 TCLP	ND	10/28/2004 20:20	10/28/2004	ug/L	0.0048	1
Heptachlor	8081 TCLP	ND	10/28/2004 20:20	10/28/2004	ug/L	0.0028	1
Heptachlor epoxide	8081 TCLP	ND	10/28/2004 20:20	10/28/2004	ug/L	0.0028	1
Methoxychlor	8081 TCLP	ND	10/28/2004 20:20	10/28/2004	ug/L	0.0036	1
Toxaphene	8081 TCLP	ND	10/28/2004 20:20	10/28/2004	ug/L	0.36	1
2,4,5,6-tetrachloro-m-xylene(SUR	8081 TCLP	70	10/28/2004 20:20	10/28/2004	%	(45 - 125)	1
Decachlorobiphenyl(SURR)	8081 TCLP	75	10/28/2004 20:20	10/28/2004	%	(34 - 133)	1
2,4,5-TP (Silvex)	8151 TCLP	ND	10/30/2004 17:41	10/28/2004	ug/L	0.076	1
2,4,5-TP (Silvex)	8151 TCLP	ND	10/29/2004 11:48	10/28/2004	ug/L	0.076	1
2,4'-D	8151 TCLP	ND	10/29/2004 11:48	10/28/2004	ug/L	0.3	1
2,4'-D	8151 TCLP	ND	10/30/2004 17:41	10/28/2004	ug/L	0.3	1
DCAA(SURR)	8151 TCLP	87.9	10/30/2004 17:41	10/28/2004	%	(60 - 130)	1
DCAA(SURR)	8151 TCLP	52 J3	10/29/2004 11:48	10/28/2004	%	(60 - 130)	1
1,1-Dichloroethene	8260 TCLP	ND	10/28/2004 20:18		ug/l	9	1
1,2-Dichloroethane	8260 TCLP	ND	10/28/2004 20:18		ug/l	2.9	1
2-Butanone	8260 TCLP	ND	10/28/2004 20:18		ug/l	8.5	1
Benzene	8260 TCLP	ND	10/28/2004 20:18		ug/l	1.5	1
Carbon tetrachloride	8260 TCLP	ND	10/28/2004 20:18		ug/l	3.7	1
Chlorobenzene	8260 TCLP	ND	10/28/2004 20:18		ug/l	3.2	1
Chloroform	8260 TCLP	ND	10/28/2004 20:18		ug/l	2.5	1
Tetrachloroethene	8260 TCLP	ND	10/28/2004 20:18		ug/l	5	1
Trichloroethene	8260 TCLP	ND	10/28/2004 20:18		ug/l	2.7	1
Vinyl chloride	8260 TCLP	ND	10/28/2004 20:18		ug/l	4	1
1,2-Dichloroethane-d4(SURR)	8260 TCLP	104	10/28/2004 20:18		%	(80 - 120)	1
4-Bromofluorobenzene(SURR)	8260 TCLP	97.8	10/28/2004 20:18		%	(86 - 115)	1
Dibromofluoromethane(SURR)	8260 TCLP	103	10/28/2004 20:18		%	(86 - 118)	1
Toluene d8(SURR)	8260 TCLP	102	10/28/2004 20:18		%	(88 - 110)	1
1,4-Dichlorobenzene	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.4	1
2,4,5-Trichlorophenol	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	6.8	1
2,4,6-Trichlorophenol	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	7.2	1
2,4-Dinitrotoluene	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.6	1
2-Methylphenol (o-Cresol)	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	5.2	1
4-Methylphenol	8270 TCLP	ND	10/29/2004 0:00	10/28/2004	ug/l	12.2	1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211

PROJECT ID: VIEQUES - IDW / 180357.FI.22

PEL Lab# : 240921102

Client ID : WEST IDW I&E S

Matrix : SO

Collection Information:

Sample Date: 10/21/2004 9:00:00 AM

ND = Less than RL

Parameter	Method	Results		Analysis Date	Prep Date	Units	RL	Dilution Factor
Hexachlorobenzene	8270 TCLP	ND		10/29/2004 0:00	10/28/2004	ug/l	5.2	1
Hexachlorobutadiene	8270 TCLP	ND		10/29/2004 0:00	10/28/2004	ug/l	5	1
Hexachloroethane	8270 TCLP	ND		10/29/2004 0:00	10/28/2004	ug/l	5.2	1
Nitrobenzene	8270 TCLP	ND		10/29/2004 0:00	10/28/2004	ug/l	5.6	1
Pentachlorophenol	8270 TCLP	ND		10/29/2004 0:00	10/28/2004	ug/l	5.2	1
Pyridine	8270 TCLP	ND		10/29/2004 0:00	10/28/2004	ug/l	4.2	1
2,4,6-Tribromophenol(SURR)	8270 TCLP	74.5		10/29/2004 0:00	10/28/2004	%	(10 - 122)	1
2-Fluorobiphenyl(SURR)	8270 TCLP	76.5		10/29/2004 0:00	10/28/2004	%	(43 - 116)	1
2-Fluorophenol(SURR)	8270 TCLP	66		10/29/2004 0:00	10/28/2004	%	(21 - 120)	1
Nitrobenzene-d5(SURR)	8270 TCLP	76		10/29/2004 0:00	10/28/2004	%	(35 - 114)	1
Phenol-d5(SURR)	8270 TCLP	54.8		10/29/2004 0:00	10/28/2004	%	(10 - 94)	1
p-Terphenyl-d14(SURR)	8270 TCLP	79.5		10/29/2004 0:00	10/28/2004	%	(33 - 141)	1
Cyanide	9012	ND		10/27/2004 14:06	10/27/2004	mg/Kg	0.186	1
pH	9045	9.67	(†)	10/25/2004 10:02		pH		1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211
PROJECT ID: VIEQUES - IDW / 180357.FI.22

QC SUMMARY

METHOD: 376.1

Method Blank 161610 **Matrix :** SQ

Associated Lab Samples : 161610 161611 161612 161613 161614 240921102

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Sulfide	ND	10/26/2004	10/26/2004	mg/Kg	7.99	1

Method Blank 161618 **Matrix :** WQ

Associated Lab Samples : 161618 161619 161620 161621 161622 240921101

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Sulfide	ND	10/26/2004		mg/L	0.08	1

LABORATORY CONTROL SAMPLE 161611 **Matrix :** SQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Sulfide	mg/Kg	498	509	102.2	(80-120)

LABORATORY CONTROL SAMPLE 161619 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Sulfide	mg/L	5	5.12	102.4	(80-120)

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211
PROJECT ID: VIEQUES - IDW / 180357.FI.22
METHOD: 6010 TCLP

Method Blank 161429 **Matrix :** WQ

Associated Lab Samples : 161429 161430 161431 161432 161433 161437 161438 161439 161440 161441 240920201 240921101 24092110

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Arsenic	ND	10/27/2004	10/27/2004	mg/L	0.018	1
Barium	ND	10/27/2004	10/27/2004	mg/L	0.00491	1
Cadmium	ND	10/27/2004	10/27/2004	mg/L	0.00356	1
Chromium	ND	10/27/2004	10/27/2004	mg/L	0.013	1
Lead	0.0326	10/27/2004	10/27/2004	mg/L	0.022	1
Selenium	0.0639	10/27/2004	10/27/2004	mg/L	0.026	1
Silver	0.00924	10/27/2004	10/27/2004	mg/L	0.0065	1

Method Blank 161437 **Matrix :** WQ

Associated Lab Samples : 161429 161430 161431 161432 161433 161437 161438 161439 161440 161441 240920201 240921101 24092110

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Arsenic	ND	10/27/2004	10/27/2004	mg/L	0.018	1
Barium	ND	10/27/2004	10/27/2004	mg/L	0.00491	1
Cadmium	ND	10/27/2004	10/27/2004	mg/L	0.00356	1
Chromium	ND	10/27/2004	10/27/2004	mg/L	0.013	1
Lead	0.0313	10/27/2004	10/27/2004	mg/L	0.022	1
Selenium	0.0618	10/27/2004	10/27/2004	mg/L	0.026	1
Silver	0.0129	10/27/2004	10/27/2004	mg/L	0.0065	1

LABORATORY CONTROL SAMPLE 161430 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Arsenic	mg/L	5	4.93	98.6	(80-120)
Barium	mg/L	5	4.88	97.6	(80-120)
Cadmium	mg/L	5	5.03	100.6	(80-120)
Chromium	mg/L	5	4.95	99	(80-120)
Lead	mg/L	5	4.92	98.4	(80-120)
Selenium	mg/L	5	4.93	98.6	(80-120)
Silver	mg/L	5	4.56	91.2	(80-120)

LABORATORY CONTROL SAMPLE 161438 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Arsenic	mg/L	5	4.91	98.2	(80-120)
Barium	mg/L	5	4.93	98.6	(80-120)

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211

PROJECT ID: VIEQUES - IDW / 180357.FI.22

METHOD: 6010 TCLP

LABORATORY CONTROL SAMPLE 161438 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Cadmium	mg/L	5	5.07	101.4	(80-120)
Chromium	mg/L	5	4.98	99.6	(80-120)
Lead	mg/L	5	4.94	98.8	(80-120)
Selenium	mg/L	5	4.95	99	(80-120)
Silver	mg/L	5	4.58	91.6	(80-120)

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211
PROJECT ID: VIEQUES - IDW / 180357.FI.22
METHOD: 7470 TCLP

Method Blank 161442 **Matrix :** WQ

Associated Lab Samples : 161442 161443 161444 161445 161446 240920201 240921102

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Mercury	ND	10/28/2004	10/27/2004	mg/L	0.000162	1

Method Blank 161447 **Matrix :** WQ

Associated Lab Samples : 161447 161448 161449 161450 161451 240921101

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Mercury	ND	10/28/2004	10/27/2004	mg/L	0.000162	1

LABORATORY CONTROL SAMPLE 161443 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Mercury	mg/L	0.03	0.0294	98	(80-120)

LABORATORY CONTROL SAMPLE 161448 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Mercury	mg/L	0.03	0.0295	98.3	(80-120)

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211
PROJECT ID: VIEQUES - IDW / 180357.FI.22
METHOD: 8081 TCLP

Method Blank 161599 **Matrix :** WQ

Associated Lab Samples : 161599 161600 240921101 240921101MS 240921102

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Chlordane	ND	10/28/2004	10/28/2004	ug/L	0.1	1
Endrin	ND	10/28/2004	10/28/2004	ug/L	0.0036	1
gamma-BHC (Lindane)	ND	10/28/2004	10/28/2004	ug/L	0.0048	1
Heptachlor	ND	10/28/2004	10/28/2004	ug/L	0.0028	1
Heptachlor epoxide	ND	10/28/2004	10/28/2004	ug/L	0.0028	1
Methoxychlor	ND	10/28/2004	10/28/2004	ug/L	0.0036	1
Toxaphene	ND	10/28/2004	10/28/2004	ug/L	0.36	1
2,4,5,6-tetrachloro-m-xylene(SUR	70	10/28/2004	10/28/2004	%	(45 - 125)	1
Decachlorobiphenyl(SURR) (S)	75	10/28/2004	10/28/2004	%	(34 - 133)	1

LABORATORY CONTROL SAMPLE 161600 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Endrin	ug/L	1	0.89	89	(43-128)
gamma-BHC (Lindane)	ug/L	1	0.84	84	(25-139)
Heptachlor	ug/L	1	0.83	83	(36-121)
Heptachlor epoxide	ug/L	1	0.85	85	(43-125)
Methoxychlor	ug/L	1	0.88	88	(48-131)
2,4,5,6-tetrachloro-m-xylene(SUR	ug/L	2	1.5	75	(45-125)
Decachlorobiphenyl(SURR) (S)	ug/L	2	1.6	80	(34-133)

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211
PROJECT ID: VIEQUES - IDW / 180357.FI.22
METHOD: 8151 TCLP

Method Blank 161602 **Matrix :** WQ

Associated Lab Samples : 161602 161603 240921101 240921101MS 240921102

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
2,4,5-TP (Silvex)	ND	10/29/2004	10/28/2004	ug/L	0.076	1
2,4'-D	ND	10/29/2004	10/28/2004	ug/L	0.3	1
DCAA(SURR) (S)	58 J3	10/29/2004	10/28/2004	%	(60 - 130)	1

Method Blank 161760 **Matrix :** WQ

Associated Lab Samples : 161760 161761 240921102RE1MS

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
2,4,5-TP (Silvex)	ND	10/30/2004	10/30/2004	ug/L	0.076	1
2,4'-D	ND	10/30/2004	10/30/2004	ug/L	0.3	1
DCAA(SURR) (S)	93.9	10/30/2004	10/30/2004	%	(60 - 130)	1

LABORATORY CONTROL SAMPLE 161603 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
2,4,5-TP (Silvex)	ug/L	2	1.4	70	(54-150)
2,4'-D	ug/L	2	1	50	(43-161)
DCAA(SURR) (S)	ug/L	5	3	60	(60-130)

LABORATORY CONTROL SAMPLE 161761 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
2,4,5-TP (Silvex)	ug/L	2	1.3	65	(54-150)
2,4'-D	ug/L	2	1.1	55	(43-161)
DCAA(SURR) (S)	ug/L	3.3	3	90.9	(60-130)

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211
PROJECT ID: VIEQUES - IDW / 180357.FI.22
METHOD: 8260 TCLP

Method Blank 102804TBLKA33 **Matrix :** WQ

Associated Lab Samples : 102804TBLKA33 102804TLCSA34 240921102 240921102MS 240921102MSD

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,1-Dichloroethene	ND	10/28/2004		ug/l	9	1
1,2-Dichloroethane	ND	10/28/2004		ug/l	2.9	1
2-Butanone	ND	10/28/2004		ug/l	8.5	1
Benzene	ND	10/28/2004		ug/l	1.5	1
Carbon tetrachloride	ND	10/28/2004		ug/l	3.7	1
Chlorobenzene	ND	10/28/2004		ug/l	3.2	1
Chloroform	ND	10/28/2004		ug/l	2.5	1
Tetrachloroethene	ND	10/28/2004		ug/l	5	1
Trichloroethene	ND	10/28/2004		ug/l	2.7	1
Vinyl chloride	ND	10/28/2004		ug/l	4	1
1,2-Dichloroethane-d4(SURR) (S)	109	10/28/2004		%	(80 - 120)	1
4-Bromofluorobenzene(SURR) (S	100	10/28/2004		%	(86 - 115)	1
Dibromofluoromethane(SURR) (S	106	10/28/2004		%	(86 - 118)	1
Toluene d8(SURR) (S)	103	10/28/2004		%	(88 - 110)	1

Method Blank 102904TBLKA32 **Matrix :** WQ

Associated Lab Samples : 102904TBLKA32 102904TLCSA32 240921101

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,1-Dichloroethene	ND	10/29/2004		ug/l	9	1
1,2-Dichloroethane	ND	10/29/2004		ug/l	2.9	1
2-Butanone	ND	10/29/2004		ug/l	8.5	1
Benzene	ND	10/29/2004		ug/l	1.5	1
Carbon tetrachloride	ND	10/29/2004		ug/l	3.7	1
Chlorobenzene	ND	10/29/2004		ug/l	3.2	1
Chloroform	ND	10/29/2004		ug/l	2.5	1
Tetrachloroethene	ND	10/29/2004		ug/l	5	1
Trichloroethene	ND	10/29/2004		ug/l	2.7	1
Vinyl chloride	ND	10/29/2004		ug/l	4	1
1,2-Dichloroethane-d4(SURR) (S)	105	10/29/2004		%	(80 - 120)	1
4-Bromofluorobenzene(SURR) (S	104	10/29/2004		%	(86 - 115)	1
Dibromofluoromethane(SURR) (S	102	10/29/2004		%	(86 - 118)	1
Toluene d8(SURR) (S)	101	10/29/2004		%	(88 - 110)	1

LABORATORY CONTROL SAMPLE 102804TLCSA3 **Matrix :** WQ

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211

PROJECT ID: VIEQUES - IDW / 180357.FI.22

METHOD: 8260 TCLP

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
1,1-Dichloroethene	ug/l	200	204	102	(75-150)
1,2-Dichloroethane	ug/l	200	214	107	(86-120)
2-Butanone	ug/l	600	585	97.5	(83-127)
Benzene	ug/l	200	214	107	(82-129)
Carbon tetrachloride	ug/l	200	215	108	(74-140)
Chlorobenzene	ug/l	200	208	104	(87-117)
Chloroform	ug/l	200	214	107	(83-127)
Tetrachloroethene	ug/l	200	218	109	(87-124)
Trichloroethene	ug/l	200	210	105	(82-127)
Vinyl chloride	ug/l	200	170	85	(66-128)
1,2-Dichloroethane-d4(SURR) (S)	ug/l	50	53.4	107	(80-120)
4-Bromofluorobenzene(SURR) (S	ug/l	50	49.8	99.6	(86-115)
Dibromofluoromethane(SURR) (S	ug/l	50	53	106	(86-118)
Toluene d8(SURR) (S)	ug/l	50	51.4	103	(88-110)

LABORATORY CONTROL SAMPLE 102904TLCSA3 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
1,1-Dichloroethene	ug/l	200	188	94	(75-150)
1,2-Dichloroethane	ug/l	200	200	100	(86-120)
2-Butanone	ug/l	600	647	108	(83-127)
Benzene	ug/l	200	194	97	(82-129)
Carbon tetrachloride	ug/l	200	203	102	(74-140)
Chlorobenzene	ug/l	200	207	104	(87-117)
Chloroform	ug/l	200	198	99	(83-127)
Tetrachloroethene	ug/l	200	209	104	(87-124)
Trichloroethene	ug/l	200	200	100	(82-127)
Vinyl chloride	ug/l	200	179	89.5	(66-128)
1,2-Dichloroethane-d4(SURR) (S)	ug/l	50	50.2	100	(80-120)
4-Bromofluorobenzene(SURR) (S	ug/l	50	50.4	101	(86-115)
Dibromofluoromethane(SURR) (S	ug/l	50	49.3	98.6	(86-118)
Toluene d8(SURR) (S)	ug/l	50	48.1	96.2	(88-110)

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211
PROJECT ID: VIEQUES - IDW / 180357.FI.22
METHOD: 8270 TCLP

Method Blank 161605 **Matrix :** WQ

Associated Lab Samples : 161605 161606 161607 240921101 240921102

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,4-Dichlorobenzene	ND	10/29/2004	10/28/2004	ug/l	5.4	1
2,4,5-Trichlorophenol	ND	10/29/2004	10/28/2004	ug/l	6.8	1
2,4,6-Trichlorophenol	ND	10/29/2004	10/28/2004	ug/l	7.2	1
2,4-Dinitrotoluene	ND	10/29/2004	10/28/2004	ug/l	5.6	1
2-Methylphenol (o-Cresol)	ND	10/29/2004	10/28/2004	ug/l	5.2	1
4-Methylphenol	ND	10/29/2004	10/28/2004	ug/l	12.2	1
Hexachlorobenzene	ND	10/29/2004	10/28/2004	ug/l	5.2	1
Hexachlorobutadiene	ND	10/29/2004	10/28/2004	ug/l	5	1
Hexachloroethane	ND	10/29/2004	10/28/2004	ug/l	5.2	1
Nitrobenzene	ND	10/29/2004	10/28/2004	ug/l	5.6	1
Pentachlorophenol	ND	10/29/2004	10/28/2004	ug/l	5.2	1
Pyridine	ND	10/29/2004	10/28/2004	ug/l	4.2	1
2,4,6-Tribromophenol(SURR) (S)	80.5	10/29/2004	10/28/2004	%	(10 - 122)	1
2-Fluorobiphenyl(SURR) (S)	80.5	10/29/2004	10/28/2004	%	(43 - 116)	1
2-Fluorophenol(SURR) (S)	75	10/29/2004	10/28/2004	%	(21 - 120)	1
Nitrobenzene-d5(SURR) (S)	78	10/29/2004	10/28/2004	%	(35 - 114)	1
Phenol-d5(SURR) (S)	63.5	10/29/2004	10/28/2004	%	(10 - 94)	1
p-Terphenyl-d14(SURR) (S)	83	10/29/2004	10/28/2004	%	(33 - 141)	1

LABORATORY CONTROL SAMPLE 161606 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC		% REC LIMITS
1,4-Dichlorobenzene	ug/l	80	61.4	76.8		(26-101)
2,4,5-Trichlorophenol	ug/l	80	64.7	80.9		(9-131)
2,4,6-Trichlorophenol	ug/l	80	61.7	77.1		(8-130)
2,4-Dinitrotoluene	ug/l	80	65.3	81.6		(39-144)
2-Methylphenol (o-Cresol)	ug/l	80	68.4	85.5		(6-114)
4-Methylphenol	ug/l	80	65.7	82.1		(6-104)
Hexachlorobenzene	ug/l	80	60.1	75.1		(35-135)
Hexachlorobutadiene	ug/l	80	67.9	84.9		(48-92)
Hexachloroethane	ug/l	80	62.4	78		(22-96)
Nitrobenzene	ug/l	80	62.2	77.8		(37-136)
Pentachlorophenol	ug/l	80	55.2	69		(17-131)
Pyridine	ug/l	80	57.2	71.5	*	(22-70)
2,4,6-Tribromophenol(SURR) (S)	ug/l	400	347	86.8		(10-122)
2-Fluorobiphenyl(SURR) (S)	ug/l	200	163	81.5		(43-116)
2-Fluorophenol(SURR) (S)	ug/l	400	308	77		(21-120)
Nitrobenzene-d5(SURR) (S)	ug/l	200	157	78.5		(35-114)
Phenol-d5(SURR) (S)	ug/l	400	279	69.8		(10-94)
p-Terphenyl-d14(SURR) (S)	ug/l	200	167	83.5		(33-141)

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211

PROJECT ID: VIEQUES - IDW / 180357.FI.22

METHOD: 8270 TCLP

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211
PROJECT ID: VIEQUES - IDW / 180357.FI.22
METHOD: 9012

Method Blank 161457 **Matrix :** WQ

Associated Lab Samples : 161457 161458 161459 161460 161461 240921101

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Cyanide	ND	10/27/2004	10/26/2004	ug/L	9.9	1

Method Blank 161466 **Matrix :** SQ

Associated Lab Samples : 161466 161467 161468 161469 161470 240921102

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Cyanide	ND	10/27/2004	10/27/2004	mg/Kg	0.136	1

LABORATORY CONTROL SAMPLE 161458 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Cyanide	ug/L	250	242	96.8	(74-108)

LABORATORY CONTROL SAMPLE 161467 **Matrix :** SQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Cyanide	mg/Kg	12.5	12.1	96.8	(75-106)

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Kevin Sanders
CH2M Hill

WORK ORDER: 2409211

PROJECT ID: VIEQUES - IDW / 180357.FI.22

Brian C. Spann

Digitally signed by Brian C. Spann
DN: CN = Brian C. Spann, C = US
Date: 2004.11.01 15:09:39 -05'00'

Brian C. Spann	Laboratory Manager
David Cantillo	Quality Assurance
Mark Gudnason	Senior Project Manager
Lisa Pelo	Volatiles Team Leader
Thomas Scott	Semi-Volatiles Team Leader

Chain of Custody Record
Record/Work Request

PEL Laboratories, Inc.
4420 Pendola Point Road
Tampa, Florida 33619
(813) 247-2805 • Fax: (813) 248-1537
E-Mail: login@Pelab.com

2409-211 ou

Company: CH2M HILL	Project Name/Number: VIEQUES - IDW / 180357. FI. 22
Address: 4350 WEST CYPRESS	Project Manager: BRETT DOERR
Phone: 813-874-0777 Fax: 813-874-3056	Purchase Order:
Print Names(s) / Affiliation: JOHN SWENFURTH / CH2M HILL	
Sampler(s) Signature(s):	

Page of

DEP Form #: 62-770.900(2)
Form Title: Chain of Custody Record
Effective Date: September 23, 1997
FDEP Facility No.
Project Name:
Sampling CompQAP No:
Approval Date:
REQUESTED DUE DATE
/ STD /

Item No.	Field ID No.	Sampled Date	Sampled Time	Grab or Composite	Matrix (see codes)	Number of Containers	Preservatives (see codes)	Analyses Requested	Remarks	Lab. No.
1.	WEST IDW I & E	10-21-04	0900	COMP	GW	2	RCI ✓	HTRW List	500 ML PLASTIC - NaOH 500 ML PLASTIC-NaOH-Zn	01
2	WEST IDW I & E	"	"	"	"	1	✓		1 - 1 LITER AMBER	01
3.	WEST IDW I & E	"	"	"	"	3		✓	3 - 1 LITER AMBERS	01
4.	" " " 5	"	0930	"	SO	2	✓		2 - 4 oz. jars	02
5	" " " 5	"	0930	"	SO	2		✓	2 - 8 oz jars	02

Shipment Method

← Total Number of Containers

Out: / /	Via: FED EX	Item Nos.	Relinquished by / Affiliations	Date	Time	Accepted by / Affiliation	Date	Time
Returned: / /	Via.		JOHN SWENFURTH	10-31-04	1000	[signature] / PEL	10/22/04	17:00
Additional Comments:								
RECD @ 3.7C								
pH > 9 (376.1)								
pH > 12 (9012)								

Cooler No. (s) / Temperature(s) (C)	Sampling Kit No.	Equipment ID No.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATION CODES: H-Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify)

A&V GROUP
ENVIRONMENTAL SUPPORT

DATA VALIDATION REPORT

To: Mr. Brian C. Spann
Laboratory Manager
PEL Laboratories, Inc.
Tampa, FL

From: Rafael Infante, A&V Environmental Support

Date: November 5, 2004

Re: **Data set from CH2M-Hill- Vieques IDW PR License Chemist Certification of Samples Analyzed for RCRA Characteristics for Disposal**

The enclosed analysis report is based on data generated by PEL Laboratories, Inc. of Tampa, Florida for soil and aqueous samples collected on October 21, 2004. The analytical data was obtained directly from PEL and reviewed in accordance with the quality control requirements of the methods performed. The analyses were performed in accordance with the EPA SW-846 Methods.

This report applies to the following samples:

SAMPLE ID
WEST-IDW I & EW (ground water)
WEST-IDW I & ES (SOIL)

TCLP Volatiles Data.

There were one (1) liquid sample and one (1) soil sample. No trip blanks or duplicates were taken. Samples were analyzed for TCLP volatiles following method SW-846 8260B (purge-and-trap gas chromatography with Mass Spectrometry detection). This report is based on a review of holding times, initial and continuing calibration data, blank analysis results, surrogate and matrix spike recoveries, quantitation of positive results, and sample result verification.

The data package obtained for TCLP volatiles is complete.

Holding times. All samples were analyzed within the required holding time of fourteen (14) days for TCLP extraction and fourteen days for analysis- 28 days total.

BFB tuning There is no indication that the frequency and abundance of BFB tune was outsidethe QC acceptance criteria.

Calibration. Internal standard calibration was employed; calibration extended the concentration range found in the samples. There are no indications that initial and continuing calibration were not in compliance with the method. Surrogate recoveries were within established limits.

Blanks. No contamination was found in the method blank. Field, trip and equipment blanks were not submitted for analysis.

Matrix spikes (MS)/Matrix spike duplicate (MSD). Laboratory control samples were within acceptance limit for the samples analyzed .

Laboratory duplicates. No information on laboratory duplicates was provided with the data package.

Surrogate recovery. Recoveries of surrogate standards were within control limits.

Sample result calculation. Calculation was based on the area for characteristics peaks for analyte and internal standard, sample volume, dilution factor, and calibration factor. Sample PEL-240921101 required a 10 dilution due to excessive foaming on the purge step.

Detection limits are set to meet EPA's CLP OLMO1.0 standards.

Overall assessment. Sample data meet the necessary quality control requirements for the method.

TCLP Metals by ICAP (SW-846 6010) Data.
Trace metals (As, Ba, Cd, Cr, Pb, Se, and Ag)

The following samples were analyzed for trace metals following SW-846 6010-induced coupled Argon plasma:

One (3) liquid sample and one (1) soil sample were analyzed.

The data package obtained for the trace metals is complete.

Holding times. Analytes analyzed within method holding times (180 days).

Calibration. Initial demonstration of instrument calibration- there are no indication that the calibration did not meet minimum performance criteria specific for the method. Quantification was performed by comparing emission intensity of standards with that of the sample for the wavelength characteristic for each element. Interelement correction factors were employed.

Blanks. No target analytes were detected in the initial and continuing calibration blanks except for the following:
Sample: 240921101

Analyte	Concentration, ug/L
Lead	0.0326
Selenium	0.0639
Silver	0.00924

Laboratory duplicates. Duplicates (laboratory and field) data was not provided. There are no indication on the report that duplicates were outside the established limits.

Laboratory control standards. Within the laboratory control limit.

Sample result calculation. Calculation was based on emission of the corresponding element line, sample volume, and dilution factor.

Detection limit are set to meet EPA's CLP OLMO1.0

Overall assessment. Sample data meets the necessary quality control requirements for the method.

TCLP Metals by Flameless Atomic Absorption (SW-846 7470) Data.
Mercury (Hg) by atomic absorption.

The following samples were analyzed for TCLP Hg by atomic absorption following SW-846 7470:

One (1) liquid sample and one (1) soil sample.

The data package obtained for mercury metals is complete.

Holding times. Analytes analyzed within method holding times (28 days for Hg).

Calibration. Initial demonstration of instrument calibration- there are no indication that the calibration did not meet minimum performance criteria specific for the method. Quantification was performed by using a Beer law plot (absorbance vs. concentration) for each element.

Blanks. Preparation blank contained less than the minimum detectable quantity for mercury.

Laboratory control standards. Within the laboratory control limit.

Sample result calculation. Calculation was based on absorbance measurement and the Beer's law plot for the corresponding element, sample volume, and dilution factor.

Detection limit are set to meet EPA's CLP OLMO1.0.

Overall assessment. Sample data meets the necessary quality control requirements for the method.

TCLP Pesticides/Herbicides by (SW-846 8081A/8150) Data.

The following samples were analyzed for TCLP pesticides/herbicides by gas chromatography with electron capture detection following SW-846 8081A/81500:

One (1) liquid sample and one (1) soil sample.

The data package obtained for pesticides and herbicides is complete.

Holding times. Analytes analyzed within method holding times. Samples 240921101 and 240921102 has surrogate recoveries below the laboratory criteria for method 8150, the sample was re-extracted and re-analyzed out of holding time. Both data are reported.

Calibration. Initial demonstration of instrument calibration-there are no indication that the calibration did not meet minimum performance criteria specific for the method. In all cases, quantification was performed using a five points calibration.

Blanks. Method blank contained less than the minimum detectable quantity of the target analytes.

Surrogate recoveries. Were within established limits except for samples 240921101 and 240921102 for method 8051 and sample 240921101 for method 8081A.

Laboratory control standards. Within the laboratory control limits.

Sample result calculation. Calculation for TCLP pesticides and herbicides was based on the peak area, response factor, sample volume, dilution factor, and calibration curve response.

Detection limit are set to meet EPA's CLP OLMO1.0

Overall assessment. Sample data meets the necessary quality control requirements for the method.

TCLP Semivolatiles by (SW-846 8270C) Data.

One (1) liquid sample and one (1) soil sample were analyzed for TCLP semivolatile organics (acids/base neutrals).

The data package obtained is complete.

Holding times. Analytes analyzed within method holding times.

Calibration. Initial demonstration of instrument calibration-there are no indication that the initial and continuing calibration did not meet minimum performance criteria specific for the method.

Blanks. Method blank contained less than the minimum detectable quantity of the target analytes.

Surrogate recoveries. Were within established limits except for the following:
Sample 240921101- 2,4,6-Tribromophenol; 2-Fluorophenol

Laboratory control standards. Within the laboratory control limits.

Sample result calculation. Calculation for TCLP semivolatile organic analytes was based on the peak area, response factor, sample volume, dilution factor, and calibration curve response.

Detection limit are set to meet EPA's CLP OLMO1.0

Overall assessment. Sample data meets the necessary quality control requirements for the method.

Hazardous Characteristics Data:

Reactive cyanide by (SW-846 9012)
Reactive sulfide by (SW-846 9030-solid samples/376.1-liquid sample)
Corrosivity by (SW-846 9045-solid samples/150.1-liquid samples), and
Ignigtability by (SW-846 1010)

One (1) liquid sample and one (1) liquid sample were analyzed by the methods described above.

The data package obtained for the hazardous characteristics is complete.

Holding times. Samples analyzed within method holding times.

Calibration. Initial demonstration of instrument calibration- there are no indications that calibration did not meet minimum performance criteria specific for the method. Continuing calibration were perform as per the method described frequency.

Blanks. Blanks did not have any positive results for target analytes.

Sample result calculation. Calculations were based on analyte response, sample volume, and dilution factor.

Detection limit are set to meet EPA's CLP OLMO1.0

Overall assessment. Sample data meets the necessary quality control requirements for the method.

The samples did neither exceeded the toxicity characteristic leaching procedure criteria for target analytes, nor the hazardous characteristics. Waste samples can be classified as non-hazardous.

Certification

The following samples 240921101 and 240921102 were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document. The results are valid.

Rafael Infante
Chemist License 1888

ESTADO LIBRE ASOCIADO DE PUERTO RICO
QUIMICO LICENCIADO
Rafael Infante Méndez
LIC. #1888
978118

ALLIED WAS TE

GENERATOR WASTE PROFILE SHEET

Requested Disposal Facility: BFI Ponce

an Allied Waste Company

Waste Profile #
AWI Sales Rep:
Date: Nov 23, 2004

I. Generator Information

Generator Name: US NAVY NAVFAC ATLANTIC			
Generator Site Address: VIEQUES ISLAND, PUERTO RICO			
City: VIEQUES	County:	State: PR	Zip:
State ID/Reg No:	State Approval/Waste Code: (if applicable)		SIC Code:
Generator Mailing Address (if different): NAVFAC ATLANTIC 6506 HAMPTOM Blvd.			
City: Norfolk	County: USA	State: VA	Zip: 23508
Generator Contact Name: Jeffrey Harlow			
Phone Number: (757) 322-4787		Fax Number: (757) 322-4805	

IIa. Transporter Information

Transporter Name: CHED		Contact Name: Ricardo Arrufat	
Transporter Address: PO BOX 790			
City: Peñuelas	County:	State: PR	Zip: 00624-0790
Phone Number: 787-836-1110	Fax Number: 787-836-0577	State Transportation Number:	

IIb. Billing Information

Bill To: CHED		Contact Name: Ricardo Arrufat	
Billing Address: PO BOX 790			
City: Peñuelas	State: PR	Zip: 00624-0790	Phone Number: (787) 836-1110

III. Waste Stream Information

Name of Waste: Soil From Environmental Sampling
Process Generating Waste: Drilling and sampling Monitoring Wells
Type of Waste ☐ INDUSTRIAL PROCESS WASTE or ☒ POLLUTION CONTROL WASTE
Physical State: ☒ SOLID ☐ SEMI-SOLID ☐ POWDER ☐ LIQUID ☐ OTHER: _____:
Method of Shipment: ☐ BULK ☒ DRUM ☐ BAGGED ☐ OTHER:
Estimated Annual Volume: ☐ CUBIC YARDS: _____ ☐ TONS: _____ ☐ GALLONS _____ ☐ OTHER:
Frequency: ☒ ONE TIME ☐ DAILY ☐ WEEKLY ☐ MONTHLY ☐ OTHER:
Special Handling Instructions: Drum Handler

IV. Representative Sample Certification

☐ NO SAMPLE TAKEN

Is the representative sample collected to prepare this profile and laboratory analysis, collected in accordance with U.S. EPA 40 CFR 261.20(c) guidelines or equivalent rules?	☒ YES or ☐ NO
Sample Date: 10-21-2004	Type of Sample: ☒ COMPOSITE SAMPLE ☐ GRAB SAMPLE
Laboratory: Progress Environ Labs	Sample ID Numbers: WEST IDW I&E S
Sampler's Employer: CH2MHill	
Sampler's Name (printed): John W. Swenfurth	Signature:

ALLIED WASTE

GENERATOR WASTE PROFILE SHEET (continued)

Waste Profile #

V. Physical Characteristics of Waste

Characteristic Components					% by Weight (range)	
1. Non-Hazardous Soil						
2.						
3.						
4.						
5.						
Color	Odor (describe)	Free Liquids ☐ YES or ☒ NO	% Solids	pH:	Flash Point	Phenol
Tan	None	Content ____%	100		≥160 ☐F	0ppm

Attach Laboratory Analytical Report (and/or Material Safety Data Sheet) Including Required Parameters Provided for this Profile

Does this waste or generating process contain regulated concentrations of the following Pesticides and/or Herbicides: Chlordane, Endrin, Heptachlor (and it epoxides), Lindane, Methoxychlor, Toxaphene, 2,4-D, or 2,4,5-TP Silvex as defined in 40 CFR 261.33?	☐ Yes or ☒ No
Does this waste or generating process cause it to exceed OSHA exposure limits from high levels of Hydrogen Sulfide or Hydrogen Cyanide as defined in 40 CFR 261.23?	☐ Yes or ☒ No
Does this waste contain regulated concentrations of Polychlorinated Biphenyls (PCBs) as defined in 40 CFR Part 761?	☐ Yes or ☒ No
Does this waste contain regulated concentrations of listed hazardous wastes defined in 40 CFR 261.31, 261.32, 261.33, including RCRA F-Listed Solvents?	☐ Yes or ☒ No
Does this waste contain regulated concentrations of 2,3,7,8-Tetrachlorodibenzodioxin (2,3,7,8-TCCD), or any other dioxin as defined in 40 CFR 261.31?	☐ Yes or ☒ No
Is this a regulated Toxic Material as defined by Federal and/or State regulations?	☐ Yes or ☒ No
Is this a regulated Radioactive Waste as defined by Federal and/or State regulations?	☐ Yes or ☒ No
Is this a regulated Medical or Infectious Waste as defined by Federal and/or State regulations?	☐ Yes or ☒ No
Is this waste generated at a Federal Superfund Clean Up Site?	☐ Yes or ☒ No

VI. Generator Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. All Analytical Results/Material Safety Data Sheets submitted are truthful and complete and are representative of the waste. I further certify that by utilizing this profile, neither myself nor any other employee of the company will deliver for disposal or attempt to deliver for disposal any waste which is classified as toxic waste, hazardous waste or infectious waste, or any other waste material this facility is prohibited from accepting by law. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify this disposal facility against any damages resulting from this certification being inaccurate or untrue. I further certify that the company has not altered the form or content of this profile sheet as provided by Allied Waste.

Pedro J. Ruiz / UST Manager
Authorized Representative Name And Title (Printed)

Naval Activity Puerto Rico
Company Name

Authorized Representative Signature

Date

VII. Allied Waste Decision

☐ Approved ☐ Rejected Expiration: _____

Conditions:

Name, Title

Signature

Date

BFI Waste Systems™

BROWNING-FERRIS INDUSTRIES

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	Manifest Document No. 128818	2. Page 1 of	Pass Code:

GENERATOR

3. Generator's Name and Mailing Address: U.S. NAVY, Comandancia Base Roosevelt Roads P.R. 00765

4. Generator's Phone (787) 865-4045

Generating Location: US NAVY AFHTF, Comandancia Naval, Vieques, P.R. 00765

5. Transporter 1 Company Name	6. EQB Permit #	A. Transporter's Phone
Caribe Hydrocarbons Corp.	SR-ST-0007	787-834-1110
7. Transporter 2 Company Name	8. EQB Permit #	B. Transporter's Phone

9. Designated Facility Name and Site Address	10. EQB Permit #	C. Facility's Phone
PONCE SANITARY LANDFILL PO BOX 7104 / RD 500 BARAMAYA FINAL AVENUE PONCE, PR 00731	RSM-0058	787-841-7775

	11. Waste Shipping Name and Description	Handling Code	12. Containers No	Type	13. Total Quantity	14. Unit Wt/Vol
a.	Water Contaminated with Diesel	GS(33) L29/43243	17			V
b.	Soil Contaminated with Diesel	GS(33) L29/432430	13			C
c.						
d.						

D. Additional Descriptions for Materials Listed Above

15. Special Handling Instructions and Additional Information: As per OSHA and NIOSH Guidelines

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

Printed / Typed Name	Signature	Month	Day	Year
Pedro J. Ruiz		02	03	05

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed / Typed Name	Signature	Month	Day	Year
Omar Cepeda		02	04	05

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed / Typed Name	Signature	Month	Day	Year

FACILITY

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
		2	8	05

GENERATOR-2ND COPY

Appendix J
2006 IDW Disposal Information

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 8926
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS: WAR-IDW-3

The one water sample listed above was scheduled for the requested analysis of the Herbicide fraction. The requested SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8151A were used to prepare and analyze the samples, with the exceptions and/or additions requested by the client. All pertinent Quality Assurance notices are included in the narrative section and all pertinent Laboratory notices for SDG #8926 are included in the sample data sections.

Herbicides

Extraction and analysis holding time requirements were met for the samples.

No target analytes confirmed above the reporting limits in the sample.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All surrogate recoveries were with the method specified limits.

The method blank associated with the samples met all quality control criteria.

The Laboratory Control Sample (LCS) prepared and analyzed with the samples met all recovery and precision criteria for all spike analytes.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Katrina L. Travis
Director, Laboratory Operations
January 30, 2006

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG #8926
PROTOCOL: SW-846 8270C

SAMPLE IDENTIFICATIONS: WAR-IDW-3

The one liquid sample listed above was scheduled for the requested analyses of the GC/MS Semivolatiles fraction. SW-846, 3rd Edition, Update 3, Method 1311, Separatory funnel extraction (Method 3510C) and Method 8270C were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. All pertinent Quality Assurance notices are included in the narrative section and all pertinent Laboratory notices for SDG #8926 are included in the sample data section.

TCLP GC/MS Semivolatiles

Analysis holding time requirements were met for the sample.

There were no target analytes identified above the Quantitation Limit (QL) in the sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All decafluorotriphenylphosphine (DFTPP) abundance criteria were met for tunes associated to this SDG. Overall QC criteria were met for all initial and continuing calibration verification standards (CCVs) associated to this SDG. There is no Form VII in the deliverables package for the batch analyzed on instrument 5972hp64 on 01/26/06, associated with the DFTPP tune analyzed at 1441. This batch included an initial calibration and the relevant relative response factors are all displayed on the appropriate Form VIs. The initial calibration met all acceptance criteria and therefore samples could be analyzed without having to inject a continuing calibration verification standard.

All of the surrogates met recovery criteria in the analyses of the sample. All of the internal standards met response and retention time criteria in the analyses of the sample.

The associated method blank met all quality control criteria.

There were no duplicate matrix spikes (MS/MSD) associated with this SDG.

The associated Laboratory Control Sample (LCS) met all recovery criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Kerry S. Hinshaw

Kerry S. Hinshaw
Semivolatiles Manager
January 31, 2006

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WAR-IDW-3

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8926

Matrix: (soil/water) WATER Lab Sample ID: 892601

Sample wt/vol: 100 (g/mL) ML Lab File ID: 892601A64

Level: (low/med) LOW Date Received: 01/19/06

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/24/06

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/26/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	100	U
106-44-5	4-Methylphenol	100	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

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Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one water sample listed above was received intact, properly refrigerated with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the pesticide-TCLP fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8081A were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the pesticide-TCLP fraction only.

Pesticides TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no pesticide-TCLP analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample prepared and analyzed along with this sample (LCS) met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd

Elsie S. Byrd
Senior Scientist I
January 26, 2006

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WAR-IDW-4

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.13	U
72-20-8	Endrin	0.50	U
76-44-8	Heptachlor	0.13	U
1024-57-3	Heptachlor Epoxide	0.13	U
72-43-5	Methoxychlor	1.3	U
8001-35-2	Toxaphene	25	U
57-74-09	Technical Chlordane	8.0	U

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 8926
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-3

The one water sample listed above was received intact, properly refrigerated with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the pesticide-TCLP fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8081A were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the pesticide-TCLP fraction only.

Pesticides TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no pesticide-TCLP analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample prepared and analyzed along with this sample (LCS) met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd
Senior Scientist I
January 26, 2006

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WAR-IDW-3

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8926

Matrix: (soil/water) WATER Lab Sample ID: 892601

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.13	U
72-20-8	Endrin	0.50	U
76-44-8	Heptachlor	0.13	U
1024-57-3	Heptachlor Epoxide	0.13	U
72-43-5	Methoxychlor	1.3	U
8001-35-2	Toxaphene	25	U
57-74-09	Technical Chlordane	8.0	U

FORM I PEST

CompuChem
a Division of Liberty Analytical Corp.
501 Madison Avenue Cary, NC 27513

SDG NARRATIVE
SDG # 8926

The indicated Sample Delivery Group (SDG) consisting of one (1) liquid sample was received into the laboratory information management system (LIMS) on January 19, 2006 intact and in good condition with Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The temperature of the sample was 4.6°C. Sample ID's reported in this data package are noted by the receiving department on the COC if they differ from those listed by the samplers on the COC.

The sample was prepared following the TCLP leaching procedure and analyzed in accordance with SW846 methodology for TCLP metals.

INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within allowable limits.

SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW, & PBW) were found to be within acceptable ranges and the sample was prepared and analyzed within the specified holding times.

MATRIX RELATED QUALITY CONTROL:

No matrix spikes or duplicates were requested with this case.

The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

Susan W Bass

Susan W. Bass
Senior Chemist
January 28, 2006

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
WAR-IDW-3

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8926

Matrix (soil/water): WATER Lab Sample ID: 892601

Level (low/med): LOW Date Received: 1/19/2006

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.4	U		P
7440-39-3	Barium	24.4	B		P
7440-43-9	Cadmium	0.20	U		P
7440-47-3	Chromium	0.40	U		P
7439-92-1	Lead	1.0	U		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	3.3	U		P
7440-22-4	Silver	0.50	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one water sample listed above was received intact, properly refrigerated, with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the herbicide fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction and Method 8151A were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the herbicide fraction only.

Herbicide-TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no herbicide project analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

The surrogate met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample (LCS) prepared and analyzed along with this sample met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd
Senior Scientist I
January 27, 2006

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WAR-IDW-4

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	25	U
93-72-1	silvex	5.0	U

FORM I PEST

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 8926
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS: WAR-IDW-3

The one water sample listed above was scheduled for the requested analysis of the Herbicide fraction. The requested SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8151A were used to prepare and analyze the samples, with the exceptions and/or additions requested by the client. All pertinent Quality Assurance notices are included in the narrative section and all pertinent Laboratory notices for SDG #8926 are included in the sample data sections.

Herbicides

Extraction and analysis holding time requirements were met for the samples.

No target analytes confirmed above the reporting limits in the sample.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All surrogate recoveries were with the method specified limits.

The method blank associated with the samples met all quality control criteria.

The Laboratory Control Sample (LCS) prepared and analyzed with the samples met all recovery and precision criteria for all spike analytes.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Katrina L. Travis
Director, Laboratory Operations
January 30, 2006

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WAR-IDW-3

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8926

Matrix: (soil/water) WATER Lab Sample ID: 892601

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	25	U
93-72-1	silvex	5.0	U

FORM I PEST

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE

SDG # 8926
CONTRACT # SW-846 8260B

SAMPLE IDENTIFICATIONS:WAR-IDW-3

The one (1) water sample listed above was received intact, properly refrigerated at 4.6°C, with proper documentation, on January 19, 2006. The sample was scheduled for the requested ZHE extraction procedure followed by an 8260B volatile analysis for the ZHE compound list.

Analysis holding time requirements were met for the sample.

The sample contained no compounds above the Contract Required Quantitation Limit (CRQL).

All bromofluorobenzene (BFB) abundance criteria were met for tunes associated to this SDG. Overall QC criteria were met for the initial calibration and continuing calibration standard associated to this SDG.

All of the system monitoring compounds met recovery criteria in the analysis of this sample. All of the internal standards met response and retention time criteria in the analysis of this sample. The associated method blank met all quality control criteria.

A laboratory control sample was analyzed with this SDG and passed all QC criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W Bass

Susan W. Bass
Senior Chemist
January 31, 2006

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WAR-IDW-3

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8926

Matrix: (soil/water) WATER Lab Sample ID: 892601

Sample wt/vol: 5 (g/ml) ML Lab File ID: 892601A59

Level: (low/med) LOW Date Received: 01/19/06

% Moisture: not dec. _____ Date Analyzed: 01/24/06

GC Column: ZB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
78-93-3	2-butanone	13	U
67-66-3	Chloroform	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-90-7	Chlorobenzene	5.0	U

CompuChem
a Division of Liberty Analytical Corp.
501 Madison Avenue Cary, NC 27513

SDG NARRATIVE
SDG # 8925

The indicated Sample Delivery Group (SDG) consisting of one (1) solid sample was received into the laboratory information management system (LIMS) on January 19, 2006 intact and in good condition with Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The temperature of the sample was 4.6°C. Sample ID's reported in this data package are noted by the receiving department on the COC if they differ from those listed by the samplers on the COC.

The sample was prepared following the TCLP leaching procedure and analyzed in accordance with SW846 methodology for TCLP metals.

INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within allowable limits.

SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW, & PBW) were found to be within acceptable ranges and the sample was prepared and analyzed within the specified holding times.

MATRIX RELATED QUALITY CONTROL:

No matrix spikes or duplicates were requested with this case.

The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

Susan W Bass

Susan W. Bass
Senior Chemist
January 28, 2006

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
WAR-IDW-4

ab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix (soil/water): WATER Lab Sample ID: 892501

Level (low/med): LOW Date Received: 1/19/2006

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.2	B		P
7440-39-3	Barium	1120	B		P
7440-43-9	Cadmium	3.2	B		P
7440-47-3	Chromium	26.6	B		P
7439-92-1	Lead	2.3	B		P
7439-97-6	Mercury	0.11	B		CV
7782-49-2	Selenium	18.4	B		P
7440-22-4	Silver	0.50	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE

SDG # 8925
CONTRACT # SW-846 8260B

SAMPLE IDENTIFICATIONS: WAR-IDW-4

The one (1) solid sample listed above was received intact, properly refrigerated at 4.6°C, with proper documentation, on January 19, 2006. The sample was scheduled for the requested ZHE extraction procedure followed by an 8260B volatile analysis for the ZHE compound list.

Analysis holding time requirements were met for the sample.

The sample contained no compounds above the Contract Required Quantitation Limit (CRQL).

All bromofluorobenzene (BFB) abundance criteria were met for tunes associated to this SDG. Overall QC criteria were met for the initial calibration and continuing calibration standard associated to this SDG.

All of the system monitoring compounds met recovery criteria in the analysis of this sample. All of the internal standards met response and retention time criteria in the analysis of this sample. The associated method blank met all quality control criteria.

A laboratory control sample was analyzed with this SDG and passed all QC criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W Bass

Susan W. Bass
Senior Chemist
January 31, 2006

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WAR-IDW-4

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 5 (g/ml) ML Lab File ID: 892501A59

Level: (low/med) LOW Date Received: 01/19/06

% Moisture: not dec. _____ Date Analyzed: 01/27/06

GC Column: ZB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	25	U
75-35-4	1,1-Dichloroethene	25	U
78-93-3	2-butanone	63	U
67-66-3	Chloroform	25	U
56-23-5	Carbon Tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U
79-01-6	Trichloroethene	25	U
127-18-4	Tetrachloroethene	25	U
108-90-7	Chlorobenzene	25	U

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SDG NARRATIVE
SDG #8925
PROTOCOL: SW-846 8270C

SAMPLE IDENTIFICATIONS: WAR-IDW-4

The one soil sample listed above was scheduled for the requested analyses of the GC/MS Semivolatiles fraction. SW-846, 3rd Edition, Update 3, Method 1311, Separatory funnel extraction (Method 3510C) and Method 8270C were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. All pertinent Quality Assurance notices are included in the narrative section and all pertinent Laboratory notices for SDG #8925 are included in the sample data section.

TCLP GC/MS Semivolatiles

Analysis holding time requirements were met for the sample.

There were no target analytes identified above the Quantitation Limit (QL) in the sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All decafluorotriphenylphosphine (DFTPP) abundance criteria were met for tunes associated to this SDG. Overall QC criteria were met for all initial and continuing calibration verification standards (CCVs) associated to this SDG. There is no Form VII in the deliverables package for the batch analyzed on instrument 5972hp64 on 01/26/06, associated with the DFTPP tune analyzed at 1441. This batch included an initial calibration and the relevant relative response factors are all displayed on the appropriate Form VIs. The initial calibration met all acceptance criteria and therefore samples could be analyzed without having to inject a continuing calibration verification standard.

All of the surrogates met recovery criteria in the analyses of the sample. All of the internal standards met response and retention time criteria in the analyses of the sample.

The associated method blank met all quality control criteria.

There were no duplicate matrix spikes (MS/MSD) associated with this SDG.

The associated Laboratory Control Sample (LCS) met all recovery criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Kerry S. Hinshaw

Kerry S. Hinshaw
Semivolatiles Manager
January 31, 2006

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WAR-IDW-4

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 100 (g/mL) ML Lab File ID: 892501A64

Level: (low/med) LOW Date Received: 01/19/06

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/24/06

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/26/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	100	U
106-44-5	4-Methylphenol	100	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

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Remit to: P.O. Box 4603
Cary, NC 27519-4603
Phone: (919) 379-4100
Fax: (919) 379-4050

Tuesday, January 31, 2006

MARK STINNETT
CH2M HILL, INC.
3011 SW WILLISTON ROAD
GAINESVILLE, FL 32608

RE: Project: 8925
Project ID: CTO-007/180357.FI.FK.AR/N62470

Dear MARK STINNETT:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, January 19, 2006. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. If you have any questions concerning this report, please feel free to contact your project manger.

Sincerely,

Paul E. Cvetich for
Catherine S. Dover
cdover@compuchemlabs.com

YES

Enclosures

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CompuChem a Division of Liberty Analytical Corp.
Remit to: P.O. Box 4603
Cary, NC 27519-4603
Phone: (919) 379-4100
Fax: (919) 379-4050

ANALYTICAL RESULTS

Project: 8925
Project ID: CTO-007/180357.FI.FK.AR/N62470
Solid results are reported on a dry weight basis.

Lab ID: **892501** Date Collected: 1/17/2006 11:40 Matrix: Leachate Soil
Sample ID: **WAR-IDW-4** Date Received: 1/19/2006 17:04

Parameters	Results	Units	Report Limit	DF	Prepared	By	Analyzed	By	CAS No.	Qual	RegLmt
IGNITABILITY 1010 SOIL		Analytical Method: EPA 1010									
Ignitability	>140	Degrees F	NA	1			1/31/2006	2152			
REACTIVE CYANIDE 9014 SOIL		Analytical Method: SW846 9014									
Reactive Cyanide	125U	mg/kg	125	1			1/31/2006	2477			
REACTIVE SULFIDE 9034 SOIL		Analytical Method: SW846 9034									
Reactive Sulfide	62.5U	mg/kg	62.5	1			1/31/2006	2477			
CORROSIVITY 9040B SOIL		Analytical Method: SW846 9040B									
Corrosivity	9.18	PH UNITS	NA	1			1/31/2006	2477			

COMPUCHEM
a division of Liberty Analytical Corp.

CompuChem a Division of Liberty Analytical Corp.
Remit to: P.O. Box 4603
Cary, NC 27519-4603
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Fax: (919) 379-4050

Tuesday, January 31, 2006

MARK STINNETT
CH2M HILL, INC.
3011 SW WILLISTON ROAD
GAINESVILLE, FL 32608

RE: Project: 8926
Project ID: CTO-007/180357.FI.FK.AR/N62470

Dear MARK STINNETT:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, January 19, 2006. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. If you have any questions concerning this report, please feel free to contact your project manager.

Sincerely,

Paul E. Cvetich for
Catherine S. Dover
cdover@compuchemlabs.com

YES

Enclosures

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Remit to: P.O. Box 4603
Cary, NC 27519-4603
Phone: (919) 379-4100
Fax: (919) 379-4050

ANALYTICAL RESULTS

Project: 8926
Project ID: CTO-007/180357.FI.FK.AR/N62470
Solid results are reported on a dry weight basis.

Lab ID: **892601** Date Collected: 1/17/2006 10:40 Matrix: Leachate Soil
Sample ID: **WAR-IDW-3** Date Received: 1/19/2006 17:04

Parameters	Results	Units	Report Limit	DF	Prepared	By	Analyzed	By	CAS No.	Qual	RegLmt
IGNITABILITY 1010 WATER		Analytical Method: EPA 1010									
Ignitability	>140	Degrees F	NA	1			1/31/2006	2152			
REACTIVE CYANIDE 9014 WATER		Analytical Method: SW846 9014									
Reactive Cyanide	125U	mg/kg	125	1			1/31/2006	2477			
REACTIVE SULFIDE 9034 WATER		Analytical Method: SW846 9034									
Reactive Sulfide	62.5U	mg/kg	62.5	1			1/31/2006	2477			
CORROSIVITY 9040B WATER		Analytical Method: SW846 9040B									
Corrosivity	7.62	PH UNITS	NA	1			1/31/2006	2477			

CompuChem
a division of Liberty Analytical Corp.

HC (summary only) + full + EDD CD

31-Jan-06

ADRIENNE JONES
CH2M HILL, INC.
5700 CLEVELAND STREET
SUITE 101
VIRGINIA BEACH, VA 23462

Subject:
Report of Data-Project: CTO-007 (AR) Workorder: 8925

Attn.: ADRIENNE JONES

Enclosed are the results of analytical work performed in accordance with the referenced account number.

This report covers sample(s) appearing on the attached listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097.

Sincerely,

CompuChem
A Division of Liberty Analytical

Attachment

TOTAL NUMBER
OF PAGES____

501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050

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a division of Liberty Analytical Corp.

HC (summary only) + full + CD

31-Jan-06

MARK STINNETT
CH2M HILL, INC.
3011 SW WILLISTON ROAD

GAINESVILLE, FL 32608

Subject:
Report of Data-Project: CTO-007 (AR) Workorder: 8925

Attn.: MARK STINNETT

Enclosed are the results of analytical work performed in accordance with the referenced account number.

This report covers sample(s) appearing on the attached listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097.

Sincerely,

CompuChem
A Division of Liberty Analytical

Attachment

TOTAL NUMBER
OF PAGES_____

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full HC (hole punched)

31-Jan-06

SHAWNE RODGERS
ENVIRONMENTAL DATA QUALITY, INC.
967 EAST SWEDESFORD ROAD
SUITE 404
Exton, PA 19341

Subject:
Report of Data-Project: CTO-007 (AR) Workorder: 8925

Attn.: SHAWNE RODGERS

Enclosed are the results of analytical work performed in accordance with the referenced account number.

This report covers sample(s) appearing on the attached listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097.

Sincerely,

CompuChem
A Division of Liberty Analytical

Attachment

TOTAL NUMBER
OF PAGES_____

CompuChem, a division of Liberty Analytical

Hsn	Client ID	Wordorder	Matrix	Account	Project	Report
892501	WAR-IDW-4	8925	L	CH2MHILL	CTO-007 (AR)	

CompuChem, a Division of Liberty Analytical Corporation

I. SAMPLE DATA SUMMARY PACKAGE

GC by SW-846

The sample data summary package shall contain data for all samples in one Sample Delivery Group (SDG) of the Case, as follows:

A. SDG Narrative

B. Tabulated target compound results (Form I)

C. Surrogate spike analysis results (Form II)
By matrix (Water or Soil), and
by concentration (Low, or Medium)

D. Spike results MS / MSD / LCS (Form III)

E. Blank data (Form IV)
Tabulated blank results (Form I)

LAB CODE : COMPU

METHOD: 8081B TCLP

SDG # : 3925

A. SDG Narrative

CompuChem

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501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one water sample listed above was received intact, properly refrigerated with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the pesticide-TCLP fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8081A were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the pesticide-TCLP fraction only.

Pesticides TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no pesticide-TCLP analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample prepared and analyzed along with this sample (LCS) met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd

Elsie S. Byrd
Senior Scientist I
January 26, 2006

GC and GC/MS Column and Trap Specifications Table

SDG #:	8925

COLUMNS

Columns Utilized	Brand Name	Coating Material	ID (mm)	Film Thickness (um)	Length (m)
	GC Laboratory				
	Restek	RTX-5	0.53	1.0	30
	Restek	RTX-SMS	0.53	1.0	30
✓	Restek	CLPesticides	0.53	0.5	30
✓	Restek	CLPesticides II	0.53	0.42	30
	J&W	DB-210	0.53	1.0	30
	J&W	GS-GASPRO	0.32		30
	GC Volatiles Laboratory				
	Restek	RTX-Volatiles	0.53	2.0	30
	GC/MS Volatiles Laboratory				
	Restek	RTX-624	0.32	1.8	60
	Restek	RTX-VMS*	0.18	1.0	20
	Phenomonex	ZB-624	0.32	1.8	60
	Supelco	SPB-624	0.32	3	75
	GC/MS Semivolatiles Laboratory				
	Restek	RTX-5MS	0.25	0.3	30
	Restek	RTX-5MS	0.32	0.3	30
	HPLC Laboratory				
	Supelco	Supelcosil LC-PAH	4.6	5.0	15 cm
	Supelco	Discovery RP Amide C16	4.6	5.0	25 cm
	Restek	Pinnacle Cyano	4.6	5	25 cm
	Restek	Allure C18	4.6	5	25 cm

TRAPS

	GC and GC/MS Volatiles Laboratory	
	Tekmar 3	* 8 cm of 2,6-diphenylene oxide polymer (Tenax)
		* 8 cm of silica gel
		* 7 cm of coconut charcoal
		* 0.5 cm of silanized glass wool at each end
	Tekmar 5	* 1 cm of methyl silicone packing (OV-1 coating)
		* 8 cm of 2,6-diphenylene oxide polymer (Tenax)
		* 8 cm of silica gel
		* 7 cm of coconut charcoal
		* 0.5 cm of silanized glass wool at each end
	Supelco K (Vocarb3000)	* 10 cm of Carbopack B (Graphitized Carbons)
		* 6 cm of Carboxen 1000 (Carbon molecular sieves)
		* 1 cm of Carboxen 1001 (Carbon molecular sieves)

Rev. 18

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CompuChem's Pagination Convention

As required by the EPA CLP Statement of Work (SOW) documents, data to be delivered must be paginated (by machine or hand). In the event that the initial numbering is incorrect (a page numbered twice or a page skipped, for example), it is CompuChem's policy to add an alphabetic suffix to a page number when necessary (e.g., 100A, 100B, etc.).

Notification Regarding Manual Editing/Integration Flags

In some instances, manual adjustments to the software output are necessary to provide accurate data. These manual integrations are performed by the data reviewers, GC/MS operators, or GC chemists. An Extracted Ion Current Profile (EICP) or a GC chromatographic peak has been provided for the manual integration performed on each compound to demonstrate the accuracy of that process. The manual integrations are flagged on the quantitation report in the far right column beyond the FINAL concentration for GC/MS analysis, and in the "Flags" column for GC analysis. The manual editing/integration flags are:

M - Denotes that a manual integration has been performed for this compound. The manual integration was performed in order to provide the most accurate area count possible for the peak.

H - Denotes that the data reviewer, GC/MS operator, or GC Chemist has chosen an alternate peak within the retention time window from that chosen by the software for that compound. No manual integration is performed in choosing an alternate peak. The software still performs the integration.

MH - Denotes that an alternate peak has been chosen within the retention time window from that chosen by the software for that compound and also a manual integration of the chosen peak has been performed. The manual integration was performed in order to provide the most accurate area count possible for the peak.

L - Denotes that a data reviewer or GC/MS operator has selected an alternate library search. This is typically done when an additional tentatively identified compound (TIC) has been added to the number of peaks searched. No manual integration is performed in choosing an alternate peak. The software still performs the integration.

ML - Denotes that an alternate library search has been selected and a manual integration has also been performed. This is typically done when an additional TIC has been added and the TIC peak also required a manual integration.

The EPA CLP SOW documents require additional explanations for manual editing/integration. In the accompanying raw data packages, additional codes have been applied to the "M" flag and carry the following meanings;

M1 - The compound was not found by the automatic integration routine.

M2 - The compound was incorrectly integrated by the automatic integration routine.

M3 - The co-eluting compounds were incorrectly integrated by the automatic integration routine.

These codes will appear in the GC/MS and GC raw data.

DATA REPORTING QUALIFIERS

On the Form I, under the column labeled "Q" for qualifier, each result is flagged with the specific data reporting qualifiers listed below, as appropriate. Up to five qualifiers may be reported on Form I for each compound. The qualifiers used are:

U : This flag indicates the compound was analyzed for but not detected. The Contract Required Quantitation Limit (CRQL), or reporting limit, will be adjusted to reflect any dilution and, for soils, the percent moisture.

J : This flag indicates an estimated value. The flag is used as detailed below:

1. When estimating a concentration for tentatively identified compounds (TICs) where a response factor of 1.0 is assumed for the TIC analyte,

2. When the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero, and

3. When the retention time data indicate the presence of a compound that meets the pesticide/Aroclor or other GC or HPLC identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero. For example, if the CRQL (or Reporting Limit) is 10 µg/L, but a concentration of 3 µg/L is calculated, it is reported as 3J.

N : This flag indicates presumptive evidence of a compound. This flag is only used for TICs, where the identification is based on a mass spectral library search. For generic characterization of a TIC such as 'chlorinated hydrocarbon', the N flag is not used.

P : In the EPA's Contract Laboratory Program (CLP), this flag is used for a pesticide/Aroclor target analyte, when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a P.
For SW-846 GC and HPLC analyses, when the Relative Percent Difference (RPD) is greater than 40% and there is no evidence of chromatographic anomalies or interferences, then the higher of the two values is reported and flagged with a P. When the RPD is equal to or less than 40%, our policy is to also report the higher of the two values, although the choice could be a project specific issue. For certain HPLC analyses, if one of the HPLC columns displays co-elution of target analytes, all results are reported from a primary column displaying no co-elution. Results are still flagged with a P if the RPD between columns is greater than 40%.

DATA REPORTING QUALIFIERS (continued)

C : This flag applies to GC or HPLC results where the identification has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, this flag is not applied; a laboratory-defined flag is used instead (see the X/Y/Z qualifier.)

B : This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag is used for a TIC as well as for a positively identified target compound. The combination of flags BU or UB is not an allowable policy. Blank contaminants are flagged B only when they are detected in the sample.

E : This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis. If one or more compounds have a response greater than the upper level of the calibration range, the sample or extract will be diluted and reanalyzed. All such compounds with a response greater than the upper level of the calibration range will have the concentration flagged with an E on Form I for the original analysis.

D : If a sample or extract is reanalyzed at a higher dilution factor, for example when the concentration of an analyte exceeds the upper calibration range, the DL suffix is appended to the sample number on Form I for the more diluted sample, and **all** reported concentrations on that Form I are flagged with the D flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.

NOTE 1: The D flag is not applied to compounds which are not detected in the sample analysis i.e. compounds reported with the CRQL (or Reporting Limit) and the U flag.

NOTE 2: Separate Form Is are used for reporting the original analysis (Client Sample No. XXXXX) and the more diluted sample analysis (Client Sample No. XXXXXDL) i.e. the results from both analyses <u>are not combined</u> on a single Form I.

A: This flag indicates that a TIC is a suspected aldol-condensation product.

S: In the SOM01.1 SOW, this flag is used to indicate an estimated value for Aroclor target compounds where a valid 5-point initial calibration was not performed prior to the analytes detection in a sample. If an "S" flag is used for a specific Aroclor, then a reanalysis of the sample is required after a valid 5-point calibration is performed for the detected Aroclor.

X/Y/Z : Other specific flags may be required to properly define the results. If used, the flags will be fully described in the SDG Narrative. The laboratory-defined flags are limited to X, Y and Z.

B. Form I

Organic Analysis Data Sheet (OADS)
- All samples in alphanumeric order
- Matrix Spike/Matrix Spike Duplicate
- Laboratory Control Sample(s)

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WAR-IDW-4

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.13	U
72-20-8	Endrin	0.50	U
76-44-8	Heptachlor	0.13	U
1024-57-3	Heptachlor Epoxide	0.13	U
72-43-5	Methoxychlor	1.3	U
8001-35-2	Toxaphene	25	U
57-74-09	Technical Chlordane	8.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PGNLCS

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91896

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	1.4	
72-20-8	Endrin	0.50	U
76-44-8	Heptachlor	1.4	
1024-57-3	Heptachlor Epoxide	1.2	
72-43-5	Methoxychlor	1.3	U
8001-35-2	Toxaphene	47	
57-74-09	Technical Chlordane	8.0	U

C. Form II

Surrogate spike analysis

- By level (low, medium) -

2E
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column(1): CLPEST ID: 0.53 (mm) GC Column(2): CLPEST2 ID: 0.53 (mm)

	EPA SAMPLE NO.	DCB 1 %REC #	DCB 2 %REC #	TCX 1 %REC #	TCX 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PBLKGN	97	92	100	104			0
02	PGNLCS	94	92	110	103			0
03	TCLPBLKGW	98	93	100	104			0
04	WAR-IDW-4	93	89	110	107			0
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
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22								
23								
24								
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27								
28								
29								
30								

ADVISORY
QC LIMITS

S1 (DCB) = Decachlorobiphenyl (43-144)
S2 (TCX) = Tetrachloro-m-Xylene (43-135)

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

D. Form III

Matrix Spike/Matrix Spike Duplicate results

- By level (low, medium) -

Laboratory Control Sample(s)

3E
WATER PESTICIDE LAB CONTROL SAMPLE

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

LCS ID: PGNLCS

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
gamma-BHC (Lindane)	1.5	1.4	93	32-127
Heptachlor	1.5	1.4	93	34-111
Heptachlor Epoxide	1.5	1.2	80	37-142
Toxaphene	50	47	94	41-126

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

* Values outside of QC limits

Spike Recovery: 0 out of 4 outside limits

COMMENTS: _____

_____

FORM III PEST-1

E. Form IV

Method Blank Results
Form IV, Form I

Method blank summary, OADS
- In chronological order of analysis

4C

PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PBLKGN

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Lab Sample ID: 91895 Lab File ID: 342I91895

Matrix (soil/water) WATER Extraction:(SepF/Cont/Sonc) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 01/24/06

Date Analyzed (1): 01/24/06 Date Analyzed (2): 01/24/06

Time Analyzed (1): 2032 Time Analyzed (2): 2032

Instrument ID (1): TRACEGC82 Instrument ID (2): TRACEGC83

GC Column (1): CLPEST ID: 0.53(mm) GC Column (2): CLPEST2 ID: 0.53(mm)

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	PGNLCS	91896	01/24/06	01/24/06
02	TCLPBLKGW	91765	01/24/06	01/24/06
03	WAR-IDW-4	892501	01/24/06	01/24/06
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS: _____

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLKGN

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91895

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.025	U
72-20-8	Endrin	0.10	U
76-44-8	Heptachlor	0.025	U
1024-57-3	Heptachlor Epoxide	0.025	U
72-43-5	Methoxychlor	0.25	U
8001-35-2	Toxaphene	5.0	U
57-74-09	Technical Chlordane	1.6	U

CompuChem, a Division of Liberty Analytical Corporation

I. SAMPLE DATA PACKAGE

GC by SW-846

The sample data package shall include data for all analyses of all samples in one Sample Delivery Group (SDG), including field samples, dilutions, reanalyses, blanks, matrix spikes, matrix spike duplicates, and laboratory control samples. The sample data package consists of the following:

A. SDG Narrative

B. Chain-of-Custody Documentation

C. SDG Data

LAB CODE : COMPU

METHOD: 8081A TCLP

CASE # : _____

SDG # : 8925

A. SDG Narrative

CompuChem
a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one water sample listed above was received intact, properly refrigerated with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the pesticide-TCLP fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8081A were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the pesticide-TCLP fraction only.

Pesticides TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no pesticide-TCLP analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample prepared and analyzed along with this sample (LCS) met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd
Senior Scientist I
January 26, 2006

GC and GC/MS Column and Trap Specifications Table

SDG #:	8925

COLUMNS

Columns Utilized	Brand Name	Coating Material	ID (mm)	Film Thickness (um)	Length (m)
	GC Laboratory				
	Restek	RTX-5	0.53	1.0	30
	Restek	RTX-SMS	0.53	1.0	30
✓	Restek	CLPesticides	0.53	0.5	30
✓	Restek	CLPesticides II	0.53	0.42	30
	J&W	DB-210	0.53	1.0	30
	J&W	GS-GASPRO	0.32		30
	GC Volatiles Laboratory				
	Restek	RTX-Volatiles	0.53	2.0	30
	GC/MS Volatiles Laboratory				
	Restek	RTX-624	0.32	1.8	60
	Restek	RTX-VMS*	0.18	1.0	20
	Phenomonex	ZB-624	0.32	1.8	60
	Supelco	SPB-624	0.32	3	75
	GC/MS Semivolatiles Laboratory				
	Restek	RTX-5MS	0.25	0.3	30
	Restek	RTX-5MS	0.32	0.3	30
	HPLC Laboratory				
	Supelco	Supelcosil LC-PAH	4.6	5.0	15 cm
	Supelco	Discovery RP Amide C16	4.6	5.0	25 cm
	Restek	Pinnacle Cyano	4.6	5	25 cm
	Restek	Allure C18	4.6	5	25 cm

TRAPS

	GC and GC/MS Volatiles Laboratory	
	Tekmar 3	* 8 cm of 2,6-diphenylene oxide polymer (Tenax)
		* 8 cm of silica gel
		* 7 cm of coconut charcoal
		* 0.5 cm of silanized glass wool at each end
	Tekmar 5	* 1 cm of methyl silicone packing (OV-1 coating)
		* 8 cm of 2,6-diphenylene oxide polymer (Tenax)
		* 8 cm of silica gel
		* 7 cm of coconut charcoal
		* 0.5 cm of silanized glass wool at each end
	Supelco K (Vocarb3000)	* 10 cm of Carbopack B (Graphitized Carbons)
		* 6 cm of Carboxen 1000 (Carbon molecular sieves)
		* 1 cm of Carboxen 1001 (Carbon molecular sieves)

Rev. 18

CompuChem

a division of Liberty Analytical Corporation

CompuChem's Pagination Convention

As required by the EPA CLP Statement of Work (SOW) documents, data to be delivered must be paginated (by machine or hand). In the event that the initial numbering is incorrect (a page numbered twice or a page skipped, for example), it is CompuChem's policy to add an alphabetic suffix to a page number when necessary (e.g., 100A, 100B, etc.).

Notification Regarding Manual Editing/Integration Flags

In some instances, manual adjustments to the software output are necessary to provide accurate data. These manual integrations are performed by the data reviewers, GC/MS operators, or GC chemists. An Extracted Ion Current Profile (EICP) or a GC chromatographic peak has been provided for the manual integration performed on each compound to demonstrate the accuracy of that process. The manual integrations are flagged on the quantitation report in the far right column beyond the FINAL concentration for GC/MS analysis, and in the "Flags" column for GC analysis. The manual editing/integration flags are:

M - Denotes that a manual integration has been performed for this compound. The manual integration was performed in order to provide the most accurate area count possible for the peak.

H - Denotes that the data reviewer, GC/MS operator, or GC Chemist has chosen an alternate peak within the retention time window from that chosen by the software for that compound. No manual integration is performed in choosing an alternate peak. The software still performs the integration.

MH - Denotes that an alternate peak has been chosen within the retention time window from that chosen by the software for that compound and also a manual integration of the chosen peak has been performed. The manual integration was performed in order to provide the most accurate area count possible for the peak.

L - Denotes that a data reviewer or GC/MS operator has selected an alternate library search. This is typically done when an additional tentatively identified compound (TIC) has been added to the number of peaks searched. No manual integration is performed in choosing an alternate peak. The software still performs the integration.

ML - Denotes that an alternate library search has been selected and a manual integration has also been performed. This is typically done when an additional TIC has been added and the TIC peak also required a manual integration.

The EPA CLP SOW documents require additional explanations for manual editing/integration. In the accompanying raw data packages, additional codes have been applied to the "M" flag and carry the following meanings;

M1 - The compound was not found by the automatic integration routine.

M2 - The compound was incorrectly integrated by the automatic integration routine.

M3 - The co-eluting compounds were incorrectly integrated by the automatic integration routine.

These codes will appear in the GC/MS and GC raw data.

DATA REPORTING QUALIFIERS

On the Form I, under the column labeled "Q" for qualifier, each result is flagged with the specific data reporting qualifiers listed below, as appropriate. Up to five qualifiers may be reported on Form I for each compound. The qualifiers used are:

U : This flag indicates the compound was analyzed for but not detected. The Contract Required Quantitation Limit (CRQL), or reporting limit, will be adjusted to reflect any dilution and, for soils, the percent moisture.

J : This flag indicates an estimated value. The flag is used as detailed below:

1. When estimating a concentration for tentatively identified compounds (TICs) where a response factor of 1.0 is assumed for the TIC analyte,

2. When the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero, and

3. When the retention time data indicate the presence of a compound that meets the pesticide/Aroclor or other GC or HPLC identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero. For example, if the CRQL (or Reporting Limit) is 10 µg/L, but a concentration of 3 µg/L is calculated, it is reported as 3J.

N : This flag indicates presumptive evidence of a compound. This flag is only used for TICs, where the identification is based on a mass spectral library search. For generic characterization of a TIC such as 'chlorinated hydrocarbon', the N flag is not used.

P : In the EPA's Contract Laboratory Program (CLP), this flag is used for a pesticide/Aroclor target analyte, when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a P.
For SW-846 GC and HPLC analyses, when the Relative Percent Difference (RPD) is greater than 40% and there is no evidence of chromatographic anomalies or interferences, then the higher of the two values is reported and flagged with a P. When the RPD is equal to or less than 40%, our policy is to also report the higher of the two values, although the choice could be a project specific issue. For certain HPLC analyses, if one of the HPLC columns displays co-elution of target analytes, all results are reported from a primary column displaying no co-elution. Results are still flagged with a P if the RPD between columns is greater than 40%.

DATA REPORTING QUALIFIERS (continued)

C : This flag applies to GC or HPLC results where the identification has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, this flag is not applied; a laboratory-defined flag is used instead (see the X/Y/Z qualifier.)

B : This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag is used for a TIC as well as for a positively identified target compound. The combination of flags BU or UB is not an allowable policy. Blank contaminants are flagged B only when they are detected in the sample.

E : This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis. If one or more compounds have a response greater than the upper level of the calibration range, the sample or extract will be diluted and reanalyzed. All such compounds with a response greater than the upper level of the calibration range will have the concentration flagged with an E on Form I for the original analysis.

D : If a sample or extract is reanalyzed at a higher dilution factor, for example when the concentration of an analyte exceeds the upper calibration range, the DL suffix is appended to the sample number on Form I for the more diluted sample, and **all** reported concentrations on that Form I are flagged with the D flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.

NOTE 1: The D flag is not applied to compounds which are not detected in the sample analysis i.e. compounds reported with the CRQL (or Reporting Limit) and the U flag.

NOTE 2: Separate Form Is are used for reporting the original analysis (Client Sample No. XXXXX) and the more diluted sample analysis (Client Sample No. XXXXXDL) i.e. the results from both analyses <u>are not combined</u> on a single Form I.

A: This flag indicates that a TIC is a suspected aldol-condensation product.

S: In the SOM01.1 SOW, this flag is used to indicate an estimated value for Aroclor target compounds where a valid 5-point initial calibration was not performed prior to the analytes detection in a sample. If an "S" flag is used for a specific Aroclor, then a reanalysis of the sample is required after a valid 5-point calibration is performed for the detected Aroclor.

X/Y/Z : Other specific flags may be required to properly define the results. If used, the flags will be fully described in the SDG Narrative. The laboratory-defined flags are limited to X, Y and Z.

B. Chains-of-Custody

The laboratory shall include a copy of the Chain-of-Custody (CoC) documentation for all of the samples in the SDG. The CoC documents shall be arranged in increasing Client Sample ID number order, considering both letters and numbers.

Vieques ERP
CH2M HILL
Chain of Custody Form

Project Site	AOC R					Analysis Requested												Project No. 180357.FI.FK.AR	
Project Manager	Brett Doerr																		
Contact Tel No.	757-289-9246 (Adrienne Jones)																	Lab Batch/SDG ID	
Contact Address	4350 W. Cypress Street, Suite 600, Tampa, FL 33607																		
Lab Name	CompuChem Labs																	Lab Tel No./Fax No.	
Lab Contact	Cathy Dover																	919-379-4089/919-379-4040	
Lab Address	501 Madison Ave. Cary, NC 27513																		
Item	Sample ID	Station ID	Matrl	x	Date & Time Collected	Number of Containers	CORR_IGNIT_SO 8oz	REACTIVITY_SO	TCLP_VOC_SO 4oz	TCLP_SO 8oz		CORR_IGNIT_W 2AL	REACTIVITY_W	TCLP_VOC_W 3-40ml	TCLP_W 5AL			Comments	
1	WAR-IDW-4	IDW	WW		01/17/2006 1140	3	X	X	X	X								892501	
2	WAR-IDW-3	IDW	WW		01/17/2006 1040	10						X	X	X	X			892601	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
Sampled By: Kenji Butler					Date/Time: 1-18-06 0800		Custody Seal: (Y) / N					Relinquished By:						Date/Time: 1/18/06 0830	
Shipped Via: UPS (FedEx) Hand Other (Please specify):																			
Samples Temperature and Condition Upon Receipt (for lab's use):																			
Received By:					Date/Time:		Custody Seal: Y / N					Relinquished By:						Date/Time:	
Received By:					Date/Time: 1-19-06 9:15		Custody Seal: (Y) / N					Relinquished By:						Date/Time:	
Remarks: 01/18/2006 AOC-R COC # 10																			
Cooler # 1																			

Temp @ 4.6 °C

CompuChem

a division of Liberty Analytical Corp.

WORKORDER SUMMARY REPORT

Workorder: 8925 **Account:** CH2MHILL **Project:** CTO-007 (AR)
SDG-Case: CTO-007/18035 **Status:** CLOSED **QC Type:** CLIENT SPECIFIC MS/MSD
Report Style: COMPUCHEM STYLE 9 INTEGRATED W/EDD&CD

SAMPLE ID	CLIENT ID	COLLECT DATE	RECEIVE DATE	DUE DATE	COMMENTS
892501	WAR-IDW-4	1/17/2006	1/19/2006	2/13/2006	LCS ONLY*TCLP VOC, SVOC, PEST, HERB & METALS*RIC
L	GS8081TCLP	TCLP PST ONLY 8081A SOIL			
L	GS8151TCLP	TCLP HERBICIDE 8151 SOIL			
L	MS6010TCLP	TCLP METAL 6010B SOIL			
L	MS74HGTCLP	TCLP MERCURY ONLY 7471A SOIL			
L	SS8270TCLP	TCLP SVOC 8270C SOIL			
L	VS8260ZHE	ZHE VOC 8260B SOIL			
L	WS1010IGNT	IGNITABILITY 1010 SOIL			
L	WS9014RCCN	REACTIVE CYANIDE 9014 SOIL			
L	WS9034RCSF	REACTIVE SULFIDE 9034 SOIL			
L	WS9040COR	CORROSIVITY 9040B SOIL			

CompuChem, a Division of Liberty Analytical

Extract Chain of Custody

Batch: 8894 Date: 1/24/2006

Department: Organic Extractions

Sample ID	Client ID	Product	Matrix	Hold Date
892501	WAR-IDW-4	GW8081TCLX	L	2/1/2006
892601	WAR-IDW-3	GW8081TCLX	L	2/1/2006
91765	PLCHBK for	GW8081TCLX	W	2/1/2006
91770	PLCHBK for	GW8081TCLX	W	2/1/2006
91895	PBLKGN	GW8081TCLX	W	2/1/2006
91896	PGNLCS	GW8081TCLX	W	2/1/2006

1-24-5

Relinquished By:	Received By:	Date/Time
GC #3	GC #3	1-24-06/1430
KP	KP	1-24-06 5:05pm
	GC #4	1-24-06 5:10pm

C. SDG Data

1. QC Summary
2. Sample Data
3. Standards Data
4. Raw QC Data

LAB CODE : COMPU

METHOD: 8081A TCLP

CASE # : _____

SDG # : 8928

1. Q C Summary

a. Surrogate Percent Recovery Summary (Form II)

b. Matrix Spike/Matrix Spike Duplicate/
Laboratory Control Sample Summary
(Form III)

c. Method Blank Summary (Form IV)

a. Surrogate Percent Recovery Summary

(Form II)

2E

WATER PESTICIDE SURROGATE RECOVERY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column(1): CLPEST ID: 0.53 (mm) GC Column(2): CLPEST2 ID: 0.53 (mm)

	EPA SAMPLE NO.	DCB 1 %REC #	DCB 2 %REC #	TCX 1 %REC #	TCX 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PBLKGN	97	92	100	104			0
02	PGNLCS	94	92	110	103			0
03	TCLPBLKGW	98	93	100	104			0
04	WAR-IDW-4	93	89	110	107			0
05								
06								
07								
08								
09								
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11								
12								
13								
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28								
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30								

ADVISORY QC LIMITS

S1 (DCB) = Decachlorobiphenyl (43-144)
S2 (TCX) = Tetrachloro-m-Xylene (43-135)

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

b. Matrix Spike/Matrix Spike Duplicate/ Laboratory Control Sample Summary

(Form III)

3E
WATER PESTICIDE LAB CONTROL SAMPLE

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

LCS ID: PGNLCS

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
gamma-BHC (Lindane)	1.5	1.4	93	32-127
Heptachlor	1.5	1.4	93	34-111
Heptachlor Epoxide	1.5	1.2	80	37-142
Toxaphene	50	47	94	41-126

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

* Values outside of QC limits

Spike Recovery: 0 out of 4 outside limits

COMMENTS: _____

_____

FORM III PEST-1

c. Method Blank Summary (Form IV)

If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blanks, by instrument.

4C

PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PBLKGN

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Lab Sample ID: 91895 Lab File ID: 342I91895

Matrix (soil/water) WATER Extraction:(SepF/Cont/Sonc) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 01/24/06

Date Analyzed (1): 01/24/06 Date Analyzed (2): 01/24/06

Time Analyzed (1): 2032 Time Analyzed (2): 2032

Instrument ID (1): TRACEGC82 Instrument ID (2): TRACEGC83

GC Column (1): CLPEST ID: 0.53(mm) GC Column (2): CLPEST2 ID: 0.53(mm)

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	PGNLCS	91896	01/24/06	01/24/06
02	TCLPBLKGW	91765	01/24/06	01/24/06
03	WAR-IDW-4	892501	01/24/06	01/24/06
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS: _____

2. Sample Data

Sample data shall be arranged in packets with the Organic Analysis Data Sheet (Form I), followed by the raw data for samples. These sample packets shall be placed in increasing Client Sample ID number order, considering both letters and numbers.

a. Target Analyte Results (Form I)

Tabulated results (identification and quantitation) shall be included.

b. Copies of Chromatograms

Positively identified compounds shall be labeled with the names of compounds, either directly out from the peak on the chromatogram, or on a printout of retention times on the data system printout if retention times are printed over the peak on the chromatogram. Include for each sample or sample extract, including dilutions and reanalyses. The chromatogram shall contain the following header information: Client Sample ID number, volume injected (µL), date and time of injection, GC column ID, and GC instrument ID.

c. Copies of Chromatograms from the Second Column (if necessary)

d. Data System Printout

A printout of retention time and corresponding peak height or peak area shall accompany each chromatogram. Where edits have been made, initialing, dating and integration time range are required.

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WAR-IDW-4

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.13	U
72-20-8	Endrin	0.50	U
76-44-8	Heptachlor	0.13	U
1024-57-3	Heptachlor Epoxide	0.13	U
72-43-5	Methoxychlor	1.3	U
8001-35-2	Toxaphene	25	U
57-74-09	Technical Chlordane	8.0	U

Data File: /chem/tracegc82.i/i060110zb.b/346i892501.d

Page 1

Date : 24-JAN-2006 22:14

Client ID: WAR-IDW-4

Instrument: tracegc82.i

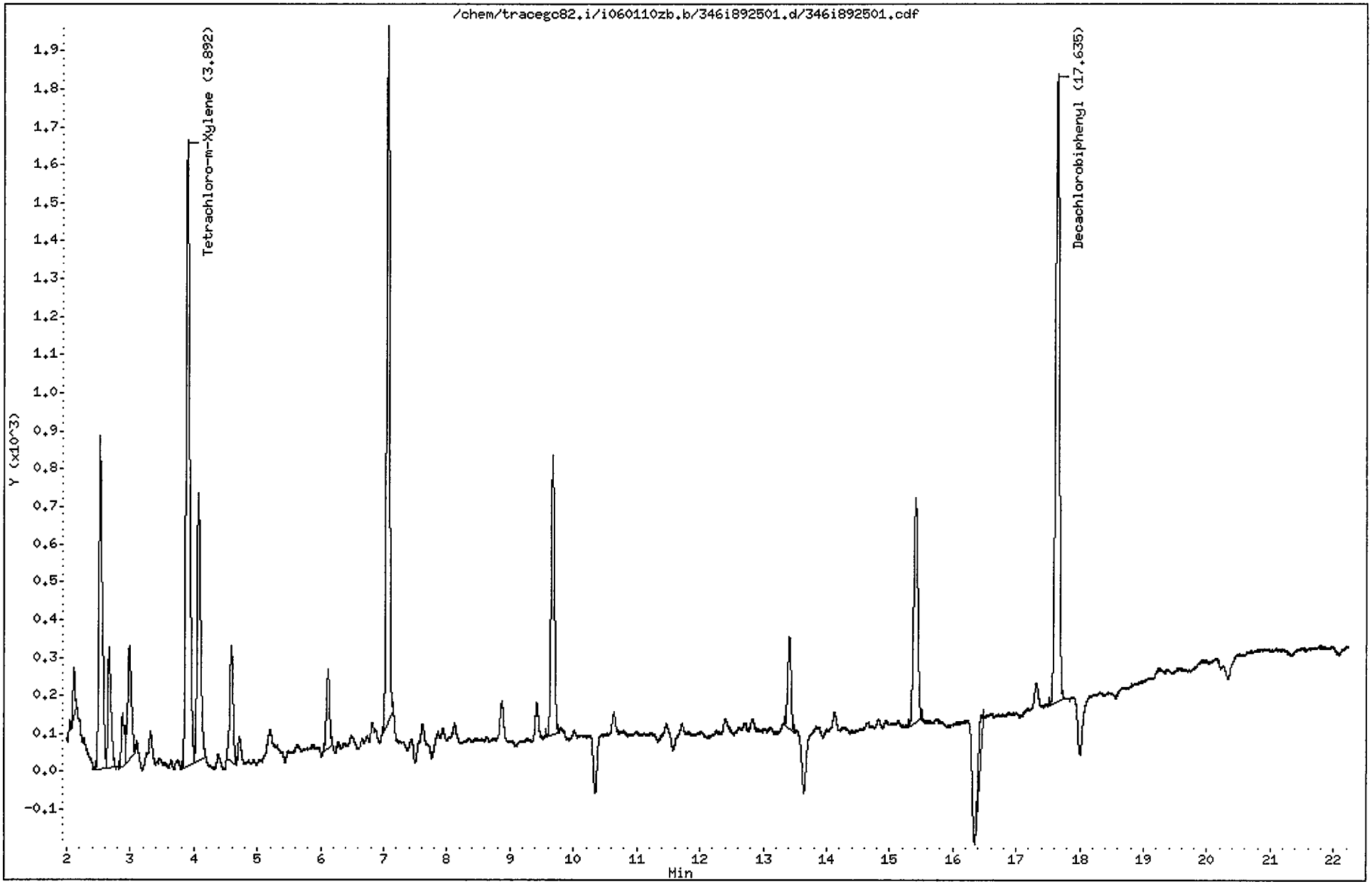
Sample Info: 892501

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : 892501 Client Smp Id : WAR-IDW-4
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 24-JAN-2006 22:14 Inst ID : TRACEGC82
Operator : 2564
Method : /chem/tracegc82.i/i060110zb.b/8081A_clpestv4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.17			502								
0.94			7352								
1.04			13994								
1.19			14980								
1.66			876								
1.78			4008								
2.12			316								
2.52			3160								
2.66			1062								
2.88			471								
2.98			1243								
3.89	3.78	3.92	6588	306784	Tetrachloro-m-Xylene	0.021471	1.073555		107.4	43 - 135	
4.07			2681								
4.59			1097								
6.11			707								
7.06			6023								
9.67			2721								
13.41			895								
15.40			2663								
16.45			436								
17.64	17.53	17.67	6775	362764	Decachlorobiphenyl	0.018676	0.933803		93.4	43 - 144	

TAJ 1/25/06

Data File: /chem/tracegc83.i/i060110zb.b/346i892501.d

Date : 24-JAN-2006 22:14

Client ID: WAR-IDW-4

Instrument: tracegc83.i

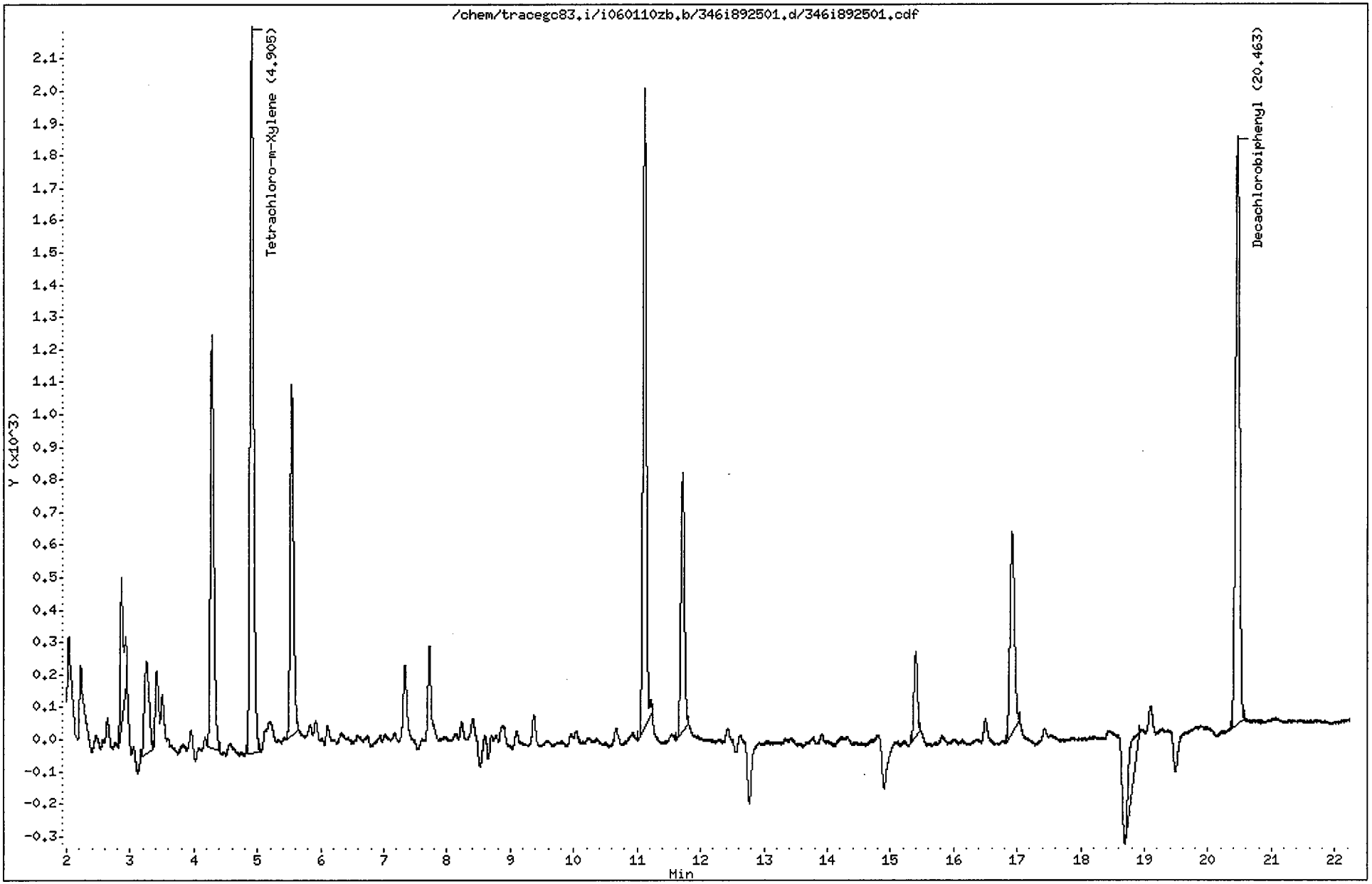
Sample Info: 892501

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : 892501 Client Smp Id : WAR-IDW-4
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 24-JAN-2006 22:14 Inst ID : TRACEGC83
Operator : 2564
Method : /chem/tracegc83.i/i060110zb.b/8081A_clpest2v4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.94		4320								
1.02		5145								
1.07		4559								
1.13		7035								
1.23		20165								
1.83		2604								
2.86		1710								
3.26		1509								
4.28		4717								
4.90	4.79 4.93	8652	403926	Tetrachloro-m-Xylene	0.021417	1.070864		107.1	43 - 135	
5.54		3955								
11.12		7078								
11.71		3074								
15.40		998								
16.92		3042								
18.91		1325								
20.46	20.35 20.49	8170	459870	Decachlorobiphenyl	0.017766	0.888295		88.8	43 - 144	

TAJ 1/25/06

3. Standards Data

a. Initial Calibration Data (Form VI)

b. Calibration Verification Summary (Form VII)

c. Analytical Sequence (Form VIII)

d. Identification Summary for Single Component Analytes (Form X)

e. Identification Summary for Multicomponent Analytes (Form X) - if applicable

f. Chromatograms and Data System Printouts

a. Initial Calibration Data
(Form VI)

For all GC columns, all instruments, in chronological order by GC column and instrument.

FORM 6
PESTICIDE INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC82 Calibration Date(s): 01/10/06 01/11/06

Column: CLPEST ID: 0.53 (mm) Calibration Time(s): 1616 2313

LAB FILE ID: RF0.0025: 005IINDBRF0.005: 007IINDB2RF0.01: 009IINDB39
RF0.02: 073ICHLORORF0.04: 013IINDB59

COMPOUND	RF0.0025	RF0.005	RF0.01	RF0.02	RF0.04
gamma-BHC (Lindane)	508400.00	507400.00	481200.00	477850.00	482875.00
Endrin	426900.00	392150.00	376025.00	382212.50	353918.75
Heptachlor	576000.00	539600.00	523200.00	501450.00	484100.00
Heptachlor Epoxide	541600.00	503200.00	487600.00	478700.00	434250.00
Methoxychlor	223640.00	212700.00	191030.00	174790.00	167205.00
Toxaphene				16063.750	
(2)				14262.750	
(3)				20141.000	
(4)				16035.500	
(5)				10148.500	
Technical Chlordane				28238.750	
(2)				20038.750	
(3)				45171.250	
(4)				69800.000	
(5)				17728.750	
Decachlorobiphenyl	412500.00	400000.00	358975.00	325543.75	316800.00
Tetrachloro-m-Xylene	330700.00	321725.00	299712.50	289281.25	292503.12

FORM 6
PESTICIDE INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC82 Calibration Date(s): 01/10/06 01/11/06

Column: CLPEST ID: 0.53 (mm) Calibration Time(s): 1616 2313

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	
gamma-BHC (Lindane)	AVRG	491545.000	3.1	
Endrin	AVRG	386241.250	6.9	
Heptachlor	AVRG	524870.000	6.8	
Heptachlor Epoxide	AVRG	489070.000	8.0	
Methoxychlor	AVRG	193873.000	12.4	
Toxaphene	AVRG	16063.7500	0.0	<-
(2)	AVRG	14262.7500	0.0	<-
(3)	AVRG	20141.0000	0.0	<-
(4)	AVRG	16035.5000	0.0	<-
(5)	AVRG	10148.5000	0.0	<-
Technical Chlordane	AVRG	28238.7500	0.0	<-
(2)	AVRG	20038.7500	0.0	<-
(3)	AVRG	45171.2500	0.0	<-
(4)	AVRG	69800.0000	0.0	<-
(5)	AVRG	17728.7500	0.0	<-
Decachlorobiphenyl	AVRG	362763.750	11.8	
Tetrachloro-m-Xylene	AVRG	306784.375	6.0	

FORM VI PEST

FORM 6
PESTICIDE INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC82 Calibration Date(s): 01/10/06 01/11/06

Column: CLPEST ID: 0.53 (mm) Calibration Time(s): 1616 2313

LAB FILE ID: RT1: 005IINDB19P RT2: 007IINDB29P RT3: 009IINDB39P
RT4: 073ICHLORO49PRT5: 013IINDB59P

COMPOUND	RT1	RT2	RT3	RT4	RT5
gamma-BHC (Lindane)	5.830	5.830	5.830	5.830	5.830
Endrin	11.340	11.340	11.340	11.340	11.340
Heptachlor	6.950	6.950	6.950	6.950	6.950
Heptachlor Epoxide	9.220	9.220	9.230	9.230	9.230
Methoxychlor	13.900	13.900	13.900	13.910	13.900
Toxaphene				12.120	
(2)				12.750	
(3)				13.310	
(4)				13.840	
(5)				14.730	
Technical Chlordane				6.970	
(2)				8.110	
(3)				9.570	
(4)				9.900	
(5)				11.750	
Decachlorobiphenyl	17.590	17.600	17.600	17.590	17.590
Tetrachloro-m-Xylene	3.850	3.850	3.850	3.860	3.850

FORM 6
PESTICIDE INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC82 Calibration Date(s): 01/10/06 01/11/06

Column: CLPEST ID: 0.53 (mm) Calibration Time(s): 1616 2313

COMPOUND	MEAN RT	RT WINDOW FROM	RT WINDOW TO	
gamma-BHC (Lindane)	5.830	5.758	5.898	
Endrin	11.340	11.272	11.412	
Heptachlor	6.950	6.878	7.018	
Heptachlor Epoxide	9.226	9.157	9.297	
Methoxychlor	13.902	13.833	13.973	
Toxaphene	12.120	12.050	12.190	<-
(2)	12.750	12.680	12.820	<-
(3)	13.310	13.242	13.382	<-
(4)	13.840	13.767	13.907	<-
(5)	14.730	14.660	14.800	<-
Technical Chlordane	6.970	6.903	7.043	<-
(2)	8.110	8.042	8.182	<-
(3)	9.570	9.497	9.637	<-
(4)	9.900	9.835	9.975	<-
(5)	11.750	11.682	11.822	<-
Decachlorobiphenyl	17.594	17.525	17.665	
Tetrachloro-m-Xylene	3.852	3.782	3.922	

FORM 6
PESTICIDE INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC83 Calibration Date(s): 01/10/06 01/11/06

Column: CLPEST2 ID: 0.53 (mm) Calibration Time(s): 1616 2313

LAB FILE ID: RF0.0025: 005IINDBRF0.005: 007IINDB2RF0.01: 009IINDB39
RF0.02: 073ICHLORORF0.04: 013IINDB59

COMPOUND	RF0.0025	RF0.005	RF0.01	RF0.02	RF0.04
gamma-BHC (Lindane)	741600.00	723000.00	667000.00	652650.00	664100.00
Endrin	579500.00	518150.00	494100.00	505200.00	479381.25
Heptachlor	835200.00	786200.00	712800.00	674600.00	651925.00
Heptachlor Epoxide	747600.00	690600.00	652500.00	633250.00	577825.00
Methoxychlor	273640.00	260260.00	236750.00	219610.00	216435.00
Toxaphene				18028.750	
(2)				23239.000	
(3)				25353.750	
(4)				27277.000	
(5)				10463.750	
Technical Chlordane				37720.000	
(2)				24328.750	
(3)				58726.250	
(4)				50830.000	
(5)				20925.000	
Decachlorobiphenyl	504150.00	495350.00	451650.00	419737.50	428462.50
Tetrachloro-m-Xylene	431400.00	414200.00	382900.00	384668.75	406462.50

FORM 6
PESTICIDE INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC83 Calibration Date(s): 01/10/06 01/11/06

Column: CLPEST2 ID: 0.53 (mm) Calibration Time(s): 1616 2313

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	
gamma-BHC (Lindane)	AVRG	689670.000	5.8	
Endrin	AVRG	515266.250	7.5	
Heptachlor	AVRG	732145.000	10.5	
Heptachlor Epoxide	AVRG	660355.000	9.6	
Methoxychlor	AVRG	241339.000	10.4	
Toxaphene	AVRG	18028.7500	0.0	<-
(2)	AVRG	23239.0000	0.0	<-
(3)	AVRG	25353.7500	0.0	<-
(4)	AVRG	27277.0000	0.0	<-
(5)	AVRG	10463.7500	0.0	<-
Technical Chlordane	AVRG	37720.0000	0.0	<-
(2)	AVRG	24328.7500	0.0	<-
(3)	AVRG	58726.2500	0.0	<-
(4)	AVRG	50830.0000	0.0	<-
(5)	AVRG	20925.0000	0.0	<-
Decachlorobiphenyl	AVRG	459870.000	8.3	
Tetrachloro-m-Xylene	AVRG	403926.250	5.1	

FORM 6
PESTICIDE INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC83 Calibration Date(s): 01/10/06 01/11/06

Column: CLPEST2 ID: 0.53 (mm) Calibration Time(s): 1616 2313

LAB FILE ID: RT1: 005IINDB19P RT2: 007IINDB29P RT3: 009IINDB39P
RT4: 073ICHLORO49PRT5: 013IINDB59P

COMPOUND	RT1	RT2	RT3	RT4	RT5
gamma-BHC (Lindane)	7.430	7.430	7.430	7.430	7.430
Endrin	13.450	13.450	13.450	13.460	13.460
Heptachlor	8.570	8.570	8.570	8.570	8.570
Heptachlor Epoxide	10.970	10.970	10.970	10.970	10.970
Methoxychlor	16.730	16.730	16.730	16.730	16.730
Toxaphene				13.380	
(2)				14.300	
(3)				15.000	
(4)				16.280	
(5)				17.300	
Technical Chlordane				8.600	
(2)				9.930	
(3)				11.500	
(4)				11.900	
(5)				14.160	
Decachlorobiphenyl	20.420	20.420	20.420	20.420	20.420
Tetrachloro-m-Xylene	4.860	4.860	4.870	4.870	4.860

FORM 6
PESTICIDE INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC83 Calibration Date(s): 01/10/06 01/11/06

Column: CLPEST2 ID: 0.53 (mm) Calibration Time(s): 1616 2313

COMPOUND	MEAN RT	RT WINDOW FROM	RT WINDOW TO	
gamma-BHC (Lindane)	7.430	7.357	7.497	
Endrin	13.454	13.385	13.525	
Heptachlor	8.570	8.498	8.638	
Heptachlor Epoxide	10.970	10.900	11.040	
Methoxychlor	16.730	16.660	16.800	
Toxaphene	13.380	13.310	13.450	<-
(2)	14.300	14.235	14.375	<-
(3)	15.000	14.927	15.067	<-
(4)	16.280	16.210	16.350	<-
(5)	17.300	17.225	17.365	<-
Technical Chlordane	8.600	8.527	8.667	<-
(2)	9.930	9.855	9.995	<-
(3)	11.500	11.432	11.572	<-
(4)	11.900	11.828	11.968	<-
(5)	14.160	14.093	14.233	<-
Decachlorobiphenyl	20.420	20.353	20.493	
Tetrachloro-m-Xylene	4.864	4.792	4.932	

b. Calibration Verification Summary (Form VII)

For all performance evaluation mixtures (if applicable) and continuing calibration verification standards, on all GC columns and instruments, in chronological order by GC column and instrument.

FORM 7B
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC82 Calibration Date: 01/24/06 Time: 1941

Lab File ID: 340IINDAMBF Init. Calib. Date(s): 01/10/06 01/12/06

Init. Calib. Times: 1616 0329

GC Column: CLPEST ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF0.0200 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
gamma-BHC (Lindane)	491545.00	478910.00	0.01	-2.57	15.00	AVRG	
Endrin	386241.25	362618.75	0.01	-6.12	15.00	AVRG	
Heptachlor	524870.00	504085.00	0.01	-3.96	15.00	AVRG	
Heptachlor Epoxide	489070.00	455905.00	0.01	-6.78	15.00	AVRG	
Methoxychlor	193873.00	166928.00	0.01	-13.90	15.00	AVRG	
Toxaphene	16063.750		0.01	-100.00	15.00	AVRG	<-
(2)	14262.750		0.01	-100.00	15.00	AVRG	<-
(3)	20141.000		0.01	-100.00	15.00	AVRG	<-
(4)	16035.500		0.01	-100.00	15.00	AVRG	<-
(5)	10148.500		0.01	-100.00	15.00	AVRG	<-
Technical Chlordane	28238.750		0.01	-100.00	15.00	AVRG	<-
(2)	20038.750		0.01	-100.00	15.00	AVRG	<-
(3)	45171.250		0.01	-100.00	15.00	AVRG	<-
(4)	69800.000		0.01	-100.00	15.00	AVRG	<-
(5)	17728.750		0.01	-100.00	15.00	AVRG	<-
Decachlorobiphenyl	362763.75	296382.50	0.01	-18.30	15.00	AVRG	<-
Tetrachloro-m-Xylene	306784.37	297565.31	0.01	-3.00	15.00	AVRG	

FORM 7B
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC83 Calibration Date: 01/24/06 Time: 1941

Lab File ID: 340IINDAMBF Init. Calib. Date(s): 01/10/06 01/12/06

Init. Calib. Times: 1616 0329

GC Column: CLPEST2 ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF0.0200 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
gamma-BHC (Lindane)	689670.00	652310.00	0.01	-5.42	15.00	AVRG	
Endrin	515266.25	472613.12	0.01	-8.28	15.00	AVRG	
Heptachlor	732145.00	667395.00	0.01	-8.84	15.00	AVRG	
Heptachlor Epoxide	660355.00	592060.00	0.01	-10.34	15.00	AVRG	
Methoxychlor	241339.00	206211.25	0.01	-14.56	15.00	AVRG	
Toxaphene	18028.750		0.01	-100.00	15.00	AVRG	<-
(2)	23239.000		0.01	-100.00	15.00	AVRG	<-
(3)	25353.750		0.01	-100.00	15.00	AVRG	<-
(4)	27277.000		0.01	-100.00	15.00	AVRG	<-
(5)	10463.750		0.01	-100.00	15.00	AVRG	<-
Technical Chlordane	37720.000		0.01	-100.00	15.00	AVRG	<-
(2)	24328.750		0.01	-100.00	15.00	AVRG	<-
(3)	58726.250		0.01	-100.00	15.00	AVRG	<-
(4)	50830.000		0.01	-100.00	15.00	AVRG	<-
(5)	20925.000		0.01	-100.00	15.00	AVRG	<-
Decachlorobiphenyl	459870.00	372111.25	0.01	-19.08	15.00	AVRG	<-
Tetrachloro-m-Xylene	403926.25	397997.19	0.01	-1.47	15.00	AVRG	

FORM 7B
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC82 Calibration Date: 01/25/06 Time: 0022

Lab File ID: 351IINDAMBH Init. Calib. Date(s): 01/10/06 01/12/06

Init. Calib. Times: 1616 0329

GC Column: CLPEST ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF0.0200 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
gamma-BHC (Lindane)	491545.00	501765.00	0.01	2.08	15.00	AVRG	
Endrin	386241.25	375069.38	0.01	-2.89	15.00	AVRG	
Heptachlor	524870.00	527317.50	0.01	0.47	15.00	AVRG	
Heptachlor Epoxide	489070.00	471970.00	0.01	-3.50	15.00	AVRG	
Methoxychlor	193873.00	185547.25	0.01	-4.29	15.00	AVRG	
Toxaphene	16063.750		0.01	-100.00	15.00	AVRG	<-
(2)	14262.750		0.01	-100.00	15.00	AVRG	<-
(3)	20141.000		0.01	-100.00	15.00	AVRG	<-
(4)	16035.500		0.01	-100.00	15.00	AVRG	<-
(5)	10148.500		0.01	-100.00	15.00	AVRG	<-
Technical Chlordane	28238.750		0.01	-100.00	15.00	AVRG	<-
(2)	20038.750		0.01	-100.00	15.00	AVRG	<-
(3)	45171.250		0.01	-100.00	15.00	AVRG	<-
(4)	69800.000		0.01	-100.00	15.00	AVRG	<-
(5)	17728.750		0.01	-100.00	15.00	AVRG	<-
Decachlorobiphenyl	362763.75	339655.62	0.01	-6.37	15.00	AVRG	
Tetrachloro-m-Xylene	306784.37	308055.62	0.01	0.41	15.00	AVRG	

FORM 7B
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: TRACEGC83 Calibration Date: 01/25/06 Time: 0022

Lab File ID: 351IINDAMBH Init. Calib. Date(s): 01/10/06 01/12/06

Init. Calib. Times: 1616 0329

GC Column: CLPEST2 ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF0.0200 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
gamma-BHC (Lindane)	689670.00	680172.50	0.01	-1.38	15.00	AVRG	
Endrin	515266.25	489175.00	0.01	-5.06	15.00	AVRG	
Heptachlor	732145.00	697062.50	0.01	-4.79	15.00	AVRG	
Heptachlor Epoxide	660355.00	614917.50	0.01	-6.88	15.00	AVRG	
Methoxychlor	241339.00	230371.25	0.01	-4.54	15.00	AVRG	
Toxaphene	18028.750		0.01	-100.00	15.00	AVRG	<-
(2)	23239.000		0.01	-100.00	15.00	AVRG	<-
(3)	25353.750		0.01	-100.00	15.00	AVRG	<-
(4)	27277.000		0.01	-100.00	15.00	AVRG	<-
(5)	10463.750		0.01	-100.00	15.00	AVRG	<-
Technical Chlordane	37720.000		0.01	-100.00	15.00	AVRG	<-
(2)	24328.750		0.01	-100.00	15.00	AVRG	<-
(3)	58726.250		0.01	-100.00	15.00	AVRG	<-
(4)	50830.000		0.01	-100.00	15.00	AVRG	<-
(5)	20925.000		0.01	-100.00	15.00	AVRG	<-
Decachlorobiphenyl	459870.00	430545.31	0.01	-6.38	15.00	AVRG	
Tetrachloro-m-Xylene	403926.25	413768.12	0.01	2.44	15.00	AVRG	

7F

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column: CLPEST ID: 0.53 (mm) Init. Calib. Date(s): 01/10/06 01/10/06

EPA Sample No.(PIBLK): _____ Date Analyzed :_____

Lab Sample ID (PIBLK): _____ Time Analyzed :_____

EPA Sample No.(PEM): PEM9P Date Analyzed :01/10/06

Lab Sample ID (PEM): PEM9P Time Analyzed :1551

PEM COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	AREA
4,4'-DDD	11.79	11.72	11.86	19
4,4'-DDE	10.27	10.20	10.34	61
4,4'-DDT	12.49	12.41	12.55	11147
Endrin	11.34	11.27	11.41	7991
Endrin Aldehyde	13.06	12.96	13.10	27
Endrin Ketone	14.77	14.70	14.84	40

4,4'-DDT % breakdown (1): 0.712 Endrin % breakdown (1): 0.831

QC LIMITS:

4,4'-DDT breakdown must be less than or equal to 15.0%

Endrin breakdown must be less than or equal to 15.0%

FORM VII PEST-1

7F

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column: CLPEST2 ID: 0.53 (mm) Init. Calib. Date(s): 01/10/06 01/10/06

EPA Sample No.(PIBLK): _____ Date Analyzed :_____

Lab Sample ID (PIBLK): _____ Time Analyzed :_____

EPA Sample No.(PEM): PEM9P Date Analyzed :01/10/06

Lab Sample ID (PEM): PEM9P Time Analyzed :1551

PEM COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	AREA
4,4'-DDD	14.01	13.94	14.08	18
4,4'-DDE	12.49	12.42	12.56	51
4,4'-DDT	14.80	14.73	14.88	14497
Endrin	13.45	13.38	13.53	10594
Endrin Aldehyde				
Endrin Ketone	16.98	16.92	17.06	52

4,4'-DDT % breakdown (1): 0.474 Endrin % breakdown (1): 0.488

QC LIMITS:

4,4'-DDT breakdown must be less than or equal to 15.0%

Endrin breakdown must be less than or equal to 15.0%

FORM VII PEST-1

7F

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column: CLPEST ID: 0.53 (mm) Init. Calib. Date(s): 01/10/06 01/12/06

EPA Sample No.(PIBLK): PIBLKBG Date Analyzed :01/24/06

Lab Sample ID (PIBLK): PIBLKBG Time Analyzed :2331

EPA Sample No.(PEM): PEMBH Date Analyzed :01/25/06

Lab Sample ID (PEM): PEMBH Time Analyzed :0113

PEM COMPOUND	RT	RT WINDOW FROM	TO	AREA
4,4'-DDD	11.83	11.72	11.86	228
4,4'-DDE	10.31	10.20	10.34	109
4,4'-DDT	12.53	12.41	12.55	11155
Endrin	11.39	11.27	11.41	8359
Endrin Aldehyde	13.09	12.96	13.10	78
Endrin Ketone	14.81	14.70	14.84	191

4,4'-DDT % breakdown (1): 2.93 Endrin % breakdown (1): 3.12

QC LIMITS:

4,4'-DDT breakdown must be less than or equal to 15.0%

Endrin breakdown must be less than or equal to 15.0%

FORM VII PEST-1

7F

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column: CLPEST2 ID: 0.53 (mm) Init. Calib. Date(s): 01/10/06 01/12/06

EPA Sample No.(PIBLK): PIBLKBH Date Analyzed :01/24/06

Lab Sample ID (PIBLK): PIBLKBH Time Analyzed :2331

EPA Sample No.(PEM): PEMBH Date Analyzed :01/25/06

Lab Sample ID (PEM): PEMBH Time Analyzed :0113

PEM COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	AREA
4,4'-DDD	14.05	13.94	14.08	289
4,4'-DDE	12.53	12.42	12.56	83
4,4'-DDT	14.85	14.73	14.88	13641
Endrin	13.50	13.38	13.53	11101
Endrin Aldehyde	15.01	14.89	15.03	80
Endrin Ketone	17.02	16.92	17.06	161

4,4'-DDT % breakdown (1): 2.65 Endrin % breakdown (1): 2.12

QC LIMITS:

4,4'-DDT breakdown must be less than or equal to 15.0%

Endrin breakdown must be less than or equal to 15.0%

FORM VII PEST-1

c. Analytical Sequence (Form VIII)

For all GC columns, all instruments, in chronological order by GC column and instrument.

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column: CLPEST ID: 0.53 (mm) Init. Calib. Date(s): 01/10/06 01/11/06

Instrument ID: TRACEGC82

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
DCB: 17.59 TCX: 3.85

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	DCB RT #	TCX RT #
01	PEM9P	PEM9P	01/10/06	1551	17.59	3.85
02	INDA19P	INDA19P	01/10/06	1616	17.59	3.85
03	INDB19P	INDB19P	01/10/06	1642	17.59	3.85
04	INDA29P	INDA29P	01/10/06	1708	17.60	3.85
05	INDB29P	INDB29P	01/10/06	1733	17.59	3.85
06	INDA39P	INDA39P	01/10/06	1759	17.60	3.85
07	INDB39P	INDB39P	01/10/06	1824	17.59	3.85
08	INDA49P	INDA49P	01/10/06	1850	17.59	3.86
09	INDB49P	INDB49P	01/10/06	1915	17.60	3.85
10	INDA59P	INDA59P	01/10/06	1941	17.59	3.85
11	INDB59P	INDB59P	01/10/06	2007	17.59	3.86
12	CLPAMP	CLPAMP	01/10/06	2032	17.59	3.85
13	CLPBM9P	CLPBM9P	01/10/06	2058	17.60	3.86
14	TOXAPH49P	TOXAPH49P	01/11/06	2248	17.62	3.87
15	CHLORO49P	CHLORO49P	01/11/06	2313	17.62	3.88
16	PIBLKBE	PIBLKBE	01/24/06	1850	17.64	3.89
17	INDAMBF	INDAMBF	01/24/06	1941	17.64	3.90
18	INDBMBF	INDBMBF	01/24/06	2006	17.64	3.90
19	PBLKGN	91895	01/24/06	2032	17.64	3.89
20	PGNLCS	91896	01/24/06	2058	17.64	3.90
21	TCLPBLKGW	91765	01/24/06	2123	17.64	3.90
22	WAR-IDW-4	892501	01/24/06	2214	17.64	3.89
23	PIBLKBG	PIBLKBG	01/24/06	2331	17.64	3.89
24	INDAMBH	INDAMBH	01/25/06	0022	17.64	3.89
25	INDBMBH	INDBMBH	01/25/06	0048	17.64	3.89
26	PEMBH	PEMBH	01/25/06	0113	17.64	3.89
27						
28						
29						
30						
31						
32						

QC LIMITS

DCB = Decachlorobiphenyl (+/- 0.07 MINUTES)
TCX = Tetrachloro-m-Xylene (+/- 0.07 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII PEST

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column: CLPEST2 ID: 0.53 (mm) Init. Calib. Date(s): 01/10/06 01/11/06

Instrument ID: TRACEGC83

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
DCB: 20.42 TCX: 4.86

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	DCB RT #	TCX RT #
01	PEM9P	PEM9P	01/10/06	1551	20.42	4.86
02	INDA19P	INDA19P	01/10/06	1616	20.42	4.86
03	INDB19P	INDB19P	01/10/06	1642	20.42	4.86
04	INDA29P	INDA29P	01/10/06	1708	20.42	4.86
05	INDB29P	INDB29P	01/10/06	1733	20.42	4.86
06	INDA39P	INDA39P	01/10/06	1759	20.42	4.87
07	INDB39P	INDB39P	01/10/06	1824	20.42	4.86
08	INDA49P	INDA49P	01/10/06	1850	20.42	4.87
09	INDB49P	INDB49P	01/10/06	1915	20.42	4.86
10	INDA59P	INDA59P	01/10/06	1941	20.42	4.86
11	INDB59P	INDB59P	01/10/06	2007	20.42	4.87
12	CLPAMP	CLPAMP	01/10/06	2032	20.42	4.86
13	CLPBM9P	CLPBM9P	01/10/06	2058	20.43	4.86
14	TOXAPH49P	TOXAPH49P	01/11/06	2248	20.45	4.88
15	CHLORO49P	CHLORO49P	01/11/06	2313	20.44	4.89
16	PIBLKBF	PIBLKBF	01/24/06	1850	20.47	4.90
17	INDAMBF	INDAMBF	01/24/06	1941	20.47	4.91
18	INDBMBF	INDBMBF	01/24/06	2006	20.47	4.91
19	PBLKGN	91895	01/24/06	2032	20.47	4.91
20	PGNLCS	91896	01/24/06	2058	20.47	4.91
21	TCLPBLKGW	91765	01/24/06	2123	20.46	4.91
22	WAR-IDW-4	892501	01/24/06	2214	20.46	4.91
23	PIBLKBH	PIBLKBH	01/24/06	2331	20.46	4.91
24	INDAMBH	INDAMBH	01/25/06	0022	20.47	4.91
25	INDBMBH	INDBMBH	01/25/06	0048	20.46	4.91
26	PEMBH	PEMBH	01/25/06	0113	20.46	4.91
27						
28						
29						
30						
31						
32						

QC LIMITS

DCB = Decachlorobiphenyl (+/- 0.07 MINUTES)
TCX = Tetrachloro-m-Xylene (+/- 0.07 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII PEST

d. Identification Summary for Single Component Analytes (Form X)

For all samples with positively identified single component analytes, in order by increasing Client Sample ID number.

10A

PESTICIDE IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.

PGNLCS

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Lab Sample ID: 91896 Date(s) Analyzed: 01/24/06 01/24/06

Instrument ID (1): TRACEGC82 Instrument ID (2): TRACEGC83

GC Column(1): CLPEST ID: 0.53(mm) GC Column(2): CLPEST2 ID: 0.53(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	RPD
gamma-BHC (Lindane)	1	5.88	5.76	5.90	1.4	
	2	7.48	7.36	7.50	1.4	0.0
Heptachlor	1	7.00	6.88	7.02	1.4	
	2	8.62	8.50	8.64	1.3	7.4
Heptachlor Epoxide	1	9.28	9.16	9.30	1.2	
	2	11.03	10.90	11.04	1.2	0.0
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

FORM X PEST-1

e. Identification Summary for Multicomponent Analytes (Form X) - if applicable

For all samples with positively identified multicomponent analytes, in order by increasing Client Sample ID number.

10B

PESTICIDE IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

EPA SAMPLE NO.

PGNLCS

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Lab Sample ID: 91896 Date(s) Analyzed: 01/24/06 01/24/06

Instrument ID (1): TRACEGC82 Instrument ID (2): TRACEGC83

GC Column(1): CLPEST ID: 0.53(mm) GC Column(2): CLPEST2 ID: 0.53(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	12.14	12.05	12.19	36		
Toxaphene	2	12.77	12.68	12.82	27		
	3	13.34	13.24	13.38	50		
COLUMN 1	4	13.86	13.77	13.91	50		
	5	14.76	14.66	14.80	70	47	
	1	13.41	13.31	13.45	43		
	2	14.33	14.23	14.38	30		
	3	15.03	14.93	15.07	29		
COLUMN 2	4	16.31	16.21	16.35	49		
	5	17.32	17.23	17.36	84	47	0.0
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

FORM X PEST-2

f. Chromatograms and Data System Printouts

For all methods, standards packages shall include the following:

- Performance evaluation mixtures (8081 only)
- Initial Calibration Standards
- Second Source Initial Calibration Verifications (if required by client)
- Continuing Calibration Verification Standards
- The quantitation report must include the Client Sample ID number.
- The chromatograms shall include the following: Client Sample ID number for the standard, labeled standard peaks, volume injected, for each standard, date and time of injection GC column identifier, and GC instrument identifier.

Data File: /chem/tracegc82.i/i060110.b/003iPEM9P.d

Date : 10-JAN-2006 15:51

Client ID: PEM9P

Instrument: tracegc82.i

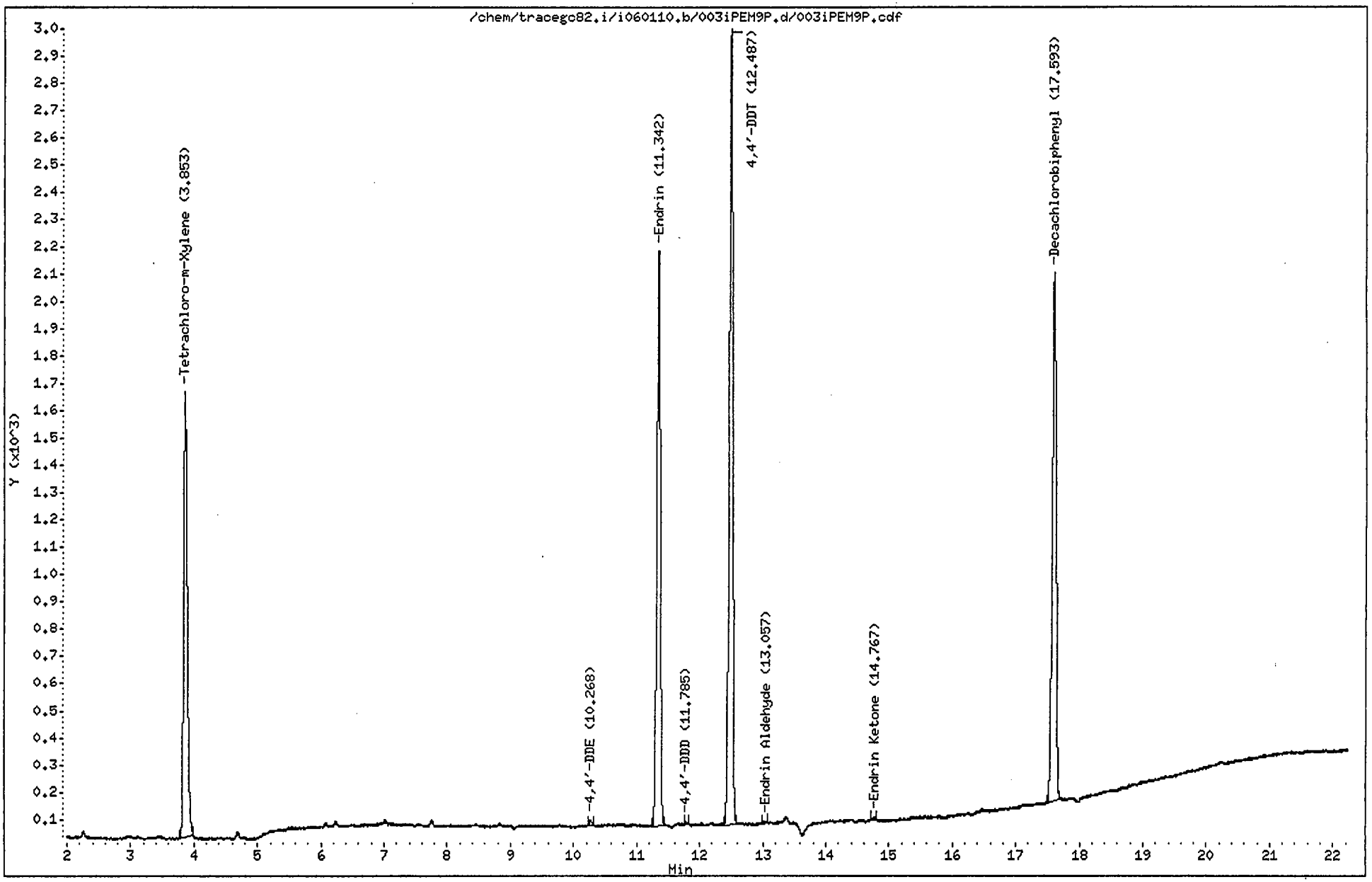
Sample Info: PEM9P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: olpest

Column diameter: 0.53



CompuChem

Lab Smp Id : PEM9P Client Smp Id : PEM9P
Sample Type : SAMPLE Sublist : PEM
Inj Date : 10-JAN-2006 15:51 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Ws) * (100/(100-M))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Ws Sample Weight: 30.0(g) M Moisture: 0(%)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/Kg)	ADJUSTED PQL (ug/Kg)	% REC	RECOVERY LIMITS	FLAGS
0.17			714								
0.90			20514								
3.85	3.78	3.92	6437	306784	Tetrachloro-m-Xylene	0.020982	3.496917		52.5	43 - 135	
10.27	10.20	10.34	61	440000	4,4'-DDE	0.000140	0.023258	0.830000			JM 2
11.34	11.27	11.41	7991	386241	Endrin	0.020690	3.448275	1.670000			
11.78	11.72	11.86	19	279151	4,4'-DDD	0.000069	0.011583	1.670000			JM 2
12.49	12.41	12.55	11147	315540	4,4'-DDT	0.035327	5.887869	2.500000			
13.06	12.96	13.10	28	321174	Endrin Aldehyde	0.000086	0.014271	1.670000			JM 2
14.77	14.70	14.84	41	374160	Endrin Ketone	0.000109	0.018174	4.170000			JM 2
17.59	17.53	17.67	8117	362764	Decachlorobiphenyl	0.022375	3.729194		55.9	43 - 144	

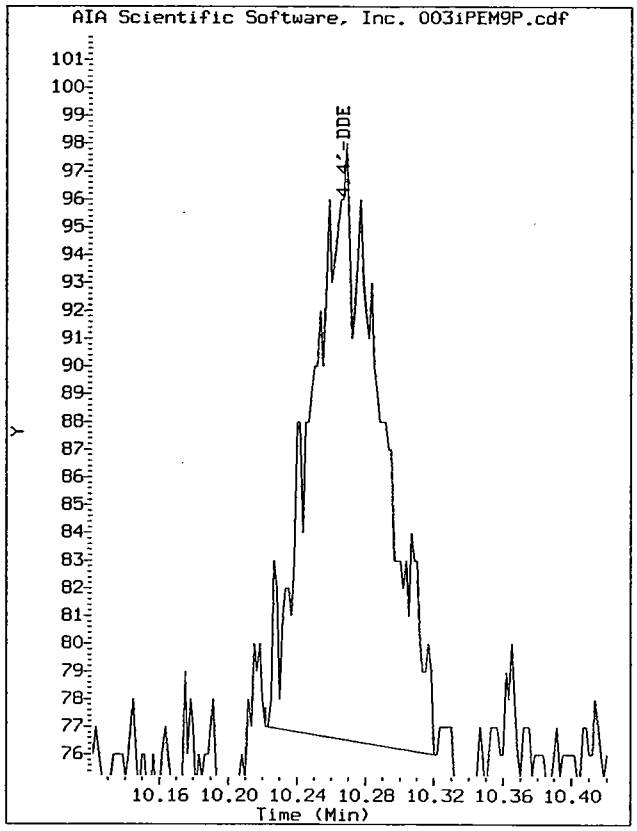
% Endrin Breakdown $\frac{28+41}{28+41+7991} * 100 = \frac{69}{8060} * 100 = 0.86\%$

% DDT Breakdown $\frac{19+61}{19+61+11147} * 100 = \frac{80}{11227} * 100 = 0.71\%$

1/10/06

TAJ 1/11/06

Manually Integrated Peaks



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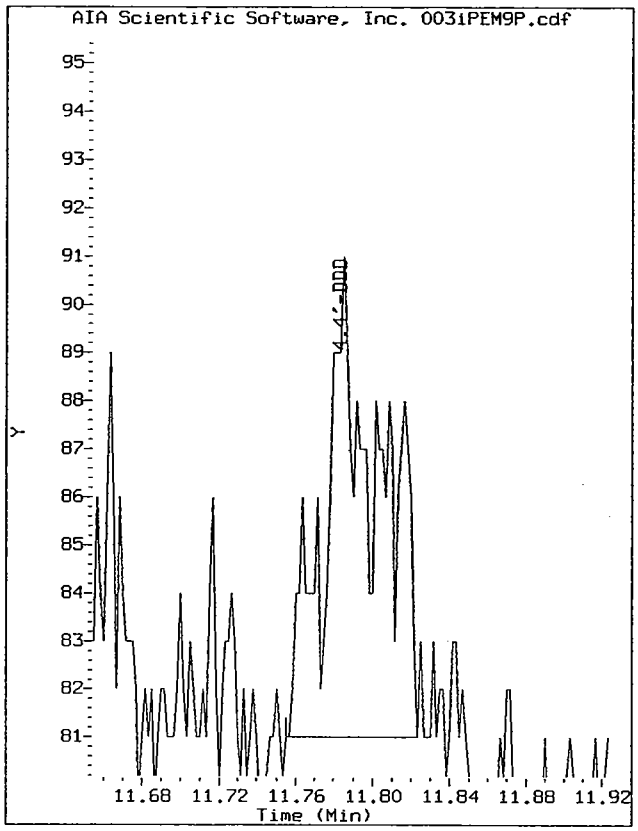
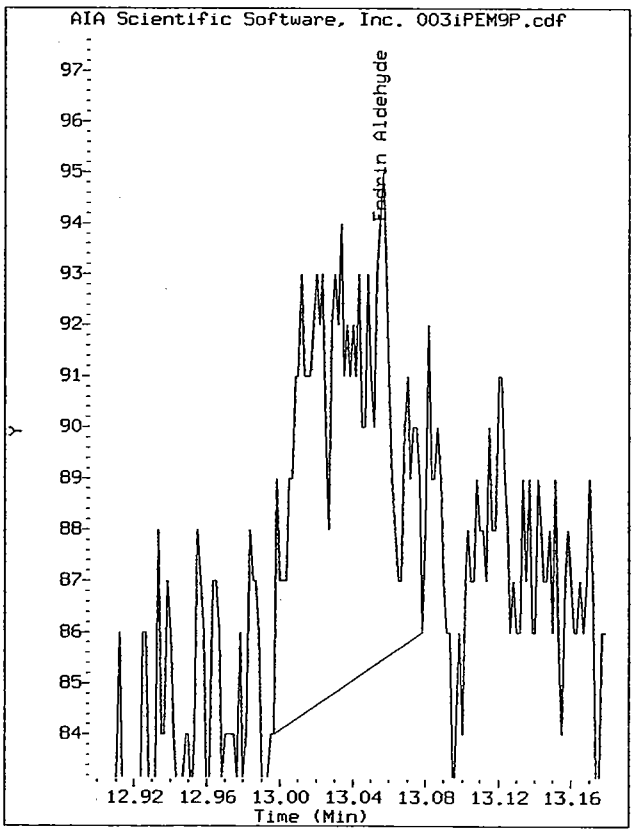
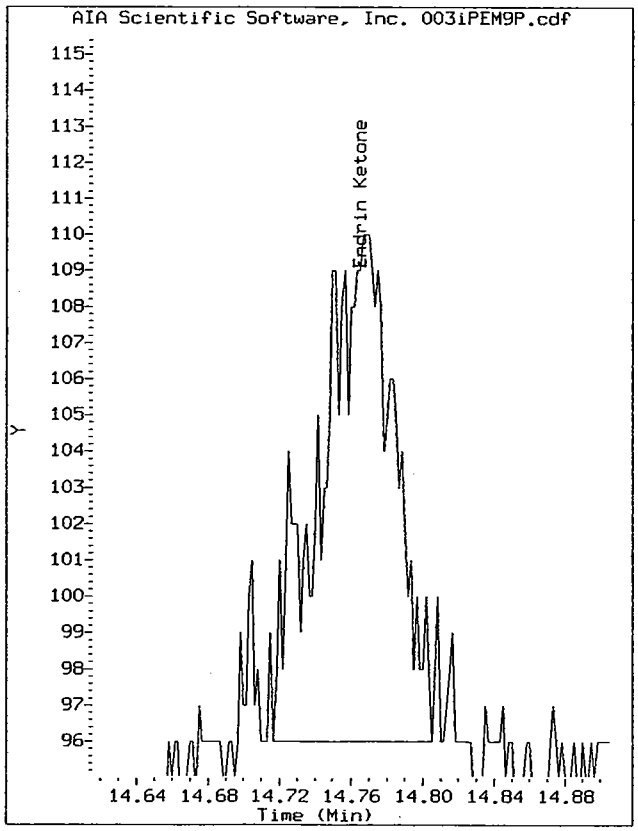


Start: 11.76 Stop: 11.82



Start: 13.00 Stop: 13.08



Start: 14.72 Stop: 14.80

Data File: /chem/tracegc82.i/i060110.b/004iINDA19P.d

Date : 10-JAN-2006 16:16

Client ID: INDA19P

Sample Info: INDA19P

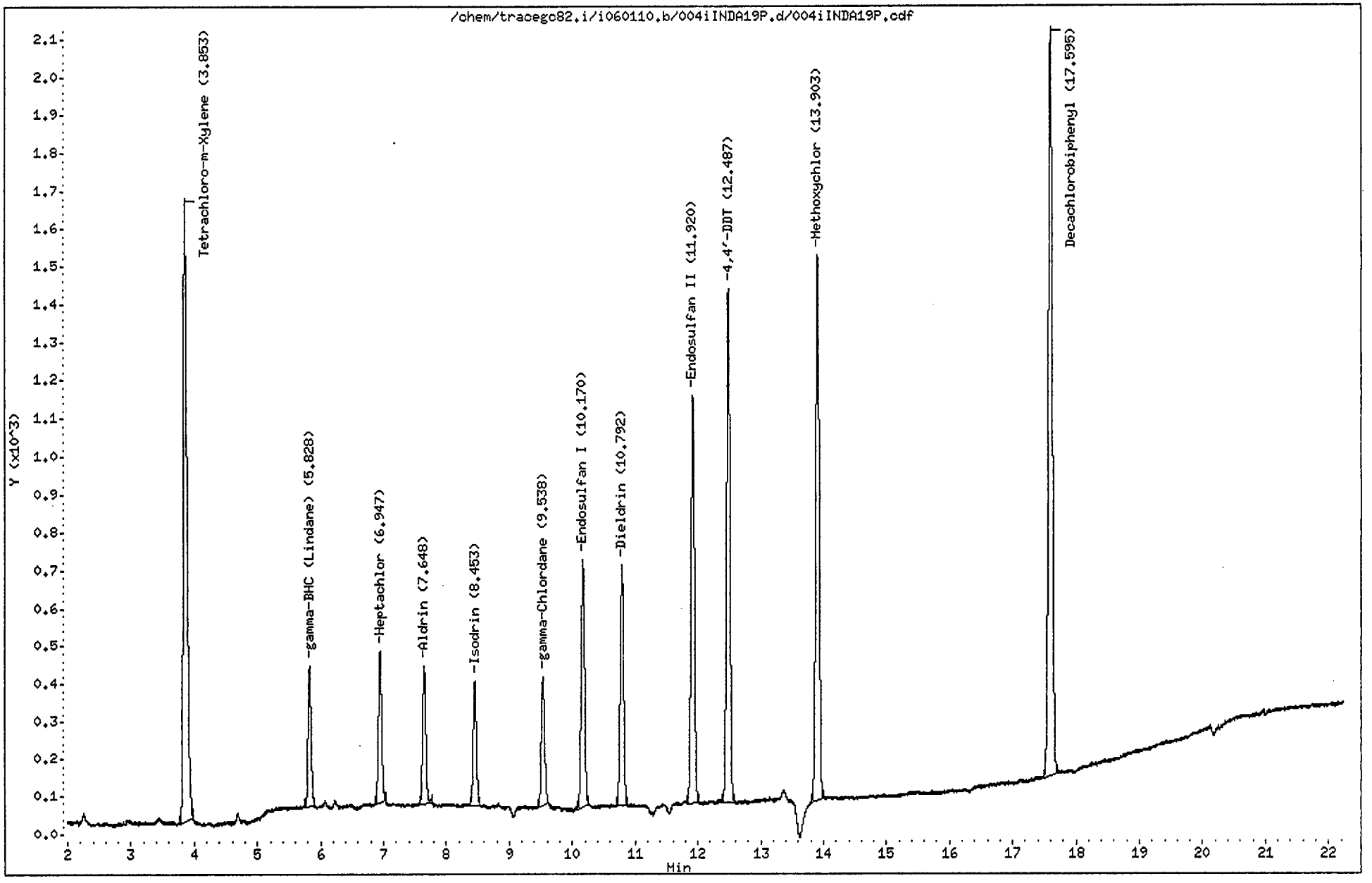
Volume Injected (uL): 1.0

Column phase: olpest

Instrument: tracegc82.i

Operator: 2512

Column diameter: 0.53



CompuChem

Lab Smp Id : INDA19P Client Smp Id : INDA19P
Sample Type : INITIAL CAL: Level 1 Sublist : INDA
Inj Date : 10-JAN-2006 16:16 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.16			644					
0.90			3818					
3.85	3.78	3.92	6614	306784	Tetrachloro-m-Xylene	0.020000	330700	
5.83	5.76	5.90	1272	491545	gamma-BHC (Lindane)	0.002500	508400	
6.95	6.88	7.02	1440	524870	Heptachlor	0.002500	576000	
7.65	7.58	7.72	1337	482395	Aldrin	0.002500	534400	
8.45	8.39	8.53	1186	430775	Isodrin	0.002500	474400	
9.54	9.47	9.61	1246	465605	gamma-Chlordane	0.002500	498000	
10.17	10.10	10.24	2405	428652	Endosulfan I	0.005000	481000	
10.79	10.72	10.86	2345	426262	Dieldrin	0.005000	468800	
11.92	11.85	11.99	4036	362004	Endosulfan II	0.010000	403500	
12.49	12.42	12.56	5117	315540	4,4'-DDT	0.015000	341133	
13.90	13.83	13.97	5592	193873	Methoxychlor	0.025000	223640	
17.60	17.52	17.66	8251	362764	Decachlorobiphenyl	0.020000	412500	

1/10/06

Data File: /chem/tracegc82.i/i060110.b/005iINDB19P.d

Date : 10-JAN-2006 16:42

Client ID: INDB19P

Instrument: tracegc82.i

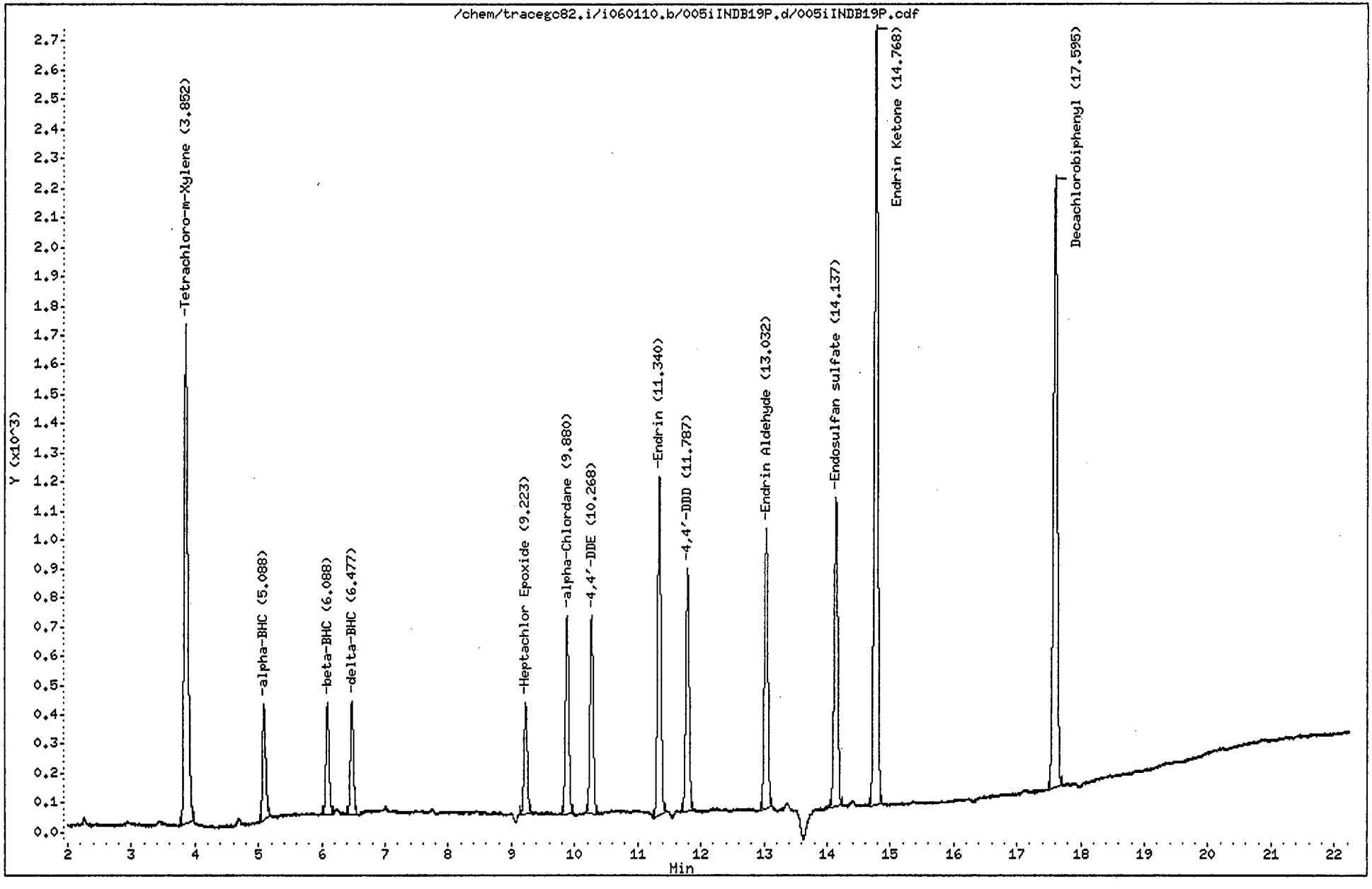
Sample Info: INDB19P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDB19P Client Smp Id : INDB19P
Sample Type : INITIAL CAL: Level 1 Sublist : INDB
Inj Date : 10-JAN-2006 16:42 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.16			561					
0.90			2858					
3.85	3.78	3.92	6683	306784	Tetrachloro-m-Xylene	0.020000	330700	
5.09	5.02	5.16	1358	531661	alpha-BHC	0.002500	542800	
6.09	6.02	6.16	1288	232364	beta-BHC	0.005000	257600	
6.48	6.41	6.55	1297	495962	delta-BHC	0.002500	518400	
9.22	9.16	9.30	1354	489072	Heptachlor Epoxide	0.002500	541600	
9.88	9.81	9.95	2445	444440	alpha-Chlordane	0.005000	488800	
10.27	10.20	10.34	2472	440000	4,4'-DDE	0.005000	494200	
11.34	11.27	11.41	4270	386241	Endrin	0.010000	426900	
11.79	11.72	11.86	3033	279151	4,4'-DDD	0.010000	303200	
13.03	12.96	13.10	3644	321174	Endrin Aldehyde	0.010000	364300	
14.14	14.07	14.21	4067	353871	Endosulfan sulfate	0.010000	406700	
14.77	14.70	14.84	10210	374160	Endrin Ketone	0.025000	408360	
17.60	17.52	17.66	8775	362764	Decachlorobiphenyl	0.020000	412500	

1/10/06

Data File: /chem/tracegc82.i/i060110.b/006iINDA29P.d

Date : 10-JAN-2006 17:08

Client ID: INDA29P

Instrument: tracegc82.i

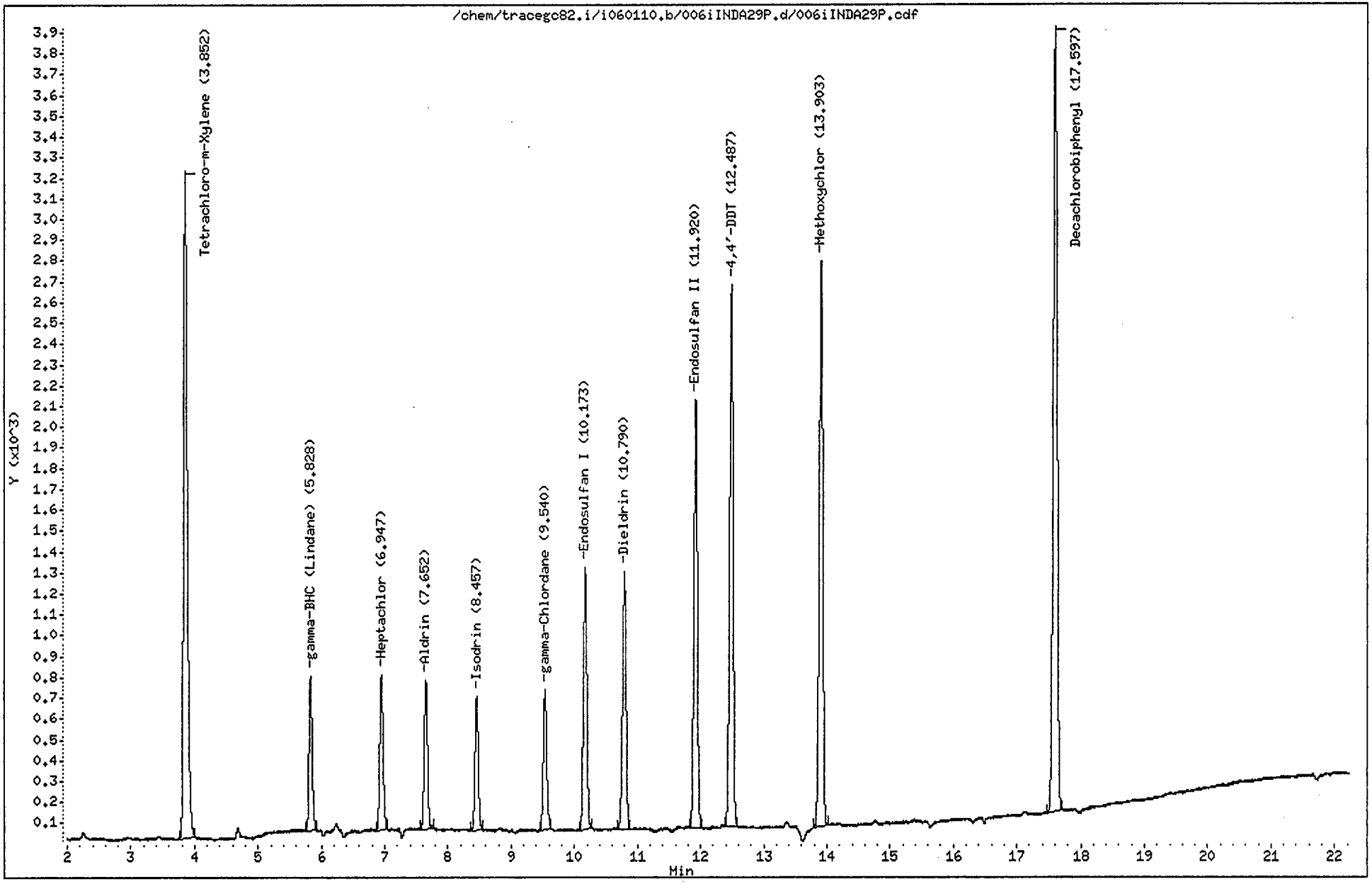
Sample Info: INDA29P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: olpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDA29P Client Smp Id : INDA29P
Sample Type : INITIAL CAL: Level 2 Sublist : INDA
Inj Date : 10-JAN-2006 17:08 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.16			626					
0.90			4341					
3.85	3.78	3.92	12869	306784	Tetrachloro-m-Xylene	0.040000	321725	
5.83	5.76	5.90	2537	491545	gamma-BHC (Lindane)	0.005000	507400	
6.95	6.88	7.02	2698	524870	Heptachlor	0.005000	539600	
7.65	7.58	7.72	2590	482395	Aldrin	0.005000	517800	
8.46	8.39	8.53	2282	430775	Isodrin	0.005000	456400	
9.54	9.47	9.61	2468	465605	gamma-Chlordane	0.005000	493400	
10.17	10.10	10.24	4605	428652	Endosulfan I	0.010000	460500	
10.79	10.72	10.86	4640	426262	Dieldrin	0.010000	463900	
11.92	11.85	11.99	7724	362004	Endosulfan II	0.020000	386200	
12.49	12.42	12.56	9894	315540	4,4'-DDT	0.030000	329800	
13.90	13.83	13.97	10636	193873	Methoxychlor	0.050000	212700	
17.60	17.52	17.66	16000	362764	Decachlorobiphenyl	0.040000	400000	

1/10/06

Data File: /chem/tracegc82.i/i060110.b/007iINDB29P.d

Date : 10-JAN-2006 17:33

Client ID: INDB29P

Instrument: tracegc82.i

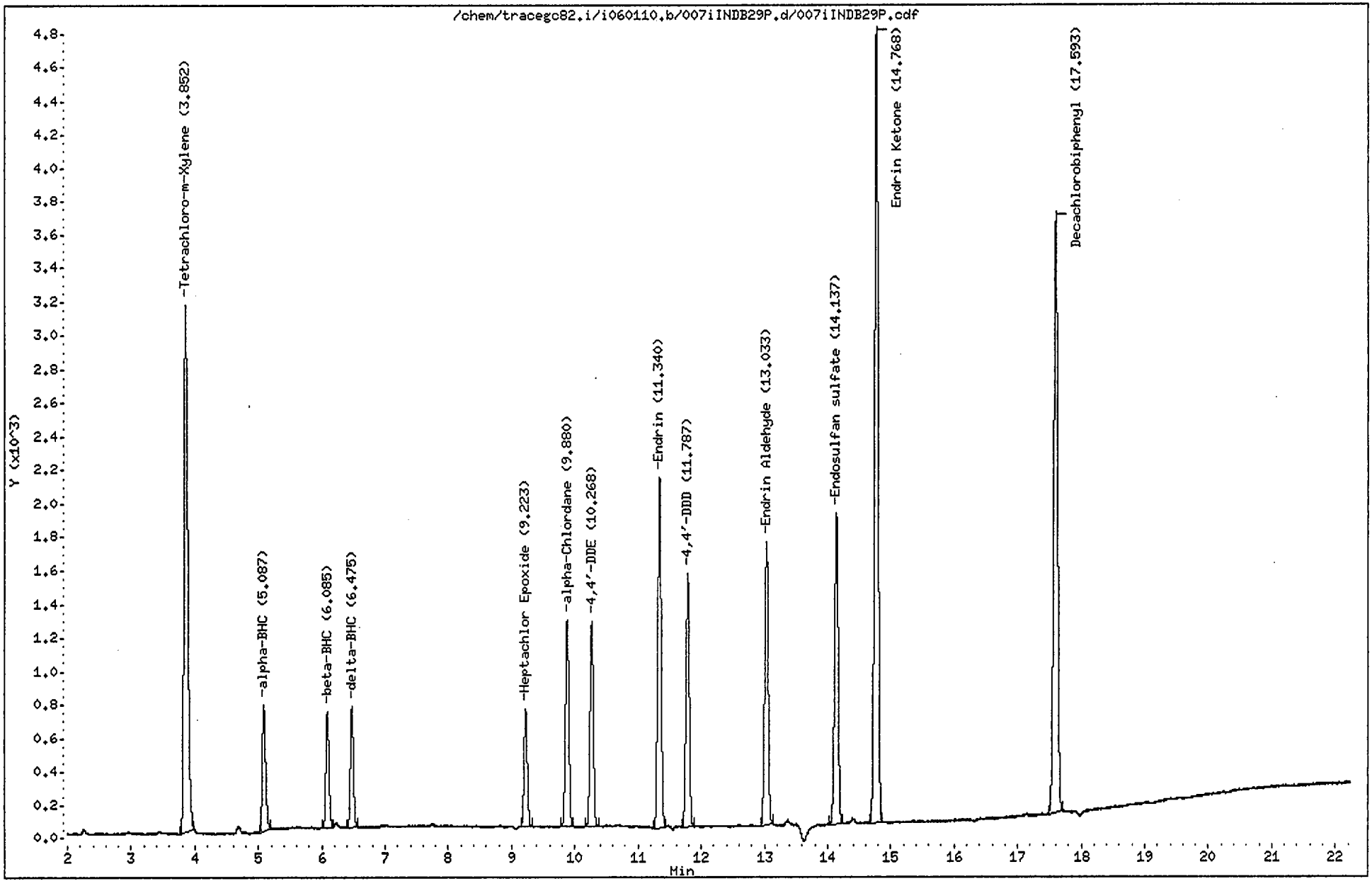
Sample Info: INDB29P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDB29P Client Smp Id : INDB29P
Sample Type : INITIAL CAL: Level 2 Sublist : INDB
Inj Date : 10-JAN-2006 17:33 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.90			7369					
3.85	3.78	3.92	12735	306784	Tetrachloro-m-Xylene	0.040000	321725	
5.09	5.02	5.16	2643	531661	alpha-BHC	0.005000	528400	
6.08	6.02	6.16	2371	232364	beta-BHC	0.010000	237100	
6.48	6.41	6.55	2431	495962	delta-BHC	0.005000	486000	
9.22	9.16	9.30	2517	489072	Heptachlor Epoxide	0.005000	503200	
9.88	9.81	9.95	4572	444440	alpha-Chlordane	0.010000	457100	
10.27	10.20	10.34	4507	440000	4,4'-DDE	0.010000	450700	
11.34	11.27	11.41	7843	386241	Endrin	0.020000	392150	
11.79	11.72	11.86	5549	279151	4,4'-DDD	0.020000	277450	
13.03	12.96	13.10	6464	321174	Endrin Aldehyde	0.020000	323150	
14.14	14.07	14.21	7229	353871	Endosulfan sulfate	0.020000	361400	
14.77	14.70	14.84	18281	374160	Endrin Ketone	0.050000	365620	
17.59	17.52	17.66	15143	362764	Decachlorobiphenyl	0.040000	400000	

1/10/06

Data File: /chem/tracegc82.i/i060110.b/008iINDA39P.d

Date : 10-JAN-2006 17:59

Client ID: INDA39P

Instrument: tracegc82.i

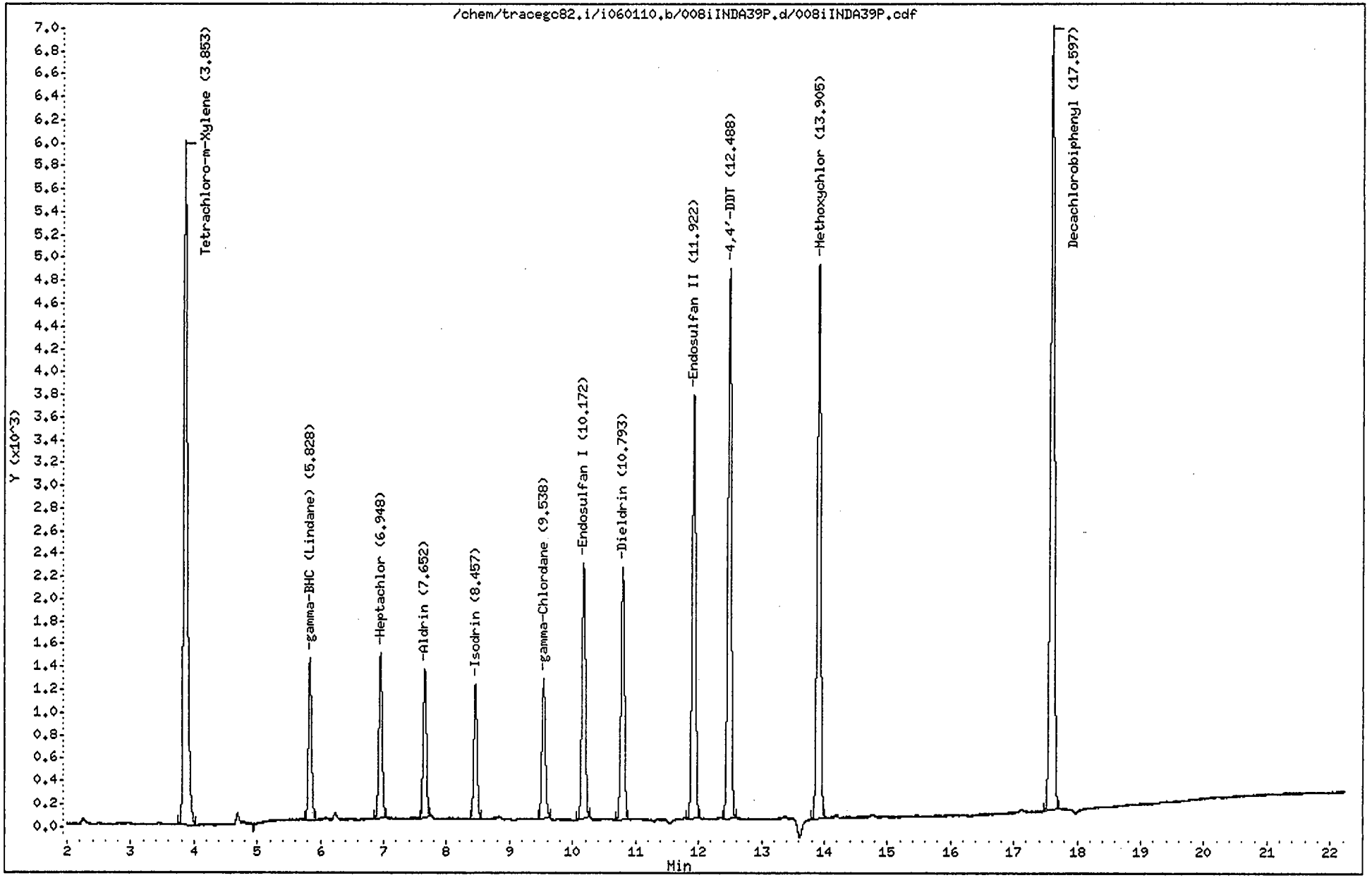
Sample Info: INDA39P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDA39P Client Smp Id : INDA39P
Sample Type : INITIAL CAL: Level 3 Sublist : INDA
Inj Date : 10-JAN-2006 17:59 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.17			616					
0.90			6690					
3.85	3.78	3.92	23977	306784	Tetrachloro-m-Xylene	0.080000	299712	
5.83	5.76	5.90	4813	491545	gamma-BHC (Lindane)	0.010000	481200	
6.95	6.88	7.02	5232	524870	Heptachlor	0.010000	523200	
7.65	7.58	7.72	4654	482395	Aldrin	0.010000	465400	
8.46	8.39	8.53	4261	430775	Isodrin	0.010000	426000	
9.54	9.47	9.61	4623	465605	gamma-Chlordane	0.010000	462300	
10.17	10.10	10.24	8391	428652	Endosulfan I	0.020000	419550	
10.79	10.72	10.86	8321	426262	Dieldrin	0.020000	416050	
11.92	11.85	11.99	14146	362004	Endosulfan II	0.040000	353650	
12.49	12.42	12.56	18346	315540	4,4'-DDT	0.060000	305750	
13.90	13.83	13.97	19104	193873	Methoxychlor	0.100000	191030	
17.60	17.52	17.66	28718	362764	Decachlorobiphenyl	0.080000	358975	

1/10/06

Data File: /chem/tracegc82.i/i060110.b/009iINDB39P.d

Date : 10-JAN-2006 18:24

Client ID: INDB39P

Instrument: tracegc82.i

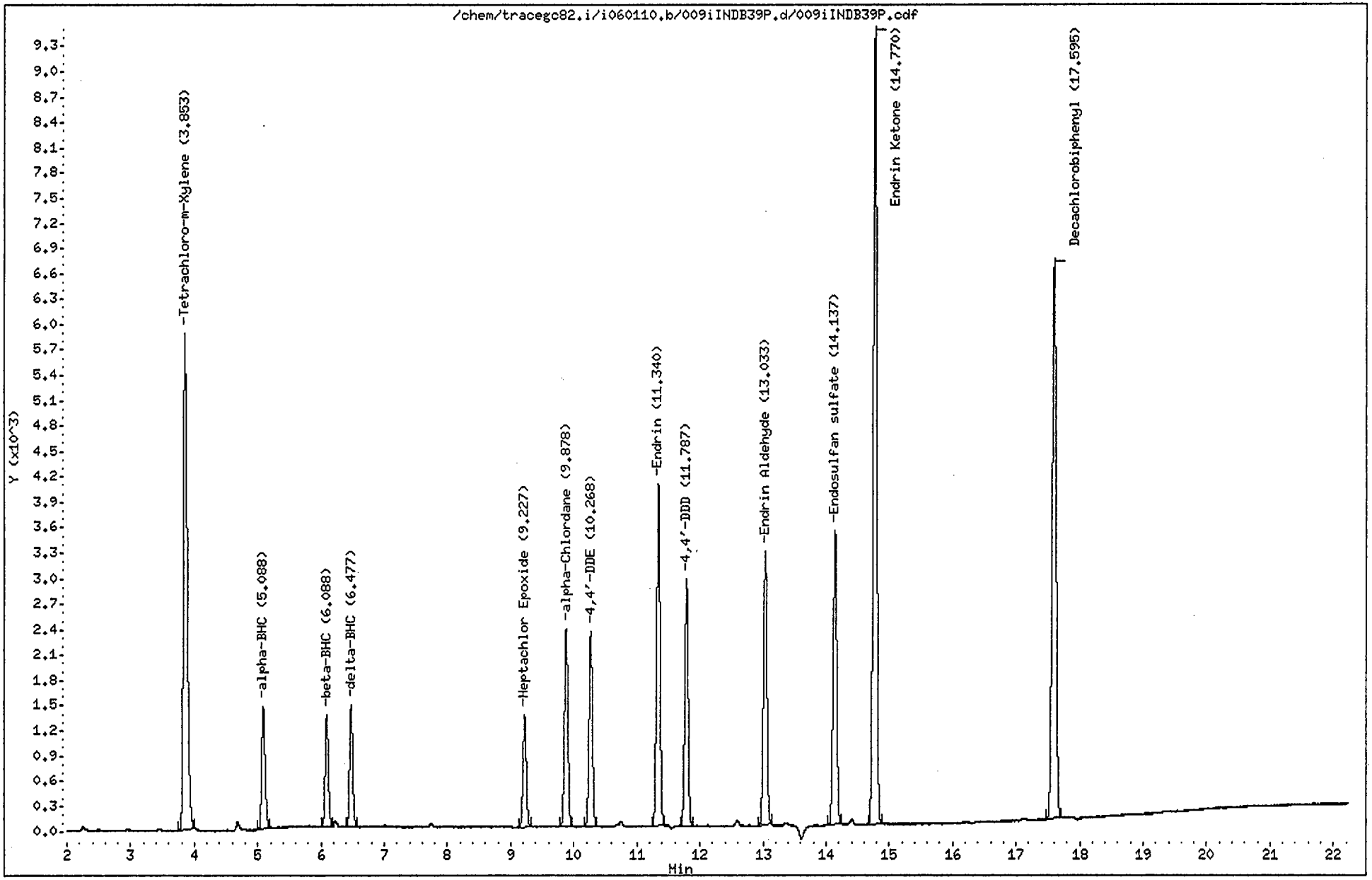
Sample Info: INDB39P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDB39P Client Smp Id : INDB39P
Sample Type : INITIAL CAL: Level 3 Sublist : INDB
Inj Date : 10-JAN-2006 18:24 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.90			4377					
3.85	3.78	3.92	24360	306784	Tetrachloro-m-Xylene	0.080000	299712	
5.09	5.02	5.16	5280	531661	alpha-BHC	0.010000	528000	
6.09	6.02	6.16	4566	232364	beta-BHC	0.020000	228300	
6.48	6.41	6.55	4859	495962	delta-BHC	0.010000	485900	
9.23	9.16	9.30	4876	489072	Heptachlor Epoxide	0.010000	487600	
9.88	9.81	9.95	8765	444440	alpha-Chlordane	0.020000	438200	
10.27	10.20	10.34	8587	440000	4,4'-DDE	0.020000	429350	
11.34	11.27	11.41	15042	386241	Endrin	0.040000	376025	
11.79	11.72	11.86	10742	279151	4,4'-DDD	0.040000	268550	
13.03	12.96	13.10	12379	321174	Endrin Aldehyde	0.040000	309475	
14.14	14.07	14.21	13605	353871	Endosulfan sulfate	0.040000	340100	
14.77	14.70	14.84	35879	374160	Endrin Ketone	0.100000	358790	
17.60	17.52	17.66	27929	362764	Decachlorobiphenyl	0.080000	358975	

1/10/06

Data File: /chem/tracegc82.i/i060110.b/010iINDA49P.d

Date : 10-JAN-2006 18:50

Client ID: INDA49P

Instrument: tracegc82.i

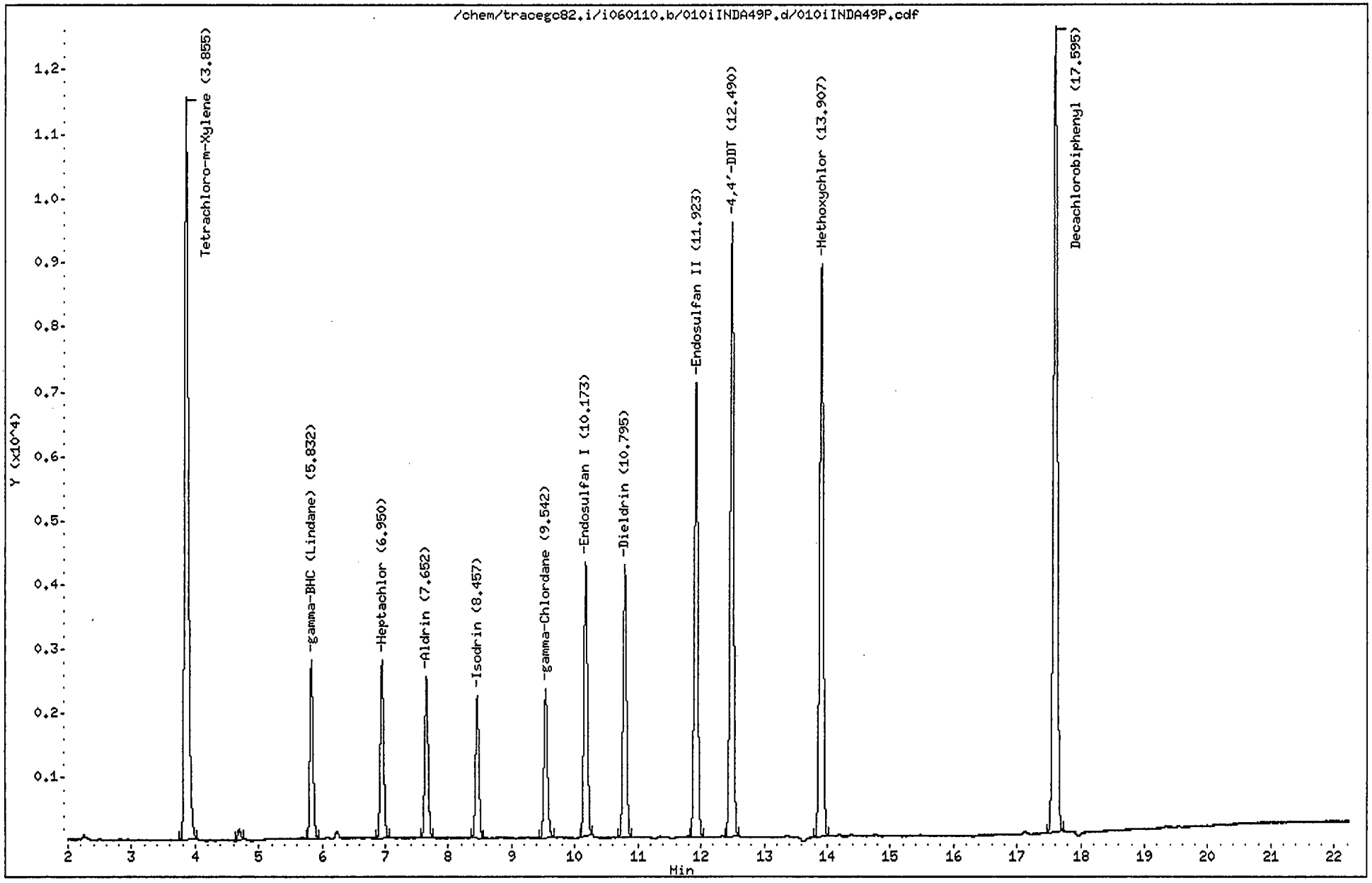
Sample Info: INDA49P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDA49P Client Smp Id : INDA49P
Sample Type : INITIAL CAL: Level 4 Sublist : INDA
Inj Date : 10-JAN-2006 18:50 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.92			1302832					
0.94			4376973					
3.86	3.78	3.92	46285	306784	Tetrachloro-m-Xylene	0.160000	289281	
4.69			509					
5.83	5.76	5.90	9557	491545	gamma-BHC (Lindane)	0.020000	477850	
6.95	6.88	7.02	10029	524870	Heptachlor	0.020000	501450	
7.65	7.58	7.72	9090	482395	Aldrin	0.020000	454450	
8.46	8.39	8.53	8146	430775	Isodrin	0.020000	407250	
9.54	9.47	9.61	8951	465605	gamma-Chlordane	0.020000	447500	
10.17	10.10	10.24	15907	428652	Endosulfan I	0.040000	397650	
10.80	10.72	10.86	15868	426262	Dieldrin	0.040000	396700	
11.92	11.85	11.99	26700	362004	Endosulfan II	0.080000	333738	
12.49	12.42	12.56	35641	315540	4,4'-DDT	0:120000	297000	
13.91	13.83	13.97	34959	193873	Methoxychlor	0.200000	174790	
17.60	17.52	17.66	52087	362764	Decachlorobiphenyl	0.160000	325544	

1/10/06

Data File: /chem/tracegc82.i/i060110.b/011iINDB49P.d

Date : 10-JAN-2006 19:15

Client ID: INDB49P

Instrument: tracegc82.i

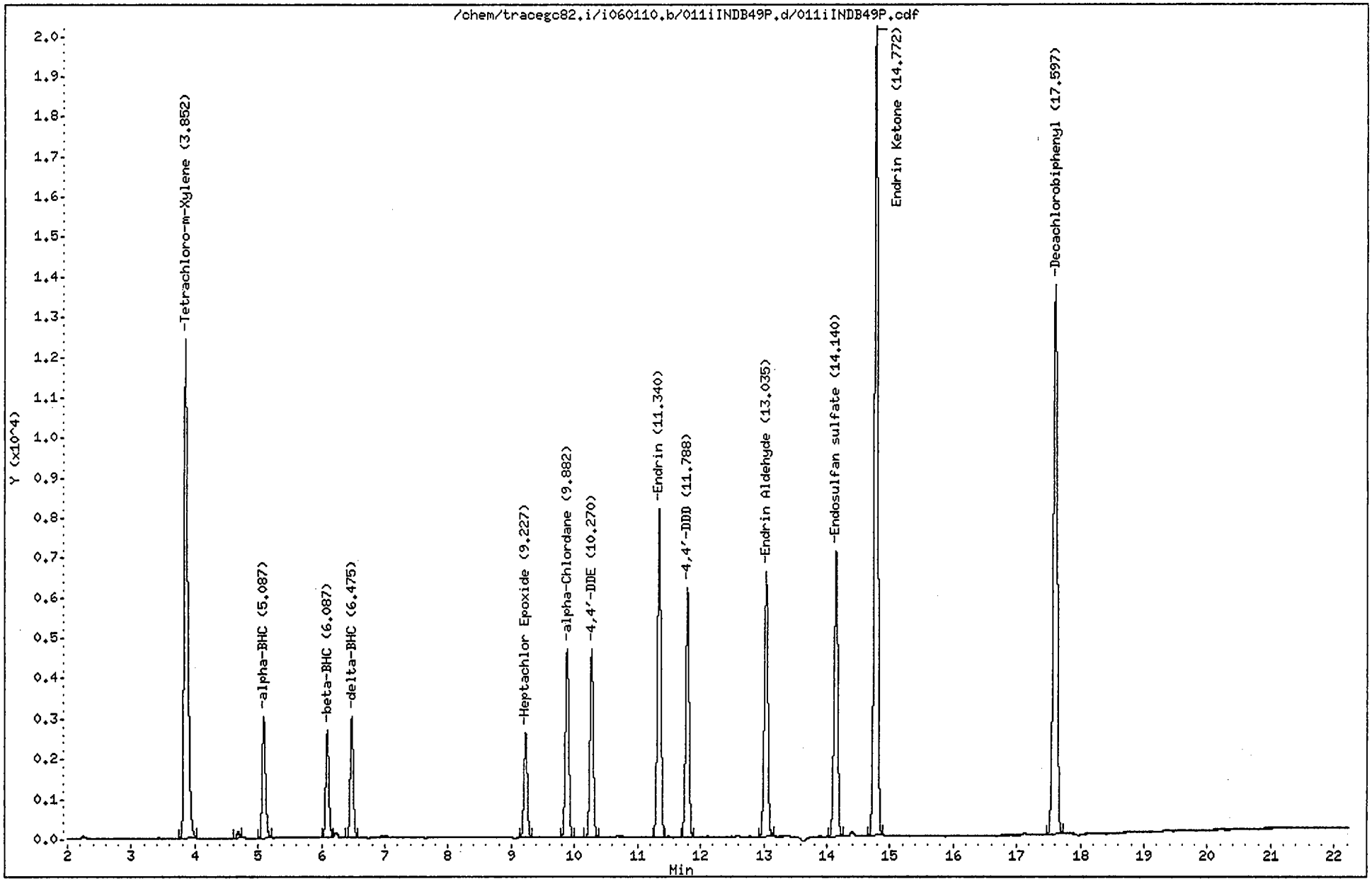
Sample Info: INDB49P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDB49P Client Smp Id : INDB49P
Sample Type : INITIAL CAL: Level 4 Sublist : INDB
Inj Date : 10-JAN-2006 19:15 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.16			529					
0.94			4841057					
3.85	3.78	3.92	48601	306784	Tetrachloro-m-Xylene	0.160000	289281	
4.68			514					
5.09	5.02	5.16	10687	531661	alpha-BHC	0.020000	534300	
6.09	6.02	6.16	9044	232364	beta-BHC	0.040000	226075	
6.48	6.41	6.55	10025	495962	delta-BHC	0.020000	501200	
9.23	9.16	9.30	9575	489072	Heptachlor Epoxide	0.020000	478700	
9.88	9.81	9.95	17453	444440	alpha-Chlordane	0.040000	436325	
10.27	10.20	10.34	17265	440000	4,4'-DDE	0.040000	431600	
11.34	11.27	11.41	30578	386241	Endrin	0.080000	382212	
11.79	11.72	11.86	22425	279151	4,4'-DDD	0.080000	280300	
13.04	12.96	13.10	25461	321174	Endrin Aldehyde	0.080000	318250	
14.14	14.07	14.21	27660	353871	Endosulfan sulfate	0.080000	345738	
14.77	14.70	14.84	75934	374160	Endrin Ketone	0.200000	379670	
17.60	17.52	17.66	57189	362764	Decachlorobiphenyl	0.160000	325544	

1/10/06

Data File: /chem/tracegc82.i/i060110.b/012iINDA59P.d

Date : 10-JAN-2006 19:41

Client ID: INDA59P

Instrument: tracegc82.i

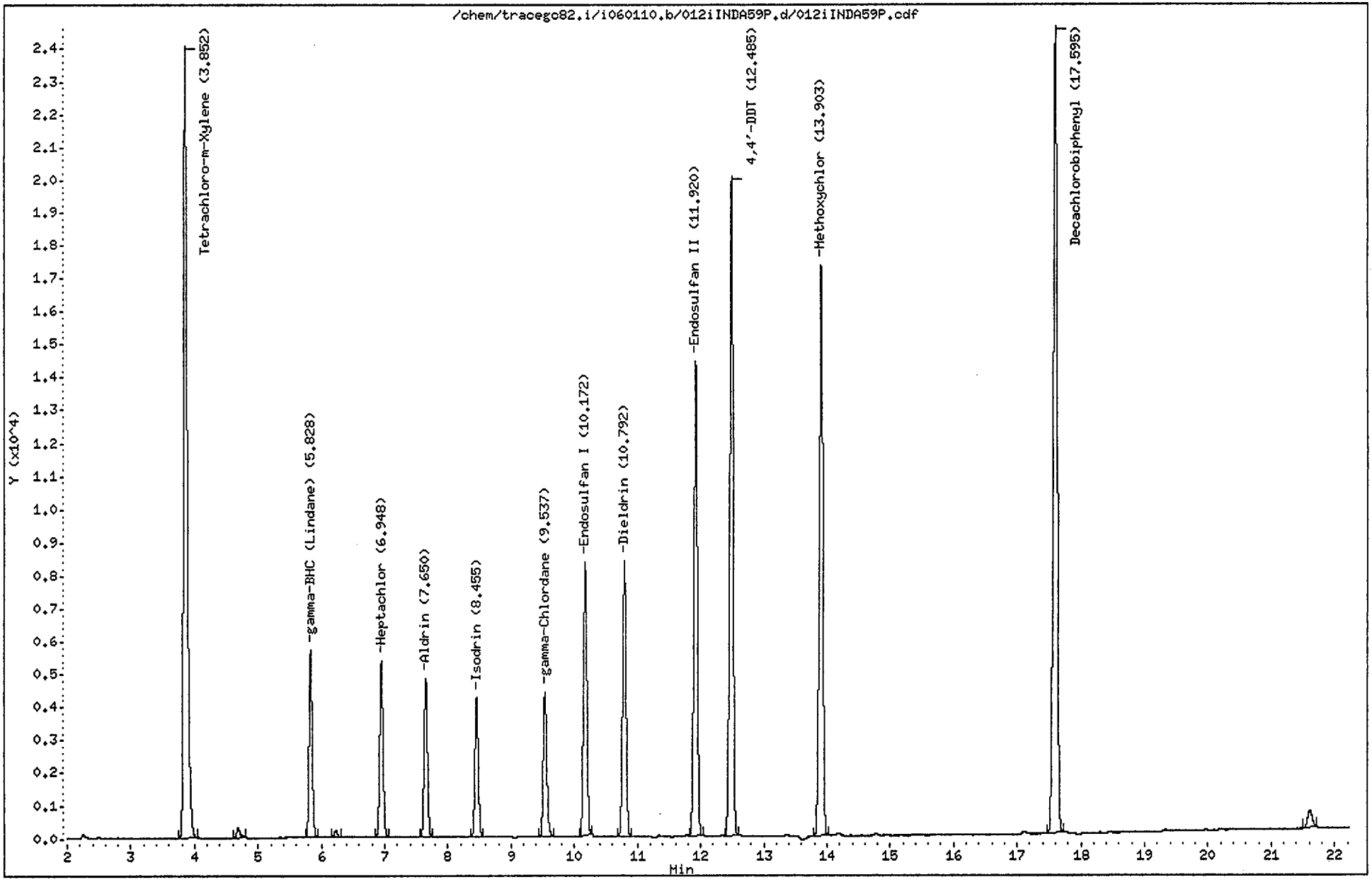
Sample Info: INDA59P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDA59P Client Smp Id : INDA59P
Sample Type : INITIAL CAL: Level 5 Sublist : INDA
Inj Date : 10-JAN-2006 19:41 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.18			686					
0.90			4281					
3.85	3.78	3.92	93601	306784	Tetrachloro-m-Xylene	0.320000	292503	
4.68			1254					
5.83	5.76	5.90	19315	491545	gamma-BHC (Lindane)	0.040000	482875	
6.23			704					
6.95	6.88	7.02	19365	524870	Heptachlor	0.040000	484100	
7.65	7.58	7.72	17598	482395	Aldrin	0.040000	439925	
8.46	8.39	8.53	15594	430775	Isodrin	0.040000	389825	
9.54	9.47	9.61	17073	465605	gamma-Chlordane	0.040000	426825	
10.17	10.10	10.24	30766	428652	Endosulfan I	0.080000	384562	
10.79	10.72	10.86	30869	426262	Dieldrin	0.080000	385862	
11.92	11.85	11.99	53270	362004	Endosulfan II	0.160000	332931	
12.48	12.42	12.56	72964	315540	4,4'-DDT	0.240000	304017	
13.90	13.83	13.97	66883	193873	Methoxychlor	0.400000	167205	
17.60	17.52	17.66	101376	362764	Decachlorobiphenyl	0.320000	316800	
21.61			2671					

1/10/06

Data File: /chem/tracegc82.i/i060110.b/013iINDB59P.d

Date : 10-JAN-2006 20:07

Client ID: INDB59P

Sample Info: INDB59P

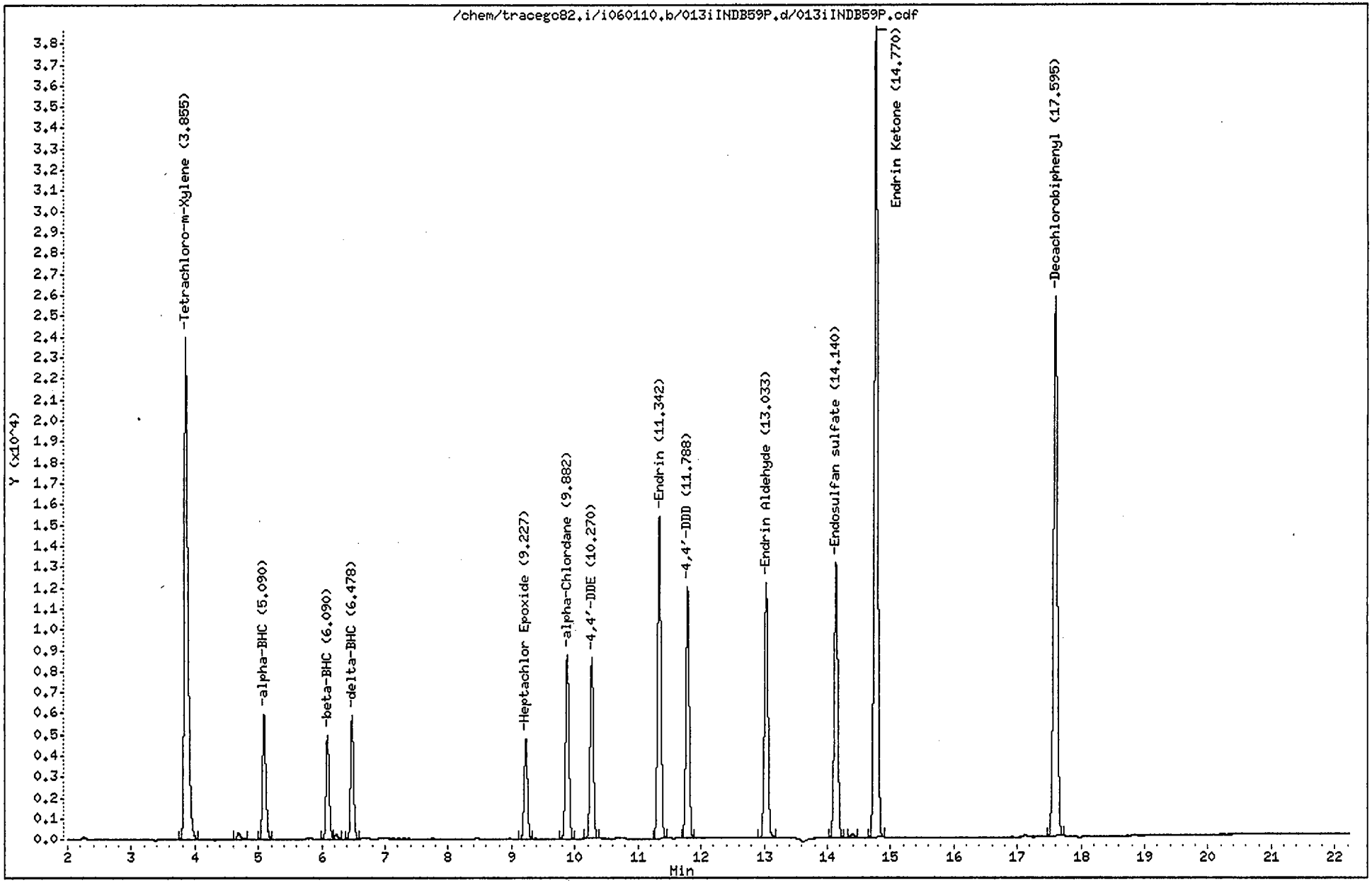
Volume Injected (uL): 1.0

Column phase: olpest

Instrument: tracegc82.i

Operator: 2512

Column diameter: 0.53



CompuChem

Lab Smp Id : INDB59P Client Smp Id : INDB59P
Sample Type : INITIAL CAL: Level 5 Sublist : INDB
Inj Date : 10-JAN-2006 20:07 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc. Info : None

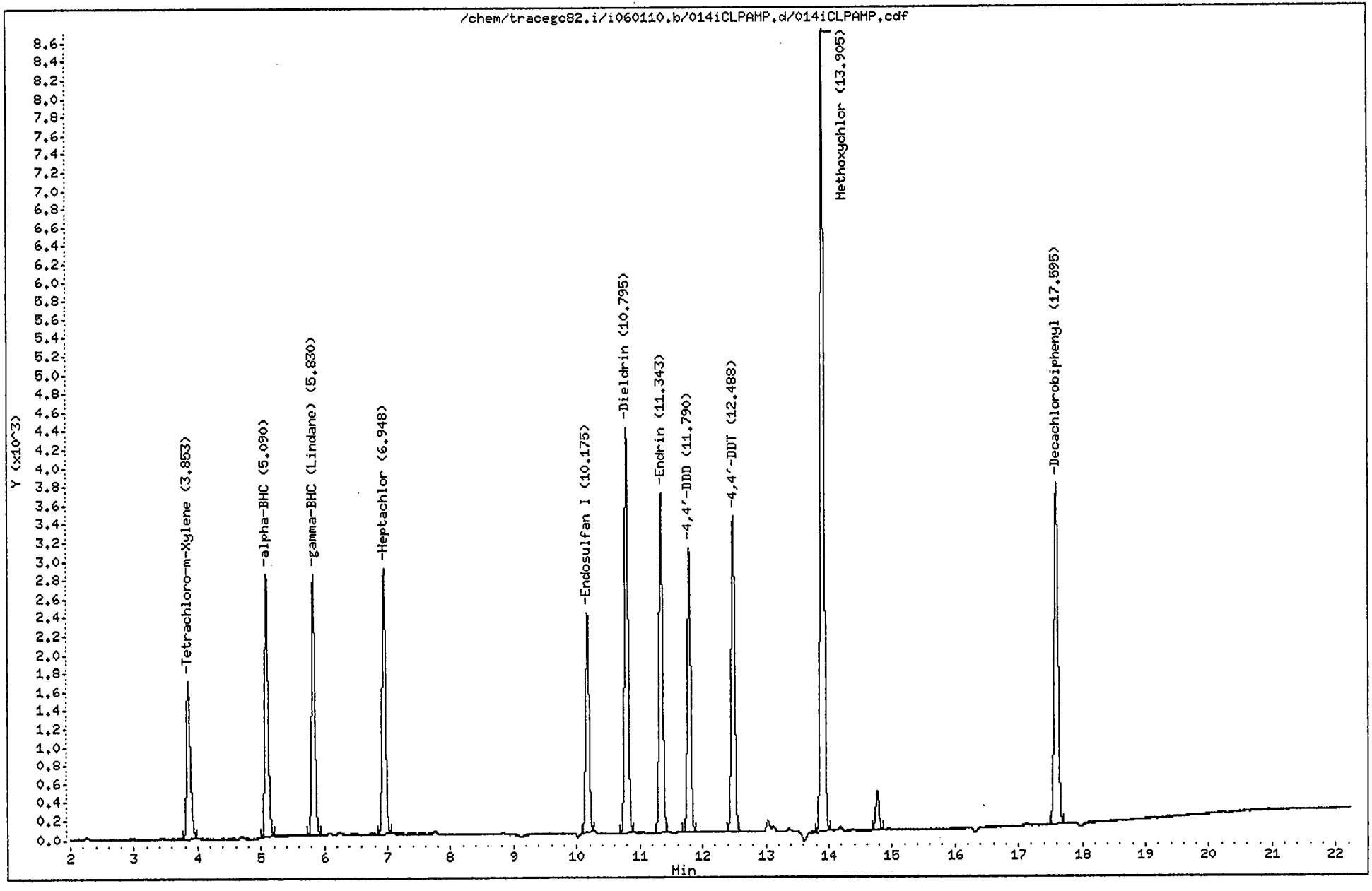
RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.15			527					
0.90			9045					
3.86	3.78	3.92	93636	306784	Tetrachloro-m-Xylene	0.320000	292503	
4.68			1309					
5.09	5.02	5.16	20992	531661	alpha-BHC	0.040000	524800	
6.09	6.02	6.16	17019	232364	beta-BHC	0.080000	212738	
6.23			772					
6.48	6.41	6.55	19532	495962	delta-BHC	0.040000	488300	
9.23	9.16	9.30	17370	489072	Heptachlor Epoxide	0.040000	434250	
9.88	9.81	9.95	32142	444440	alpha-Chlordane	0.080000	401762	
10.27	10.20	10.34	31532	440000	4,4'-DDE	0.080000	394150	
11.34	11.27	11.41	56627	386241	Endrin	0.160000	353919	
11.79	11.72	11.86	42600	279151	4,4'-DDD	0.160000	266250	
13.03	12.96	13.10	46511	321174	Endrin Aldehyde	0.160000	290694	
14.14	14.07	14.21	50467	353871	Endosulfan sulfate	0.160000	315412	
14.40			692					
14.77	14.70	14.84	143343	374160	Endrin Ketone	0.400000	358358	
17.60	17.52	17.66	104874	362764	Decachlorobiphenyl	0.320000	316800	

1/10/06

Data File: /chem/tracegc82.i/i060110.b/014iCLPAMP.d
Date : 10-JAN-2006 20:32
Client ID: CLPAMP
Sample Info: CLPAMP
Volume Injected (uL): 1.0
Column phase: clpest

Instrument: tracegc82.i

Operator: 2512
Column diameter: 0.53



CompuChem

Lab Smp Id	: CLPAMP	Client Smp Id	: CLPAMP
Sample Type	: QCCHECK	Sublist	: MDLA
Inj Date	: 10-JAN-2006 20:32	Inst ID	: TRACEGC82
Operator	: 2512	Spike Sublist	: INDAchek
Method	: /chem/tracegc82.i/i060110.b/8081A_clpestv4.m		
Misc. Info	: None		

RT	AREA
0.15	796
0.90	4345
0.93	8466
3.85	6852
5.09	10152
5.83	9680
6.95	10420
10.18	8739
10.80	16167
11.34	13788
11.79	11245
12.49	12990
13.90	33999
14.77	1574
17.59	15458

1/10/06

CompuChem

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: CLPAMP
Level: LOW
Data Type: GC MULTI COMP
SpikeList File: INDAchek.spk
Sublist File: MDLA.sub
Method File: /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc Info: None

Client SDG: i060110
Fraction: PEST
Client Smp ID: CLPAMP
Operator: 2512
SampleType: QCCHECK
Quant Type: ESTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
2 alpha-BHC	0.020	0.019	95.47	80-120
3 gamma-BHC (Lindane	0.020	0.020	98.47	80-120
4 Heptachlor	0.020	0.020	99.26	80-120
13 Endosulfan I	0.020	0.020	101.93	80-120
15 Dieldrin	0.040	0.038	94.82	80-120
16 Endrin	0.040	0.036	89.24	80-120
17 4,4'-DDD	0.040	0.040	100.70	80-120
19 4,4'-DDT	0.040	0.041	102.92	80-120
22 Methoxychlor	0.20	0.18	87.68	80-120

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 1 Tetrachloro-m-Xyle	0.020	0.022	111.68	43-135
$ 33 Decachlorobiphenyl	0.020	~~0.043~~ 0.0215	~~213.06*~~ 106.53	43-144

RP 1/10/06

Data File: /chem/tracegc82.i/i060110.b/015iCLPBM9P.d

Date : 10-JAN-2006 20:58

Client ID: CLPBM9P

Instrument: tracegc82.i

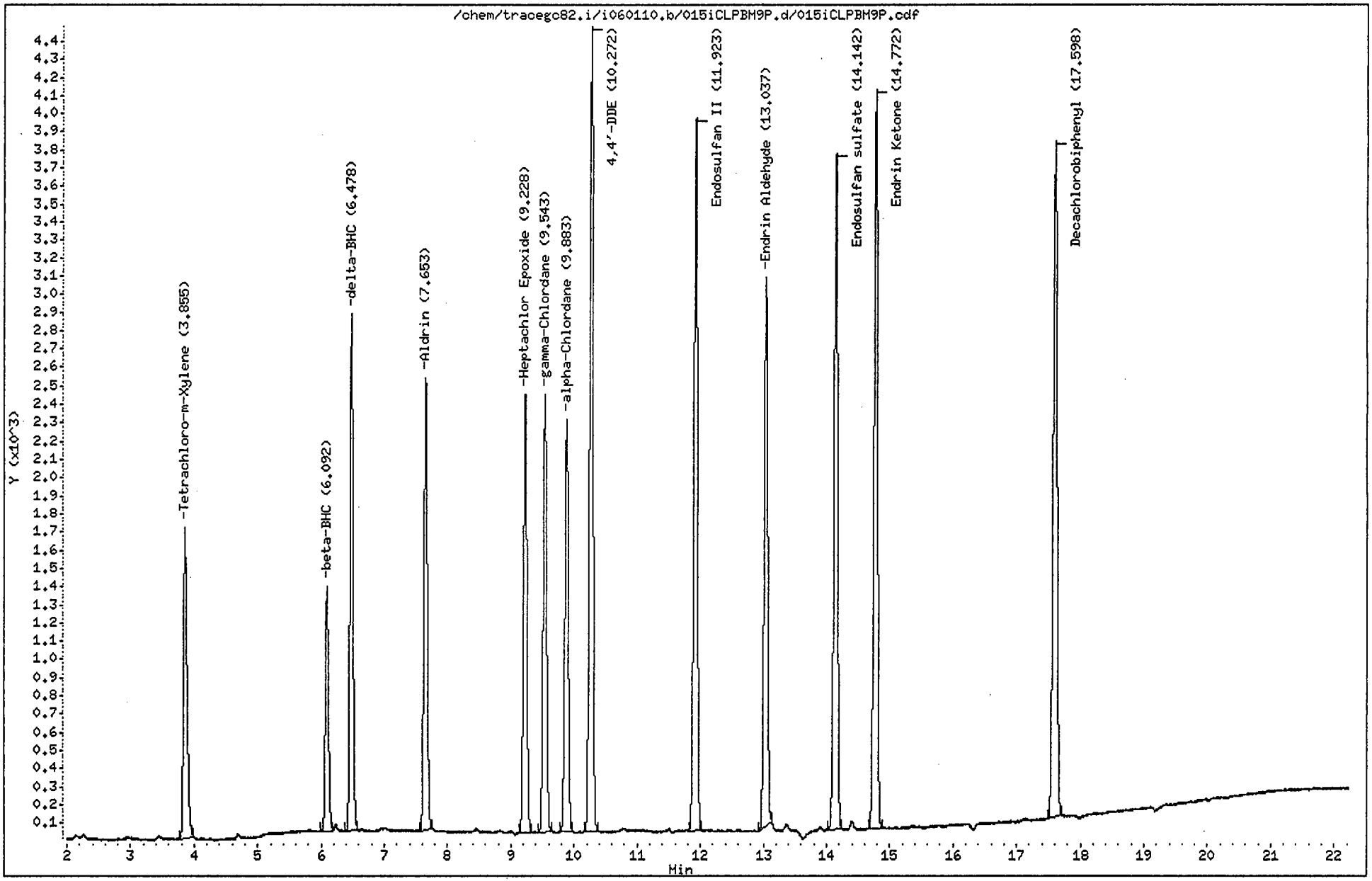
Sample Info: CLPBM9P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

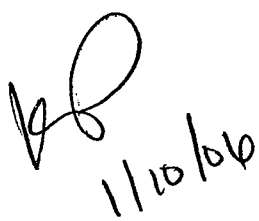
Column diameter: 0.53



CompuChem

Lab Smp Id	: CLPBM9P	Client Smp Id	: CLPBM9P
Sample Type	: QCCHECK	Sublist	: MDLB
Inj Date	: 10-JAN-2006 20:58	Inst ID	: TRACEGC82
Operator	: 2512	Spike Sublist	: INDBchek
Method	: /chem/tracegc82.i/i060110.b/8081A_clpestv4.m		
Misc. Info	: None		

RT	AREA
0.90	4340
3.86	6616
6.09	4598
6.48	9469
7.65	9035
9.23	8885
9.54	8985
9.88	8404
10.27	16369
11.92	14899
13.04	11558
14.14	14533
14.77	15595
17.60	15586



CompuChem

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: CLPBM9P
Level: LOW
Data Type: GC MULTI COMP
SpikeList File: INDBchek.spk
Sublist File: MDLB.sub
Method File: /chem/tracegc82.i/i060110.b/8081A_clpestv4.m
Misc Info: None

Client SDG: i060110
Fraction: PEST
Client Smp ID: CLPBM9P
Operator: 2512
SampleType: QCCHECK
Quant Type: ESTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
7 beta-BHC	0.020	0.020	98.93	80-120
8 delta-BHC	0.020	0.019	95.46	80-120
5 Aldrin	0.020	0.019	93.65	80-120
9 Heptachlor Epoxide	0.020	0.018	90.84	80-120
10 gamma-Chlordane	0.020	0.019	96.48	80-120
11 alpha-Chlordane	0.020	0.019	94.55	80-120
14 4,4'-DDE	0.040	0.037	93.01	80-120
18 Endosulfan II	0.040	0.041	102.89	80-120
20 Endrin Aldehyde	0.040	0.036	89.97	80-120
21 Endosulfan sulfate	0.040	0.041	102.67	80-120
23 Endrin Ketone	0.040	0.042	104.20	80-120

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 1 Tetrachloro-m-Xyle	0.020	0.022	107.83	43-135
$ 33 Decachlorobiphenyl	0.020	~~0.043~~ 0.0215	~~214.83*~~ 107.415	43-144

KP 1/10/06

Data File: /chem/tracegc83.i/i060110.b/003iPEM9P.d

Date : 10-JAN-2006 15:51

Client ID: PEM9P

Instrument: tracegc83.i

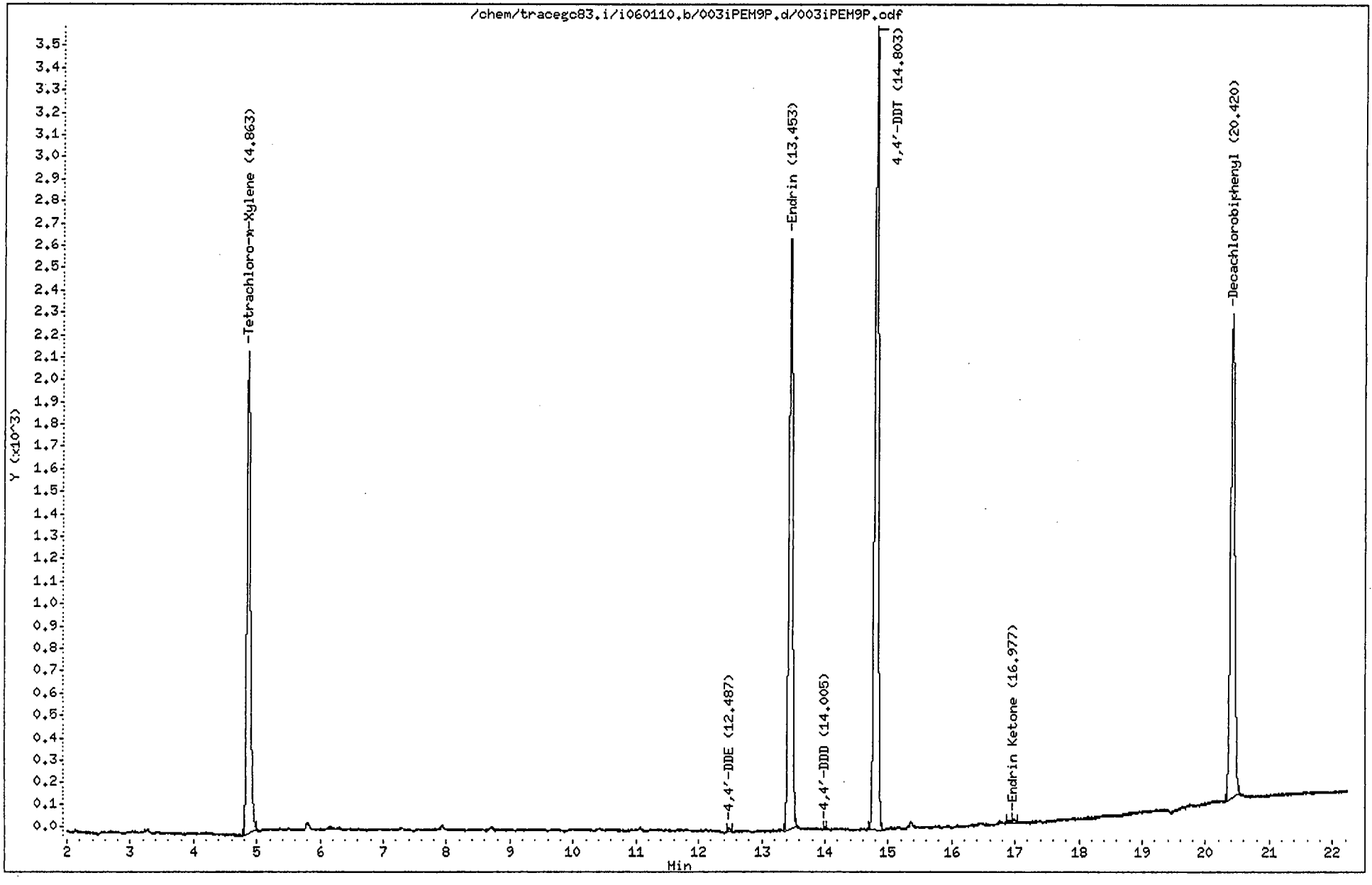
Sample Info: PEM9P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : PEM9P Client Smp Id : PEM9P
Sample Type : SAMPLE Sublist : PEM
Inj Date : 10-JAN-2006 15:51 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Ws) * (100/(100-M))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Ws Sample Weight: 10.0(g) M Moisture: 0(%)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/Kg)	ADJUSTED PQL (ug/Kg)	% REC	RECOVERY LIMITS	FLAGS
0.89			14041								
4.86	4.79	4.93	8413	403926	Tetrachloro-m-Xylene	0.020828	10.41384		52.1	43 - 135	
12.49	12.42	12.56	52	558335	4,4'-DDE	0.000092	0.046119	2.490000			JM 2
13.45	13.38	13.52	10594	515266	Endrin	0.020561	10.28041	5.010000			
14.00	13.94	14.08	18	367186	4,4'-DDD	0.000050	0.025055	5.010000			JM 2
14.80	14.73	14.87	14497	414793	4,4'-DDT	0.034951	17.47545	7.500000			
16.90			33								
16.98	16.92	17.06	52	497694	Endrin Ketone	0.000105	0.052392	12.51000			JM 2
20.42	20.35	20.49	9970	459870	Decachlorobiphenyl	0.021679	10.83969		54.2	43 - 144	

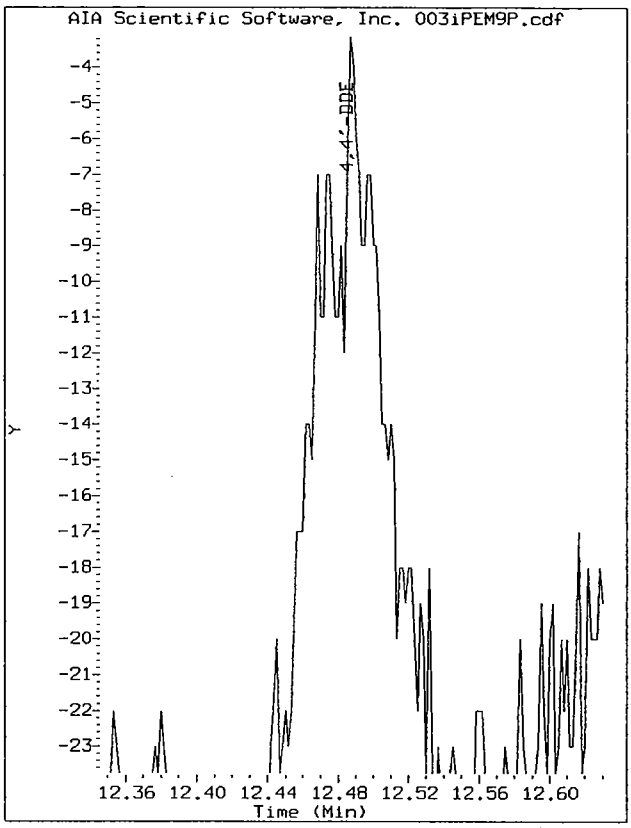
%DDT Breakdown $\frac{52+18}{52+18+14497} * 100 = \frac{70}{14567} * 100 = 0.48\%$

%Endrin Breakdown $\frac{52}{52+10594} * 100 = \frac{52}{10646} * 100 = 0.49\%$

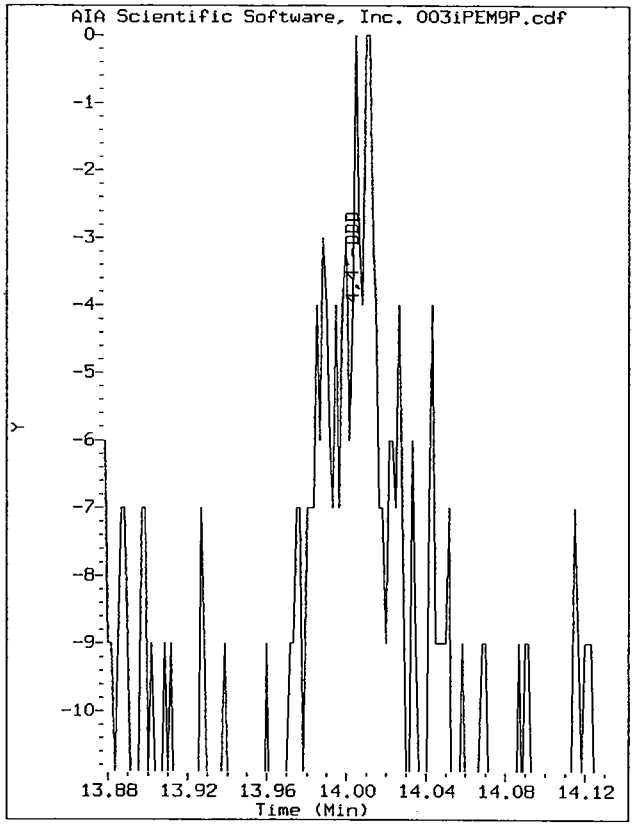
1/10/06

TAJ 1/11/06

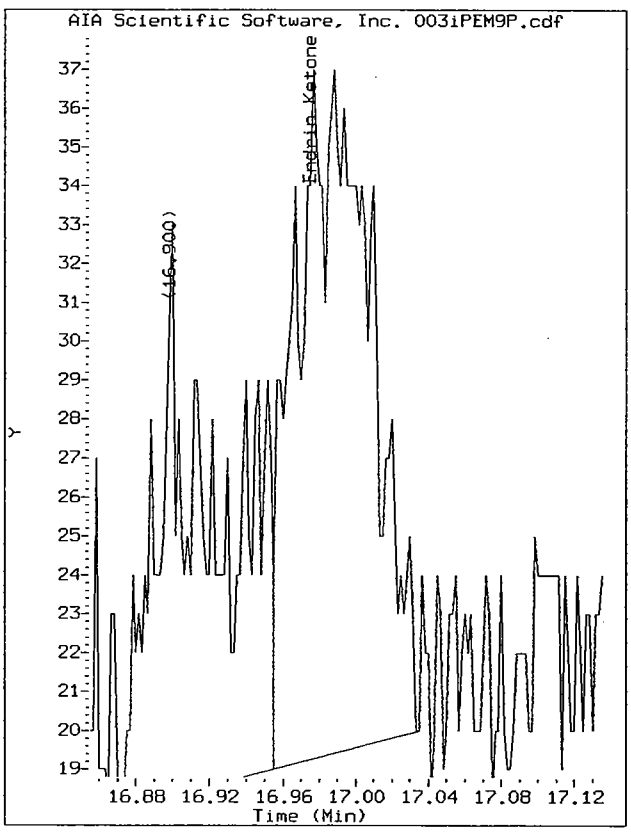
Manually Integrated Peaks



Start: 12.45 Stop: 12.53



Start: 13.98 Stop: 14.03



Start: 16.95 Stop: 17.04

Data File: /chem/tracegc83.i/i060110.b/004iINDA19P.d

Page 1

Date : 10-JAN-2006 16:16

Client ID: INDA19P

Instrument: tracegc83.i

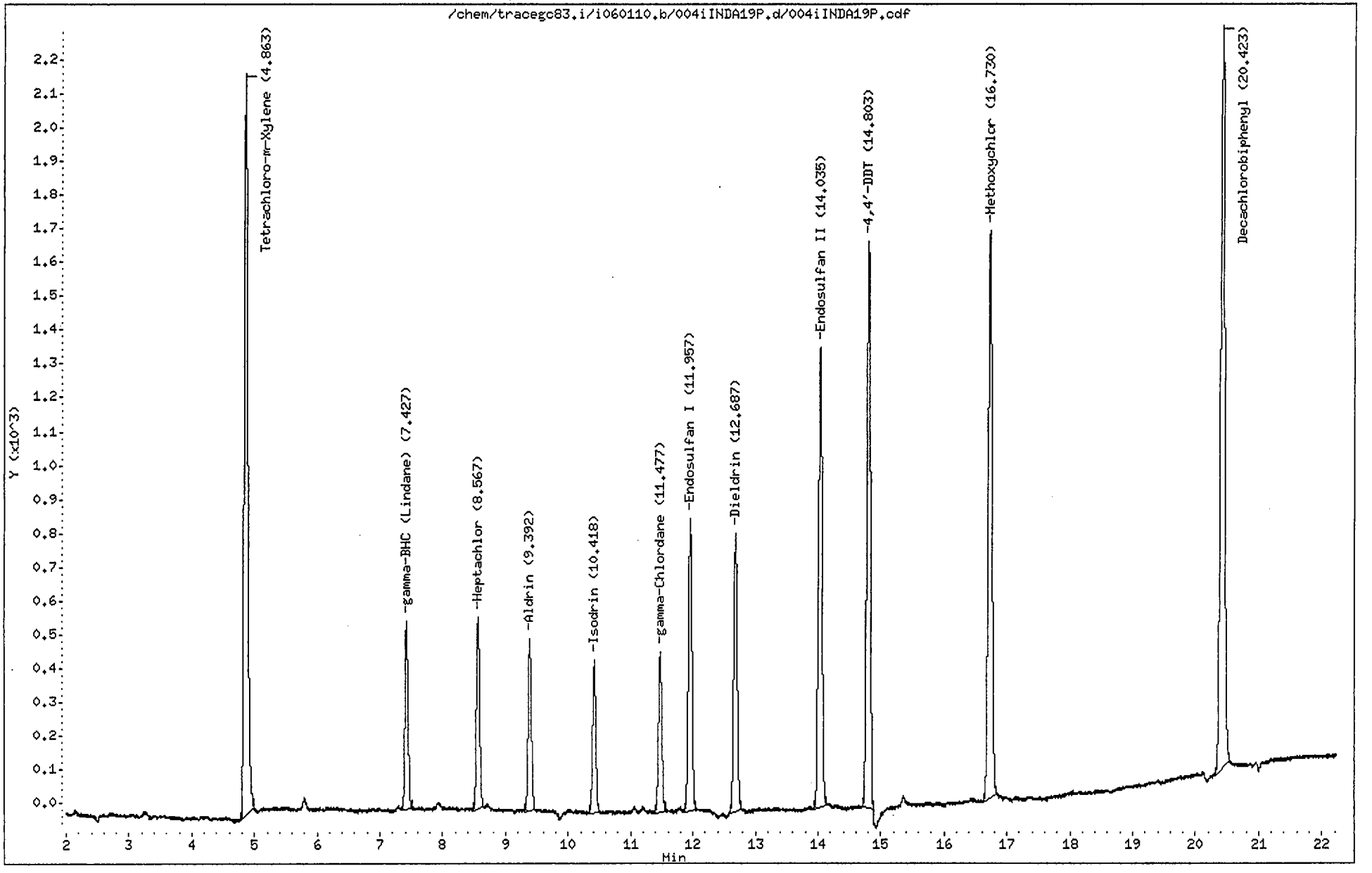
Sample Info: INDA19P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

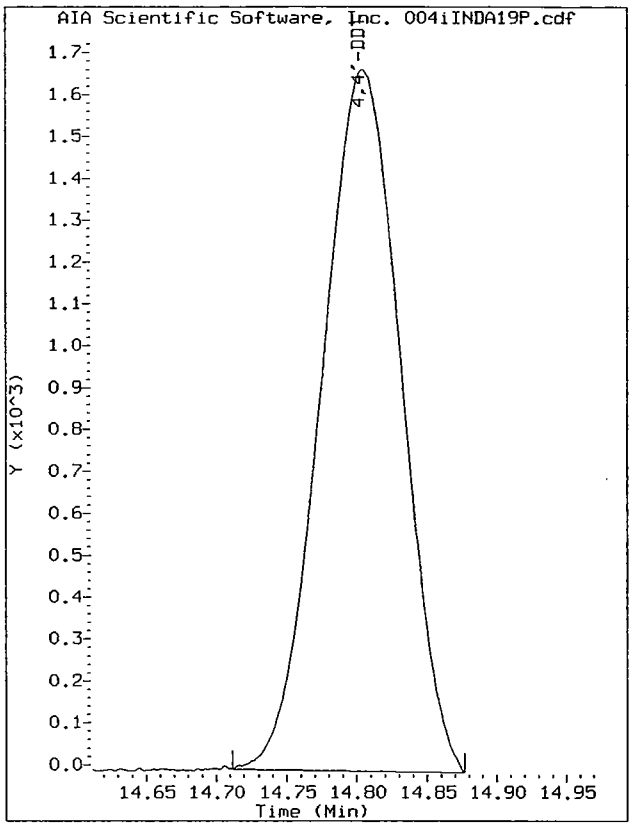
Lab Smp Id : INDA19P Client Smp Id : INDA19P
Sample Type : INITIAL CAL: Level 1 Sublist : INDA
Inj Date : 10-JAN-2006 16:16 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.89			2115					
4.86	4.79	4.93	8628	403926	Tetrachloro-m-Xylene	0.020000	431400	
7.43	7.36	7.50	1854	689670	gamma-BHC (Lindane)	0.002500	741600	
8.57	8.50	8.64	2088	732145	Heptachlor	0.002500	835200	
9.39	9.32	9.46	1848	661560	Aldrin	0.002500	738800	
10.42	10.35	10.49	1642	589030	Isodrin	0.002500	656800	
11.48	11.41	11.55	1795	627645	gamma-Chlordane	0.002500	718000	
11.96	11.89	12.03	3322	581450	Endosulfan I	0.005000	664400	
12.69	12.62	12.76	3202	563772	Dieldrin	0.005000	640400	
14.04	13.97	14.11	5390	481879	Endosulfan II	0.010000	539000	
14.80	14.73	14.87	6590	414793	4,4'-DDT	0.015000	439333	M2
16.73	16.66	16.80	6842	241339	Methoxychlor	0.025000	273640	
20.42	20.35	20.49	10083	459870	Decachlorobiphenyl	0.020000	504150	

1/10/06

TAJ 1/11/06

Manually Integrated Peaks



Start: 14.71 Stop: 14.88

Data File: /chem/tracegc83.i/i060110.b/005iINDB19P.d

Date : 10-JAN-2006 16:42

Client ID: INDB19P

Sample Info: INDB19P

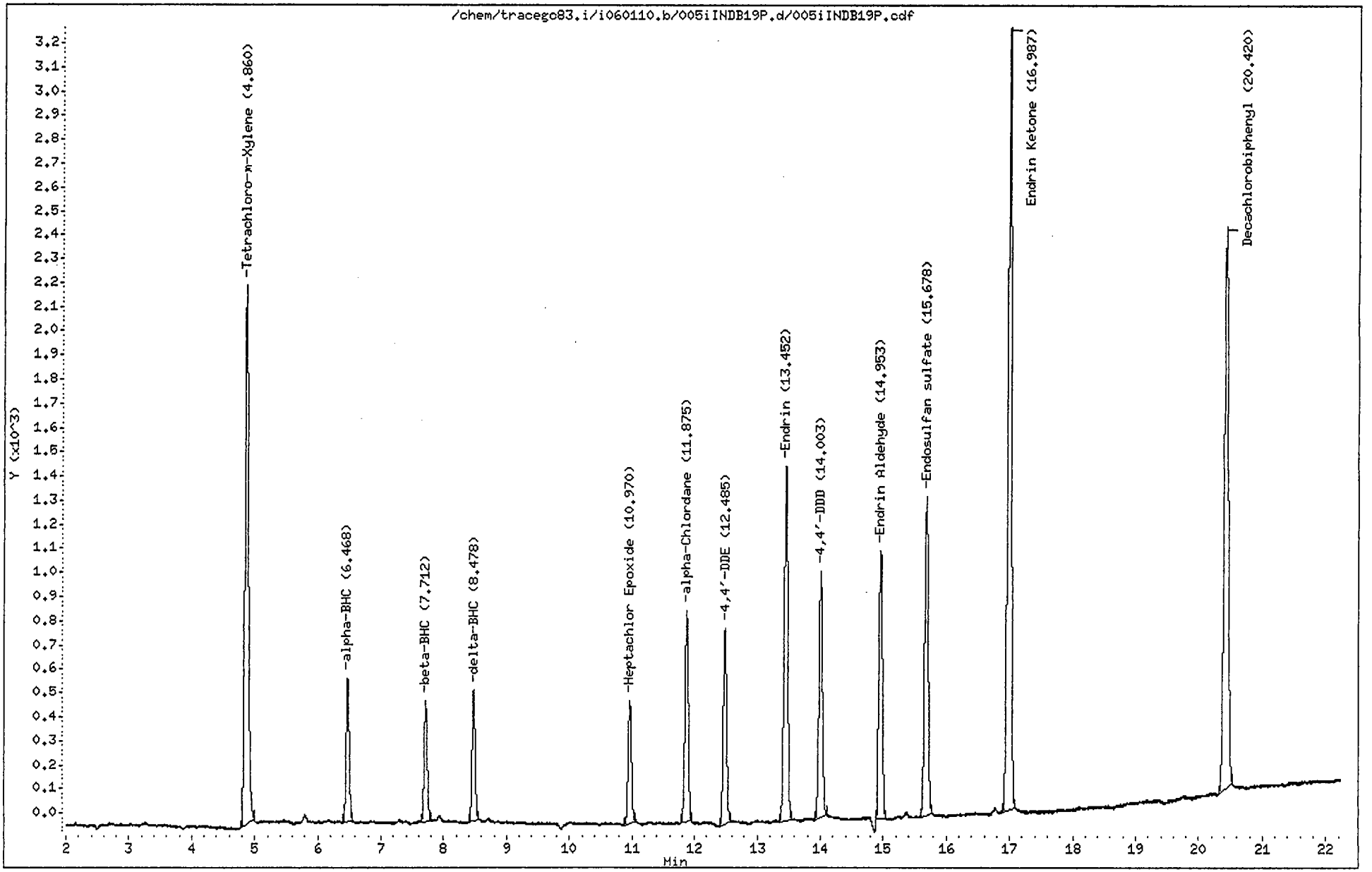
Volume Injected (uL): 1.0

Column phase: clpest2

Instrument: tracegc83.i

Operator: 2512

Column diameter: 0.53



CompuChem

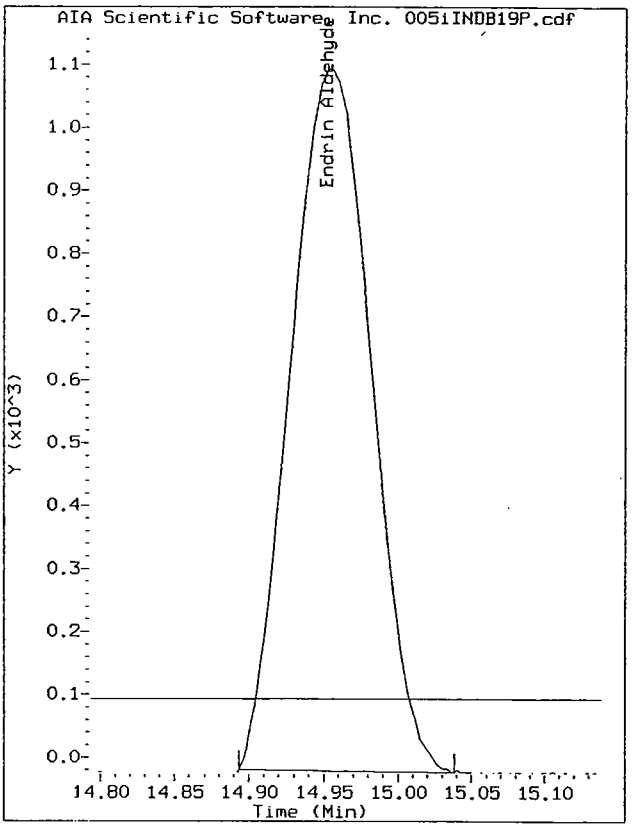
Lab Smp Id : INDB19P
Client Smp Id : INDB19P
Sample Type : INITIAL CAL: Level 1
Sublist : INDB
Inj Date : 10-JAN-2006 16:42
Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.89			1394					
4.86	4.79	4.93	8677	403926	Tetrachloro-m-Xylene	0.020000	431400	
6.47	6.40	6.54	2034	762580	alpha-BHC	0.002500	813600	
7.71	7.64	7.78	1693	311082	beta-BHC	0.005000	338400	
8.48	8.41	8.55	1828	687745	delta-BHC	0.002500	730800	
10.97	10.90	11.04	1869	660355	Heptachlor Epoxide	0.002500	747600	
11.88	11.81	11.95	3395	602048	alpha-Chlordane	0.005000	679000	
12.48	12.42	12.56	3104	558335	4,4'-DDE	0.005000	620800	
13.45	13.38	13.52	5796	515266	Endrin	0.010000	579500	
14.00	13.94	14.08	3987	367186	4,4'-DDD	0.010000	398700	
14.95	14.89	15.03	4192	394594	Endrin Aldehyde	0.010000	419100	M2
15.68	15.61	15.75	5331	464389	Endosulfan sulfate	0.010000	533100	
16.99	16.92	17.06	13061	497694	Endrin Ketone	0.025000	522400	
20.42	20.35	20.49	10723	459870	Decachlorobiphenyl	0.020000	504150	

1/10/06

TAJ 1/11/06

Manually Integrated Peaks



Start: 14.89 Stop: 15.04

Data File: /chem/tracegc83.i/i060110.b/006iINDA29P.d

Page 1

Date : 10-JAN-2006 17:08

Client ID: INDA29P

Instrument: tracegc83.i

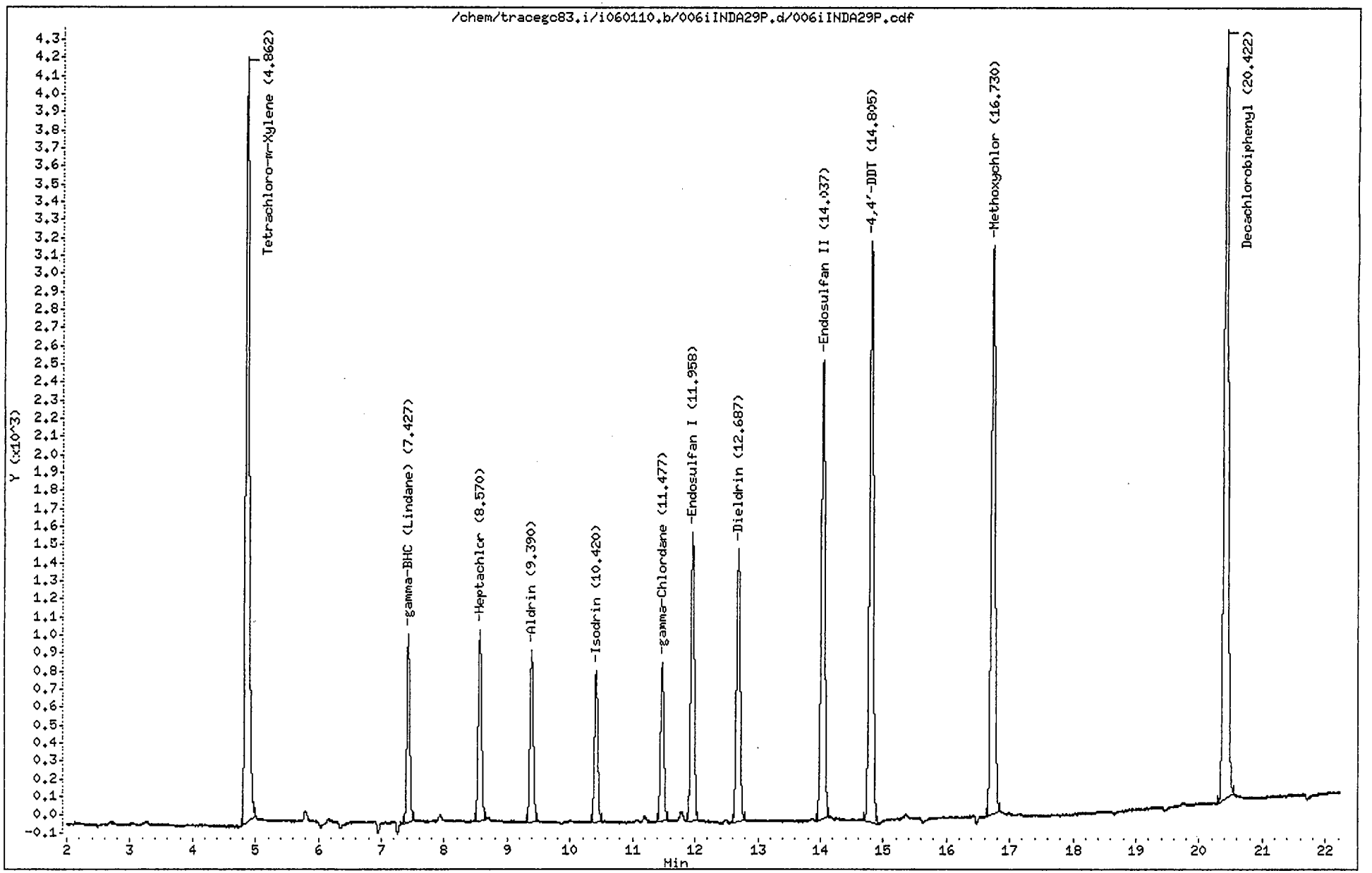
Sample Info: INDA29P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : INDA29P Client Smp Id : INDA29P
Sample Type : INITIAL CAL: Level 2 Sublist : INDA
Inj Date : 10-JAN-2006 17:08 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.89			2146					
0.92			4514					
4.86	4.79	4.93	16569	403926	Tetrachloro-m-Xylene	0.040000	414200	
7.43	7.36	7.50	3615	689670	gamma-BHC (Lindane)	0.005000	723000	
8.57	8.50	8.64	3931	732145	Heptachlor	0.005000	786200	
9.39	9.32	9.46	3581	661560	Aldrin	0.005000	716000	
10.42	10.35	10.49	3196	589030	Isodrin	0.005000	639000	
11.48	11.41	11.55	3376	627645	gamma-Chlordane	0.005000	675000	
11.96	11.89	12.03	6248	581450	Endosulfan I	0.010000	624800	
12.69	12.62	12.76	6067	563772	Dieldrin	0.010000	606600	
14.04	13.97	14.11	10129	481879	Endosulfan II	0.020000	506450	
14.80	14.73	14.87	12943	414793	4,4'-DDT	0.030000	431433	
16.73	16.66	16.80	13014	241339	Methoxychlor	0.050000	260260	
20.42	20.35	20.49	19815	459870	Decachlorobiphenyl	0.040000	495350	

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Data File: /chem/tracegc83.i/i060110.b/007iINDB29P.d

Date : 10-JAN-2006 17:33

Client ID: INDB29P

Sample Info: INDB29P

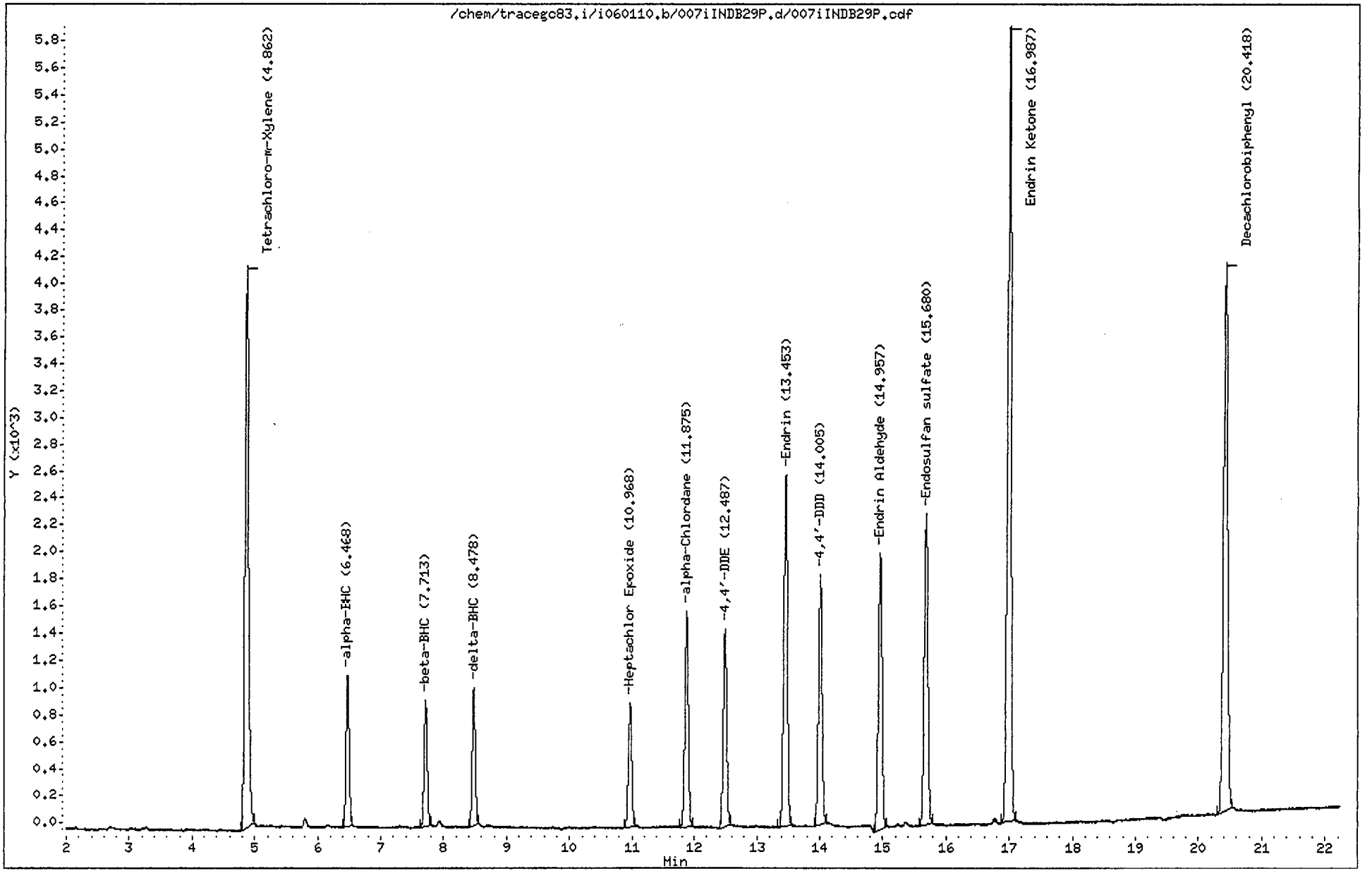
Volume Injected (uL): 1.0

Column phase: clpest2

Instrument: tracegc83.i

Operator: 2512

Column diameter: 0.53



CompuChem

Lab Smp Id : INDB29P
Client Smp Id : INDB29P
Sample Type : INITIAL CAL: Level 2
Sublist : INDB
Inj Date : 10-JAN-2006 17:33
Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.89			3849					
0.92			8610					
4.86	4.79	4.93	16517	403926	Tetrachloro-m-Xylene	0.040000	414200	
6.47	6.40	6.54	3873	762580	alpha-BHC	0.005000	774400	
7.71	7.64	7.78	3151	311082	beta-BHC	0.010000	315100	
8.48	8.41	8.55	3415	687745	delta-BHC	0.005000	683000	
10.97	10.90	11.04	3454	660355	Heptachlor Epoxide	0.005000	690600	
11.88	11.81	11.95	6194	602048	alpha-Chlordane	0.010000	619400	
12.49	12.42	12.56	5663	558335	4,4'-DDE	0.010000	566300	
13.45	13.38	13.52	10364	515266	Endrin	0.020000	518150	
14.00	13.94	14.08	7247	367186	4,4'-DDD	0.020000	362350	
14.96	14.89	15.03	7939	394594	Endrin Aldehyde	0.020000	396950	
15.68	15.61	15.75	9338	464389	Endosulfan sulfate	0.020000	466850	
16.99	16.92	17.06	23580	497694	Endrin Ketone	0.050000	471600	
20.42	20.35	20.49	18736	459870	Decachlorobiphenyl	0.040000	495350	

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Data File: /chem/tracegc83.i/i060110.b/008iINDA39P.d

Date : 10-JAN-2006 17:59

Client ID: INDA39P

Instrument: tracegc83.i

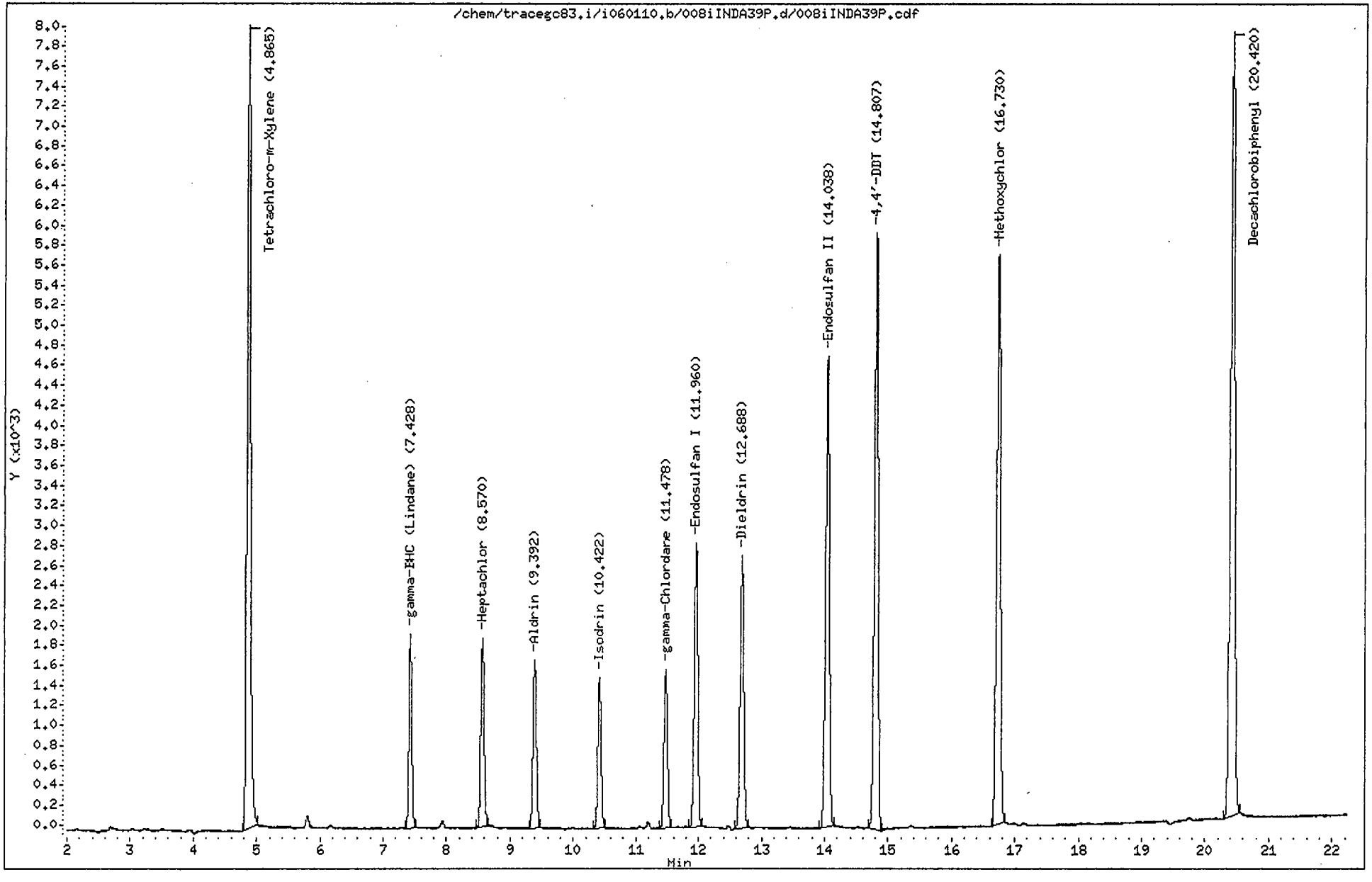
Sample Info: INDA39P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : INDA39P Client Smp Id : INDA39P
Sample Type : INITIAL CAL: Level 3 Sublist : INDA
Inj Date : 10-JAN-2006 17:59 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.89			4518					
4.86	4.79	4.93	30632	403926	Tetrachloro-m-Xylene	0.080000	382900	
7.43	7.36	7.50	6671	689670	gamma-BHC (Lindane)	0.010000	667000	
8.57	8.50	8.64	7128	732145	Heptachlor	0.010000	712800	
9.39	9.32	9.46	6468	661560	Aldrin	0.010000	646800	
10.42	10.35	10.49	5820	589030	Isodrin	0.010000	581900	
11.48	11.41	11.55	6164	627645	gamma-Chlordane	0.010000	616300	
11.96	11.89	12.03	11279	581450	Endosulfan I	0.020000	563950	
12.69	12.62	12.76	10972	563772	Dieldrin	0.020000	548550	
14.04	13.97	14.11	18571	481879	Endosulfan II	0.040000	464250	
14.81	14.73	14.87	23461	414793	4,4'-DDT	0.060000	391000	
16.73	16.66	16.80	23676	241339	Methoxychlor	0.100000	236750	
20.42	20.35	20.49	36133	459870	Decachlorobiphenyl	0.080000	451650	

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Data File: /chem/tracegc83.i/i060110.b/009iINDB39P.d

Page 1

Date : 10-JAN-2006 18:24

Client ID: INDB39P

Instrument: tracegc83.i

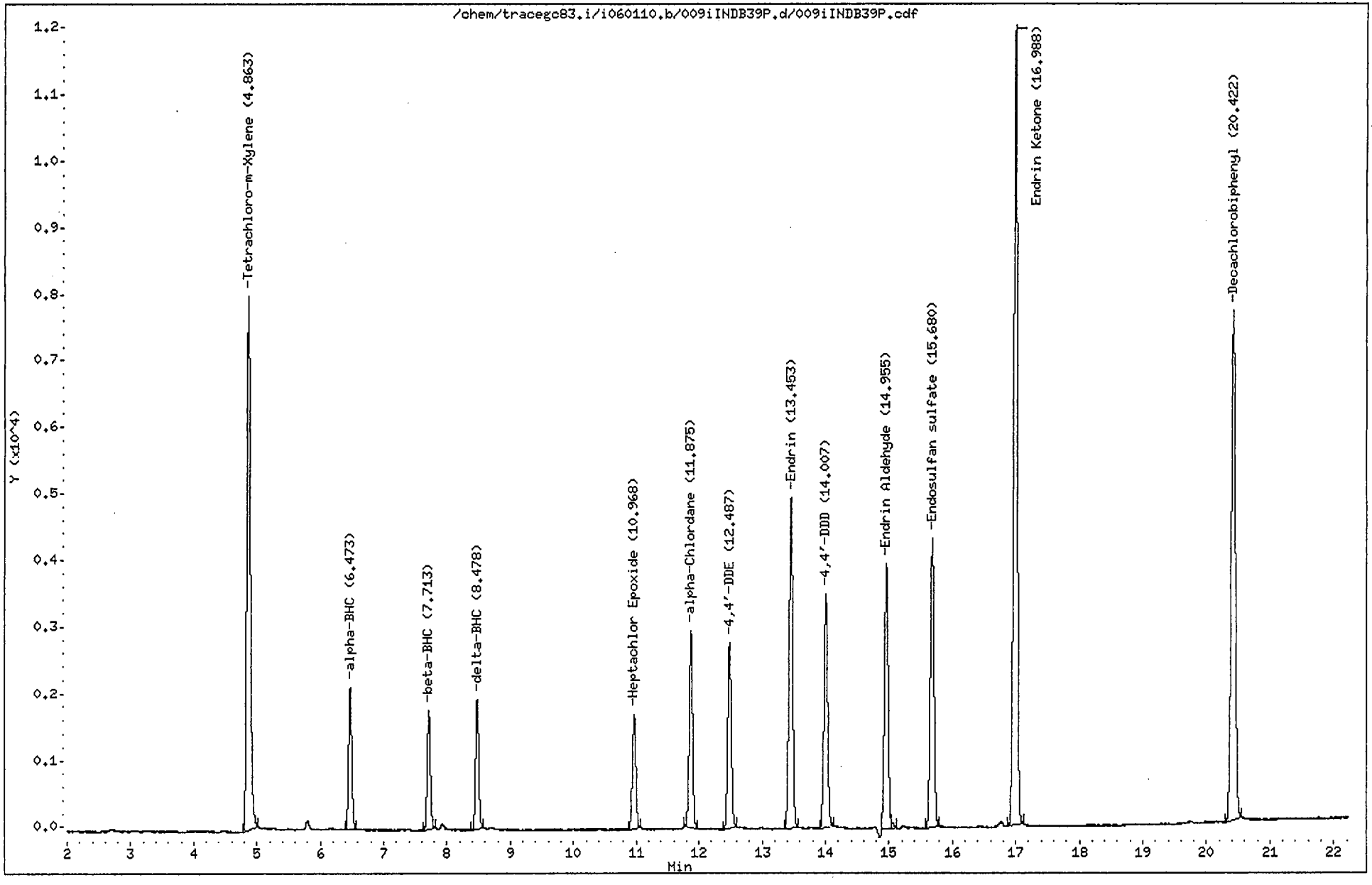
Sample Info: INDB39P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

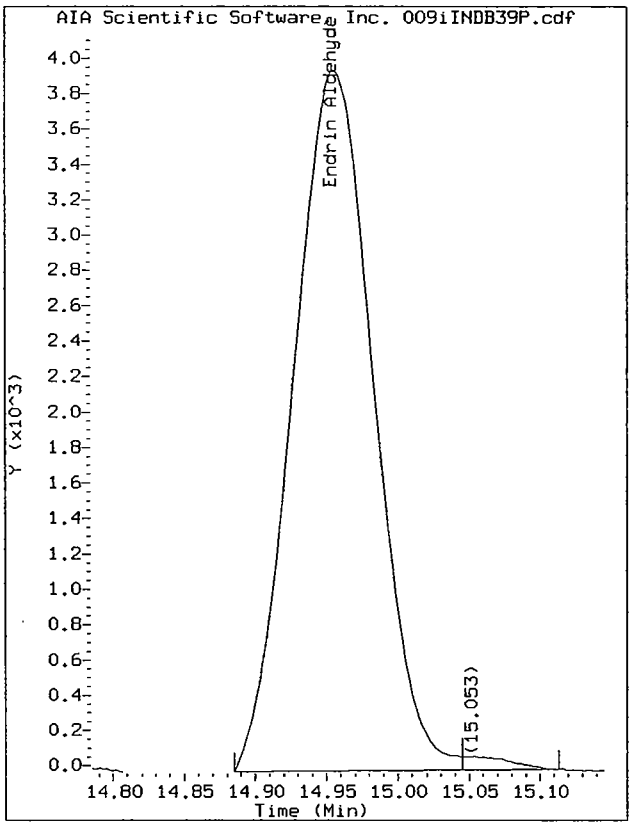
Lab Smp Id : INDB39P Client Smp Id : INDB39P
Sample Type : INITIAL CAL: Level 3 Sublist : INDB
Inj Date : 10-JAN-2006 18:24 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.89			2180					
0.92			4606					
4.86	4.79	4.93	31845	403926	Tetrachloro-m-Xylene	0.080000	382900	
6.47	6.40	6.54	7454	762580	alpha-BHC	0.010000	745300	
7.71	7.64	7.78	6112	311082	beta-BHC	0.020000	305550	
8.48	8.41	8.55	6688	687745	delta-BHC	0.010000	668700	
10.97	10.90	11.04	6525	660355	Heptachlor Epoxide	0.010000	652500	
11.88	11.81	11.95	11573	602048	alpha-Chlordane	0.020000	578650	
12.49	12.42	12.56	10856	558335	4,4'-DDE	0.020000	542800	
13.45	13.38	13.52	19764	515266	Endrin	0.040000	494100	
14.01	13.94	14.08	13991	367186	4,4'-DDD	0.040000	349775	
14.96	14.89	15.03	15479	394594	Endrin Aldehyde	0.040000	386975	M 2
15.05			175					
15.68	15.61	15.75	17617	464389	Endosulfan sulfate	0.040000	440400	
16.99	16.92	17.06	47226	497694	Endrin Ketone	0.100000	472250	
20.42	20.35	20.49	35105	459870	Decachlorobiphenyl	0.080000	451650	

1/10/06

TAJ 1/11/06

Manually Integrated Peaks



Start: 14.88 Stop: 15.04

Data File: /chem/tracegc83.i/i060110.b/010iINDA49P.d

Date : 10-JAN-2006 18:50

Client ID: INDA49P

Instrument: tracegc83.i

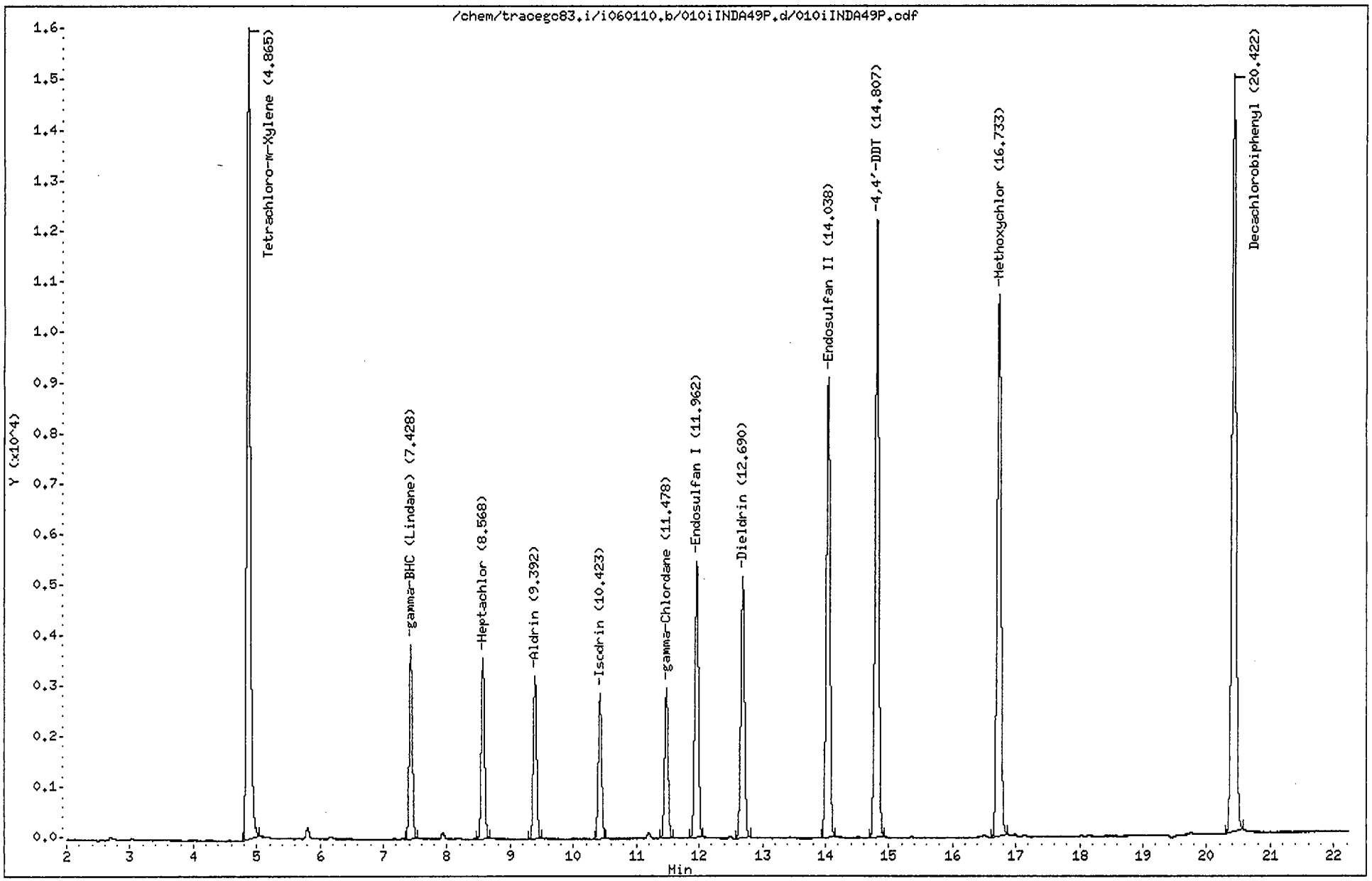
Sample Info: INDA49P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : INDA49P Client Smp Id : INDA49P
Sample Type : INITIAL CAL: Level 4 Sublist : INDA
Inj Date : 10-JAN-2006 18:50 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.94			7267179					
4.86	4.79	4.93	61548	403926	Tetrachloro-m-Xylene	0.160000	384669	
7.43	7.36	7.50	13054	689670	gamma-BHC (Lindane)	0.020000	652650	
8.57	8.50	8.64	13493	732145	Heptachlor	0.020000	674600	
9.39	9.32	9.46	12261	661560	Aldrin	0.020000	613050	
10.42	10.35	10.49	10918	589030	Isodrin	0.020000	545850	
11.48	11.41	11.55	11581	627645	gamma-Chlordane	0.020000	579050	
11.96	11.89	12.03	21281	581450	Endosulfan I	0.040000	532000	
12.69	12.62	12.76	20681	563772	Dieldrin	0.040000	517000	
14.04	13.97	14.11	35521	481879	Endosulfan II	0.080000	444000	
14.81	14.73	14.87	47333	414793	4,4'-DDT	0.120000	394433	
16.73	16.66	16.80	43923	241339	Methoxychlor	0.200000	219610	
20.42	20.35	20.49	67158	459870	Decachlorobiphenyl	0.160000	419738	

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Data File: /chem/tracegc83.i/i060110.b/011iINDB49P.d

Date : 10-JAN-2006 19:15

Client ID: INDB49P

Instrument: tracegc83.i

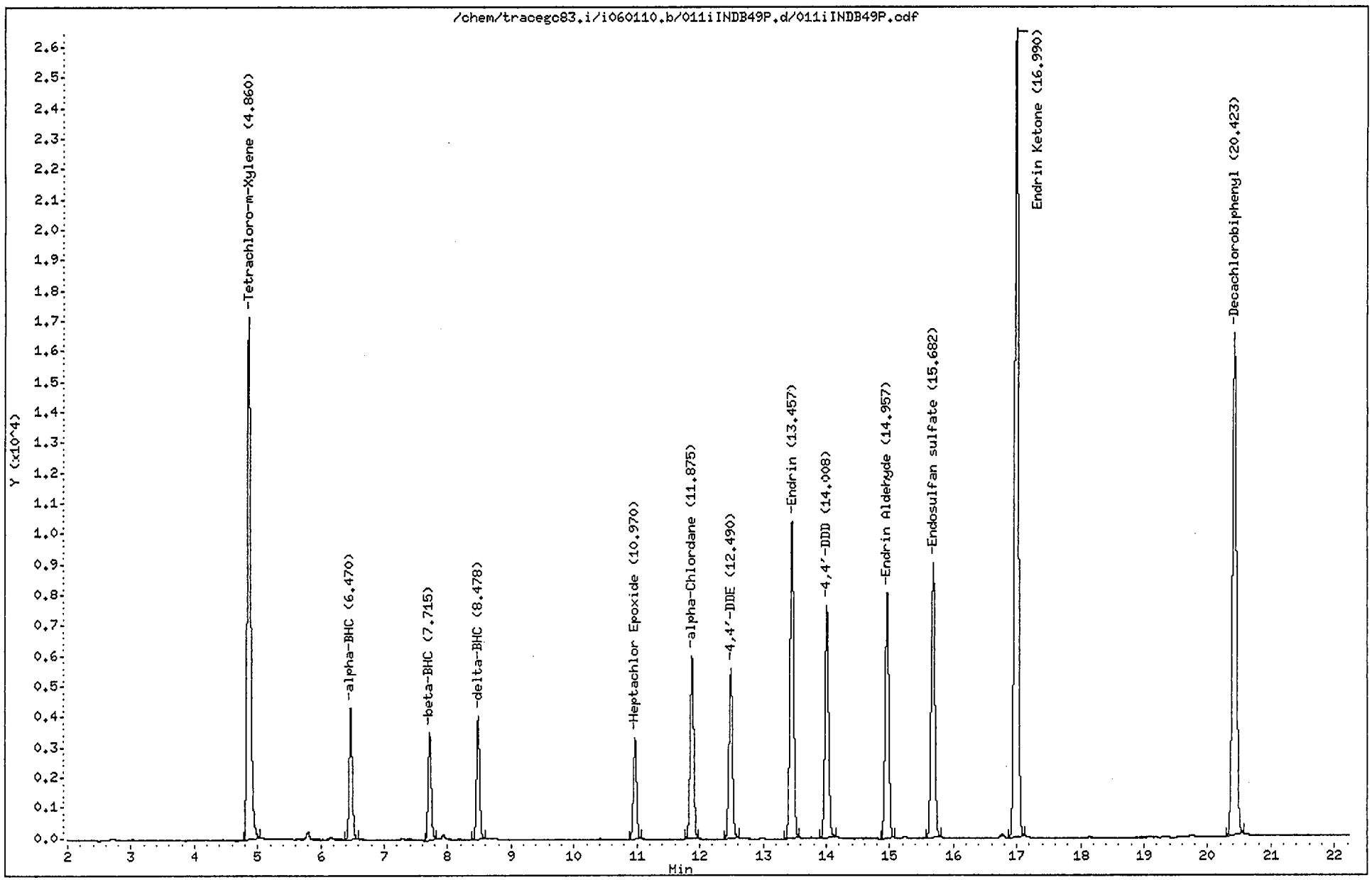
Sample Info: INDB49P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : INDB49P Client Smp Id : INDB49P
Sample Type : INITIAL CAL: Level 4 Sublist : INDB
Inj Date : 10-JAN-2006 19:15 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.93			6262266					
4.86	4.79	4.93	64931	403926	Tetrachloro-m-Xylene	0.160000	384669	
6.47	6.40	6.54	14905	762580	alpha-BHC	0.020000	745200	
7.72	7.64	7.78	12199	311082	beta-BHC	0.040000	304975	
8.48	8.41	8.55	13642	687745	delta-BHC	0.020000	682050	
10.97	10.90	11.04	12666	660355	Heptachlor Epoxide	0.020000	633250	
11.88	11.81	11.95	23351	602048	alpha-Chlordane	0.040000	583750	
12.49	12.42	12.56	21994	558335	4,4'-DDE	0.040000	549825	
13.46	13.38	13.52	40417	515266	Endrin	0.080000	505200	
14.01	13.94	14.08	29420	367186	4,4'-DDD	0.080000	367750	
14.96	14.89	15.03	31942	394594	Endrin Aldehyde	0.080000	399262	
15.68	15.61	15.75	36361	464389	Endosulfan sulfate	0.080000	454512	
16.99	16.92	17.06	103201	497694	Endrin Ketone	0.200000	516000	
20.42	20.35	20.49	74183	459870	Decachlorobiphenyl	0.160000	419738	

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Data File: /chem/tracegc83.i/i060110.b/012iINDA59P.d

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Date : 10-JAN-2006 19:41

Client ID: INDA59P

Instrument: tracegc83.i

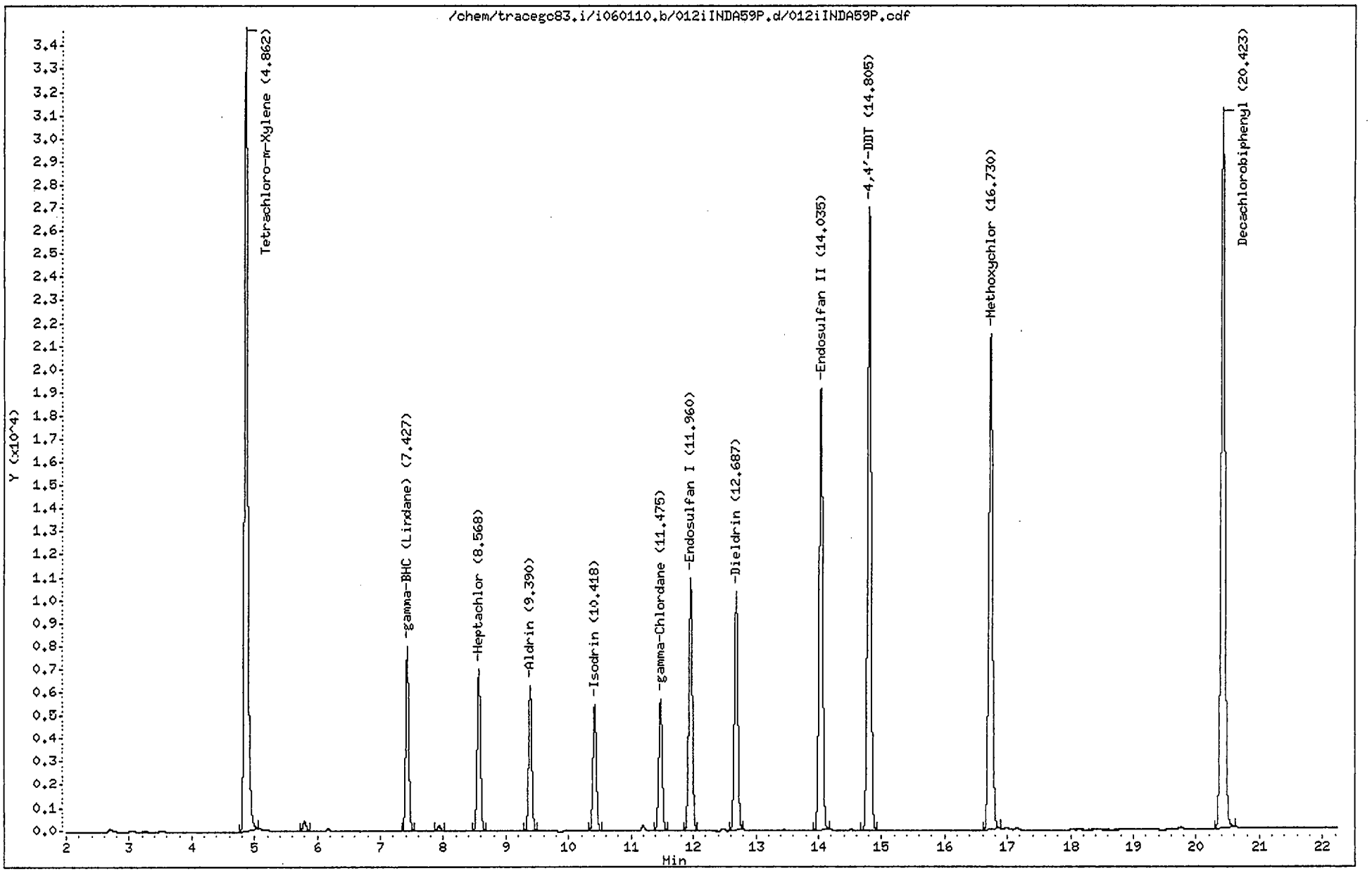
Sample Info: INDA59P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : INDA59P
Client Smp Id : INDA59P
Sample Type : INITIAL CAL: Level 5
Sublist : INDA
Inj Date : 10-JAN-2006 19:41
Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.88			2549					
4.86	4.79	4.93	130069	403926	Tetrachloro-m-Xylene	0.320000	406462	
5.80			1635					
7.43	7.36	7.50	26565	689670	gamma-BHC (Lindane)	0.040000	664100	
7.93			928					
8.57	8.50	8.64	26078	732145	Heptachlor	0.040000	651925	
9.39	9.32	9.46	23727	661560	Aldrin	0.040000	593150	
10.42	10.35	10.49	20864	589030	Isodrin	0.040000	521600	
11.48	11.41	11.55	21995	627645	gamma-Chlordane	0.040000	549875	
11.96	11.89	12.03	41768	581450	Endosulfan I	0.080000	522100	
12.69	12.62	12.76	40506	563772	Dieldrin	0.080000	506312	
14.04	13.97	14.11	72912	481879	Endosulfan II	0.160000	455694	
14.80	14.73	14.87	100265	414793	4,4'-DDT	0.240000	417767	
16.73	16.66	16.80	86574	241339	Methoxychlor	0.400000	216435	
20.42	20.35	20.49	137109	459870	Decachlorobiphenyl	0.320000	428462	

1/10/06

Data File: /chem/tracegc83.i/i060110.b/013iINDB59P.d

Date : 10-JAN-2006 20:07

Client ID: INDB59P

Instrument: tracegc83.i

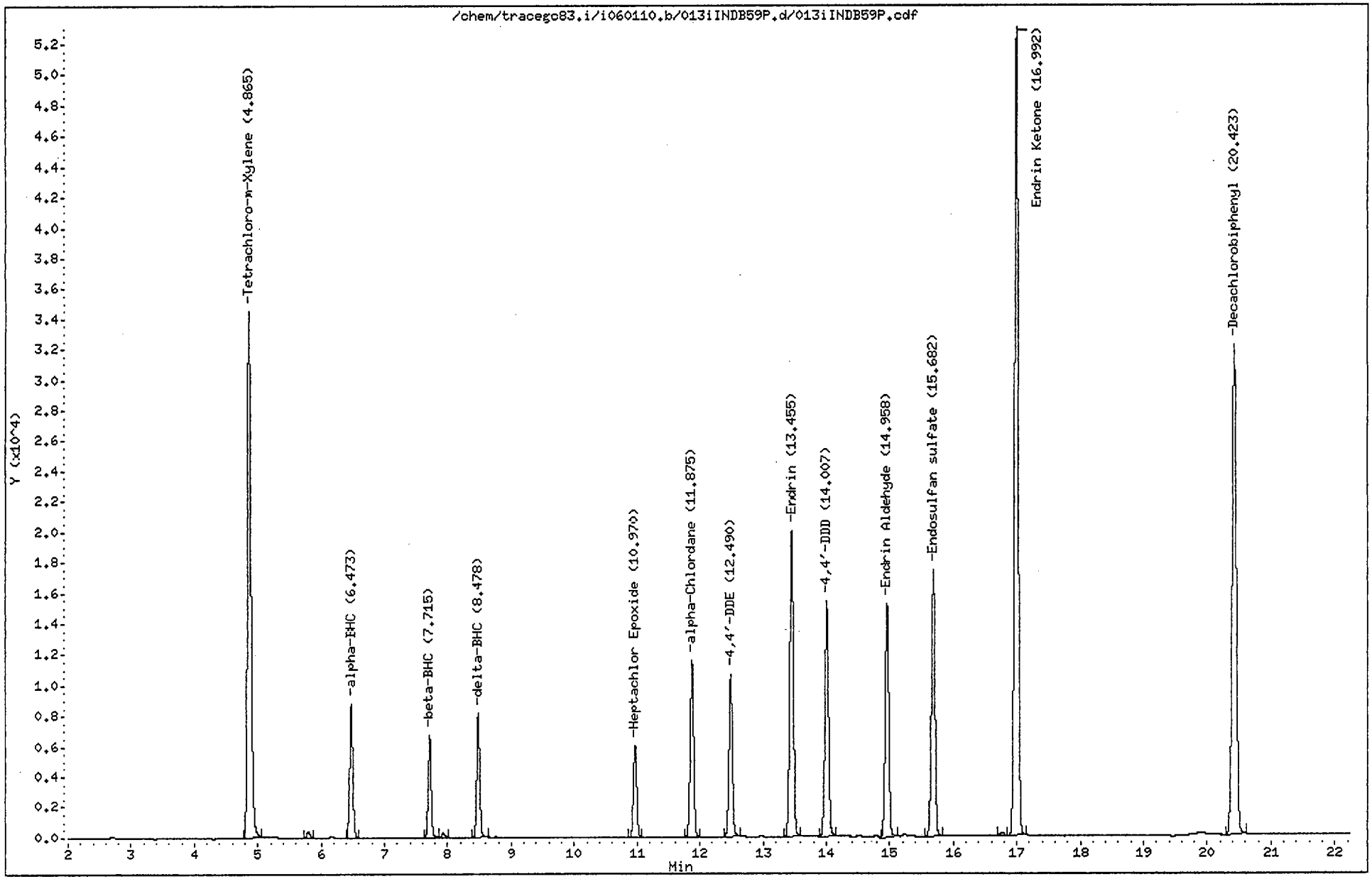
Sample Info: INDB59P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : INDB59P
Client Smp Id : INDB59P
Sample Type : INITIAL CAL: Level 5
Sublist : INDB
Inj Date : 10-JAN-2006 20:07
Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.89			3620					
0.92			12271					
4.86	4.79	4.93	129576	403926	Tetrachloro-m-Xylene	0.320000	406462	
5.80			1603					
6.47	6.40	6.54	29377	762580	alpha-BHC	0.040000	734400	
7.72	7.64	7.78	23312	311082	beta-BHC	0.080000	291388	
7.93			1095					
8.48	8.41	8.55	26967	687745	delta-BHC	0.040000	674175	
10.97	10.90	11.04	23113	660355	Heptachlor Epoxide	0.040000	577825	
11.88	11.81	11.95	43956	602048	alpha-Chlordane	0.080000	549438	
12.49	12.42	12.56	40956	558335	4,4'-DDE	0.080000	511950	
13.46	13.38	13.52	76702	515266	Endrin	0.160000	479381	
14.01	13.94	14.08	57178	367186	4,4'-DDD	0.160000	357356	
14.96	14.89	15.03	59309	394594	Endrin Aldehyde	0.160000	370681	
15.68	15.61	15.75	68334	464389	Endosulfan sulfate	0.160000	427081	
16.77			942					
16.99	16.92	17.06	202489	497694	Endrin Ketone	0.400000	506222	
20.42	20.35	20.49	141627	459870	Decachlorobiphenyl	0.320000	428462	

1/10/06

Data File: /chem/tracegc83.i/i060110.b/014iCLPAMP.d

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Date : 10-JAN-2006 20:32

Client ID: CLPAMP

Instrument: tracegc83.i

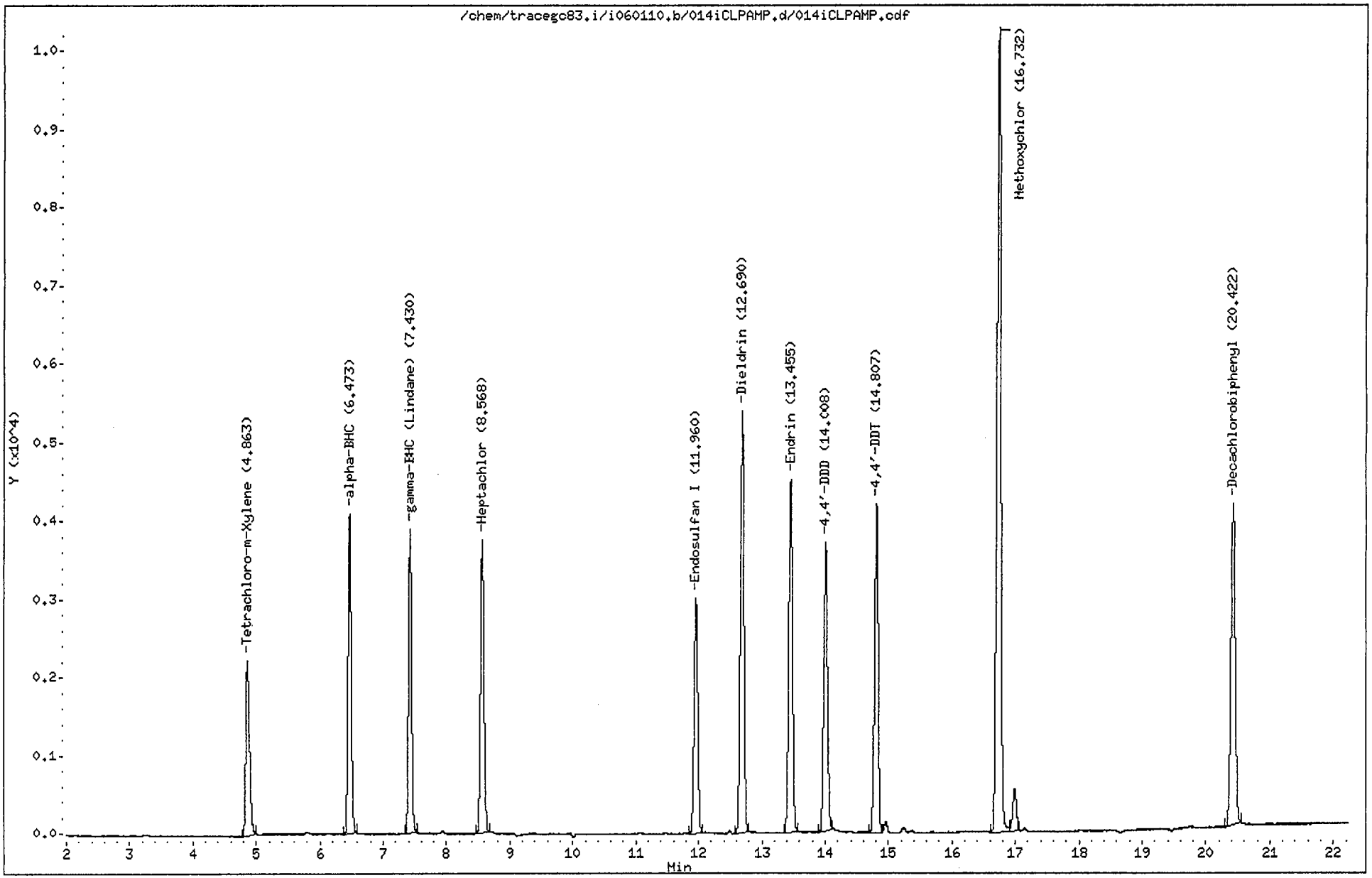
Sample Info: CLPAMP

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : CLPAMP
Client Smp Id : CLPAMP
Sample Type : QCCHECK
Sublist : MDLA
Inj Date : 10-JAN-2006 20:32
Inst ID : TRACEGC83
Operator : 2512
Spike Sublist : INDAchek
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	AREA
0.89	3795
0.92	6688
4.86	8838
6.47	14087
7.43	13261
8.57	13993
11.96	11736
12.69	21012
13.46	18004
14.01	14508
14.81	16587
16.73	43392
16.99	2121
20.42	19185

1/10/06

CompuChem

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: CLPAMP
Level: LOW
Data Type: GC MULTI COMP
SpikeList File: INDAchek.spk
Sublist File: MDLA.sub
Method File: /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc Info: None

Client SDG: i060110
Fraction: PEST
Client Smp ID: CLPAMP
Operator: 2512
SampleType: QCCHECK
Quant Type: ESTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
2 alpha-BHC	0.020	0.018	92.36	80-120
3 gamma-BHC (Lindane	0.020	0.019	96.14	80-120
4 Heptachlor	0.020	0.019	95.56	80-120
13 Endosulfan I	0.020	0.020	100.92	80-120
15 Dieldrin	0.040	0.037	93.18	80-120
16 Endrin	0.040	0.035	87.35	80-120
17 4,4'-DDD	0.040	0.040	98.77	80-120
19 4,4'-DDT	0.040	0.040	99.97	80-120
22 Methoxychlor	0.20	0.18	89.90	80-120

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 1 Tetrachloro-m-Xyle	0.020	0.022	109.40	43-135
$ 33 Decachlorobiphenyl	0.020	~~0.042~~ 0.021	~~208.59*~~ 104.295	43-144

RP 1/10/06

Data File: /chem/tracegc83.i/i060110.b/015iCLPBM9P.d

Date : 10-JAN-2006 20:58

Client ID: CLPBM9P

Instrument: tracegc83.i

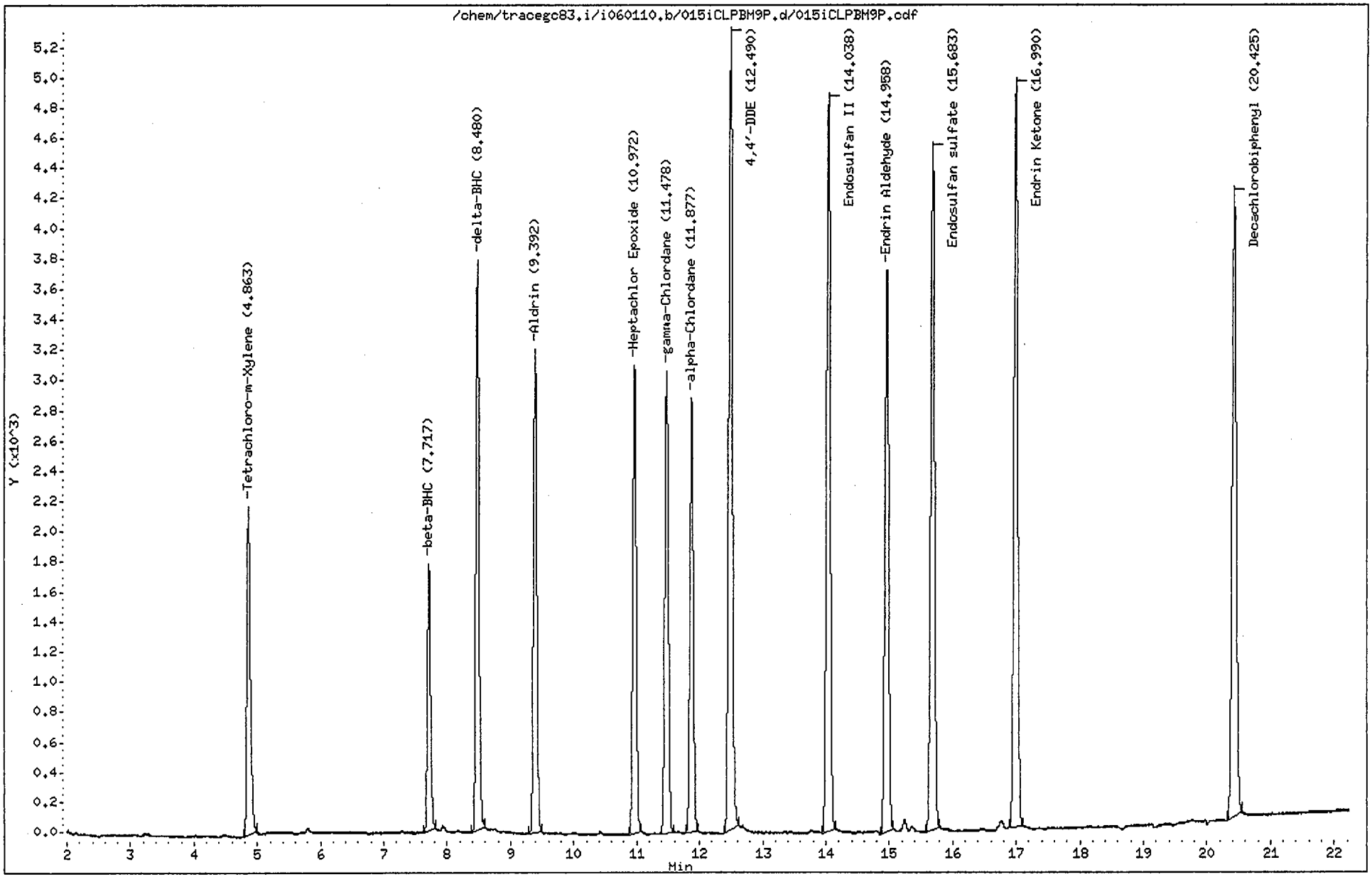
Sample Info: CLPBM9P

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : CLPBM9P
Client Smp Id : CLPBM9P
Sample Type : QCCHECK
Sublist : MDLB
Inj Date : 10-JAN-2006 20:58
Inst ID : TRACEGC83
Operator : 2512
Spike Sublist : INDBchek
Method : /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc. Info : None

RT	AREA
0.89	2559
4.86	8515
7.72	6070
8.48	12893
9.39	12162
10.97	11857
11.48	12064
11.88	11317
12.49	20944
14.04	19514
14.96	14860
15.68	18850
16.99	20017
20.43	19307

1/10/06

CompuChem

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: CLPBM9P
Level: LOW
Data Type: GC MULTI COMP
SpikeList File: INDBchek.spk
Sublist File: MDLB.sub
Client SDG: i060110
Fraction: PEST
Client Smp ID: CLPBM9P
Operator: 2512
SampleType: QCCHECK
Quant Type: ESTD
Method File: /chem/tracegc83.i/i060110.b/8081A_clpest2v4.m
Misc Info: None

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
7 beta-BHC	0.020	0.020	97.56	80-120
8 delta-BHC	0.020	0.019	93.73	80-120
5 Aldrin	0.020	0.018	91.92	80-120
9 Heptachlor Epoxide	0.020	0.018	89.77	80-120
10 gamma-Chlordane	0.020	0.019	96.11	80-120
11 alpha-Chlordane	0.020	0.019	93.99	80-120
14 4,4'-DDE	0.040	0.038	93.78	80-120
18 Endosulfan II	0.040	0.040	101.24	80-120
20 Endrin Aldehyde	0.040	0.038	94.15	80-120
21 Endosulfan sulfate	0.040	0.041	101.48	80-120
23 Endrin Ketone	0.040	0.040	100.55	80-120

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 1 Tetrachloro-m-Xyle	0.020	0.021	105.41	43-135
$ 33 Decachlorobiphenyl	0.020	~~0.042~~ 0.021	~~209.91*~~ 104.95	43-144

DL 1/10/06

Data File: /chem/tracegc82.i/i060110e.b/072iTOXAPH49P.d

Page 1

Date : 11-JAN-2006 22:48

Client ID: TOXAPH49P

Instrument: tracegc82.i

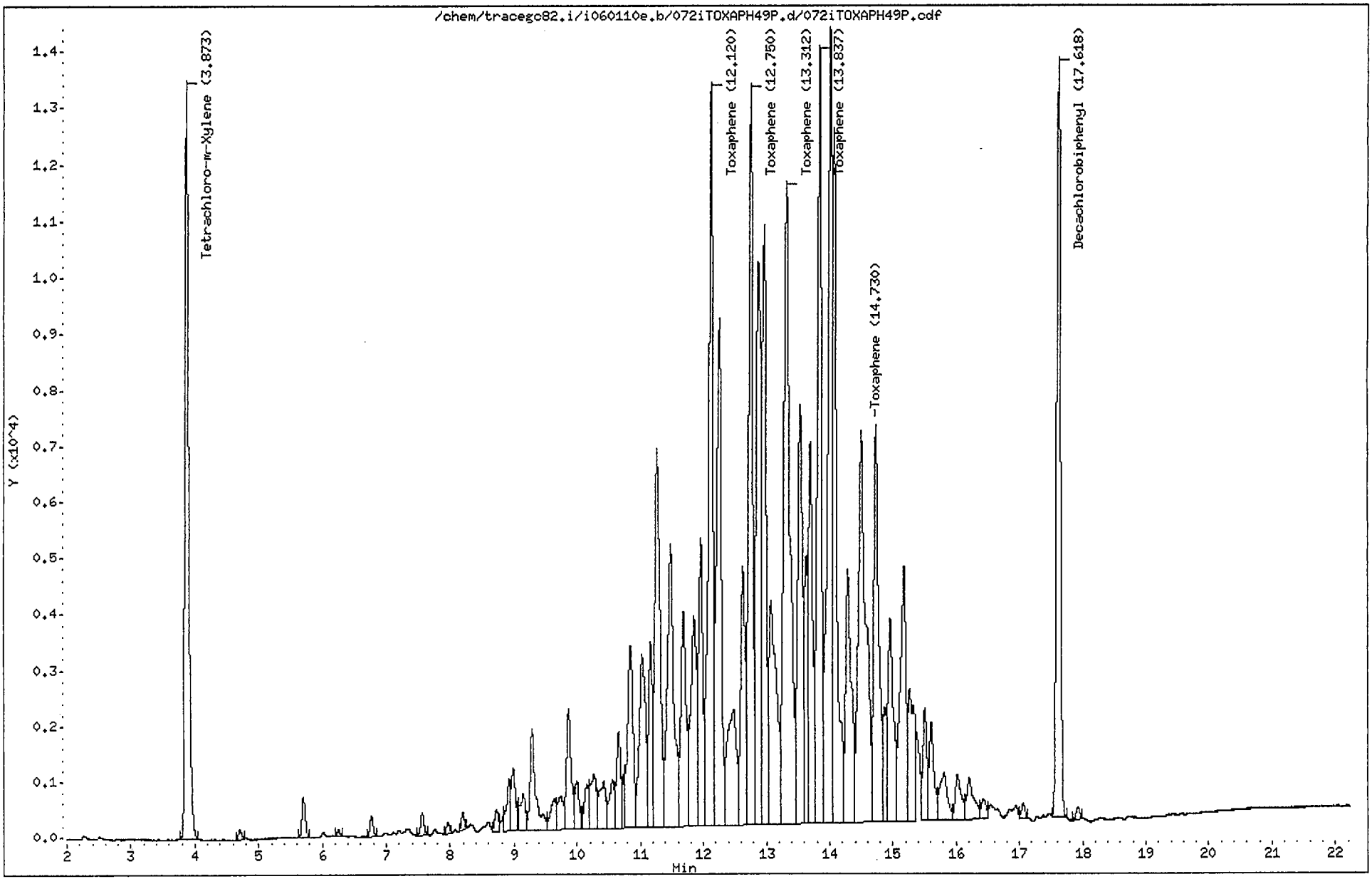
Sample Info: TOXAPH49P

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : TOXAPH49P Client Smp Id : TOXAPH49P
Sample Type : INITIAL CAL: Level 4 Sublist : TOXAPH
Inj Date : 11-JAN-2006 22:48 Inst ID : TRACEGC82
Operator : 2564
Method : /chem/tracegc82.i/i060110e.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.15			401					
0.91			7198					
3.87	3.78	3.92	53166	306784	Tetrachloro-m-Xylene	0.160000	289281	
4.71			564					
5.70			2637					
6.26			368					
6.77			1310					
7.56			1484					
7.96			707					
8.19			1090					
8.72			1575					
8.92			4106					
8.99			4801					
9.14			3655					
9.29			11076					
9.63			3569					
9.74			3477					
9.87			11270					
9.99			4175					
10.15			3633					
10.27			6869					
10.36			5958					
10.56			4831					
10.65			8021					
10.75			2694					
10.85			19801					
11.03			22146					
11.16			14216					
11.27			40738					
11.48			37476					
11.68			22150					
11.85			24966					
11.96			23499					
12.12	12.05	12.19	64255	16064	Toxaphene Peak 1	4.000000	16064	
12.25			47816					
12.47			21625					
12.63			23411					
12.75	12.68	12.82	57051	14263	Toxaphene Peak 2	4.000000	14263	
12.87			54955					
12.96			49035					
13.07			32756					
13.31	13.24	13.38	80565	20141	Toxaphene Peak 3	4.000000	20141	

1/12/06

CompuChem

Lab Smp Id : TOXAPH49P Client Smp Id : TOXAPH49P
Sample Type : INITIAL CAL: Level 4 Sublist : TOXAPH
Inj Date : 11-JAN-2006 22:48 Inst ID :
Operator : 2564
Method : /chem/tracegc82.i/i060110e.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
13.53		39728					
13.63		16478					
13.69		33625					
13.84	13.77 13.91	64142	16036	Toxaphene Peak 4	4.000000	16036	
14.01		70278					
14.07		54491					
14.29		28762					
14.50		59960					
14.73	14.66 14.80	40594	10148	Toxaphene Peak 5	4.000000	10148	
14.87		7565					
14.96		22603					
15.18		28807					
15.27		16439					
15.51		9254					
15.61		9342					
15.81		7348					
16.02		5279					
16.21		6021					
16.43		1906					
17.05		982					
17.62	17.52 17.66	55632	362764	Decachlorobiphenyl	0.160000	325544	
17.92		786					

Data File: /chem/tracegc82.i/i060110e.b/073iCHLOR049P.d

Page 1

Date : 11-JAN-2006 23:13

Client ID: CHLOR049P

Instrument: tracegc82.i

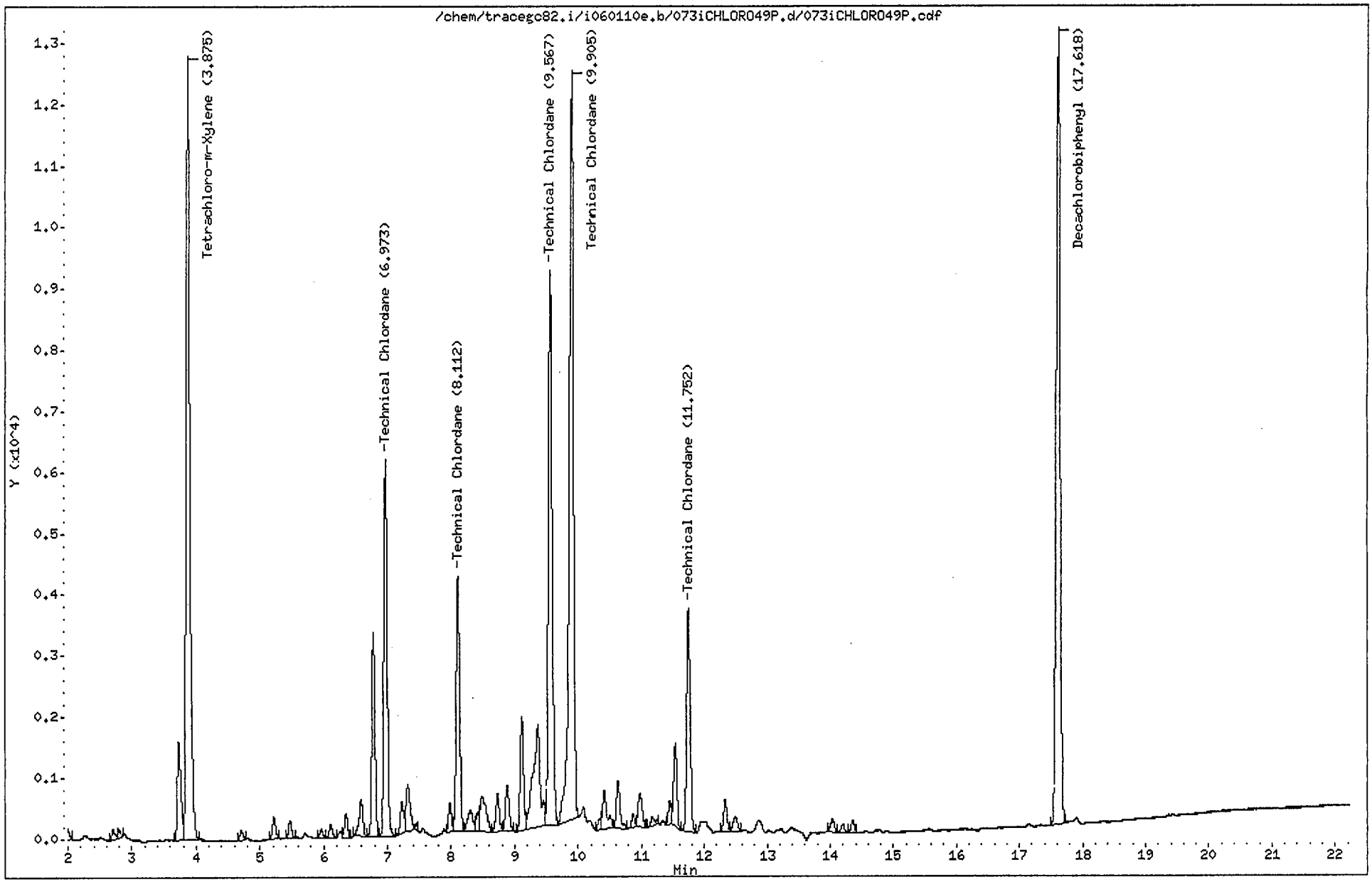
Sample Info: CHLOR049P

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : CHLORO49P Client Smp Id : CHLORO49P
Sample Type : INITIAL CAL: Level 4 Sublist : TechChlor
Inj Date : 11-JAN-2006 23:13 Inst ID : TRACEGC82
Operator : 2564
Method : /chem/tracegc82.i/i060110e.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.91			10145					
1.07			1999					
1.92			3488					
2.70			586					
2.80			356					
3.73			6301					
3.88	3.78	3.92	50709	306784	Tetrachloro-m-Xylene	0.160000	289281	
4.70			548					
5.22			1349					
5.47			992					
5.96			480					
6.11			802					
6.35			1395					
6.58			2499					
6.78			11938					
6.97	6.90	7.04	22592	28239	TechnicalChlordane Peak 1	0.800000	28239	
7.22			1833					
7.32			3806					
7.98			1559					
8.11	8.04	8.18	16031	20039	TechnicalChlordane Peak 2	0.800000	20039	
8.31			2012					
8.41			955					
8.49			3834					
8.73			2309					
8.88			3025					
9.11			6787					
9.37			13294					
9.57	9.50	9.64	36138	45171	TechnicalChlordane Peak 3	0.800000	45171	
9.90	9.83	9.97	55841	69800	TechnicalChlordane Peak 4	0.800000	69800	
10.34			598					
10.41			3117					
10.63			3172					
10.87			654					
10.98			2532					
11.17			728					
11.45			1180					
11.54			4978					
11.75	11.68	11.82	14183	17729	TechnicalChlordane Peak 5	0.800000	17729	
12.33			2007					
12.49			1177					
14.03			832					
14.20			534					

c 1/12/06

CompuChem

Lab Smp Id : CHLORO49P
Client Smp Id : CHLORO49P
Sample Type : INITIAL CAL: Level 4
Sublist : TechChlor
Inj Date : 11-JAN-2006 23:13
Inst ID :
Operator : 2564
Method : /chem/tracegc82.i/i060110e.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
14.36		709					
17.62	17.52 17.66	53168	362764	Decachlorobiphenyl	0.160000	325544	

Data File: /chem/tracegc83.i/i060110e.b/072iTOXAPH49P.d

Page 1

Date : 11-JAN-2006 22:48

Client ID: TOXAPH49P

Instrument: tracegc83.i

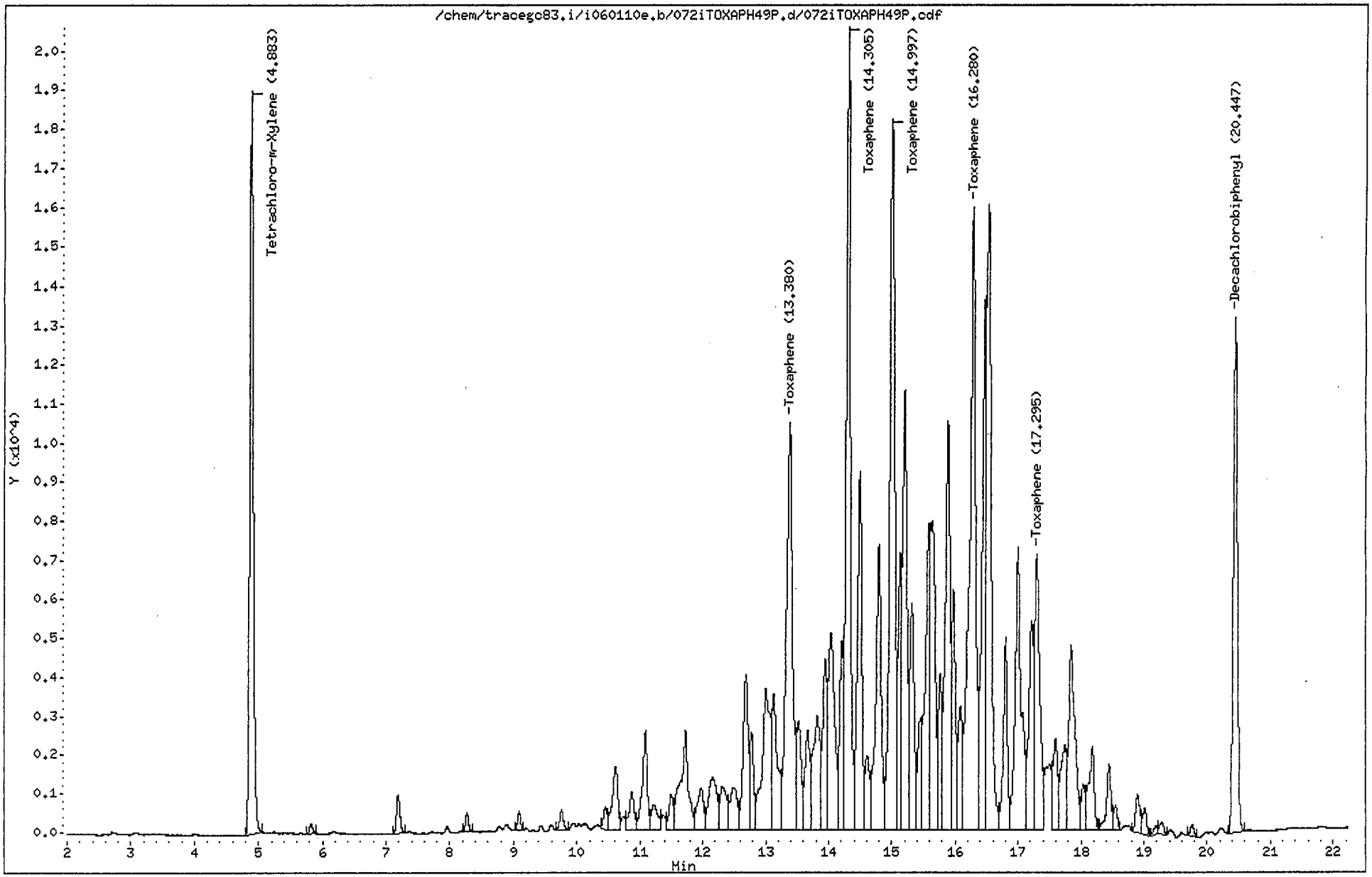
Sample Info: TOXAPH49P

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : TOXAPH49P Client Smp Id : TOXAPH49P
Sample Type : INITIAL CAL: Level 4 Sublist : TOXAPH
Inj Date : 11-JAN-2006 22:48 Inst ID : TRACEGC83
Operator : 2564
Method : /chem/tracegc83.i/i060110e.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.90		3790					
0.93		8233					
4.88	4.79 4.93	70515	403926	Tetrachloro-m-Xylene	0.160000	384669	
5.82		925					
7.19		3821					
8.27		1620					
9.09		1618					
9.76		2195					
10.45		2518					
10.61		10088					
10.87		5634					
11.09		13363					
11.23		4696					
11.50		4576					
11.72		22352					
11.98		7746					
12.16		12518					
12.31		8599					
12.51		8734					
12.69		22438					
12.78		10849					
13.00		32834					
13.13		22382					
13.38	13.31 13.45	72116	18029	Toxaphene Peak 1	4.000000	18029	
13.52		15070					
13.66		14157					
13.82		23763					
13.95		20605					
14.04		35651					
14.21		19972					
14.30	14.23 14.37	92957	23239	Toxaphene Peak 2	4.000000	23239	
14.49		46684					
14.61		9763					
14.79		44697					
15.00	14.93 15.07	101416	25354	Toxaphene Peak 3	4.000000	25354	
15.13		26029					
15.20		55347					
15.32		29567					
15.44		12012					
15.58		41495					
15.63		42055					
15.76		16900					

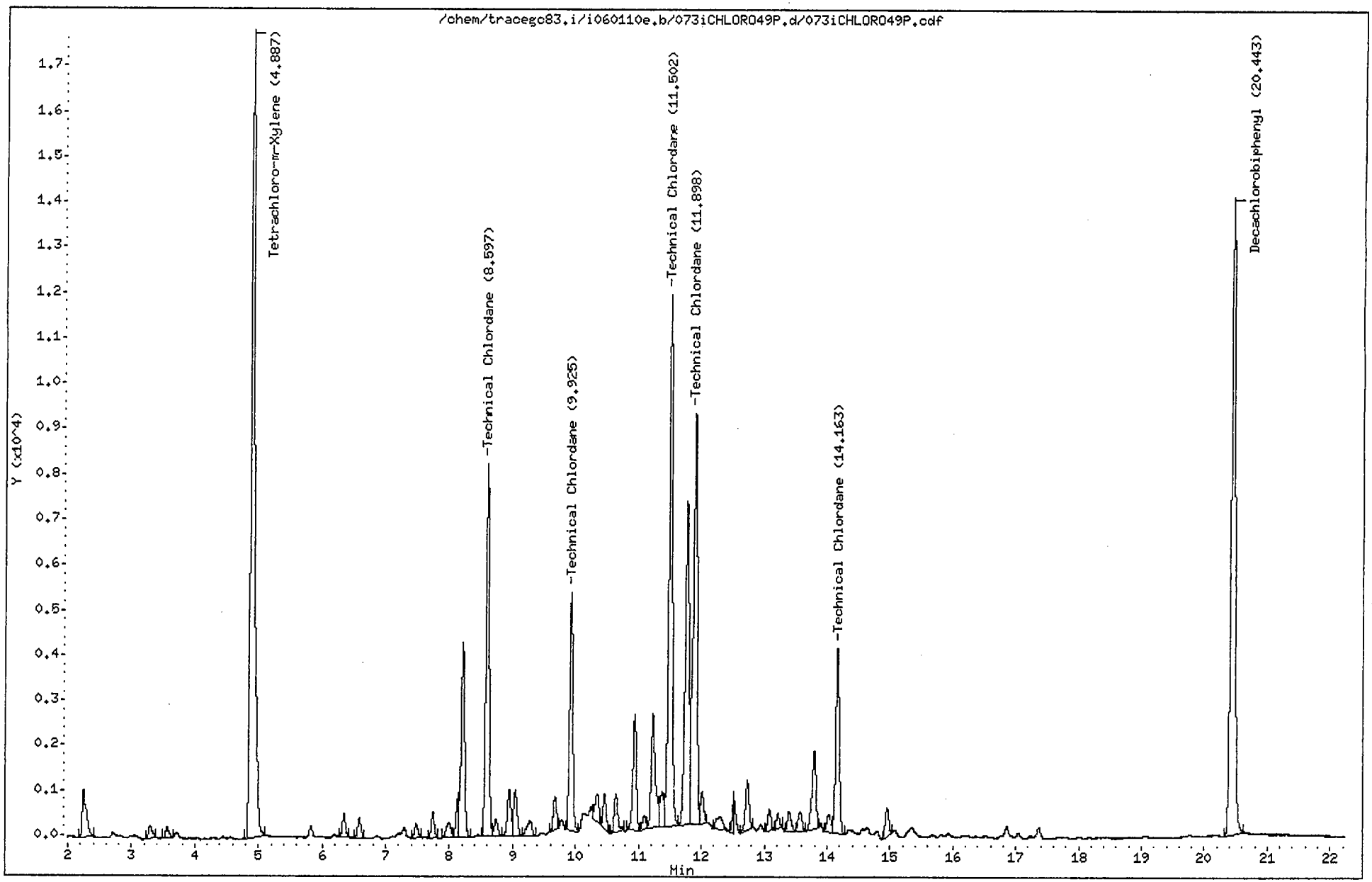
CompuChem

Lab Smp Id : TOXAPH49P Client Smp Id : TOXAPH49P
Sample Type : INITIAL CAL: Level 4 Sublist : TOXAPH
Inj Date : 11-JAN-2006 22:48 Inst ID :
Operator : 2564
Method : /chem/tracegc83.i/i060110e.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
15.88		55129					
15.97		25882					
16.08		16069					
16.28	16.21 16.35	109108	27277	Toxaphene Peak 4	4.000000	27277	
16.47		60413					
16.53		82644					
16.80		23201					
17.00		49745					
17.21		27825					
17.30	17.23 17.37	41856	10464	Toxaphene Peak 5	4.000000	10464	
17.59		13010					
17.74		14462					
17.84		33101					
18.03		5088					
18.18		13796					
18.45		8804					
18.55		2677					
18.90		4888					
19.01		3006					
19.18		973					
19.28		1631					
19.76		1327					
20.45	20.35 20.49	58547	459870	Decachlorobiphenyl	0.160000	419738	

Data File: /chem/tracegc83.i/i060110e.b/073iCHLOR049P.d
Date : 11-JAN-2006 23:13
Client ID: CHLOR049P
Sample Info: CHLOR049P
Volume Injected (uL): 1.0
Column phase: clpest2

Instrument: tracegc83.i
Operator: 2564
Column diameter: 0.53



CompuChem

Lab Smp Id : CHLORO49P Client Smp Id : CHLORO49P
Sample Type : INITIAL CAL: Level 4 Sublist : TechChlor
Inj Date : 11-JAN-2006 23:13 Inst ID : TRACEGC83
Operator : 2564
Method : /chem/tracegc83.i/i060110e.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
0.90			5470					
0.93			11924					
1.06			1955					
1.12			3671					
2.25			4612					
3.29			1110					
3.56			925					
4.89	4.79	4.93	75132	403926	Tetrachloro-m-Xylene	0.160000	384669	
6.34			1726					
6.58			1493					
7.48			1131					
7.74			1933					
7.99			1728					
8.13			2557					
8.21			16345					
8.60	8.53	8.67	30177	37720	TechnicalChlordane Peak 1	0.800000	37720	
8.74			1553					
8.95			4042					
9.04			4231					
9.28			1934					
9.67			2657					
9.92	9.85	9.99	19464	24329	TechnicalChlordane Peak 2	0.800000	24329	
10.34			2551					
10.46			2769					
10.64			3193					
10.94			10033					
11.09			1156					
11.23			11922					
11.38			3347					
11.50	11.43	11.57	46982	58726	TechnicalChlordane Peak 3	0.800000	58726	
11.77			32060					
11.90	11.83	11.97	40665	50830	TechnicalChlordane Peak 4	0.800000	50830	
12.01			2633					
12.30			2225					
12.52			1361					
12.73			4278					
13.08			1746					
13.22			1064					
13.39			1907					
13.57			1839					
13.80			7622					
14.03			1673					

1/12/06

CompuChem

Lab Smp Id : CHLORO49P Client Smp Id : CHLORO49P
Sample Type : INITIAL CAL: Level 4 Sublist : TechChlor
Inj Date : 11-JAN-2006 23:13 Inst ID :
Operator : 2564
Method : /chem/tracegc83.i/i060110e.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
14.16	14.09 14.23	16740	20925	TechnicalChlordane Peak 5	0.800000	20925	
14.95		2431					
20.44	20.35 20.49	62580	459870	Decachlorobiphenyl	0.160000	419738	

Data File: /chem/tracegc82.i/i060110zb.b/340iINDAMBF.d

Date : 24-JAN-2006 19:41

Client ID: INDAMBF

Instrument: tracegc82.i

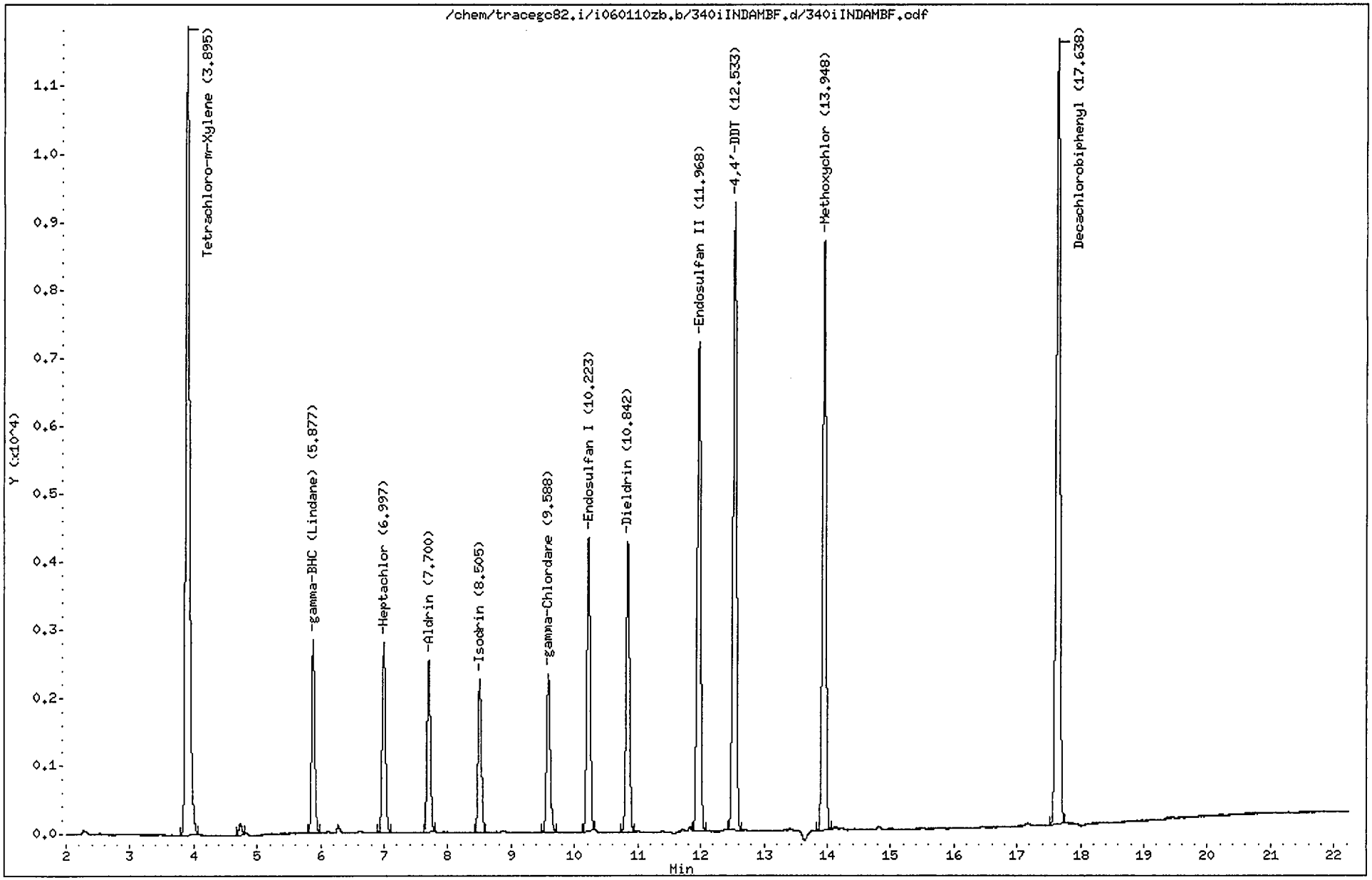
Sample Info: INDAMBF

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDAMBF Client Smp Id : INDAMBF
Sample Type : CONT CAL: Level 4 Sublist : INDA
Inj Date : 24-JAN-2006 19:41 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110zb.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
0.95			5726013								
3.90	3.78	3.92	47610	306784	Tetrachloro-m-Xylene	0.160000	297565	3.0	15.0		
4.73			529								
5.88	5.76	5.90	9578	491545	gamma-BHC (Lindane)	0.020000	478910	2.6	15.0		
7.00	6.88	7.02	10082	524870	Heptachlor	0.020000	504085	4.0	15.0		
7.70	7.58	7.72	9059	482395	Aldrin	0.020000	452940	6.1	15.0		
8.50	8.39	8.53	8105	430775	Isodrin	0.020000	405250	5.9	15.0		
9.59	9.47	9.61	8850	465605	gamma-Chlordane	0.020000	442515	5.0	15.0		
10.22	10.10	10.24	15833	428652	Endosulfan I	0.040000	395815	7.7	15.0		
10.84	10.72	10.86	15767	426262	Dieldrin	0.040000	394176	7.5	15.0		
11.97	11.85	11.99	26477	362004	Endosulfan II	0.080000	330964	8.6	15.0		
12.53	12.41	12.55	34213	315540	4,4'-DDT	0.120000	285109	9.6	15.0		
13.95	13.83	13.97	33386	193873	Methoxychlor	0.200000	166928	13.9	15.0		
17.64	17.53	17.67	47421	362764	Decachlorobiphenyl	0.160000	296382	18.3*	15.0	R	

1/24/06
$\bar{x} = 7.7$

Data File: /chem/tracegc82.i/i060110zb.b/341iINDBMBF.d

Date : 24-JAN-2006 20:06

Client ID: INDBMBF

Instrument: tracegc82.i

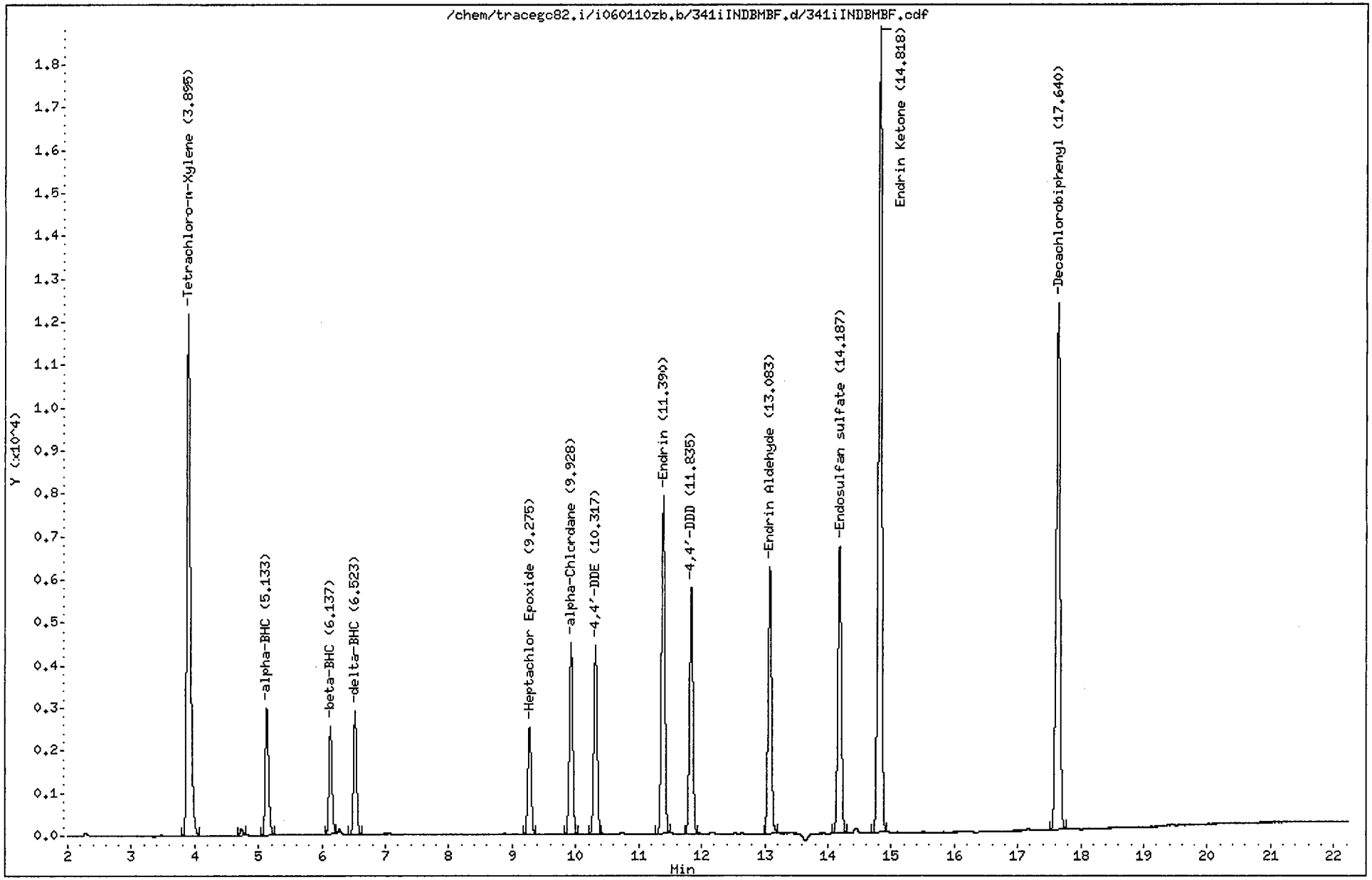
Sample Info: INDBMBF

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDBMBF Client Smp Id : INDBMBF
Sample Type : CONT CAL: Level 4 Sublist : INDB
Inj Date : 24-JAN-2006 20:06 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110zb.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
0.17			419								
0.95			4823158								
3.90	3.78	3.92	48444	306784	Tetrachloro-m-Xylene	0.160000	297565	3.0	15.0		
4.73			515								
5.13	5.02	5.16	10485	531660	alpha-BHC	0.020000	524255	1.4	15.0		
6.14	6.02	6.16	8721	232362	beta-BHC	0.040000	218024	6.2	15.0		
6.52	6.41	6.55	9545	495960	delta-BHC	0.020000	477238	3.8	15.0		
9.28	9.16	9.30	9118	489070	Heptachlor Epoxide	0.020000	455905	6.8	15.0		
9.93	9.81	9.95	16430	444438	alpha-Chlordane	0.040000	410740	7.6	15.0		
10.32	10.20	10.34	16150	440000	4,4'-DDE	0.040000	403760	8.2	15.0		
11.39	11.27	11.41	29010	386241	Endrin	0.080000	362619	6.1	15.0		
11.84	11.72	11.86	20846	279150	4,4'-DDD	0.080000	260579	6.7	15.0		
13.08	12.96	13.10	23669	321174	Endrin Aldehyde	0.080000	295861	7.9	15.0		
14.19	14.07	14.21	25753	353870	Endosulfan sulfate	0.080000	321914	9.0	15.0		
14.82	14.70	14.84	69987	374160	Endrin Ketone	0.200000	349934	6.5	15.0		
17.64	17.53	17.67	50443	362764	Decachlorobiphenyl	0.160000	296382	18.3*	15.0	R	

1/24/06
$\bar{X} = 7.0$

Data File: /chem/tracegc83.i/i060110zb.b/340iINDAMBF.d

Page 1

Date : 24-JAN-2006 19:41

Client ID: INDAMBF

Instrument: tracegc83.i

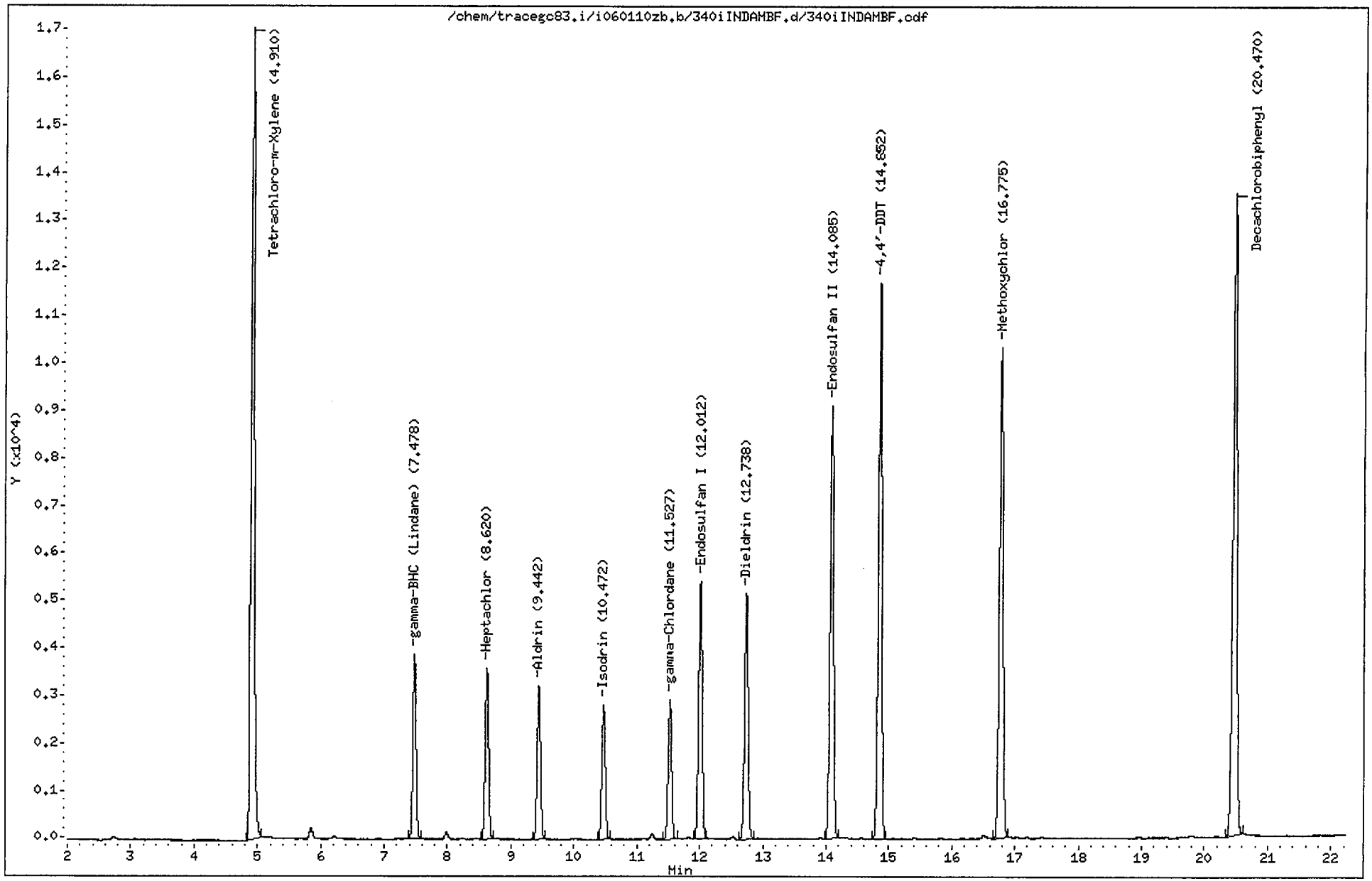
Sample Info: INDAMBF

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : INDAMBF
Client Smp Id : INDAMBF
Sample Type : CONT CAL: Level 4
Sublist : INDA
Inj Date : 24-JAN-2006 19:41
Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110zb.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
0.95			7283949								
4.91	4.79	4.93	63680	403926	Tetrachloro-m-Xylene	0.160000	397997	1.5	15.0		
7.48	7.36	7.50	13046	689670	gamma-BHC (Lindane)	0.020000	652310	5.4	15.0		
8.62	8.50	8.64	13348	732145	Heptachlor	0.020000	667395	8.8	15.0		
9.44	9.32	9.46	12110	661560	Aldrin	0.020000	605510	8.5	15.0		
10.47	10.35	10.49	10718	589030	Isodrin	0.020000	535880	9.0	15.0		
11.53	11.41	11.55	11264	627645	gamma-Chlordane	0.020000	563222	10.3	15.0		
12.01	11.89	12.03	20844	581450	Endosulfan I	0.040000	521097	10.4	15.0		
12.74	12.62	12.76	20125	563772	Dieldrin	0.040000	503129	10.8	15.0		
14.08	13.97	14.11	35022	481879	Endosulfan II	0.080000	437781	9.2	15.0		
14.85	14.73	14.87	43978	414793	4,4'-DDT	0.120000	366487	11.6	15.0		
16.78	16.66	16.80	41242	241339	Methoxychlor	0.200000	206211	14.6	15.0		
20.47	20.35	20.49	59538	459870	Decachlorobiphenyl	0.160000	372111	19.1*	15.0	R	

bf
1/24/06
Y=9.9

Data File: /chem/tracegc83.i/i060110zb.b/341iINDBMBF.d

Date : 24-JAN-2006 20:06

Client ID: INDBMBF

Instrument: tracegc83.i

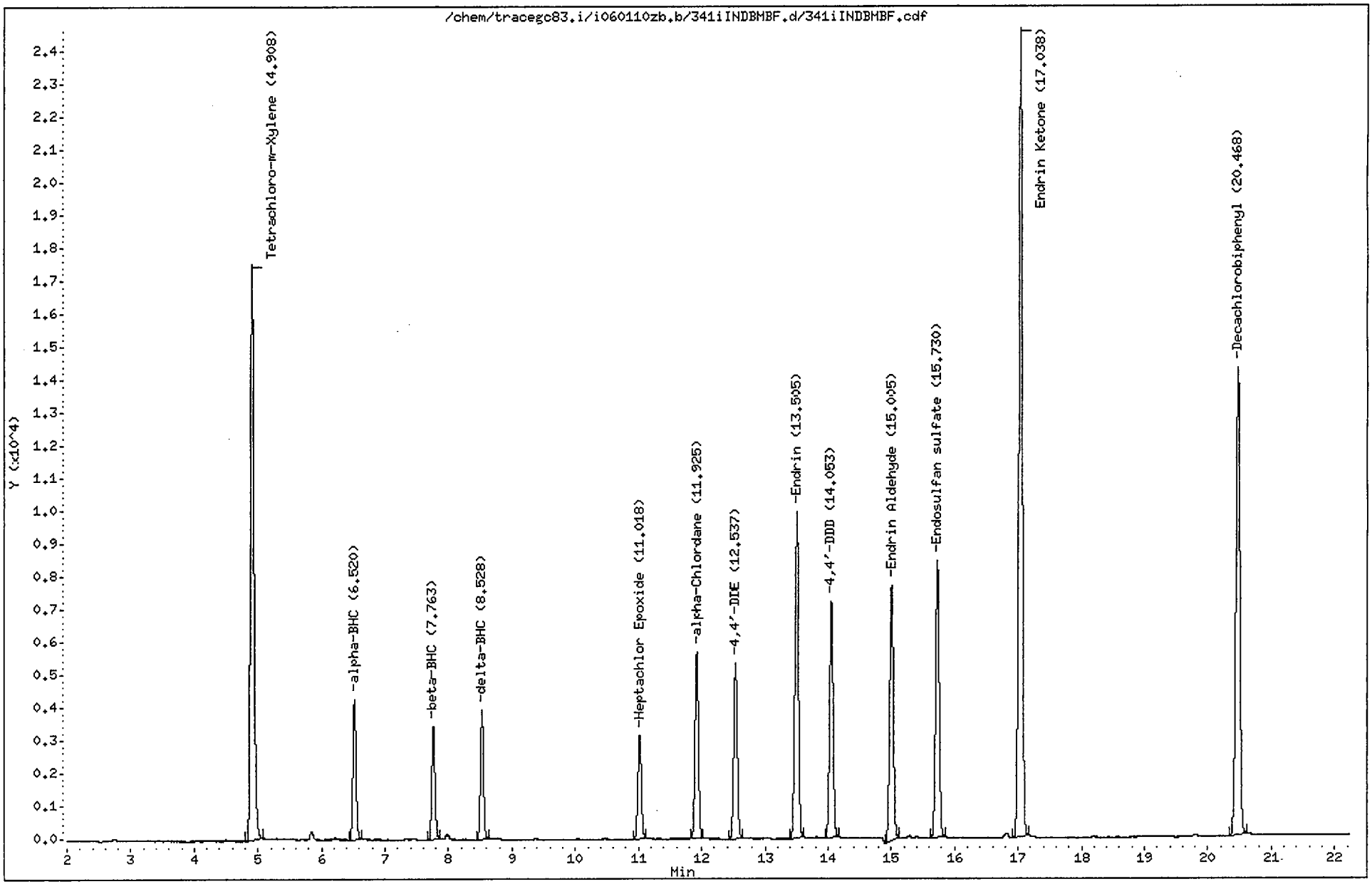
Sample Info: INDBMBF

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : INDBMBF
Client Smp Id : INDBMBF
Sample Type : CONT CAL: Level 4
Sublist : INDB
Inj Date : 24-JAN-2006 20:06
Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110zb.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
0.95			6213864								
4.91	4.79	4.93	64728	403926	Tetrachloro-m-Xylene	0.160000	397997	1.5	15.0		
6.52	6.40	6.54	14467	762580	alpha-BHC	0.020000	723355	5.1	15.0		
7.76	7.65	7.79	11690	311082	beta-BHC	0.040000	292255	6.1	15.0		
8.53	8.41	8.55	12893	687745	delta-BHC	0.020000	644637	6.3	15.0		
11.02	10.90	11.04	11841	660355	Heptachlor Epoxide	0.020000	592060	10.3	15.0		
11.92	11.81	11.95	21590	602048	alpha-Chlordane	0.040000	539743	10.3	15.0		
12.54	12.42	12.56	20467	558335	4,4'-DDE	0.040000	511679	8.4	15.0		
13.50	13.39	13.53	37809	515266	Endrin	0.080000	472613	8.3	15.0		
14.05	13.94	14.08	27134	367186	4,4'-DDD	0.080000	339173	7.6	15.0		
15.00	14.89	15.03	30100	394594	Endrin Aldehyde	0.080000	376253	4.6	15.0		
15.73	15.61	15.75	33245	464389	Endosulfan sulfate	0.080000	415563	10.5	15.0		
17.04	16.92	17.06	93002	497694	Endrin Ketone	0.200000	465011	6.6	15.0		
20.47	20.35	20.49	63576	459870	Decachlorobiphenyl	0.160000	372111	19.1*	15.0	R	

KP 1/24/06
$\bar{X} = 8.1$

Data File: /chem/tracegc82.i/i060110zc.b/351iINDAMBH.d

Date : 25-JAN-2006 00:22

Client ID: INDAMBH

Instrument: tracegc82.i

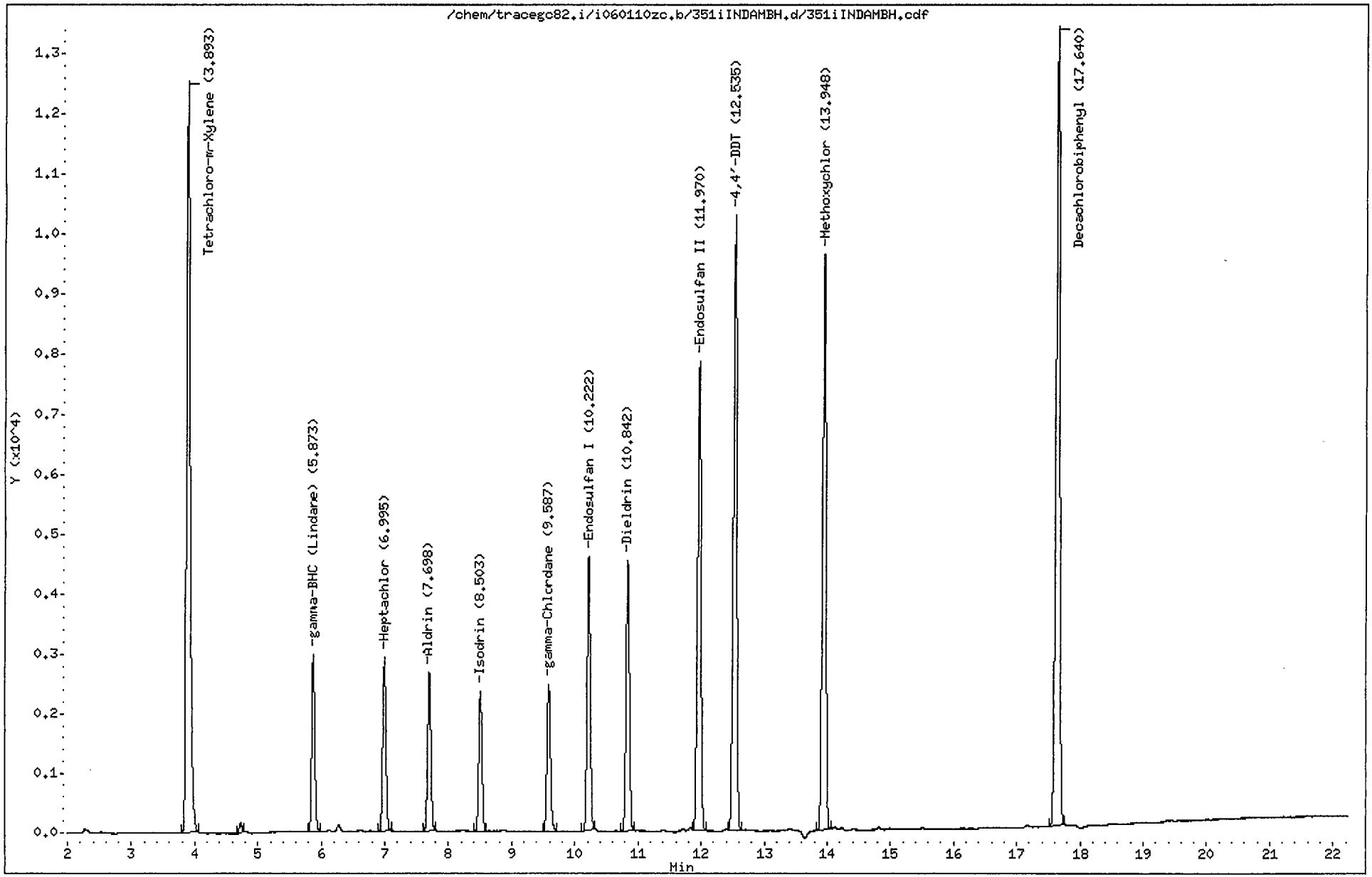
Sample Info: INDAMBH

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDAMBH
Client Smp Id : INDAMBH
Sample Type : CONT CAL: Level 4
Sublist : INDA
Inj Date : 25-JAN-2006 00:22
Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110zc.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
0.16			374								
0.95			5799451								
3.89	3.78	3.92	49289	306784	Tetrachloro-m-Xylene	0.160000	308056	-0.4	15.0		
4.73			552								
5.87	5.76	5.90	10035	491545	gamma-BHC (Lindane)	0.020000	501765	-2.1	15.0		
7.00	6.88	7.02	10546	524870	Heptachlor	0.020000	527318	-0.5	15.0		
7.70	7.58	7.72	9513	482395	Aldrin	0.020000	475670	1.4	15.0		
8.50	8.39	8.53	8575	430775	Isodrin	0.020000	428728	0.5	15.0		
9.59	9.47	9.61	9441	465605	gamma-Chlordane	0.020000	472042	-1.4	15.0		
10.22	10.10	10.24	16930	428652	Endosulfan I	0.040000	423260	1.3	15.0		
10.84	10.72	10.86	16830	426262	Dieldrin	0.040000	420760	1.3	15.0		
11.97	11.85	11.99	28819	362004	Endosulfan II	0.080000	360234	0.5	15.0		
12.54	12.41	12.55	37798	315540	4,4'-DDT	0.120000	314985	0.2	15.0		
13.95	13.83	13.97	37109	193873	Methoxychlor	0.200000	185547	4.3	15.0		
17.64	17.53	17.67	54345	362764	Decachlorobiphenyl	0.160000	339656	6.4	15.0		

Data File: /chem/tracegc82.i/i060110zc.b/352iINDBMBH.d

Page 1

Date : 25-JAN-2006 00:48

Client ID: INDBMBH

Instrument: tracegc82.i

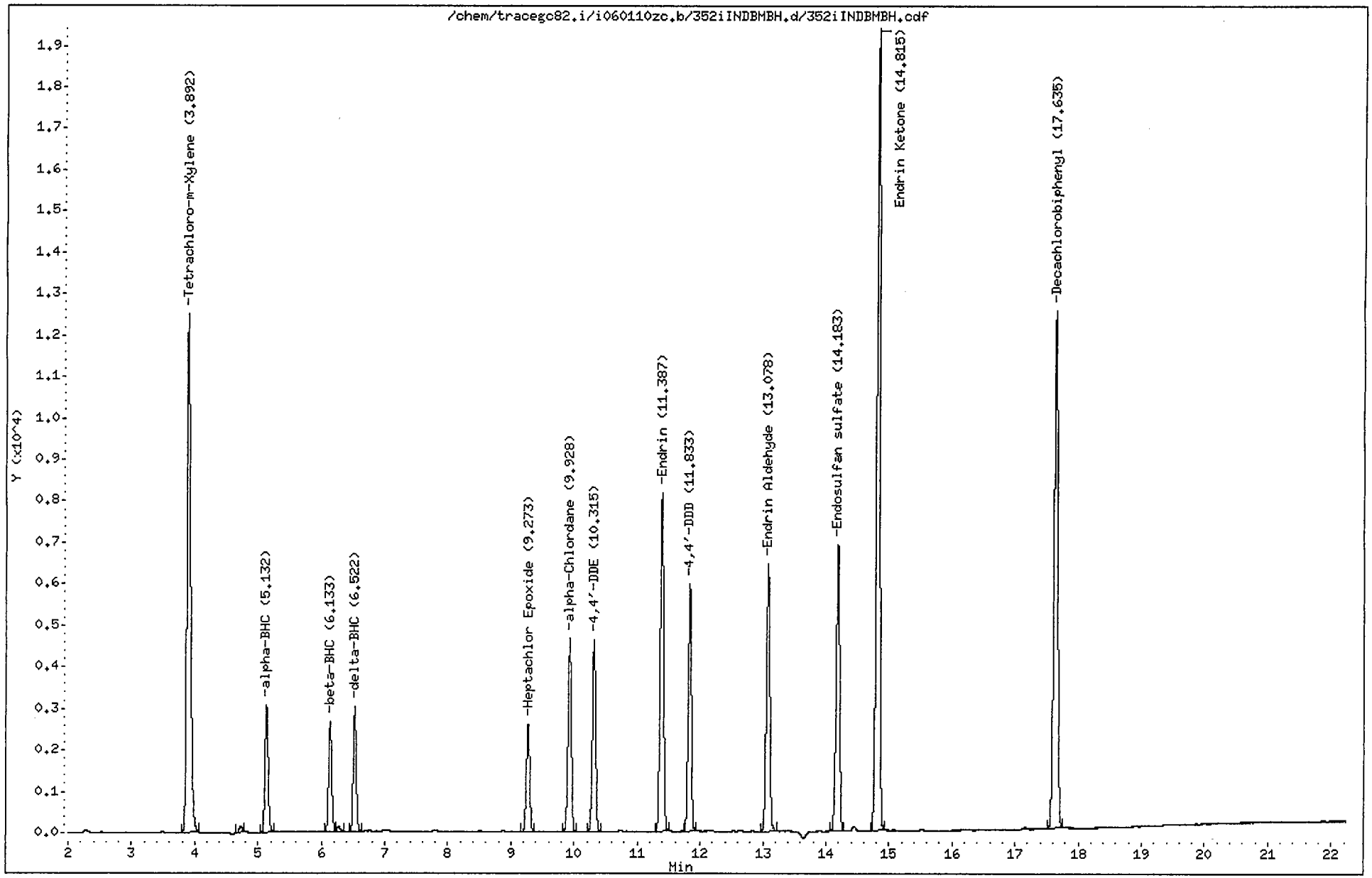
Sample Info: INDBMBH

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : INDBMBH
Client Smp Id : INDBMBH
Sample Type : CONT CAL: Level 4
Sublist : INDB
Inj Date : 25-JAN-2006 00:48
Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110zc.b/8081A_clpestv4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
0.16			465								
0.92			996494								
0.95			3834644								
3.89	3.78	3.92	49532	306784	Tetrachloro-m-Xylene	0.160000	382256	-24.6*	15.0	R	
4.73			545								
5.13	5.02	5.16	10781	531660	alpha-BHC	0.020000	539055	-1.4	15.0		
6.13	6.02	6.16	9138	232362	beta-BHC	0.040000	228441	1.7	15.0		
6.28			425								
6.52	6.41	6.55	9906	495960	delta-BHC	0.020000	495325	0.1	15.0		
9.27	9.16	9.30	9439	489070	Heptachlor Epoxide	0.020000	471970	3.5	15.0		
9.93	9.81	9.95	17027	444438	alpha-Chlordane	0.040000	425687	4.2	15.0		
10.32	10.20	10.34	16727	440000	4,4'-DDE	0.040000	418185	5.0	15.0		
11.39	11.27	11.41	30006	386241	Endrin	0.080000	375069	2.9	15.0		
11.83	11.72	11.86	21519	279150	4,4'-DDD	0.080000	268988	3.6	15.0		
13.08	12.96	13.10	24403	321174	Endrin Aldehyde	0.080000	305040	5.0	15.0		
14.18	14.07	14.21	26422	353870	Endosulfan sulfate	0.080000	330279	6.7	15.0		
14.82	14.70	14.84	71895	374160	Endrin Ketone	0.200000	359473	3.9	15.0		
17.64	17.53	17.67	50781	362764	Decachlorobiphenyl	0.160000	329612	9.1	15.0		

Data File: /chem/tracegc82.i/i060110zc.b/353iPEMBH.d

Date : 25-JAN-2006 01:13

Client ID: PEMBH

Instrument: tracegc82.i

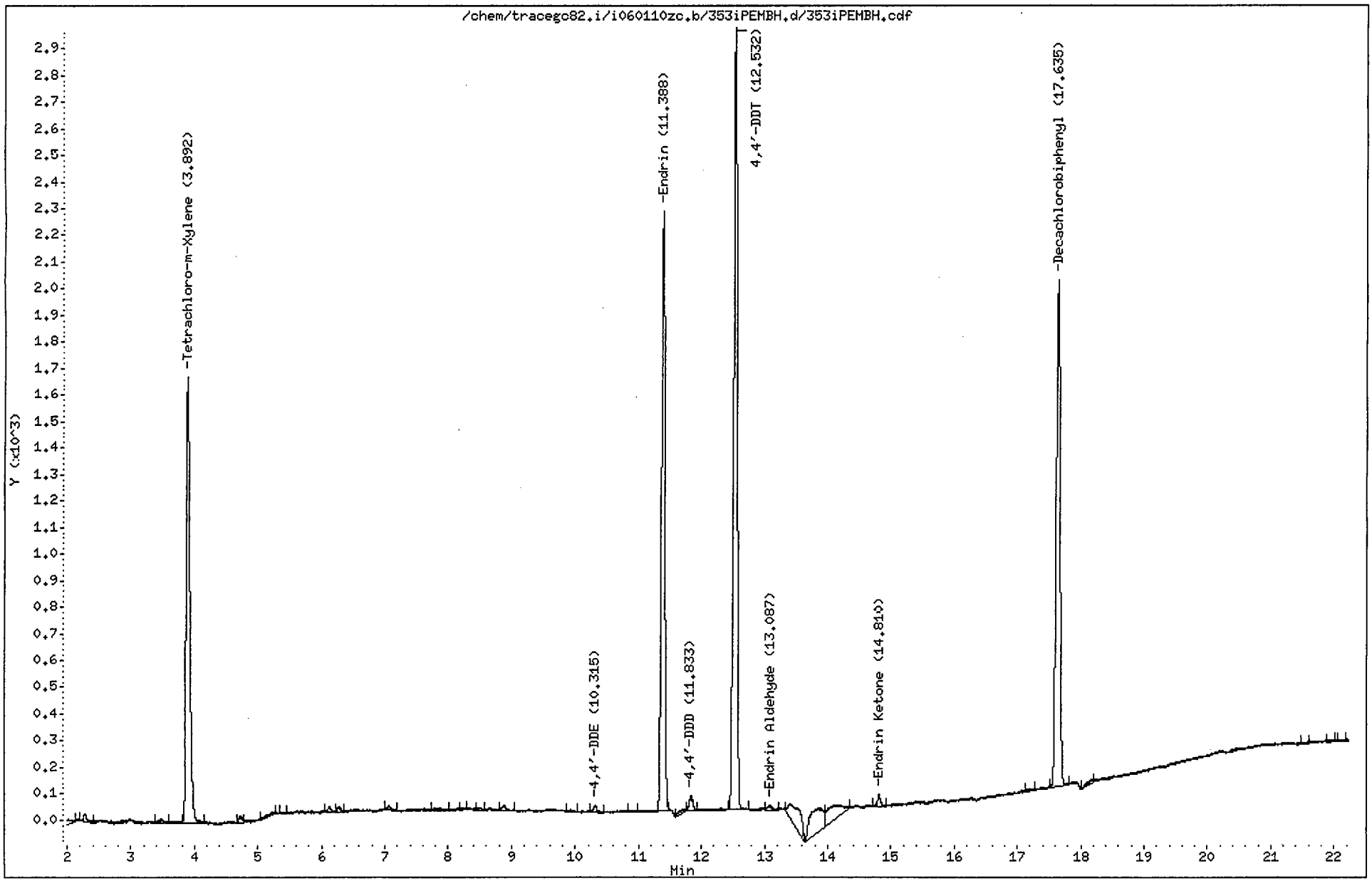
Sample Info: PEMBH

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : PEMBH Client Smp Id : PEMBH
Sample Type : SAMPLE Sublist : PEM
Inj Date : 25-JAN-2006 01:13 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110zc.b/8081A_clpestv4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.16			2107								
0.51			57								
0.76			22								
0.91			23590								
1.46			275								
1.56			20								
1.63			92								
1.97			157								
2.28			114								
3.48			86								
3.89	3.78	3.92	6969	306784	Tetrachloro-m-Xylene	0.022717	0.227166		113.6	43 - 135	
4.73			81								
5.23			82								
5.37			26								
6.12			93								
6.29			86								
7.06			61								
7.79			63								
8.24			36								
8.49			39								
8.88			82								
9.93			38								
10.32	10.20	10.34	110	440000	4,4'-DDE	0.000249	0.002493	0.050000			J
10.85			27								
11.39	11.27	11.41	8359	386241	Endrin	0.021642	0.216424	0.100000			M2
11.71			101								
11.83	11.72	11.86	228	279150	4,4'-DDD	0.000817	0.008173	0.100000			J
12.53	12.41	12.55	11156	315540	4,4'-DDT	0.035355	0.353549	0.150000			
13.09	12.96	13.10	78	321174	Endrin Aldehyde	0.000243	0.002435	0.100000			J
13.41			975								
13.85			1327								
14.18			919								
14.81	14.70	14.84	192	374160	Endrin Ketone	0.000512	0.005125	0.250000			J
17.17			54								
17.64	17.53	17.67	7829	362764	Decachlorobiphenyl	0.021581	0.215813		107.9	43 - 144	
18.16			83								
21.60			35								

$\%DDT = \frac{110 + 228}{110 + 228 + 11158} \times 100 =$

$\frac{338}{11494} \times 100 = 2.9\%$

1/25/06

$\%Endrin = \frac{78 + 192}{78 + 192 + 8359} \times 100 =$

$\frac{270}{8629} \times 100 = 3.1\%$

TAJ 1/25/06

CompuChem

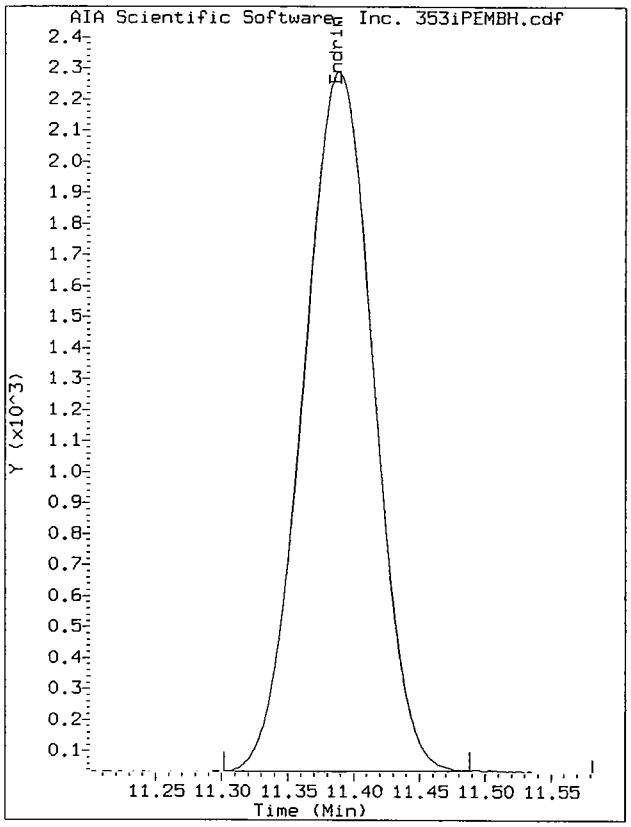
Lab Smp Id : PEMBH Client Smp Id : PEMBH
Sample Type : SAMPLE Sublist : PEM
Inj Date : 25-JAN-2006 01:13 Inst ID :
Operator : 2512
Method : /chem/tracegc82.i/i060110zc.b/8081A_clpestv4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
21.96		34								
22.07		25								

Manually Integrated Peaks



Start: 11.30 Stop: 11.49

Data File: /chem/tracegc83.i/i060110zc.b/351iINDAMBH.d

Date : 25-JAN-2006 00:22

Client ID: INDAMBH

Sample Info: INDAMBH

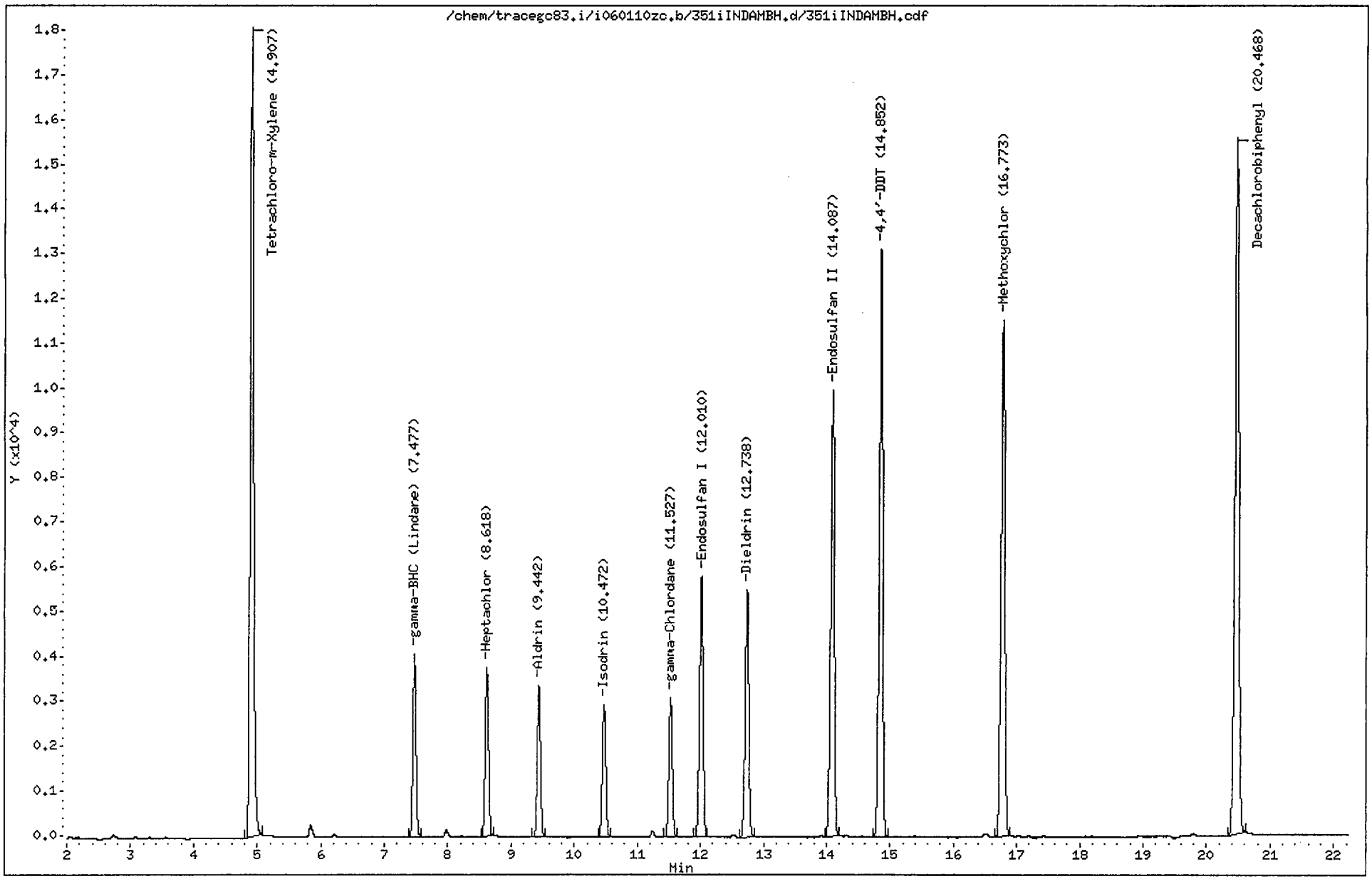
Volume Injected (uL): 1.0

Column phase: clpest2

Instrument: tracegc83.i

Operator: 2512

Column diameter: 0.53



CompuChem

Lab Smp Id : INDAMBH Client Smp Id : INDAMBH
Sample Type : CONT CAL: Level 4 Sublist : INDA
Inj Date : 25-JAN-2006 00:22 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110zc.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
0.95			7388434								
4.91	4.79	4.93	66203	403926	Tetrachloro-m-Xylene	0.160000	413768	-2.4	15.0		
7.48	7.36	7.50	13603	689670	gamma-BHC (Lindane)	0.020000	680173	1.4	15.0		
8.62	8.50	8.64	13941	732145	Heptachlor	0.020000	697063	4.8	15.0		
9.44	9.32	9.46	12701	661560	Aldrin	0.020000	635065	4.0	15.0		
10.47	10.35	10.49	11320	589030	Isodrin	0.020000	565990	3.9	15.0		
11.53	11.41	11.55	12012	627645	gamma-Chlordane	0.020000	600618	4.3	15.0		
12.01	11.89	12.03	22308	581450	Endosulfan I	0.040000	557709	4.1	15.0		
12.74	12.62	12.76	21617	563772	Dieldrin	0.040000	540430	4.1	15.0		
14.09	13.97	14.11	38111	481879	Endosulfan II	0.080000	476387	1.1	15.0		
14.85	14.73	14.87	48811	414793	4,4'-DDT	0.120000	406755	1.9	15.0		
16.77	16.66	16.80	46074	241339	Methoxychlor	0.200000	230371	4.5	15.0		
20.47	20.35	20.49	68887	459870	Decachlorobiphenyl	0.160000	430545	6.4	15.0		

Data File: /chem/tracegc83.i/i060110zc.b/352iINDBMBH.d

Date : 25-JAN-2006 00:48

Client ID: INDBMBH

Instrument: tracegc83.i

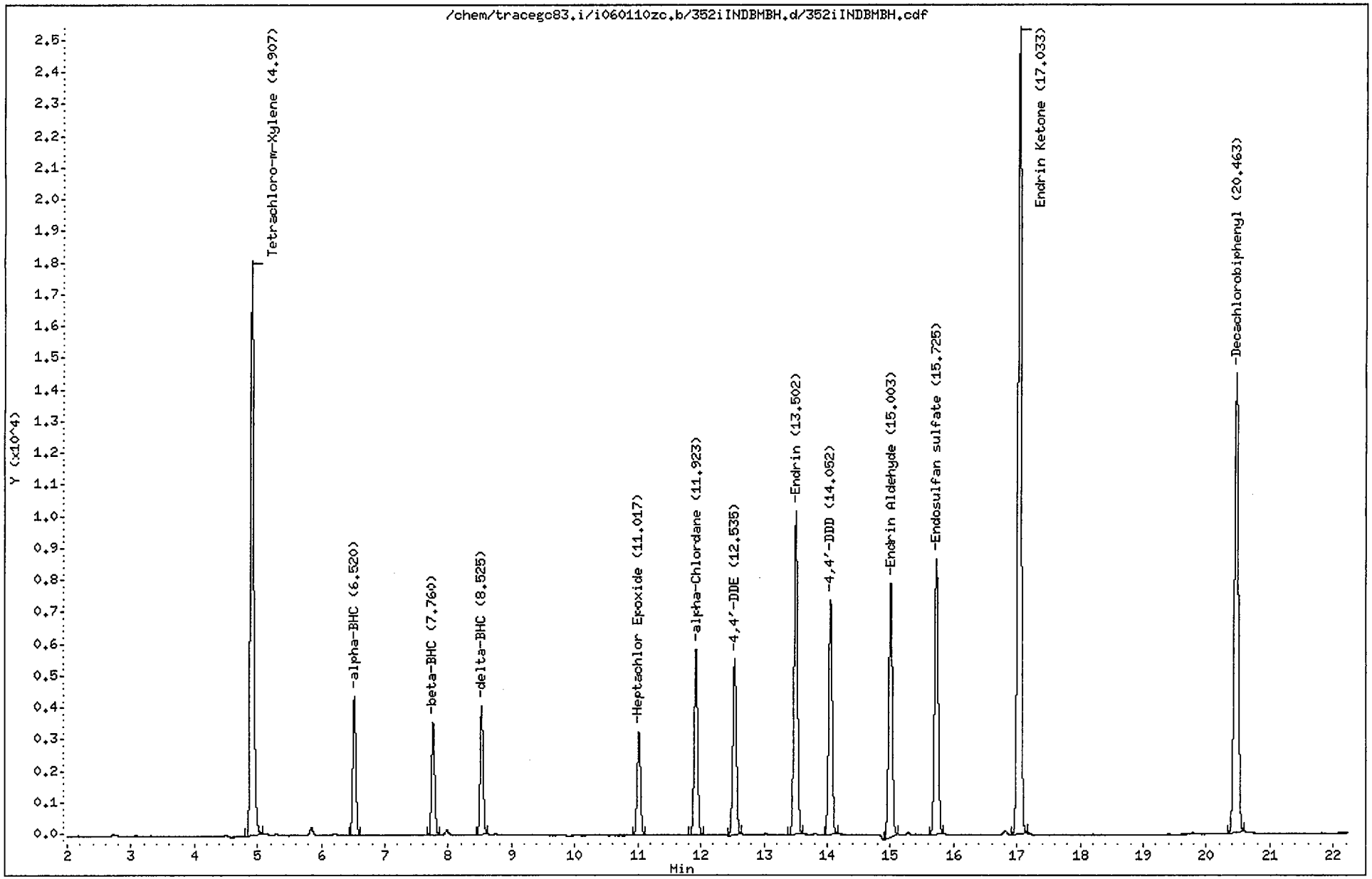
Sample Info: INDBMBH

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : INDBMBH
Client Smp Id : INDBMBH
Sample Type : CONT CAL: Level 4
Sublist : INDB
Inj Date : 25-JAN-2006 00:48
Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110zc.b/8081A_clpest2v4.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
0.94			6242769								
4.91	4.79	4.93	66394	403926	Tetrachloro-m-Xylene	0.160000	520688	-28.9*	15.0	R	
6.52	6.40	6.54	14848	762580	alpha-BHC	0.020000	742415	2.6	15.0		
7.76	7.65	7.79	12140	311082	beta-BHC	0.040000	303510	2.4	15.0		
8.52	8.41	8.55	13424	687745	delta-BHC	0.020000	671223	2.4	15.0		
11.02	10.90	11.04	12298	660355	Heptachlor Epoxide	0.020000	614918	6.9	15.0		
11.92	11.81	11.95	22451	602048	alpha-Chlordane	0.040000	561285	6.8	15.0		
12.54	12.42	12.56	21020	558335	4,4'-DDE	0.040000	525504	5.9	15.0		
13.50	13.39	13.53	39134	515266	Endrin	0.080000	489175	5.1	15.0		
14.05	13.94	14.08	27989	367186	4,4'-DDD	0.080000	349856	4.7	15.0		
15.00	14.89	15.03	31027	394594	Endrin Aldehyde	0.080000	387835	1.7	15.0		
15.72	15.61	15.75	34183	464389	Endosulfan sulfate	0.080000	427289	8.0	15.0		
17.03	16.92	17.06	95951	497694	Endrin Ketone	0.200000	479754	3.6	15.0		
20.46	20.35	20.49	64142	459870	Decachlorobiphenyl	0.160000	418688	9.0	15.0		

Data File: /chem/tracegc83.i/i060110zc.b/353iPEMBH.d

Date : 25-JAN-2006 01:13

Client ID: PEMBH

Instrument: tracegc83.i

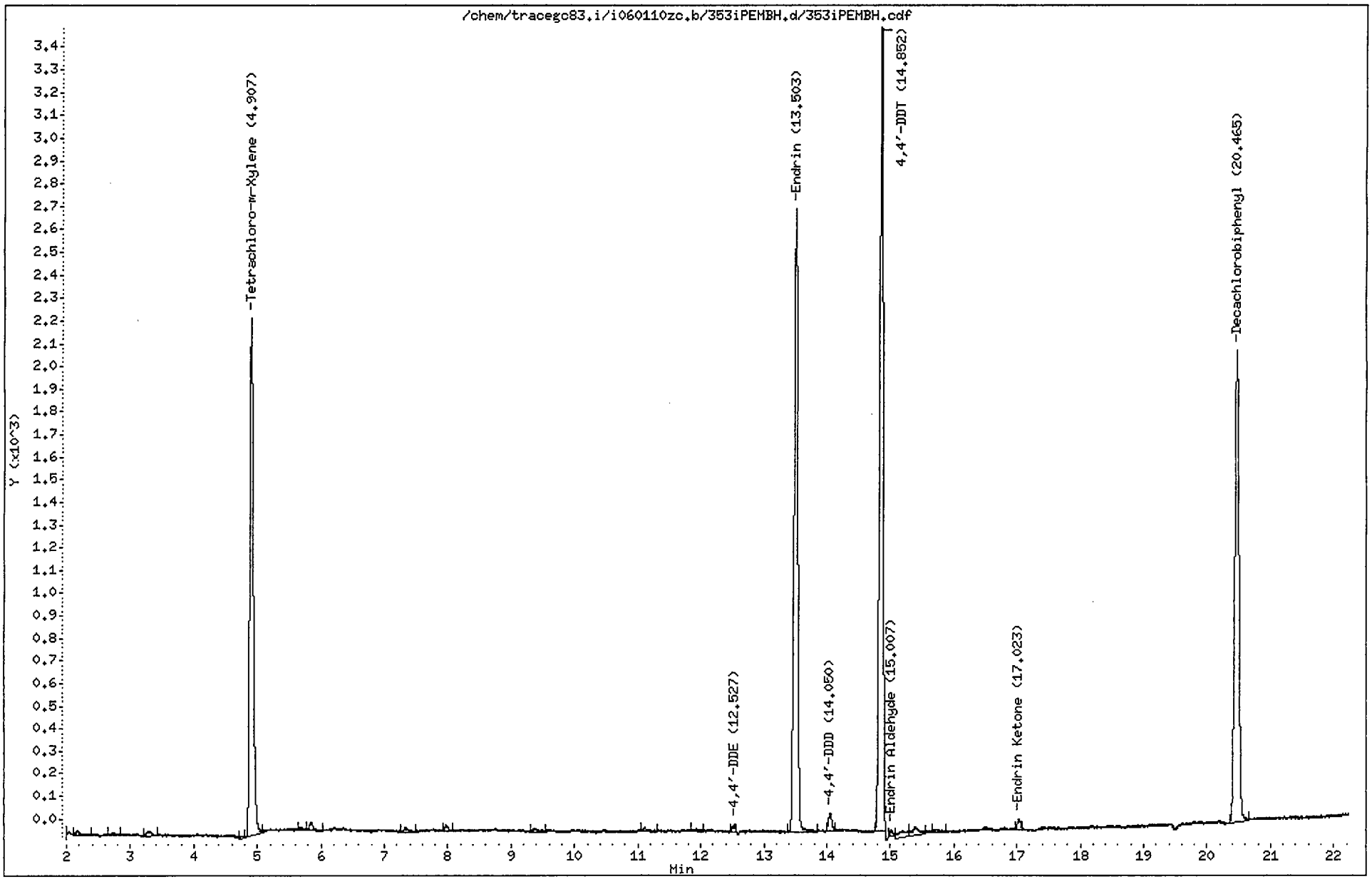
Sample Info: PEMBH

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : PEMBH Client Smp Id : PEMBH
Sample Type : SAMPLE Sublist : PEM
Inj Date : 25-JAN-2006 01:13 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110zc.b/8081A_clpest2v4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.15			1019								
0.91			23281								
1.56			1259								
1.90			125								
2.17			111								
2.72			53								
3.32			137								
4.77			31								
4.91	4.79	4.93	9030	403926	Tetrachloro-m-Xylene	0.022356	0.223558		111.8	43 - 135	
5.68			31								
5.84			178								
7.34			119								
7.97			117								
9.36			101								
11.12			86								
11.93			60								
12.53	12.42	12.56	84	558335	4,4'-DDE	0.000150	0.001501	0.050000			JM 2
13.50	13.39	13.53	11101	515266	Endrin	0.021545	0.215450	0.100000			
14.05	13.94	14.08	289	367186	4,4'-DDD	0.000788	0.007879	0.100000			JM 2
14.85	14.73	14.87	13642	414793	4,4'-DDT	0.032888	0.328877	0.150000			M 2
15.01	14.89	15.03	81	394594	Endrin Aldehyde	0.000205	0.002049	0.100000			JM 2
15.18			280								
15.40			280								
15.74			60								
17.02	16.92	17.06	162	497694	Endrin Ketone	0.000325	0.003251	0.250000			JM 2
20.46	20.35	20.49	9589	459870	Decachlorobiphenyl	0.020852	0.208523		104.3	43 - 144	

% DDT = 84 + 289 / 84 + 289 + 13642 X100 =

373 / 14015 X100 = 2.6%

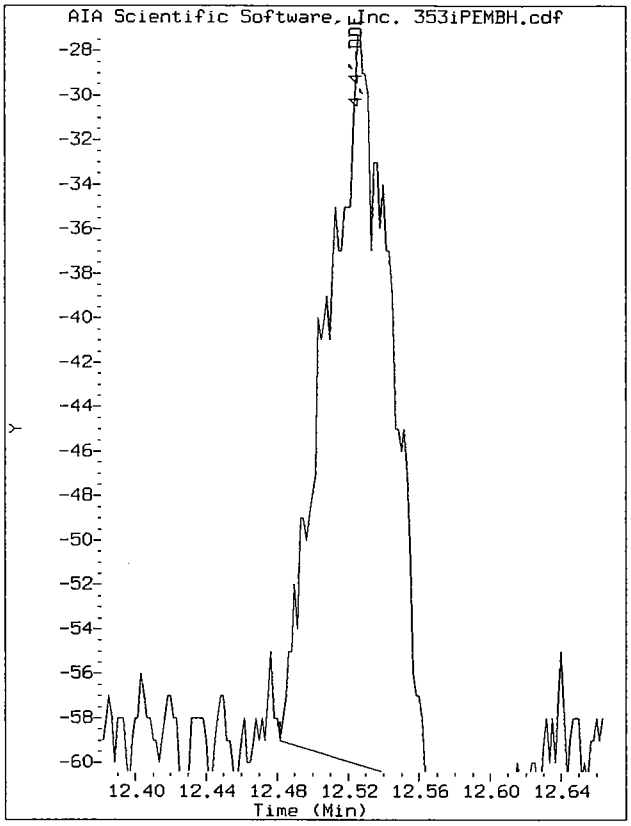
1/25/06

% Endrin = 81 + 162 / 81 + 162 + 11101 X100 =

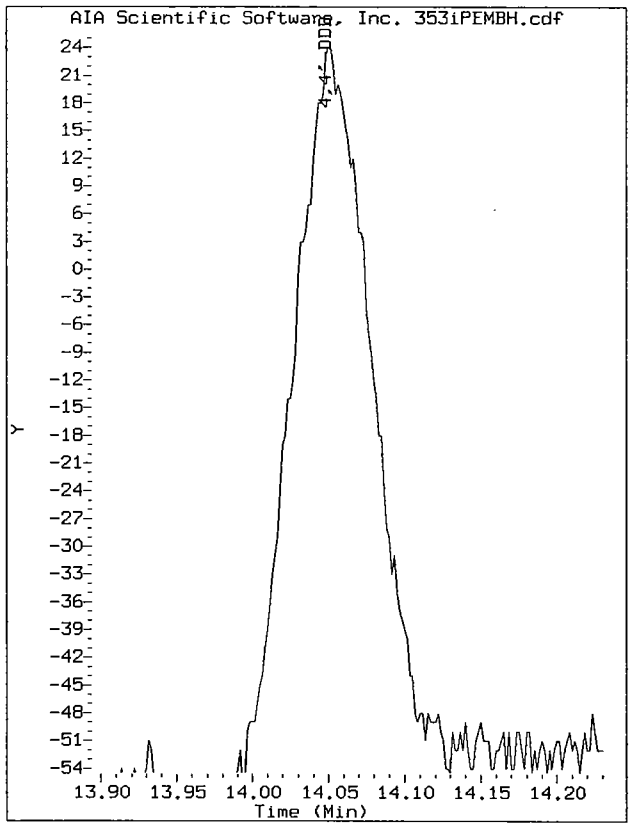
243 / 11344 X100 = 2.1%

TAJ 1/25/06

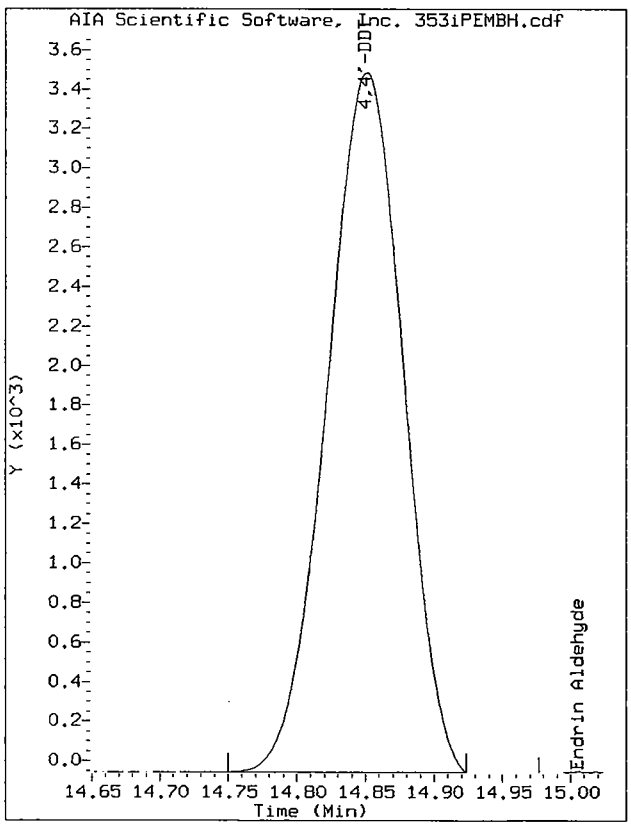
Manually Integrated Peaks



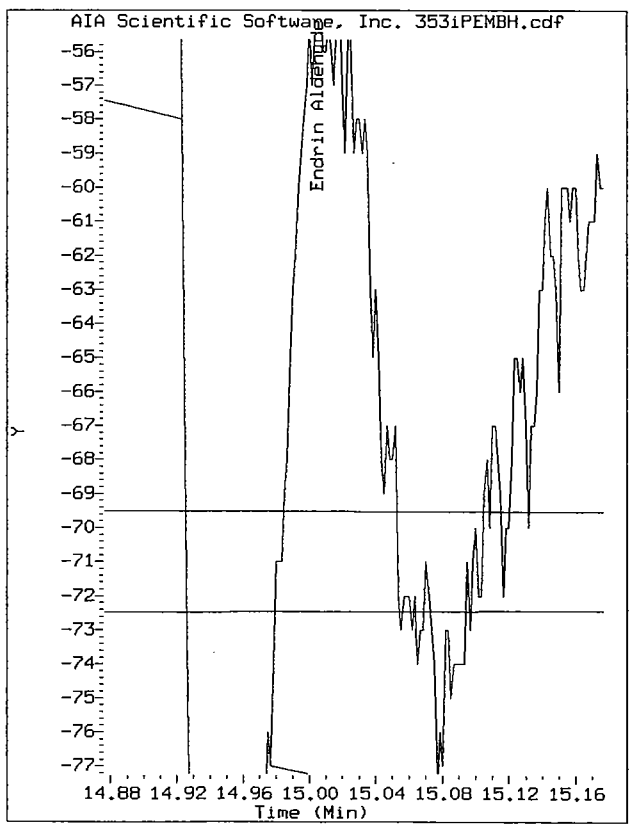
Start: 12.48 Stop: 12.56



Start: 13.99 Stop: 14.13

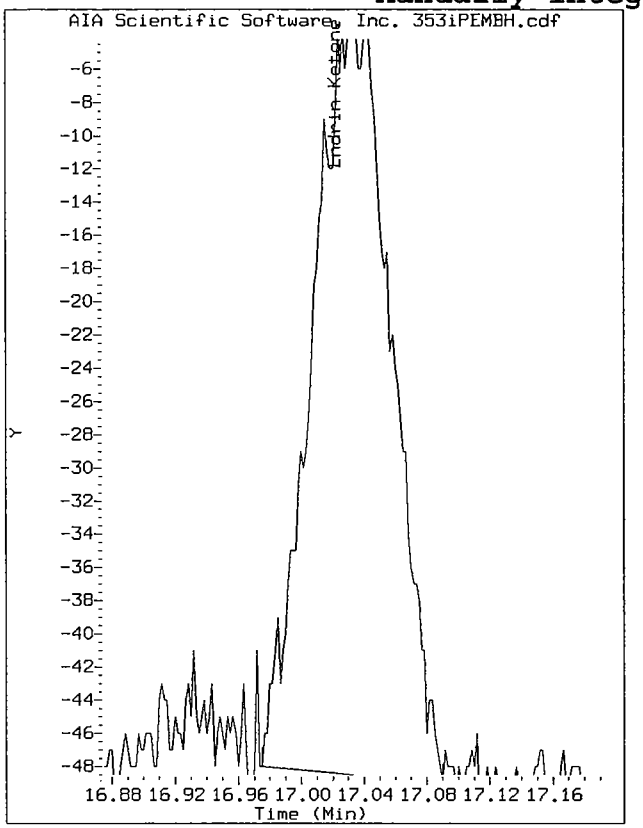


Start: 14.75 Stop: 14.92



Start: 14.98 Stop: 15.08

Manually Integrated Peaks



Start: 16.98 Stop: 17.09

COMPUCHEM a division of Liberty Analytical Corp Instrument ID 82 / 83

GC EXTRACTABLES RUN LOG

COMPUCHEM LOGBOOK 4 M(4) 23

Sequence ID: 060110

DATE 1/10/06

SHIFT/S(A)_____(B)_____

Amt. Inj. 2 µL (1 µL on column)

Method (8081A) 8082 8151A CLP Other_____

	MS/SCTED	FILE NAME	RTBD	DATE	CompuChem #	CASE/SDG#	CHEMIST	COMMENTS(ETC.)/DISPOSITION
1		1		1/10/06	Hexane	Solvt	ZSR	
2		2		/ /	√	√		
3		3	✓	/ /	PEM9P	58193		
4		4	✓	/ /	INDA1MP	58028		
5		5	✓	/ /	INDB1MP	58047		
6		6	✓	/ /	INDA2MP	58059		
7		7	✓	/ /	INDB2MP	58043		
8		8	✓	/ /	INDA3MP	58050		
9		9	✓	/ /	INDB3MP	58064		
10		10	✓	/ /	INDA4MP	58173		
11		11	✓	/ /	INDB4MP	58178		
12		12	✓	/ /	INDA5MP	58032		
13		13	✓	/ /	INDB5MP	58057		
14		14	✓	/ /	CUPA1MP	58116		
15		15	✓	/ /	CUPB1MP	58214		
~~16~~				/ /				
17				/ /				
18				/ /				
19				/ /		KP 1/10/06		
20				/ /				
21				/ /				
22				/ /				
23				/ /				
24				/ /				

SUPERVISOR APPROVAL Karen Parker

DATE 1/10/06

Hexane Lot No C0760

The presence of the Chemist's/Analyst's employee ID number, or signature, on this run log attests that strict compliance with the method's SOP has occurred. Any SOP deviations require documentation by the responsible chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation.

10/27/05:jad

COMPUCHEM a division of Liberty Analytical Corp Instrument ID 82 / 83 DATE 1/11/06
GC EXTRACTABLES RUN LOG Sequence ID: 060110e SHIFT/S(A)_____(B)_____
COMPUCHEM LOGBOOK 4 M(4) 23 Amt. Inj. 2 µL (1 µL on column)

Method 8081A 8082 8151A CLP Other_____

	KEYBOARD CTRD	FILE NAME	KEYBOARD CTRD	DATE	CompuChem #	CASE/SDG#	CHEMIST	COMMENTS(ETC.)/DISPOSITION
1		69	✓	1/11/06	PIBLKAG4H	58134	2564	
2		70	✓	/ /	INDAMA4H	58173		
3		71	✓	/ /	INDBMA4H	58174		
4		72	–	/ /	TOXAP449H	58103		
5		73	–	/ /	CHLOR049H	58002		
6		74	–	/ /	AR1606019H	58115		
7		75	–	1/12/06	AR1606029H	16		
8		76	–	/ /	AR1606039H	17		
9		77	–	/ /	AR1606049H	18		
10		78	–	/ /	AR1606059H	19		
11		79	–	/ /	AR122149H	57834A		
12		80	–	/ /	AR123249H	58187		
13		81	–	/ /	AR124249H	58193		
14		82	–	/ /	AR124849H	57994		
15		83	–	/ /	AR125149H	58212		
16		84	–	/ /	NST1606091H	58181		
17		85		/ /	PIBLK	58134		
18				/ /				
19				/ /				
20				/ /				
21				/ /		TAJ	1/12/06	
22				/ /				
23				/ /				
24				/ /				

SUPERVISOR APPROVAL TAJ

DATE 1/12/06 Hexane Lot No C0760

The presence of the Chemist's/Analyst's employee ID number, or signature, on this run log attests that strict compliance with the method's SOP has occurred. Any SOP deviations require documentation by the responsible chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation.

10/27/05:jad

COMPUCHEM a division of Liberty Analytical Corp Instrument ID 82 / 83 DATE 1/24/06

GC EXTRACTABLES RUN LOG Sequence ID: 060110Z6 SHIFT/S(A)_____(B)_____

COMPUCHEM LOGBOOK 4 M(4) 23 Amt. Inj. 2 µL (1 µL on column)

Method : 8081A 8082 8151A CLP Other_____

	CCV	FILE NAME	ICAL	DATE	CompuChem #	CASE/SDG#	CHEMIST	COMMENTS(ETC.)/DISPOSITION
1		338	✓	1/24/06	PIBLKBFBF	58134	2512	
2		339	✓	/ /	AR1660BF	58118	↓	
3		340	✓	/ /	INDAMBF	58173		
4		341	✓	/ /	INDBMBF	58174	↓	
5		342	✓	/ /	91895	Various	2564	
6		343	✓	/ /	91896	↓		
7		344	✓	/ /	91765	8925		
8		345	✓	/ /	91770	8926		
9		346	✓	/ /	892501	8925		
10		347	✓	/ /	892601	8926		
11		348		/ /	PIBLK	58154	↓	
12				/ /				
13				/ /				
14				/ /				
15				/ /				
16				/ /				
17				/ /				TAJ 1/25/06
18				/ /				
19				/ /				
20				/ /				
21				/ /				
22				/ /				
23				/ /				
24				/ /				

SUPERVISOR APPROVAL TAJ

DATE 1/25/06

Hexane Lot No C0760

The presence of the Chemist's/Analyst's employee ID number, or signature, on this run log attests that strict compliance with the method's SOP has occurred. Any SOP deviations require documentation by the responsible chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation.

10/27/05:jad

COMPUCHEM a division of Liberty Analytical Corp Instrument ID 82 / 83 DATE 1/24/06

GC EXTRACTABLES RUN LOG Sequence ID: L060111026 SHIFT/S(A)_____(B)_____

COMPUCHEM LOGBOOK 4 M(4) 23 Amt. Inj. 2 µL (1 µL on column)

Method: 8081A 8082 8151A CLP Other_____

	SDG Start	FILE NAME	SDG End	DATE	CompuChem #	CASE/SDG#	CHEMIST	COMMENTS(ETC.)/DISPOSITION
1		349		1/24/06	PIBLKBGBH	58134	2564	
2		350		〃	ARI666QBH	58118	↓	
3		351		1/25/06	INDAMBH	58179		
4		352		〃	INDBMBH	58174		
5		353		〃	PEMBH	58198		
6				/ /				
7				/ /				
8				/ /				
9				/ /				
10				/ /				
11				/ /	DATA STILL		ACQUIRING	
12				/ /				
13				/ /				
14				/ /				
15				/ /				
16				/ /				
17				/ /				
18				/ /				
19				/ /				
20				/ /				
21				/ /				
22				/ /				
23				/ /				
24				/ /				

SUPERVISOR APPROVAL TAJ

DATE 1/25/06 Hexane Lot No C0760

The presence of the Chemist's/Analyst's employee ID number, or signature, on this run log attests that strict compliance with the method's SOP has occurred. Any SOP deviations require documentation by the responsible chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation.

10/27/05:jad

4. Raw QC Data

   a. Blank Data

   b. Laboratory Control Sample Data

   c. Matrix Spike Data

   d. Matrix Spike Duplicate Data

a. Blank Data

Arranged by type of blank (method, then instrument), and shall be in chronological order, by instrument.

- Tabulated Results (Form I)

- Chromatograms and data system printout(s) by instrument used for analysis.

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLKGN

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91895

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.025	U
72-20-8	Endrin	0.10	U
76-44-8	Heptachlor	0.025	U
1024-57-3	Heptachlor Epoxide	0.025	U
72-43-5	Methoxychlor	0.25	U
8001-35-2	Toxaphene	5.0	U
57-74-09	Technical Chlordane	1.6	U

Data File: /chem/tracegc82.i/i060110zb.b/342i91895.d

Date : 24-JAN-2006 20:32

Client ID: PBLKGN

Instrument: tracegc82.i

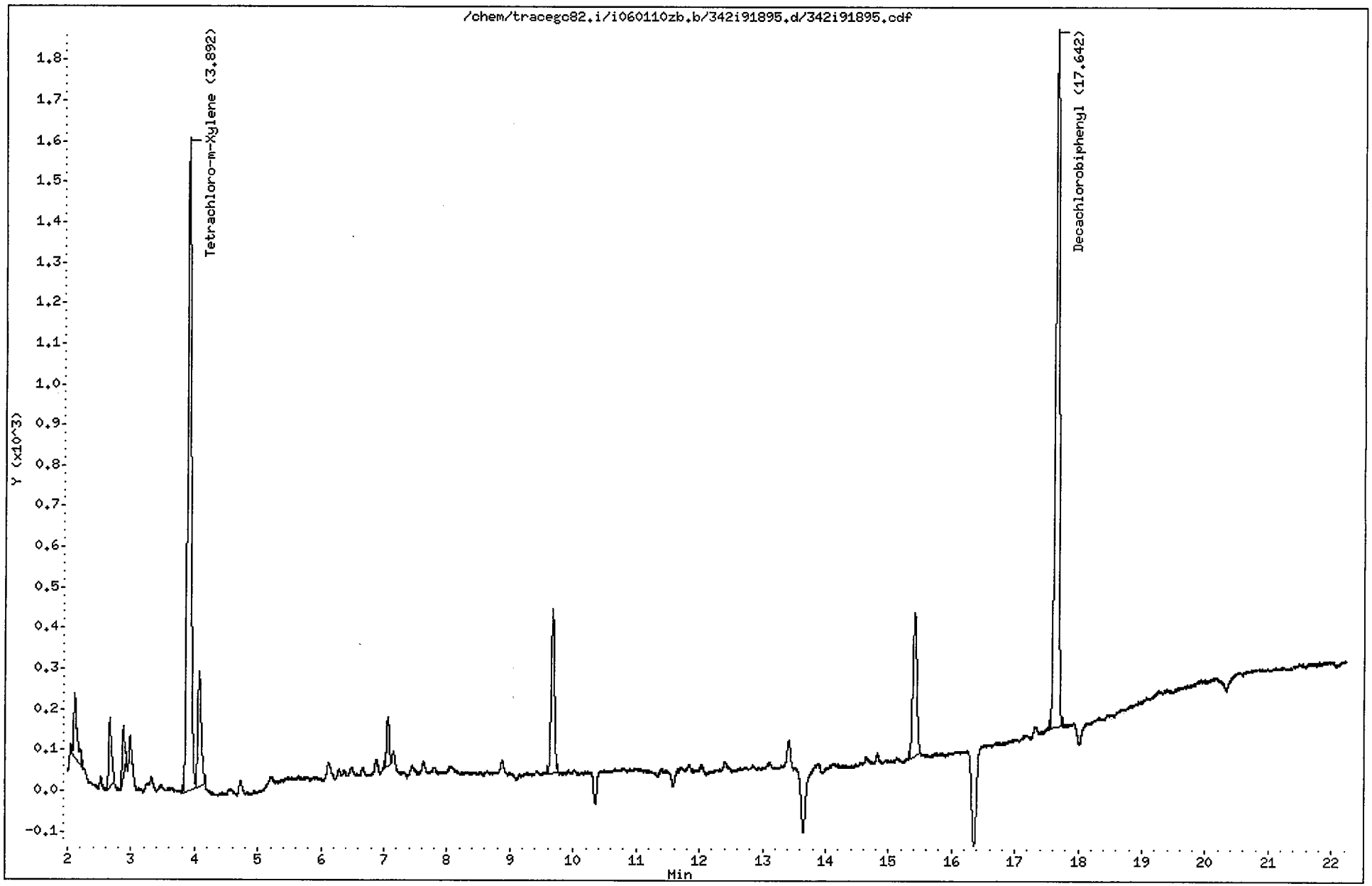
Sample Info: 91895

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : 91895 Client Smp Id : PBLKGN
Sample Type : BLANK Sublist : TCLP
Inj Date : 24-JAN-2006 20:32 Inst ID : TRACEGC82
Operator : 2564
Method : /chem/tracegc82.i/i060110zb.b/8081A_clpestv4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 500.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.92			5136								
1.04			9213								
1.21			4686								
1.66			636								
1.78			3514								
2.12			580								
2.67			543								
2.88			311								
3.89	3.78	3.92	6414	306784	Tetrachloro-m-Xylene	0.020904	0.209039		104.5	43 - 135	
4.07			1063								
7.06			355								
9.67			1430								
15.41			1555								
17.64	17.53	17.67	7047	362764	Decachlorobiphenyl	0.019423	0.194231		97.1	43 - 144	

TAJ 1/25/06

Data File: /chem/tracegc83.i/i060110zb.b/342i91895.d

Date : 24-JAN-2006 20:32

Client ID: PBLKGN

Instrument: tracegc83.i

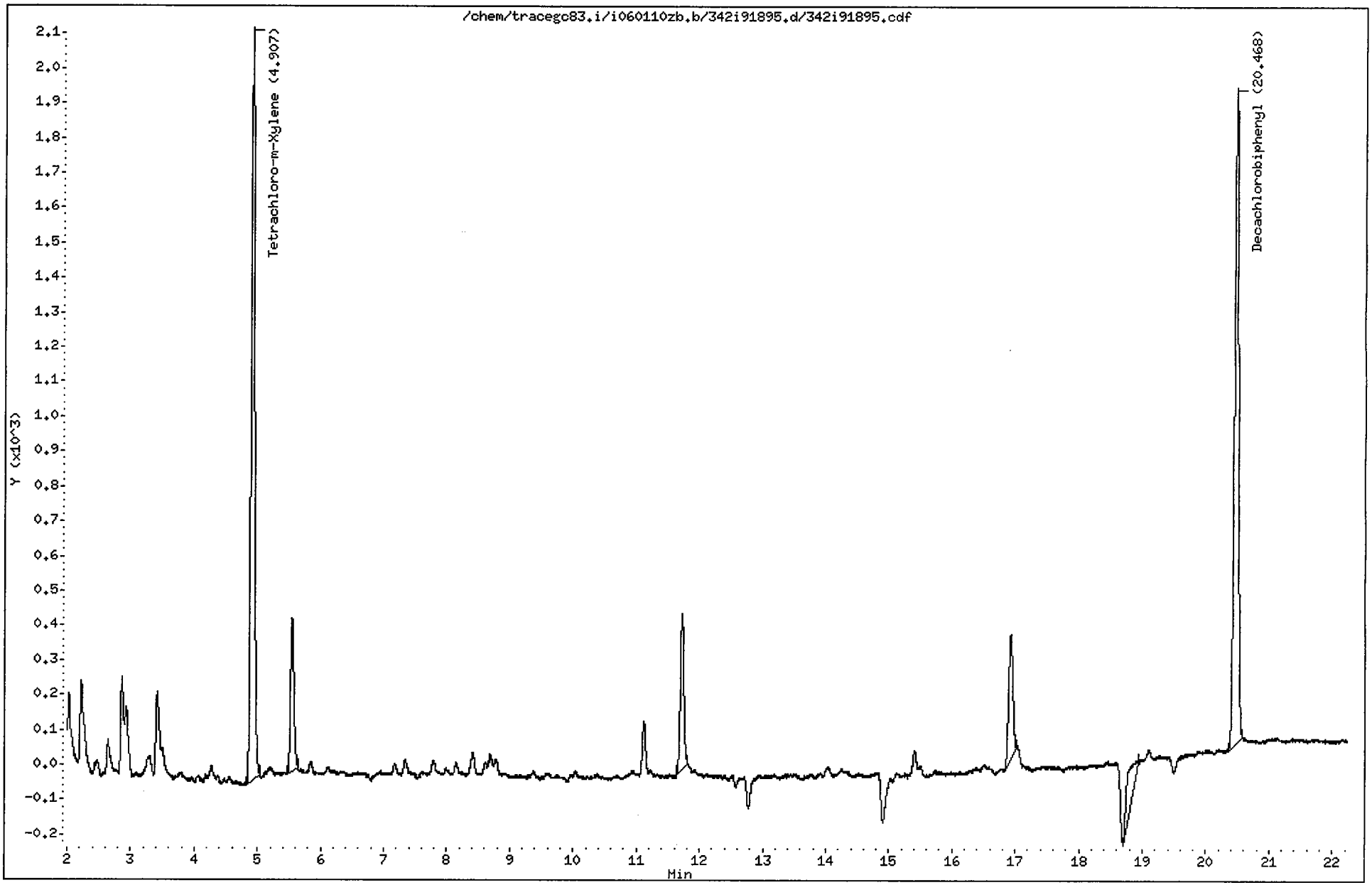
Sample Info: 91895

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : 91895 Client Smp Id : PBLKGN
Sample Type : BLANK Sublist : TCLP
Inj Date : 24-JAN-2006 20:32 Inst ID : TRACEGC83
Operator : 2564
Method : /chem/tracegc83.i/i060110zb.b/8081A_clpest2v4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 500.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.91			1278								
0.94			2133								
1.02			14465								
1.23			16301								
1.83			2944								
4.91	4.79	4.93	8375	403926	Tetrachloro-m-Xylene	0.020734	0.207340		103.7	43 - 135	
5.54			1625								
11.72			1681								
16.92			1670								
18.92			1024								
20.47	20.35	20.49	8477	459870	Decachlorobiphenyl	0.018433	0.184335		92.2	43 - 144	

TAJ 1/25/06

COMPUCHEM

EXTRACTION WORKSHEET

Pesticide in Water; BY SW-846 Method 3510C

TCLP Waste Characterization - 8081A

ASSIGNED TO: Richard/Margaret/Lael/Eric/Rod

EMP ID NUMBER: 2583/2611 / 2566/2171

DATE EXTRACTED/POSTED: 1/24/2006

BATCH NO.: 88980

-1021

1-24-5

	COMPUCHEM NUMBER	CLIENT SAMPLE ID	QC SAMPLE TYPE	SAMPLE VOLUME (mL)	Initial pH	pH Adjusted? (Y / N)	FINAL VOLUME (mL)	COMMENTS
1	892501	WAR-IDW-4	SAMPLE	~~500~~ 100	4.0	Y (5.0)	5.0	
2	892601	WAR-IDW-3	SAMPLE	~~500~~ 100	8.0	Y N		
3	91765	TCLPBLKGW	PLCHBK	~~500~~ 100	4.0	Y (8.0)		
4	91770	TCLPBLKGX	PLCHBK	~~500~~ 100	5.0	Y N		Use 100 mL of TCLP leachate and dilute to 500 mL with extracted
5	91895	PBLKGN	MB	~~500~~ 100	5.0	Y N		water for all samples. Add 0.5 mL TCLP Pesticides spike
6	91896	PGNLCS	LCS	~~500~~ 100	5.0	Y N	5.0	to SS's and BS. Add 0.5 mL of #426 Surr. To all samples.
7								Final volume = 5.0 mL.
8								
9								Florisil (3620B) performed Y (N)
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								

1-24-06 KM

1-24-06 KM

		EXT. TPH	SURROGATE & SPIKE ADDED BY
SURROGATE	No.	426	VG 1/24/06
	Amt.	0.5 ml	INITIALS / DATE
		58113	
TCLP PEST SPIKE	No.		Witness MK 1/24/06
	Amt.	0.5 ml	Initials Date
		58060	

FINAL VOLUME VERIFIED

SUPERVISOR REVIEWED

Analysts Initials. Extracted RH/MK/VG/AW/KM KD VG/KM N2 KM Bottle up KM

Manufacturer and lot number of reagents/solvents used CH_2Cl_2 - 45166, Na_2SO_4 - 2xx4-320-4, 10N NaOH - 60SP00, C_6H_{14} - CP584

Rev. 7/21/05:dce

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TCLPBLKGW

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91765

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.13	U
72-20-8	Endrin	0.50	U
76-44-8	Heptachlor	0.13	U
1024-57-3	Heptachlor Epoxide	0.13	U
72-43-5	Methoxychlor	1.3	U
8001-35-2	Toxaphene	25	U
57-74-09	Technical Chlordane	8.0	U

Data File: /chem/tracegc82.i/i060110zb.b/344i91765.d

Date : 24-JAN-2006 21:23

Client ID: TCLPBLKGW

Instrument: tracegc82.i

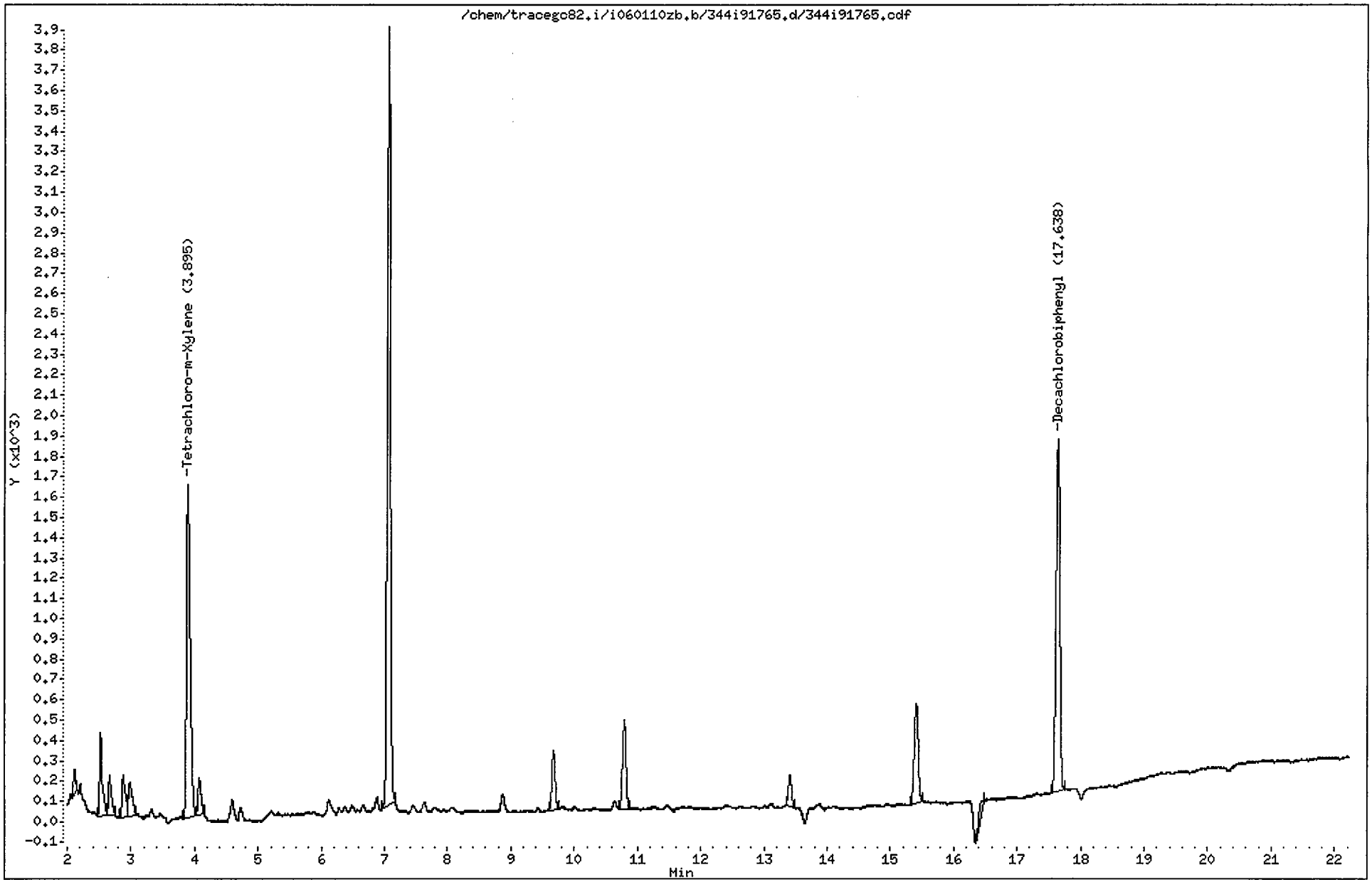
Sample Info: 91765

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : 91765 Client Smp Id : TCLPBLKGW
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 24-JAN-2006 21:23 Inst ID : TRACEGC82
Operator : 2564
Method : /chem/tracegc82.i/i060110zb.b/8081A_clpestv4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.17			523								
0.92			6179								
1.04			13432								
1.21			12536								
1.67			745								
1.78			2646								
2.12			288								
2.52			1174								
2.66			627								
2.88			764								
2.99			684								
3.90	3.78	3.92	6438	306784	Tetrachloro-m-Xylene	0.020982	1.049108		104.9	43 - 135	
4.08			606								
7.07			12712								
9.68			1046								
10.79			1664								
13.41			573								
15.41			2144								
16.47			300								
17.64	17.53	17.67	7146	362764	Decachlorobiphenyl	0.019699	0.984939		98.5	43 - 144	

TAJ 1/25/06

Data File: /chem/tracegc83.i/i060110zb.b/344i91765.d

Date : 24-JAN-2006 21:23

Client ID: TCLPBLKGW

Instrument: tracegc83.i

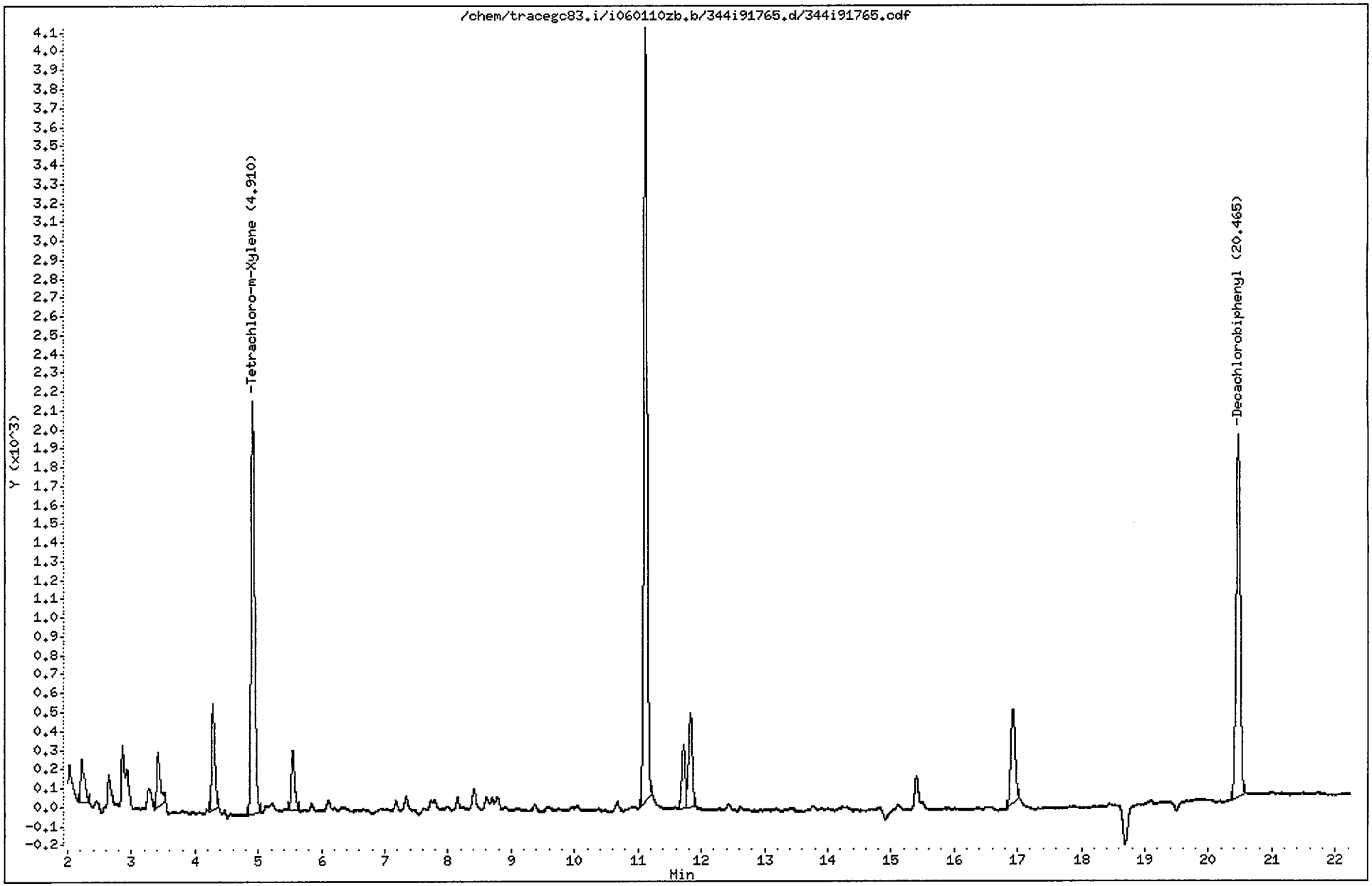
Sample Info: 91765

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : 91765 Client Smp Id : TCLPBLKGW
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 24-JAN-2006 21:23 Inst ID : TRACEGC83
Operator : 2564
Method : /chem/tracegc83.i/i060110zb.b/8081A_clpest2v4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.94			3707								
1.02			11806								
1.13			4056								
1.23			18335								
1.84			2960								
2.23			930								
3.42			1143								
4.28			1904								
4.91	4.79	4.93	8421	403926	Tetrachloro-m-Xylene	0.020845	1.042269		104.2	43 - 135	
5.54			1153								
11.12			14513								
11.72			1264								
11.83			2046								
16.93			2441								
20.46	20.35	20.49	8593	459870	Decachlorobiphenyl	0.018686	0.934286		93.4	43 - 144	

TAJ 1/25/06

CompuChem, a Division of Liberty Analytical Corp.

TCLP WASTE CHARACTERIZATION LEACHATE

Method 1311

SPP -814

Assigned to: RMK24/Norms

Employee No.: 2171 1151

Date Extracted: 1/23/2006

Batch No.: 8877

186

COMPUCHEM NUMBER	CLIENT SAMPLE ID	SAMPLE TYPE	PRE-TEST pH VALUE START	PRE-TEST pH VALUE FINAL	PRE-TEST EXTRACTION FLUID AND VOL. (mL) ADDED[1] 1	PRE-TEST EXTRACTION FLUID AND VOL. (mL) ADDED[1] 2	PARTICLE REDUCT. DONE (Y/N)	SAMPLE WEIGHT (g)	FINAL LEACH. pH VALUE	FINAL VOLUME (ml)	PERCENT SOLID	COMMENTS
91764/65/66/67/68	TCLPBLKFW	SLCHBK	N/A	N/A	N/A	2000	N	N/A	2.87	1900	N/A	
91769/70/71/72/73	TCLPBLKFX	SLCHBK	N/A	N/A	N/A	N/A	N	N/A	7.71	2000	N/A	Filter Blk - diH2O
892501	WAR-IDW-4	SAMPLE	9.71	5.69	N/A	2000	N	100	4.18	1800	100	
892601	WAR-IDW-3	SAMPLE	N/A	N/A	N/A	N/A	N	N/A	7.52	1900	N/A	Filter only

1-24-06

LOADED TUMBLER CALIB. CHECK (MUST BE 30 rpm ± 2 rpm)

TUMBLER #	CALC. RPM
2A	32

(COUNT rpm FOR 30 sec AND MULTIPLY NUMBER BY 2 TO CALCULATE rpm)

ROTATION TIME ONLY

Date/Time Started 1/23/06 / 3:15

Date/Time Stopped 1/24/06 / 0900

Room Temp. 24°C

Manufacturer and lot # of reagent used TCLP Fluid #2 2XX4-323-1

Final Vol. Verified:

Reviewed By:

Ext. Fluid 1 pH N/A (4.93 ± 0.05)

Ext. Fluide 2 pH 2.90 (2.88 ± 0.05)

Enter volume (mL) of Extraction Fluid added into appropriate column, e.g., enter volume into column 1 if Ext. Fluid #1 is used. Ensure that the fluid volume to sample weight ration is 20:1.

Rev. 7/29/03:dce

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PIBLKBE

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: PIBLKBE

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) ____ Date Extracted:_____

Concentrated Extract Volume: 10000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.025	U
72-20-8	Endrin	0.10	U
76-44-8	Heptachlor	0.025	U
1024-57-3	Heptachlor Epoxide	0.025	U
72-43-5	Methoxychlor	0.25	U
8001-35-2	Toxaphene	5.0	U
57-74-09	Technical Chlordane	1.6	U

Data File: /chem/tracegc82.i/i060110zb.b/338iPIBLKBEBF.d

Date : 24-JAN-2006 18:50

Client ID: PIBLKBE

Instrument: tracegc82.i

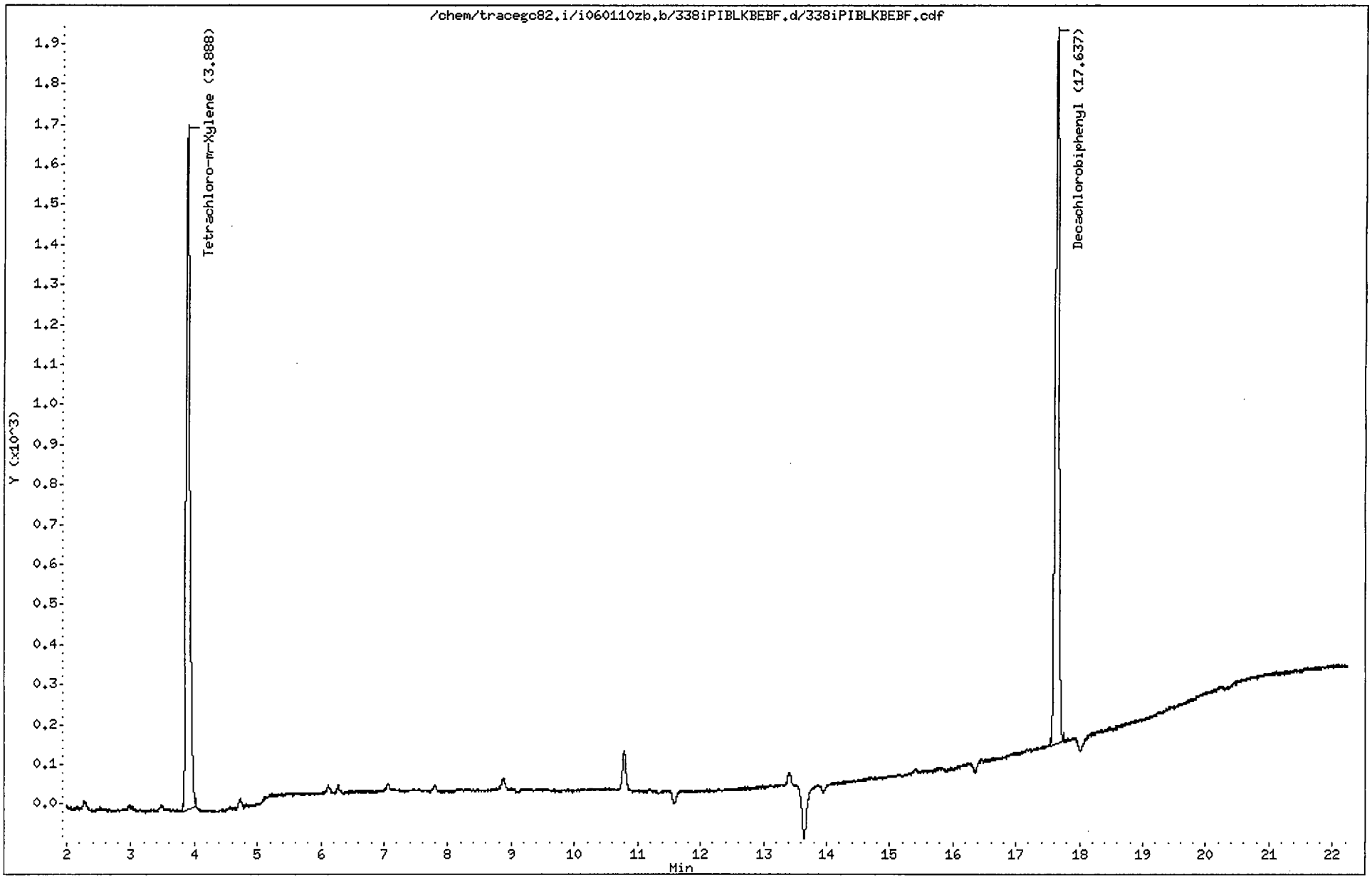
Sample Info: PIBLKBEBF

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : PIBLKBE Client Smp Id : PIBLKBE
Sample Type : INSTBLANK Sublist : all
Inj Date : 24-JAN-2006 18:50 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110zb.b/8081A_clpestv4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Ws) * (100/(100-M))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Ws Sample Weight: 30.0(g) M Moisture: 0(%)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/Kg)	ADJUSTED PQL (ug/Kg)	FLAGS
0.15			432						
0.90			21490						
3.89	3.78	3.92	6831	306784	Tetrachloro-m-Xylene	0.022266	3.711048		
17.64	17.53	17.67	7389	362764	Decachlorobiphenyl	0.020368	3.394588		

1/24/06

1D

EPA SAMPLE NO.

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

PIBLKBF

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: PIBLKBF

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) _____ Date Extracted:_____

Concentrated Extract Volume: 10000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.025	U
72-20-8	Endrin	0.10	U
76-44-8	Heptachlor	0.025	U
1024-57-3	Heptachlor Epoxide	0.025	U
72-43-5	Methoxychlor	0.25	U
8001-35-2	Toxaphene	5.0	U
12789-03-6	Technical Chlordane	1.6	U

Data File: /chem/tracegc83.i/i060110zb.b/338iPIBLKBEBF.d

Page 1

Date : 24-JAN-2006 18:50

Client ID: PIBLKBF

Instrument: tracegc83.i

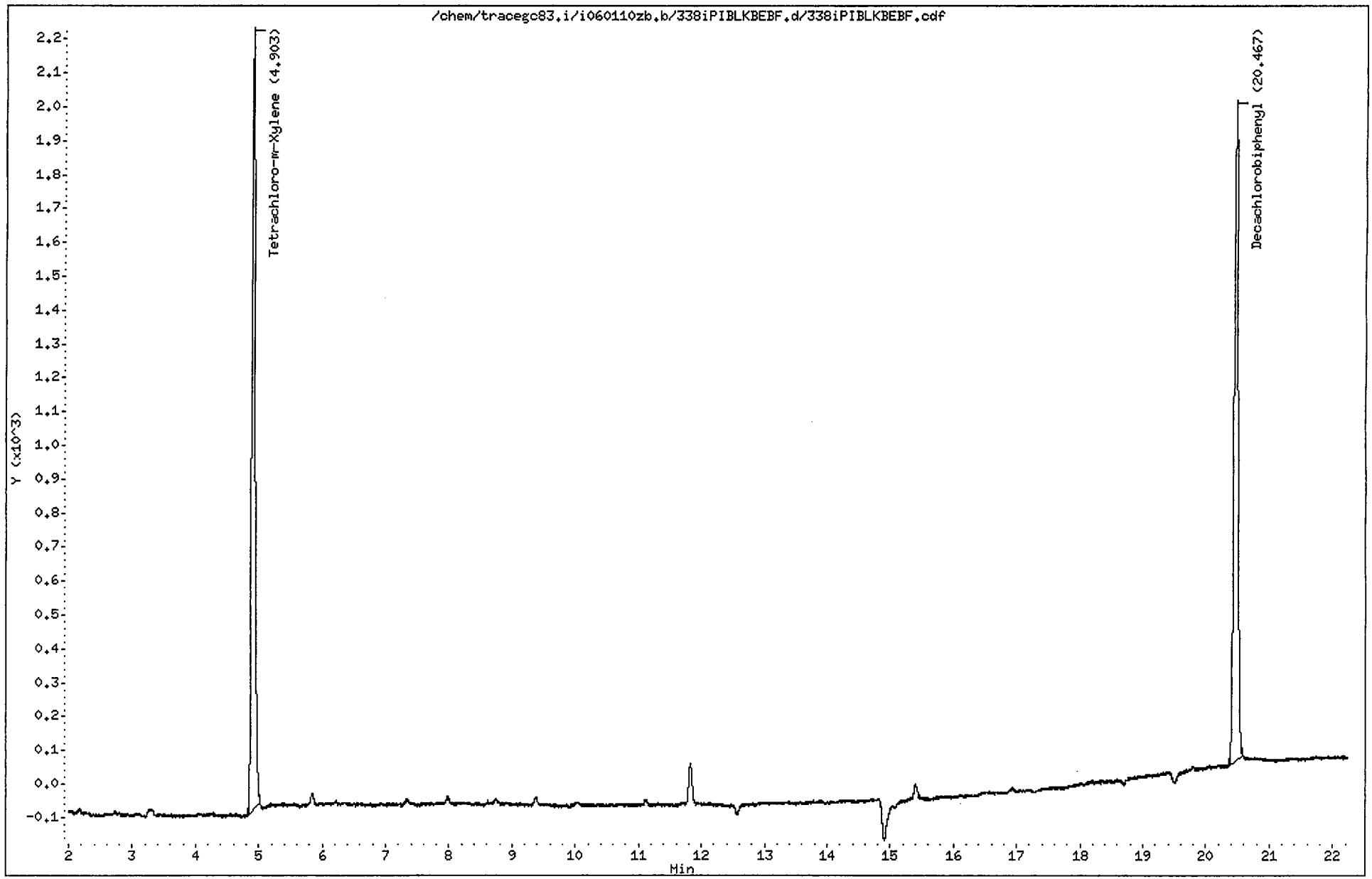
Sample Info: PIBLKBEBF

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : PIBLKBF Client Smp Id : PIBLKBF
Sample Type : INSTBLANK Sublist : all
Inj Date : 24-JAN-2006 18:50 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110zb.b/8081A_clpest2v4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	FLAGS
0.90			15628						
4.90	4.79	4.93	8807	403926	Tetrachloro-m-Xylene	0.021804	0.218037		
20.47	20.35	20.49	8760	459870	Decachlorobiphenyl	0.019048	0.190480		

1/24/06

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PIBLKBG

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: PIBLKBG

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) _____ Date Extracted:_____

Concentrated Extract Volume: 10000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.025	U
72-20-8	Endrin	0.10	U
76-44-8	Heptachlor	0.025	U
1024-57-3	Heptachlor Epoxide	0.025	U
72-43-5	Methoxychlor	0.25	U
8001-35-2	Toxaphene	5.0	U
57-74-09	Technical Chlordane	1.6	U

Data File: /chem/tracegc82.i/i060110zc.b/349iPIBLKBGBH.d

Date : 24-JAN-2006 23:31

Client ID: PIBLKBG

Instrument: tracegc82.i

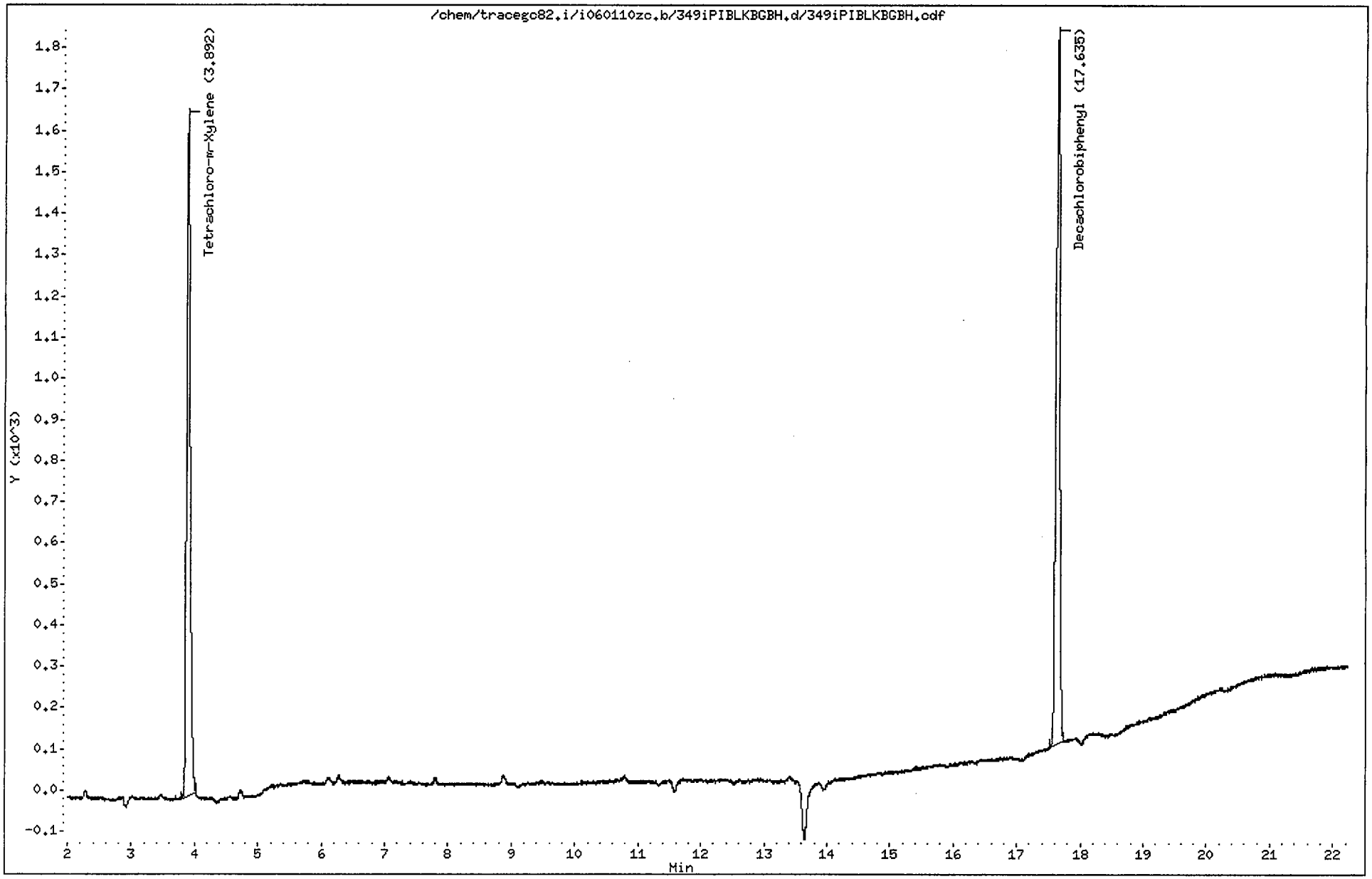
Sample Info: PIBLKBGBH

Volume Injected (uL): 1.0

Operator: 2512

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : PIBLKBG Client Smp Id : PIBLKBG
Sample Type : INSTBLANK Sublist : all
Inj Date : 24-JAN-2006 23:31 Inst ID : TRACEGC82
Operator : 2512
Method : /chem/tracegc82.i/i060110zc.b/8081A_clpestv4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	FLAGS
0.17			439						
0.91			3570						
3.89	3.78	3.92	6588	306784	Tetrachloro-m-Xylene	0.021474	0.214744		
17.64	17.53	17.67	7176	362764	Decachlorobiphenyl	0.019782	0.197819		

4/5/06

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PIBLKBH

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: PIBLKBH

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) ____ Date Extracted:_____

Concentrated Extract Volume: 10000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.025	U
72-20-8	Endrin	0.10	U
76-44-8	Heptachlor	0.025	U
1024-57-3	Heptachlor Epoxide	0.025	U
72-43-5	Methoxychlor	0.25	U
8001-35-2	Toxaphene	5.0	U
12789-03-6	Technical Chlordane	1.6	U

Data File: /chem/tracegc83.i/i060110zc.b/349iPIBLKBGBH.d

Date : 24-JAN-2006 23:31

Client ID: PIBLKBH

Instrument: tracegc83.i

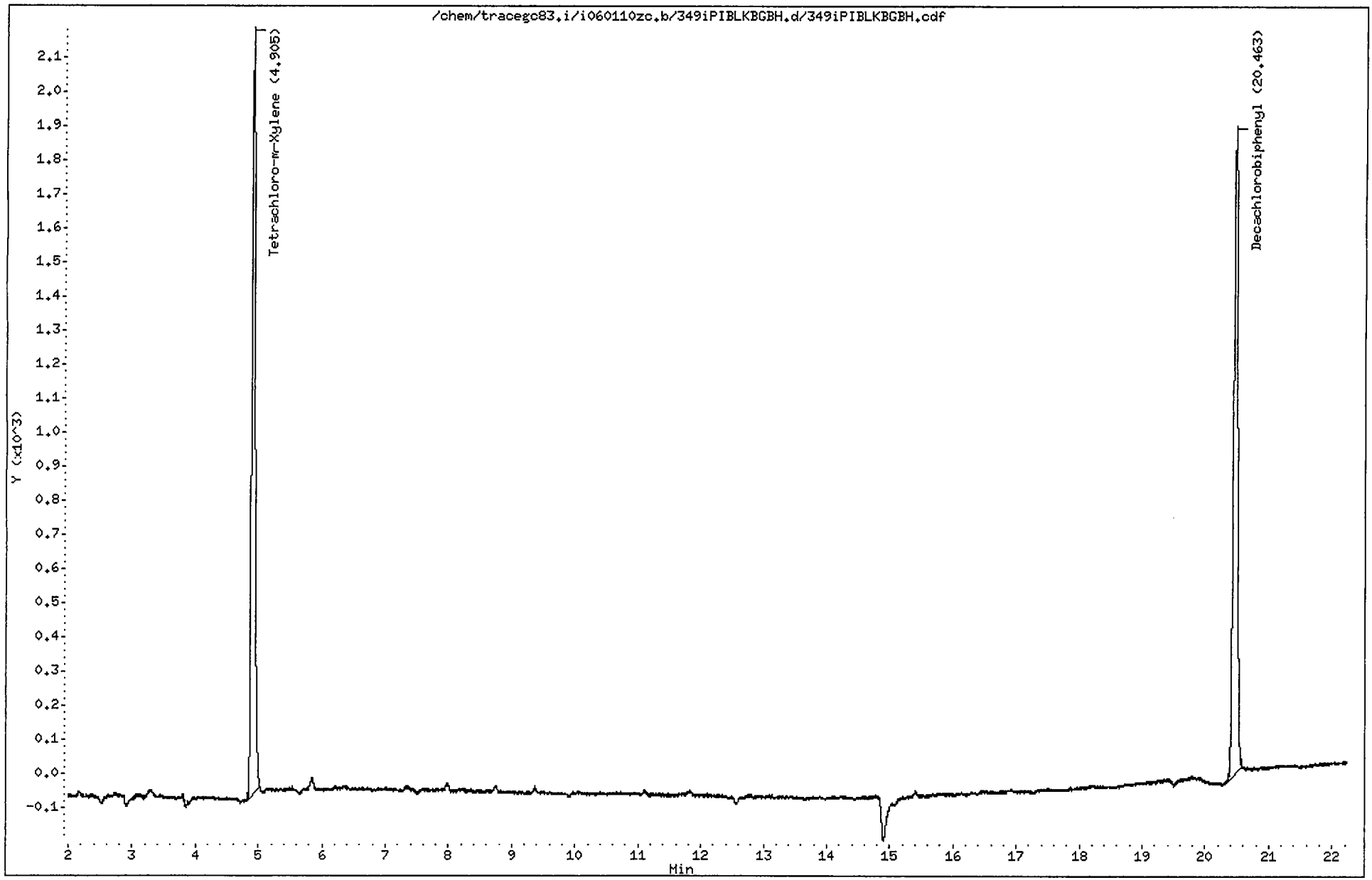
Sample Info: PIBLKBGBH

Volume Injected (uL): 1.0

Operator: 2512

Column phase: olpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : PIBLKBH Client Smp Id : PIBLKBH
Sample Type : INSTBLANK Sublist : all
Inj Date : 24-JAN-2006 23:31 Inst ID : TRACEGC83
Operator : 2512
Method : /chem/tracegc83.i/i060110zc.b/8081A_clpest2v4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	FLAGS
4.90	4.79	4.93	8654	403926	Tetrachloro-m-Xylene	0.021424	0.214245		
20.46	20.35	20.49	8723	459870	Decachlorobiphenyl	0.018969	0.189693		

b. Matrix Spike Data

- Tabulated Results (Form I)

- Chromatograms and data system printout(s)

c. Matrix Spike Duplicate Data

- Tabulated Results (Form I)

- Chromatograms and data system printout(s)

d. Laboratory Control Sample Data

- Tabulated Results (Form I)

- Chromatograms and data system printout(s)

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PGNLCS

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91896

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	1.4	
72-20-8	Endrin	0.50	U
76-44-8	Heptachlor	1.4	
1024-57-3	Heptachlor Epoxide	1.2	
72-43-5	Methoxychlor	1.3	U
8001-35-2	Toxaphene	47	
57-74-09	Technical Chlordane	8.0	U

Data File: /chem/tracegc82.i/i060110zb.b/343i91896.d

Page 1

Date : 24-JAN-2006 20:58

Client ID: PGNLCS

Instrument: tracegc82.i

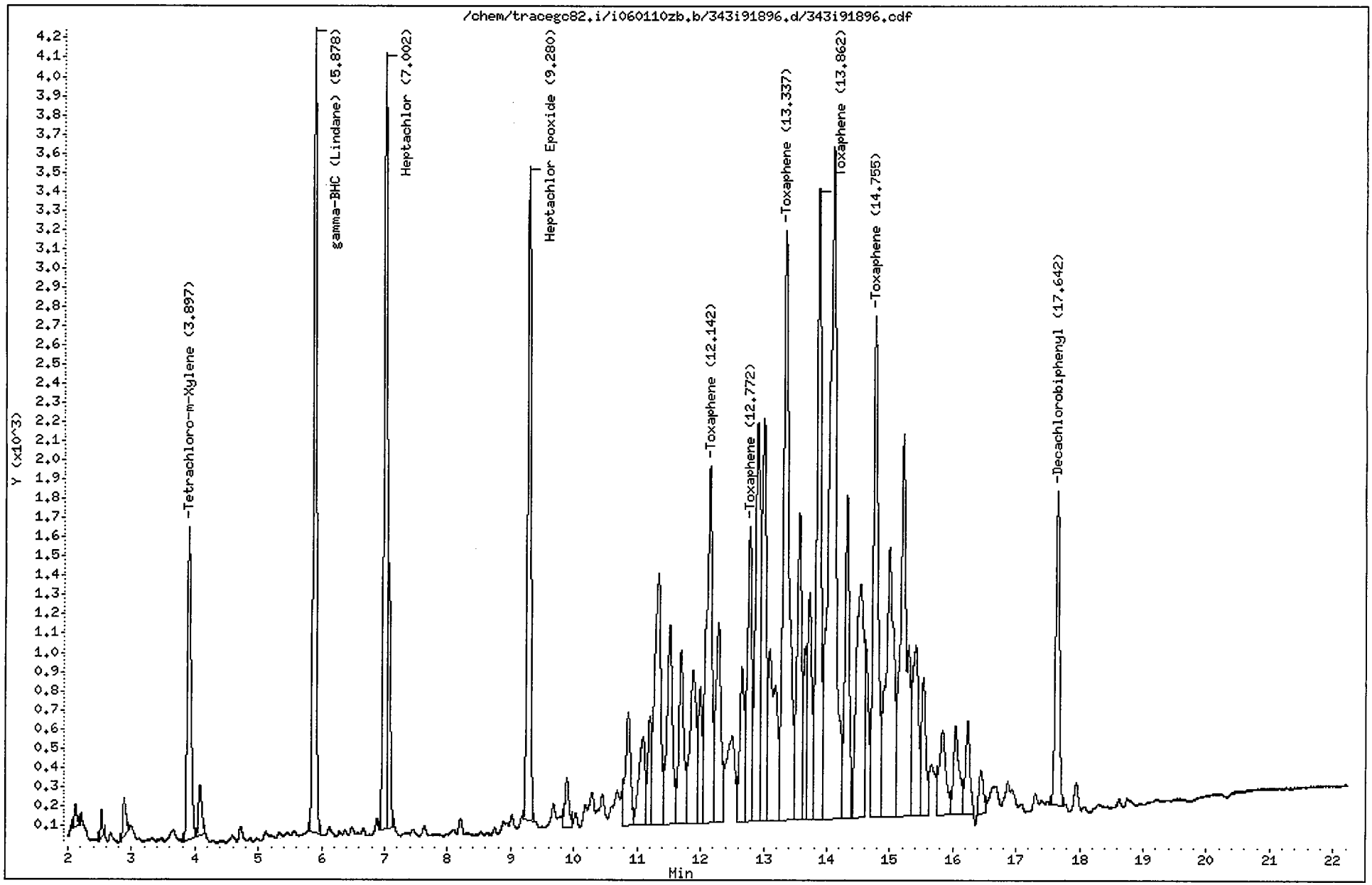
Sample Info: 91896

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest

Column diameter: 0.53



CompuChem

Lab Smp Id : 91896 Client Smp Id : PGNLCS
Sample Type : LCS Sublist : TCLP
Inj Date : 24-JAN-2006 20:58 Inst ID : TRACEGC82
Operator : 2564 Spike Sublist : TCLP
Method : /chem/tracegc82.i/i060110zb.b/8081A_clpestv4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.92			6133								
1.04			11596								
1.21			8560								
1.78			526								
2.12			321								
2.53			299								
2.88			656								
3.90	3.78	3.92	6539	306784	Tetrachloro-m-Xylene	0.021315	1.065732		106.6	43 - 135	
4.08			952								
5.88	5.76	5.90	14224	491545	gamma-BHC (Lindane)	0.028937	1.446867	0.125000	96.5	32 - 127	
7.00	6.88	7.02	14832	524870	Heptachlor	0.028258	1.412921	0.125000	94.2	34 - 111	M2
7.05			3650								
9.28	9.16	9.30	12171	489070	Heptachlor Epoxide	0.024886	1.244300	0.125000	83.0	37 - 142	
9.89			1120								
10.86			3430								
11.10			3196								
11.20			2396								
11.33			8943								
11.51			6500								
11.69			4798								
11.88			5838								
11.99			2869								
12.14	12.05	12.19	11718	16064	Toxaphene Peak 1	0.729469	36.47343	25.00000	94.0	41 - 126	
12.28			6422								
12.65			3963								
12.77	12.68	12.82	7820	14263	Toxaphene Peak 2	0.548281	27.41407	25.00000	94.0	41 - 126	
12.89			11409								
12.99			10318								
13.09			7641								
13.34	13.24	13.38	20306	20141	Toxaphene Peak 3	1.008192	50.40961	25.00000	94.0	41 - 126	
13.56			8534								
13.65			3093								
13.72			5633								
13.86	13.77	13.91	16175	16036	Toxaphene Peak 4	1.008699	50.43497	25.00000	94.0	41 - 126	
14.10			28794								
14.31			8006								
14.53			11078								

M2

TAJ 1/25/06

CompuChem

Lab Smp Id : 91896
Client Smp Id : PGNLCS
Sample Type : LCS
Sublist : TCLP
Inj Date : 24-JAN-2006 20:58
Inst ID :
Operator : 2564
Spike Sublist : TCLP
Method : /chem/tracegc82.i/i060110zb.b/8081A_clpestv4.m
Misc. Info : None

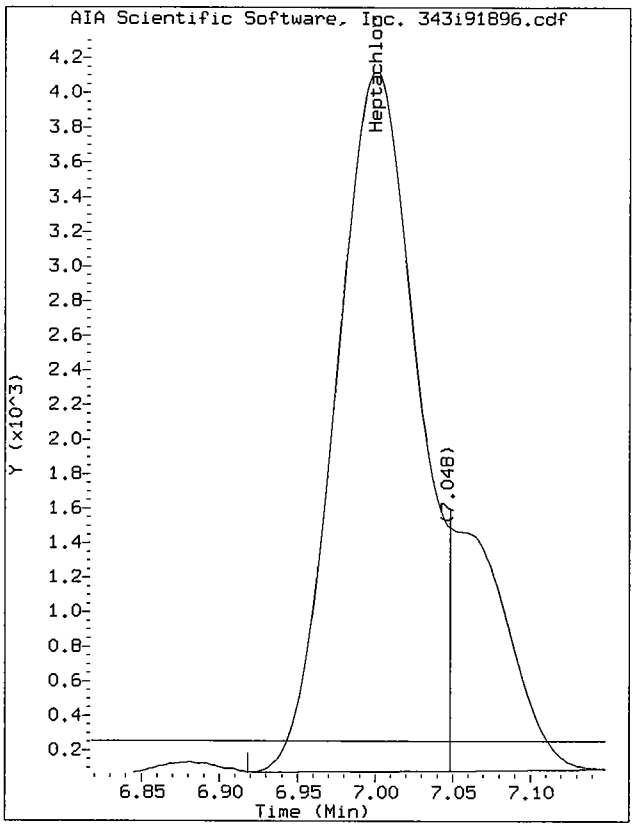
Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0
Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul)
Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
14.76	14.66 14.80	14250	10148	Toxaphene Peak 5	1.404050	70.20249	25.00000	94.0	41 - 126	Mz
14.98		12522								
15.21		14873								
15.41		6324								
15.53		3518								
15.84		3184								
16.04		2947								
16.23		2370								
16.44		1095								
17.64	17.53 17.67	6851	362764	Decachlorobiphenyl	0.018883	0.944141		94.4	43 - 144	

TAJ 1/25/06

Manually Integrated Peaks



Start: 6.92 Stop: 7.05

Data File: /chem/tracegc83.i/i060110zb.b/343i91896.d

Page 1

Date : 24-JAN-2006 20:58

Client ID: PGNLCS

Instrument: tracegc83.i

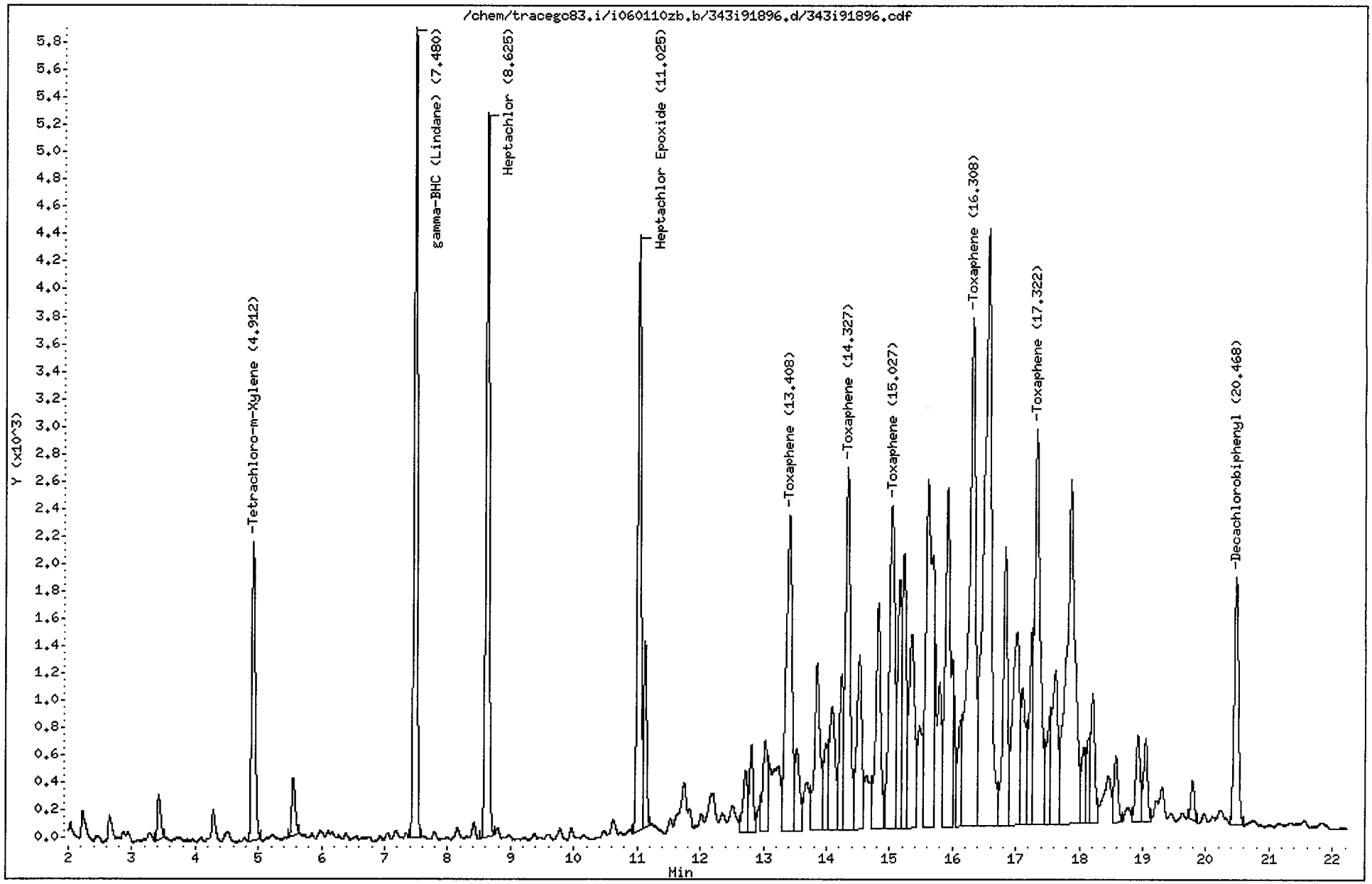
Sample Info: 91896

Volume Injected (uL): 1.0

Operator: 2564

Column phase: clpest2

Column diameter: 0.53



CompuChem

Lab Smp Id : 91896
Client Smp Id : PGNLCS
Sample Type : LCS
Sublist : TCLP
Inj Date : 24-JAN-2006 20:58
Inst ID : TRACEGC83
Operator : 2564
Spike Sublist : TCLP
Method : /chem/tracegc83.i/i060110zb.b/8081A_clpest2v4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0
Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul)
Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.91			3533								
1.02			13785								
1.23			12254								
1.84			1582								
3.42			1216								
4.91	4.79	4.93	8329	403926	Tetrachloro-m-Xylene	0.020620	1.031005		103.1	43 - 135	
5.55			1582								
7.48	7.36	7.50	19456	689670	gamma-BHC (Lindane)	0.028209	1.410457	0.125000	94.0	32 - 127	
8.62	8.50	8.64	19620	732145	Heptachlor	0.026797	1.339830	0.125000	89.3	34 - 111	
11.02	10.90	11.04	16412	660355	Heptachlor Epoxide	0.024853	1.242665	0.125000	82.8	37 - 142	
11.12			4703								
12.71			2214								
12.81			2618								
13.03			3692								
13.41	13.31	13.45	15343	18029	Toxaphene Peak 1	0.850974	42.54871	25.00000	94.0	41 - 126	
13.52			3054								
13.85			7503								
13.98			2825								
14.09			6084								
14.23			4879								
14.33	14.23	14.37	13998	23239	Toxaphene Peak 2	0.602349	30.11747	25.00000	94.0	41 - 126	
14.52			7592								
14.81			9170								
15.03	14.93	15.07	14696	25354	Toxaphene Peak 3	0.579638	28.98191	25.00000	94.0	41 - 126	
15.15			7693								
15.22			9096								
15.35			9230								
15.60			19736								
15.91			16171								
16.12			3191								
16.31	16.21	16.35	26889	27277	Toxaphene Peak 4	0.985776	49.28878	25.00000	94.0	41 - 126	
16.56			36661								
16.83			9907								
17.01			11156								
17.10			5453								
17.25			5898								
17.32	17.23	17.37	17658	10464	Toxaphene Peak 5	1.687445	84.37224	25.00000	94.0	41 - 126	

M_2

TAJ 1/25/06

CompuChem

Lab Smp Id : 91896 Client Smp Id : PGNLCS
Sample Type : LCS Sublist : TCLP
Inj Date : 24-JAN-2006 20:58 Inst ID :
Operator : 2564 Spike Sublist : TCLP
Method : /chem/tracegc83.i/i060110zb.b/8081A_clpest2v4.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
17.54		3925								M2
17.62		6980								
17.86		24042								
18.06		2465								
18.13		2068								
18.20		4563								
18.57		2301								
18.92		3218								
19.04		2714								
19.79		1114								
20.47	20.35 20.49	8448	459870	Decachlorobiphenyl	0.018368	0.918412		91.8	43 - 144	

TAJ 1/25/06

CompuChem
a division of Liberty Analytical Corp.

HC (summary only) + full + EDD CD

31-Jan-06

ADRIENNE JONES
CH2M HILL, INC.
5700 CLEVELAND STREET
SUITE 101
VIRGINIA BEACH, VA 23462

Subject:
Report of Data-Project: CTO-007 (AR) Workorder: 8925

Attn.: ADRIENNE JONES

Enclosed are the results of analytical work performed in accordance with the referenced account number.

This report covers sample(s) appearing on the attached listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097.

Sincerely,

CompuChem
A Division of Liberty Analytical

Attachment

TOTAL NUMBER
OF PAGES_____

501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050

CompuChem
a division of Liberty Analytical Corp.

HC (summary only) + full + CD

31-Jan-06

MARK STINNETT
CH2M HILL, INC.
3011 SW WILLISTON ROAD

GAINESVILLE, FL 32608

Subject:
Report of Data-Project: CTO-007 (AR) Workorder: 8925

Attn.: MARK STINNETT

Enclosed are the results of analytical work performed in accordance with the referenced account number.

This report covers sample(s) appearing on the attached listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097.

Sincerely,

CompuChem
A Division of Liberty Analytical

Attachment

TOTAL NUMBER

OF PAGES_____

501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050

CompuChem

a division of Liberty Analytical Corp.

full HC (hole punched)

31-Jan-06

SHAWNE RODGERS
ENVIRONMENTAL DATA QUALITY, INC.
967 EAST SWEDESFORD ROAD
SUITE 404
Exton, PA 19341

Subject:
Report of Data-Project: CTO-007 (AR) Workorder: 8925

Attn.: SHAWNE RODGERS

Enclosed are the results of analytical work performed in accordance with the referenced account number.

This report covers sample(s) appearing on the attached listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097.

Sincerely,

CompuChem
A Division of Liberty Analytical

Attachment

TOTAL NUMBER

OF PAGES_____

501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050

CompuChem, a division of Liberty Analytical

Hsn	Client ID	Wordorder	Matrix	Account	Project	Report
892501	WAR-IDW-4	8925	L	CH2MHILL	CTO-007 (AR)	

CompuChem, a Division of Liberty Analytical Corporation

I. SAMPLE DATA SUMMARY PACKAGE

GC by SW-846

The sample data summary package shall contain data for all samples in one Sample Delivery Group (SDG) of the Case, as follows:

A. SDG Narrative

B. Tabulated target compound results (Form I)

C. Surrogate spike analysis results (Form II)
By matrix (Water or Soil), and
by concentration (Low, or Medium)

D. Spike results MS / MSD / LCS (Form III)

E. Blank data (Form IV)
Tabulated blank results (Form I)

LAB CODE : COMPU

METHOD: 8151A

SDG # : 8925

A. SDG Narrative

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one water sample listed above was received intact, properly refrigerated, with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the herbicide fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction and Method 8151A were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the herbicide fraction only.

Herbicide-TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no herbicide project analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

The surrogate met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample (LCS) prepared and analyzed along with this sample met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd
Senior Scientist I
January 27, 2006

GC and GC/MS Column and Trap Specifications Table

SDG #:	8925

COLUMNS

Columns Utilized	Brand Name	Coating Material	ID (mm)	Film Thickness (um)	Length (m)
	GC Laboratory				
	Restek	RTX-5	0.53	1.0	30
	Restek	RTX-SMS	0.53	1.0	30
✓	Restek	CLPesticides	0.53	0.5	30
✓	Restek	CLPesticides II	0.53	0.42	30
	J&W	DB-210	0.53	1.0	30
	J&W	GS-GASPRO	0.32		30
	GC Volatiles Laboratory				
	Restek	RTX-Volatiles	0.53	2.0	30
	GC/MS Volatiles Laboratory				
	Restek	RTX-624	0.32	1.8	60
	Restek	RTX-VMS*	0.18	1.0	20
	Phenomonex	ZB-624	0.32	1.8	60
	Supelco	SPB-624	0.32	3	75
	GC/MS Semivolatiles Laboratory				
	Restek	RTX-5MS	0.25	0.3	30
	Restek	RTX-5MS	0.32	0.3	30
	HPLC Laboratory				
	Supelco	Supelcosil LC-PAH	4.6	5.0	15 cm
	Supelco	Discovery RP Amide C16	4.6	5.0	25 cm
	Restek	Pinnacle Cyano	4.6	5	25 cm
	Restek	Allure C18	4.6	5	25 cm

TRAPS

	GC and GC/MS Volatiles Laboratory	
	Tekmar 3	* 8 cm of 2,6-diphenylene oxide polymer (Tenax)
		* 8 cm of silica gel
		* 7 cm of coconut charcoal
		* 0.5 cm of silanized glass wool at each end
	Tekmar 5	* 1 cm of methyl silicone packing (OV-1 coating)
		* 8 cm of 2,6-diphenylene oxide polymer (Tenax)
		* 8 cm of silica gel
		* 7 cm of coconut charcoal
		* 0.5 cm of silanized glass wool at each end
	Supelco K (Vocarb3000)	* 10 cm of Carbopack B (Graphitized Carbons)
		* 6 cm of Carboxen 1000 (Carbon molecular sieves)
		* 1 cm of Carboxen 1001 (Carbon molecular sieves)

Rev. 18

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CompuChem's Pagination Convention

As required by the EPA CLP Statement of Work (SOW) documents, data to be delivered must be paginated (by machine or hand). In the event that the initial numbering is incorrect (a page numbered twice or a page skipped, for example), it is CompuChem's policy to add an alphabetic suffix to a page number when necessary (e.g., 100A, 100B, etc.).

Notification Regarding Manual Editing/Integration Flags

In some instances, manual adjustments to the software output are necessary to provide accurate data. These manual integrations are performed by the data reviewers, GC/MS operators, or GC chemists. An Extracted Ion Current Profile (EICP) or a GC chromatographic peak has been provided for the manual integration performed on each compound to demonstrate the accuracy of that process. The manual integrations are flagged on the quantitation report in the far right column beyond the FINAL concentration for GC/MS analysis, and in the "Flags" column for GC analysis. The manual editing/integration flags are:

M - Denotes that a manual integration has been performed for this compound. The manual integration was performed in order to provide the most accurate area count possible for the peak.

H - Denotes that the data reviewer, GC/MS operator, or GC Chemist has chosen an alternate peak within the retention time window from that chosen by the software for that compound. No manual integration is performed in choosing an alternate peak. The software still performs the integration.

MH - Denotes that an alternate peak has been chosen within the retention time window from that chosen by the software for that compound and also a manual integration of the chosen peak has been performed. The manual integration was performed in order to provide the most accurate area count possible for the peak.

L - Denotes that a data reviewer or GC/MS operator has selected an alternate library search. This is typically done when an additional tentatively identified compound (TIC) has been added to the number of peaks searched. No manual integration is performed in choosing an alternate peak. The software still performs the integration.

ML - Denotes that an alternate library search has been selected and a manual integration has also been performed. This is typically done when an additional TIC has been added and the TIC peak also required a manual integration.

The EPA CLP SOW documents require additional explanations for manual editing/integration. In the accompanying raw data packages, additional codes have been applied to the "M" flag and carry the following meanings;

M1 - The compound was not found by the automatic integration routine.

M2 - The compound was incorrectly integrated by the automatic integration routine.

M3 - The co-eluting compounds were incorrectly integrated by the automatic integration routine.

These codes will appear in the GC/MS and GC raw data.

DATA REPORTING QUALIFIERS

On the Form I, under the column labeled "Q" for qualifier, each result is flagged with the specific data reporting qualifiers listed below, as appropriate. Up to five qualifiers may be reported on Form I for each compound. The qualifiers used are:

U : This flag indicates the compound was analyzed for but not detected. The Contract Required Quantitation Limit (CRQL), or reporting limit, will be adjusted to reflect any dilution and, for soils, the percent moisture.

J : This flag indicates an estimated value. The flag is used as detailed below:

1. When estimating a concentration for tentatively identified compounds (TICs) where a response factor of 1.0 is assumed for the TIC analyte,

2. When the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero, and

3. When the retention time data indicate the presence of a compound that meets the pesticide/Aroclor or other GC or HPLC identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero. For example, if the CRQL (or Reporting Limit) is 10 µg/L, but a concentration of 3 µg/L is calculated, it is reported as 3J.

N : This flag indicates presumptive evidence of a compound. This flag is only used for TICs, where the identification is based on a mass spectral library search. For generic characterization of a TIC such as 'chlorinated hydrocarbon', the N flag is not used.

P : In the EPA's Contract Laboratory Program (CLP), this flag is used for a pesticide/Aroclor target analyte, when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a P.
For SW-846 GC and HPLC analyses, when the Relative Percent Difference (RPD) is greater than 40% and there is no evidence of chromatographic anomalies or interferences, then the higher of the two values is reported and flagged with a P. When the RPD is equal to or less than 40%, our policy is to also report the higher of the two values, although the choice could be a project specific issue. For certain HPLC analyses, if one of the HPLC columns displays co-elution of target analytes, all results are reported from a primary column displaying no co-elution. Results are still flagged with a P if the RPD between columns is greater than 40%.

DATA REPORTING QUALIFIERS (continued)

C : This flag applies to GC or HPLC results where the identification has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, this flag is not applied; a laboratory-defined flag is used instead (see the X/Y/Z qualifier.)

B : This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag is used for a TIC as well as for a positively identified target compound. The combination of flags BU or UB is not an allowable policy. Blank contaminants are flagged B only when they are detected in the sample.

E : This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis. If one or more compounds have a response greater than the upper level of the calibration range, the sample or extract will be diluted and reanalyzed. All such compounds with a response greater than the upper level of the calibration range will have the concentration flagged with an E on Form I for the original analysis.

D : If a sample or extract is reanalyzed at a higher dilution factor, for example when the concentration of an analyte exceeds the upper calibration range, the DL suffix is appended to the sample number on Form I for the more diluted sample, and **all** reported concentrations on that Form I are flagged with the D flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.

NOTE 1: The D flag is not applied to compounds which are not detected in the sample analysis i.e. compounds reported with the CRQL (or Reporting Limit) and the U flag.

NOTE 2: Separate Form Is are used for reporting the original analysis (Client Sample No. XXXXX) and the more diluted sample analysis (Client Sample No. XXXXXDL) i.e. the results from both analyses <u>are not combined</u> on a single Form I.

A: This flag indicates that a TIC is a suspected aldol-condensation product.

S: In the SOM01.1 SOW, this flag is used to indicate an estimated value for Aroclor target compounds where a valid 5-point initial calibration was not performed prior to the analytes detection in a sample. If an "S" flag is used for a specific Aroclor, then a reanalysis of the sample is required after a valid 5-point calibration is performed for the detected Aroclor.

X/Y/Z : Other specific flags may be required to properly define the results. If used, the flags will be fully described in the SDG Narrative. The laboratory-defined flags are limited to X, Y and Z.

B. Form I

Organic Analysis Data Sheet (OADS)
- All samples in alphanumeric order
- Matrix Spike/Matrix Spike Duplicate
- Laboratory Control Sample(s)

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WAR-IDW-4

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	25	U
93-72-1	silvex	5.0	U

FORM I PEST

1D

EPA SAMPLE NO.

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

PGMLCS

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91894

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	74	
93-72-1	silvex	19	

C. Form II

Surrogate spike analysis

- By level (low, medium) -

2E

WATER PESTICIDE SURROGATE RECOVERY

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column(1): CLPEST ID: 0.53 (mm) GC Column(2): CLPEST2 ID: 0.53 (mm)

	EPA SAMPLE NO.	S1 1 %REC	#	S1 2 %REC	#	S2 1 %REC	#	S2 2 %REC	#	S3 1 %REC	#	S3 2 %REC	#	TOT OUT
01	PBLKGM	88		87										0
02	PGMLCS	94		91										0
03	TCLPBLKFW	56		56										0
04	WAR-IDW-4	82		83										0
05														
06														
07														
08														
09														
10														
11														
12														
13														
14														
15														
16														
17														
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20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														

ADVISORY
QC LIMITS

S1 = DCAA (50-148)

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

D. Form III

Matrix Spike/Matrix Spike Duplicate results

- By level (low, medium) -

Laboratory Control Sample(s)

3E
WATER PESTICIDE LAB CONTROL SAMPLE

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

LCS ID: PGMLCS

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
2,4-D	80	74	93	50-150
silvex	20	19	95	50-150

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

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

_____

FORM III PEST-1

E. Form IV

Method Blank Results
Form IV, Form I

Method blank summary, OADS
- In chronological order of analysis

4C

PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PBLKGM

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Lab Sample ID: 91893 Lab File ID: 036L91893

Matrix (soil/water) WATER Extraction:(SepF/Cont/Sonc) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 01/24/06

Date Analyzed (1): 01/25/06 Date Analyzed (2): 01/25/06

Time Analyzed (1): 1949 Time Analyzed (2): 1949

Instrument ID (1): VARIAN37 Instrument ID (2): VARIAN42

GC Column (1): CLPEST ID: 0.53(mm) GC Column (2): CLPEST2 ID: 0.53(mm)

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	PGMLCS	91894	01/25/06	01/25/06
02	TCLPBLKFW	91766	01/25/06	01/25/06
03	WAR-IDW-4	892501	01/25/06	01/25/06
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS: _____

1D

EPA SAMPLE NO.

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

PBLKGM

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91893

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	5.0	U
93-72-1	silvex	1.0	U

CompuChem, a Division of Liberty Analytical Corporation

I. SAMPLE DATA PACKAGE

GC by SW-846

The sample data package shall include data for all analyses of all samples in one Sample Delivery Group (SDG), including field samples, dilutions, reanalyses, blanks, matrix spikes, matrix spike duplicates, and laboratory control samples. The sample data package consists of the following:

A. SDG Narrative

B. Chain-of-Custody Documentation

C. SDG Data

LAB CODE : COMPU

METHOD: 8151A

CASE # : _____

SDG # : 8925

A. SDG Narrative

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one water sample listed above was received intact, properly refrigerated, with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the herbicide fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction and Method 8151A were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the herbicide fraction only.

Herbicide-TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no herbicide project analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

The surrogate met recovery and retention time criteria in the analyses of this sample.

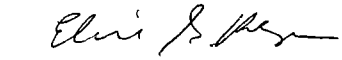
The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample (LCS) prepared and analyzed along with this sample met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.



Elsie S. Byrd
Senior Scientist I
January 27, 2006

GC and GC/MS Column and Trap Specifications Table

SDG #:	8925

COLUMNS

Columns Utilized	Brand Name	Coating Material	ID (mm)	Film Thickness (um)	Length (m)
	GC Laboratory				
	Restek	RTX-5	0.53	1.0	30
	Restek	RTX-SMS	0.53	1.0	30
✓	Restek	CLPesticides	0.53	0.5	30
✓	Restek	CLPesticides II	0.53	0.42	30
	J&W	DB-210	0.53	1.0	30
	J&W	GS-GASPRO	0.32		30
	GC Volatiles Laboratory				
	Restek	RTX-Volatiles	0.53	2.0	30
	GC/MS Volatiles Laboratory				
	Restek	RTX-624	0.32	1.8	60
	Restek	RTX-VMS*	0.18	1.0	20
	Phenomonex	ZB-624	0.32	1.8	60
	Supelco	SPB-624	0.32	3	75
	GC/MS Semivolatiles Laboratory				
	Restek	RTX-5MS	0.25	0.3	30
	Restek	RTX-5MS	0.32	0.3	30
	HPLC Laboratory				
	Supelco	Supelcosil LC-PAH	4.6	5.0	15 cm
	Supelco	Discovery RP Amide C16	4.6	5.0	25 cm
	Restek	Pinnacle Cyano	4.6	5	25 cm
	Restek	Allure C18	4.6	5	25 cm

TRAPS

	GC and GC/MS Volatiles Laboratory	
	Tekmar 3	* 8 cm of 2,6-diphenylene oxide polymer (Tenax)
		* 8 cm of silica gel
		* 7 cm of coconut charcoal
		* 0.5 cm of silanized glass wool at each end
	Tekmar 5	* 1 cm of methyl silicone packing (OV-1 coating)
		* 8 cm of 2,6-diphenylene oxide polymer (Tenax)
		* 8 cm of silica gel
		* 7 cm of coconut charcoal
		* 0.5 cm of silanized glass wool at each end
	Supelco K (Vocarb3000)	* 10 cm of Carbopack B (Graphitized Carbons)
		* 6 cm of Carboxen 1000 (Carbon molecular sieves)
		* 1 cm of Carboxen 1001 (Carbon molecular sieves)

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In some instances, manual adjustments to the software output are necessary to provide accurate data. These manual integrations are performed by the data reviewers, GC/MS operators, or GC chemists. An Extracted Ion Current Profile (EICP) or a GC chromatographic peak has been provided for the manual integration performed on each compound to demonstrate the accuracy of that process. The manual integrations are flagged on the quantitation report in the far right column beyond the FINAL concentration for GC/MS analysis, and in the "Flags" column for GC analysis. The manual editing/integration flags are:

M - Denotes that a manual integration has been performed for this compound. The manual integration was performed in order to provide the most accurate area count possible for the peak.

H - Denotes that the data reviewer, GC/MS operator, or GC Chemist has chosen an alternate peak within the retention time window from that chosen by the software for that compound. No manual integration is performed in choosing an alternate peak. The software still performs the integration.

MH - Denotes that an alternate peak has been chosen within the retention time window from that chosen by the software for that compound and also a manual integration of the chosen peak has been performed. The manual integration was performed in order to provide the most accurate area count possible for the peak.

L - Denotes that a data reviewer or GC/MS operator has selected an alternate library search. This is typically done when an additional tentatively identified compound (TIC) has been added to the number of peaks searched. No manual integration is performed in choosing an alternate peak. The software still performs the integration.

ML - Denotes that an alternate library search has been selected and a manual integration has also been performed. This is typically done when an additional TIC has been added and the TIC peak also required a manual integration.

The EPA CLP SOW documents require additional explanations for manual editing/integration. In the accompanying raw data packages, additional codes have been applied to the "M" flag and carry the following meanings;

M1 - The compound was not found by the automatic integration routine.

M2 - The compound was incorrectly integrated by the automatic integration routine.

M3 - The co-eluting compounds were incorrectly integrated by the automatic integration routine.

These codes will appear in the GC/MS and GC raw data.

DATA REPORTING QUALIFIERS

On the Form I, under the column labeled "Q" for qualifier, each result is flagged with the specific data reporting qualifiers listed below, as appropriate. Up to five qualifiers may be reported on Form I for each compound. The qualifiers used are:

U : This flag indicates the compound was analyzed for but not detected. The Contract Required Quantitation Limit (CRQL), or reporting limit, will be adjusted to reflect any dilution and, for soils, the percent moisture.

J : This flag indicates an estimated value. The flag is used as detailed below:

1. When estimating a concentration for tentatively identified compounds (TICs) where a response factor of 1.0 is assumed for the TIC analyte,

2. When the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero, and

3. When the retention time data indicate the presence of a compound that meets the pesticide/Aroclor or other GC or HPLC identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero. For example, if the CRQL (or Reporting Limit) is 10 µg/L, but a concentration of 3 µg/L is calculated, it is reported as 3J.

N : This flag indicates presumptive evidence of a compound. This flag is only used for TICs, where the identification is based on a mass spectral library search. For generic characterization of a TIC such as 'chlorinated hydrocarbon', the N flag is not used.

P : In the EPA's Contract Laboratory Program (CLP), this flag is used for a pesticide/Aroclor target analyte, when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a P.
For SW-846 GC and HPLC analyses, when the Relative Percent Difference (RPD) is greater than 40% and there is no evidence of chromatographic anomalies or interferences, then the higher of the two values is reported and flagged with a P. When the RPD is equal to or less than 40%, our policy is to also report the higher of the two values, although the choice could be a project specific issue. For certain HPLC analyses, if one of the HPLC columns displays co-elution of target analytes, all results are reported from a primary column displaying no co-elution. Results are still flagged with a P if the RPD between columns is greater than 40%.

DATA REPORTING QUALIFIERS (continued)

C : This flag applies to GC or HPLC results where the identification has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, this flag is not applied; a laboratory-defined flag is used instead (see the X/Y/Z qualifier.)

B : This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag is used for a TIC as well as for a positively identified target compound. The combination of flags BU or UB is not an allowable policy. Blank contaminants are flagged B only when they are detected in the sample.

E : This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis. If one or more compounds have a response greater than the upper level of the calibration range, the sample or extract will be diluted and reanalyzed. All such compounds with a response greater than the upper level of the calibration range will have the concentration flagged with an E on Form I for the original analysis.

D : If a sample or extract is reanalyzed at a higher dilution factor, for example when the concentration of an analyte exceeds the upper calibration range, the DL suffix is appended to the sample number on Form I for the more diluted sample, and **all** reported concentrations on that Form I are flagged with the D flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.

NOTE 1: The D flag is not applied to compounds which are not detected in the sample analysis i.e. compounds reported with the CRQL (or Reporting Limit) and the U flag.

NOTE 2: Separate Form Is are used for reporting the original analysis (Client Sample No. XXXXX) and the more diluted sample analysis (Client Sample No. XXXXXDL) i.e. the results from both analyses <u>are not combined</u> on a single Form I.

A: This flag indicates that a TIC is a suspected aldol-condensation product.

S: In the SOM01.1 SOW, this flag is used to indicate an estimated value for Aroclor target compounds where a valid 5-point initial calibration was not performed prior to the analytes detection in a sample. If an "S" flag is used for a specific Aroclor, then a reanalysis of the sample is required after a valid 5-point calibration is performed for the detected Aroclor.

X/Y/Z : Other specific flags may be required to properly define the results. If used, the flags will be fully described in the SDG Narrative. The laboratory-defined flags are limited to X, Y and Z.

B. Chains-of-Custody

The laboratory shall include a copy of the Chain-of-Custody (CoC) documentation for all of the samples in the SDG. The CoC documents shall be arranged in increasing Client Sample ID number order, considering both letters and numbers.

Vieques ERP

CH2M HILL

Chain of Custody Form

Project Site	AOC R				Number of Containers	Analysis Requested											Project No. 180357.FI.FK.AR
Project Manager	Brett Doerr																
Contact Tel No.	757-289-9246 (Adrienne Jones)																Lab Batch/SDG ID
Contact Address	4350 W. Cypress Street, Suite 600, Tampa, FL 33607																
Lab Name	CompuChem Labs																Lab Tel No./Fax No.
Lab Contact	Cathy Dover																919-379-4089/919-379-4040
Lab Address	501 Madison Ave. Cary, NC 27513																
Item	Sample ID	Station ID	Matrix	Date & Time Collected		CORR_IGNIT_SO 8oz	REACTIVITY_SO	TCLP_VOC_SO 4oz	TCLP_SO 8oz		CORR_IGNIT_W 2AL	REACTIVITY_W	TCLP_VOC_W 3-40ml	TCLP_W 5AL			Comments
1	WAR-IDW-4	IDW	WW	01/17/2006 1140	3	X	X	X	X								892501
2	WAR-IDW-3	IDW	WW	01/17/2006 1040	10						X	X	X	X			892601
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	

Sampled By: Kenji Butler	Date/Time: 1-18-06 0800	Custody Seal: Y / N Relinquished By:	Date/Time: 1/18/06 0830
Shipped Via: UPS (FedEx) Hand Other (Please specify):			
Samples Temperature and Condition Upon Receipt (for lab's use):			
Received By:	Date/Time:	Custody Seal: Y / N Relinquished By:	Date/Time:
Received By:	Date/Time: 1-19-06 9:15	Custody Seal: Y / N Relinquished By:	Date/Time:

Remarks: 01/18/2006 AOC-R COC # 10

Cooler # 1

Temp @ 4.6 °C

CompuChem

a division of Liberty Analytical Corp.

WORKORDER SUMMARY REPORT

Workorder: 8925 **Account:** CH2MHILL **Project:** CTO-007 (AR)
SDG-Case: CTO-007/18035 **Status:** CLOSED **QC Type:** CLIENT SPECIFIC MS/MSD
Report Style: COMPUCHEM STYLE 9 INTEGRATED W/EDD&CD

SAMPLE ID	CLIENT ID	COLLECT DATE	RECEIVE DATE	DUE DATE	COMMENTS
892501	WAR-IDW-4	1/17/2006	1/19/2006	2/13/2006	LCS ONLY*TCLP VOC, SVOC, PEST, HERB & METALS*RIC
L	GS8081TCLP	TCLP PST ONLY 8081A SOIL			
L	GS8151TCLP	TCLP HERBICIDE 8151 SOIL			
L	MS6010TCLP	TCLP METAL 6010B SOIL			
L	MS74HGTCLP	TCLP MERCURY ONLY 7471A SOIL			
L	SS8270TCLP	TCLP SVOC 8270C SOIL			
L	VS8260ZHE	ZHE VOC 8260B SOIL			
L	WS1010IGNT	IGNITABILITY 1010 SOIL			
L	WS9014RCCN	REACTIVE CYANIDE 9014 SOIL			
L	WS9034RCSF	REACTIVE SULFIDE 9034 SOIL			
L	WS9040COR	CORROSIVITY 9040B SOIL			

CompuChem, a Division of Liberty Analytical

Extract Chain of Custody

Batch: 8893 Date: 1/24/2006

Department: Organic Extractions

Sample ID	Client ID	Product	Matrix	Hold Date
892501	WAR-IDW-4	GW8151TCLX	L	2/1/2006
892601	WAR-IDW-3	GW8151TCLX	L	2/1/2006
91766	HLCHBK for	GW8151TCLX	W	2/1/2006
91771	HLCHBK for	GW8151TCLX	W	2/1/2006
91893	PBLKGM	GW8151TCLX	W	2/1/2006
91894	PGMLCS	GW8151TCLX	W	2/1/2006

1-25-6

Relinquished By:	Received By:	Date/Time
GC#3	GC Rebug #3	1/25/06 4:00
		1/25/61 1600
	GC#4	1/25/06 1600

C. SDG Data

1. QC Summary
2. Sample Data
3. Standards Data
4. Raw QC Data

LAB CODE : COMPU

METHOD: _____

CASE # : _____

SDG # : _____

1. Q C Summary

a. Surrogate Percent Recovery Summary (Form II)

b. Matrix Spike/Matrix Spike Duplicate/
Laboratory Control Sample Summary
(Form III)

c. Method Blank Summary (Form IV)

a. Surrogate Percent Recovery Summary

(Form II)

2E

WATER PESTICIDE SURROGATE RECOVERY

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column(1): CLPEST ID: 0.53 (mm) GC Column(2): CLPEST2 ID: 0.53 (mm)

	EPA SAMPLE NO.	S1 1 %REC	#	S1 2 %REC	#	S2 1 %REC	#	S2 2 %REC	#	S3 1 %REC	#	S3 2 %REC	#	TOT OUT
01	PBLKGM	88		87										0
02	PGMLCS	94		91										0
03	TCLPBLKFW	56		56										0
04	WAR-IDW-4	82		83										0
05														
06														
07														
08														
09														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														

ADVISORY QC LIMITS

S1 = DCAA (50-148)

\# Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

b. Matrix Spike/Matrix Spike Duplicate/
Laboratory Control Sample Summary

(Form III)

3E
WATER PESTICIDE LAB CONTROL SAMPLE

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

LCS ID: PGMLCS

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
2,4-D	80	74	93	50-150
silvex	20	19	95	50-150

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

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

_____

FORM III PEST-1

c. Method Blank Summary (Form IV)

If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blanks, by instrument.

4C

PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PBLKGM

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Lab Sample ID: 91893 Lab File ID: 036L91893

Matrix (soil/water) WATER Extraction:(SepF/Cont/Sonc) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 01/24/06

Date Analyzed (1): 01/25/06 Date Analyzed (2): 01/25/06

Time Analyzed (1): 1949 Time Analyzed (2): 1949

Instrument ID (1): VARIAN37 Instrument ID (2): VARIAN42

GC Column (1): CLPEST ID: 0.53(mm) GC Column (2): CLPEST2 ID: 0.53(mm)

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	PGMLCS	91894	01/25/06	01/25/06
02	TCLPBLKFW	91766	01/25/06	01/25/06
03	WAR-IDW-4	892501	01/25/06	01/25/06
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS: _____

2. Sample Data

Sample data shall be arranged in packets with the Organic Analysis Data Sheet (Form I), followed by the raw data for samples. These sample packets shall be placed in increasing Client Sample ID number order, considering both letters and numbers.

a. Target Analyte Results (Form I)

Tabulated results (identification and quantitation) shall be included.

b. Copies of Chromatograms

Positively identified compounds shall be labeled with the names of compounds, either directly out from the peak on the chromatogram, or on a printout of retention times on the data system printout if retention times are printed over the peak on the chromatogram. Include for each sample or sample extract, including dilutions and reanalyses. The chromatogram shall contain the following header information: Client Sample ID number, volume injected (μL), date and time of injection, GC column ID, and GC instrument ID.

c. Copies of Chromatograms from the Second Column (if necessary)

d. Data System Printout

A printout of retention time and corresponding peak height or peak area shall accompany each chromatogram. Where edits have been made, initialing, dating and integration time range are required.

1D

EPA SAMPLE NO.

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

WAR-IDW-4

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	25	U
93-72-1	silvex	5.0	U

Data File: /chem/varian37.i/1060112c.b/0401892501.d

Date : 25-JAN-2006 21:41

Client ID: WAR-IDW-4

Instrument: varian37.i

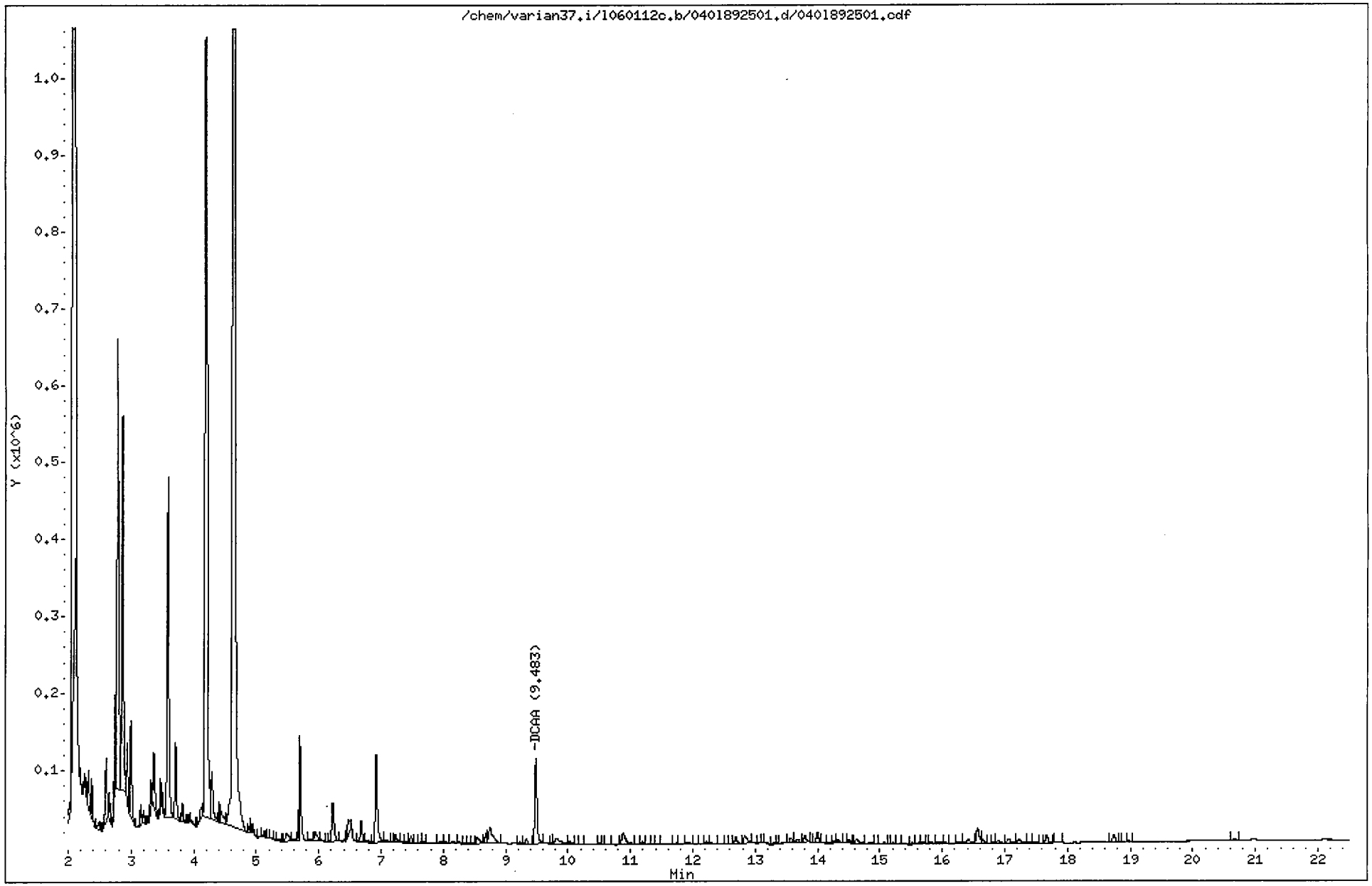
Sample Info: 892501

Volume Injected (uL): 1.0

Operator: 2512

Column phase: CLPest

Column diameter: 0.53



CompuChem

Lab Smp Id : 892501 Client Smp Id : WAR-IDW-4
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 21:41 Inst ID : VARIAN37
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.09		1529								
1.34		292815								
1.36		251805								
1.42		1125								
1.62		270598								
1.65		83182								
1.76		106145								
1.83		7789								
1.87		15981								
1.90		26479								
2.02		16808								
2.07		3434993								
2.20		9713								
2.26		12679								
2.28		12900								
2.32		70637								
2.38		63997								
2.49		22773								
2.61		144628								
2.66		43711								
2.73		23187								
2.75		135937								
2.79		1067970								
2.86		843102								
2.94		97397								
3.00		218066								
3.15		35134								
3.20		23206								
3.26		12343								
3.31		65555								
3.36		132170								
3.47		54505								
3.50		25609								
3.59		829090								
3.71		180246								
3.82		42150								
3.89		1961								

TAJ 1/26/06

CompuChem

Lab Smp Id : 892501 Client Smp Id : WAR-IDW-4
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 21:41 Inst ID :
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
3.93		2217								
3.96		7456								
4.12		36529								
4.20		2846385								
4.29		151333								
4.41		12964								
4.44		47312								
4.65		4385325								
4.89		8949								
4.91		13302								
4.96		9656								
5.05		1842								
5.13		17812								
5.18		1465								
5.23		3363								
5.34		6981								
5.49		35127								
5.58		7241								
5.70		120148								
5.84		8408								
5.95		38204								
6.03		4856								
6.22		126860								
6.48		59197								
6.68		58076								
6.79		7770								
6.92		275046								
7.08		7580								
7.18		1320								
7.23		23555								
7.33		3180								
7.42		2914								
7.48		15865								
7.65		1773								
7.69		5361								
7.96		5376								
8.04		4144								

CompuChem

Lab Smp Id : 892501 Client Smp Id : WAR-IDW-4
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 21:41 Inst ID :
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
8.15		6334								
8.26		5483								
8.34		1542								
8.40		1402								
8.47		2089								
8.55		29542								
8.69		27251								
8.75		87204								
9.22		4295								
9.33		18035								
9.48	9.45 9.51	260440	63689	DCAA	4.089228	204.4614		81.8	50 - 148	
9.73		1858								
9.81		35554								
10.03		7231								
10.20		1548								
10.50		3335								
10.63		2528								
10.88		66158								
11.19		7873								
11.29		2675								
11.44		1750								
11.74		1100								
11.92		7595								
12.14		1599								
12.22		8274								
12.29		6158								
12.46		2396								
12.61		1598								
12.69		21654								
12.84		39978								
13.06		1137								
13.18		6973								
13.29		3257								
13.47		6339								
13.57		17362								
13.68		16768								
13.80		25823								

CompuChem

Lab Smp Id : 892501 Client Smp Id : WAR-IDW-4
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 21:41 Inst ID :
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
14.00		33542								
14.17		3388								
14.27		5473								
14.33		13497								
14.50		10070								
14.62		24112								
14.84		7368								
15.07		5814								
15.21		1985								
15.29		1771								
15.52		3177								
15.68		2894								
15.83		2493								
15.94		5161								
16.05		2010								
16.27		7304								
16.42		23319								
16.57		60098								
16.64		13295								
16.82		3301								
16.90		13746								
17.06		23667								
17.23		18259								
17.39		4315								
17.48		5545								
17.67		27920								
17.84		3337								
18.74		26425								
18.91		1564								
18.97		3472								
20.67		3027								

Data File: /chem/varian42.i/1060112c.b/0401892501.d

Date : 25-JAN-2006 21:41

Client ID: WAR-IDW-4

Instrument: varian42.i

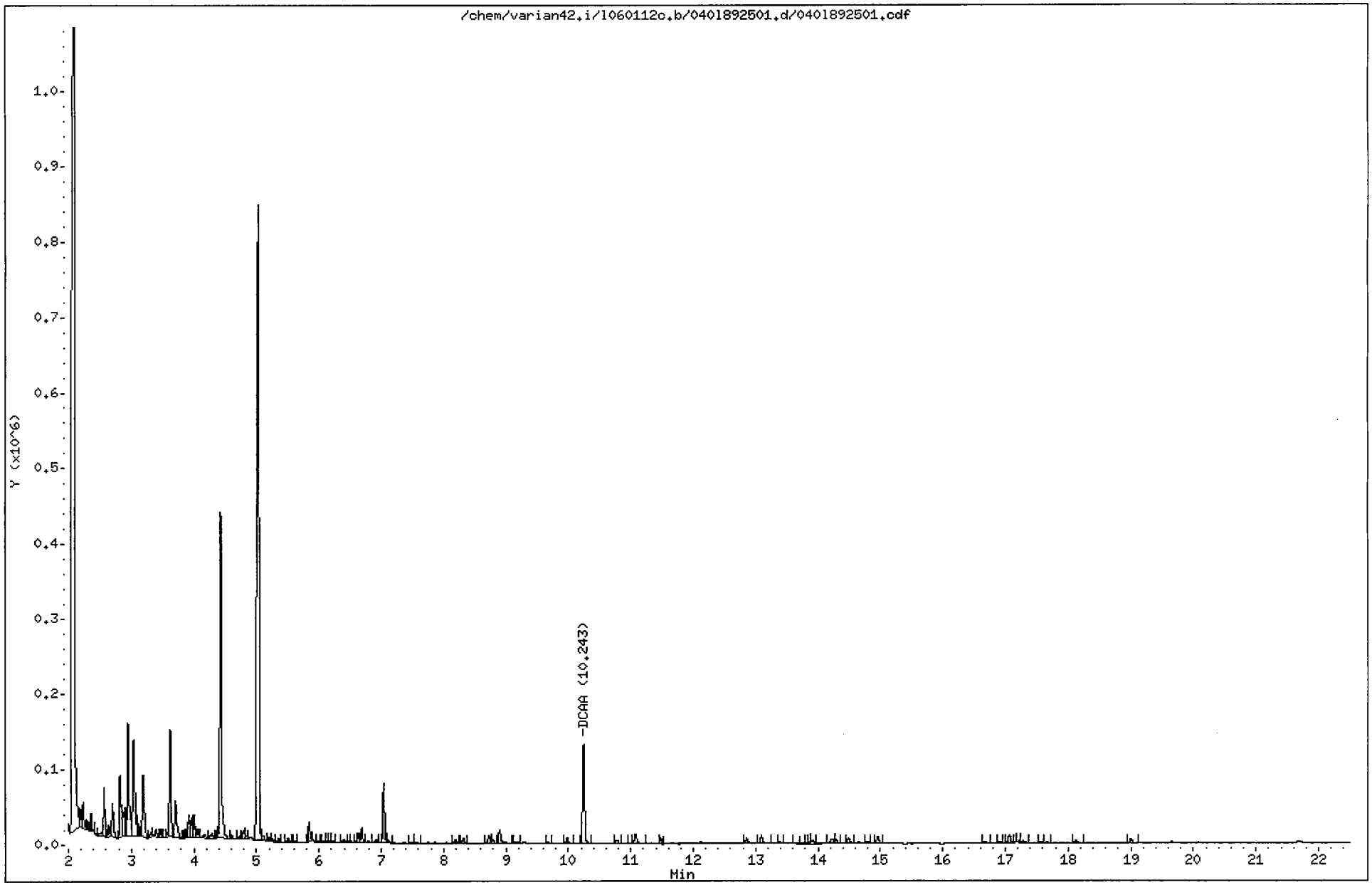
Sample Info: 892501

Volume Injected (uL): 1.0

Operator: 2512

Column phase: CLPest2

Column diameter: 0.53



CompuChem

Lab Smp Id : 892501 Client Smp Id : WAR-IDW-4
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 21:41 Inst ID : VARIAN42
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
1.30		1881299								
1.34		292808								
1.35		1439863								
1.51		86662								
1.55		79703								
1.73		44802								
1.86		24393								
1.89		12629								
1.95		19884								
2.10		3767859								
2.19		44493								
2.23		61117								
2.31		17649								
2.36		32897								
2.50		13994								
2.57		89298								
2.64		25938								
2.70		82629								
2.82		169216								
2.87		50571								
2.91		56701								
2.95		287598								
3.04		290549								
3.10		32921								
3.15		4204								
3.19		190610								
3.31		13272								
3.39		23024								
3.47		21286								
3.58		9215								
3.62		273476								
3.71		108067								
3.87		19878								
3.92		46812								
3.96		44878								
4.00		55333								
4.06		21610								

TAJ 1/26/06

CompuChem

Lab Smp Id : 892501 Client Smp Id : WAR-IDW-4
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 21:41 Inst ID :
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
4.17		12366								
4.29		17935								
4.37		16375								
4.43		799575								
4.60		11202								
4.73		4696								
4.79		22798								
4.84		5798								
5.03		2075399								
5.10		14533								
5.20		8876								
5.25		6114								
5.35		11038								
5.50		10930								
5.61		4366								
5.84		49908								
5.98		3663								
6.08		5084								
6.12		3745								
6.16		5627								
6.21		5493								
6.40		11217								
6.47		3526								
6.52		3449								
6.62		29563								
6.68		39213								
6.79		3585								
6.92		9761								
7.04		148764								
7.11		8745								
7.47		5912								
7.55		5396								
8.19		11680								
8.32		14407								
8.73		24206								
8.79		14236								
8.90		52915								

CompuChem

Lab Smp Id : 892501 Client Smp Id : WAR-IDW-4
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 21:41 Inst ID :
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
9.17		5430								
9.67		3043								
9.98		17934								
10.24	10.21 10.27	290094	69876	DCAA	4.151550	207.5775		83.0	50 - 148	
10.77		13866								
10.89		2934								
11.07		39141								
11.48		14376								
12.86		19627								
13.09		33282								
13.39		4878								
13.64		5122								
13.76		4282								
13.83		6411								
13.87		7233								
13.91		12917								
14.02		9654								
14.23		19030								
14.29		12398								
14.49		18363								
14.79		3760								
14.95		25138								
16.68		7494								
16.92		6128								
17.07		30095								
17.21		4241								
17.28		6650								
17.55		7236								
17.67		5365								
18.12		10530								
19.01		16118								

3. Standards Data

a. Initial Calibration Data (Form VI)

b. Calibration Verification Summary (Form VII)

c. Analytical Sequence (Form VIII)

d. Identification Summary for Single Component Analytes (Form X)

e. Identification Summary for Multicomponent Analytes (Form X) - if applicable

f. Chromatograms and Data System Printouts

a. Initial Calibration Data
(Form VI)

For all GC columns, all instruments, in chronological order by GC column and instrument.

FORM 6
8151 INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN37 Calibration Date(s): 01/12/06 01/12/06

Column: CLPEST ID: 0.53 (mm) Calibration Time(s): 0107 0259

LAB FILE ID: RF0.063: 003L81511RF0.125: 004L81512RF0.25: 005L815135
RF0.5: 006L815145PRF1: 007L815155P

COMPOUND	RF0.063	RF0.125	RF0.25	RF0.5	RF1
2,4-D	133621.28	124937.23	135573.40	148484.75	130213.19
silvex	1455415.4	1335867.5	1355562.6	1407642.8	1164001.1
DCAA	63740.385	63818.910	62418.803	68433.048	60034.081

FORM 6
8151 INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN37 Calibration Date(s): 01/12/06 01/12/06

Column: CLPEST ID: 0.53 (mm) Calibration Time(s): 0107 0259

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2
2,4-D	AVRG	134565.972	6.5
silvex	AVRG	1343697.86	8.2
DCAA	AVRG	63689.0456	4.8

FORM VI 8151

FORM 6
8151 INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN42 Calibration Date(s): 01/12/06 01/12/06

Column: CLPEST2 ID: 0.53 (mm) Calibration Time(s): 0107 0259

LAB FILE ID: RF0.063: 003L81511RF0.125: 004L81512RF0.25: 005L815135
RF0.5: 006L815145PRF1: 007L815155P

COMPOUND	RF0.063	RF0.125	RF0.25	RF0.5	RF1
2,4-D	136164.00	116960.00	116271.00	119784.67	99215.600
silvex	984320.00	845400.00	805062.50	783375.00	618886.00
DCAA	80272.000	69414.000	68949.500	71460.667	59283.000

FORM 6
8151 INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN42 Calibration Date(s): 01/12/06 01/12/06

Column: CLPEST2 ID: 0.53 (mm) Calibration Time(s): 0107 0259

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2
2,4-D	AVRG	117679.067	11.2
silvex	AVRG	807408.840	16.2
DCAA	AVRG	69875.8373	10.7

FORM VI 8151

b. Calibration Verification Summary (Form VII)

For all performance evaluation mixtures (if applicable) and continuing calibration verification standards, on all GC columns and instruments, in chronological order by GC column and instrument.

FORM 6
8151 INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN37 Calibration Date(s): 01/12/06 01/12/06

Column: CLPEST ID: 0.53 (mm) Calibration Time(s): 0107 0259

LAB FILE ID: RT1: 003L815115P RT2: 004L815125P RT3: 005L815135P
RT4: 006L815145P RT5: 007L815155P

COMPOUND	RT1	RT2	RT3	RT4	RT5
2,4-D	11.172	11.157	11.132	11.135	11.125
silvex	12.242	12.233	12.212	12.218	12.210
DCAA	9.502	9.497	9.478	9.487	9.478

FORM 6
8151 INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN37 Calibration Date(s): 01/12/06 01/12/06

Column: CLPEST ID: 0.53 (mm) Calibration Time(s): 0107 0259

COMPOUND	MEAN RT	RT WINDOW FROM	RT WINDOW TO
2,4-D	11.144	11.095	11.155
silvex	12.223	12.180	12.240
DCAA	9.488	9.448	9.508

FORM VI 8151

FORM 6
8151 INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN42 Calibration Date(s): 01/12/06 01/12/06

Column: CLPEST2 ID: 0.53 (mm) Calibration Time(s): 0107 0259

LAB FILE ID: RT1: 003L815115P RT2: 004L815125P RT3: 005L815135P
RT4: 006L815145P RT5: 007L815155P

COMPOUND	RT1	RT2	RT3	RT4	RT5
2,4-D	11.945	11.938	11.918	11.925	11.917
silvex	12.982	12.978	12.958	12.965	12.957
DCAA	10.255	10.253	10.237	10.247	10.238

FORM 6
8151 INITIAL CALIBRATION DATA

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN42 Calibration Date(s): 01/12/06 01/12/06

Column: CLPEST2 ID: 0.53 (mm) Calibration Time(s): 0107 0259

COMPOUND	MEAN RT	RT WINDOW FROM	RT WINDOW TO
2,4-D	11.929	11.887	11.947
silvex	12.968	12.927	12.987
DCAA	10.246	10.208	10.268

FORM 7B
8151 CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN37 Calibration Date: 01/25/06 Time: 1701

Lab File ID: 030L8151M5V Init. Calib. Date(s): 01/12/06 01/12/06

Init. Calib. Times: 0107 0259

GC Column: CLPEST ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF0.5000 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
2,4-D	134565.97	149938.97	0.01	11.42	15.00	AVRG
silvex	1343697.9	1421073.3	0.01	5.76	15.00	AVRG
DCAA	63689.045	68736.369	0.01	7.92	15.00	AVRG

FORM VII 8151

FORM 7B
8151 CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN42 Calibration Date: 01/25/06 Time: 1701

Lab File ID: 030L8151M5V Init. Calib. Date(s): 01/12/06 01/12/06

Init. Calib. Times: 0107 0259

GC Column: CLPEST2 ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF0.5000 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
2,4-D	117679.05	109076.07	0.01	-7.31	15.00	AVRG
silvex	807408.70	716988.33	0.01	-11.20	15.00	AVRG
DCAA	69875.833	65532.083	0.01	-6.22	15.00	AVRG

FORM VII 8151

FORM 7B
8151 CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN37 Calibration Date: 01/26/06 Time: 0045

Lab File ID: 046L8151M5X Init. Calib. Date(s): 01/12/06 01/12/06

Init. Calib. Times: 0107 0259

GC Column: CLPEST ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF0.5000 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
2,4-D	134565.97	148061.63	0.01	10.03	15.00	AVRG
silvex	1343697.9	1390207.2	0.01	3.46	15.00	AVRG
DCAA	63689.045	68502.840	0.01	7.56	15.00	AVRG

FORM VII 8151

FORM 7B
8151 CALIBRATION VERIFICATION SUMMARY

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Instrument ID: VARIAN42 Calibration Date: 01/26/06 Time: 0045

Lab File ID: 046L8151M5X Init. Calib. Date(s): 01/12/06 01/12/06

Init. Calib. Times: 0107 0259

GC Column: CLPEST2 ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF0.5000 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
2,4-D	117679.05	115665.03	0.01	-1.71	15.00	AVRG
silvex	807408.70	761548.00	0.01	-5.68	15.00	AVRG
DCAA	69875.833	69603.225	0.01	-0.39	15.00	AVRG

FORM VII 8151

c. Analytical Sequence (Form VIII)

For all GC columns, all instruments, in chronological order by GC column and instrument.

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column: CLPEST ID: 0.53 (mm) Init. Calib. Date(s): 01/12/06 01/12/06

Instrument ID: VARIAN37

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.48

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	815115P	815115P	01/12/06	0107	9.50			
02	815125P	815125P	01/12/06	0135	9.50			
03	815135P	815135P	01/12/06	0203	9.48			
04	815145P	815145P	01/12/06	0231	9.49			
05	815155P	815155P	01/12/06	0259	9.48			
06	HIBLK5U	HIBLK5U	01/25/06	1634	9.49			
07	8151M5V	8151M5V	01/25/06	1701	9.49			
08	PBLKGM	91893	01/25/06	1949	9.48			
09	PGMLCS	91894	01/25/06	2017	9.48			
10	TCLPBLKFW	91766	01/25/06	2045	9.50			
11	WAR-IDW-4	892501	01/25/06	2141	9.48			
12	HIBLK5W	HIBLK5W	01/26/06	0015	9.51			
13	8151M5X	8151M5X	01/26/06	0045	9.49			
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

S1 = DCAA

QC LIMITS
(+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII PEST

8D
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

GC Column: CLPEST2 ID: 0.53 (mm) Init. Calib. Date(s): 01/12/06 01/12/06

Instrument ID: VARIAN42

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 10.24

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	815115P	815115P	01/12/06	0107	10.26	
02	815125P	815125P	01/12/06	0135	10.25	
03	815135P	815135P	01/12/06	0203	10.24	
04	815145P	815145P	01/12/06	0231	10.25	
05	815155P	815155P	01/12/06	0259	10.24	
06	HIBLK5V	HIBLK5V	01/25/06	1634	10.24	
07	8151M5V	8151M5V	01/25/06	1701	10.25	
08	PBLKGM	91893	01/25/06	1949	10.24	
09	PGMLCS	91894	01/25/06	2017	10.24	
10	TCLPBLKFW	91766	01/25/06	2045	10.26	
11	WAR-IDW-4	892501	01/25/06	2141	10.24	
12	HIBLK5X	HIBLK5X	01/26/06	0015	10.26	
13	8151M5X	8151M5X	01/26/06	0045	10.26	
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

S1 = DCAA

QC LIMITS
(+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII PEST

d. Identification Summary for Single Component Analytes (Form X)

For all samples with positively identified single component analytes, in order by increasing Client Sample ID number.

10A

EPA SAMPLE NO.

PESTICIDE IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

PGMLCS

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Lab Sample ID: 91894 Date(s) Analyzed: 01/25/06 01/25/06

Instrument ID (1): VARIAN37 Instrument ID (2): VARIAN42

GC Column(1): CLPEST ID: 0.53(mm) GC Column(2): CLPEST2 ID: 0.53(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	RPD
2,4-D	1	11.13	11.10	11.15	69	
	2	11.92	11.89	11.95	74	7.0
silvex	1	12.22	12.18	12.24	19	
	2	12.96	12.93	12.99	19	0.0
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

FORM X PEST-1

e. Identification Summary for Multicomponent Analytes (Form X) - if applicable

For all samples with positively identified multicomponent analytes, in order by increasing Client Sample ID number.

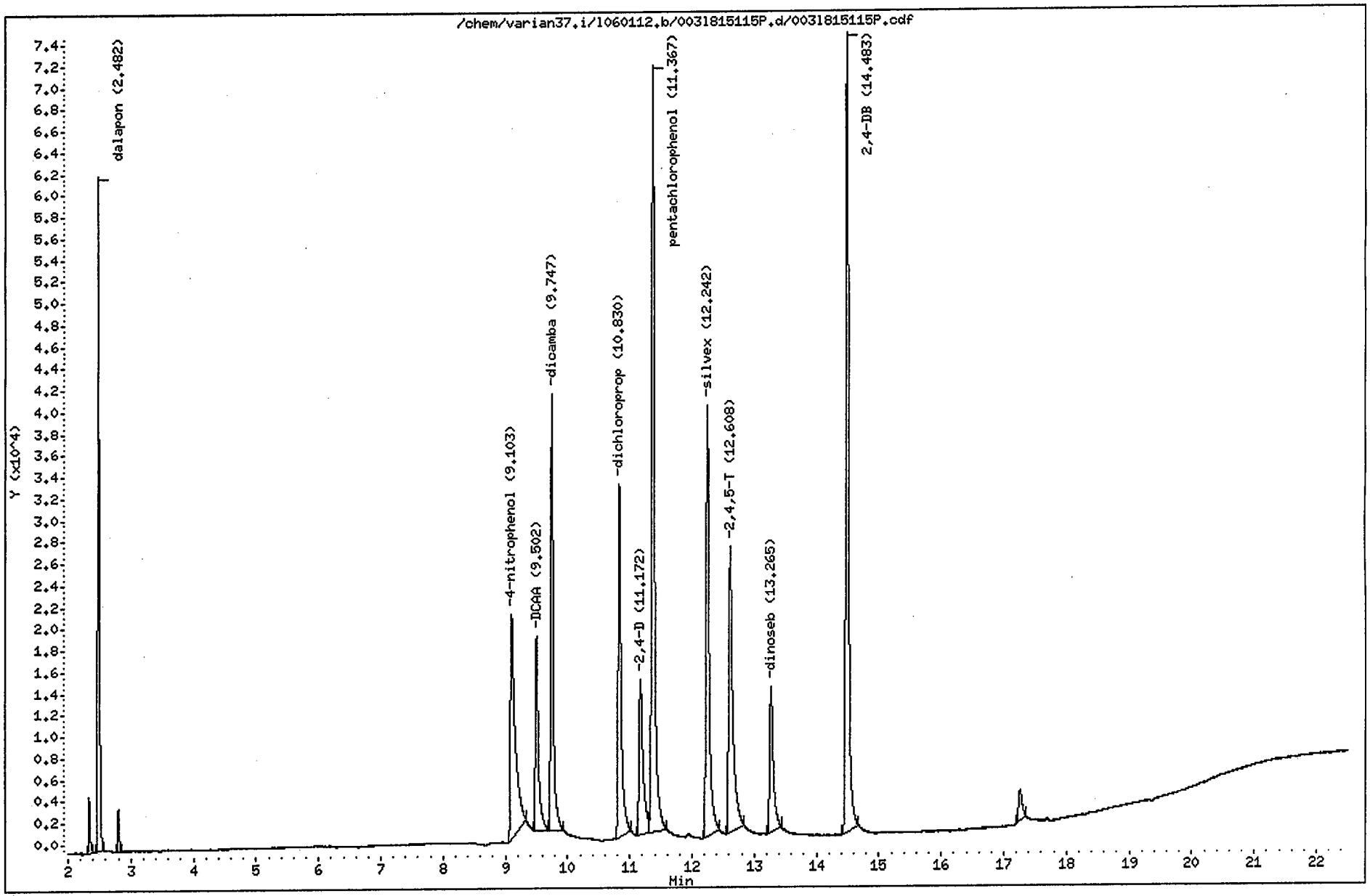
f. Chromatograms and Data System Printouts

For all methods, standards packages shall include the following:

- Performance evaluation mixtures (8081 only)
- Initial Calibration Standards
- Second Source Initial Calibration Verifications (if required by client)
- Continuing Calibration Verification Standards
- The quantitation report must include the Client Sample ID number.
- The chromatograms shall include the following: Client Sample ID number for the standard, labeled standard peaks, volume injected, for each standard, date and time of injection GC column identifier, and GC instrument identifier.

Data File: /chem/varian37.i/1060112.b/0031815115P.d
Date : 12-JAN-2006 01:07
Client ID: 815115P
Sample Info: 815115P
Volume Injected (uL): 1.0
Column phase: CLPest

Instrument: varian37.i
Operator: 2564
Column diameter: 0.53



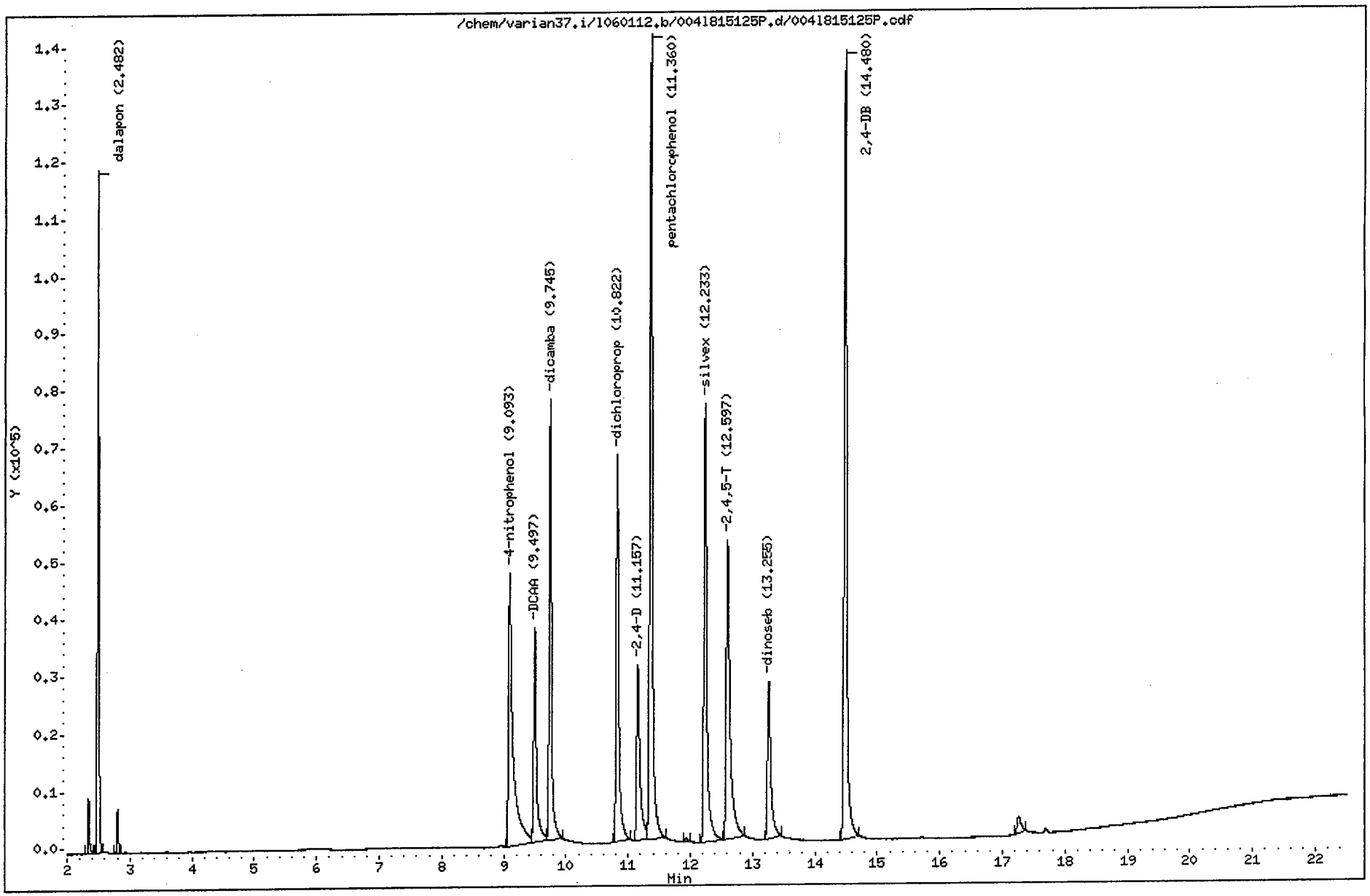
CompuChem

Lab Smp Id : 815115P Client Smp Id : 815115P
Sample Type : INITIAL CAL: Level 1 Sublist : FULL8151new
Inj Date : 12-JAN-2006 01:07 Inst ID : VARIAN37
Operator : 2564
Method : /chem/varian37.i/1060112.b/8151f_clpestv2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.35			4080					
1.39			48658					
1.43			62438					
2.34			7876					
2.48	2.45	2.51	98879	201114	dalapon	0.455000	217314	
2.80			6464					
9.10	9.04	9.12	108710	506043	4-nitrophenol	0.227000	478894	
9.50	9.46	9.52	59662	63689	DCAA	0.936000	63740	
9.75	9.71	9.77	114131	432434	dicamba	0.235000	485660	
10.83	10.78	10.84	112334	119362	dichloroprop	0.944000	118997	
11.17	11.11	11.17	62802	134566	2,4-D	0.470000	133621	
11.37	11.32	11.38	228086	4417153	pentachlorophenol	0.047500	4801811	
12.24	12.19	12.25	138411	1343698	silvex	0.095100	1455415	
12.61	12.55	12.61	116496	1185886	2,4,5-T	0.094800	1228850	
13.26	13.21	13.27	53572	242034	dinoseb	0.236300	226708	
14.48	14.44	14.50	227281	218780	2,4-DB	0.947000	240000	
17.26			11675					

Data File: /chem/varian37.i/1060112.b/0041815125P.d
Date : 12-JAN-2006 01:35
Client ID: 815125P
Sample Info: 815125P
Volume Injected (uL): 1.0
Column phase: CLPest

Instrument: varian37.i
Operator: 2564
Column diameter: 0.53



CompuChem

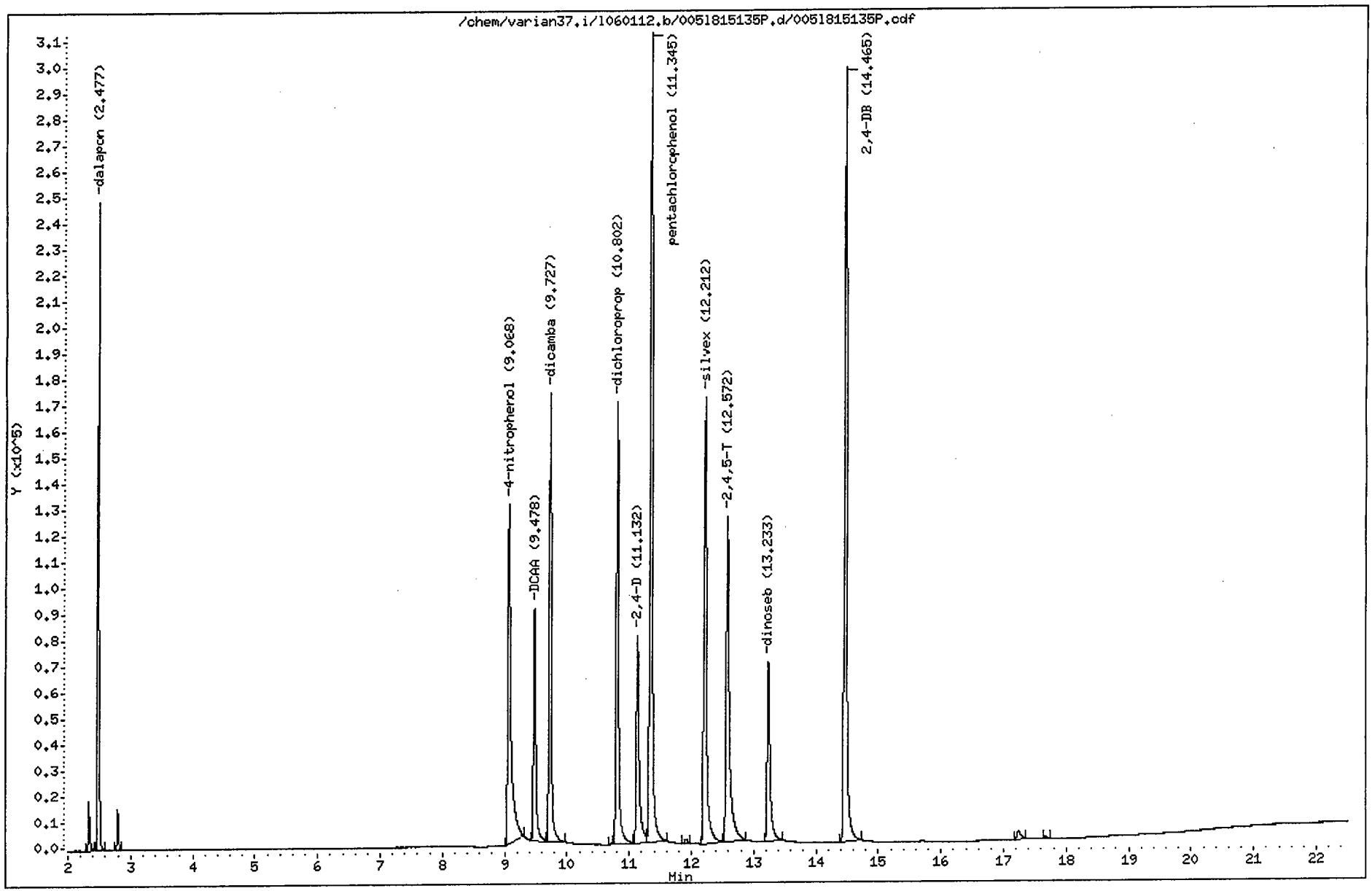
Lab Smp Id : 815125P Client Smp Id : 815125P
Sample Type : INITIAL CAL: Level 2 Sublist : FULL8151new
Inj Date : 12-JAN-2006 01:35 Inst ID : VARIAN37
Operator : 2564
Method : /chem/varian37.i/l060112.b/8151f_clpestv2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.35			4044					
1.39			53027					
1.44			67633					
2.34			14177					
2.48	2.45	2.51	175499	201114	dalapon	0.911000	192644	
2.80			11846					
9.09	9.04	9.12	240428	506043	4-nitrophenol	0.454000	529575	
9.50	9.46	9.52	119470	63689	DCAA	1.872000	63819	
9.74	9.71	9.77	208496	432434	dicamba	0.470000	443606	
10.82	10.78	10.84	205379	119362	dichloroprop	1.888000	108781	
11.16	11.11	11.17	117442	134802	2,4-D	0.940000	124937	
11.36	11.32	11.38	413370	4417154	pentachlorophenol	0.095000	4351263	
11.93			1845					
12.23	12.19	12.25	254083	1343698	silvex	0.190200	1335868	
12.60	12.55	12.61	220612	1175145	2,4,5-T	0.196800	1120996	
13.26	13.21	13.27	104573	242034	dinoseb	0.472500	221316	
14.48	14.44	14.50	406570	218780	2,4-DB	1.894000	214662	
17.26			11808					

1/12/06

Data File: /chem/varian37.i/1060112.b/0051815135P.d
Date : 12-JAN-2006 02:03
Client ID: 815135P
Sample Info: 815135P
Volume Injected (uL): 1.0
Column phase: CLPest

Instrument: varian37.i
Operator: 2564
Column diameter: 0.53



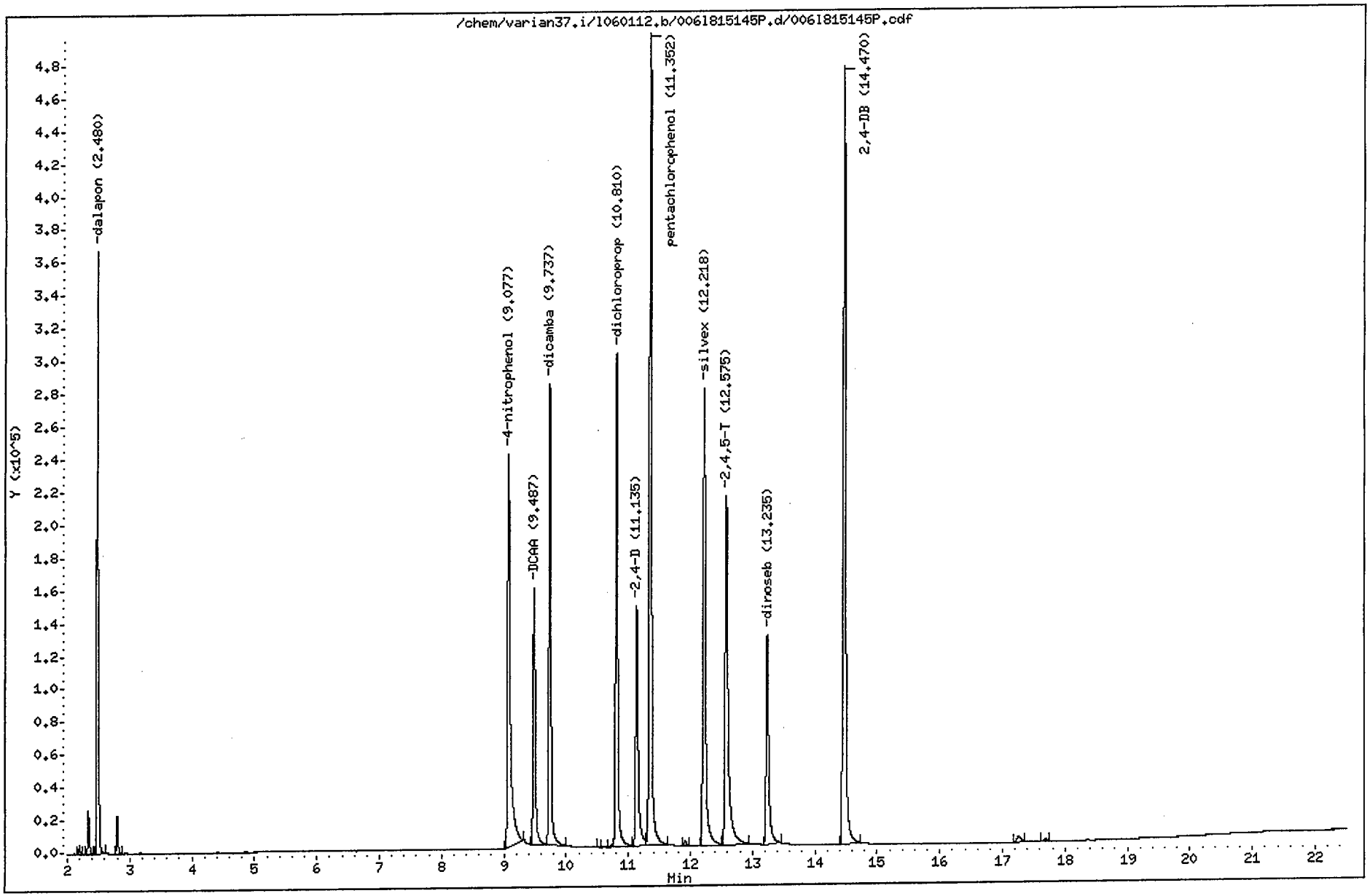
CompuChem

Lab Smp Id : 815135P Client Smp Id : 815135P
Sample Type : INITIAL CAL: Level 3 Sublist : FULL8151new
Inj Date : 12-JAN-2006 02:03 Inst ID : VARIAN37
Operator : 2564
Method : /chem/varian37.i/l060112.b/8151f_clpestv2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.35			4073					
1.39			205050					
2.33			29775					
2.48	2.45	2.51	371145	201114	dalapon	1.822000	203701	
2.79			24777					
9.07	9.04	9.12	453000	506043	4-nitrophenol	0.908000	498898	
9.48	9.46	9.52	233696	63689	DCAA	3.744000	62419	
9.73	9.71	9.77	428134	432434	dicamba	0.940000	455462	
10.72			1913					
10.80	10.78	10.84	455609	119362	dichloroprop	3.776000	120659	
11.13	11.11	11.17	254879	134802	2,4-D	1.880000	135573	
11.34	11.32	11.38	850430	4417154	pentachlorophenol	0.190000	4475942	
11.91			4716					
12.21	12.19	12.25	515657	1343698	silvex	0.380400	1355563	
12.57	12.55	12.61	461431	1175145	2,4,5-T	0.379200	1216854	
13.23	13.21	13.27	232863	242034	dinoseb	0.945000	246415	
14.46	14.44	14.50	830192	218780	2,4-DB	3.788000	219164	
17.24			13154					
17.68			3124					

Data File: /chem/varian37.i/1060112.b/0061815145P.d
Date : 12-JAN-2006 02:31
Client ID: 815145P
Sample Info: 815145P
Volume Injected (uL): 1.0
Column phase: CLPest

Instrument: varian37.i
Operator: 2564
Column diameter: 0.53



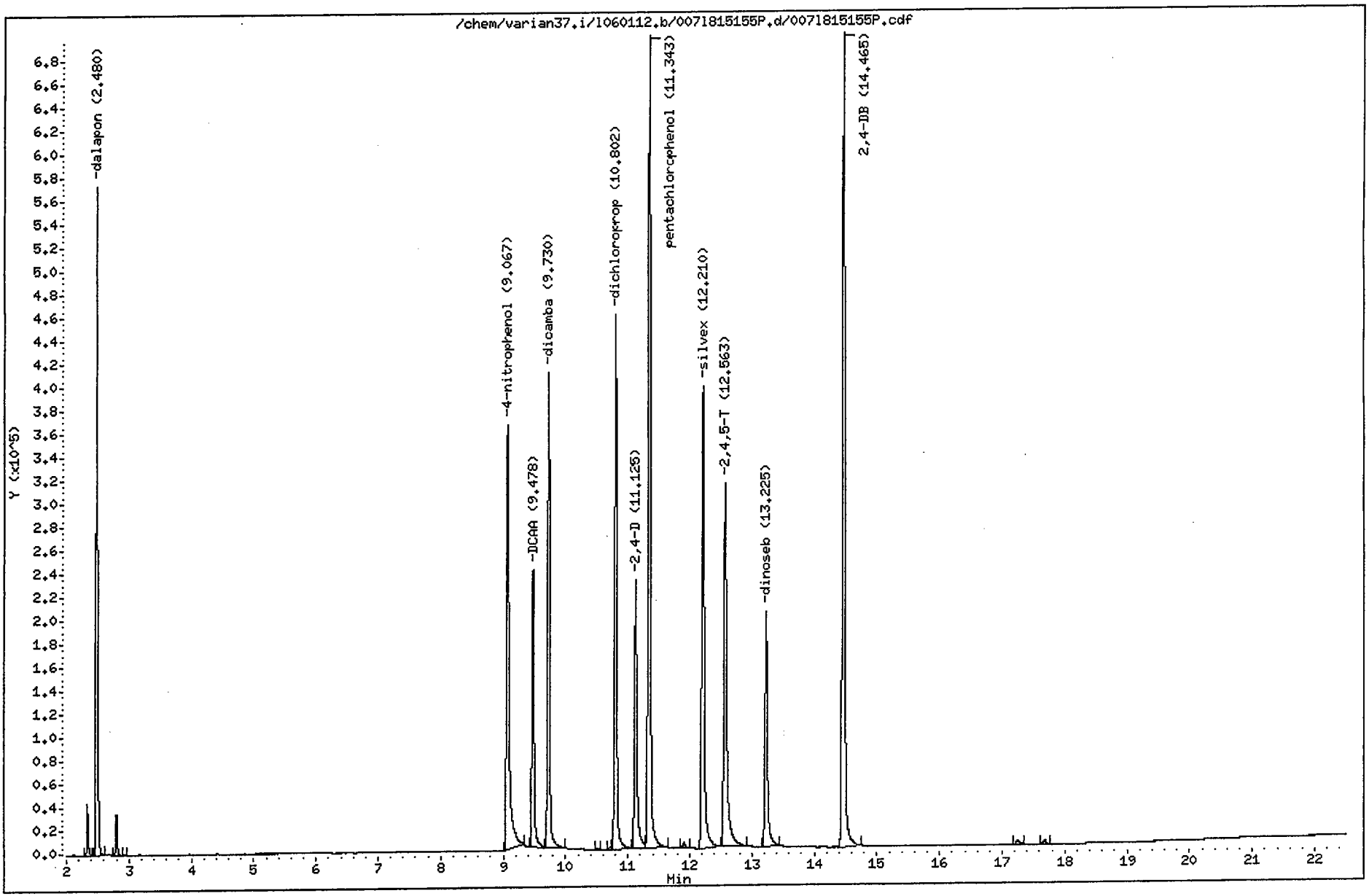
CompuChem

Lab Smp Id : 815145P Client Smp Id : 815145P
Sample Type : INITIAL CAL: Level 4 Sublist : FULL8151new
Inj Date : 12-JAN-2006 02:31 Inst ID : VARIAN37
Operator : 2564
Method : /chem/varian37.i/l060112.b/8151f_clpestv2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.34			2497					
1.39			2096					
2.19			7057					
2.33			42731					
2.48	2.45	2.51	562393	201114	dalapon	2.733000	205779	
2.80			37289					
9.08	9.04	9.12	742314	506043	4-nitrophenol	1.362000	545017	
9.49	9.46	9.52	384320	63689	DCAA	5.616000	68433	
9.74	9.71	9.77	685603	432434	dicamba	1.880000	364682	
10.53			1126					
10.73			3706					
10.81	10.78	10.84	750110	119362	dichloroprop	5.664000	132435	
11.14	11.11	11.17	418728	134802	2,4-D	2.820000	148485	
11.35	11.32	11.38	1311874	4417154	pentachlorophenol	0.285000	4603063	
11.92			7996					
12.22	12.19	12.25	803201	1343698	silvex	0.570600	1407643	
12.58	12.55	12.61	733418	1175145	2,4,5-T	0.568000	1291229	
13.24	13.21	13.27	387065	242034	dinoseb	1.417500	273062	
14.47	14.44	14.50	1284433	218780	2,4-DB	5.682000	226053	
17.25			12873					
17.68			5945					

Data File: /chem/varian37.i/1060112.b/0071815155P.d
Date : 12-JAN-2006 02:59
Client ID: 815155P
Sample Info: 815155P
Volume Injected (uL): 1.0
Column phase: CLPest

Instrument: varian37.i
Operator: 2564
Column diameter: 0.53



CompuChem

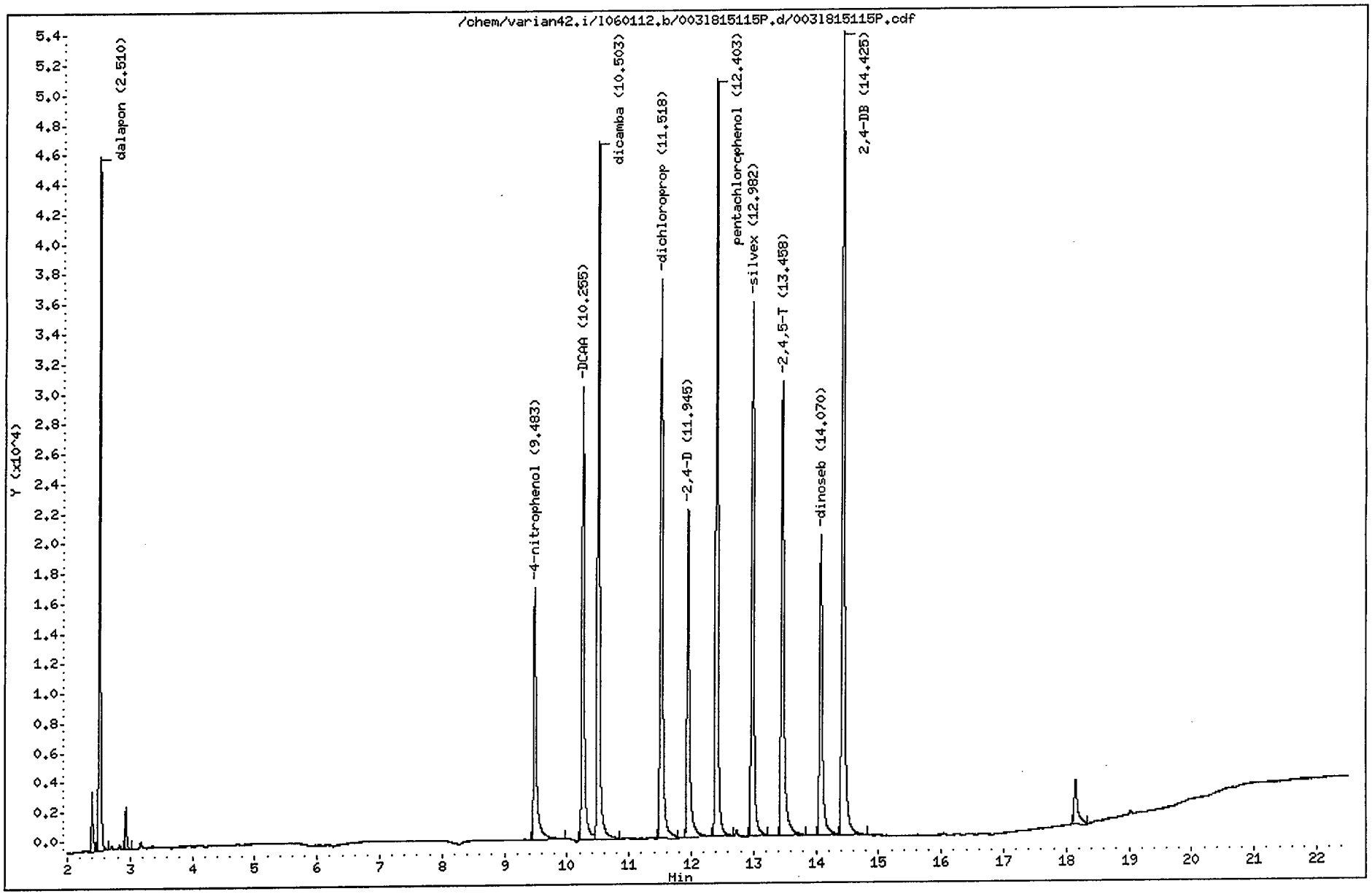
Lab Smp Id : 815155P Client Smp Id : 815155P
Sample Type : INITIAL CAL: Level 5 Sublist : FULL8151new
Inj Date : 12-JAN-2006 02:59 Inst ID : VARIAN37
Operator : 2564
Method : /chem/varian37.i/l060112.b/8151f_clpestv2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.35			3959					
1.40			31083					
1.44			55027					
2.34			65341					
2.48	2.45	2.51	847834	201114	dalapon	4.555000	186132	
2.80			55261					
2.93			1067					
9.07	9.04	9.12	1084676	506043	4-nitrophenol	2.270000	477831	
9.48	9.46	9.52	561920	63689	DCAA	9.360000	60034	
9.73	9.71	9.77	969983	432434	dicamba	2.350000	412759	
10.52			1778					
10.72			5435					
10.80	10.78	10.84	1094470	119362	dichloroprop	9.440000	115940	
11.12	11.11	11.17	612003	134802	2,4-D	4.700000	130213	
11.34	11.32	11.38	1830503	4417154	pentachlorophenol	0.475000	3853688	
11.91			12461					
12.21	12.19	12.25	1106965	1343698	silvex	0.951000	1164001	
12.56	12.55	12.61	1015783	1175145	2,4,5-T	0.948000	1071501	
13.22	13.21	13.27	573311	242034	dinoseb	2.362500	242671	
14.46	14.44	14.50	1837396	218780	2,4-DB	9.470000	194023	
17.25			13257					
17.68			9177					

Data File: /chem/varian42.i/1060112.b/0031815115P.d
Date : 12-JAN-2006 01:07
Client ID: 815115P
Sample Info: 815115P
Volume Injected (uL): 1.0
Column phase: CLPest2

Instrument: varian42.i

Operator: 2564
Column diameter: 0.53



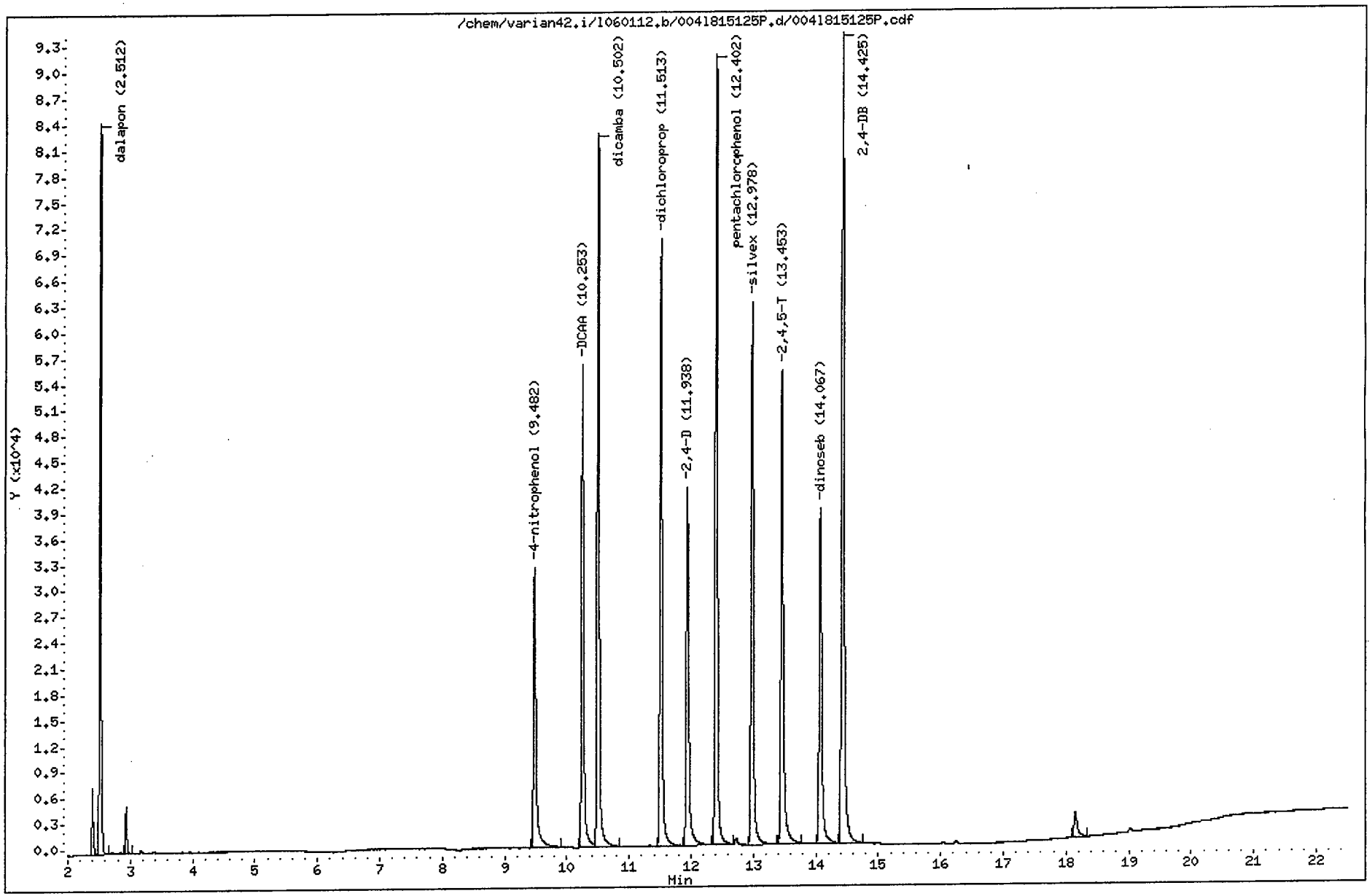
CompuChem

Lab Smp Id : 815115P
Client Smp Id : 815115P
Sample Type : INITIAL CAL: Level 1
Sublist : FULL8151new
Inj Date : 12-JAN-2006 01:07
Inst ID : VARIAN42
Operator : 2564
Method : /chem/varian42.i/l060112.b/8151f_clpest2v2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.33			21688					
2.39			6064					
2.51	2.48	2.54	78430	134001	dalapon	0.500000	156858	
2.93			4731					
9.48	9.44	9.50	51835	181557	4-nitrophenol	0.250000	207336	
10.26	10.22	10.28	80273	69876	DCAA	1.000000	80272	
10.50	10.45	10.53	120266	392690	dicamba	0.250000	481060	
11.52	11.48	11.54	106148	91737	dichloroprop	1.000000	106148	
11.94	11.90	11.96	68083	117679	2,4-D	0.500000	136164	
12.40	12.35	12.43	134340	2232541	pentachlorophenol	0.050000	2686800	
12.98	12.94	13.00	98433	807409	silvex	0.100000	984320	
13.46	13.41	13.47	94351	784415	2,4,5-T	0.100000	943500	
14.07	14.02	14.08	63928	236426	dinoseb	0.250000	255708	
14.42	14.38	14.44	155270	124308	2,4-DB	1.000000	155270	
18.14			11138					

Data File: /chem/varian42.i/1060112.b/0041815125P.d
Date : 12-JAN-2006 01:35
Client ID: 815125P
Sample Info: 815125P
Volume Injected (uL): 1.0
Column phase: CLPest2

Instrument: varian42.i
Operator: 2564
Column diameter: 0.53



CompuChem

Lab Smp Id : 815125P Client Smp Id : 815125P
Sample Type : INITIAL CAL: Level 2 Sublist : FULL8151new
Inj Date : 12-JAN-2006 01:35 Inst ID : VARIAN42
Operator : 2564
Method : /chem/varian42.i/l060112.b/8151f_clpest2v2.m
Misc. Info : None

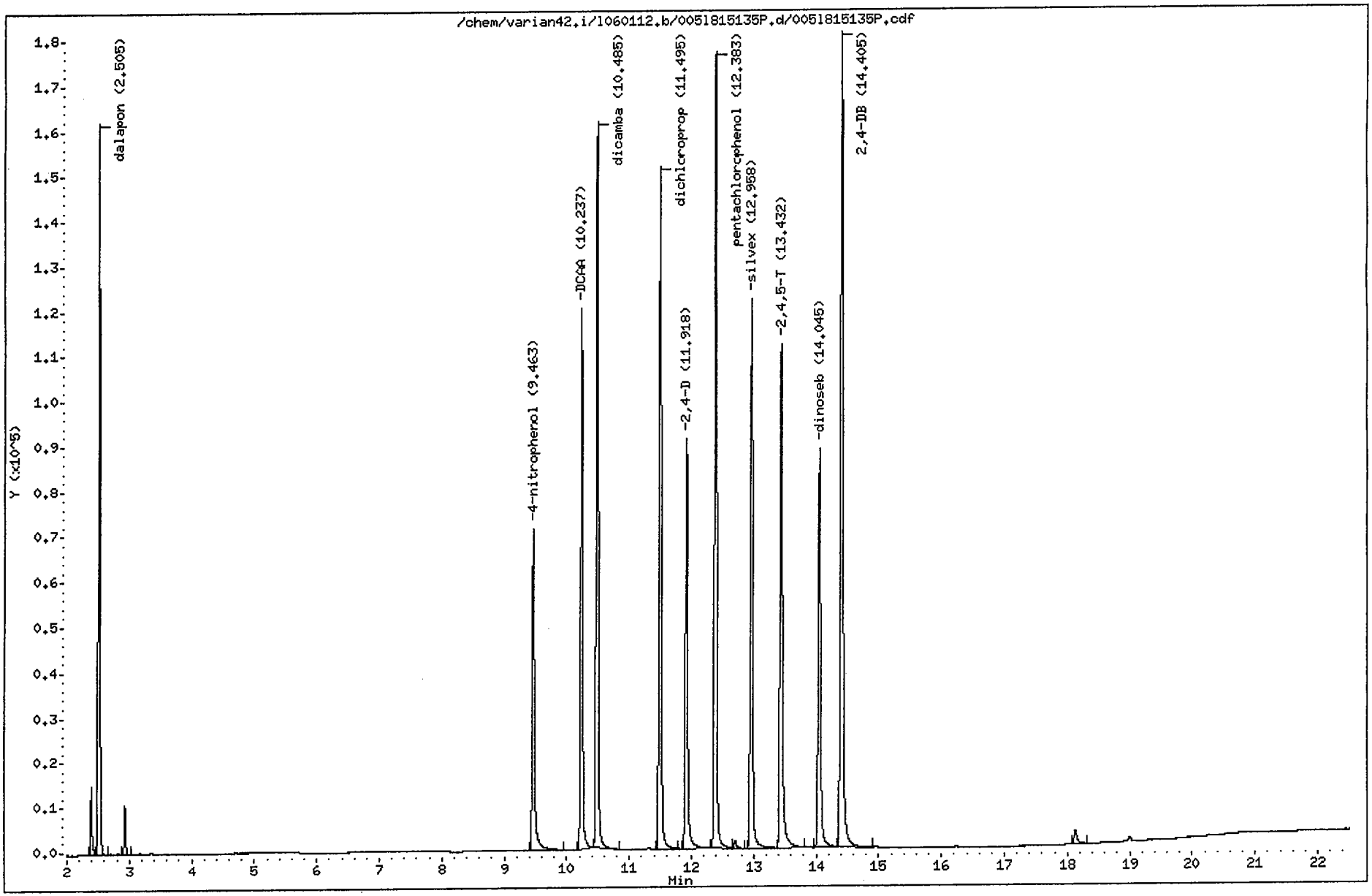
RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.33			18289					
1.40			4375					
2.39			11353					
2.51	2.48	2.54	135461	134001	dalapon	1.000000	135461	
2.93			8581					
9.48	9.44	9.50	89678	181557	4-nitrophenol	0.500000	179354	
10.25	10.22	10.28	138829	69876	DCAA	2.000000	69414	
10.50	10.45	10.53	204142	392690	dicamba	0.500000	408284	
11.51	11.48	11.54	181681	91737	dichloroprop	2.000000	90840	
11.94	11.90	11.96	116960	117679	2,4-D	1.000000	116960	
12.40	12.35	12.43	233300	2232541	pentachlorophenol	0.100000	2333000	
12.98	12.94	13.00	169080	807409	silvex	0.200000	845400	
13.45	13.41	13.47	162546	784415	2,4,5-T	0.200000	812730	
14.07	14.02	14.08	114071	236426	dinoseb	0.500000	228142	
14.42	14.38	14.44	260326	124308	2,4-DB	2.000000	130162	
18.14			10488					

1/11/06

Data File: /chem/varian42.i/1060112.b/0051815135P.d
Date : 12-JAN-2006 02:03
Client ID: 815135P
Sample Info: 815135P
Volume Injected (uL): 1.0
Column phase: CLPest2

Instrument: varian42.i

Operator: 2564
Column diameter: 0.53



CompuChem

Lab Smp Id : 815135P Client Smp Id : 815135P
Sample Type : INITIAL CAL: Level 3 Sublist : FULL8151new
Inj Date : 12-JAN-2006 02:03 Inst ID : VARIAN42
Operator : 2564
Method : /chem/varian42.i/l060112.b/8151f_clpest2v2.m
Misc. Info : None

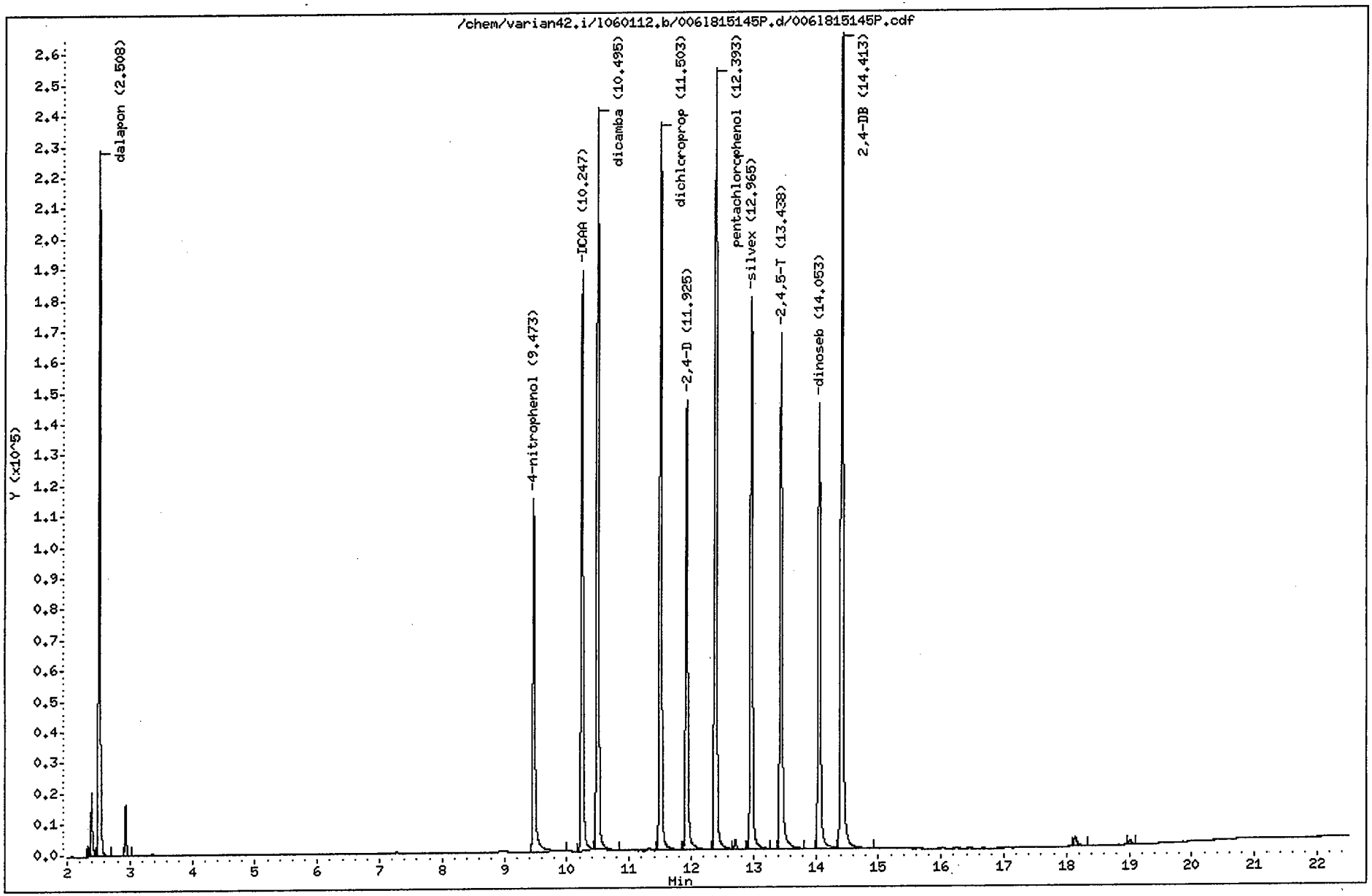
RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.33			60740					
2.39			23703					
2.50	2.48	2.54	269083	134001	dalapon	2.000000	134542	
2.92			18141					
9.46	9.44	9.50	180483	181557	4-nitrophenol	1.000000	180482	
10.24	10.22	10.28	275798	69876	DCAA	4.000000	68950	
10.48	10.45	10.53	384435	392690	dicamba	1.000000	384435	
11.50	11.48	11.54	363650	91737	dichloroprop	4.000000	90912	
11.92	11.90	11.96	232543	117679	2,4-D	2.000000	116271	
12.38	12.35	12.43	449070	2232541	pentachlorophenol	0.200000	2245345	
12.70			4574					
12.96	12.94	13.00	322026	807409	silvex	0.400000	805062	
13.43	13.41	13.47	314659	784415	2,4,5-T	0.400000	786645	
14.04	14.02	14.08	238014	236426	dinoseb	1.000000	238014	
14.40	14.38	14.44	490312	124308	2,4-DB	4.000000	122578	
18.12			11789					

1/12/06

Data File: /chem/varian42.i/1060112.b/0061815145P.d
Date : 12-JAN-2006 02:31
Client ID: 815145P
Sample Info: 815145P
Volume Injected (uL): 1.0
Column phase: CLPest2

Instrument: varian42.i

Operator: 2564
Column diameter: 0.53



CompuChem

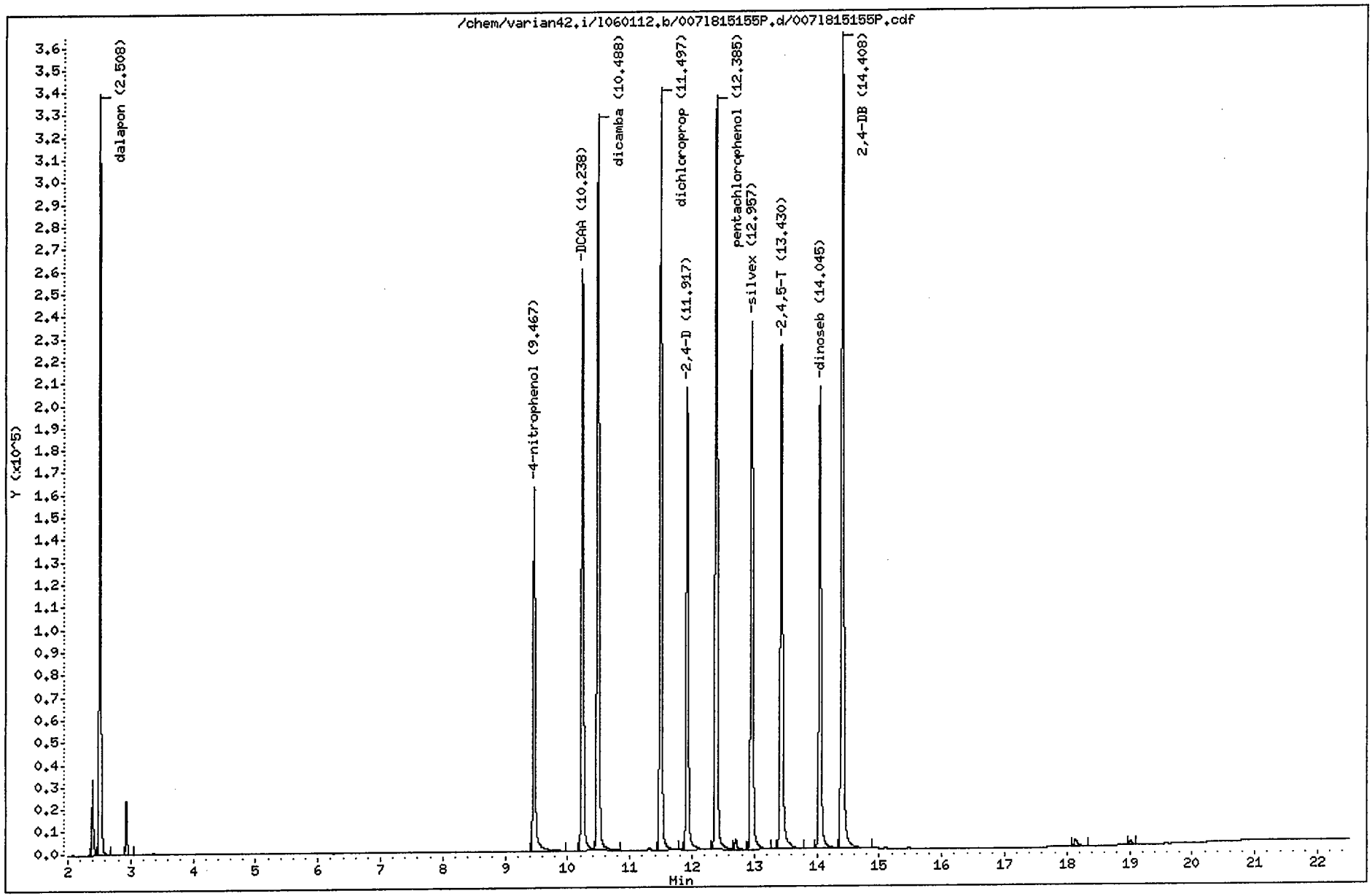
Lab Smp Id : 815145P
Client Smp Id : 815145P
Sample Type : INITIAL CAL: Level 4
Sublist : FULL8151new
Inj Date : 12-JAN-2006 02:31
Inst ID : VARIAN42
Operator : 2564
Method : /chem/varian42.i/l060112.b/8151f_clpest2v2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.33			6777					
2.34			3866					
2.39			32809					
2.51	2.48	2.54	392370	134001	dalapon	3.000000	130790	
2.93			27198					
9.47	9.44	9.50	279561	181557	4-nitrophenol	1.500000	186373	
10.25	10.22	10.28	428765	69876	DCAA	6.000000	71461	
10.50	10.45	10.53	572069	392690	dicamba	1.500000	381379	
11.50	11.48	11.54	559839	91737	dichloroprop	6.000000	93306	
11.92	11.90	11.96	359355	117679	2,4-D	3.000000	119785	
12.39	12.35	12.43	654085	2232541	pentachlorophenol	0.300000	2180283	
12.71			7616					
12.96	12.94	13.00	470025	807409	silvex	0.600000	783375	
13.44	13.41	13.47	461818	784415	2,4,5-T	0.600000	769695	
14.05	14.02	14.08	375264	236426	dinoseb	1.500000	250175	
14.41	14.38	14.44	712692	124308	2,4-DB	6.000000	118782	
18.14			11622					
19.02			3808					

1/12/06

Data File: /chem/varian42.i/1060112.b/0071815155P.d
Date : 12-JAN-2006 02:59
Client ID: 815155P
Sample Info: 815155P
Volume Injected (uL): 1.0
Column phase: CLPest2

Instrument: varian42.i
Operator: 2564
Column diameter: 0.53



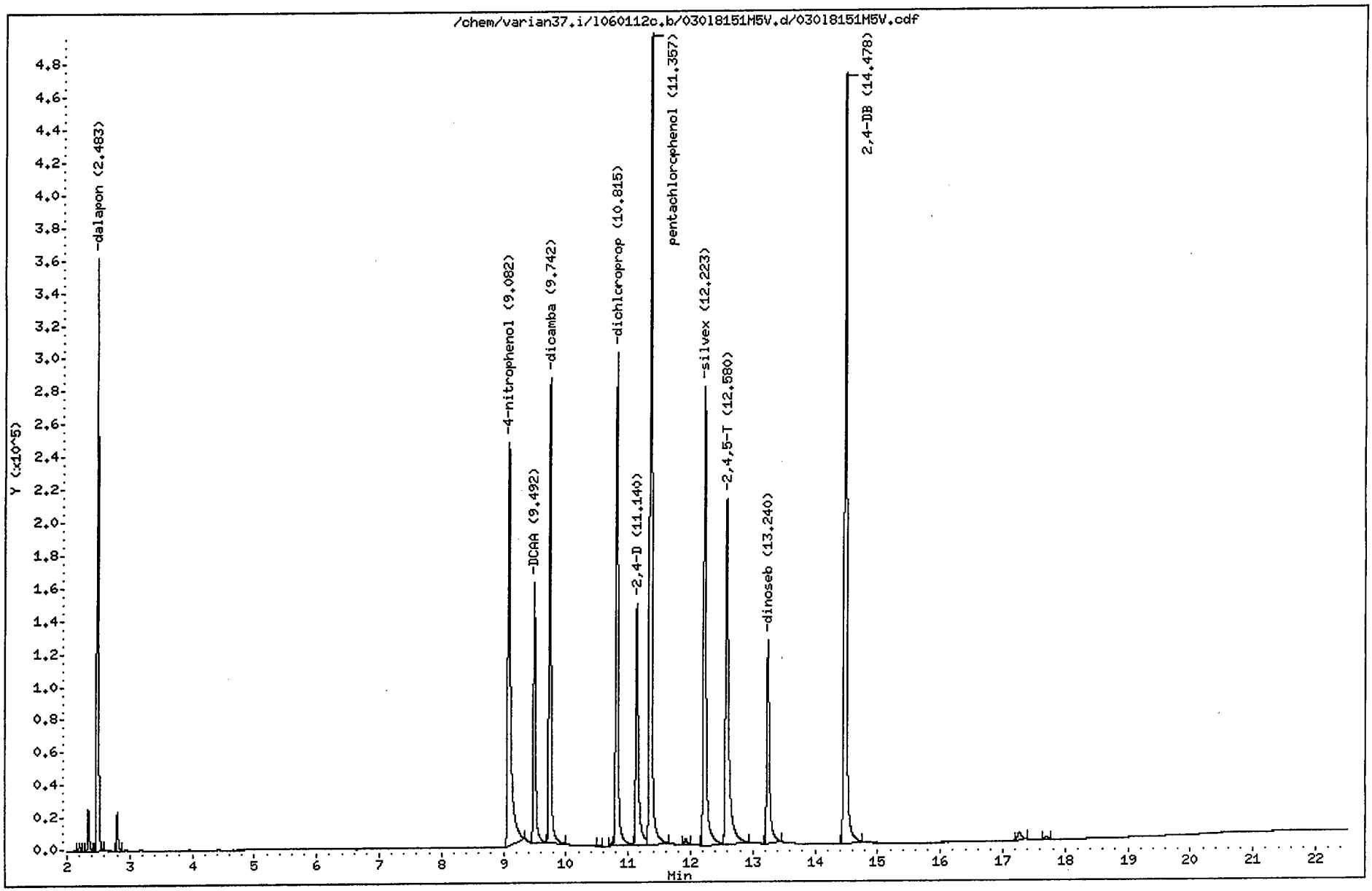
CompuChem

Lab Smp Id : 815155P Client Smp Id : 815155P
Sample Type : INITIAL CAL: Level 5 Sublist : FULL8151new
Inj Date : 12-JAN-2006 02:59 Inst ID : VARIAN42
Operator : 2564
Method : /chem/varian42.i/l060112.b/8151f_clpest2v2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	RF	FLAGS
1.33			8291					
2.39			51586					
2.51	2.48	2.54	561768	134001	dalapon	5.000000	112353	
2.93			39721					
9.47	9.44	9.50	385604	181557	4-nitrophenol	2.500000	154241	
10.24	10.22	10.28	592830	69876	DCAA	10.00000	59283	
10.49	10.45	10.53	770730	392690	dicamba	2.500000	308292	
11.50	11.48	11.54	774768	91737	dichloroprop	10.00000	77477	
11.92	11.90	11.96	496078	117679	2,4-D	5.000000	99216	
12.38	12.35	12.43	858638	2232541	pentachlorophenol	0.500000	1717276	
12.70			10818					
12.96	12.94	13.00	618887	807409	silvex	1.000000	618886	
13.43	13.41	13.47	609504	784415	2,4,5-T	1.000000	609504	
14.04	14.02	14.08	525226	236426	dinoseb	2.500000	210090	
14.41	14.38	14.44	947505	124308	2,4-DB	10.00000	94750	
18.13			12025					
19.01			5503					

Data File: /chem/varian37.i/1060112c.b/03018151M5V.d
Date : 25-JAN-2006 17:01
Client ID: 8151M5V
Sample Info: 8151M5V
Volume Injected (uL): 1.0
Column phase: CLPest

Instrument: varian37.i
Operator: 2512
Column diameter: 0.53



CompuChem

Lab Smp Id : 8151M5V
Client Smp Id : 8151M5V
Sample Type : CONT CAL: Level 4
Sublist : FULL8151new
Inj Date : 25-JAN-2006 17:01
Inst ID : VARIAN37
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

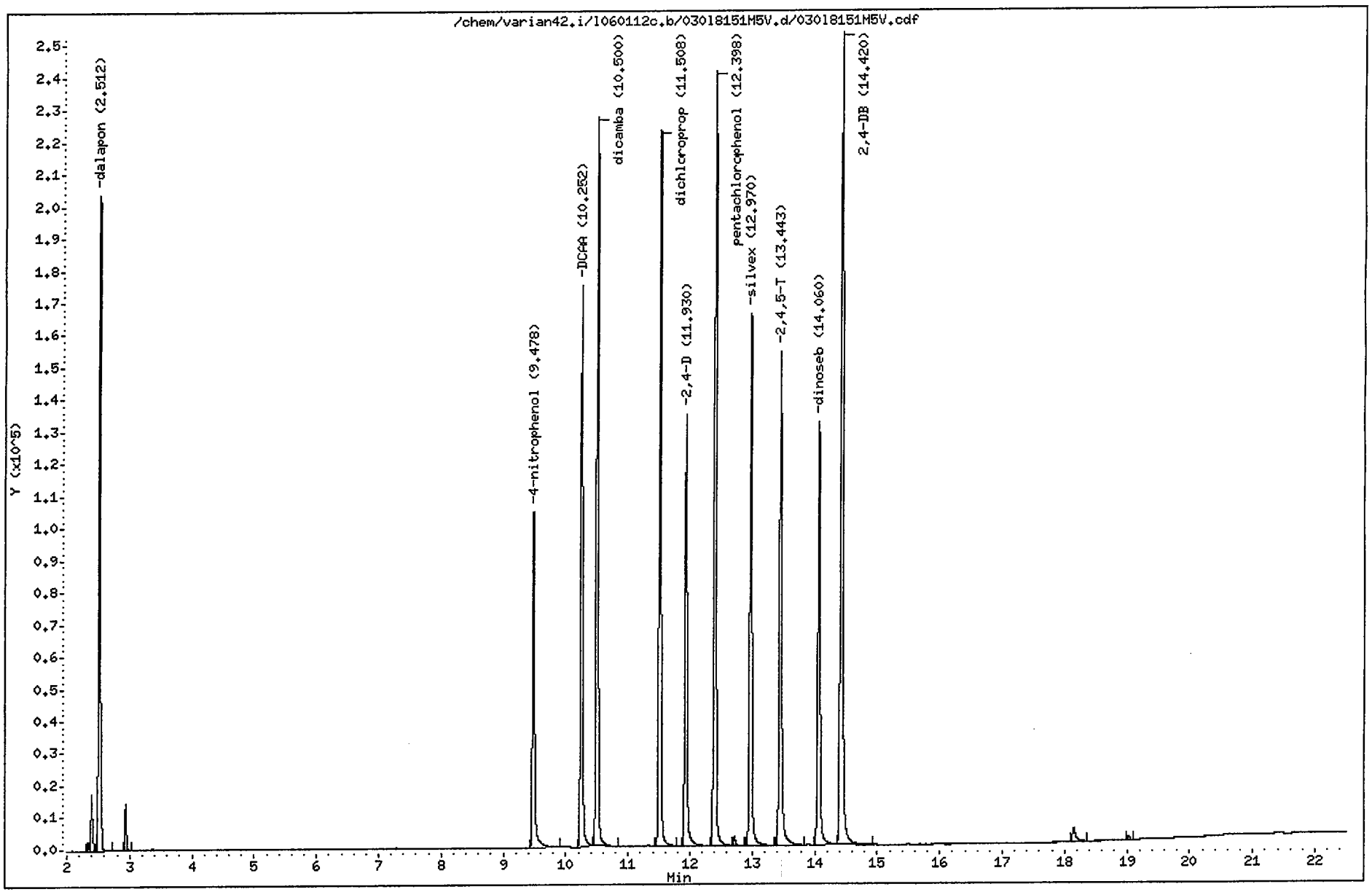
RT	RT WINDOW		AREA	QUANT RF.	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
1.34			3632								
1.40			31605								
1.44			60890								
2.20			7252								
2.34			44666								
2.48	2.45	2.51	582167	201114	dalapon	2.733000	213014	-5.9	15.0		
2.80			39302								
9.08	9.03	9.11	786793	506043	4-nitrophenol	1.362000	577675	-14.2	15.0		
9.49	9.45	9.51	386023	63689	DCAA	5.616000	68736	-7.9	15.0		
9.74	9.70	9.76	688551	432434	dicamba	1.880000	366251	15.3*	15.0	R	
10.53			1141								
10.73			3858								
10.82	10.77	10.83	754033	119362	dichloroprop	5.664000	133127	-11.5	15.0		
11.14	11.09	11.15	422828	134566	2,4-D	2.820000	149939	-11.4	15.0		
11.36	11.31	11.37	1327067	4417153	pentachlorophenol	0.285000	4656375	-5.4	15.0		
11.92			8300								
12.22	12.18	12.24	810864	1343698	silvex	0.570600	1421073	-5.8	15.0		
12.58	12.53	12.59	740905	1185886	2,4,5-T	0.568000	1304410	-10.0	15.0		
13.24	13.19	13.25	381402	242034	dinoseb	1.417500	269067	-11.2	15.0		
14.48	14.43	14.49	1284707	218780	2,4-DB	5.682000	226101	-3.3	15.0		
17.26			20797								
17.69			5776								

1/25/06
$\bar{x} = 9.3$

Data File: /chem/varian42.i/1060112c.b/03018151M5V.d
Date : 25-JAN-2006 17:01
Client ID: 8151M5V
Sample Info: 8151M5V
Volume Injected (uL): 1.0
Column phase: CLPest2

Instrument: varian42.i

Operator: 2512
Column diameter: 0.53



CompuChem

Lab Smp Id : 8151M5V Client Smp Id : 8151M5V
Sample Type : CONT CAL: Level 4 Sublist : FULL8151new
Inj Date : 25-JAN-2006 17:01 Inst ID : VARIAN42
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

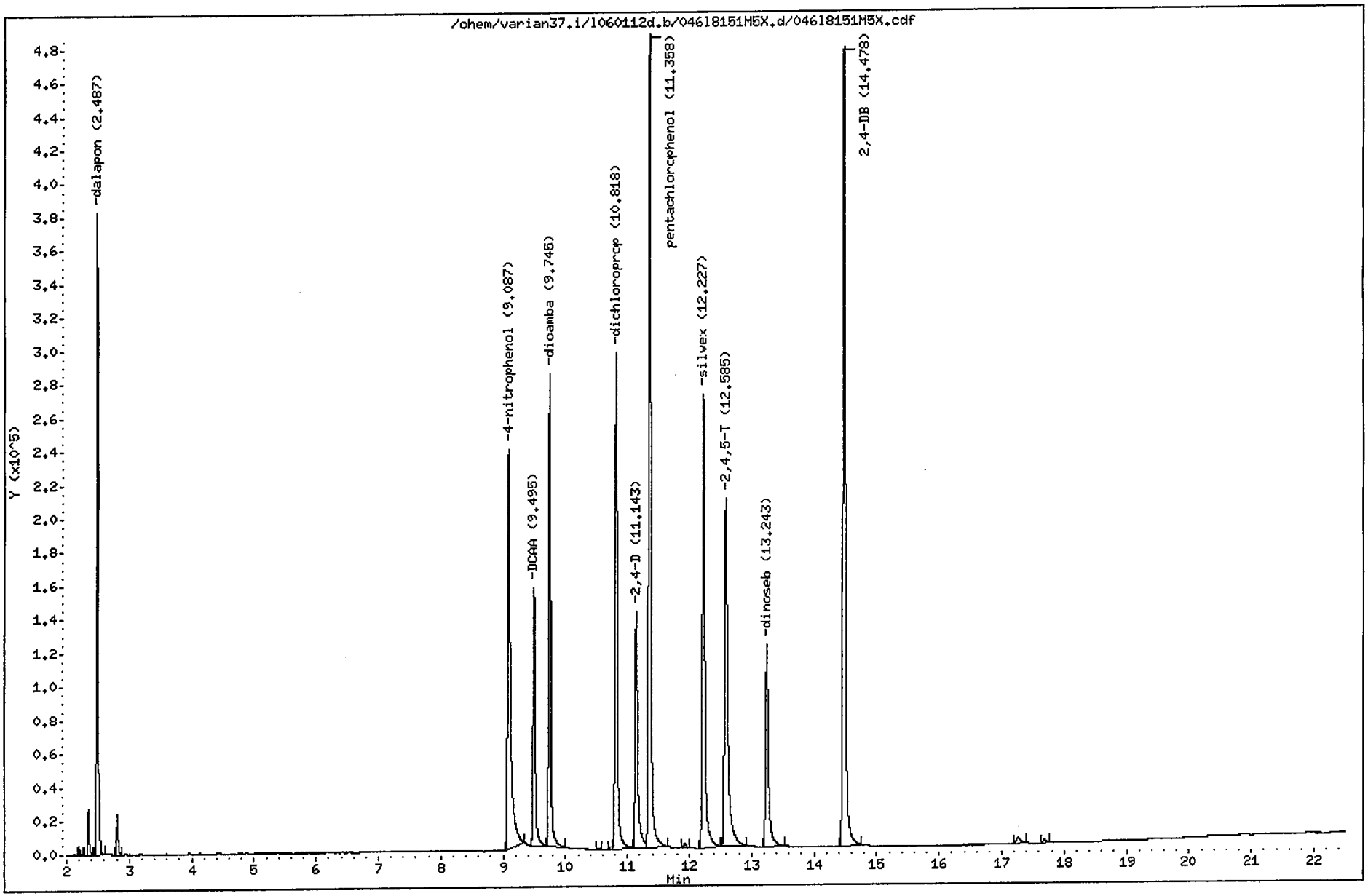
RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
1.34			7574								
2.34			4143								
2.39			30819								
2.51	2.48	2.54	357460	134001	dalapon	3.000000	119153	11.1	15.0		
2.93			24846								
9.48	9.44	9.50	251341	181557	4-nitrophenol	1.500000	167561	7.7	15.0		
10.25	10.21	10.27	393193	69876	DCAA	6.000000	65532	6.2	15.0		
10.50	10.45	10.53	528678	392690	dicamba	1.500000	352452	10.2	15.0		
11.51	11.47	11.53	517440	91737	dichloroprop	6.000000	86240	6.0	15.0		
11.93	11.89	11.95	327228	117679	2,4-D	3.000000	109076	7.3	15.0		
12.40	12.34	12.42	607057	2232541	pentachlorophenol	0.300000	2023525	9.4	15.0		
12.71			6676								
12.97	12.93	12.99	430193	807409	silvex	0.600000	716988	11.2	15.0		
13.44	13.40	13.46	420476	784415	2,4,5-T	0.600000	700793	10.7	15.0		
14.06	14.01	14.07	336905	236426	dinoseb	1.500000	224603	5.0	15.0		
14.42	14.38	14.44	665891	124308	2,4-DB	6.000000	110982	10.7	15.0		
18.14			15254								
19.02			3248								

1/25/06

Data File: /chem/varian37.i/1060112d.b/04618151M5X.d
Date : 26-JAN-2006 00:45
Client ID: 8151M5X
Sample Info: 8151M5X
Volume Injected (uL): 1.0
Column phase: CLPest

Instrument: varian37.i

Operator: 2564
Column diameter: 0.53



CompuChem

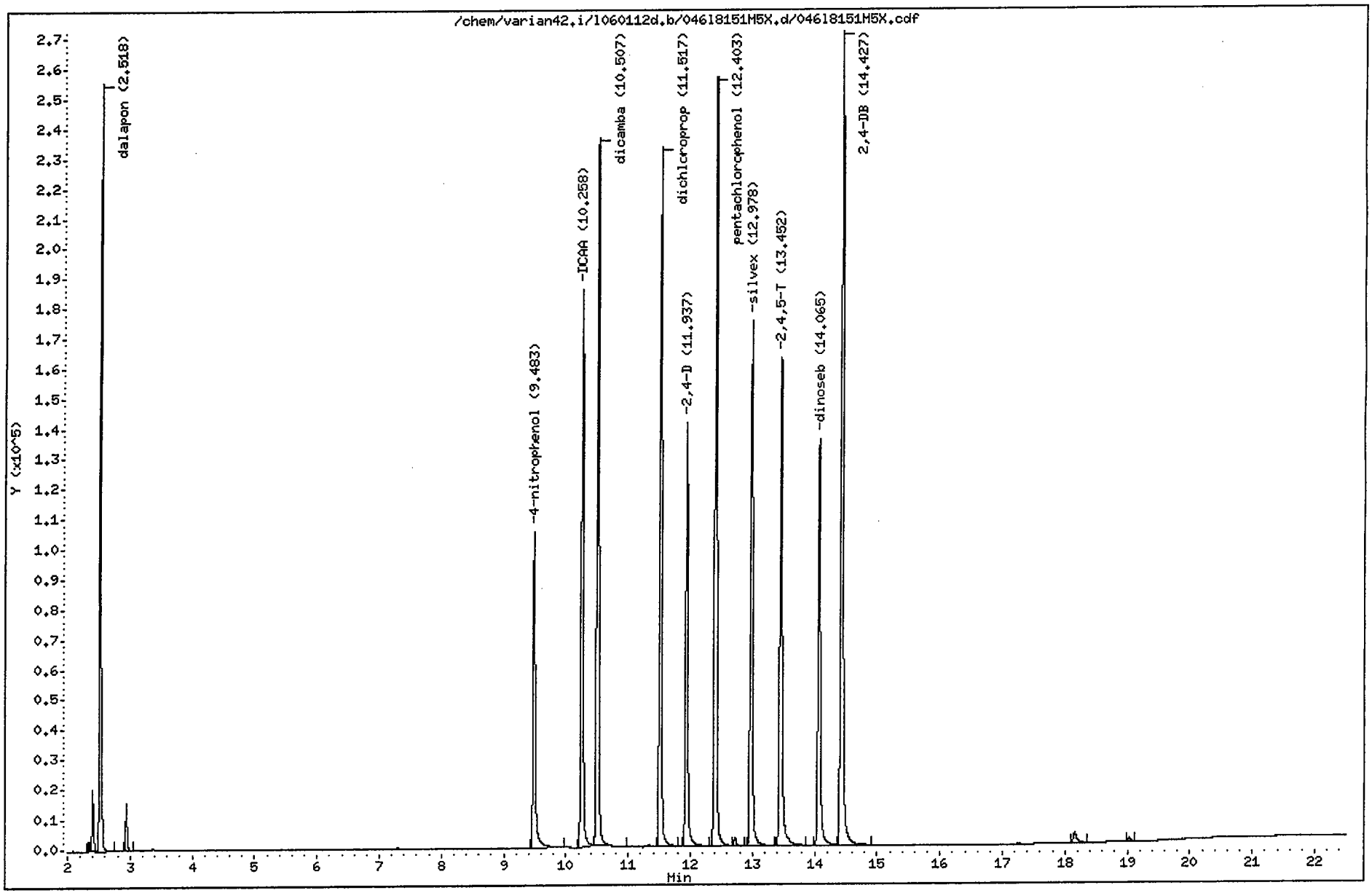
Lab Smp Id : 8151M5X Client Smp Id : 8151M5X
Sample Type : CONT CAL: Level 4 Sublist : FULL8151new
Inj Date : 26-JAN-2006 00:45 Inst ID : VARIAN37
Operator : 2564
Method : /chem/varian37.i/1060112d.b/8151f_clpestv2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
1.34			3617								
1.40			6414								
1.44			88940								
2.20			7008								
2.34			43546								
2.49	2.45	2.51	586664	201114	dalapon	2.733000	214659	-6.7	15.0		
2.81			37730								
9.09	9.04	9.12	768038	506043	4-nitrophenol	1.362000	563904	-11.4	15.0		
9.50	9.45	9.51	384712	63689	DCAA	5.616000	68503	-7.6	15.0		
9.74	9.71	9.77	681790	432434	dicamba	1.880000	362654	16.1*	15.0	R	
10.53			1187								
10.74			3676								
10.82	10.78	10.84	747171	119362	dichloroprop	5.664000	131916	-10.5	15.0		
11.14	11.11	11.17	417534	134566	2,4-D	2.820000	148062	-10.0	15.0		
11.36	11.32	11.38	1308021	4417153	pentachlorophenol	0.285000	4589547	-3.9	15.0		
11.93			8067								
12.23	12.19	12.25	793252	1343698	silvex	0.570600	1390207	-3.5	15.0		
12.58	12.55	12.61	735505	1185886	2,4,5-T	0.568000	1294904	-9.2	15.0		
13.24	13.21	13.27	386299	242034	dinoseb	1.417500	272522	-12.6	15.0		
14.48	14.44	14.50	1310534	218780	2,4-DB	5.682000	230647	-5.4	15.0		
17.26			16037								
17.69			5599								

1/25/06
$\bar{x} = 8.8$

Data File: /chem/varian42.i/1060112d.b/04618151M5X.d
Date : 26-JAN-2006 00:45
Client ID: 8151M5X
Sample Info: 8151M5X
Volume Injected (uL): 1.0
Column phase: CLPest2

Instrument: varian42.i
Operator: 2564
Column diameter: 0.53



CompuChem

Lab Smp Id : 8151M5X
Client Smp Id : 8151M5X
Sample Type : CONT CAL: Level 4
Sublist : FULL8151new
Inj Date : 26-JAN-2006 00:45
Inst ID : VARIAN42
Operator : 2564
Method : /chem/varian42.i/l060112d.b/8151f_clpest2v2.m
Misc. Info : None

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	STD AMT ON-COLUMN (Ng)	CCAL RF	%D	%D LIMIT	FLAGS	
1.34			7187								
2.34			3695								
2.40			31304								
2.52	2.48	2.54	407796	134001	dalapon	3.000000	135932	-1.4	15.0		
2.94			26070								
9.48	9.44	9.50	260182	181557	4-nitrophenol	1.500000	173455	4.5	15.0		
10.26	10.21	10.27	417619	69876	DCAA	6.000000	69603	0.4	15.0		
10.51	10.45	10.53	558515	392690	dicamba	1.500000	372343	5.2	15.0		
11.52	11.47	11.53	544858	91737	dichloroprop	6.000000	90810	1.0	15.0		
11.94	11.89	11.95	346995	117679	2,4-D	3.000000	115665	1.7	15.0		
12.40	12.34	12.42	646348	2232541	pentachlorophenol	0.300000	2154493	3.5	15.0		
12.72			6931								
12.98	12.93	12.99	456929	807409	silvex	0.600000	761548	5.7	15.0		
13.45	13.40	13.46	455410	784415	2,4,5-T	0.600000	759017	3.2	15.0		
14.06	14.01	14.07	355592	236426	dinoseb	1.500000	237061	-0.3	15.0		
14.43	14.38	14.44	718860	124308	2,4-DB	6.000000	119810	3.6	15.0		
18.15			12974								
19.03			3473								

1/25/06

COMPUCHEM a division of Liberty Analytical Corp
GC EXTRACTABLES RUN LOG
COMPUCHEM LOGBOOK 4 ZZZ 13

Instrument ID 37/42
Sequence ID: D060112

DATE 1/12/06
SHIFT/S(A)_____(B)_____(C)_____
Amt. Inj. 2 ul

Method : 8081A 8082 (8151A) CLP Other_____

		FILE NAME		DATE	CompuChem #	CASE/SDG#	CHEMIST	COMMENTS(ETC.)/DISPOSITION
1	✓	1		1/12/06	Hexane	Solvent	ZSC4	
2	✓	2		/ /	↓	↓	↓	
3		3	✓	/ /	8151SP	58041		
4		4	✓	/ /	8151SP	42		
5		5	✓	/ /	8151SP	43		
6		6	✓	/ /	8151SP	44		
7		7	✓	/ /	8151SP	↓ 45		
8		8	✓	/ /	CALSTD5P	58109	↓	
9				/ /				
10				/ /				
11				/ /				
12				/ /				
13				/ /				
14				/ /				
15				/ /				
16				/ /		1/12/06		
17				/ /				
18				/ /				
19				/ /				
20				/ /				
21				/ /				
22				/ /				
23				/ /				
24				/ /				

HEXANE LOT # Co74

SUPERVISOR APPROVAL

DATE: 1/12/06

The presence of the Chemist's/Analyst's employee ID number, or signature, on this run log attests that strict compliance with the method's SOP has occurred. Any SOP deviations require documentation by the responsible chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation.

COMPUCHEM a division of Liberty Analytical Corp
GC EXTRACTABLES RUN LOG
COMPUCHEM LOGBOOK 4 ZZZ 13

Instrument ID 37/42
Sequence ID: 060112C

DATE 1/25/06
SHIFT/S(A)_____(B)_____(C)_____
Amt. Inj. 2 ul

Method : 8081A 8082 (8151A) CLP Other_____

		FILE NAME		DATE	CompuChem #	CASE/SDG#	CHEMIST	COMMENTS(ETC)/DISPOSITION
1		28		1/25/06	HIBLK	58189	2512	
2		29	✓	/ /	HIBLKSMSV	↓		
3		30	✓	/ /	8157MSV	58044		
4		31		/ /	91946	8931		
5		32		/ /	47	↓		
6		33		/ /	48			
7		34		/ /	893105			
8		35		/ /	Hexane	Solvent		
9		36	✓	/ /	91893	Various		
10		37	✓	/ /	91894	↓		
11		38	✓	/ /	917666	8925		
12		39	✓	/ /	91771	8926		
13		40	✓	/ /	892501	8925		
14		41	✓	/ /	892601	8926		
15		42		/ /	HIBLK	58189		
16				/ /				
17				/ /				
18				/ /				
19				/ /				
20				/ /		KH 1/25/06		
21				/ /				
22				/ /				
23				/ /				
24				/ /				

HEXANE LOT # C0760

SUPERVISOR APPROVAL TAJ

DATE: 1/26/06

The presence of the Chemist's/Analyst's employee ID number, or signature, on this run log attests that strict compliance with the method's SOP has occurred. Any SOP deviations require documentation by the responsible chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation.

8/11/05:jad

COMPUCHEM a division of Liberty Analytical Corp
GC EXTRACTABLES RUN LOG
COMPUCHEM LOGBOOK 4 ZZZ 13

Instrument ID 37/42
Sequence ID: 1060112d

DATE 1/25/06
SHIFT/S(A)_____(B)_____(C)_____
Amt. Inj. 2 ul

Method : 8081A 8082 (8151A) CLP Other_____

		FILE NAME		DATE	CompuChem #	CASE/SDG#	CHEMIST	COMMENTS/ETC. W/DISPOSITION
1	✓	43		1/25/06	#1BLKSW5X	58189	2512	RT shift
2	✓	44		↓	8151M5X	58044	↓	
3		45	✓	1/26/06	#1BLKSW5X	58189	2504	fittings tightened
4		46	✓	↓	8151M5X	58044	↓	
5				/ /				
6				/ /				
7				/ /				
8				/ /				
9				/ /				
10				/ /				
11				/ /				
12				/ /				
13				/ /				
14				/ /				
15				/ /				
16				/ /				
17				/ /				
18				/ /				
19				/ /				
20				/ /				
21				/ /				
22				/ /				
23				/ /				
24				/ /				

1/23/06

HEXANE LOT # C076Ø

SUPERVISOR APPROVAL TAJ

DATE: 1/26/06

The presence of the Chemist's/Analyst's employee ID number, or signature, on this run log attests that strict compliance with the method's SOP has occurred. Any SOP deviations require documentation by the responsible chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation.

8/11/05:jad

4. Raw QC Data

   a. Blank Data

   b. Laboratory Control Sample Data

   c. Matrix Spike Data

   d. Matrix Spike Duplicate Data

a. Blank Data

Arranged by type of blank (method, then instrument), and shall be in chronological order, by instrument.

- Tabulated Results (Form I)

- Chromatograms and data system printout(s) by instrument used for analysis.

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLKGM

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91893

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	5.0	U
93-72-1	silvex	1.0	U

FORM I PEST

Data File: /chem/varian37.i/1060112c.b/036191893.d

Date : 25-JAN-2006 19:49

Client ID: PBLKGM

Instrument: varian37.i

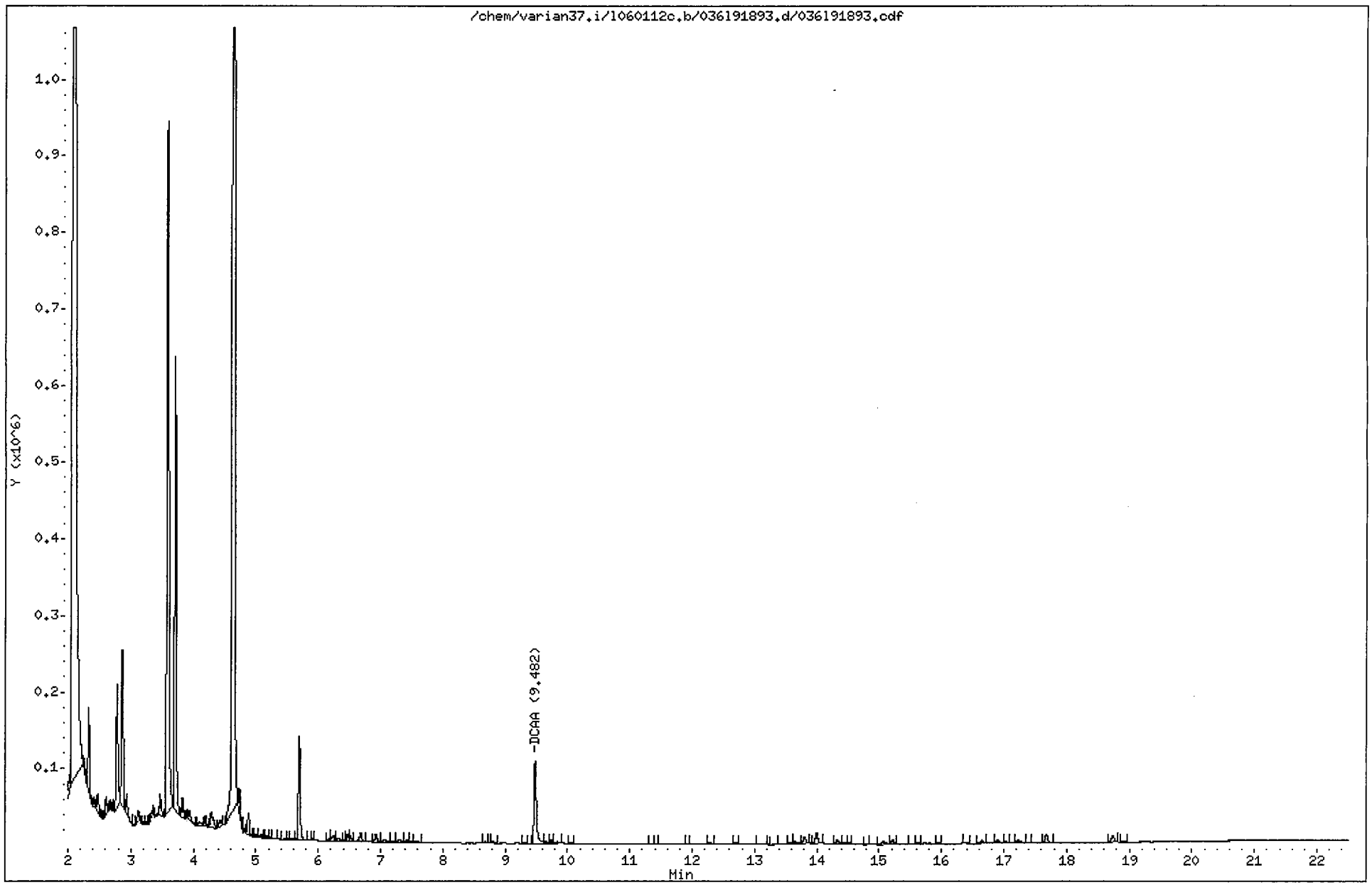
Sample Info: 91893

Volume Injected (uL): 1.0

Operator: 2512

Column phase: CLPest

Column diameter: 0.53



CompuChem

Lab Smp Id : 91893
Client Smp Id : PBLKGM
Sample Type : BLANK
Sublist : TCLP
Inj Date : 25-JAN-2006 19:49
Inst ID : VARIAN37
Operator : 2512
Method : /chem/varian37.i/1060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0
Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul)
Vi Injection Volume: 1(ul)
Vo Sample Volume: 500.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
1.34		285039								
1.36		182497								
1.75		101990								
1.83		18466								
1.92		124523								
2.02		21314								
2.10		5128083								
2.26		30388								
2.33		186773								
2.42		13975								
2.47		49485								
2.54		1869								
2.61		43357								
2.66		12065								
2.69		7425								
2.72		15645								
2.78		292963								
2.86		423255								
2.93		39620								
3.11		19597								
3.15		9901								
3.20		3431								
3.24		5906								
3.33		13874								
3.36		2831								
3.42		4574								
3.47		52660								
3.59		2135854								
3.71		1055289								
3.82		47239								
3.89		2006								
3.93		28148								
4.09		16267								
4.19		23385								
4.29		61689								
4.43		18542								
4.64		3648892								

TAJ 1/26/06

CompuChem

Lab Smp Id : 91893 Client Smp Id : PBLKGM
Sample Type : BLANK Sublist : TCLP
Inj Date : 25-JAN-2006 19:49 Inst ID :
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 500.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
4.74		53259								
4.88		50944								
5.00		5398								
5.09		10928								
5.18		5842								
5.23		1360								
5.28		2635								
5.36		2399								
5.46		2217								
5.51		2487								
5.58		4075								
5.70		270397								
5.91		2207								
6.18		7870								
6.24		23813								
6.32		10636								
6.42		3794								
6.47		20344								
6.51		15042								
6.68		30167								
6.92		28863								
7.07		15086								
7.18		3927								
7.31		11967								
7.42		10557								
7.48		4447								
7.59		5350								
8.69		3203								
8.80		6024								
9.31		1765								
9.48	9.45 9.51	280068	63689	DCAA	4.397412	43.97412		87.9	50 - 148	
9.65		7741								
9.74		9346								
9.84		6878								
10.06		2912								
11.35		1936								
11.44		1157								

CompuChem

Lab Smp Id : 91893 Client Smp Id : PBLKGM
Sample Type : BLANK Sublist : TCLP
Inj Date : 25-JAN-2006 19:49 Inst ID :
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 500.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
11.93		1366								
12.28		3334								
12.70		2466								
13.17		3280								
13.36		3649								
13.58		3215								
13.65		8535								
13.80		23427								
14.00		37473								
14.33		12698								
14.45		1318								
14.51		2156								
14.82		1163								
15.07		16436								
15.21		14366								
15.56		1970								
15.62		2302								
15.95		1786								
16.39		2439								
16.65		12270								
16.90		8732								
17.04		4110								
17.23		13812								
17.39		2538								
17.68		33835								
18.74		27375								
18.91		2557								

Data File: /chem/varian42.i/1060112c.b/036191893.d

Date : 25-JAN-2006 19:49

Client ID: PBLKGM

Instrument: varian42.i

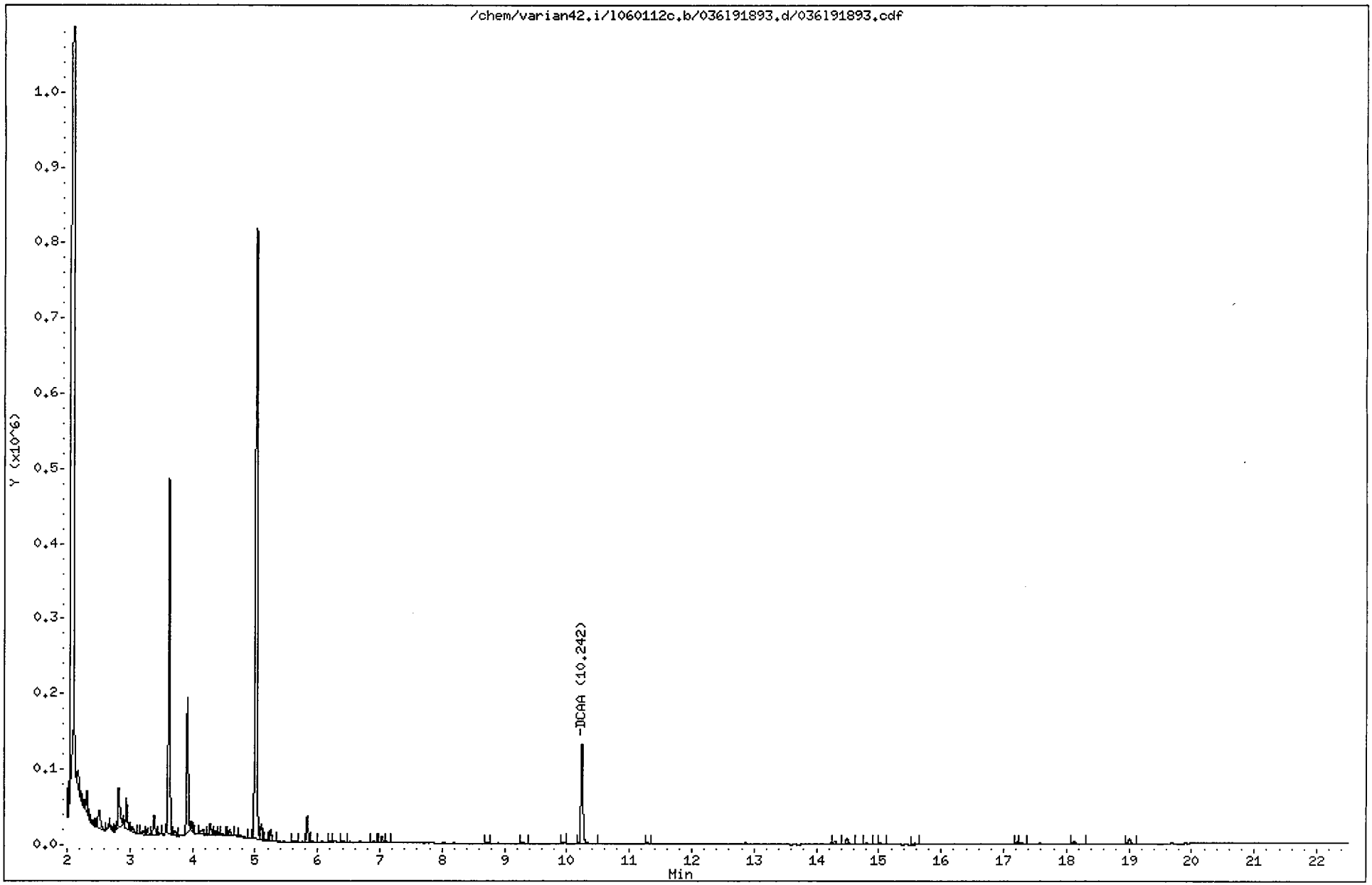
Sample Info: 91893

Volume Injected (uL): 1.0

Operator: 2512

Column phase: CLPest2

Column diameter: 0.53



CompuChem

Lab Smp Id : 91893
Client Smp Id : PBLKGM
Sample Type : BLANK
Sublist : TCLP
Inj Date : 25-JAN-2006 19:49
Inst ID : VARIAN42
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0
Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul)
Vi Injection Volume: 1(ul)
Vo Sample Volume: 500.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
1.30		2133152								
1.34		1707857								
1.36		1908571								
1.41		8686452								
1.54		2266243								
1.73		202536								
1.86		4546								
1.92		3484								
1.95		44655								
2.09		3431333								
2.17		49532								
2.23		12967								
2.32		49327								
2.35		4884								
2.40		7160								
2.52		71204								
2.67		8422								
2.70		4009								
2.77		7618								
2.82		121442								
2.94		70338								
3.04		15848								
3.22		14773								
3.28		14278								
3.38		54167								
3.47		4158								
3.62		810450								
3.71		16487								
3.92		332612								
4.00		20232								
4.17		25923								
4.29		31580								
4.37		10248								
4.42		5565								
4.47		4065								
4.60		17633								
4.70		3645								

TAJ 1/26/06

CompuChem

Lab Smp Id : 91893 Client Smp Id : PBLKGM
Sample Type : BLANK Sublist : TCLP
Inj Date : 25-JAN-2006 19:49 Inst ID :
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 500.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
4.76		7587								
5.02		1826996								
5.10		42884								
5.25		29719								
5.62		5519								
5.84		67321								
5.91		3953								
6.21		2965								
6.41		4576								
6.91		5862								
7.04		16642								
7.10		3642								
8.73		2933								
9.29		3790								
9.94		3054								
10.24	10.21 10.27	303119	69876	DCAA	4.337952	43.37952		86.8	50 - 148	
11.30		3131								
14.29		10054								
14.49		20383								
14.80		3714								
15.03		4719								
15.58		6504								
17.21		7327								
17.29		7198								
18.13		11320								
19.01		18632								

Assigned to: Mary / Vince

Emp. ID # 2583 2611

CompuChem, a division of Liberty Analytical
EXTRACTION WORKSHEET
HERB. IN WATER BY SW-846 METHODS 8151A
TCLP WASTE CHARACTERIZATION

DATE EXTRACTED/POSTED: 1/24/2006

BATCH NO.: 8893

113

1020

1.25.6

	COMPUCHEM NUMBER	CLIENT SAMPLE ID	QC SAMPLE TYPE	SAMPLE VOL (ml)	1ST HALF DATE/INT	2ND HALF DATE/INT	FINAL VOL	COMMENTS
1	892501	WAR-IDW-4	SAMPLE	100	1/24/06 NB 1/25/06 MK	1/25/06 MK	5.0	USE 100 ml OF TCLP LEACHATE, DILUTE
2	892601	WAR-IDW-3	SAMPLE	100	1/24/06			TO 500 ml WITH D.I. WATER FOR ALL
3	91893	PBLKGM	MB	1/26 ~~100~~ 500				SAMPLES. ADD 200 UL OF TCLP
4	91894	PGMLCS	LCS	100				HERBICIDE SPIKE TO SS's AND BS.
5	91766	TCLPBLKFW	HLCHBK	100				ADD 250 UL OF #445 SURROGATE TO ALL
6	91771	TCLPBLKFX	HLCHBK	100				SAMPLES. CONCENTRATE TO FINAL
7								VOLUME OF 5.0 ml.
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								

MB 1/25/06

MB 1/25/06

	ID #	AMOUNT	LOT
	SURR 445	250 UL	58026e
	SPIKE 4806	200 UL	38193

FINAL VOLUME VERIFIED

SUPERVISOR REVIEWED

Witness AW, 1/24/06
Initials Date

SPIKE AND SURROGATE ADDED BY MK, 1/24/06
INITIALS DATE

Analysts initials. Extracted MK/MK KD MB/AW Bottle up MB Derivitization MB

MANUFACTURER AND LOT NUMBER OF REAGENTS/SOLVENTS USED NaCl: 56298 6NNaOH: A35519 CH2Cl2: 45166 H2SO4: 2XX4-321-1
Ethyl Ether: C0953 Acidified Na2SO4: 2XX4-320-1 Methanol: 45010 Isooctane: 43316 Diazomethane: 2XX4-323-4 Calif4: CP584

Rev. 7/21/03:dce

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TCLPBLKFW

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91766

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	25	U
93-72-1	silvex	5.0	U

Data File: /chem/varian37.i/1060112c.b/038191766.d

Date : 25-JAN-2006 20:45

Client ID: TCLPBLKFW

Instrument: varian37.i

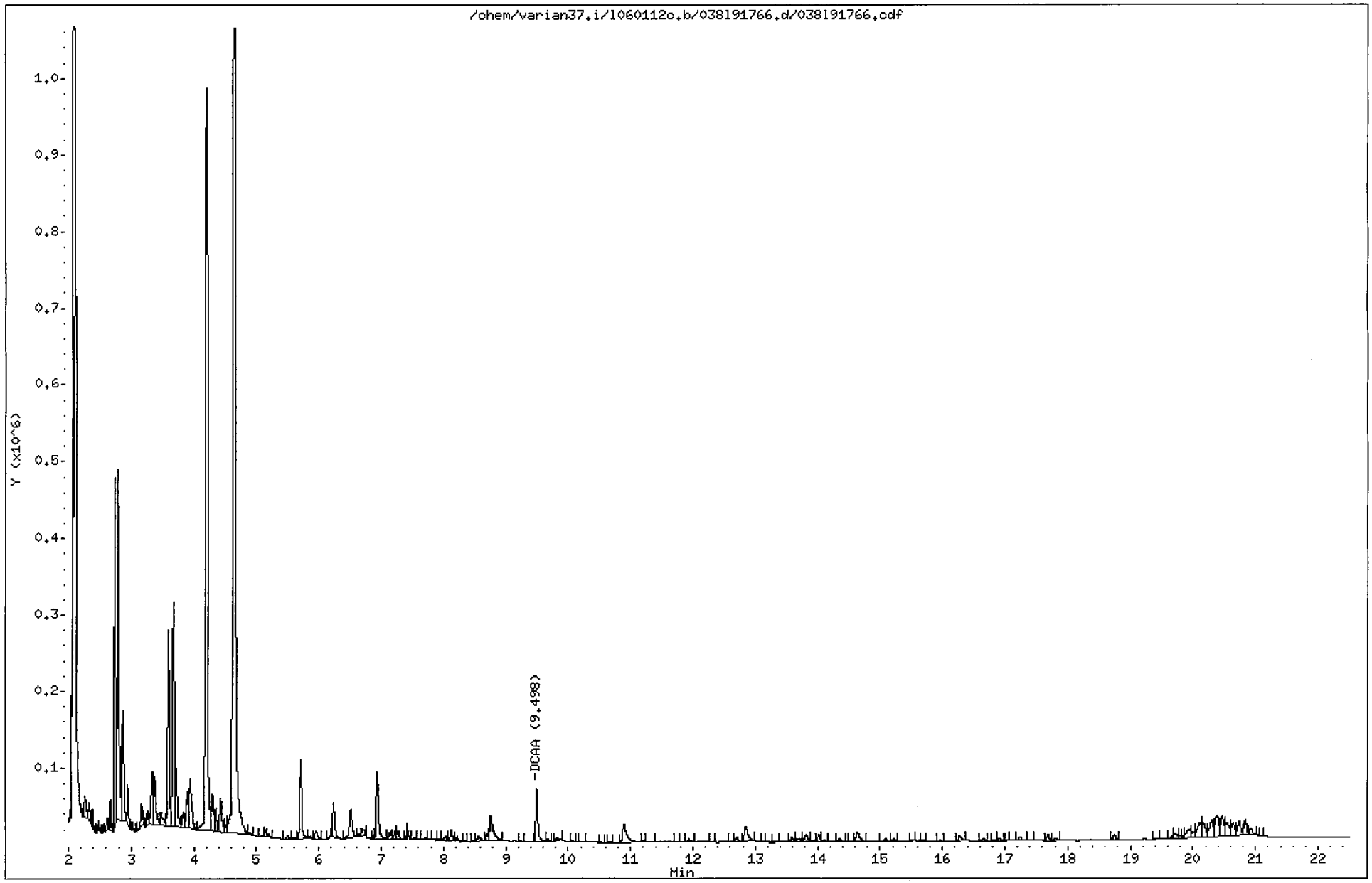
Sample Info: 91766

Volume Injected (uL): 1.0

Operator: 2512

Column phase: CLPest

Column diameter: 0.53



CompuChem

Lab Smp Id : 91766 Client Smp Id : TCLPBLKFW
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 20:45 Inst ID : VARIAN37
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
1.34		231816								
1.37		762805								
1.62		225916								
1.76		62217								
1.83		119468								
1.87		22579								
1.90		20386								
1.99		1829								
2.03		14327								
2.08		1932672								
2.27		63921								
2.33		36047								
2.38		30939								
2.48		1422								
2.50		3355								
2.56		1452								
2.62		28599								
2.67		49025								
2.74		643351								
2.79		824215								
2.87		278698								
2.94		86767								
3.03		3852								
3.16		46662								
3.21		12068								
3.26		29919								
3.34		158680								
3.38		139083								
3.48		49662								
3.60		470252								
3.68		656211								
3.72		142903								
3.83		44032								
3.90		94593								
3.94		168938								
4.20		2362552								
4.30		114137								

TAJ 1/26/06

CompuChem

Lab Smp Id : 91766 Client Smp Id : TCLPBLKFW
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 20:45 Inst ID :
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
4.35		63306								
4.43		117778								
4.54		21615								
4.65		3745403								
4.89		8785								
4.98		3123								
5.11		4301								
5.14		15377								
5.19		7706								
5.50		14170								
5.59		3995								
5.71		223686								
5.86		5251								
5.95		31936								
6.18		1190								
6.24		105490								
6.51		121190								
6.64		5843								
6.70		26483								
6.88		10737								
6.94		219911								
7.15		27007								
7.23		26348								
7.27		26180								
7.42		11143								
7.54		6402								
7.61		2792								
7.70		5344								
7.85		3077								
7.93		2356								
8.04		18662								
8.12		35602								
8.21		14460								
8.35		2470								
8.48		1690								
8.56		20997								
8.70		20749								

CompuChem

Lab Smp Id : 91766 Client Smp Id : TCLPBLKFW
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 20:45 Inst ID :
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
8.76		130301								
9.23		3883								
9.50	9.45 9.51	177835	63689	DCAA	2.792238	139.6119		55.8	50 - 148	
9.67		7022								
9.82		14433								
10.07		2122								
10.22		2013								
10.52		3138								
10.66		1562								
10.89		121146								
11.20		6222								
11.29		5174								
11.75		1096								
11.94		10743								
12.30		1633								
12.62		2008								
12.70		14569								
12.85		77940								
13.13		1504								
13.20		5685								
13.37		2975								
13.59		16884								
13.70		19591								
13.81		33453								
13.90		8267								
14.01		25886								
14.09		5519								
14.34		10150								
14.52		1382								
14.64		53894								
15.09		12344								
15.22		8844								
15.52		4152								
15.69		3204								
15.97		2189								
16.27		22449								
16.66		9364								

CompuChem

Lab Smp Id : 91766 Client Smp Id : TCLPBLKFW
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 20:45 Inst ID :
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
16.84		2277								
16.91		7587								
17.05		1466								
17.24		15314								
17.40		2166								
17.68		23355								
17.80		9813								
18.75		20129								
19.45		1133								
19.68		10739								
19.72		27248								
19.79		9536								
19.86		8171								
19.94		55468								
20.01		25896								
20.12		95063								
20.17		68574								
20.30		97540								
20.38		106314								
20.47		103947								
20.55		74972								
20.64		76131								
20.74		64796								
20.84		62686								
20.93		28686								
21.09		1710								

Data File: /chem/varian42.i/1060112c.b/038191766.d

Date : 25-JAN-2006 20:45

Client ID: TCLPBLKFW

Instrument: varian42.i

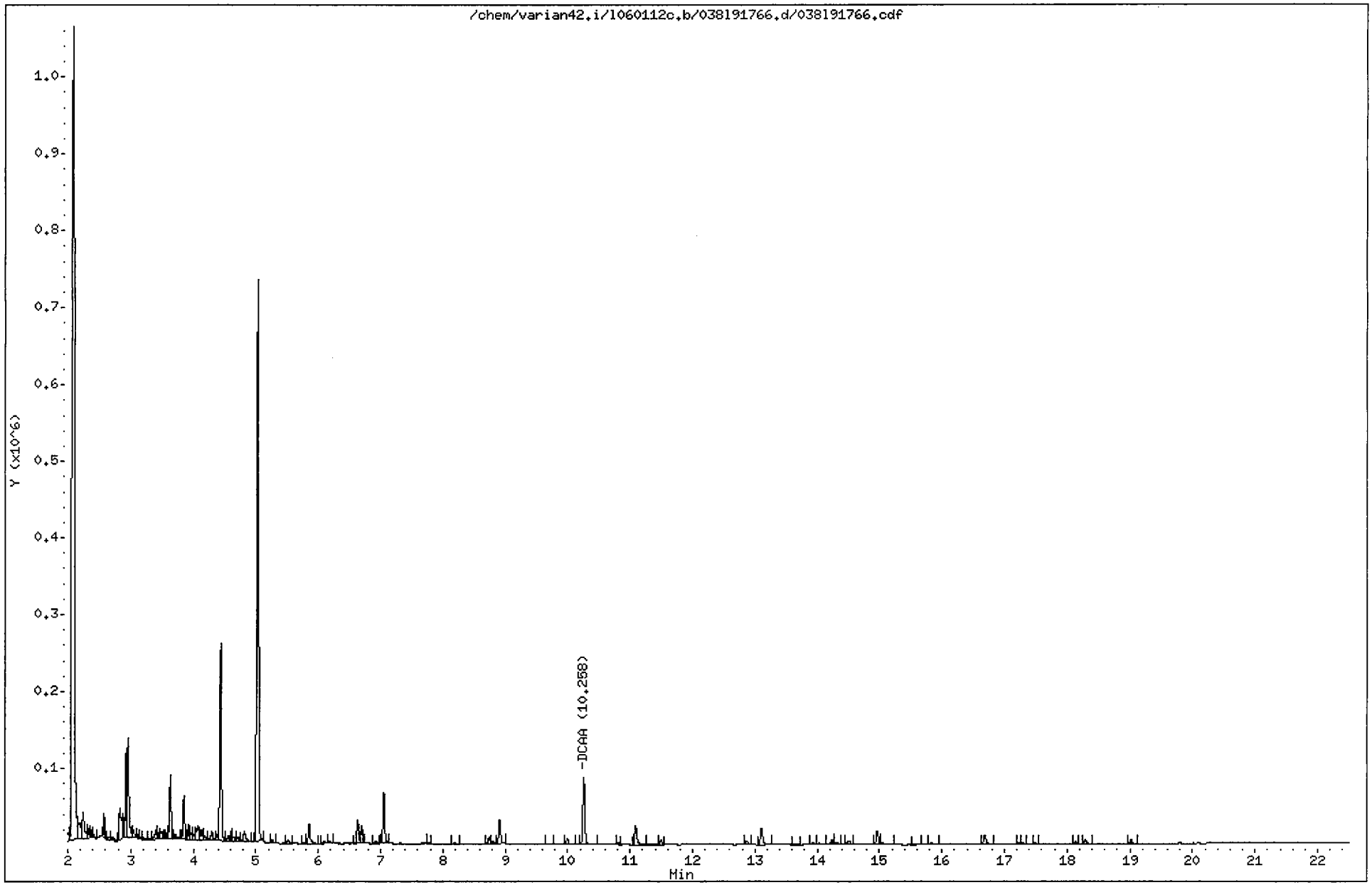
Sample Info: 91766

Volume Injected (uL): 1.0

Operator: 2512

Column phase: CLPest2

Column diameter: 0.53



CompuChem

Lab Smp Id : 91766 Client Smp Id : TCLPBLKFW
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 20:45 Inst ID : VARIAN42
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
1.31		2290835								
1.34		791858								
1.35		3335682								
1.42		5686465								
1.52		1505439								
1.74		160852								
1.80		150753								
1.88		115990								
1.96		69619								
2.09		2979808								
2.19		53492								
2.24		80336								
2.31		24757								
2.36		14528								
2.41		8351								
2.58		42144								
2.66		6935								
2.71		7925								
2.83		95156								
2.88		38623								
2.93		167632								
2.96		222196								
3.05		17605								
3.10		7684								
3.20		7402								
3.40		24081								
3.44		10787								
3.49		21270								
3.58		12053								
3.63		155589								
3.72		14681								
3.85		104570								
3.93		33336								
3.97		14369								
4.01		10661								
4.07		51423								
4.13		27900								

TAJ 1/26/06

CompuChem

Lab Smp Id : 91766 Client Smp Id : TCLPBLKFW
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 20:45 Inst ID :
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
4.18		13481								
4.30		27336								
4.38		12601								
4.44		479242								
4.56		14865								
4.61		6475								
4.64		12237								
4.71		10788								
4.82		34596								
5.03		1458906								
5.26		8398								
5.52		8780								
5.78		3127								
5.85		56111								
6.09		5970								
6.17		4303								
6.63		57630								
6.70		41769								
6.93		6724								
7.05		120708								
7.76		4196								
8.19		3780								
8.74		17653								
8.80		8149								
8.91		67719								
9.68		3063								
9.99		17637								
10.26	10.21 10.27	197349	69876	DCAA	2.824281	141.2141		56.5	50 - 148	
10.81		4080								
11.09		65389								
11.31		5365								
11.50		12216								
12.87		10398								
13.10		58315								
13.65		6314								
13.93		5421								
14.03		5049								

CompuChem

Lab Smp Id : 91766 Client Smp Id : TCLPBLKFW
Sample Type : SAMPLE Sublist : TCLP
Inj Date : 25-JAN-2006 20:45 Inst ID :
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
14.24		16149								
14.30		8005								
14.51		11746								
14.96		45400								
15.04		9375								
15.60		5540								
15.83		4623								
16.69		31444								
17.23		3996								
17.30		4034								
17.50		3606								
18.14		7993								
18.29		13483								
19.02		13436								

CompuChem, a Division of Liberty Analytical Corp.

TCLP WASTE CHARACTERIZATION LEACHATE

Method 1311

SPP -814

Assigned to: R.Mlkoy/Norms

Employee No.: 2171 1157

Date Extracted: 1/23/2006

Batch No.: 8877

COMPUCHEM NUMBER	CLIENT SAMPLE ID	SAMPLE TYPE	PRE-TEST pH VALUE START	PRE-TEST pH VALUE FINAL	PRE-TEST EXTRACTION FLUID AND VOL. (mL) ADDED 1	PRE-TEST EXTRACTION FLUID AND VOL. (mL) ADDED 2	PARTICLE REDUCT. DONE (Y/N)	SAMPLE WEIGHT (g)	FINAL LEACH. pH VALUE	FINAL VOLUME (ml)	PERCENT SOLID	COMMENTS
91764/65/66/67/68	TCLPBLKFW	SLCHBK	N/A	N/A	N/A	2000	N	N/A	2.87	1900	N/A	
91769/70/71/72/73	TCLPBLKFX	SLCHBK	N/A	N/A	N/A	N/A	N	N/A	7.71	2000	N/A	Filter Blk - diff 20
892501	WAR-IDW-4	SAMPLE	9.71	5.69	N/A	2000	N	100	4.18	1800	100	
892601	WAR-IDW-3	SAMPLE	N/A	N/A	N/A	N/A	N	N/A	7.52	1900	N/A	Filter only

1-24-06

LOADED TUMBLER CALIB. CHECK	
TUMBLER (MUST BE 30 rpm ± 2 rpm)	
TUMBLER #	CALC. RPM
2A	32

COUNT TIME FOR 30 sec AND MULTIPLY NUMBER BY 2 TO CALCULATE rpm

ROTATION TIME ONLY

Date/Time Started 1/23/06 / 3:15

Date/Time Stopped 1/24/06 / 0900

Room Temp. 24°C

Manufacturer and lot # of reagent used TCLP Fluid #2 2XX4-323-1

Final Vol. Verified:

Reviewed By:

Ext. Fluid 1 pH N/A (4.93 ± 0.05)

Ext. Fluide 2 pH 2.90 (2.88 ± 0.05)

Enter volume (mL) of Extraction Fluid added into appropriate column, e.g., enter volume into column 1 if Ext. Fluid #1 is used. Ensure that the fluid volume to sample weight ration is 20:1.

Rev. 7/29/03:dce

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIBLK5U

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: HIBLK5U

Sample wt/vol: 1000 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) _____ Date Extracted:_____

Concentrated Extract Volume: 10000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

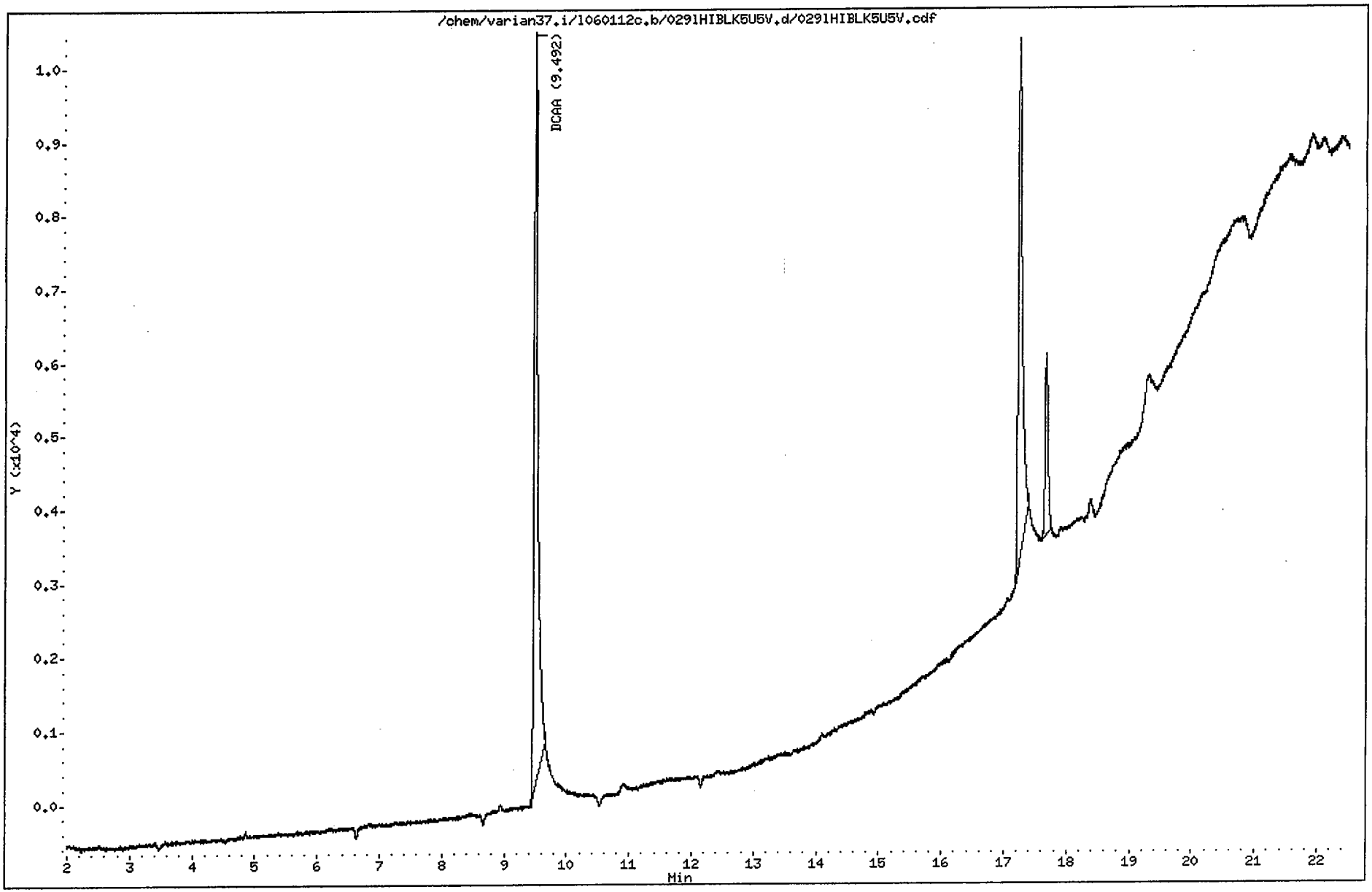
GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	5.0	U
93-72-1	silvex	1.0	U

Data File: /chem/varian37.i/1060112c.b/0291HIBLK5U5V.d
Date : 25-JAN-2006 16:34
Client ID: HIBLK5U
Sample Info: HIBLK5U5V
Volume Injected (uL): 1.0
Column phase: CLPest

Instrument: varian37.i

Operator: 2512
Column diameter: 0.53



CompuChem

Lab Smp Id : HIBLK5U Client Smp Id : HIBLK5U
Sample Type : INSTBLANK Sublist : all
Inj Date : 25-JAN-2006 16:34 Inst ID : VARIAN37
Operator : 2512
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	FLAGS
1.35			2452						
1.40			35260						
9.49	9.45	9.51	41109	63689	DCAA	0.645460	6.454595		
17.24			31096						
17.68			7728						

1/25/06

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIBLK5V

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: HIBLK5V

Sample wt/vol: 1000 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) _____ Date Extracted:_____

Concentrated Extract Volume: 10000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

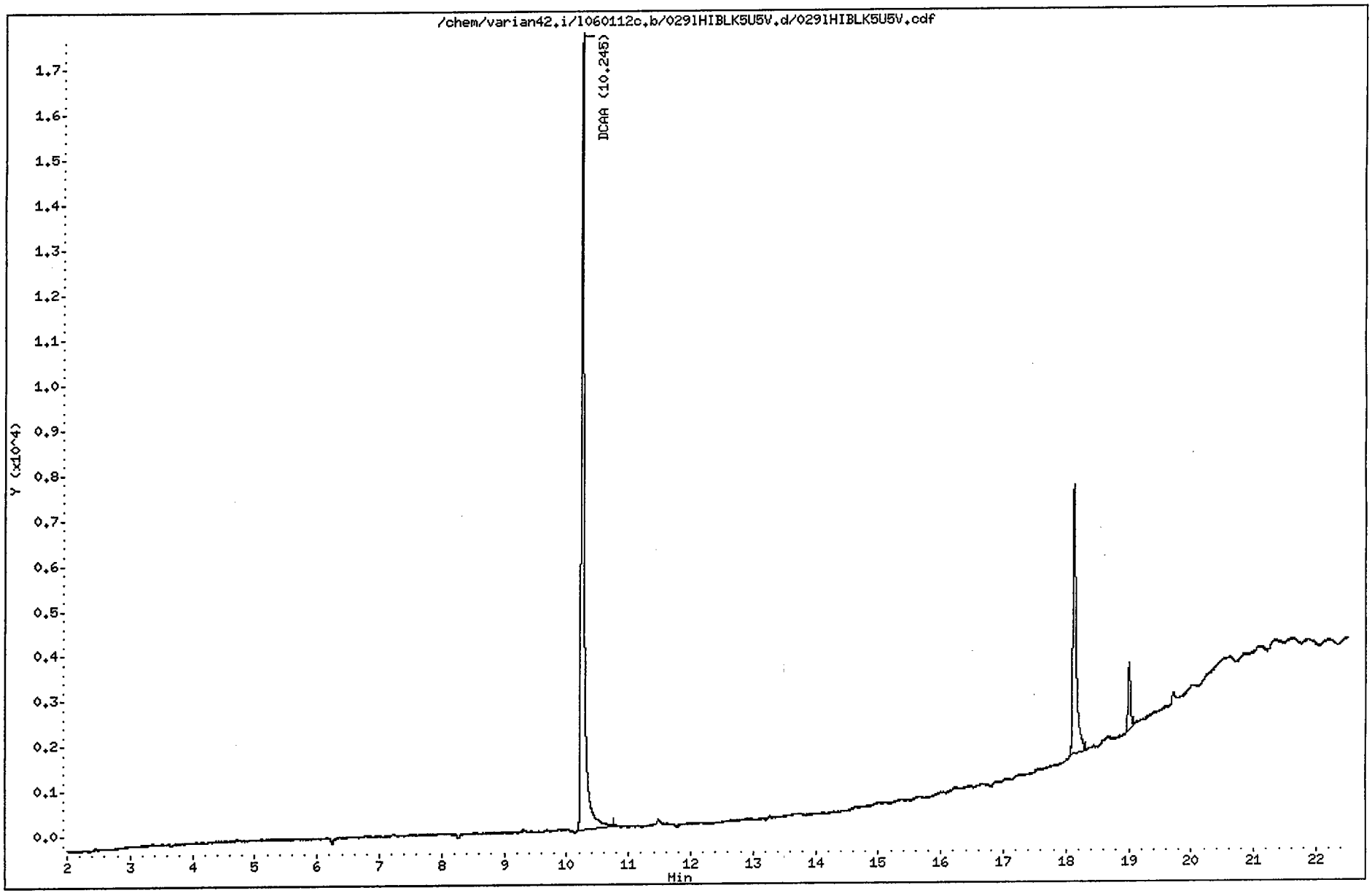
GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	5.0	U
93-72-1	silvex	1.0	U

Data File: /chem/varian42.i/1060112c.b/0291HIBLK5U5V.d
Date : 25-JAN-2006 16:34
Client ID: HIBLK5V
Sample Info: HIBLK5U5V
Volume Injected (uL): 1.0
Column phase: CLPest2

Instrument: varian42.i

Operator: 2512
Column diameter: 0.53



CompuChem

Lab Smp Id : HIBLK5V Client Smp Id : HIBLK5V
Sample Type : INSTBLANK Sublist : all
Inj Date : 25-JAN-2006 16:34 Inst ID : VARIAN42
Operator : 2512
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	FLAGS
10.24	10.21 10.27	58185	69876	DCAA	0.832686	8.326863		
18.13		21168						
19.00		3898						

1/25/06

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIBLK5W

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: HIBLK5W

Sample wt/vol: 1000 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) _____ Date Extracted:_____

Concentrated Extract Volume: 10000(ul) Date Analyzed: 01/26/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

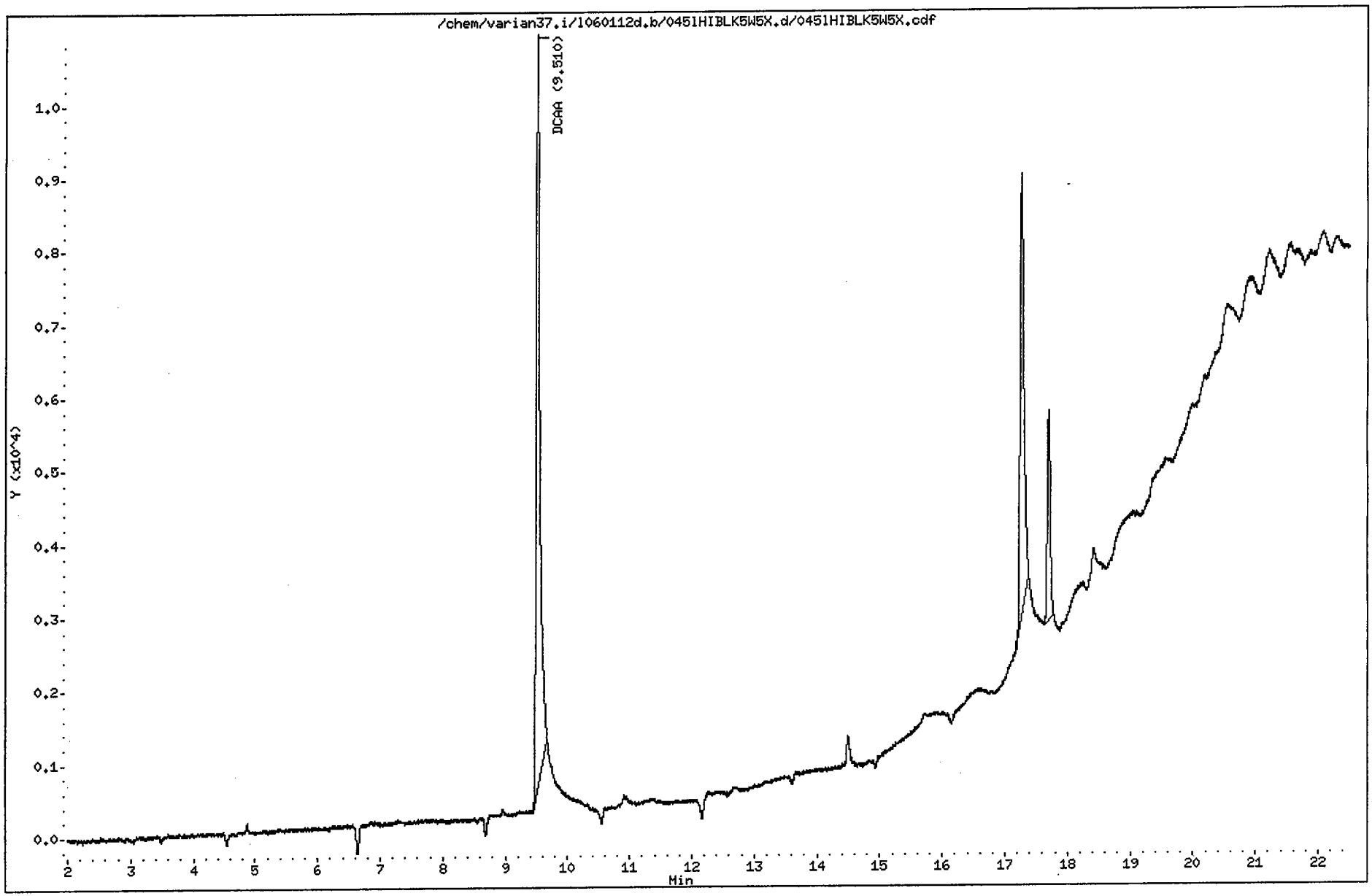
GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	5.0	U
93-72-1	silvex	1.0	U

Data File: /chem/varian37.i/1060112d.b/0451HIBLK5W5X.d
Date : 26-JAN-2006 00:15
Client ID: HIBLK5W
Sample Info: HIBLK5W5X
Volume Injected (uL): 1.0
Column phase: CLPest

Instrument: varian37.i

Operator: 2564
Column diameter: 0.53



CompuChem

Lab Smp Id : HIBLK5W Client Smp Id : HIBLK5W
Sample Type : INSTBLANK Sublist : all
Inj Date : 26-JAN-2006 00:15 Inst ID : VARIAN37
Operator : 2564
Method : /chem/varian37.i/1060112d.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW		AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	FLAGS
1.34			3951						
1.40			106386						
9.51	9.45	9.51	42743	63689	DCAA	0.671122	6.711225		
17.26			25295						
17.69			9159						

1/25/06

1D

EPA SAMPLE NO.

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

HIBLK5X

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: HIBLK5X

Sample wt/vol: 1000 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) _____ Date Extracted:_____

Concentrated Extract Volume: 10000(ul) Date Analyzed: 01/26/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

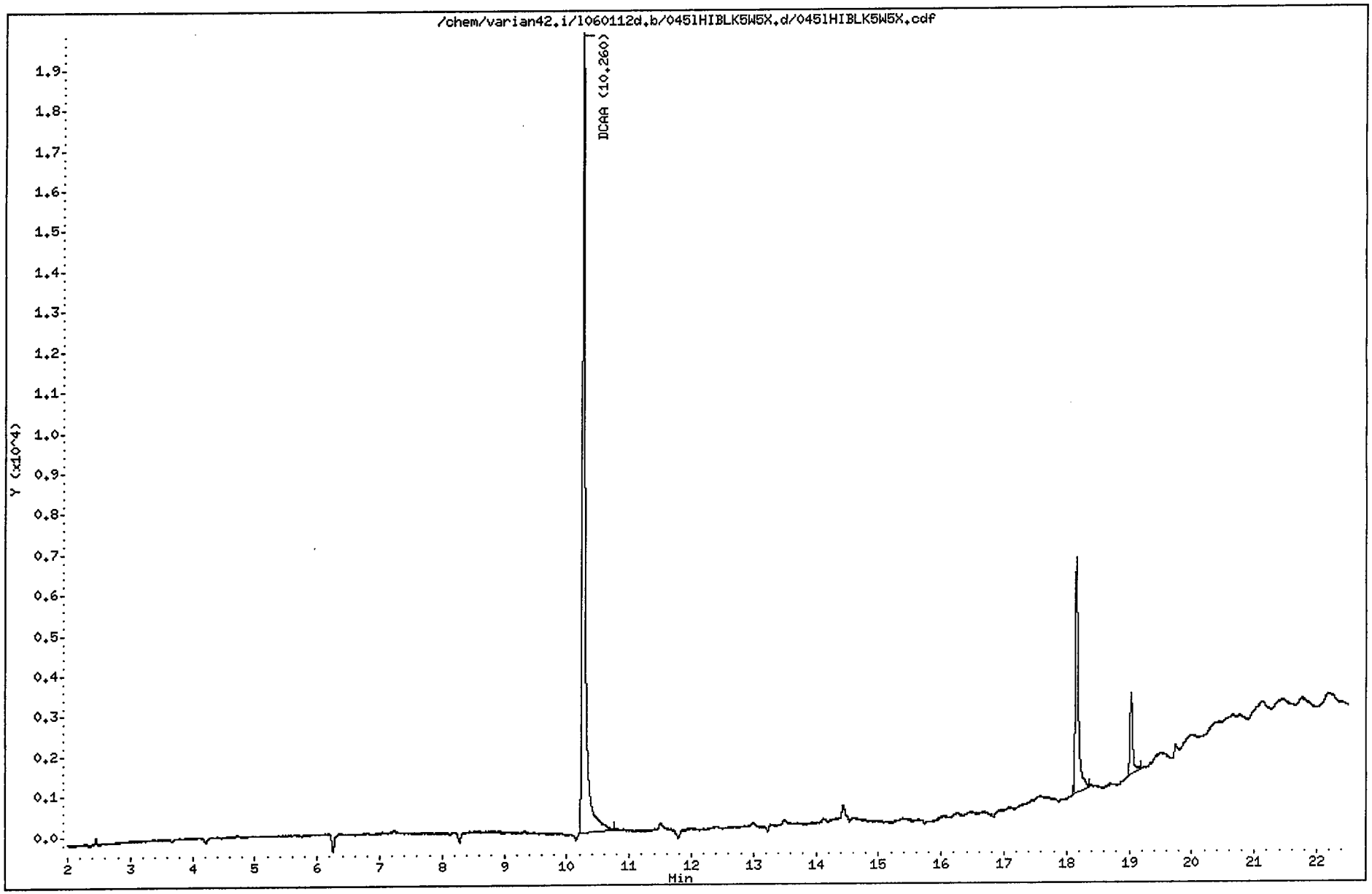
GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	5.0	U
93-72-1	silvex	1.0	U

Data File: /chem/varian42.i/1060112d.b/0451HIBLK5W5X.d
Date : 26-JAN-2006 00:15
Client ID: HIBLK5X
Sample Info: HIBLK5W5X
Volume Injected (uL): 1.0
Column phase: CLPest2

Instrument: varian42.i

Operator: 2564
Column diameter: 0.53



CompuChem

Lab Smp Id : HIBLK5X Client Smp Id : HIBLK5X
Sample Type : INSTBLANK Sublist : all
Inj Date : 26-JAN-2006 00:15 Inst ID : VARIAN42
Operator : 2564
Method : /chem/varian42.i/l060112d.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 10000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 1000.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	FLAGS
1.30		4164						
10.26	10.21 10.27	67274	69876	DCAA	0.962765	9.627648		
18.15		19743						
19.03		5930						

1/25/06

b. Matrix Spike Data

- Tabulated Results (Form I)

- Chromatograms and data system printout(s)

c. Matrix Spike Duplicate Data

- Tabulated Results (Form I)

- Chromatograms and data system printout(s)

d. Laboratory Control Sample Data

- Tabulated Results (Form I)

- Chromatograms and data system printout(s)

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PGMLCS

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 91894

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	74	
93-72-1	silvex	19	

Data File: /chem/varian37.i/1060112c.b/037191894.d

Date : 25-JAN-2006 20:17

Client ID: PGMLCS

Instrument: varian37.i

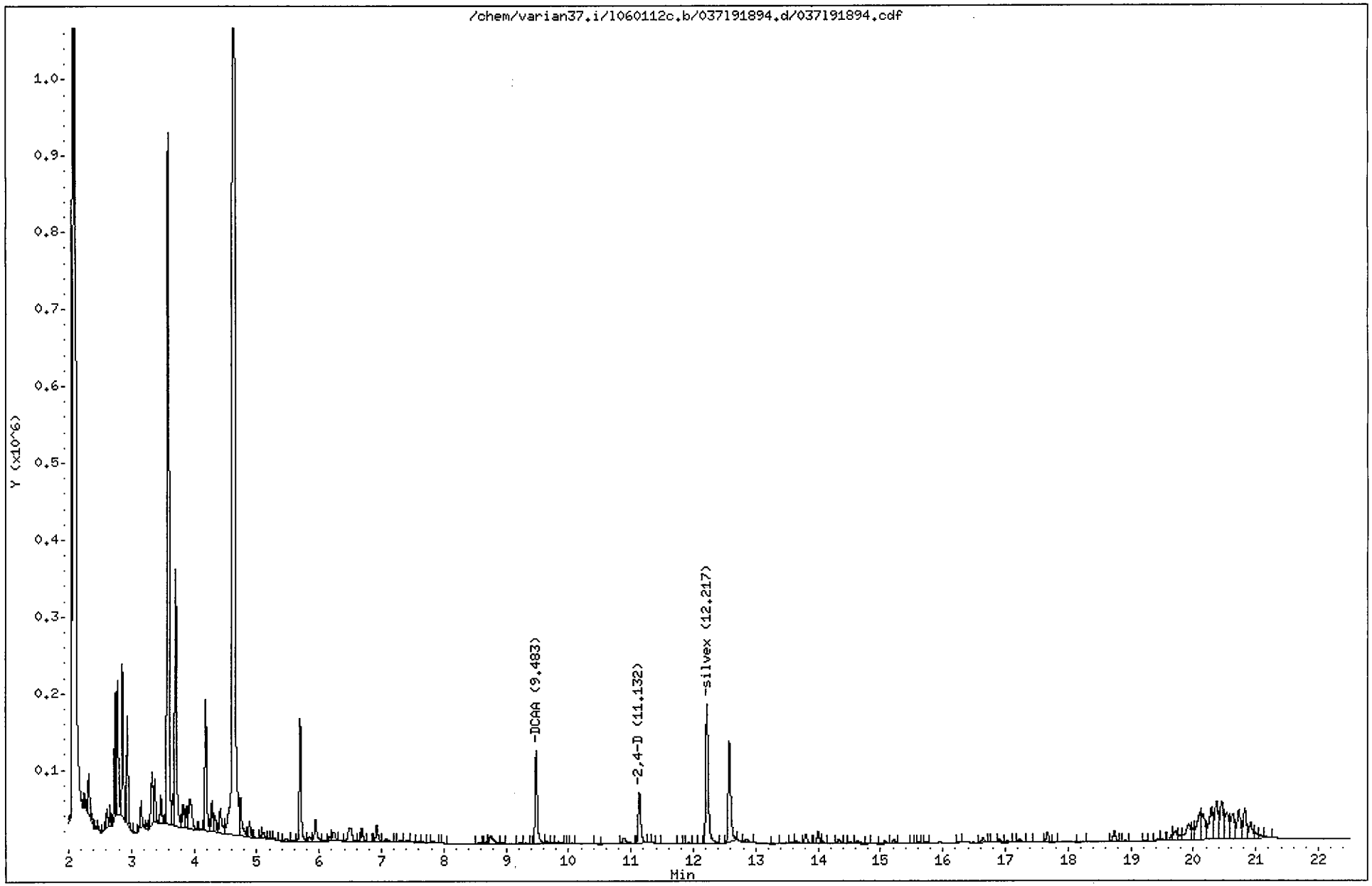
Sample Info: 91894

Volume Injected (uL): 1.0

Operator: 2512

Column phase: CLPest

Column diameter: 0.53



CompuChem

Lab Smp Id : 91894 Client Smp Id : PGMLCS
Sample Type : LCS Sublist : TCLP
Inj Date : 25-JAN-2006 20:17 Inst ID : VARIAN37
Operator : 2512 Spike Sublist : TCLP
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
0.10		1082								
1.34		292181								
1.36		1918388								
1.42		970032								
1.61		114395								
1.76		74028								
1.82		308692								
1.92		22048								
2.02		9748								
2.07		549660								
2.25		22485								
2.28		12321								
2.32		91869								
2.38		12491								
2.43		3619								
2.47		10297								
2.56		2328								
2.61		40928								
2.66		35359								
2.73		103365								
2.75		208008								
2.78		297785								
2.86		356655								
2.94		217090								
3.12		3410								
3.15		46840								
3.20		3950								
3.24		12389								
3.33		148757								
3.37		104315								
3.47		70753								
3.59		2008284								
3.67		69479								
3.71		652896								
3.82		72191								
3.89		55520								
3.93		132033								

TAJ 1/26/06

CompuChem

Lab Smp Id : 91894 Client Smp Id : PGMLCS
Sample Type : LCS Sublist : TCLP
Inj Date : 25-JAN-2006 20:17 Inst ID :
Operator : 2512 Spike Sublist : TCLP
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
4.13		7119								
4.19		326872								
4.29		83363								
4.34		45789								
4.42		89925								
4.64		3949075								
4.74		139911								
4.88		38877								
4.96		3090								
5.07		4349								
5.11		23423								
5.18		3514								
5.23		4597								
5.28		6798								
5.47		10700								
5.58		5428								
5.70		329575								
5.84		17838								
5.94		75552								
6.08		3873								
6.16		16541								
6.23		40982								
6.50		84067								
6.63		1795								
6.68		42446								
6.87		1070								
6.92		56241								
7.07		16523								
7.31		8138								
7.41		9122								
7.49		3181								
7.60		3438								
7.67		2207								
7.76		1205								
7.83		4101								
7.99		1240								
8.55		2622								

CompuChem

Lab Smp Id : 91894 Client Smp Id : PGMLCS
Sample Type : LCS Sublist : TCLP
Inj Date : 25-JAN-2006 20:17 Inst ID :
Operator : 2512 Spike Sublist : TCLP
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
8.69		5551								
8.75		50746								
8.95		2081								
9.22		5255								
9.32		3348								
9.48	9.45 9.51	300792	63689	DCAA	4.722806	236.1403		94.5	50 - 148	
9.65		10135								
9.74		2058								
9.84		11118								
10.00		1080								
10.05		2850								
10.45		1491								
10.88		39567								
11.13	11.09 11.15	184671	134566	2,4-D	1.372338	68.61690	25.00000	85.8	50 - 150	
11.35		1742								
11.42		1841								
11.77		1648								
11.92		3773								
12.10		1579								
12.22	12.18 12.24	512885	1343698	silvex	0.381697	19.08483	5.000000	95.4	50 - 150	
12.57		389169								
12.84		18949								
13.36		3864								
13.57		4063								
13.65		13981								
13.80		34590								
14.00		41539								
14.07		7420								
14.33		14887								
14.45		1662								
14.51		3139								
14.63		16491								
14.82		1294								
15.07		16555								
15.21		15215								
15.53		1007								
15.62		1441								

CompuChem

Lab Smp Id : 91894 Client Smp Id : PGMLCS
Sample Type : LCS Sublist : TCLP
Inj Date : 25-JAN-2006 20:17 Inst ID :
Operator : 2512 Spike Sublist : TCLP
Method : /chem/varian37.i/l060112c.b/8151f_clpestv2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
15.73		1651								
16.27		2340								
16.64		17333								
16.84		3650								
16.90		13804								
17.03		6799								
17.22		14468								
17.39		3428								
17.67		37834								
17.80		1998								
18.24		3686								
18.74		38612								
18.91		2347								
19.23		1664								
19.44		10720								
19.48		7880								
19.66		16645								
19.71		48129								
19.78		19199								
19.92		115664								
19.99		47741								
20.11		167790								
20.16		126403								
20.29		180252								
20.37		188593								
20.45		190642								
20.53		146896								
20.63		150380								
20.73		136347								
20.82		137643								
20.91		77241								
20.99		27665								
21.07		15455								
21.15		9003								

Data File: /chem/varian42.i/1060112c.b/037191894.d

Date : 25-JAN-2006 20:17

Client ID: PGMLCS

Instrument: varian42.i

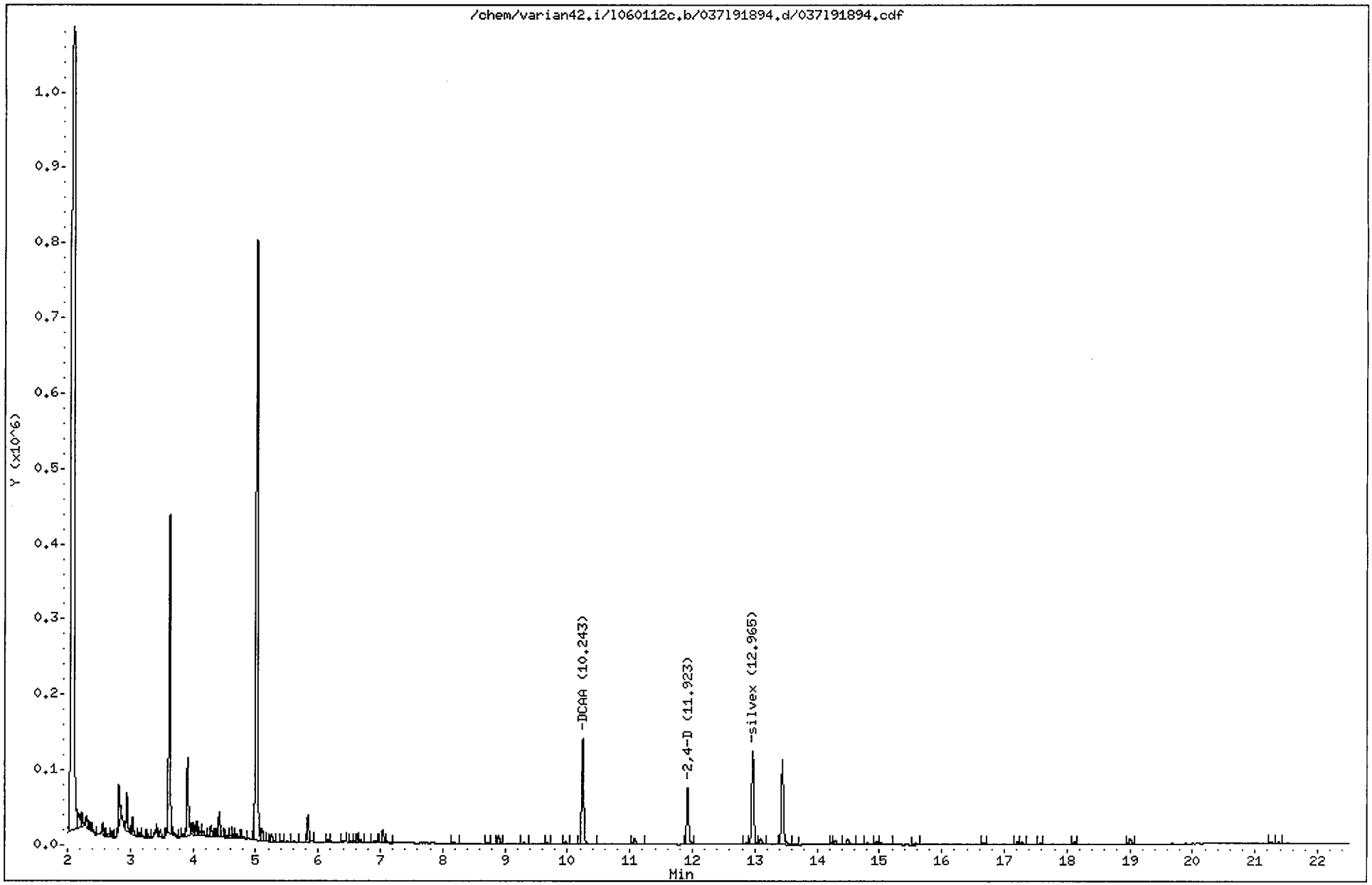
Sample Info: 91894

Volume Injected (uL): 1.0

Operator: 2512

Column phase: CLPest2

Column diameter: 0.53



CompuChem

Lab Smp Id : 91894
Client Smp Id : PGMLCS
Sample Type : LCS
Sublist : TCLP
Inj Date : 25-JAN-2006 20:17
Inst ID : VARIAN42
Operator : 2512
Spike Sublist : TCLP
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0
Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul)
Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
1.30		2972270								
1.35		1769865								
1.40		8766110								
1.55		1097615								
1.66		299605								
1.73		183716								
1.79		291390								
1.86		83525								
1.95		62343								
2.08		3805949								
2.18		43455								
2.23		31661								
2.31		23629								
2.36		9196								
2.40		6039								
2.57		19887								
2.65		8323								
2.71		11049								
2.82		106313								
2.94		79965								
3.04		41642								
3.15		8140								
3.19		3230								
3.29		8056								
3.40		7993								
3.48		17884								
3.58		9175								
3.63		722150								
3.71		10585								
3.84		7069								
3.92		194283								
4.00		26846								
4.06		31983								
4.12		7768								
4.17		16322								
4.29		32804								
4.37		17632								

TAJ 1/26/06

CompuChem

Lab Smp Id : 91894
Client Smp Id : PGMLCS
Sample Type : LCS
Sublist : TCLP
Inj Date : 25-JAN-2006 20:17
Inst ID :
Operator : 2512
Spike Sublist : TCLP
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0
Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul)
Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
4.42		54573								
4.55		4962								
4.60		6407								
4.63		11574								
4.70		10977								
4.80		6223								
5.02		1771836								
5.10		33746								
5.25		21358								
5.42		3692								
5.50		4003								
5.62		5020								
5.84		71185								
6.16		6313								
6.42		3555								
6.53		3629								
6.62		23076								
6.68		8761								
6.91		7363								
7.04		33425								
7.11		5406								
8.17		6350								
8.73		4368								
8.90		23616								
9.30		3699								
9.67		3799								
9.98		7565								
10.24	10.21 10.27	316957	69876	DCAA	4.535989	226.7994		90.7	50 - 148	
11.07		22422								
11.92	11.89 11.95	175428	117679	2,4-D	1.490724	74.53620	25.00000	93.2	50 - 150	
12.86		5752								
12.96	12.93 12.99	302541	807409	silvex	0.374706	18.73530	5.000000	93.7	50 - 150	
13.09		17004								
13.44		288279								
13.64		8262								
14.23		4118								
14.29		13526								

CompuChem

Lab Smp Id : 91894 Client Smp Id : PGMLCS
Sample Type : LCS Sublist : TCLP
Inj Date : 25-JAN-2006 20:17 Inst ID :
Operator : 2512 Spike Sublist : TCLP
Method : /chem/varian42.i/l060112c.b/8151f_clpest2v2.m
Misc. Info : None

Formula: Conc=(Area/RF) * DF * (Uf * Vt/(Vi * Vo))

DF Dilution Factor: 1.0 Uf GPC Unit Factor: 1
Vt Final Volume: 5000(ul) Vi Injection Volume: 1(ul)
Vo Sample Volume: 100.0(ml)

RT	RT WINDOW	AREA	QUANT RF	COMPOUND	CONCENTRATIONS ON-COLUMN (Ng)	CONCENTRATIONS FINAL (ug/L)	ADJUSTED PQL (ug/L)	% REC	RECOVERY LIMITS	FLAGS
14.49		21737								
14.80		4037								
14.95		12812								
15.03		7870								
15.58		7088								
16.68		5309								
17.21		9386								
17.28		8205								
17.57		3834								
18.12		7635								
19.01		19417								
21.26		3438								
21.38		3287								

[redacted] **CompuChem**

a division of Liberty Analytical Corp.

WORKORDER SUMMARY REPORT

Workorder: 8925 **Account:** CH2MHILL **Project:** CTO-007 (AR)
SDG-Case: CTO-007/18035 **Status:** CLOSED **QC Type:** CLIENT SPECIFIC MS/MSD
Report Style: COMPUCHEM STYLE 9 INTEGRATED W/EDD&CD

SAMPLE ID	CLIENT ID	COLLECT DATE	RECEIVE DATE	DUE DATE	COMMENTS
892501	WAR-IDW-4	1/17/2006	1/19/2006	2/13/2006	LCS ONLY*TCLP VOC, SVOC, PEST, HERB & METALS*RIC
L	GS8081TCLP	TCLP PST ONLY 8081A SOIL			
L	GS8151TCLP	TCLP HERBICIDE 8151 SOIL			
L	MS6010TCLP	TCLP METAL 6010B SOIL			
L	MS74HGTCLP	TCLP MERCURY ONLY 7471A SOIL			
L	SS8270TCLP	TCLP SVOC 8270C SOIL			
L	VS8260ZHE	ZHE VOC 8260B SOIL			
L	WS1010IGNT	IGNITABILITY 1010 SOIL			
L	WS9014RCCN	REACTIVE CYANIDE 9014 SOIL			
L	WS9034RCSF	REACTIVE SULFIDE 9034 SOIL			
L	WS9040COR	CORROSIVITY 9040B SOIL			

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DATA REPORTING QUALIFIERS

On the Form I, under the column labeled "Q" for qualifier, each result is flagged with the specific data reporting qualifiers listed below, as appropriate. Up to five qualifiers may be reported on Form I for each compound. The qualifiers used are:

U : This flag indicates the compound was analyzed for but not detected. The Contract Required Quantitation Limit (CRQL), or reporting limit, will be adjusted to reflect any dilution and, for soils, the percent moisture.

J : This flag indicates an estimated value. The flag is used as detailed below:

1. When estimating a concentration for tentatively identified compounds (TICs) where a response factor of 1.0 is assumed for the TIC analyte,

2. When the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero, and

3. When the retention time data indicate the presence of a compound that meets the pesticide/Aroclor or other GC or HPLC identification criteria, and the result is less than the CRQL (or Reporting Limit) but greater than zero. For example, if the CRQL (or Reporting Limit) is 10 µg/L, but a concentration of 3 µg/L is calculated, it is reported as 3J.

N : This flag indicates presumptive evidence of a compound. This flag is only used for TICs, where the identification is based on a mass spectral library search. For generic characterization of a TIC such as 'chlorinated hydrocarbon', the N flag is not used.

P : In the EPA's Contract Laboratory Program (CLP), this flag is used for a pesticide/Aroclor target analyte, when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a P.
For SW-846 GC and HPLC analyses, when the Relative Percent Difference (RPD) is greater than 40% and there is no evidence of chromatographic anomalies or interferences, then the higher of the two values is reported and flagged with a P. When the RPD is equal to or less than 40%, our policy is to also report the higher of the two values, although the choice could be a project specific issue. For certain HPLC analyses, if one of the HPLC columns displays co-elution of target analytes, all results are reported from a primary column displaying no co-elution. Results are still flagged with a P if the RPD between columns is greater than 40%.

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WAR-IDW-4

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(ul) Date Analyzed: 01/25/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	25	U
93-72-1	silvex	5.0	U

FORM I HERB

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WAR-IDW-4

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 8925

Matrix: (soil/water) WATER Lab Sample ID: 892501

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/19/06

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:01/24/06

Concentrated Extract Volume: 5000(uL) Date Analyzed: 01/24/06

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.13	U
72-20-8	Endrin	0.50	U
76-44-8	Heptachlor	0.13	U
1024-57-3	Heptachlor Epoxide	0.13	U
72-43-5	Methoxychlor	1.3	U
8001-35-2	Toxaphene	25	U
57-74-09	Technical Chlordane	8.0	U

FORM I PEST

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

AMENDED SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one soil sample listed above was received intact, properly refrigerated, with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the herbicide fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction and Method 8151A were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the herbicide fraction only.

Herbicide-TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no herbicide project analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

The surrogate met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample (LCS) prepared and analyzed along with this sample met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd

Elsie S. Byrd
Senior Scientist I
March 10, 2006

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

AMENDED SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one soil sample listed above was received intact, properly refrigerated, with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the herbicide fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction and Method 8151A were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the herbicide fraction only.

Herbicide-TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no herbicide project analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

The surrogate met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample (LCS) prepared and analyzed along with this sample met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd
Senior Scientist I
March 10, 2006

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

AMENDED SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one soil sample listed above was received intact, properly refrigerated with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the pesticide-TCLP fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8081A were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the pesticide-TCLP fraction only.

Pesticides TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no pesticide-TCLP analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample prepared and analyzed along with this sample (LCS) met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd
Senior Scientist I
March 10, 2006

CompuChem

a division of Liberty Analytical Corporation
501 Madison Avenue
Cary, N.C. 27513
Tel: 919/379-4100 Fax: 919/379-4050

AMENDED SDG NARRATIVE
SDG # 8925
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
WAR-IDW-4

The one soil sample listed above was received intact, properly refrigerated with proper documentation, in sealed shipping containers, on January 19, 2006. The sample was scheduled for the requested analyses of the pesticide-TCLP fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8081A were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the pesticide-TCLP fraction only.

Pesticides TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no pesticide-TCLP analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of this sample.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample prepared and analyzed along with this sample (LCS) met all accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Elsie S. Byrd
Senior Scientist I
March 10, 2006

WASTE MANAGEMENT

Waste Profile Document

Soil Profile

Approval No. _____

Expiration Date: _____

IMPORTANT: This form must be completed by a Representative of the Waste Generator. The information on this form must be typed or legibly printed in ink and signed by an Authorized Agent of the Generator. Completed form bearing original signature must be provided to WMI **PRIOR TO ACCEPTANCE AT A WMI FACILITY.** If this form is submitted via facsimile, the original form MUST be received by WMI within five (5) working days.

1.0 Generator Information

1.1 Generator Name: ___US Navy, NAVFAC Atlantic_____

_____

1.2 Generating Facility Address: ___former NASD_____

City: __Vieques Island_____ State: _PR Zip:_____

1.3 Company Representative: ___Pedro Ruiz_____

Title: _____Environmental Engineer_____

1.4 Emergency Contact: _____Terri Fort, 540-777-6547_____

Title: _____Business Manager_____

1.5 Local Registration No.: _____N/A_____

1.6 Generator's EPA ID No.: ____N/A_____

1.7 Facility Phone: (_____)

1.8 After Hours Phone: (_____)

1.9 Emergency Phone: (_____)

2.0 Waste Description

2.1 General Waste Description: _____soil from a subsurface investigation

2.2 Process Generating Waste: _____generated by drilling monitoring wells _____

2.3 Is this waste "Hazardous Waste" as defined by Federal, State or Local Regulations: _____ Yes ____X_____ No

2.4 Has this waste ever been "handled" or "disposed of" as a hazardous _____ material _____ waste or disposed of via a "uniform hazardous waste manifest". If yes, explain: _____NO_____

_____

2.5 State/Local Regulatory Waste Identification Code Number: _____None_____

2.6 Waste Generation Rate: _____ Tons _____ Cubic Yards Other: _____22 drums_____

Per: _____ Day _____ Week _____ Year __one time_____Other

2.7 Waste will be transported in: _____ Roll-off Boxes ___ Drums (Type/Size): _55 gallon drums, open top

_____ Dump Trucks Other: _____ _____

3.0 Waste Properties at Room Temperature

3.1 Physical State: ___X___ Solid _____ Semi-Solid _____ Powder ____ Liquid Combination: _____

3.2 Odor: ___X_____ None _____ Mild _____ Strong 3.3 pH Range: _____7_____ to _____8_____

3.4 Color(s) _____brown_____

3.5 Percent Solid: ____>99%_____% 3.6 Flash Point F°: ___>200_____

4.0 This Waste Contains:

Note if the waste contains any of the following:

_____ Free Liquids	_____ Dioxins	_____ Etiological Agents	_____ Radioactive Materials
_____ Free Cyanide	_____ Organic Solvents	_____ Pathogens	_____ Free Sulfide
_____ Used Oils	_____ OSHA Substances	_____ Free Ammonia	_____ Virgin Oils
_____ Biological Materials	_____ PCB's not regulated y	TSCA 40 CFR 761	__X___ None of the above

5.0 Transportation

If the waste is a DOT Hazardous Material, complete the following:

5.1 Proper U.S. DOT Shipping Name: _____N/A_____

5.2 U.S. DOT Hazard Class: _____N/A_____

5.3 CERCLA Reportable Quantity: _____N/A_____ **5.4 UN or NA Number:** _____N/A_____

6.0 Attached Information

6.1 Analytical (Check all that apply): _____None _____Waste Composition Summary

_____TPH Gas/Diesel _____BTEX _____RCI ___X___TCLP Analysis _____Semi-volatile Organics

_____Volatile Organics _____Herbicides/Pesticides _____Total Metals _____MSDS

6.2 _____Generator Certification **Other:** ____Flash point, corrosivity and reactivity_____

7.0 Billing Information

7.1 Bill to: **Attention:** __Accounts Payable_____

___Capitol Environmental Services, Inc._____ **Phone:** (_540-777-6547)

___15C Trolley Square, Wilmington, DE 19806_____ **P.O.#:** _ROAN-TFORT-2985-12989_____

_____ **Job #:** _same_____

7.2 Does Customer have a current account with WMI?.: ___X__ Yes _____ No Account No._____410-0000401-0041-4_____

==========

GENERATOR CERTIFICATION – MUST BE COMPLETED

I hereby certify that all information supplied is truly representative of the above mentioned waste. I agree to notify Waste Management, Inc. if there is a change in the waste stream information submitted for acceptance. I also authorize Waste Management, Inc. to periodically re-analyze the waste, at my expense. I also certify that all samples were collected according to EPA Method SW-846 and that samples were analyzed by a certified laboratory and that the appropriate chain of custody was attached. I further certify that the wastes submitted for disposal are non-hazardous in accordance with the applicable State Health and Safety Codes, and the Code of Federal Regulations and any applicable local laws or regulations.

Pedro J. Ruiz — Printed Name

NAVFAC LANT — Company or Business

Signature

3/1/2006 — Date

INTERNAL USE ONLY - DO NOT WRITE BELOW THIS LINE

____ Accept ____ Reject **Approval Chemist:**_____ Date:_____

Compliance Manager Signature: _____ Date: _____

Comments:/Restrictions:_____

_____

WASTE MANAGEMENT
PEÑUELAS VALLEY LANDFILL, INC.

TEL: (787) 836-3535 (EXT. 223)
FAX: (787) 836-2590

FAX TRANSMITAL

DATE: 05/02/2006

TO: Terri Fort

COMPANY Capitol Environmental Services

FROM: Lic. María Vidal

SUBJECT: WASTE APPROVAL NOTICE

FAX NUMBER: (540)777-6549

NUMBER OF PAGES: 6 (INCLUDING COVER PAGE)

WASTE MANAGEMENT
PEÑUELAS VALLEY LANDFILL, INC.

ACKNOWLEDGEMENT OF RECEIPT OF NONHAZARDOUS WASTE

DATE: 05/02/2006

COMPANY AND LOCATION: US Navy, NAVFAC Atlantic
Vieques

NAME OF WASTE MATERIAL: Soil from surface investigation

AMOUNT OF WASTE MATERIAL: 22 Drums

WPS CODE NUMBER: 1310-306-6367

HANDLING METHOD: LANDFILL

FACILITY AREA: CELL 1 INDUSTRIAL LANDFILL

THIS IS TO CERTIFY THAT THE ABOVE NAMED WASTE MATERIAL WAS HANDLED AND DISPOSED SAFELY ACCORDING TO INTERNAL PRACTICES AND ENVIRONMENTAL REGULATIONS.

REPORTED BY COMPLIANCE DEPARTMENT

RELEASED BY: _____
AUTHORIZED SIGNATURE

PEÑUELAS VALLEY LANDFILL, INC. Aprobado por Departamento de Cumplimiento WASTE MANAGEMENT DE PUERTO RICO

Daily Report Reference number : 095505
Contractor:

WASTE MANAGEMENT
PEÑUELAS VALLEY LANDFILL, INC.

ACKNOWLEDGEMENT OF RECEIPT OF NONHAZARDOUS WASTE

DATE: 05/02/2006

COMPANY AND LOCATION: US Navy, NAVFAC Atlantic
Vieques

NAME OF WASTE MATERIAL: Water from surface investigation

AMOUNT OF WASTE MATERIAL: 41 Drums

WPS CODE NUMBER: 1310-306-6368

HANDLING METHOD: LANDFILL

FACILITY AREA: CELL 1 INDUSTRIAL LANDFILL

THIS IS TO CERTIFY THAT THE ABOVE NAMED WASTE MATERIAL WAS HANDLED AND DISPOSED SAFELY ACCORDING TO INTERNAL PRACTICES AND ENVIRONMENTAL REGULATIONS.

REPORTED BY COMPLIANCE DEPARTMENT

RELEASED BY: María Vidal Cintrón
AUTHORIZED SIGNATURE

PEÑUELAS VALLEY LANDFILL, INC. Aprobado por AVC Departamento de Cumplimiento WASTE MANAGEMENT DE PUERTO RICO

Daily Report Reference number : 095505
Contractor:

WASTE MANAGEMENT
PEÑUELAS VALLEY LANDFILL, INC.

PAINT FILTER LIQUIDS TEST REPORT

DATE: 05/02/2006

COMPANY/LOCATION: US Navy NAVFAC Atlantic / Vieques

NAME OF WASTE: Water from a surface investigation

W.P.S. CODE: 1310-306-6368

	Passed	Failed
SAMPLE AS RECEIVED		✓
SAMPLE AFTER TREATMENT	✓	

THIS IS TO CERTIFY THAT THE PAINT FILTER TEST REPORTED ABOVE WAS PERFORMED IN ACCORDANCE WITH THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S MANUAL SW-846, "TEST METHODS FOR EVALUATING SOLID WASTES".

APPROVED BY: COMPLIANCE DEPARTMENT

PEÑUELAS VALLEY LANDFILL, INC. WASTE MANAGEMENT DE PUERTO RICO
Aprobado por
Departamento de Cumplimiento

NON - HAZARDOUS WASTE TRANSPORTATION/ACCEPTANCE DOCUMENT

DATE

TO:
PEÑUELAS VALLEY LANDFILL
Carr. 385 KM 4.5 Barrio Tallaboa
Peñuelas, Puerto Rico 00624
1-787-836-3535
FACILITY PERMIT NO. **IDF-57-0020**

FROM:
U.S. NAVY, NAVFAC ATLANTIC
FORMER NASD
VIEQUES ISLAND, PUERTO RICO

P.O. NO.

No. of Units & Container Type	DESCRIPTION AND CLASSIFICATION OF WASTE MATERIAL	Waste Profile Sheet Code	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
41 drms	NOT AN US DOT REGULATED MATERIAL.		2,255 gals			
	NOT AN US EPA HAZARDOUS MATERIAL.					
	(CONTAINS WATER)(40 CFR AND 49 CFR)					
	APPROVAL#1310-306-6368					

GENERATOR'S CERTIFICATION: This is to certify that the above named materials are properly classified, described, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation, U.S. EPA and the Commonwealth of P.R. The waste described above were consigned to the Transporter named. The Treatment, Storage or Disposal Facility can and will accept the shipment of waste, and has a valid permit to do so. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE	TITLE: Env. Eng.	DATE SHIPPED: 04 (MO.) 28 (DAY) 06 (YR.)	EXPECTED ARRIVAL DATE: 05 (MO.) 02 (DAY) 06 (YR.)
TRANSPORTER SIGNATURE: Joel Alvarez González	COMPANY NAME: JUAN E. HERNANDEZ	VEHICLE ID. NO.: RP-9305	DATE RECEIVED: 05 (MO.) 02 (DAY) 06 (YR.)
FACILITY SIGNATURE			DATE RECEIVED: 05 (MO.) 02 (DAY) 06 (YR.)

NON - HAZARDOUS WASTE TRANSPORTATION/ACCEPTANCE DOCUMENT

DATE

TO:
PEÑUELAS VALLEY LANDFILL
Carr. 385 KM 4.5 Barrio Tallaboa
Peñuelas, Puerto Rico 00624
1-787-836-3535
FACILITY PERMIT NO. IDF-57-0020

FROM:
U.S. Navy, NAVFAC Atlantic
Former NASD
Vieques Island, Puerto Rico

P.O. NO.

No. of Units & Container Type	DESCRIPTION AND CLASSIFICATION OF WASTE MATERIAL	Waste Profile Sheet Code	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
22 dms	NOT AN US DOT REGULATED MATERIAL,		9,900 lbs			
	NOT AN US EPA HAZARDOUS MATERIAL,					
	(CONTAINS SOIL) (40 CFR AND 49 CFR)					
	APPROVAL#1310-306-6367					

GENERATOR'S CERTIFICATION: This is to certify that the above named materials are properly classified, described, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation, U.S. EPA and the Commonwealth of P.R. The waste described above were consigned to the Transporter named. The Treatment, Storage or Disposal Facility can and will accept the shipment of waste, and has a valid permit to do so. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE	TITLE: Env Eng	DATE SHIPPED: 04 29 06 (MO. DAY YR.)	EXPECTED ARRIVAL DATE: 05 (MO. DAY YR.)
TRANSPORTER SIGNATURE: José Alberto González	COMPANY NAME: JUAN E. HERNANDEZ	VEHICLE ID. NO.: RP-9305	DATE RECEIVED: 05 (MO. DAY YR.)
FACILITY SIGNATURE			DATE RECEIVED: 05 (MO. DAY YR.)

Appendix K
Habitat Characterization Report

HABITAT CHARACTERIZATION OF SOLID WASTE MANAGEMENT UNITS (SWMU) 4, SWMU 5, SWMU 6, SWMU 7, AND THE PUBLIC WORKS AREA NAVAL AMMUNITION SUPPORT (NASD) DETACHMENT, VIEQUES ISLAND, PUERTO RICO

Prepared for:

CH2M Hill

Prepared by:

Dr. Dan L. Wilkinson, Rudi Reinecke, Melissa Lopez-Rodriguez, Manuel Figueroa-Pagan, and Donna DeYoung

Geo-Marine, Inc.
550 E. 15th Street
Plano, Texas 75074

August 29, 2000

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INTRODUCTION

As part of a Resource Conservation and Recovery Act (RCRA) facility investigation at Vieques, ecological risk assessments were conducted at 10 solid waste management unit (SWMU) sites. A habitat characterization was conducted at each SWMU in order to determine the presence of plant and animal species and to determine whether preferred habitat was present for any federally endangered or threatened plant and animal species.

SITE LOCATION

The Naval Ammunition Support Department (NASD) Vieques (approximately 8,265 acres) is operated by the Weapons Department of Naval Station Roosevelt Roads and is located on the western end of Vieques (Figure 1). This report covers 10 SWMU sites located at NASD Vieques (Figure 2). Four of the sites were separated geographically and were located in different plant communities. These sites, SWMU 4, SWMU 5, SWMU 6, and SWMU 7, are presented individually in this report. SWMU 4, an inactive Waste Explosive Open Burn/Detonation Range, is approximately 3 acres in size and is located on the western side of NASD. SWMU 5, IRFNA/MAF-4 Disposal Site, is located adjacent to magazine Building 422 and consists of a small ditch and ravine. SWMU 6, Mangrove Disposal Site, is located north of Laguna Kiani. SWMU 7, Quebrada Disposal Site, is approximately 5.0 acres in size and is located within a quebrada (drainage channel or ravine) located about 0.5 miles west of the NASD Public Works area.

Six of the SWMU sites (SWMU 10, SWMU 14, SWMU 15, AOC C, AOC E-UST, and AOC F-UIC) were located near each other and were potentially contaminated with similar debris; therefore, they were analyzed as one unit and are presented in the same section of this report. These six sites were all located in the NASD Public Works area.

METHODS

Vegetation communities were initially characterized into broad community types based on color signatures from true-color aerial photographs (November 4, 1999: scale, RF=1:6000). Different vegetation communities were delineated based on species composition and structure by viewing magnified stereo pairs of aerial photography. The community types were marked on overlying acetate for use in the field (May 15-19, 2000). Personnel walked transects through each of these SWMU to:

1. verify that the community types were identified and delineated correctly from the true color aerial photography;
2. identify the species composition of the dominant vegetation;
3. identify the wildlife species present in the SWMU sites;

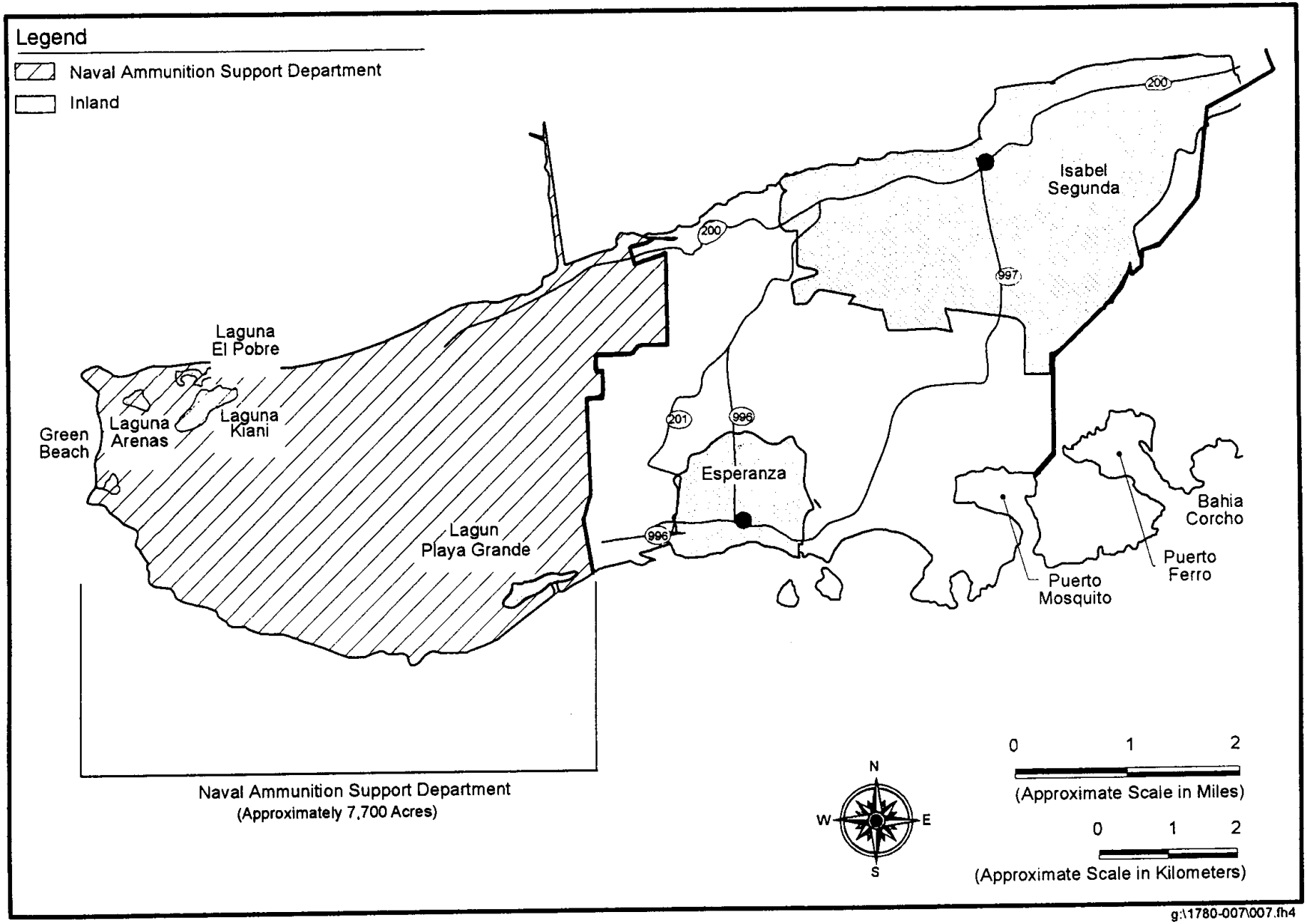

Figure 1. NASD Location.

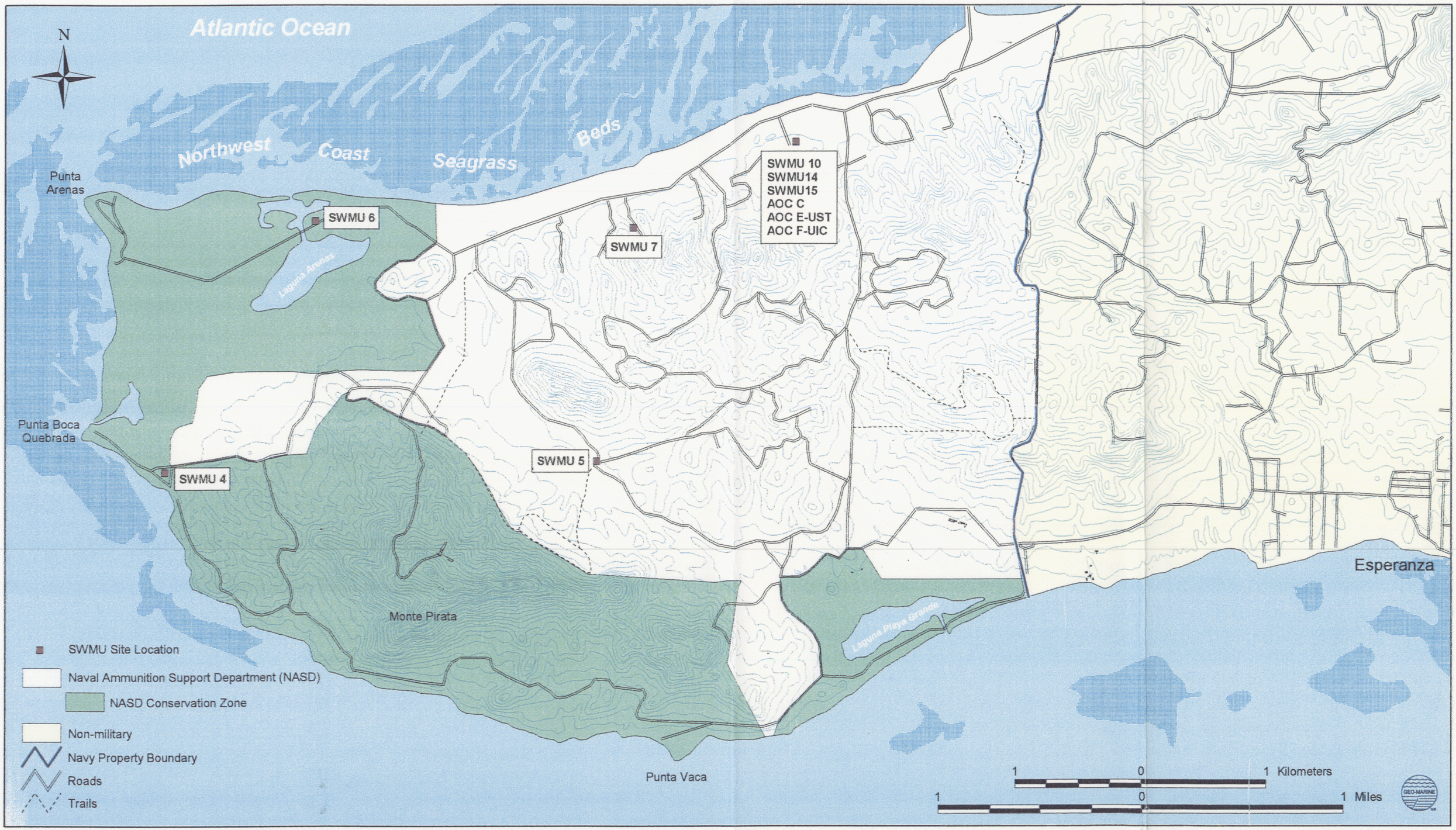

Figure 2. Solid Waste Management Unit (SWMU) Locations in the Naval Ammunition Support Department (NASD) Vieques Island, Puerto Rico.

4. identify habitat that may potentially support federally designated threatened and endangered species within and contiguous to each SWMU; and
5. identify any obvious impacts potentially related to previous waste management activities.

The vegetation communities were verified by walking surveys through each community type previously identified with aerial photography. Most species were identified in the field; however, some specimens were collected for identification using reference books (Liogier 1985, 1988, 1994, 1995, 1997; Little and Wadsworth 1964; Little et al. 1964; and Acevedo-Rodriguez 1996) and herbarium specimens. Relative dominance and species structure were characterized from the visual observations within each community type and SWMU.

Wildlife species residing within or utilizing each SWMU habitat, and wildlife habitat were identified during the vegetation field surveys. A wildlife biologist characterized the habitats and determined the types of wildlife that could potentially inhabit the plant communities or SWMU sites. Any wildlife species that were observed were identified in the field with the use of 8 x 40 binoculars and reference guides (Raffaele 1989 and Raffaele et al 1998).

Fourteen federally listed species are known to occur or have the potential to occur on NASD Vieques (Table 1). Prior to conducting the fieldwork, a literature search was conducted for each federally protected species. During the May 15-19 surveys, biologists walked transects through each site and identified any federally protected species seen and noted the presence or absence of preferred habitat for the species.

Table 1

Federally Listed Species Occurring or Potentially Occurring at NASD Vieques

Scientific Name **(Common Name)**	**Federal Status**
Plants	
Chaemacrista glandulosa var. *mirabilis* (Herb)	Endangered
Stahlia monosperma (Cobana negra)	Threatened
Calyptranthes thomasiana (Tree)	Endangered
Eugenia woodburyana (Evergreen tree)	Endangered
Reptiles and Amphibians	
Chelonia mydas (Green sea turtle)	Threatened
Dermochelys coriacea (Leatherback sea turtle)	Endangered
Eretmochelys imbricata (Hawksbill sea turtle)	Endangered
Birds	
*Falco peregrinus tundrius (*Arctic peregrine)	Threatened
*Pelecanus occidentalis occidentalis (*Brown pelican)	Endangered
Sterna dougalli dougalli (Roseate tern)	Endangered
Mammals	
Physeter macrocephalus (Sperm whale)	Endangered
Balaenoptera physalus (Fin whale)	Endangered
Megaptera novaeangliae (Humpback whale)	Endangered
*Trichechas manatus (*West Indian manatee)	Endangered

Source: NASD 1996

Past management activities at the SWMU sites may have potentially impacted the current vegetation communities. During the field surveys the biologists made visual observations to characterize the health of the plants in the SWMU sites. Indications of altered plant communities include: chlorotic leaves, epinasty (deformities of leaves and stems), patches of altered plant growth, absence of plants (bare ground), and changes in species composition. To determine if the SWMU sites contained altered plant communities, a nearby representative site was selected as a control. When altered plant communities were identified, the biologists made an effort to determine and record the probable cause (i.e., chemical, soil compaction, natural causes, etc.).

In addition to identification of wildlife in the field, existing literature sources were used to identify any additional species that may have occurred on the SWMU sites but were not observed. Most of the wildlife occurring in the area is bird species and these are presented in Appendix A. Species information and field data was used to generate a simplified food web for the sites. A food web is an interlocking pattern of several to many food chains that is helpful in determining ecosystem processes including those that may occur when a contaminant is introduced to a system.

RESULTS AND DISCUSSION

SWMU 4

Vegetation Community Description

SWMU 4, an inactive Waste Explosive Open Burn/Detonation Range, is approximately 3 acres in size and is located on the western side of NASD. The area is located on a hill that is completely surrounded by dirt roads (Figure 3). A high density of thorny shrubs dominates species composition on the site. Many areas of the site had both a shrub and a herbaceous stratum. With the two strata combined, the canopy cover was approximately 75-95 percent. Dominant shrubs identified on the site included *Acacia farnenciana, Prosopis glandulosa, Pithlcellobium dulce,* and *Zanthoxylum brevipes*. Another shrub that was present throughout the site and was dominant in some areas was *Leucaena leucocephala*. In certain areas there was an herbaceous stratum that was dominated by *Bothriochloa ischaemum, Commelina erecta, C. diffusa,* and *Lasiacis divaricata*. Vegetation photos are presented in Figures 4 and 5. The vegetation observed at SWMU 4 is presented in Table 2.

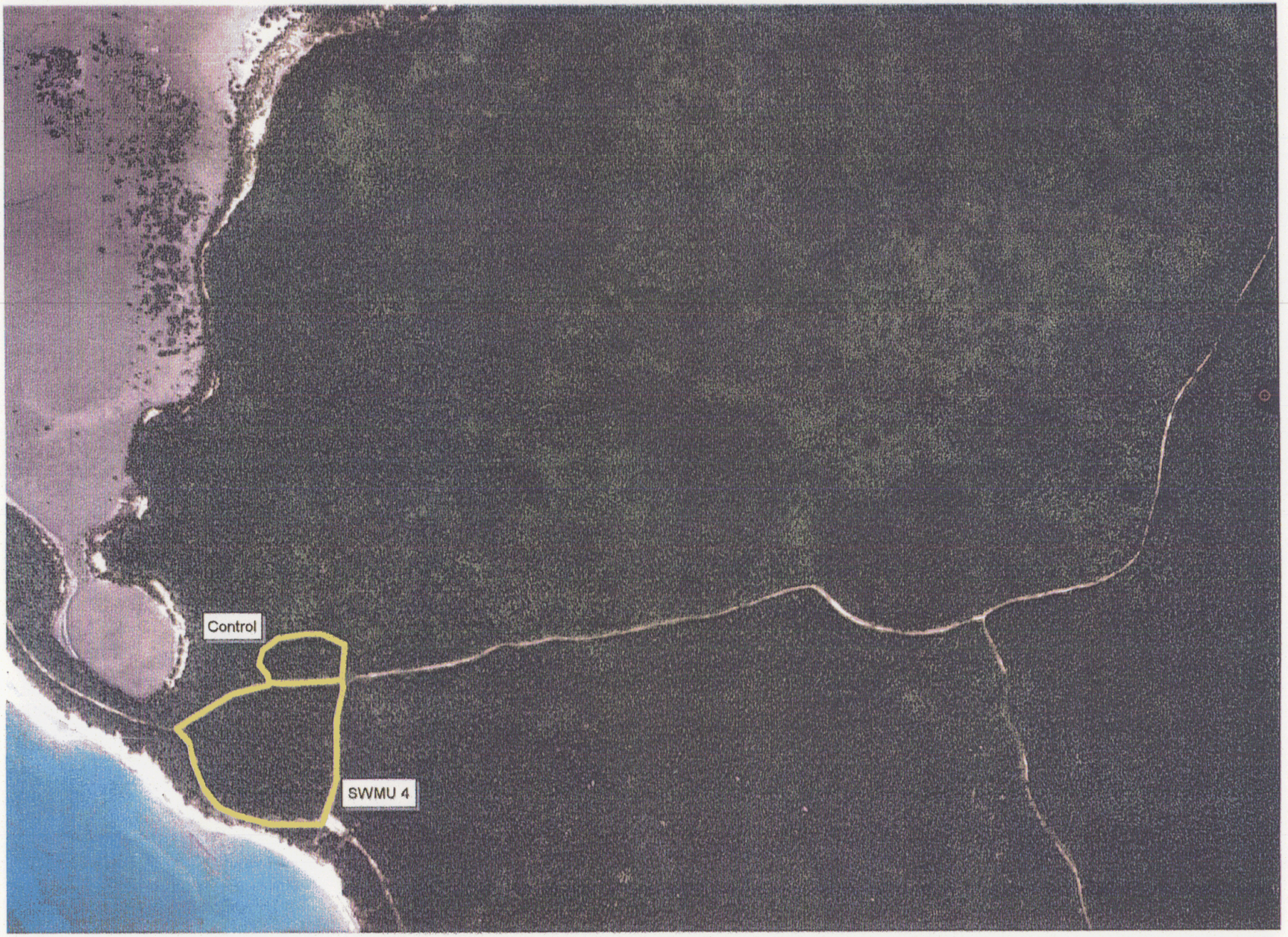

Figure 3. Location of SWMU 4 and control site at NASD Vieques Island, Puerto Rico.

Figure 4. SWMU 4, typical vegetation at the site.

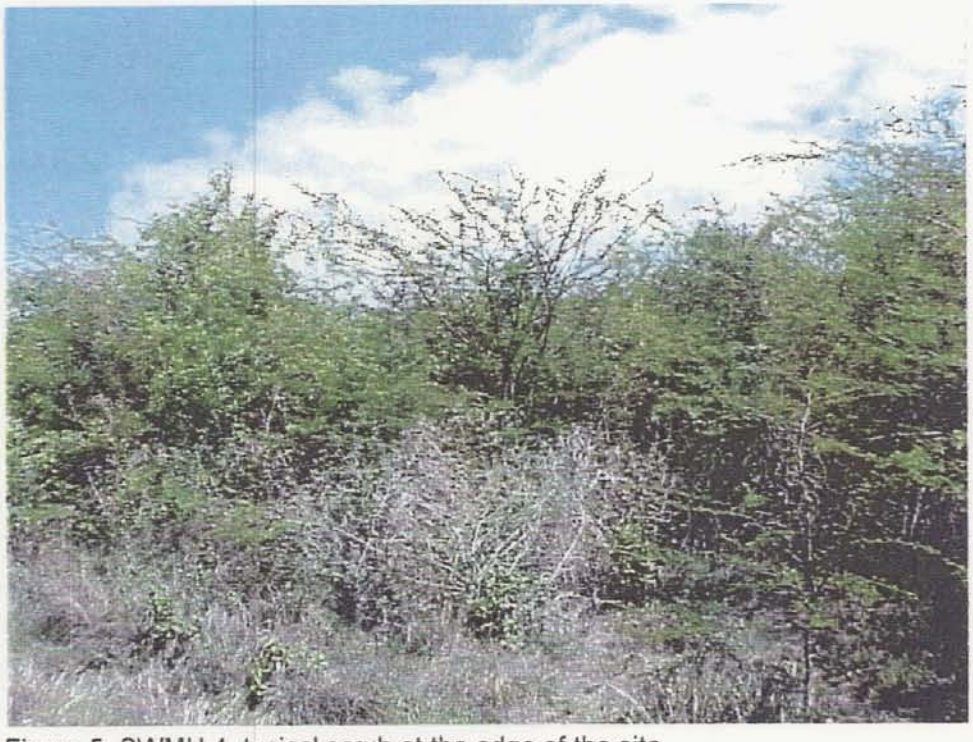

Figure 5. SWMU 4, typical scrub at the edge of the site

Table 2

Vegetation Observed at SWMU 4

Common Name	Scientific Name	Stratum
Aroma, sweet acacia	*Acacia farnenciana*	S
None	*Acalypha poiretti*	H
Kitty katies, Tibet tree	*Albizia lebbek*	T
Bastard mahogany	*Andira inermis*	T
None	*Bothriochloa ischaemum*	H
Turpentine tree, almácigo	*Bursera simaruba*	T
Papaya	*Carica papaya*	S
Palo Blanco	*Casearia gianensis*	T
Trumpet tree	*Cecropia shreberiana*	T
Wist vine	*Centrosema virginianum*	V
Lime bush	*Citrus aurantifolia*	S
None	*Citrus lima*	T
French grass	*Commelina* spp.	H
Purple allamanda	*Cryptostegia grandiflora*	S
Brazilette, brizzlet, wild cherry	*Erythroxylum brevipes*	S
Wild coffee	*Faramea occidentalis*	S
Bastard cedar	*Guazuma ulmifolia*	T
Sea pusley	*Heliotropium curassavicum*	H
None	*Ipomea* sp.	V
Jazmin oloroso	*Jasminum fluminense*	V
Belly ache bush	*Jatropha gossypifolia*	S
Belly ache bush, body catta	*Jatropha gossypifolia*	S
None	*Lasiacis divaricata*	H
Rabbit food, hollow stalk	*Leonotis nepetifolia*	H
Tan tan, tanty, wild tamarind	*Leucaena leucocephala*	S
Beach milk vine	*Matelea maritime*	V
Cundeamor, jumbie pumpkin	*Momordica charantia*	V
None	*Oceoclades maculata*	H
Passion fruit, parcha	*Passiflora* sp.	V
Guamá americano, guamuchil	*Pithlcellobium dulce*	S
Mesquite	*Prosopis glandulosa*	S
Christmas tree, tintillo	*Randia aculeata*	S
None	*Rhynchosia reticulata*	V
None	*Stigmaphyllon periplocifolium*	V
Tamarind	*Tamarindus indica*	T
Tamarind	*Tamarindus indica*	T
Basket wiss, hoop vine	*Trichostygma octandrum*	S
Yerba socialista, socialist herb	*Vernonia cinera*	H
Yellow-sanders, aceitillo	*Zanthoxylum brevipes*	S
Yuyubi	*Ziziphus mauritiana*	T

S = shrub
T = tree
H = herbaceous
V = vine

Plant Community Health

Although some debris was found at SWMU 4, there was little evidence of past military activities. There were some indications from openings in the plant communities and from worn trails that horses (*Equus caballus*) occasionally graze throughout the site. No other plant stresses were observed in SWMU 4. The control site for SWMU 4 was located adjacent to the northern boundary of the SWMU 4 site. Canopy openings and trails made by horses were also observed in the control.

Wildlife Description

During the short duration of wildlife surveys conducted on this site, numerous wildlife species were observed utilizing the habitat of this site. Although no individual horses were observed within the site, there was sufficient evidence to indicate that horses use this habitat. The bird species observed at this habitat type consisted of coastal forest and shore species due to the close proximity to ocean. Numerous lizards (*Anolis* species) were also identified. There was no evidence that the SWMU site had an impact on the wildlife diversity or its habitat. Wildlife that was observed at SWMU 4 is presented in Table 3.

Table 3
Wildlife Observed at SWMU 4

English Name	Scientific Name	Local Name
Mammals		
Horse	*Equus caballus*	Horse, caballo
Mongoose	*Herpestes auropunctatus*	Not known
Reptiles and Amphibians		
Lizards	*Anolis* sp.	Not known
Birds		
Bananaquit	*Coereba flaveola*	Reinita Común
Common-ground Dove	*Columbina passerina*	Rolita
Smooth-billed Ani	*Crotophaga ani*	Garrapatero (Judio)
Adelaidae Warbler	*Dendroica adelaidae*	Reinita Mariposera
Yellow Warbler	*Dendroica petechia*	Canario de Mangle
Pearly-eyed Thrasher	*Margarops fuscatus*	Zorzal Pardo
Greater Antillean Grackle	*Quiscalus niger*	Mozambique (Chango)
Puerto Rican Lizard Cuckoo	*Saurothera vieilloti*	Pájaro Bobo Mayor
Loggerhead Kingbird	*Tyrannus caudifasciatus*	Clérigo
Gray Kingbird	*Tyrannus dominicensis*	Pitirre

Protected Species

Stahlia monosperma (Cobana negra), a federally threatened tree, has been found between the boundary of black mangrove (*Avicennia germinans*) communities, salt flats and the upland communities at NASD Vieques. This species is also known to occur in coastal forests of southeastern Puerto Rico (Little and Wadsworth 1964). The preferred habitat for *Stahlia monosperma* was not present at this site.

Federally threatened and endangered sea turtles such as the Green (*Chelonia mydas*), Hawksbill (*Eretmochelys imbricata*), and Leatherback sea turtles (*Dermochelys coriacea*), and endangered marine mammals such as the West Indian manatee (*Trichechas manatus*), Sperm whale (*Physeter macrocephalus*), Fin whale (*Balaenoptera physalus*), and Humpback whale (*Megaptera novaeangliae*) would not occur at this site because they require marine habitats.

The Artic peregrine falcon (*Falco peregrinus tundrius*) has been observed nearby at NAVSTA Roosevelt Roads (U.S. Navy 1998b). This species utilizes open grassland areas for potential feeding areas. This type of habitat was not present at or near this site.

Federally endangered marine birds such as the Brown pelican (*Pelecanus occidentalis occidentalis*) and the Roseate tern (*Sterna dougalli dougallii*) would most likely not occur at this terrestrial site. During these surveys, Brown pelicans were observed flying over the adjacent marine habitat, but not at SWMU 4.

Food Web

The information in a food web is very important when considering the potential for contaminants existing in the ecosystem. Many contaminants are passed from one trophic level to the next. A contaminant at the soil surface goes through a different process than a contaminant that has leached into the soil. The surface contaminant may be ingested by a decomposer such as a hermit crab and then passed on to the secondary consumer (i.e., a carnivorous bird). Leached contaminates are picked up by the primary producers and are then passed upwards in the food chain.

Figure 6 presents a generalized food web for the forested and herbaceous community types found at all SWMU sites except SWMU 6. The abundance within each of the food groups is represented by the size of their polygon in the figure. Dominant species are listed in each of the food groups except for plants, which were provided previously in this section.

SWMU 5

Vegetation Community Description

SWMU 5, IRFNA/MAF-4 Disposal Site, is located adjacent to magazine Building 422 and consists of a small ditch and ravine (Figure 7). There were two plant communities present at this site – the maintained grasslands of the small ditch and the non-maintained large ravine (quebrada). This ravine occurs as a long depression that was created during the construction of a road that leads to additional magazine buildings (243-249). The elevated road was blocking the natural water flow and was creating a hydrophytic plant community.

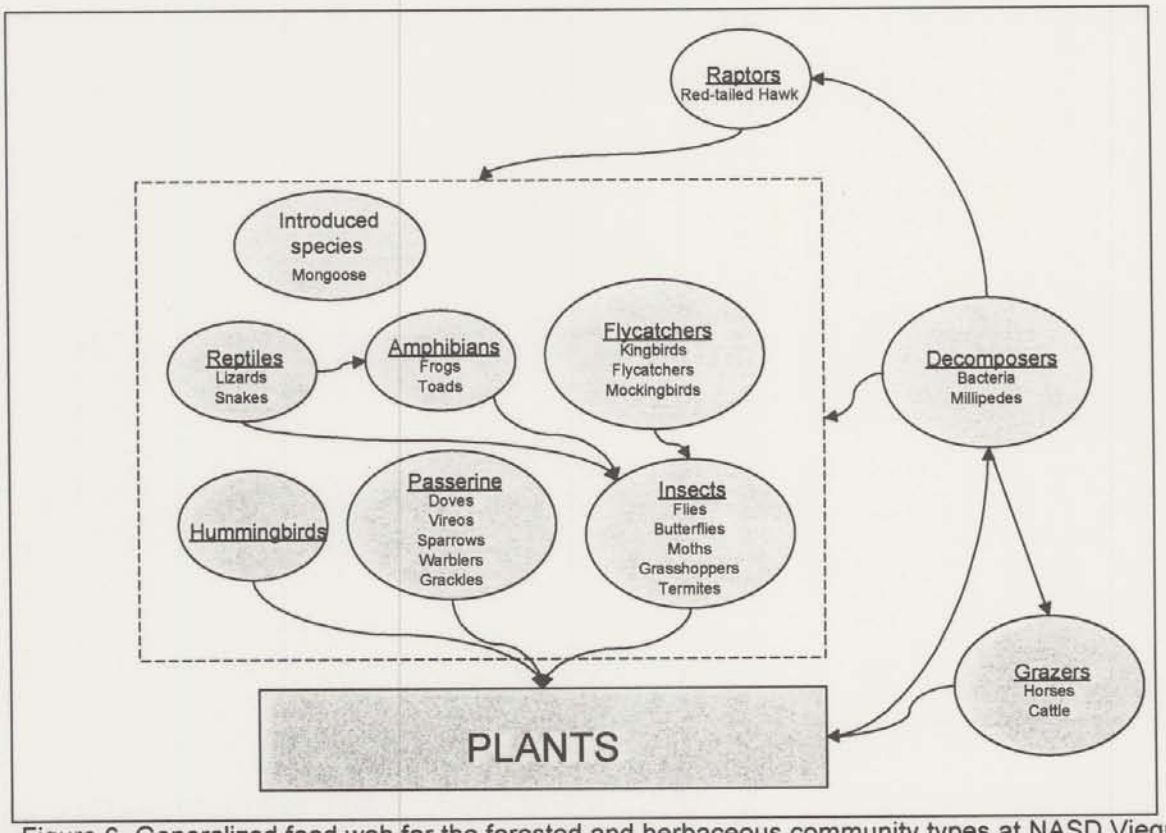

Figure 6. Generalized food web for the forested and herbaceous community types at NASD Vieques.

The non-maintained area consisting of a patchy canopy of various trees, shrubs, and herbaceous ground cover had 100 percent cover. *Eriochloa polystachya, Leonotis nepetifolia, Panicum maximum,* and *Commelina erecta* dominated the herbaceous canopy. Shrubs were mostly found along the hillside edges; these included *Randia aculeata, Erythroxylum brevipes, Acacia farnenciana,* and *Leucaena leucocephala*. There were a few trees (*Bursera simaruba* and *Tamarindus indica*) found throughout the site.

The small drainage ditch is located within the area where regular grounds maintenance occurs around Magazine Building 422. A regular disturbance by mowing has created a low-growing herbaceous community. Grasses dominated this drainage ditch and included *Bothriochloa ischaemum, Sporobolus indicus, Cynodon dactylon,* and *Scleria* sp. Vegetation photos are presented in Figures 8 and 9. The vegetation observed at SWMU 5 is presented in Table 4

Figure 7. Location of SWMU 5 and control site at NASD Vieques Island, Puerto Rico.

Figure 8. SWMU 5, maintained area.

Figure 9. SWMU 5, shrubby area within site.

Table 4

Vegetation Observed at SWMU 5

Common Name	Scientific Name	Stratum
Aroma, sweet acacia	*Acacia farnenciana*	S
Better man better	*Achyranthes aspera*	H
Bastard mahogany, dog almond	*Andira inermis*	T
Cralita, coral vine, Mexican creeper	*Antigonon leptopus*	V
None	*Bothriochloa ischaemum*	H
Almácigo, turpentine-tree	*Bursera simaruba*	T
Pataka	*Cissampelos pareira*	No data
Palo blanco	*Casearia gianensis*	No data
Cafeillo Cimarron	*Casearia sylvestris*	No data
Wist vine	*Centrosema virginianum*	V
French grass	*Commelina erecta*	H
Bermuda grass	*Cynodon dactylon*	H
None	*Eriochloa polystachya*	H
Brazilette, brizzlet, wild cherry	*Erythroxylum brevipes*	S
Jazmin oloroso	*Jasminum fluminense*	V
Sage, cariaquillo	*Lantana* sp.	S
Quinino del pasto, lion's ear	*Leonotis nepetifolia*	H
Tan tan, tanty, wild tamarind	*Leucaena leucocephala*	S
Cundeamor	*Momordica charantia*	V
None	*Panicum maximum*	H
Parcha, passion fruit	*Passiflora edulis*	V
Indigo berry, ink berry	*Passiflora suberosa*	V
Christmas tree, tintillo, ink berry	*Randia aculeata*	S
Licorice, rain tree	*Samanea saman*	T
None	*Scleria* sp.	H
White button	*Spermacocce verticilata*	H
None	*Sporobolus indicus*	H
Chichery grape	*Tournefortia hirsutissima*	V
Tamarind	*Tamarindus indica*	T
Baske wiss	*Trichostigma octrandrum*	S,V
Aprín, India jujube	*Ziziphus mauritiana*	T

S = shrub
T = tree
H = herbaceous
V = vine

Plant Community Health

It was difficult to select a control for this community due to the effects of anthropomorphic disturbances (previous road construction) on the existing topography. The selected control was split into two areas so that an adequate comparison of the site could be accomplished. The non-maintained control area was adjacent to the southern border of the SWMU 5 site. The maintained control area was adjacent to the northern border of the maintained portion of SWMU 5. There were no differences identified in the vegetation communities with the exception of the drainage ditch that had some soil disturbance from recent soil removal during which some of the vegetation was trampled or cut.

Two dead animals were found near the site. One of the remains was the skeleton of a bovine species that died some time ago. The other animal was a horse that looked to have died more recently (less than five

days old). The cause of mortality of these animals is unknown, but they probably died due to natural causes and their presence was most likely coincidental.

Wildlife Description

During the short duration of wildlife surveys conducted on this site, numerous wildlife species were observed utilizing the habitat of this site. Although no horses were observed within the site, there was sufficient evidence to indicate that they frequent this habitat. The bird species observed at this habitat type consisted of coastal forest species (Table 5). Numerous lizards were also identified at this site. There was no evidence that the SWMU site had an impact on the wildlife or its habitat.

Table 5
Wildlife Observed at SWMU 5

English Name	Scientific Name	Local Name
Mammals		
Horse	*Equus caballus*	Horse, caballo
Mongoose	*Herpestes auropunctatus*	Not known
Reptiles and Amphibians		
Lizards	*Anolis sp.*	Not known
Birds		
Bananaquit	*Coereba flaveola*	Reinita Común
White-crowned Dove	*Columba leucocephala*	Paloma Cabeciblanca
Adelaidae Warbler	*Dendroica adelaidae*	Reinita Mariposera
Puerto Rican Lizard Cuckoo	*Saurothera vieilloti*	Pájaro Bobo Mayor
Gray Kingbird	*Tyrannus dominicensis*	Pitirre
Zenaida Dove	*Zenaida aurita*	Tórtola Cardosantera

Protected Species

There were no federally protected species or preferred habitat observed at this site. Terrestrial forested plant community dominated the sites and is not preferred habitat for any of the species.

Food Web

Figure 6 presents a generalized food web for the forested community type found at this SWMU site.

SWMU 6

Vegetation Community Description

SWMU 6, Mangrove Disposal Site, consists of black and red mangrove (*Rhizophora mangle*) communities located between Laguna Kiani and the Caribbean Sea (Figure 10). These communities were separated by position within the landscape. The red mangroves were located near open water where there is saturation/inundation of seawater while the black mangroves were located on higher land.

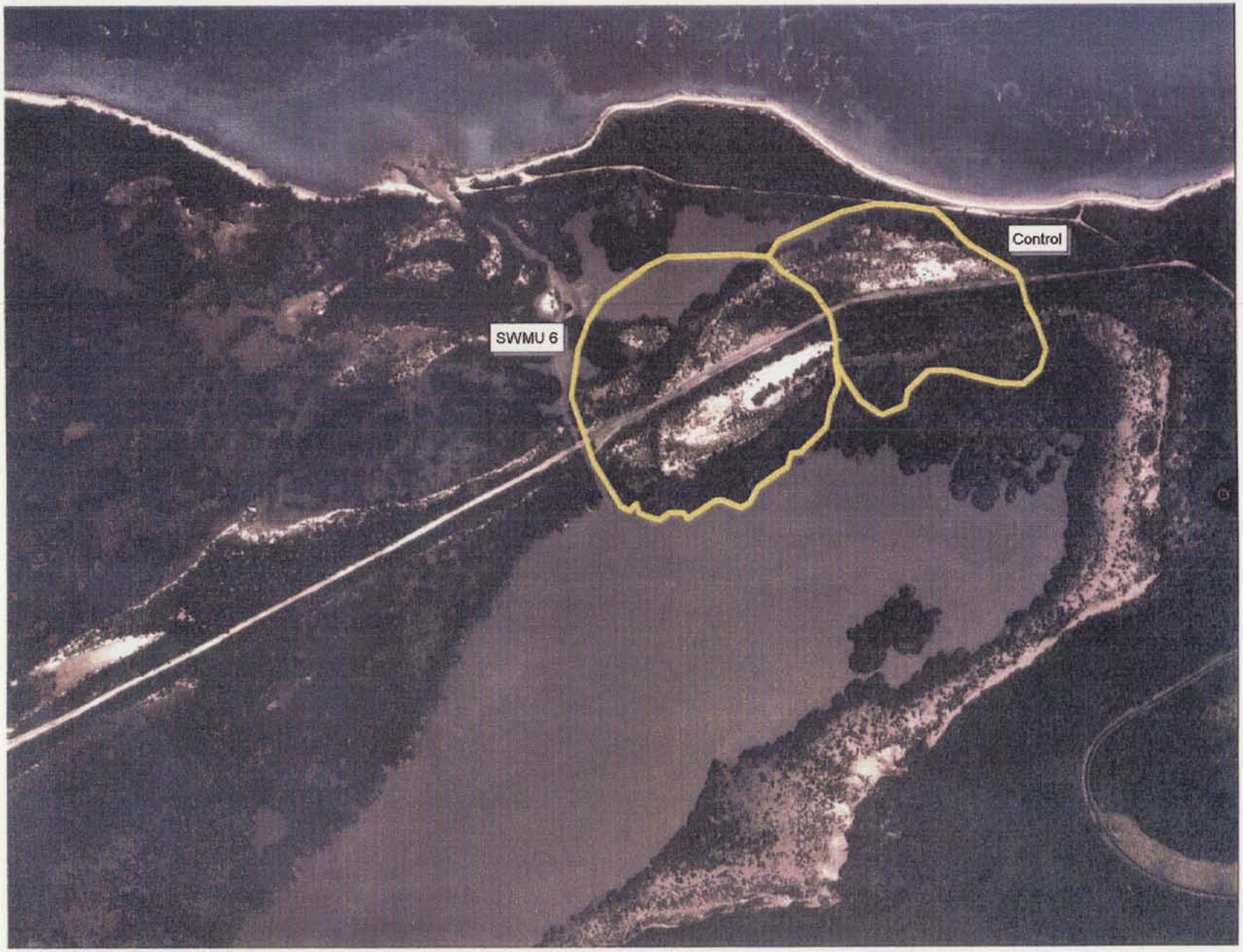

Figure 10. Location of SWMU 6 and control site at NASD Vieques Island, Puerto Rico.

The red mangrove community was sparsely vegetated (approximately 25 percent cover) with large pools of open water. Nearly all vegetation included short shrubs of red mangrove; no other vegetation was observed in this community. Numerous red mangrove seedlings were also observed in this site.

The black mangrove community also had sparse vegetation cover; there was approximately 25 percent cover. Plants were predominately short shrubs (8-15 feet); however, there were some patches of herbaceous vegetation located on higher topography. Black mangrove dominated the shrub vegetation, with *Laguncularia racemosa*, *Prosopis glandulosa*, and *Acacia farnesiana* also present. The herbaceous vegetation was dominated by *Sporobolus virginicus*. *Heliotropium curassavicum*, *Sesuvium portulacastrum*, and *Blutaparon vermiculare* were also identified. Vegetation photos are presented in Figures 11 and 12. The vegetation observed at SWMU 6 is presented in Table 6.

Plant Community Health

A control site was selected along the eastern boundary of the SWMU 6 site for plant community comparisons. These sites (control vs. SWMU 6) were essentially the same. The only difference was that the open areas of the black mangrove community in SWMU 6 were covered in debris. There were no observed stresses in the plant communities.

Wildlife Description

During the short duration of wildlife surveys conducted on this site, numerous wildlife species such as birds and lizards were observed utilizing the habitat of this site (Table 7). The mangrove communities had significant crab activity. The red mangrove community, with more water present, had more crab holes than the black mangrove. There was no evidence that the SWMU site had an impact on the wildlife or habitat.

Figure 11. SWMU 6, typical vegetation, mangroves

Figure 12. SWMU 6, typical vegetation, drier area.

Table 6

Vegetation Observed at SWMU 6

Common Name	Scientific Name	Stratum
Aroma, sweet acacia	*Acacia farnesiana*	S
Black mangrove	*Avicennia germinans*	S
Bay flower	*Blutaparon vermiculare*	H
None	*Croton discolor*	S
Purple allamanda	*Cryptostegia grandiflora*	S
None	*Heliotropium curassavicum*	H
None	*Jacquinia arborea*	S
None	*Jasminum fluminense*	V
Belly ache bush, body catta	*Jatropha gossypifolia*	S
White mangrove	*Laguncularia racemosa*	S
Sage, cariaquillo	*Lantana* sp.	S
None	*Mikania cordifolia*	V
Mesquite	*Prosopis glandulosa*	S
Tintillo, Christmas tree	*Randia aculeata*	S
Red mangrove	*Rhizophora mangle*	S
Bay flower, sea purslane, sea pusley	*Sesuvium portulacastrum*	H
None	*Sporobolus virginicus*	H
None	*Stigmaphyllon periplocifolium*	V
White cedar, pink cedar	*Tabebuia heterophylla*	T
Emajaguilla, portiatree	*Thespesia populnea*	T

S = shrub
T = tree
H = herbaceous
V = vine

Table 7
Wildlife Observed at SWMU 6

English Name	Scientific Name	Local Name
Reptiles and Amphibians		
Lizards	*Anolis* sp.	Not known
Birds		
Green Heron	*Butorides virescens*	Martinete
Bananaquit	*Coereba flaveola*	Reinita Común
White-crowned Dove	*Columba leucocephala*	Paloma Cabeciblanca
Yellow Warbler	*Dendroica petechia*	Canario de Mangle
Common Moorhen	*Gallinula chloropus*	Gallareta Común
Pearly-eyed Thrasher	*Margarops fuscatus*	Zorzal Pardo
Zenaida Dove	*Zenaida aurita*	Tórtola Cardosantera

Protected Species

There were no federally protected species or preferred habitat observed at this site which was dominated by black and red mangrove communities.

The federally endangered tree *Stahlia monosperma* is known to occur in coastal forests of southeastern Puerto Rico (Little and Wadsworth 1964). One of the two known *Stahlia monosperma* populations is

located on the eastern boundary of Laguna Kiani which is fairly close to SWMU 6. No individuals of *Stahlia monosperma* were found at SWMU 6. Although *Stahlia monosperma* has been found at NASD Vieques (in the boundary between black mangrove communities, salt flats and the upland communities), the habitat at SWMU is a mixed mangrove and therefore not preferred habitat.

Brown pelicans and roseate terns, both federally endangered marine birds, would most likely not occur at the site, but have been found adjacent to the site at Laguna Kiani. During the surveys, brown pelicans were observed flying over the adjacent marine habitat, but not at SWMU 7.

Food Web

Figure 13 presents a generalized food web for the mangrove community type found at SWMU 6. The abundance within each of the food groups is represented by the size of their polygon in the figure. Dominant species are listed in each of the food groups except for plants, which were provided previously in this section.

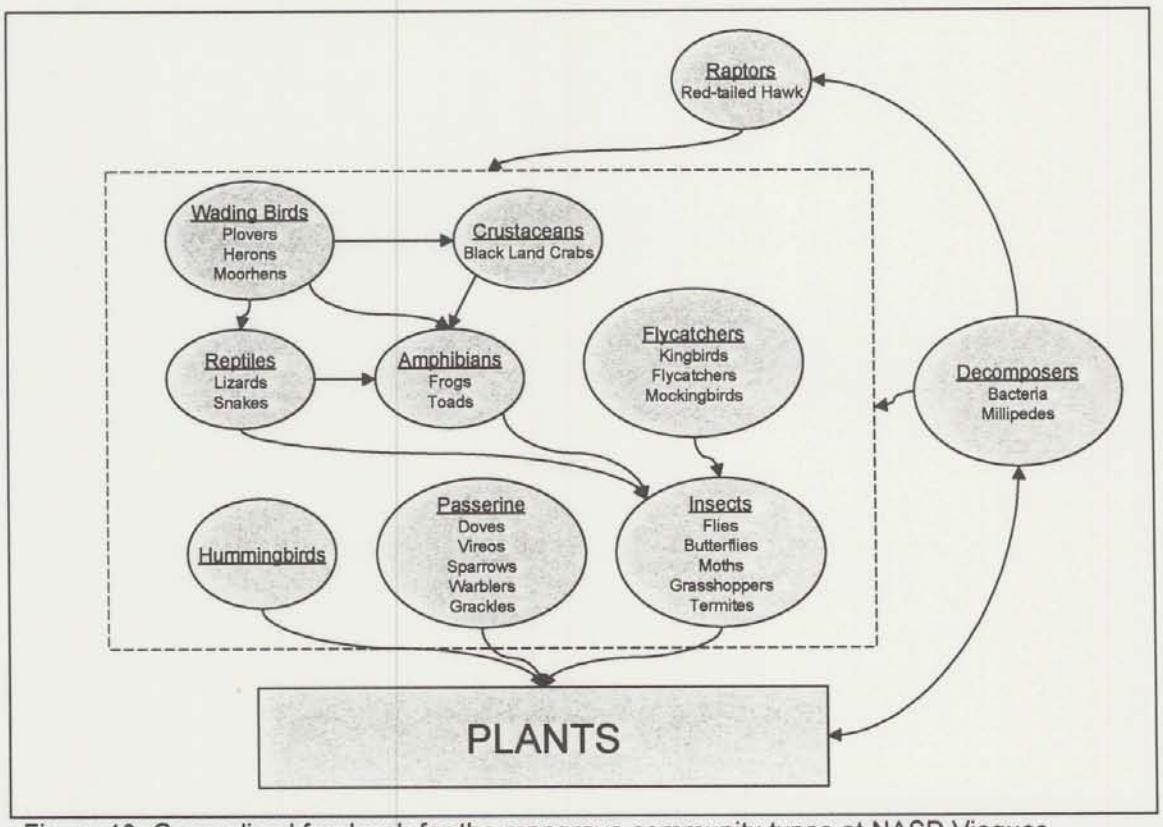

Figure 13. Generalized food web for the mangrove community types at NASD Vieques.

SWMU 7

Vegetation Community Description

SWMU 7, Quebrada Disposal Site, is located within a ravine approximately 0.5 miles west of the NASD Public Works area (Figure 14). This site had historically been used as a trash dump, but had been abandoned long enough for a shrub plant community to establish. This plant community had two canopy layers (shrub and tree), which provided nearly 100 percent canopy cover. The dense shrub and tree canopies provided little sunlight for an herbaceous canopy. *Lasiacis divaricata* was present in some areas. The dominant shrubs in this community consisted of *Leucaena leucocephala, Foresteria eggersiana,* and *Acacia retusa*. There was a lower density of trees than shrubs, but dominant tree species such as *Andira inermis* and *Cordia collococca* provided a significant contribution to the plant community. Vegetation photos are presented in Figures 15 and 16. The vegetation observed at SWMU 7 is presented in Table 8.

Table 8

Vegetation Observed at SWMU 7

Common Name	Scientific Name	Stratum
Catch and keep, white police	*Acacia retusa*	S
None	*Acacia westiana*	S
Bastard mahogany	*Andira inermis*	T
Palo blanco	*Casearia gianensis*	T
Pataka	*Cissampelos pareira*	V
Manjack, red manjack	*Cordia collococca*	T
Brazilette, brizzlet	*Erythroxylum brevipes*	S
Rocio, brizzlet	*Erthroxylum rotundifolium*	S
None	*Foresteria eggersiana*	S
Guaba,	*Inga vera*	T
None	*Ipomea* sp.	V
None	*Lasiacis divaricata*	H
Quinino del pasto, lion's ear	*Leonotis nepetifolia*	H
Zarcilla, tan tan, wild tamarind	*Leucaena leucocephala*	S
Congo root	*Petiveria alliacea*	SS
Black wattle	*Piper amalago*	S
Prickly mampoo	*Pisonia aculeata*	V/S
Christmas tree, tintillo	*Randia aculeata*	S
Cat's blood	*Rivina humilis*	H,S
None	*Securidaca virgata*	S
Basket wiss	*Serjania polyphylla*	V
Black hoopwood	*Trichostigma octrandrum*	T
Bran nettle, creeping cowitch	*Tragia volubilis*	H
Aceitillo, yellow-sanders	*Zanthoxylum monophyllum*	S
Yuyubi	*Ziziphus mauritiana*	T

S = shrub
T = tree
H = herbaceous
V = vine

Figure 14. Location of SWMU 7 and control site at NASD Vieques Island, Puerto Rico.

Figure 15. SWMU 7, typical vegetation

Figure 16. SWMU 7, vegetation located downstream

Plant Community Health

Despite a large amount of debris at the site, the plant community was very similar to the control. The control was located downstream of the site along the same ravine. The species composition and structure was similar between the two sites (control and SWMU 7). Additionally, no vegetation stresses were observed in SWMU 7.

Wildlife Description

During the short duration of wildlife surveys conducted on this site, numerous wildlife species were observed utilizing the habitat of this site. The bird species observed at this habitat type consisted of coastal forest and shore species due to the close proximity to Caribbean Sea (Table 9). Numerous lizards were also identified at this site. There was no evidence that the SWMU site had an impact on the wildlife or its habitat.

Table 9

Wildlife Observed at SWMU 7

English Name	Scientific Name	Local Name
Reptiles and Amphibians		
Lizards	*Anolis* sp.	Not known
Birds		
Red-tailed Hawk	*Buteo jamaicensis*	Guaraguao de Cola Roja
Bananaquit	*Coereba flaveola*	Reinita Común
Adelaidae Warbler	*Dendroica adelaidae*	Reinita Mariposera
Green-throated Carib	*Eulampis holosericeus*	Zumbador de Pecho Azul
Pearly-eyed Thrasher	*Margarops fuscatus*	Zorzal Pardo
Northern Mockingbird	*Mimus polyglottos*	Ruiseñor
Puerto Rican Lizard Cuckoo	*Saurothera vieilloti*	Pájaro Bobo Mayor
Louisiana Waterthrush	*Seiurus motacilla*	Pizpita de Rio
Loggerhead Kingbird	*Tyrannus caudifasciatus*	Clérigo
Gray Kingbird	*Tyrannus dominicensis*	Pitirre
White-winged Dove	*Zenaida asiatica*	Tórtola Aliblanca

Protected Species

There were no federally protected species or preferred habitat observed at this site. Terrestrial forested plant community dominated the sites, which is not preferred habitat for any of the species.

The federally endangered Brown pelican would most likely not occur at this terrestrial site. During the surveys Brown pelicans were observed flying over the adjacent marine habitat, but not at SWMU 7.

Food Web

Figure 6 presents a generalized food web for the forested community type found at this SWMU site.

AOC Sites, SWMU 10, SWMU 14, and SWMU 15

Vegetation Community Description

The SWMU 10, SWMU 14, SWMU 15, AOC C, AOC E-UST, and AOC F-UIC sites contained similar plant communities and were all located in the NASD Public Works area (Figure 17). The plant communities at these sites were dominated by herbaceous species due to grounds maintenance activities (mowing). A few shrubs with decumbent growth were present and there was approximately 70 to 85 percent ground cover at all the sites. The herbaceous plant community was dominated by several species, including: *Bothriochloa ishaemum, Digitaria ciliaris, Cynodon dactylon*, and *Commelina erecta.* Vegetation photos are presented in Figures 18 through 23. The vegetation observed at the NASP Public Works sites is presented in Table 10.

Plant Community Health

These sites have experienced regular disturbance from mowing that has resulted in a grassland community. Grounds maintenance is the primary factor affecting the species composition and structure of the sites. A control plot was selected within the Public Works area, southeast of SWMU 14.

There was no significant difference between any of the sites and the control. SWMU 10 had a greater abundance of *Digitaria ciliaris* and *Commelina erecta* than the control; however, this was most likely due to the shading effect of the associated buildings (both species are shade tolerant). AOC-C had a higher abundance of hydrophytic vegetation than the other sites because of the drainage ditches on the site. There was some surface disturbance (bare ground) at both AOC-E UST and AOC-F UIC due to the installation/maintenance of monitoring wells.

SWMU 15 was the only site that had evidence of stressed vegetation. There was a greater abundance of *Cynodon dactylon* growing at this site than other sites. *Cynodon dactylon* is an exotic and invasive grass species that can tolerate variable growing conditions. The presence of this species on any of these sites is not significant, due to the grounds maintenance. The decumbent growth form of this species indicates that this area had been compacted from heavy vehicles driving or parking on the site. The soil compaction may also limit the species diversity of the site. It appears that the site may have been a parking lot or vehicle staging area because some small patches of oil stained soil were observed in the south central portion of the site.

Wildlife Description

Wildlife observed at these sites is typical for developed areas on Vieques and is presented in Table 11. Two mammal species (horse and mongoose) were observed utilizing the sites. Numerous birds including

Figure 17. Location of SWMUs, AOCs, and control located in the NASD Public Works Area, Vieques Island, Puerto Rico.

Figure 18. SWMU 10, maintained area

Figure 19. SWMU 14 (wash rack to left) and SWMU 15 (right of light gravel area)

Figure 20. Control area southwest of SWMU 14.

Figure 21. AOC C, drainage looking North

Figure 22. AOC E-UST, wash rack

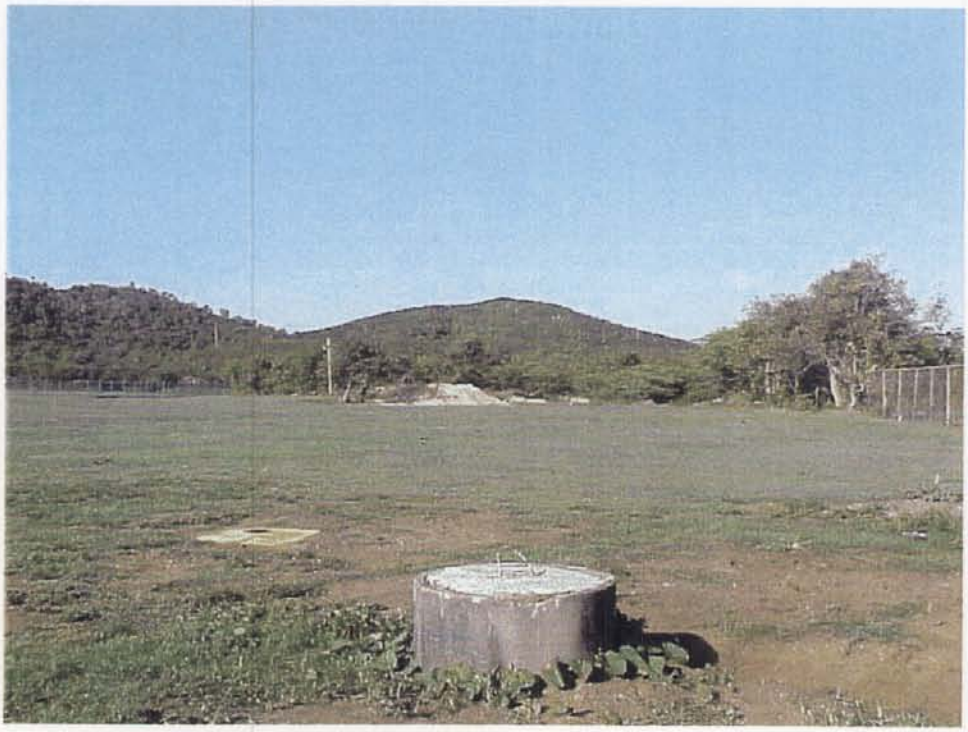

Figure 23. AOC F-UIC, showing bare areas

Table 10

Vegetation Observed at SWMU 10, SWMU 14, SWMU 15, AOC C, AOC E-UST, and AOC F-UIC

Common Name	Scientific Name	Stratum
Better man better	*Achyranthes aspera*	H or SS
Lumboo, whitey mary	*Amaranthus viridis*	H
None	*Bothriochloa ischaemum*	H
Sandbur, sand-spurs	*Cenchrus brownii*	H
Sandbur	*Cenchrus echinatus*	H
None	*Cissus sicyoides*	H
French grass	*Commelina erecta*	H
Bermuda grass	*Cynodon dactylon*	H
None	*Cyperus flexuosus*	H
None	*Datura inoxia*	H
Jimsonweed	*Datura stramonium*	H
Zarzabacoa común, tick trefoil	*Desmodium incanum*	H/S
None	*Digitaria ciliaris*	H
None	*Echinochloa colona*	H
Dutch grass	*Eleusine indica*	H
None	*Eragrostis amabilis*	H
Siempreviva silvestre	*Gomphrena serrata*	H
Willy vine	*Ipomea tiliacea*	H
None	*Ludwigia octovalus*	H
None	*Panicum diffisum*	H
None	*Paspalidium germinatum*	H
Jump up an' kiss me, purslane	*Portulaca oleracea*	H
Mesquite	*Prosopis glandulosa*	S
Christmas pride	*Ruellia tuberosa*	H
None	*Schrankia uncinata*	H
Bejuco de sopla, jaboncillo	*Securidaca virgata*	S
None	*Sida* sp.	H
None	*Sporobulus indicus*	H
Barrow, node weed	*Synedrella nodiflora*	H
White cedar, pink cedar	*Tabebuia heterophylla*	T
None	*Tridax procumbens*	H
Yerba socialista, socialist herb	*Vernonia cinerea*	H
None	*Vernonia lineria*	H

S = shrub
T = tree
H = herbaceous
V = vine

Table 11

Wildlife Observed at AOC Sites, SWMU 10, SWMU 14, and SWMU 15

English Name	Scientific Name	Local Name
Mammals		
Mongoose	*Herpestes auropunctatus*	Not known
Horse	*Equus Caballus*	Caballo
Birds		
Red-tailed Hawk	*Buteo jamaicensis*	Guaraguao de Cola Roja
Killdeer	*Charadrius vociferous*	Playero Sabanero
Common-ground Dove	*Columbina passerina*	Rolita
Scaley-naped Pigeon	*Columda squamosa*	Paloma Turca
Snowy Egret	*Egretta thula*	Garza Blanca
Puerto Rico Woodpecker	*Melanerpes portoricensis*	Carpintero de Puerto Rico
Northern Mockingbird	*Mimus polyglottos*	Ruiseñor
Greater Antillean Grackle	*Quiscalus niger*	Mozambique (Chango)
Gray Kingbird	*Tyrannus dominicensis*	Pitirre
Black-Whiskered Vireo	*Vireo altiloquus*	Bien-te-veo
White-winged Dove	*Zenaida asiatica*	Tórtola Aliblanca
Zenaida Dove	*Zenaida aurita*	Tórtola Cardosantera

the Red-tailed hawk (*Buteo jamaicensis*) and Killdeer (*Charadrius vociferous*) were present during the surveys and utilize the habitat for feeding and/or breeding.

Protected Species

There were no federally protected species or preferred habitat observed at this site. The sites were dominated by maintained herbaceous grassland, which is not preferred habitat for any of the species except the Arctic peregrine falcon.

The Arctic peregrine falcon has been observed nearby at NAVSTA Roosevelt Roads (U.S. Navy 1998b), and potential feeding habitat for these birds is present on the site. Arctic peregrine falcons prefer edges and open areas to hunt prey. Foraging habitat within and/or near the site is present since the majority of the area is open grassland.

Food Web

Figure 6 presents a generalized food web for the herbaceous community type found at this SWMU site.

CONCLUSION

The past activities at all to the SWMU sites presented in this report have some degree of impacts on their ecosystems. However, these impacts appear to be limited to changes in species composition based on physical disturbances. The construction of roads and grounds maintenance is the only disturbances that

have caused noticeable differences. Wildlife at these sites seems to be healthy and utilizing the habitats to their fullest extent. Through these surveys, no federally protected species were identified at these sites.

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APPENDIX A

Birds Potentially Occurring at NASD Vieques

Pied-billed grebe (*Podilymbus podiceps*)
Red-billed tropicbird (*Phaethon aethereus*)
Brown pelican (*Pelecanus occidentalis*)
Brown booby (*Sula leucogaster*)
Magnificent frigatebird (*Fregata magnificens*)
Great blue heron (*Ardea herodias*)
Louisiana heron (*Hydranassa tricolor*)
Snowy egret (*Egretta thula*)
Great egret (*Egretta alba*)
Striated heron (*Butorides striatus*)
Little blue heron (*Florida caerulea*)
Cattle egret (*Bubulcus ibis*)
Least bittern (*Ixobrychus exilis*)
Yellow-crowned night heron (*Nyctanassa violacea*)
Black-crowned night heron (*Nycticorax nycticorax*)
White-cheeked pintail (*Anas bahamensis*)
Blue-winged teal (*Anas discors*)
American widgeon (*Anas americana*)
Red-tailed hawk (*Buteo jamaicensis*)
Osprey (*Pandion haliaetus*)
Merlin (*Falcon columbarius*)
Clapper rail (*Rallus longirostris*)
American coot (*Fulica americana*)
Caribbean coot (*Fulica caribaea*)
Common gallinule (*Gallinula chloropus*)
Piping plover (Charadrius melodus)
Semipalmated plover (*Charadrius semipalmatus*)
Black-bellied plover (*Squatarola squatarola*)
Wilson's plover (*Charadrius wilsonia*)
Killdeer (*Charadrius vocifera*)
Ruddy turnstone (*Arenaria interpres*)
Black-necked stilt (*Himantopus himantopus*)
Whimbrel (*Numenius phaeopus*)
Spotted sandpiper (*Actitis macularia*)
Semipalmated sandpiper (*Calidris pusilla*)
Short-billed dowitcher (*Limnodromus griseus*)
Greater yellowlegs (*Tringa melanoleauca*)
Lesser yellowlegs (*Tringa flavipes*)
Willet (*Catoptrophorus semipalmatus*)
Stilt sandpiper (*Micropalama himantopus*)
Pectoral sandpiper (*Calidris melanotos*)
Laughing gull (*Larus atricilla*)
Royal tern (*Thalasseus maximus*)
Sandwich tern (*Thalasseus sandvicensis*)
Bridled tern (*Sterna anaethetus*)
Least tern (*Sterna albifrons*)
Brown noddy (*Anous stolidus*)
White-winged dove (*Zenaida asiatica*)
Zenaida dove (*Zenaida aurita*)
White-crowned pigeon (*Columba leucocephala*)
Mourning dove (*Zenaida macroura*)
Red-necked pigeon (*Columba squamosa*)
Common ground dove (*Columba passerina*)
Bridled quail dove (*Geotrygon mystacea*)

Birds Potentially Occurring at NASD Vieques (Continued)

Ruddy quail dove (*Geotrygon montana*)
Caribbean parakeet (*Aratinga pertinax*)
Smooth-billed ani (*Crotophaga ani*)
Yellow-billed cuckoo (*Coccyzus americanus*)
Mangrove cuckoo (*Coccyzus minor*)
Short-eared owl (*Asio flammeus*)
Chuck-will's-widow (*Caprimulgus carolinensis*)
Common nighthawk (*Chordeiles minor*)
Antillean crested hummingbird (*Orthorynchus cristatus*)
Green-throated carib (*Sericotes holosericeus*)
Antillean mango (*Anthracothorax dominicus*)
Belted kingfisher (*Ceryle alcyon*)
Gray kingbird (*Tyrannus dominicensis*)
Loggerhead kingbird (*Tyrannus caudifasciatus*)
Stolid flycatcher (*Myiarchus stolidus*)
Caribbean elaenia (*Elaenia martinica*)
Purple martin (*Progne subis*)
Cave swallow (*Petrochelidon fulva*)
Barn swallow (*Hirundo rustica*)
Northern mockingbird (*Mimus polyglottos*)
Pearly-eyed thrasher (*Maragarops fuscatus*)
Red-legged thrush (*Mimocichla plumbea*)
Black-whiskered vireo (*Vireo altiloquus*)
American redstart (*Setaophaga ruticilla*)
Parula warbler (*Parula americana*)
Prairie warbler (*Dendroica discolor*)
Yellow warbler (*Dendroica petechia*)
Magnolia warbler (*Dendroica magnolia*)
Cape May warbler (*Dendroica tigrina*)
Black-throated blue warbler (*Dendroica caerulescens*)
Adelaide's warbler (*Dendroica adelaidae*)
Palm warbler (*Dendroica palmarum*)
Black and white warbler (*Mniotilta varia*)
Ovenbird (*Seiurus aurocapillus*)
Northern water thrush (*Seiurus noveboracensis*)
Bananaquit (*Coerba flaveola*)
Striped-headed tanager (*Spindalis zena*)
Shiny cowbird (*Molothrus bonariensis*)
Black-cowled oriole (*Icterus dominicensis*)
Greater Antillean grackle (*Quiscalis niger*)
Yellow-shouldered blackbird (*Agelaius xanthomus*)
Hooded mannikin (*Lonchura cucullata*)
Yellow-faced grassquit (*Tiaris olivacea*)
Black-faced grassquit (*Tiaris bicolor*)
Least sandpiper (*Calidris minutilla*)
Western sandpiper (*Calidris mauri*)
Puerto Rican woodpecker (*Melanerpes portoricensis*)
Rock dove (*Columba livia*)
Puerto Rican emerald (*Chlorostilbon maugeus*)
Puerto Rican flycatcher (*Myiarchus antillarum*)
Pin-tailed whydah (*Vidua macroura*)
Spice finch (*Lonchura punctulata*)
Ruddy duck (*Oxyura jamaicensis*)
Peregrine falcon (*Falco peregrinus*)

Birds Potentially Occurring at NASD Vieques (Continued)

Marbled godwit (*Limosa fedoa*)
Puerto Rican lizard cuckoo (*Saurothera vieilloti*)
Prothonotary warbler (*Protonotaria citrea*)
Green-winged teal (*Anas carolinensis*)
Orange-cheeked waxbill (*Estrilda melpoda*)
Least grebe (*Tachybaptus dominicus*)
West Indian whistling duck (*Dendrocygna arborea*)
Puerto Rican screech owl (*Otus nudipes*)
Puerto Rican tody (*Todus mexicanus*)

Sources: Vila and Azar 1974, Weaver et al 1976, Pace 1989

Appendix L
Laboratory Data

Appendix L
Laboratory Data – Surface Soil

West Vieques - AOC-E
Validated Surface Soil
Analytical Results

Station ID	WAE-SO13	WAE-SO14	WAE-SO15	WAE-SO16	WAE-SO17		WAE-SO18	WAE-SO19
Sample ID	WAE-SS13-0002	WAE-SS14-0002	WAE-SS15-0002	WAE-SS16-0002	WAE-SS17-0002	WAE-SS17P-0002	WAE-SS18-0002	WAE-SS19-0002
Sample Date	11/30/05	11/30/05	12/01/05	12/01/05	11/30/05	11/30/05	11/30/05	11/30/05
Chemical Name								
Volatile Organic Compounds (UG/KG)								
1,1,1-Trichloroethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,1,2-Trichloroethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,1-Dichloroethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,1-Dichloroethene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,2-Dibromo-3-chloropropane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,2-Dibromoethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,2-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,2-Dichloroethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,2-Dichloropropane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,3-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
1,4-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
2-Butanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	11 UJ	10 UJ	10 UJ
2-Hexanone	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
4-Methyl-2-pentanone	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Acetone	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Benzene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Bromodichloromethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Bromoform	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Carbon disulfide	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Carbon tetrachloride	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Chlorobenzene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Chloroethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Chloroform	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Chloromethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Cyclohexane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Dibromochloromethane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Dichlorodifluoromethane (Freon-12)	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Isopropylbenzene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Methyl acetate	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Methyl-tert-butyl ether (MTBE)	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Methylcyclohexane	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Methylene chloride	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Tetrachloroethene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Toluene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Trichloroethene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Trichlorofluoromethane(Freon-11)	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Vinyl chloride	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
Xylene, total	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
cis-1,2-Dichloroethene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
trans-1,2-Dichloroethene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U

Notes:
U - Analyte not detected
J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated

West Vieques - AOC-E
Validated Surface Soil
Analytical Results

Station ID	WAE-SO13	WAE-SO14	WAE-SO15	WAE-SO16	WAE-SO17		WAE-SO18	WAE-SO19
Sample ID	WAE-SS13-0002	WAE-SS14-0002	WAE-SS15-0002	WAE-SS16-0002	WAE-SS17-0002	WAE-SS17P-0002	WAE-SS18-0002	WAE-SS19-0002
Sample Date	11/30/05	11/30/05	12/01/05	12/01/05	11/30/05	11/30/05	11/30/05	11/30/05
Chemical Name								
Semi-volatile Organic Compounds (UG/KG)								
1,1-Biphenyl	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2,2'-Oxybis(1-chloropropane)	350 UJ	360 UJ	360 UJ	370 UJ	360 UJ	360 UJ	350 UJ	370 UJ
2,4,5-Trichlorophenol	880 U	900 U	900 U	920 U	900 U	900 U	890 U	930 U
2,4,6-Trichlorophenol	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2,4-Dichlorophenol	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2,4-Dimethylphenol	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2,4-Dinitrophenol	880 U	900 U	900 U	920 U	900 U	900 U	890 U	930 U
2,4-Dinitrotoluene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2,6-Dinitrotoluene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2-Chloronaphthalene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2-Chlorophenol	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2-Methylnaphthalene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2-Methylphenol	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
2-Nitroaniline	880 U	900 U	900 U	920 U	900 U	900 U	890 U	930 U
2-Nitrophenol	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
3,3'-Dichlorobenzidine	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
3-Nitroaniline	880 U	900 U	900 U	920 U	900 U	900 U	890 U	930 U
4,6-Dinitro-2-methylphenol	880 U	900 U	900 U	920 U	900 U	900 U	890 U	930 U
4-Bromophenyl-phenylether	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
4-Chloro-3-methylphenol	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
4-Chloroaniline	350 UJ	360 UJ	360 UJ	370 UJ	360 UJ	360 UJ	350 UJ	370 UJ
4-Chlorophenyl-phenylether	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
4-Methylphenol	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
4-Nitroaniline	880 U	900 U	900 U	920 U	900 U	900 U	890 U	930 U
4-Nitrophenol	880 U	900 U	900 U	920 U	900 U	900 U	890 U	930 U
Acenaphthene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Acenaphthylene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Acetophenone	350 U	360 U	360 U	370 U	360 U	88 J	350 U	370 U
Anthracene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Atrazine	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Benzaldehyde	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Benzo(a)anthracene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Benzo(a)pyrene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Benzo(b)fluoranthene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Benzo(g,h,i)perylene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Benzo(k)fluoranthene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Butylbenzylphthalate	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Caprolactam	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Carbazole	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Chrysene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Di-n-butylphthalate	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Di-n-octylphthalate	350 U	360 U	360 U	370 U	350 J	360 U	350 U	370 U
Dibenz(a,h)anthracene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Dibenzofuran	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Diethylphthalate	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Dimethyl phthalate	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Fluoranthene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Fluorene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Hexachlorobenzene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Hexachlorobutadiene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Hexachlorocyclopentadiene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Hexachloroethane	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Indeno(1,2,3-cd)pyrene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Isophorone	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Naphthalene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Nitrobenzene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Pentachlorophenol	880 U	900 U	900 U	920 U	900 U	900 U	890 U	930 U
Phenanthrene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Phenol	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
Pyrene	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
bis(2-Chloroethoxy)methane	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
bis(2-Chloroethyl)ether	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
bis(2-Ethylhexyl)phthalate	350 U	360 U	360 U	370 U	76 J	330 J	350 U	370 U
n-Nitroso-di-n-propylamine	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U
n-Nitrosodiphenylamine	350 U	360 U	360 U	370 U	360 U	360 U	350 U	370 U

Notes:
U - Analyte not detected
J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated

West Vieques - AOC-E
Validated Surface Soil
Analytical Results

Station ID	WAE-SO13	WAE-SO14	WAE-SO15	WAE-SO16	WAE-SO17		WAE-SO18	WAE-SO19
Sample ID	WAE-SS13-0002	WAE-SS14-0002	WAE-SS15-0002	WAE-SS16-0002	WAE-SS17-0002	WAE-SS17P-0002	WAE-SS18-0002	WAE-SS19-0002
Sample Date	11/30/05	11/30/05	12/01/05	12/01/05	11/30/05	11/30/05	11/30/05	11/30/05
Chemical Name								
Pesticide/Polychlorinated Biphenyls (UG/KG)								
4,4'-DDD	3.5 U	3.6 U	2.1 J	3.7 U	3.6 U	3.6 U	3.5 U	3.7 U
4,4'-DDE	3.5 U	3.6 U	3.6 U	3.7 U	8.4	8	3.5 U	3.7 U
4,4'-DDT	3.5 U	3.6 U	3.6 U	3.7 U	3.5 J	3.6	3.5 U	3.7 U
Aldrin	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
Aroclor-1016	35 U	36 U	36 U	37 U	36 U	36 U	35 U	37 U
Aroclor-1221	71 U	73 U	73 U	74 U	73 U	73 U	72 U	75 U
Aroclor-1232	35 U	36 U	36 U	37 U	36 U	36 U	35 U	37 U
Aroclor-1242	35 U	36 U	36 U	37 U	36 U	36 U	35 U	37 U
Aroclor-1248	35 U	36 U	36 U	37 U	36 U	36 U	35 U	37 U
Aroclor-1254	35 U	36 U	36 U	37 U	36 U	36 U	35 U	37 U
Aroclor-1260	35 U	36 U	36 U	37 U	36 U	36 U	12 J	37 U
Dieldrin	3.5 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U	3.5 U	3.7 U
Endosulfan I	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
Endosulfan II	3.5 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U	3.5 U	3.7 U
Endosulfan sulfate	3.5 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U	3.5 U	3.7 U
Endrin	3.5 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U	3.5 U	3.7 U
Endrin aldehyde	3.5 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U	3.5 U	3.7 U
Endrin ketone	3.5 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U	3.5 U	3.7 U
Heptachlor	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
Heptachlor epoxide	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
Methoxychlor	18 U	18 U	18 U	19 U	18 U	18 U	18 U	19 U
Toxaphene	180 U	180 U	180 U	190 U	180 U	180 U	180 U	190 U
alpha-BHC	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
alpha-Chlordane	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
beta-BHC	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
delta-BHC	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
gamma-BHC (Lindane)	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
gamma-Chlordane	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
Total Metals (MG/KG)								
Aluminum	9,650	10,600	7,640	7,560	5,950	5,840	10,500	10,100
Antimony	0.34 J	0.56 J	0.59 J	0.35 J	0.41 J	0.42 J	0.64 J	0.51 J
Arsenic	0.36 J	1.1 U	1.1 U	0.53 J	1.1 U	1.1 U	0.34 J	1.1 U
Barium	79.3	74	40.5	63.4	65.8	58.9	79.1	56
Beryllium	0.54 U	0.55 U	0.55 U	0.56 U	0.54 U	0.54 U	0.54 U	0.56 U
Cadmium	0.82	0.55 U	0.55 U	0.56 U	0.54 U	0.54 U	0.58	0.56 U
Calcium	7,190	5,700	9,020	8,970	2,220 J	2,280 J	7,260	2,520 J
Chromium	13.1	14.7	11.7	7	5.4 R	4.9 R	18.7	6
Cobalt	9.1	8.7	7.1	6.7	7.4	6.7	9.7	7.3
Copper	51.9	29.6	24.3	20.2	17.5	16.5	38.6	21.1
Cyanide	2.7 U	2.7 U	2.7 U	2.8 U	2.7 U	2.7 U	2.7 U	2.8 U
Iron	15,800	18,500	13,800	11,200	9,780	9,690	18,800	13,800
Lead	29.9 J	11.6 J	30.2 J	52.1 J	6.6 J	6.4 J	19.7 J	2.9 J
Magnesium	3,090	3,320	3,740	1,680 R	1,200 R	1,470 R	4,010	2,290 R
Manganese	605	479	382	480	730	662	569	397
Mercury	0.028 J	0.11 U	0.11 U	0.027 J	0.11 U	0.11 U	0.11 U	0.11 U
Nickel	7.3 J	6.4 J	7 J	3.7 J	4.7 J	4.2 J	8 J	4 J
Potassium	1,020	1,500	566	779	855	749	1,170	1,060
Selenium	3.7 U	3.8 U	3.8 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U
Silver	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Sodium	110 J	86.2 J	171 J	86.7 J	61.8 J	69.8 J	116 J	77 J
Thallium	0.54 U	0.55 U	0.55 U	0.56 U	0.54 U	0.54 U	0.54 U	0.56 U
Vanadium	44	53	42.1	31.9	26.1	25.2	55.3	35.9
Zinc	82.7	57.1	30.9	40.2	26.4	25.7	60.7	25.8
Wet Chemistry (MG/KG)								
Total organic carbon (TOC)	7,340	2,320	3,110	3,390	3,330	3,300	7,010	2,750
Total Petroleum Hydrocarbons (MG/KG)								
TPH-diesel range	11 U	11 U	54 U	11	11 U	11 U	11 U	11 U
TPH-gas range	0.53 U	0.54 U	0.54 U	0.56 U	0.54 U	0.54 U	0.54 U	0.56 U
TPH-oil range	70 J	51 J	250 U	270 J	21 U	20 U	190 J	46 J

Notes:
U - Analyte not detected
J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated

Appendix L
Laboratory Data – Subsurface Data

West Vieques - AOC-E
Validated Subsurface Soil
Analytical Results

Station ID	NDAEMW01			NDAEMW02		NDAEMW03		2016-SB3	2016-SB4	AOCE-SB-06				AOCE-SB-07	AOCE-SB-08	
Sample ID	2016-SB1-A	2016-DUPE1	2016-SB1-B	2016-SB2-A	2016-SB2-B	2016-SB5-A	2016-SB5-B	2016-SB3	2016-SB4	DSSB06-12	DSSB06-14	FD205-14	DSSB06-44	DSSB7-2	DSSB08-32	DSSB08-46
Sample Date	8/4/98	8/4/98	8/10/98	8/4/98	8/19/98	8/7/98	8/13/98	8/5/98	8/6/98	05/21/02	05/21/02	05/21/02	05/21/02	05/17/02	05/23/02	05/23/02
Chemical Name																
Volatile Organic Compounds (UG/KG)																
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	NA	NA	NA	5.2 U	NA	0.31 J	6.4 UJ
Bromodichloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (Freon-12)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	50 U	50 U	240	50 U	50 U	50 U	50 U	50 U	50 U	NA	NA	NA	5.2 U	NA	0.25 J	6.4 UJ
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	NA	NA	NA	5.2 U	NA	6.8 UJ	6.4 UJ
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene, total	150 U	150 U	6,700	150 U	150 U	150 U	150 U	150 U	150 U	NA	NA	NA	5.2 U	NA	6.8 UJ	6.4 UJ
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
U - Analyte not detected
J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated
JN - Qualitative identification questionable due to poor resolution

West Vieques - AOC-E
Validated Subsurface Soil
Analytical Results

Station ID	AOCE-SB-09					AOCE-SB-10				AOCE-SB-11		AOCE-SB-12			
Sample ID	DSSB09-42	DSSB09-12	FD305-2802	DSSB09-22	DSSB09-28	DSSB10-24	DSSB10-30	DSSB10R-12	DSSB10R-24	DSSB11-12	DSSB11-28	DSSB12-12	DSSB12-26	DSSB12-28	DSSB12-42
Sample Date	05/28/02	05/28/02	05/28/02	05/28/02	05/28/02	05/17/02	05/17/02	05/30/02	05/30/02	05/29/02	05/29/02	05/29/02	05/29/02	05/29/02	05/29/02
Chemical Name															
Volatile Organic Compounds (UG/KG)															
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	2 J	4,150 J	2,560 J	491 U	25.8 J	NA	NA	5.4 U	5.2 U	4.7 U	4.6 U	5.4 U	5.2 U	1.7 J	580 U
Bromodichloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (Freon-12)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	22.1 J	14,200	8,590 J	2,160	1,470 J	NA	NA	5.4 U	5.2 U	4.7 U	4.6 U	0.19 J	5.2 U	38.6 J	284 J
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1.2 J	2,750 J	1,890 J	220 J	1,070 J	NA	NA	5.4 U	5.2 U	4.7 U	4.6 U	5.4 U	5.2 U	1.1 J	53.3 J
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene, total	119 J	90,600	55,500 J	17,000	11,100 J	NA	NA	5.4 U	5.2 U	4.7 U	4.6 U	5.4 U	5.2 U	18.7 J	4,010
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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JN - Qualitative identification questionable due to poor resolution

Station ID	WAE-SO13				WAE-SO14			WAE-SO15	WAE-SO16
Sample ID	WAE-SB13-0406R	WAE-SB13P-0406R	WAE-SB13-3234	WAE-SB13-3436	WAE-SB14-0406	WAE-SB14-4244	WAE-SB14-4446	WAE-SB15-0406R	WAE-SB16-0406
Sample Date	12/12/05	12/12/05	12/14/05	12/14/05	12/01/05	12/12/05	12/12/05	12/05/05	12/05/05
Chemical Name									
Volatile Organic Compounds (UG/KG)									
1,1,1-Trichloroethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10 U	2 J	3 J	12	10 U	54	10 U	10 U	10 U
1,2-Dichloroethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	10 UJ	11 U	10 U	10 U	10 UJ	10 UJ	10 UJ	10 U	10 U
2-Hexanone	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	5 J	11 U	12 U	21 U	10 U	10 U	10 U	10 U	10 U
Benzene	10 U	11 U	26	70	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	10 U	11 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyclohexane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane (Freon-12)	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	4 J	17	91	2,700	10 U	230	10 U	10 U	10 U
Isopropylbenzene	2 J	8 J	11	37	10 U	370	10 U	10 U	10 U
Methyl acetate	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl-tert-butyl ether (MTBE)	10 U	11 U	10 U	10 U	10 U	10 U	4 J	10 U	10 U
Methylcyclohexane	2 J	11 U	25	47	10 U	220	10 U	10 U	10 U
Methylene chloride	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	10 U	11 U	18	37	10 U	10 U	10 U	10 U	10 U
Trichloroethene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane(Freon-11)	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
Vinyl chloride	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene, total	10 U	11 U	520	18,000	10 U	520	10 U	10 U	10 U
cis-1,2-Dichloroethene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,2-Dichloroethene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:
U - Analyte not detected
J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated
JN - Qualitative identification questionable due to poor resolution

West Vieques - AOC-E
Validated Subsurface Soil
Analytical Results

Station ID	NDAEMW01			NDAEMW02		NDAEMW03		2016-SB3	2016-SB4	AOCE-SB-06				AOCE-SB-07	AOCE-SB-08	
Sample ID	2016-SB1-A	2016-DUPE1	2016-SB1-B	2016-SB2-A	2016-SB2-B	2016-SB5-A	2016-SB5-B	2016-SB3	2016-SB4	DSSB06-12	DSSB06-14	FD205-14	DSSB06-44	DSSB7-2	DSSB08-32	DSSB08-46
Sample Date	8/4/98	8/4/98	8/10/98	8/4/98	8/19/98	8/7/98	8/13/98	8/5/98	8/6/98	05/21/02	05/21/02	05/21/02	05/21/02	05/17/02	05/23/02	05/23/02
Chemical Name																
Semi-volatile Organic Compounds (UG/KG)																
1,1-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitroso-di-n-propylamine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
U - Analyte not detected
J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated
JN - Qualitative identification questionable due to poor resolution

West Vieques - AOC-E
Validated Subsurface Soil
Analytical Results

Station ID	AOCE-SB-09					AOCE-SB-10				AOCE-SB-11		AOCE-SB-12			
Sample ID	DSSB09-42	DSSB09-12	FD305-2802	DSSB09-22	DSSB09-28	DSSB10-24	DSSB10-30	DSSB10R-12	DSSB10R-24	DSSB11-12	DSSB11-28	DSSB12-12	DSSB12-26	DSSB12-28	DSSB12-42
Sample Date	05/28/02	05/28/02	05/28/02	05/28/02	05/28/02	05/17/02	05/17/02	05/30/02	05/30/02	05/29/02	05/29/02	05/29/02	05/29/02	05/29/02	05/29/02
Chemical Name															
Semi-volatile Organic Compounds (UG/KG)															
1,1-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitroso-di-n-propylamine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated
JN - Qualitative identification questionable due to poor resolution

Station ID	WAE-SO13				WAE-SO14			WAE-SO15	WAE-SO16
Sample ID	WAE-SB13-0406F	WAE-SB13P-0406F	WAE-SB13-3234	WAE-SB13-3436	WAE-SB14-0406	WAE-SB14-4244	WAE-SB14-4446	WAE-SB15-0406F	WAE-SB16-0406
Sample Date	12/12/05	12/12/05	12/14/05	12/14/05	12/01/05	12/12/05	12/12/05	12/05/05	12/05/05
Chemical Name									
Semi-volatile Organic Compounds (UG/KG)									
1,1-Biphenyl	360 U	360 U	330 J	310 J	370 U	380 U	360 UJ	380 U	380 U
2,2'-Oxybis(1-chloropropane)	360 U	360 U	380 U	1,400 U	370 UJ	380 U	360 UJ	380 U	380 U
2,4,5-Trichlorophenol	910 U	910 U	950 U	3,600 U	930 U	940 U	910 U	940 U	950 U
2,4,6-Trichlorophenol	360 U	360 U	380 U	1,400 U	370 U	380 U	360 U	380 U	380 U
2,4-Dichlorophenol	360 U	360 U	380 U	1,400 U	370 U	380 U	360 U	380 U	380 U
2,4-Dimethylphenol	360 U	360 U	380 U	1,400 U	370 U	380 U	360 U	380 U	380 U
2,4-Dinitrophenol	910 UJ	910 UJ	950 UJ	3,600 UJ	930 U	940 UJ	910 U	940 UJ	950 UJ
2,4-Dinitrotoluene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
2,6-Dinitrotoluene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
2-Chloronaphthalene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
2-Chlorophenol	360 U	360 U	380 U	1,400 U	370 U	380 U	360 U	380 U	380 U
2-Methylnaphthalene	77 J	360 U	6,000	5,200	370 U	1,200	360 UJ	380 U	380 U
2-Methylphenol	360 U	360 U	380 U	1,400 U	370 U	380 U	360 U	380 U	380 U
2-Nitroaniline	910 UJ	910 U	950 UJ	3,600 U	930 U	940 UJ	910 UJ	940 U	950 U
2-Nitrophenol	360 U	360 U	380 U	1,400 U	370 U	380 U	360 U	380 U	380 U
3,3'-Dichlorobenzidine	360 UJ	360 UJ	380 UJ	1,400 UJ	370 U	380 UJ	360 UJ	380 UJ	380 UJ
3-Nitroaniline	910 U	910 UJ	950 U	3,600 UJ	930 U	940 U	910 UJ	940 U	950 U
4,6-Dinitro-2-methylphenol	910 U	910 U	950 U	3,600 U	930 U	940 U	910 U	940 U	950 U
4-Bromophenyl-phenylether	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
4-Chloro-3-methylphenol	360 U	360 U	380 U	1,400 U	370 U	380 U	360 U	380 U	380 U
4-Chloroaniline	360 U	360 U	380 U	1,400 U	370 UJ	380 U	360 UJ	380 U	380 U
4-Chlorophenyl-phenylether	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
4-Methylphenol	360 U	360 U	380 U	1,400 U	370 U	380 U	360 U	380 U	380 U
4-Nitroaniline	910 UJ	910 UJ	950 UJ	3,600 UJ	930 U	940 UJ	910 UJ	940 UJ	950 UJ
4-Nitrophenol	910 UJ	910 U	950 UJ	3,600 U	930 U	940 UJ	910 UJ	940 U	950 U
Acenaphthene	360 U	360 U	380 U	1,400 U	370 U	140 J	360 UJ	380 U	380 U
Acenaphthylene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Acetophenone	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Anthracene	360 U	360 U	380 U	1,400 U	370 U	78 J	360 UJ	380 U	380 U
Atrazine	360 UJ	360 UJ	380 UJ	1,400 UJ	370 U	380 UJ	360 UJ	380 U	380 U
Benzaldehyde	360 UJ	360 UJ	380 UJ	1,400 UJ	370 U	380 UJ	360 UJ	380 U	380 U
Benzo(a)anthracene	360 U	360 U	100 J	1,400 U	370 U	130 J	360 UJ	380 U	380 U
Benzo(a)pyrene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Benzo(b)fluoranthene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Benzo(g,h,i)perylene	84 J	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Benzo(k)fluoranthene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Butylbenzylphthalate	360 U	360 U	210 J	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Caprolactam	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Carbazole	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Chrysene	360 U	360 U	130 J	1,400 U	370 U	130 J	360 UJ	380 U	380 U
Di-n-butylphthalate	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Di-n-octylphthalate	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Dibenz(a,h)anthracene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Dibenzofuran	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Diethylphthalate	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Dimethyl phthalate	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Fluoranthene	360 U	360 U	130 J	1,400 U	370 U	160 J	360 UJ	380 U	380 U
Fluorene	360 U	360 U	380 U	1,400 U	370 U	190 J	360 UJ	380 U	380 U
Hexachlorobenzene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Hexachlorobutadiene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Hexachlorocyclopentadiene	360 UJ	360 UJ	380 UJ	1,400 UJ	370 U	380 UJ	360 UJ	380 UJ	380 UJ
Hexachloroethane	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Indeno(1,2,3-cd)pyrene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Isophorone	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Naphthalene	360 U	360 U	3,500	3,100	370 U	380 U	360 UJ	380 U	380 U
Nitrobenzene	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
Pentachlorophenol	910 U	910 U	950 U	3,600 U	930 U	940 U	910 U	940 U	950 U
Phenanthrene	360 U	360 U	590	600 J	370 U	560	360 UJ	380 U	380 U
Phenol	360 U	360 U	380 U	1,400 U	370 U	380 U	360 U	380 U	380 U
Pyrene	360 U	360 U	230 J	1,400 U	370 U	320 J	360 UJ	380 U	380 U
bis(2-Chloroethoxy)methane	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
bis(2-Chloroethyl)ether	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
bis(2-Ethylhexyl)phthalate	360 U	99 J	630	700 J	370 U	660	120 J	380 U	380 U
n-Nitroso-di-n-propylamine	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U
n-Nitrosodiphenylamine	360 U	360 U	380 U	1,400 U	370 U	380 U	360 UJ	380 U	380 U

Notes:
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JN - Qualitative identification questionable due to poor resolution

Station ID	NDAEMW01			NDAEMW02		NDAEMW03		2016-SB3	2016-SB4	AOCE-SB-06				AOCE-SB-07	AOCE-SB-08	
Sample ID	2016-SB1-A	2016-DUPE1	2016-SB1-B	2016-SB2-A	2016-SB2-B	2016-SB5-A	2016-SB5-B	2016-SB3	2016-SB4	DSSB06-12	DSSB06-14	FD205-14	DSSB06-44	DSSB7-2	DSSB08-32	DSSB08-46
Sample Date	8/4/98	8/4/98	8/10/98	8/4/98	8/19/98	8/7/98	8/13/98	8/5/98	8/6/98	05/21/02	05/21/02	05/21/02	05/21/02	05/17/02	05/23/02	05/23/02
Chemical Name																
Pesticide/Polychlorinated Biphenyls (UG/KG)																
4,4'-DDD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (MG/KG)																
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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West Vieques - AOC-E
Validated Subsurface Soil
Analytical Results

Station ID	AOCE-SB-09					AOCE-SB-10				AOCE-SB-11		AOCE-SB-12			
Sample ID	DSSB09-42	DSSB09-12	FD305-2802	DSSB09-22	DSSB09-28	DSSB10-24	DSSB10-30	DSSB10R-12	DSSB10R-24	DSSB11-12	DSSB11-28	DSSB12-12	DSSB12-26	DSSB12-28	DSSB12-42
Sample Date	05/28/02	05/28/02	05/28/02	05/28/02	05/28/02	05/17/02	05/17/02	05/30/02	05/30/02	05/29/02	05/29/02	05/29/02	05/29/02	05/29/02	05/29/02
Chemical Name															
Pesticide/Polychlorinated Biphenyls (UG/KG)															
4,4'-DDD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (MG/KG)															
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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West Vieques - AOC-E
Validated Subsurface Soil
Analytical Results

Station ID	WAE-SO13				WAE-SO14			WAE-SO15	WAE-SO16
Sample ID	WAE-SB13-0406F	WAE-SB13P-0406F	WAE-SB13-3234	WAE-SB13-3436	WAE-SB14-0406	WAE-SB14-4244	WAE-SB14-4446	WAE-SB15-0406F	WAE-SB16-0406
Sample Date	12/12/05	12/12/05	12/14/05	12/14/05	12/01/05	12/12/05	12/12/05	12/05/05	12/05/05
Chemical Name									
Pesticide/Polychlorinated Biphenyls (UG/KG)									
4,4'-DDD	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.8 U	3.8 U
4,4'-DDE	3.6 U	1.5 J	3.8 U	3.6 U	3.7 U	3.8 U	7.8	3.8 U	3.8 U
4,4'-DDT	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.8 U	9.2	3.8 U	3.8 U
Aldrin	1.9 U	1.9 U	2 U	1.1 J	1.9 U	1.9 U	1.9 U	1.9 U	2 U
Aroclor-1016	36 U	36 U	38 U	36 U	37 U	38 U	36 U	38 U	38 U
Aroclor-1221	74 U	74 U	77 U	73 U	75 U	76 U	74 U	76 U	77 U
Aroclor-1232	36 U	36 U	38 U	36 U	37 U	38 U	36 U	38 U	38 U
Aroclor-1242	36 U	36 U	38 U	36 U	37 U	38 U	36 U	38 U	38 U
Aroclor-1248	36 U	36 U	38 U	36 U	37 U	38 U	36 U	38 U	38 U
Aroclor-1254	36 U	36 U	38 U	36 U	15 J	38 U	36 U	38 U	38 U
Aroclor-1260	36 U	36 U	38 U	36 U	37 U	38 U	36 U	38 U	38 U
Dieldrin	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.8 U	3.8 U
Endosulfan I	1.9 U	1.9 U	2 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U
Endosulfan II	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.8 U	3.8 U
Endosulfan sulfate	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.8 U	3.8 U
Endrin	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.8 U	3.8 U
Endrin aldehyde	3.6 U	3.6 U	2.1 J	3.6 U	3.7 U	3.8 U	3.6 U	3.8 U	3.8 U
Endrin ketone	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.8 U	4 R	3.8 U	3.8 U
Heptachlor	1.9 U	1.9 U	2 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U
Heptachlor epoxide	1.9 U	1.9 U	2 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U
Methoxychlor	19 U	19 U	20 U	18 U	19 U	19 U	19 U	19 U	20 U
Toxaphene	190 U	190 U	200 U	180 U	190 U	190 U	190 U	190 U	200 U
alpha-BHC	1.9 U	1.9 U	5.3 JN	4.1 J	1.9 U	1.9 U	1.9 U	1.9 U	2 U
alpha-Chlordane	1.9 U	1.9 U	2 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U
beta-BHC	1.9 U	1.9 U	2 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U
delta-BHC	1.9 U	1.9 U	2 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U
gamma-BHC (Lindane)	1.9 U	1.9 U	2 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U
gamma-Chlordane	1.9 U	5	2 U	1.8 U	1.9 U	1.9 U	8.3	1.9 U	2 U
Total Metals (MG/KG)									
Aluminum	7,070	6,670	10,200	3,780	9,730	23,800	23,100	10,600	10,100
Antimony	0.53 J	0.25 J	0.37 J	6.5 UJ	0.41 J	1.3 J	1.1 J	0.37 J	0.34 J
Arsenic	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	0.57 J	1.1 U	1.1 U	1.1 U
Barium	41.9	41.2	104	51.6	71.3	153	106	78.8	71.6
Beryllium	0.55 U	0.55 U	0.57 U	0.54 U	0.56 U	0.57 U	0.55 U	0.57 U	0.57 U
Cadmium	0.55 U	0.55 U	0.57 U	0.54 U	0.56 U	0.57 U	0.55 U	0.57 U	0.57 U
Calcium	1,610 J	1,540 J	2,880	1,720 J	3,440	8,990	8,620	2,290 J	2,740 J
Chromium	9.6 J	6.2 J	14.4	6.5	13.7	30	35.3	14.7	9.7
Cobalt	4.7 J	4.2 J	9.5	2.4 J	8.5	32.1	28.2	7.8	7.2
Copper	20.4	17	26.4	6	25.5	75.8	61	25.6	23.6
Cyanide	2.7 U	2.7 U	2.9 U	2.7 U	2.8 U	2.8 U	2.7 U	2.8 U	2.9 U
Iron	17,400 J	11,600 J	18,500	4,810	16,700	43,000	39,800	18,800	15,600
Lead	10.1 J	11.9 J	6 J	1.4 J	3.3 J	1.4 J	1.1 U	1.9 J	2.8 J
Magnesium	1,410 R	1,260 R	3,260	1,850 R	2,960	19,300	18,600	3,170	2,220 R
Manganese	287	225	486	124	476	1,000	776	348	423
Mercury	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.12 U
Nickel	4.3 J	2.6 J	5.8 J	2.2 J	5.6 J	21.5 J	16.9 J	4.9 J	4.5 J
Potassium	930	830	525 J	481 J	1,500	55.6 J	63.4 J	1,160	1,320
Selenium	3.8 U	3.8 U	4 U	3.8 U	4 U	4 U	3.8 U	4 U	4 U
Silver	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	0.29 J
Sodium	67.7 J	74.8 J	150 J	120 J	423 J	177 J	159 J	154 J	101 J
Thallium	0.55 U	0.55 U	0.57 U	0.54 U	0.56 U	0.57 U	0.55 U	0.57 U	0.57 U
Vanadium	35.7	32.8	66	8.9	46.9	125	121	53.5	41.5
Zinc	31.4	27.6	58.8	12.9	42.6	68	61.8	26.9	25.6

Notes:
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J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated
JN - Qualitative identification questionable due to poor resolution

West Vieques - AOC-E
Validated Subsurface Soil
Analytical Results

Station ID	NDAEMW01			NDAEMW02		NDAEMW03		2016-SB3	2016-SB4	AOCE-SB-06				AOCE-SB-07	AOCE-SB-08	
Sample ID	2016-SB1-A	2016-DUPE1	2016-SB1-B	2016-SB2-A	2016-SB2-B	2016-SB5-A	2016-SB5-B	2016-SB3	2016-SB4	DSSB06-12	DSSB06-14	FD205-14	DSSB06-44	DSSB7-2	DSSB08-32	DSSB08-46
Sample Date	8/4/98	8/4/98	8/10/98	8/4/98	8/19/98	8/7/98	8/13/98	8/5/98	8/6/98	05/21/02	05/21/02	05/21/02	05/21/02	05/17/02	05/23/02	05/23/02
Chemical Name																
Wet Chemistry (MG/KG)																
Total organic carbon (TOC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (MG/KG)																
Aliphatics C10-12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C12-16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C16-21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C21-35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C6-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C8-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C10-12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C12-16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C16-21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C21-35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C7-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C8-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oil and Grease	NA	NA	NA	NA	NA	NA	NA	NA	NA	63.1 U	59.4 U	63.7 U	98.8 J	116 J	95.1 J	65.1 U
Total recoverable TPH	520	390	36,000	230	80	380	87	430	590	NA	NA	NA	NA	NA	NA	NA
TPH-diesel range	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	NA	NA	NA	NA	NA	NA	NA
TPH-gas range	10 U	10 U	42,000	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA
TPH-oil range	50 U	50 U	2,400	50 U	50 U	50 U	50 U	50 U	50 U	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C10-C28	NA	NA	NA	NA	NA	NA	NA	NA	NA	126 U	120 U	127 U	113 UJ	116 U	4.7 J	17.4 J
Total Petroleum Hydrocarbons, C12-C28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C6-C10	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.012 J	122 U	12,100 U	111 U	116 U	157 U	134 U
Total Petroleum Hydrocarbons, C6-C12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
U - Analyte not detected
J - Result may be estimated
R - Unreliable result
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JN - Qualitative identification questionable due to poor resolution

West Vieques - AOC-E
Validated Subsurface Soil
Analytical Results

Station ID	AOCE-SB-09					AOCE-SB-10				AOCE-SB-11		AOCE-SB-12			
Sample ID	DSSB09-42	DSSB09-12	FD305-2802	DSSB09-22	DSSB09-28	DSSB10-24	DSSB10-30	DSSB10R-12	DSSB10R-24	DSSB11-12	DSSB11-28	DSSB12-12	DSSB12-26	DSSB12-28	DSSB12-42
Sample Date	05/28/02	05/28/02	05/28/02	05/28/02	05/28/02	05/17/02	05/17/02	05/30/02	05/30/02	05/29/02	05/29/02	05/29/02	05/29/02	05/29/02	05/29/02
Chemical Name															
Wet Chemistry (MG/KG)															
Total organic carbon (TOC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (MG/KG)															
Aliphatics C10-12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C12-16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C16-21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C21-35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C6-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C8-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C10-12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C12-16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C16-21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C21-35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C7-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C8-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oil and Grease	2,310	19,300	17,100	7,100	4,940	66.4 J	114 J	57 U	52.3 U	53 U	57.1 U	106 J	105 J	57.4 U	56.6 U
Total recoverable TPH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-diesel range	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-gas range	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-oil range	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C10-C28	438 J	3,410 J	3,780 J	2,770 J	1,930 J	120 U	114 U	112 U	104 U	106 U	114 U	111 U	18.9 J	805 J	1,110 J
Total Petroleum Hydrocarbons, C12-C28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C6-C10	0.86 J	2,150 J	981 J	370 J	154 J	118 U	234 U	538 J	84.4 U	103 U	222 UJ	220 UJ	233 UJ	42 J	149 J
Total Petroleum Hydrocarbons, C6-C12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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West Vieques - AOC-E
Validated Subsurface Soil
Analytical Results

Station ID	WAE-SO13				WAE-SO14			WAE-SO15	WAE-SO16
Sample ID	WAE-SB13-0406F	WAE-SB13P-0406F	WAE-SB13-3234	WAE-SB13-3436	WAE-SB14-0406	WAE-SB14-4244	WAE-SB14-4446	WAE-SB15-0406F	WAE-SB16-0406
Sample Date	12/12/05	12/12/05	12/14/05	12/14/05	12/01/05	12/12/05	12/12/05	12/05/05	12/05/05
Chemical Name									
Wet Chemistry (MG/KG)									
Total organic carbon (TOC)	2,890	3,480	3,170	7,400	1,500	5,070	1,740	1,940	1,390
Total Petroleum Hydrocarbons (MG/KG)									
Aliphatics C10-12	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C12-16	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C16-21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C21-35	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C6-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aliphatics C8-10	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C10-12	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C12-16	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C16-21	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C21-35	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C7-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics C8-10	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oil and Grease	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total recoverable TPH	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-diesel range	8 J	9.4 J	310	490 J	11 U	340	26 J	11 U	11 U
TPH-gas range	0.11 J	0.12 J	8.1	11	0.56 U	8.3	1.1	0.57 U	0.57 U
TPH-oil range	140 J	180 J	1,300 J	2,800 J	12 U	2,600 J	460 J	11 U	11 U
Total Petroleum Hydrocarbons, C10-C28	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C12-C28	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C6-C10	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C6-C12	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Appendix L
Laboratory Data – Groundwater

West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	NDAEMW01	NDAEMW01	NDAEMW02	NDAEMW02	NDAEMW03	NDAEMW03		AOC-E-MWE02	AOC-E-MWE03		AOC-E-MW04	AOC-E-MW05	AOC-E-MW06	AOCE-MW-02	AOCE-MW-03
Sample ID	2016-SB1-C	2016-MW1	2016-SB2-C	2016-MW2	2016-SB5-C	2016-MW3	2016-DUPE1-MW	NDA024	NDA029	NDA025FD1	NDA023	NDA026	NDA028	GWMW02-R01	GWMW03-R01
Sample Date	8/4/98	9/11/98	8/4/98	9/11/98	8/7/98	9/11/98	9/13/98	04/05/00	04/05/00	04/05/00	04/27/00	05/01/00	04/27/00	05/21/02	05/21/02
Chemical Name															
Volatile Organic Compounds (UG/L)															
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freo	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	3	4	1 U	1 U	1 U
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	32	1 U	1 U	1 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	NA	NA	NA	NA	NA	NA	NA	5 R	5 R	5 R	5 U	5 U	5 U	5 U	5 U
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	NA	NA	NA	NA	NA	NA	NA	5 R	5 R	5 R	12	5 U	10	5 U	5 U
Benzene	0.05 U	17	0.05 U	5 U	0.05 U	5 U	5 U	1 U	1 U	1 U	2	6	1 U	1 U	1 U
Bromochloromethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	0.05 U	5 U	0.05 U	5 U	0.05 U	5 U	5 U	1 U	1 U	1 U	1 U	0.9 J	1 U	1 U	1 U
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	NA	NA	NA	NA	NA	NA	NA	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Styrene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	0.05 U	5 U	0.05 U	5 U	0.05 U	5 U	5 U	1 U	1 U	1 U	1 U	0.3 J	1 U	1 U	1 U
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene, total	0.15 U	15 U	0.15 U	15 U	0.15 U	15 U	15 U	1 U	1 U	1 U	0.9 J	20	1 U	1 U	1 U
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m- and p-Xylene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	0.9 J	17	1 U	NA	NA
o-Xylene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	3	1 U	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Notes:
NA - Not analyzed
U - Analyte not detected
J - Result may be estimated
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UJ - Analyte not detected, result may be estimated

West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	AOCE-MW-04		AOCE-MW-06	AOCE-MW-07	NDAEMW08	NDAEMW01	NDAEMW02	NDAEMW03	NDAEMW04	NDAEMW05		NDAEMW06	NDAEMW07
Sample ID	GWMW04-R01	FD105-2102	GWMW06-R01	GWMW07-R01	NDAEGW08-R01	NDAEGW01-R03	NDAEGW02-R03	NDAEGW03-R01	NDAEGW04-R03	NDAEGW05-R03	NDAEFD01-R03	NDAEGW06-R03	NDAEGW07-R03
Sample Date	05/21/02	05/21/02	05/20/02	05/24/02	09/08/03	09/01/04	08/26/04	08/25/04	08/30/04	08/30/04	08/30/04	08/25/04	08/26/04
Chemical Name													
Volatile Organic Compounds (UG/L)													
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Fred	NA	NA	NA	NA	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	0.5 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
1,2,3-Trichlorobenzene	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dibromo-3-chloropropane	1 U	1 U	1 U	1 U	2 U	2 U	2 UJ	2 UJ	2 U	2 U	2 U	2 UJ	2 UJ
1,2-Dibromoethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	4.5	4.4	1 U	1 U	0.5 U	4.6	0.5 U	0.5 U	3.7	3.5	3.8	0.5 U	0.5 U
1,2-Dichloroethane	4.6	4.9	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.59	7.2	6.4	0.5 U	0.5 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U	5 U	5 UJ	5 UJ	5 UJ	5 U	5 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U	5 U	5 UJ	5 UJ	5 UJ	5 U	5 U
Acetone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	0.72 J	0.7 J	1 U	1 U	0.5 U	4.1	0.5 U	0.5 U	0.21 J	0.81 J	1.2 J	0.5 U	0.5 U
Bromochloromethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	1.4	1.4	1 U	1 U	0.5 U	0.69	0.5 U	0.5 U	0.9	1.1	1	0.5 U	0.5 U
Chloroethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	1 U	1 U	1 U	0.39 J	0.49 J	0.5 U	0.74	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.3 J
Chloromethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	NA	NA	NA	NA	0.5 U	1.3	0.5 U	0.5 U	0.5 U	0.31 J	0.5 U	0.5 U	0.5 U
Dibromochloromethane	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	1 U	1 U	1 U	1 U	0.5 U	10.9	0.5 U	0.5 U	0.5 U	0.46 J	0.71 J	0.5 U	0.5 U
Isopropylbenzene	NA	NA	NA	NA	0.5 U	6.3	0.5 U	0.5 U	0.5 U	0.17 J	0.22 J	0.5 U	0.5 U
Methyl acetate	NA	NA	NA	NA	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	0.5 U	260	0.5 U	0.5 U	234	1,180	1,220	0.5 U	0.5 U
Methylcyclohexane	NA	NA	NA	NA	0.5 U	2.9	0.58 U	0.58 U	0.61	0.75 J	0.58 UJ	0.58 U	0.58 U
Methylene chloride	2 U	2 U	2 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	1 U	1 U	1 U	1 U	0.5 U	0.3 J	0.5 U	0.5 U	0.5 U	0.5 U	0.21 J	0.5 U	0.5 U
Trichloroethene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	1 U	1 U	1 U	1 U	2 U	26.2	2 U	2 U	2 U	1 J	1.8 J	2 U	2 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m- and p-Xylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Notes:
NA - Not analyzed
U - Analyte not detected
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West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	NDAEMW08	WAE-MW02	WAE-MW03	WAE-MW04	WAE-MW06	WAE-MW07		WAE-MW08
Sample ID	NDAEGW08-R03	WAE-GW02-05D	WAE-GW03-05D	WAE-GW04-05D	WAE-GW06-05D	WAE-GW07-05D	WAE-GW07P-05D	WAE-GW08-05D
Sample Date	08/26/04	12/09/05	12/09/05	12/09/05	12/09/05	12/08/05	12/08/05	12/09/05
Chemical Name								
Volatile Organic Compounds (UG/L)								
1,1,1-Trichloroethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane(Freo	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	0.9 U	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	2 UJ	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	0.5 U	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	0.5 U	NA	NA	NA	NA	NA	NA	NA
2-Butanone	5 U	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	5 U	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	5 U	NA	NA	NA	NA	NA	NA	NA
Acetone	5 U	NA	NA	NA	NA	NA	NA	NA
Benzene	0.5 U	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
Bromoform	0.5 U	NA	NA	NA	NA	NA	NA	NA
Bromomethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	0.5 U	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	0.5 U	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	0.5 U	NA	NA	NA	NA	NA	NA	NA
Chloroethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
Chloroform	1.2	NA	NA	NA	NA	NA	NA	NA
Chloromethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	0.5 U	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	0.5 U	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (Freon-12)	0.5 U	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	0.5 U	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	0.5 U	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	2 U	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether (MTBE)	0.5 U	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	0.58 U	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.5 U	NA	NA	NA	NA	NA	NA	NA
Styrene	0.5 U	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	0.5 U	NA	NA	NA	NA	NA	NA	NA
Toluene	0.5 U	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	0.5 U	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane(Freon-11)	0.5 U	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.5 U	NA	NA	NA	NA	NA	NA	NA
Xylene, total	2 U	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	0.5 U	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	0.5 U	NA	NA	NA	NA	NA	NA	NA
m- and p-Xylene	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	0.5 U	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	0.5 U	NA	NA	NA	NA	NA	NA	NA

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West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	NDAEMW01	NDAEMW01	NDAEMW02	NDAEMW02	NDAEMW03	NDAEMW03		AOC-E-MWE02	AOC-E-MWE03		AOC-E-MW04	AOC-E-MW05	AOC-E-MW06	AOCE-MW-02	AOCE-MW-03
Sample ID	2016-SB1-C	2016-MW1	2016-SB2-C	2016-MW2	2016-SB5-C	2016-MW3	2016-DUPE1-MW	NDA024	NDA029	NDA025FD1	NDA023	NDA026	NDA028	GWMW02-R01	GWMW03-R01
Sample Date	8/4/98	9/11/98	8/4/98	9/11/98	8/7/98	9/11/98	9/13/98	04/05/00	04/05/00	04/05/00	04/27/00	05/01/00	04/27/00	05/21/02	05/21/02
Chemical Name															
Semi-volatile Organic Compounds (UG/L)															
1,1-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.4 U	5.6 U
2,2'-Oxybis(1-chloropropane)	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	21 U	21 U	21 U	21 U	22 U	22 U	5.4 U	5.6 U
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6.0 U	6.0 U	21.5 U	22.2 U
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	NA	21 U	21 U	21 U	21 U	22.0 U	22.0 U	21.5 U	22.2 U
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
2-Chloronaphthalene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
2-Chlorophenol	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	14	6 U	5.4 U	5.6 U
2-Methylphenol	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
2-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	21 U	21 U	21 U	21 U	22.0 U	22.0 U	21.5 U	22.2 U
2-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
3,3'-Dichlorobenzidine	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
3- and 4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	NA	NA
3-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	21 U	21 U	21 U	21 U	22.0 U	22.0 U	21.5 U	22.2 U
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA	NA	NA	21 U	21 U	21 U	21 U	22.0 U	22.0 U	21.5 U	22.2 U
4-Bromophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
4-Chloro-3-methylphenol	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
4-Chloroaniline	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
4-Chlorophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.4 U	5.6 U
4-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	21 U	21 U	21 U	21 U	22.0 U	22.0 U	21.5 U	22.2 U
4-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	21 U	21 U	21 U	21 U	22.0 U	22.0 U	21.5 U	22.2 U
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	680	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Atrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Benzo(b/k)fluoranthene	NA	NA	NA	NA	NA	NA	710	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Butylbenzylphthalate	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	0.4 J	6 U	5.4 U	5.6 U
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Di-n-butylphthalate	NA	NA	NA	NA	NA	NA	NA	5 U	0.7 J	2 J	5 U	6 U	6 U	5.4 U	5.6 U
Di-n-octylphthalate	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	670	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Diethylphthalate	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	0.6 J	6 U	6 U	5.4 U	5.6 U
Dimethyl phthalate	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Fluorene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	0.5 J	6 U	5.4 U	5.6 U
Hexachlorobenzene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Hexachloroethane	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	670	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Isophorone	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Naphthalene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	15	6 U	5.4 U	5.6 U
Nitrobenzene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Pentachlorophenol	NA	NA	NA	NA	NA	NA	NA	21 U	21 U	21 U	21 U	22.0 U	22.0 U	21.5 U	22.2 U
Phenanthrene	NA	NA	NA	NA	NA	NA	680	5 U	5 U	5 U	5 U	0.6 J	6 U	5.4 U	5.6 U
Phenol	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
Polynuclear aromatic hydrocarbons	NA	500 U	NA	500 U	NA	500 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	470	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
bis(2-Chloroethoxy)methane	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
bis(2-Chloroethyl)ether	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	1 J	2 J	5 J	5 U	6 U	6 U	5.4 U	5.6 U
n-Nitroso-di-n-propylamine	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U
n-Nitrosodiphenylamine	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U	6 U	6 U	5.4 U	5.6 U

Notes:
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West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	AOCE-MW-04		AOCE-MW-06	AOCE-MW-07	NDAEMW08	NDAEMW01	NDAEMW02	NDAEMW03	NDAEMW04	NDAEMW05		NDAEMW06	NDAEMW07
Sample ID	GWMW04-R01	FD105-2102	GWMW06-R01	GWMW07-R01	NDAEGW08-R01	NDAEGW01-R03	NDAEGW02-R03	NDAEGW03-R01	NDAEGW04-R03	NDAEGW05-R03	NDAEFD01-R03	NDAEGW06-R03	NDAEGW07-R03
Sample Date	05/21/02	05/21/02	05/20/02	05/24/02	09/08/03	09/01/04	08/26/04	08/25/04	08/30/04	08/30/04	08/30/04	08/25/04	08/26/04
Chemical Name													
Semi-volatile Organic Compounds (UG/L)													
1,1-Biphenyl	NA	NA	NA	NA	5.2 U	5.2 U	5.3 U	5.3 UJ	5.1 U	5.1 U	5.2 U	5.3 U	5 U
1,2,4,5-Tetrachlorobenzene	NA	NA	NA	NA	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
1,2,4-Trichlorobenzene	5.4 U	5.4 U	5.4 U	5.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2,4,5-Trichlorophenol	5.4 U	5.4 U	5.4 U	5.8 U	20.6 U	20.6 U	21.3 U	21 U	20.4 U	20.5 U	20.6 U	21 U	20 U
2,4,6-Trichlorophenol	21.5 U	21.5 U	21.5 U	23.2 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2,4-Dichlorophenol	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2,4-Dimethylphenol	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2,4-Dinitrophenol	21.5 U	21.5 U	21.5 U	23.2 U	20.6 U	20.6 U	21.3 UJ	21 UJ	20.4 U	20.5 U	20.6 U	21 UJ	20 UJ
2,4-Dinitrotoluene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 UJ	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2,6-Dinitrotoluene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2-Chloronaphthalene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2-Chlorophenol	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2-Methylnaphthalene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	12	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2-Methylphenol	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
2-Nitroaniline	21.5 U	21.5 U	21.5 U	23.2 U	20.6 U	20.6 U	21.3 U	21 U	20.4 U	20.5 U	20.6 U	21 U	20 U
2-Nitrophenol	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
3,3'-Dichlorobenzidine	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
3- and 4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	21.5 U	21.5 U	21.5 U	23.2 U	20.6 U	20.6 U	21.3 U	21 U	20.4 U	20.5 U	20.6 U	21 U	20 U
4,6-Dinitro-2-methylphenol	21.5 U	21.5 U	21.5 U	23.2 U	20.6 U	20.6 U	21.3 U	21 U	20.4 U	20.5 U	20.6 U	21 U	20 U
4-Bromophenyl-phenylether	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
4-Chloro-3-methylphenol	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
4-Chloroaniline	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
4-Chlorophenyl-phenylether	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
4-Methylphenol	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	6.3 U	6.5 U	6.4 U	6.2 U	6.2 U	6.3 U	6.4 U	6.1 U
4-Nitroaniline	21.5 U	21.5 U	21.5 U	23.2 U	20.6 U	20.6 U	21.3 U	21 U	20.4 U	20.5 U	20.6 U	21 U	20 U
4-Nitrophenol	21.5 U	21.5 U	21.5 U	23.2 U	20.6 U	20.6 U	21.3 UJ	21 U	20.4 U	20.5 U	20.6 U	21 UJ	20 UJ
Acenaphthene	0.54 J	0.55 J	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Acenaphthylene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Acetophenone	NA	NA	NA	NA	5.2 U	8.1	5.3 U	5.3 UJ	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Anthracene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Atrazine	NA	NA	NA	NA	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Benzaldehyde	NA	NA	NA	NA	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Benzo(a)anthracene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Benzo(a)pyrene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Benzo(b)fluoranthene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Benzo(b/k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 UJ	5.3 U	5.1 U	5.1 U	5.2 U	5.3 UJ	5 UJ
Benzo(k)fluoranthene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Butylbenzylphthalate	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Caprolactam	NA	NA	NA	NA	5.2 R	5.2 U	5.3 U	4.5 J	5.1 U	12.2 J	33 J	5.3 U	6.8
Carbazole	NA	NA	NA	NA	10.3 U	10.3 U	10.6 U	10.5 U	10.2 U	10.2 U	10.3 U	10.5 U	10 U
Chrysene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Di-n-butylphthalate	5.4 U	5.4 U	5.4 U	5.8 U	0.49 J	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Di-n-octylphthalate	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Dibenz(a,h)anthracene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Dibenzofuran	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Diethylphthalate	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Dimethyl phthalate	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Fluoranthene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Fluorene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Hexachlorobenzene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Hexachlorobutadiene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Hexachlorocyclopentadiene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Hexachloroethane	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Indeno(1,2,3-cd)pyrene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 UJ	5.3 U	5.1 U	5.1 U	5.2 U	5.3 UJ	5 UJ
Isophorone	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Naphthalene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	9.5	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Nitrobenzene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Pentachlorophenol	21.5 U	21.5 U	21.5 U	23.2 U	20.6 U	20.6 U	21.3 U	21 U	20.4 U	20.5 U	20.6 U	21 U	20 U
Phenanthrene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Phenol	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
Polynuclear aromatic hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
bis(2-Chloroethoxy)methane	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
bis(2-Chloroethyl)ether	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
bis(2-Ethylhexyl)phthalate	5.4 U	5.4 U	5.4 U	5.8 U	10.3 U	10.3 U	10.6 U	10.5 U	10.2 U	10.2 U	10.3 U	10.5 U	10 U
n-Nitroso-di-n-propylamine	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U
n-Nitrosodiphenylamine	5.4 U	5.4 U	5.4 U	5.8 U	5.2 U	5.2 U	5.3 U	5.3 U	5.1 U	5.1 U	5.2 U	5.3 U	5 U

Notes:
NA - Not analyzed
U - Analyte not detected
J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated

West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	NDAEMW08	WAE-MW02	WAE-MW03	WAE-MW04	WAE-MW06	WAE-MW07		WAE-MW08
Sample ID	NDAEGW08-R03	WAE-GW02-05D	WAE-GW03-05D	WAE-GW04-05D	WAE-GW06-05D	WAE-GW07-05D	WAE-GW07P-05D	WAE-GW08-05D
Sample Date	08/26/04	12/09/05	12/09/05	12/09/05	12/09/05	12/08/05	12/08/05	12/09/05
Chemical Name								
Semi-volatile Organic Compounds (UG/L)								
1,1-Biphenyl	5.2 U	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	5.2 U	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	5.2 U	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	20.6 U	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	5.2 U	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	5.2 U	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	5.2 U	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	20.6 UJ	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	5.2 U	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	5.2 U	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	5.2 U	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	5.2 U	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	5.2 U	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	5.2 U	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	20.6 U	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	5.2 U	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	5.2 U	NA	NA	NA	NA	NA	NA	NA
3- and 4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	20.6 U	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	20.6 U	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	5.2 U	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	5.2 U	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	5.2 U	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	5.2 U	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	6.3 U	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	20.6 U	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	20.6 UJ	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Acetophenone	5.2 U	NA	NA	NA	NA	NA	NA	NA
Anthracene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Atrazine	5.2 U	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	5.2 U	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Benzo(b/k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	5.2 UJ	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	5.2 U	NA	NA	NA	NA	NA	NA	NA
Caprolactam	5.2 U	NA	NA	NA	NA	NA	NA	NA
Carbazole	10.3 U	NA	NA	NA	NA	NA	NA	NA
Chrysene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	5.2 U	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	5.2 U	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	5.2 U	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	5.2 U	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	5.2 U	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Fluorene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	5.2 U	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5.2 UJ	NA	NA	NA	NA	NA	NA	NA
Isophorone	5.2 U	NA	NA	NA	NA	NA	NA	NA
Naphthalene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	20.6 U	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	5.2 U	NA	NA	NA	NA	NA	NA	NA
Phenol	5.2 U	NA	NA	NA	NA	NA	NA	NA
Polynuclear aromatic hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	5.2 U	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	5.2 U	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	5.2 U	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	10.3 U	NA	NA	NA	NA	NA	NA	NA
n-Nitroso-di-n-propylamine	5.2 U	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	5.2 U	NA	NA	NA	NA	NA	NA	NA

Notes:
NA - Not analyzed
U - Analyte not detected
J - Result may be estimated
R - Unreliable result
UJ - Analyte not detected, result may be estimated

West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	NDAEMW01	NDAEMW01	NDAEMW02	NDAEMW02	NDAEMW03	NDAEMW03		AOC-E-MWE02	AOC-E-MWE03		AOC-E-MW04	AOC-E-MW05	AOC-E-MW06	AOCE-MW-02	AOCE-MW-03
Sample ID	2016-SB1-C	2016-MW1	2016-SB2-C	2016-MW2	2016-SB5-C	2016-MW3	2016-DUPE1-MW	NDA024	NDA029	NDA025FD1	NDA023	NDA026	NDA028	GWMW02-R01	GWMW03-R01
Sample Date	8/4/98	9/11/98	8/4/98	9/11/98	8/7/98	9/11/98	9/13/98	04/05/00	04/05/00	04/05/00	04/27/00	05/01/00	04/27/00	05/21/02	05/21/02
Chemical Name															
Pesticide/Polychlorinated Biphenyls (UG/L)															
4,4'-DDD	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.03 UJ	0.02 UJ	0.02 UJ	0.02 U	0.02 U	NA	NA
4,4'-DDE	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.03 UJ	0.02 UJ	0.02 UJ	0.02 U	0.02 U	NA	NA
4,4'-DDT	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.03 UJ	0.02 UJ	0.02 UJ	0.02 U	0.02 U	NA	NA
Aldrin	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	NA	NA
Aroclor-1016	NA	NA	NA	NA	NA	NA	NA	0.21 UJ	0.25 U	0.21 U	0.21 U	0.21 U	0.21 U	NA	NA
Aroclor-1221	NA	NA	NA	NA	NA	NA	NA	0.42 UJ	0.5 U	0.43 U	0.42 U	0.41 U	0.42 U	NA	NA
Aroclor-1232	NA	NA	NA	NA	NA	NA	NA	0.21 UJ	0.25 U	0.21 U	0.21 U	0.21 U	0.21 U	NA	NA
Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	0.21 UJ	0.25 U	0.21 U	0.21 U	0.21 U	0.21 U	NA	NA
Aroclor-1248	NA	NA	NA	NA	NA	NA	NA	0.21 UJ	0.25 U	0.21 U	0.21 U	0.21 U	0.21 U	NA	NA
Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	0.21 UJ	0.25 U	0.21 U	0.21 U	0.21 U	0.21 U	NA	NA
Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	0.21 UJ	0.25 U	0.21 U	0.21 U	0.21 U	0.21 U	NA	NA
Dieldrin	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.03 UJ	0.02 UJ	0.02 UJ	0.02 U	0.11	NA	NA
Endosulfan I	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	NA	NA
Endosulfan II	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.03 UJ	0.02 UJ	0.02 UJ	0.02 U	0.02 U	NA	NA
Endosulfan sulfate	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.03 UJ	0.02 UJ	0.02 UJ	0.02 U	0.02 U	NA	NA
Endrin	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.03 UJ	0.02 UJ	0.02 UJ	0.02 U	0.02 U	NA	NA
Endrin aldehyde	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.03 UJ	0.02 UJ	0.02 UJ	0.02 U	0.02 U	NA	NA
Endrin ketone	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.03 UJ	0.02 UJ	0.02 UJ	0.02 U	0.02 U	NA	NA
Heptachlor	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	NA	NA
Heptachlor epoxide	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	NA	NA
Methoxychlor	NA	NA	NA	NA	NA	NA	NA	0.11 UJ	0.13 UJ	0.11 UJ	0.11 UJ	0.1 U	0.11 U	NA	NA
Toxaphene	NA	NA	NA	NA	NA	NA	NA	1.1 UJ	1.3 UJ	1.1 UJ	1.1 UJ	1 U	1.1 U	NA	NA
alpha-BHC	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 UJ	NA	NA
alpha-Chlordane	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	NA	NA
beta-BHC	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	NA	NA
delta-BHC	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	NA	NA
gamma-BHC (Lindane)	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 UJ	NA	NA
gamma-Chlordane	NA	NA	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	NA	NA
Total Metals (UG/L)															
Aluminum	NA	NA	NA	NA	NA	NA	NA	106,000	24,000	21,100	66,000 J	11,900	2,020 J	1,890 J	72.6 J
Amenable cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.3 U	2.3 U
Antimony	NA	NA	NA	NA	NA	NA	NA	5.6 J	1.4 U	1.4 U	2.2 J	1.9 J	1.4 U	2.8 U	2.8 U
Arsenic	NA	NA	NA	NA	NA	NA	NA	3.4 U	3.4 U	3.4 U	3.4 U	3.5 J	3.4 U	1 J	1.3 J
Barium	NA	NA	NA	NA	NA	NA	NA	826	248	234	584	269	131 J	111 J	118 J
Beryllium	NA	NA	NA	NA	NA	NA	NA	0.55 J	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.39 J	0.32 J
Cadmium	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.42 U	0.42 U
Calcium	NA	NA	NA	NA	NA	NA	NA	121,000	69,900	69,200	115,000 J	103,000	50,400 J	54,400	60,700
Chromium	NA	NA	NA	NA	NA	NA	NA	110	50.7	44.3	141	38.1	10	4.3 J	2 J
Cobalt	NA	NA	NA	NA	NA	NA	NA	118	23.6 J	20.5 J	36.1 J	8.6 J	1.1 J	2 J	0.93 J
Copper	NA	NA	NA	NA	NA	NA	NA	247	85.3	70.5	144	31.2	5.5 J	8.5 J	7.2 J
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	180,000	39,300	34,000	66,000	13,800	2,020	2,310 J	29 UJ
Lead	NA	NA	NA	NA	NA	NA	NA	3.6	1.1 UJ	1.1 UJ	11.7	1.8 J	1.5 J	2 U	2 U
Magnesium	NA	NA	NA	NA	NA	NA	NA	101,000	45,900	44,100	61,800	48,900	30,300	29,900	35,000
Manganese	NA	NA	NA	NA	NA	NA	NA	6,490	1,500	1,340	3,890	3340.0	65.2	79.4	40.9
Mercury	NA	NA	NA	NA	NA	NA	NA	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.04 U	0.04 U
Nickel	NA	NA	NA	NA	NA	NA	NA	65.1	21.7 J	18.9 J	87.7	24.4 J	6 J	3.8 J	3.2 U
Potassium	NA	NA	NA	NA	NA	NA	NA	10,400 J	6,000 J	5,720 J	12,000 J	5,860 J	3,300 J	2,890 J	3,520 J
Selenium	NA	NA	NA	NA	NA	NA	NA	5.6	2.7 J	2.1 U	2.1 U	2.1 U	2.1 U	3.8 J	4.1 J
Silver	NA	NA	NA	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.86 U	0.86 U
Sodium	NA	NA	NA	NA	NA	NA	NA	137,000	130,000	130,000	139,000 J	152,000	119,000 J	119,000	130,000
Thallium	NA	NA	NA	NA	NA	NA	NA	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	3.6 J	4.6 J
Vanadium	NA	NA	NA	NA	NA	NA	NA	489	120	106	175	39.9 J	22.0 J	20.3 J	11.7 J
Zinc	NA	NA	NA	NA	NA	NA	NA	377	95.3	75.2	248	51.4	3.2 J	60.5	28

Notes:

NA - Not analyzed

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UJ - Analyte not detected, result may be estimated

West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	AOCE-MW-04		AOCE-MW-06	AOCE-MW-07	NDAEMW08	NDAEMW01	NDAEMW02	NDAEMW03	NDAEMW04	NDAEMW05		NDAEMW06	NDAEMW07
Sample ID	GWMW04-R01	FD105-2102	GWMW06-R01	GWMW07-R01	NDAEGW08-R01	NDAEGW01-R03	NDAEGW02-R03	NDAEGW03-R01	NDAEGW04-R03	NDAEGW05-R03	NDAEFD01-R03	NDAEGW06-R03	NDAEGW07-R03
Sample Date	05/21/02	05/21/02	05/20/02	05/24/02	09/08/03	09/01/04	08/26/04	08/25/04	08/30/04	08/30/04	08/30/04	08/25/04	08/26/04
Chemical Name													
Pesticide/Polychlorinated Biphenyls (UG/L)													
4,4'-DDD	NA	NA	NA	NA	NA	0.021 U	0.021 U	NA	0.02 U	NA	0.02 UJ	0.021 U	NA
4,4'-DDE	NA	NA	NA	NA	NA	0.021 U	0.021 U	NA	0.02 U	NA	0.02 UJ	0.021 U	NA
4,4'-DDT	NA	NA	NA	NA	NA	0.021 U	0.021 U	NA	0.02 U	NA	0.02 UJ	0.021 U	NA
Aldrin	NA	NA	NA	NA	NA	0.01 U	0.01 U	NA	0.01 U	NA	0.01 UJ	0.01 U	NA
Aroclor-1016	NA	NA	NA	NA	NA	1 UJ	1 UJ	NA	1 UJ	1 UJ	1 UJ	NA	NA
Aroclor-1221	NA	NA	NA	NA	NA	0.21 U	0.21 U	NA	0.21 U	0.21 U	0.2 U	NA	NA
Aroclor-1232	NA	NA	NA	NA	NA	0.42 U	0.42 U	NA	0.42 U	0.42 U	0.4 U	NA	NA
Aroclor-1242	NA	NA	NA	NA	NA	0.21 U	0.21 U	NA	0.21 U	0.21 U	0.2 U	NA	NA
Aroclor-1248	NA	NA	NA	NA	NA	0.21 U	0.21 U	NA	0.21 U	0.21 U	0.2 U	NA	NA
Aroclor-1254	NA	NA	NA	NA	NA	0.21 U	0.21 U	NA	0.21 U	0.21 U	0.2 U	NA	NA
Aroclor-1260	NA	NA	NA	NA	NA	0.21 U	0.21 UJ	NA	0.21 U	0.21 U	0.2 U	NA	NA
Dieldrin	NA	NA	NA	NA	NA	0.021 U	0.0019 J	NA	0.02 U	NA	0.02 UJ	0.027	NA
Endosulfan I	NA	NA	NA	NA	NA	0.01 U	0.01 UJ	NA	0.01 U	NA	0.01 UJ	0.01 U	NA
Endosulfan II	NA	NA	NA	NA	NA	0.021 U	0.021 UJ	NA	0.02 U	NA	0.02 UJ	0.021 U	NA
Endosulfan sulfate	NA	NA	NA	NA	NA	0.021 U	0.021 U	NA	0.02 U	NA	0.02 UJ	0.021 U	NA
Endrin	NA	NA	NA	NA	NA	0.021 UJ	0.021 U	NA	0.02 UJ	NA	0.02 UJ	0.021 U	NA
Endrin aldehyde	NA	NA	NA	NA	NA	0.021 U	0.021 U	NA	0.02 U	NA	0.02 UJ	0.021 U	NA
Endrin ketone	NA	NA	NA	NA	NA	0.021 U	0.021 U	NA	0.02 U	NA	0.02 UJ	0.021 U	NA
Heptachlor	NA	NA	NA	NA	NA	0.01 UJ	0.01 UJ	NA	0.01 UJ	NA	0.01 UJ	0.01 UJ	NA
Heptachlor epoxide	NA	NA	NA	NA	NA	0.01 U	0.01 UJ	NA	0.01 U	NA	0.01 UJ	0.01 U	NA
Methoxychlor	NA	NA	NA	NA	NA	0.1 U	0.1 U	NA	0.1 U	NA	0.1 UJ	0.1 U	NA
Toxaphene	NA	NA	NA	NA	NA	0.053 UJ	0.052 UJ	NA	0.05 U	NA	0.05 UJ	0.052 UJ	NA
alpha-BHC	NA	NA	NA	NA	NA	0.01 U	0.01 U	NA	0.01 U	NA	0.01 UJ	0.01 U	NA
alpha-Chlordane	NA	NA	NA	NA	NA	0.01 U	0.01 UJ	NA	0.01 U	NA	0.01 UJ	0.01 UJ	NA
beta-BHC	NA	NA	NA	NA	NA	0.01 U	0.01 U	NA	0.01 U	NA	0.01 UJ	0.01 U	NA
delta-BHC	NA	NA	NA	NA	NA	0.01 UJ	0.01 U	NA	0.01 UJ	NA	0.01 UJ	0.01 U	NA
gamma-BHC (Lindane)	NA	NA	NA	NA	NA	0.01 U	0.01 U	NA	0.01 U	NA	0.01 UJ	0.01 U	NA
gamma-Chlordane	NA	NA	NA	NA	NA	0.01 U	0.01 U	NA	0.01 U	NA	0.01 UJ	0.01 U	NA
Total Metals (UG/L)													
Aluminum	38,600 J	35,400 J	3,310 J	851	5,310	35 U	212	45.8 J	195 J	71 J	216	287	151 J
Amenable cyanide	2.72 J	7.18 J	5.52 J	2.3 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	2.8 U	2.8 U	2.8 U	2.8 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Arsenic	3.2 J	1.4 J	2.1 J	0.88 U	2.04 UJ	11.4	15.2	8.91 J	10.5	13.6	12.7	13.7 J	10.1 J
Barium	624	623	201	127 J	134 J	205	115 J	127 J	405	240	250	186 J	101 J
Beryllium	0.56 J	0.5 J	0.42 J	0.29 U	0.0945 U	0.2 U	0.2 U	0.2 U	0.23 J	0.2 U	0.2 U	0.2 U	0.2 U
Cadmium	0.42 U	0.42 U	0.48 J	0.42 U	0.356 U	0.356 U	0.356 U	5.51	0.356 U	0.356 U	0.356 U	7.2	0.356 U
Calcium	127,000	127,000	70,100	47,400	46,500 J	96,500	52,400	62,200	117,000	80,100	81,200	62,000	44,700
Chromium	59.2	54.9	14	6 J	11.8	1.3 U	3.98 J	1.3 U	28	5.29 J	4.77 J	4.17 J	3.45 J
Cobalt	13.2 J	11.4 J	9.3 J	0.89 U	4.66 J	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U
Copper	74.1	68.1	5.5 J	2.8 J	15.4 J	2.05 J	1.34 J	3.31 J	1.17 U	1.17 U	1.17 U	1.45 J	1.77 J
Cyanide	NA	NA	NA	NA	6.57 J	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U
Iron	32,100 J	28,900 J	2,730 J	990 J	7,340	3,190 J	332 J	48.6 J	2,420	1,390 J	1,600 J	290 J	130
Lead	2.8 J	2.3 J	2 U	2 U	1.76 UJ	2.2 U	4.29	2.68 J	2.2 U	2.2 U	2.2 U	4.12	2.2 U
Magnesium	65,700	66,300	45,900	27,700	30,700 J	55,700	31,100	38,100	61,800	48,200	48,700	41,500	30,200
Manganese	6,410	6,340	101	111	218 J	1,990	12 J	33.8	5,810	1,900	2,020	20	5.92 J
Mercury	0.04 U	0.04 U	0.04 U	0.04 U	0.0162 U	0.026 J	0.025 U	0.132 J	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
Nickel	37.4 J	34.6 J	9.8 J	5.4 J	7.02 J	1.7 U	2.24 J	216 J	25 J	5.04 J	3.78 J	1.92 J	1.83 J
Potassium	8,360	8,130	3,480 J	3,020 J	4,790 J	2,400 J	1,600 J	1,930 J	1,570 J	1,860 J	1,940 J	1,760 J	1,410 J
Selenium	5.5	4.8 J	4.4 J	2.9 U	2.1 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Silver	0.86 U	0.86 U	0.86 U	0.86 U	0.54 J	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
Sodium	141,000	146,000	122,000	105,000	105,000 J	162,000	129,000	139,000 J	152,000	165,000	163,000	122,000	111,000
Thallium	5.2 J	4.4 J	6.6 J	4.5 J	2.54 U	0.23 U	0.23 U	0.23 UJ	0.23 U	0.23 U	0.23 U	0.23 U	0.232 J
Vanadium	90.3	81.1	22.3 J	14.2 J	31.4 J	1.1 U	13.9 J	12.6 J	1.1 U	1.1 U	1.41 J	15.2 J	17.1 J
Zinc	134	129	11.7 J	5 U	26.8	2.99 J	0.94 U	2.5 J	3.06 J	3.88 J	5.2 J	0.94 U	3.6 J

Notes:

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West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	NDAEMW08	WAE-MW02	WAE-MW03	WAE-MW04	WAE-MW06	WAE-MW07		WAE-MW08
Sample ID	NDAEGW08-R03	WAE-GW02-05D	WAE-GW03-05D	WAE-GW04-05D	WAE-GW06-05D	WAE-GW07-05D	WAE-GW07P-05D	WAE-GW08-05D
Sample Date	08/26/04	12/09/05	12/09/05	12/09/05	12/09/05	12/08/05	12/08/05	12/09/05
Chemical Name								
Pesticide/Polychlorinated Biphenyls (UG/L)								
4,4'-DDD	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1016	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (UG/L)								
Aluminum	147 J	NA	NA	NA	NA	NA	NA	NA
Amenable cyanide	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	2.5 U	NA	NA	NA	NA	NA	NA	NA
Arsenic	15 J	NA	NA	NA	NA	NA	NA	NA
Barium	114 J	NA	NA	NA	NA	NA	NA	NA
Beryllium	0.2 U	NA	NA	NA	NA	NA	NA	NA
Cadmium	0.356 U	NA	NA	NA	NA	NA	NA	NA
Calcium	48,200	NA	NA	NA	NA	NA	NA	NA
Chromium	4.22 J	NA	NA	NA	NA	NA	NA	NA
Cobalt	0.76 U	NA	NA	NA	NA	NA	NA	NA
Copper	1.21 J	NA	NA	NA	NA	NA	NA	NA
Cyanide	9.9 U	NA	NA	NA	NA	NA	NA	NA
Iron	184 J	NA	NA	NA	NA	NA	NA	NA
Lead	5.45	NA	NA	NA	NA	NA	NA	NA
Magnesium	31,600	NA	NA	NA	NA	NA	NA	NA
Manganese	10.2 J	NA	NA	NA	NA	NA	NA	NA
Mercury	0.025 U	NA	NA	NA	NA	NA	NA	NA
Nickel	2.21 J	NA	NA	NA	NA	NA	NA	NA
Potassium	1,650 J	NA	NA	NA	NA	NA	NA	NA
Selenium	2.6 U	NA	NA	NA	NA	NA	NA	NA
Silver	0.65 U	NA	NA	NA	NA	NA	NA	NA
Sodium	120,000	NA	NA	NA	NA	NA	NA	NA
Thallium	0.237 J	NA	NA	NA	NA	NA	NA	NA
Vanadium	13.9 J	NA	NA	NA	NA	NA	NA	NA
Zinc	0.94 U	NA	NA	NA	NA	NA	NA	NA

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West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	NDAEMW01	NDAEMW01	NDAEMW02	NDAEMW02	NDAEMW03	NDAEMW03		AOC-E-MWE02	AOC-E-MWE03		AOC-E-MW04	AOC-E-MW05	AOC-E-MW06	AOCE-MW-02	AOCE-MW-03
Sample ID	2016-SB1-C	2016-MW1	2016-SB2-C	2016-MW2	2016-SB5-C	2016-MW3	2016-DUPE1-MW	NDA024	NDA029	NDA025FD1	NDA023	NDA026	NDA028	GWMW02-R01	GWMW03-R01
Sample Date	8/4/98	9/11/98	8/4/98	9/11/98	8/7/98	9/11/98	9/13/98	04/05/00	04/05/00	04/05/00	04/27/00	05/01/00	04/27/00	05/21/02	05/21/02
Chemical Name															
Dissolved Metals (UG/L)															
Aluminum	NA	NA	NA	NA	NA	NA	NA	25.8 U	1,150	353	25.8 U	25.8 U	25.8 U	50 U	50 U
Antimony	NA	NA	NA	NA	NA	NA	NA	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	2.8 U	2.8 U
Arsenic	NA	NA	NA	NA	NA	NA	NA	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	1.9 J	1.9 J
Barium	NA	NA	NA	NA	NA	NA	NA	91.4 J	129 J	122 J	247	173 J	116 J	100 J	115 J
Beryllium	NA	NA	NA	NA	NA	NA	NA	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.37 J	0.35 J
Cadmium	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.25 J	0.2 U	0.46 J	0.23 J	0.2 U	0.42 U	0.42 U
Calcium	NA	NA	NA	NA	NA	NA	NA	53,700	59,000	55,500	99,500 J	89,400	50,600 J	53,200	58,600
Chromium	NA	NA	NA	NA	NA	NA	NA	1.7 J	3.6 J	1.1 J	2.6 J	3.9 J	1.8 J	1.1 J	1.2 J
Cobalt	NA	NA	NA	NA	NA	NA	NA	0.5 U	1.3 J	0.5 U	2.8 J	1 J	1 J	0.89 U	0.96 J
Copper	NA	NA	NA	NA	NA	NA	NA	1.9 U	5.5 J	2.7 J	3.8 J	1.9 U	2.5 J	5 J	4.9 J
Iron	NA	NA	NA	NA	NA	NA	NA	17.3 J	1,810	553	12.2 U	12.2 U	12.2 U	29 U	29 U
Lead	NA	NA	NA	NA	NA	NA	NA	1.1 U	1.1 U	1.1 U	1.6 J	1.2 J	1.4 J	2 U	2 U
Magnesium	NA	NA	NA	NA	NA	NA	NA	31,100	32,400	30,300	45,600	44,000	30,000	29,900	34,000
Manganese	NA	NA	NA	NA	NA	NA	NA	11.6 J	394	388	3,110	2510	23.1	1.5 J	37.9
Mercury	NA	NA	NA	NA	NA	NA	NA	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.04 U	0.04 U
Nickel	NA	NA	NA	NA	NA	NA	NA	0.8 U	1.6 J	1.2 J	6.3 J	4.5 J	6.1 J	3.2 U	3.2 U
Potassium	NA	NA	NA	NA	NA	NA	NA	6,440 J	5,040 J	4,790 J	4,860 J	4,350 J	3,020 J	2,830 J	3,420 J
Selenium	NA	NA	NA	NA	NA	NA	NA	2.1 U	2.1 U	2.1 U	2.4 J	2.1 U	4.6 J	4.3 J	2.9 U
Silver	NA	NA	NA	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.86 U	0.86 U
Sodium	NA	NA	NA	NA	NA	NA	NA	133,000	132,000	125,000	137,000 J	151,000	118,000 J	123,000	128,000
Thallium	NA	NA	NA	NA	NA	NA	NA	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	5.8 J	5 J
Vanadium	NA	NA	NA	NA	NA	NA	NA	10.8 J	15.8 J	11.3 J	12.2 J	2.1 J	15.4 J	12.9 J	11.1 J
Zinc	NA	NA	NA	NA	NA	NA	NA	3.9 J	12.2 J	11.8 J	6.2 J	3.6 J	2.5 U	68.4	30
Wet Chemistry (MG/L)															
Total dissolved solids (TDS)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (MG/L)															
Total recoverable TPH	930	10 U	400	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA	NA
TPH-diesel range	25 U	25 U	25 U	25 U	25 U	25 U	25 U	NA	NA	NA	NA	NA	NA	NA	NA
TPH-gas range	2,000	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA	NA
TPH-oil range	50 U	50 U	50 U	50 U	50 U	50 U	50 U	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C10-C28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C6-C10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

NA - Not analyzed

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West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	AOCE-MW-04		AOCE-MW-06	AOCE-MW-07	NDAEMW08	NDAEMW01	NDAEMW02	NDAEMW03	NDAEMW04	NDAEMW05		NDAEMW06	NDAEMW07
Sample ID	GWMW04-R01	FD105-2102	GWMW06-R01	GWMW07-R01	NDAEGW08-R01	NDAEGW01-R03	NDAEGW02-R03	NDAEGW03-R01	NDAEGW04-R03	NDAEGW05-R03	NDAEFD01-R03	NDAEGW06-R03	NDAEGW07-R03
Sample Date	05/21/02	05/21/02	05/20/02	05/24/02	09/08/03	09/01/04	08/26/04	08/25/04	08/30/04	08/30/04	08/30/04	08/25/04	08/26/04
Chemical Name													
Dissolved Metals (UG/L)													
Aluminum	50 U	50 U	84.6 J	84.9 J	35 UJ	35 U	211	35 U	35 U	35 U	35 U	35 U	95.4 J
Antimony	2.8 U	2.8 U	2.8 U	2.8 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	3.25 J
Arsenic	1.8 J	1.1 J	0.88 U	0.88 U	2.04 UJ	10.9	16.5	11.3 J	10.5	12.8	12.8	16.2 J	12.5 J
Barium	413	413	188 J	118 J	99.6 J	200	116 J	125 J	403	245	224	186 J	105 J
Beryllium	0.29 U	0.29 U	0.29 U	0.29 U	0.0945 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Cadmium	0.42 U	0.42 U	0.42 U	0.42 U	0.356 U	0.356 U	0.356 U	0.356 U	0.356 U	0.356 U	0.356 U	0.356 U	0.356 U
Calcium	117,000	114,000	69,200	46,300	49,100	97,600	52,100	61,100	114,000	80,200	81,600	62,600	46,300
Chromium	3.1 J	3.6 J	1.3 J	1.5 J	1.19 J	1.3 U	3.85 J	1.3 U	2.06 J	1.3 U	1.3 U	3.55 J	1.82 J
Cobalt	1.8 J	1.8 J	0.89 U	0.89 U	0.569 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U
Copper	1.3 J	1.4 J	2 J	1.3 J	1.94 J	1.17 U	1.43 J	3.28 J	1.17 U	1.17 U	1.17 U	1.43 J	1.17 U
Iron	1,320	1,060	29 U	29 U	16.7 U	2,880 J	311 J	16.7 U	663 J	73.2 J	114 J	16.7 U	62.9 J
Lead	2 U	2 U	2 U	2 U	1.76 UJ	2.2 U	2.73 J	4.78 J	2.2 U	2.2 U	2.2 U	2.92 J	2.2 U
Magnesium	59,100	58,400	45,400	26,900	31,300	56,200	30,900	37,000	60,600	49,000	49,600	42,200	31,200
Manganese	5,450	5,210	9.9 J	77	0.452 J	1,990	11.4 J	26.8	6,080	1,980	1,820	3.48 J	1.86 J
Mercury	0.04 U	0.04 U	0.04 U	0.04 U	0.0162 U	0.025 U	0.025 U	0.064 J	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
Nickel	4.9 J	4.5 J	3.2 U	3.2 U	0.997 U	1.88 J	343 J	212 J	18.2 J	3.91 J	4.39 J	276 J	2 J
Potassium	3,690 J	3,740 J	3,060 J	2,840 J	2,260 J	2,390 J	1,570 J	1,920 J	1,580 J	2,000 J	2,000 J	1,770 J	1,450 J
Selenium	2.9 U	2.9 U	3 J	2.9 U	2.8 J	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Silver	0.86 U	0.86 U	0.86 U	0.86 U	0.482 J	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
Sodium	150,000	149,000	126,000	104,000	111,000	163,000	128,000	139,000	150,000	163,000	166,000	126,000	115,000
Thallium	6.4 J	4.6 J	2 J	2 U	2.54 U	0.23 U	0.23 U	0.23 UJ	0.23 U	0.23 U	0.344 J	0.23 U	0.23 U
Vanadium	1.5 U	1.5 U	15.1 J	10.9 J	11.8 J	1.1 U	13.7 J	12.5 J	1.1 U	1.1 U	1.1 U	14.8 J	17.8 J
Zinc	8.4 J	10 J	5 U	5 U	3.86 J	4.26 J	0.94 U	2.05 J	8.52 J	15.5 J	8.04 J	0.94 U	6.77 J
Wet Chemistry (MG/L)													
Total dissolved solids (TDS)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (MG/L)													
Total recoverable TPH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-diesel range	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-gas range	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-oil range	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C10-C28	NA	NA	NA	NA	NA	0.610 J	0.102 U	0.108 U	0.430 UJ	0.460 J	0.460 J	NA	0.103 U
Total Petroleum Hydrocarbons, C6-C10	NA	NA	NA	NA	NA	0.160	0.04 U	0.04 U	0.04 U	0.024 J	0.036 J	NA	0.04 U

Notes:

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West Vieques - AOC-E
Validated Groundwater Raw Analytical Results

Station ID	NDAEMW08	WAE-MW02	WAE-MW03	WAE-MW04	WAE-MW06	WAE-MW07		WAE-MW08
Sample ID	NDAEGW08-R03	WAE-GW02-05D	WAE-GW03-05D	WAE-GW04-05D	WAE-GW06-05D	WAE-GW07-05D	WAE-GW07P-05D	WAE-GW08-05D
Sample Date	08/26/04	12/09/05	12/09/05	12/09/05	12/09/05	12/08/05	12/08/05	12/09/05
Chemical Name								
Dissolved Metals (UG/L)								
Aluminum	35 U	NA	NA	NA	NA	NA	NA	NA
Antimony	2.5 U	NA	NA	NA	NA	NA	NA	NA
Arsenic	16.7 J	NA	NA	NA	NA	NA	NA	NA
Barium	113 J	NA	NA	NA	NA	NA	NA	NA
Beryllium	0.2 U	NA	NA	NA	NA	NA	NA	NA
Cadmium	0.356 U	NA	NA	NA	NA	NA	NA	NA
Calcium	48,900	NA	NA	NA	NA	NA	NA	NA
Chromium	3.11 J	NA	NA	NA	NA	NA	NA	NA
Cobalt	0.76 U	NA	NA	NA	NA	NA	NA	NA
Copper	1.68 J	NA	NA	NA	NA	NA	NA	NA
Iron	16.7 U	NA	NA	NA	NA	NA	NA	NA
Lead	3.88	NA	NA	NA	NA	NA	NA	NA
Magnesium	32,000	NA	NA	NA	NA	NA	NA	NA
Manganese	0.971 J	NA	NA	NA	NA	NA	NA	NA
Mercury	0.025 U	NA	NA	NA	NA	NA	NA	NA
Nickel	254 J	NA	NA	NA	NA	NA	NA	NA
Potassium	1,630 J	NA	NA	NA	NA	NA	NA	NA
Selenium	2.6 U	NA	NA	NA	NA	NA	NA	NA
Silver	0.65 U	NA	NA	NA	NA	NA	NA	NA
Sodium	122,000	NA	NA	NA	NA	NA	NA	NA
Thallium	0.23 U	NA	NA	NA	NA	NA	NA	NA
Vanadium	13.4 J	NA	NA	NA	NA	NA	NA	NA
Zinc	1.72 J	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry (MG/L)								
Total dissolved solids (TDS)	NA	583	645	805	622	588	580	581
Total Petroleum Hydrocarbons (MG/L)								
Total recoverable TPH	NA	NA	NA	NA	NA	NA	NA	NA
TPH-diesel range	NA	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
TPH-gas range	NA	0.50 U	0.50 U	0.18 J	0.50 U	0.50 U	0.50 U	0.50 U
TPH-oil range	NA	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Total Petroleum Hydrocarbons, C10-C28	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons, C6-C10	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

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Appendix L
Laboratory Data – Free Product

West Vieques - AOC-E
Validated Free Product
Analytical Results

Station ID	NDAEMW01
Sample ID	NDAEGW01-FP1
Sample Date	09/01/04
Chemical Name	
Volatile Organic Compounds (UG/KG)	
1,1,1-Trichloroethane	198,000 U
1,1,2,2-Tetrachloroethane	198,000 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	198,000 U
1,1,2-Trichloroethane	198,000 UJ
1,1-Dichloroethane	198,000 U
1,1-Dichloroethene	198,000 U
1,2,4-Trichlorobenzene	198,000 U
1,2-Dibromo-3-chloropropane	198,000 U
1,2-Dibromoethane	198,000 U
1,2-Dichlorobenzene	198,000 U
1,2-Dichloroethane	198,000 UJ
1,2-Dichloropropane	198,000 U
1,3-Dichlorobenzene	198,000 U
1,4-Dichlorobenzene	198,000 U
2-Butanone	198,000 U
2-Hexanone	198,000 U
4-Methyl-2-pentanone	198,000 U
Acetone	198,000 U
Benzene	198,000 UJ
Bromodichloromethane	198,000 U
Bromoform	198,000 U
Bromomethane	198,000 U
Carbon disulfide	198,000 UJ
Carbon tetrachloride	198,000 U
Chlorobenzene	198,000 U
Chloroethane	198,000 U
Chloroform	198,000 U
Chloromethane	198,000 U
Cyclohexane	17,600 J
Dibromochloromethane	198,000 U
Dichlorodifluoromethane (Freon-12)	198,000 U
Ethylbenzene	86,000 J
Isopropylbenzene	85,700 J
Methyl acetate	198,000 U
Methyl-tert-butyl ether (MTBE)	198,000 U
Methylcyclohexane	119,000 J
Methylene chloride	198,000 U
Styrene	198,000 U
Tetrachloroethene	198,000 U
Toluene	198,000 U
Trichloroethene	198,000 U
Trichlorofluoromethane(Freon-11)	198,000 U
Vinyl chloride	198,000 U
Xylene, total	322,000
cis-1,2-Dichloroethene	198,000 U
cis-1,3-Dichloropropene	198,000 U
trans-1,2-Dichloroethene	198,000 U
trans-1,3-Dichloropropene	198,000 U

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JN - Qualitative identification questionable due to poor resolution

West Vieques - AOC-E
Validated Free Product
Analytical Results

Station ID	NDAEMW01
Sample ID	NDAEGW01-FP1
Sample Date	09/01/04
Chemical Name	
Semi-volatile Organic Compounds (UG/KG)	
1,1-Biphenyl	99,000 U
2,2'-Oxybis(1-chloropropane)	99,000 U
2,4,5-Trichlorophenol	297,000 U
2,4,6-Trichlorophenol	99,000 U
2,4-Dichlorophenol	99,000 U
2,4-Dimethylphenol	99,000 U
2,4-Dinitrophenol	297,000 R
2,4-Dinitrotoluene	99,000 U
2,6-Dinitrotoluene	99,000 U
2-Chloronaphthalene	99,000 U
2-Chlorophenol	99,000 U
2-Methylnaphthalene	341,000 J
2-Methylphenol	99,000 U
2-Nitroaniline	297,000 R
2-Nitrophenol	99,000 U
3,3'-Dichlorobenzidine	201,000 U
3-Nitroaniline	297,000 R
4,6-Dinitro-2-methylphenol	297,000 R
4-Bromophenyl-phenylether	99,000 U
4-Chloro-3-methylphenol	99,000 U
4-Chloroaniline	99,000 U
4-Chlorophenyl-phenylether	99,000 U
4-Methylphenol	99,000 U
4-Nitroaniline	297,000 R
4-Nitrophenol	297,000 R
Acenaphthene	99,000 U
Acenaphthylene	99,000 U
Acetophenone	99,000 U
Anthracene	99,000 U
Atrazine	99,000 U
Benzaldehyde	99,000 U
Benzo(a)anthracene	23,700 J
Benzo(a)pyrene	99,000 U
Benzo(b)fluoranthene	99,000 U
Benzo(g,h,i)perylene	18,900 J
Benzo(k)fluoranthene	99,000 U
Butylbenzylphthalate	17,500 J
Caprolactam	99,000 U
Carbazole	99,000 U
Chrysene	20,800 J
Di-n-butylphthalate	99,000 U
Di-n-octylphthalate	99,000 R
Dibenz(a,h)anthracene	99,000 U
Dibenzofuran	99,000 U
Diethylphthalate	99,000 U
Dimethyl phthalate	99,000 U
Fluoranthene	99,000 U
Fluorene	30,400 J
Hexachlorobenzene	99,000 U
Hexachlorobutadiene	99,000 U
Hexachlorocyclopentadiene	99,000 U
Hexachloroethane	99,000 U
Indeno(1,2,3-cd)pyrene	99,000 R
Isophorone	99,000 U
Naphthalene	118,000 J
Nitrobenzene	99,000 U
Pentachlorophenol	297,000 R
Phenanthrene	73,800 J
Phenol	99,000 U
Pyrene	50,300 J
bis(2-Chloroethoxy)methane	99,000 U
bis(2-Chloroethyl)ether	99,000 U
bis(2-Ethylhexyl)phthalate	92,100 J
n-Nitroso-di-n-propylamine	99,000 U
n-Nitrosodiphenylamine	99,000 U

Notes:

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West Vieques - AOC-E
Validated Free Product
Analytical Results

Station ID	NDAEMW01
Sample ID	NDAEGW01-FP1
Sample Date	09/01/04
Chemical Name	
Pesticide/Polychlorinated Biphenyls (UG/KG)	
4,4'-DDD	21,000 U
4,4'-DDE	21,000 U
4,4'-DDT	21,000 U
Aldrin	11,000 U
Aroclor-1016	210,000 U
Aroclor-1221	430,000 U
Aroclor-1232	210,000 U
Aroclor-1242	210,000 U
Aroclor-1248	210,000 U
Aroclor-1254	210,000 U
Aroclor-1260	210,000 U
Dieldrin	21,000 U
Endosulfan I	11,000 U
Endosulfan II	21,000 U
Endosulfan sulfate	21,000 U
Endrin	21,000 U
Endrin aldehyde	21,000 U
Endrin ketone	21,000 U
Heptachlor	11,000 U
Heptachlor epoxide	11,000 U
Methoxychlor	110,000 U
Toxaphene	1,100,000 U
alpha-BHC	11,000 U
alpha-Chlordane	11,000 U
beta-BHC	11,000 U
delta-BHC	11,000 U
gamma-BHC (Lindane)	11,000 U
gamma-Chlordane	11,000 U
Total Metals (MG/KG)	
Aluminum	29.8 J
Antimony	0.307 J
Arsenic	0.512 J
Barium	7.5 J
Beryllium	0.0156 U
Cadmium	0.0361 J
Calcium	133 J
Chromium	0.386 J
Cobalt	0.166 J
Copper	35.2 J
Cyanide	0.132 U
Iron	97.7 J
Lead	8.78
Magnesium	3.85 J
Manganese	2.81
Mercury	0.00396 J
Nickel	0.705 J
Potassium	3.1 J
Selenium	0.277 U
Silver	0.026 U
Sodium	13.7 J
Thallium	0.0454 U
Vanadium	16.3
Wet Chemistry (MG/KG)	
Total organic carbon (TOC)	NA
Total Petroleum Hydrocarbons (MG/KG)	
Aliphatics C10-12	15,800
Aliphatics C12-16	11,100
Aliphatics C16-21	20,500
Aliphatics C21-35	1,150,000
Aliphatics C6-8	2,980
Aliphatics C8-10	10,300
Aromatics C10-12	1,210
Aromatics C12-16	1,380
Aromatics C16-21	3,220
Aromatics C21-35	52,800
Aromatics C7-8	245
Aromatics C8-10	576
Oil and Grease	NA
Total recoverable TPH	NA
TPH-diesel range	NA
TPH-gas range	NA
TPH-oil range	NA
Total Petroleum Hydrocarbons, C10-C28	533,000
Total Petroleum Hydrocarbons, C12-C28	235,000
Total Petroleum Hydrocarbons, C6-C10	10,400
Total Petroleum Hydrocarbons, C6-C12	51,300

Notes:
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APPENDIX L

2005 TOC Data

2005 Total Organic Carbon Data
AOC E Remedial Investigation Report
Vieques, Puerto Rico

STRMATRIXID	SITEID	STATIONID	SAMPLEID	STRANALYTE	FLTRESULT	Units
SB	W-AOC-E	WAE-SO13	WAE-SB13-0406R	Total organic carbon (TOC)	2890	MG/KG
SB	W-AOC-E	WAE-SO13	WAE-SB13-3234	Total organic carbon (TOC)	3170	MG/KG
SB	W-AOC-E	WAE-SO13	WAE-SB13-3436	Total organic carbon (TOC)	7400	MG/KG
SB	W-AOC-E	WAE-SO13	WAE-SB13P-0406R	Total organic carbon (TOC)	3480	MG/KG
SS	W-AOC-E	WAE-SO13	WAE-SS13-0002	Total organic carbon (TOC)	7340	MG/KG
SB	W-AOC-E	WAE-SO14	WAE-SB14-0406	Total organic carbon (TOC)	1500	MG/KG
SB	W-AOC-E	WAE-SO14	WAE-SB14-4244	Total organic carbon (TOC)	5070	MG/KG
SB	W-AOC-E	WAE-SO14	WAE-SB14-4446	Total organic carbon (TOC)	1740	MG/KG
SS	W-AOC-E	WAE-SO14	WAE-SS14-0002	Total organic carbon (TOC)	2320	MG/KG
SB	W-AOC-E	WAE-SO15	WAE-SB15-0406R	Total organic carbon (TOC)	1940	MG/KG
SS	W-AOC-E	WAE-SO15	WAE-SS15-0002	Total organic carbon (TOC)	3110	MG/KG
SB	W-AOC-E	WAE-SO16	WAE-SB16-0406	Total organic carbon (TOC)	1390	MG/KG
SS	W-AOC-E	WAE-SO16	WAE-SS16-0002	Total organic carbon (TOC)	3390	MG/KG
SS	W-AOC-E	WAE-SO17	WAE-SS17-0002	Total organic carbon (TOC)	3330	MG/KG
SS	W-AOC-E	WAE-SO17	WAE-SS17P-0002	Total organic carbon (TOC)	3300	MG/KG
SS	W-AOC-E	WAE-SO18	WAE-SS18-0002	Total organic carbon (TOC)	7010	MG/KG
SS	W-AOC-E	WAE-SO19	WAE-SS19-0002	Total organic carbon (TOC)	2750	MG/KG