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Sediment Sampling Analysis Report

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Defense Distribution Depot

Memphis, Tennessee Sediment Sampling Program

30 January 1996

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Acronyms and Abbreviations

148 4 **ACRONYMS AND ABBREVIATIONS**

ASTM	American Society for Testing and Materials
BFB	Bromofluorobenzene
CLP	Contract Laboratory Program
DDMT	Defense Distribution Depot, Memphis, Tennessee
DFTPP	Decafluorotriphenylphosphine
DĻA	Defense Logistics Agency
DQO	Data Quality Objectives
EPA	Environmental Protection Agency
FΒ	Field blank
FCR	Field change request
GC/MS	Gas chromatography/mass spectroscopy
HPCDD	Heptachlorodibenzodioxin
HPCDF	Heptachlorodibenzofuran
HXCDD	Hexachlorodibenzodioxin
HXCDF	Hexachlorodibenzofuran
µg/kg	Microgram per kilogram
m g/kg	Milligram per kilogram
MS/MSD	Matrix spike/matrix spike duplicate
NPDES	National Pollutant Discharge Elimination System
OCDD	Octachlorodibenzodioxin
OCDF	Octachlorodibenzofuran
PAH	Polynuclear aromatic hydrocarbons
PARCC	Precision, accuracy, representativeness, comparability, and completeness
PCB	Polychlorinated biphenyis
PECDD	Pentachlorodibenzodioxin
PECDF	Pentachlorodibenzofuran
QA/QC	Quality assurance/quality control
QAPP	Quality Assurance Project Plan
RI/FS	Remedial investigation/feasibility study FiELD OFFILE





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RPD Relative percentage difference

SOP Standard operating procedure

SOW Statement of work

SVOC Semivolatile organic compound

TAL Target analyte list

- TB Trip blank
- TCDD Tetrachlorodibenzodioxin
- TCDF Tetrachlorodibenzofuran

TDEC Tennessee Department of Environment and Conservation

USASSDC United States Army Space and Strategic Defense Command

VOC Volatile organic compound

WP Work Plan

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1.0 Introduction



The U.S. Army Space and Strategic Defense Command (USASSDC) has a requirement to provide support to the Defense Logistics Agency (DLA), Defense Distribution Depot, Memphis, Tennessee (DDMT). As a portion of this requirement, EDAW, Inc. was tasked to complete sediment and surface soil sampling to support the DDMT Remedial Investigation/ Feasibility Study (RI/FS) efforts.

1.1 LOCATION

The DDMT covers 642 acres of land in the city of Memphis, Shelby County, Tennessee, and is located approximately 5 miles east of the Mississippi River, just northeast of the Interstate 240-Interstate 55 junction (figure 1-1). Airways Boulevard borders the depot on the east, while Dunn Road, Ball Road, and Perry Road define the northern, southern, and western boundaries, respectively, of the main installation. The Dunn Field portion of the depot is located immediately north of the main installation and is bordered by Dunn Road and Hays Road on the southern and eastern borders, respectively, by private property and Rozelle Street on the western boundary, and the Illinois Central Gulf Railroad and Person Street on the northern boundaries.

1.2 SCOPE OF THIS EFFORT

The scope of this effort is limited to sampling and analytical results. The sampling is being conducted to support the DDMT RI/FS effort to collect sediment samples at offsite outfall locations around the perimeter of the DDMT. The sample locations were identified by the DDMT RI/FS Project Manager during an initial site visit on 25 August 1995. To ensure an approach consistent with onbase RI/FS investigations, the *Draft Final Screening Sites Field Sampling Plan* (U.S. Army Corps of Engineers, 1995) was consulted. The analytical results presented in this report will be incorporated by the DDMT into the overall RI/FS effort.

Representatives from EARTH TECH, as subcontracted to EDAW, conducted the sediment sampling program from 9–12 October 1995. The sampling and subsequent analysis, the results of which are provided in this report, were completed following guidance contained in the *DDMT Sediment Sampling Program Work Plan* (WP) (U.S. Army Space and Strategic Defense Command, 1995a) and in the *Health and Safety Guidance, Sediment Sampling Program DDMT* (U.S. Army Space and Strategic Defense Command, 1995a).

This report documents the field and laboratory procedures followed during collection of the 18 sediment samples and presents the analytical results. Included in this report are analytical data validation summaries and a discussion of the precision, accuracy, representativeness, comparability, and completeness (PARCCs) parameters for the data set. The quality assurance/quality control (QA/QC) protocols used during sample collection, analysis, and data reduction are also discussed in the report. Electronic copies of the analytical data and associated QA/QC samples, formatted as an environmental data management system in Microsoft-Access³, accompany this report.



2.0 Sampling and Analytical Program

2.0 SAMPLING AND ANALYTICAL PROGRAM

Procedures and methods used during sampling and a discussion of the analytical program completed for the sampling event are presented in this section. Eighteen sediment samples were collected during the sampling event. These 18 sediment samples (identified as SD1 through SD19, exclusive of SD13) were collected from the locations shown on figure 2-1. Drawings 1 and 2 show the sediment sample locations in more detail. Deviations from the September 1995 WP were documented using field change request (FCR) forms (appendix A).

2.1 FIELD CHANGE REQUESTS

The WP originally specified the collection and analysis of 19 sediment samples. One sampling location, designated as SD13 on figure 2-1, was selected during the initial site visit. Further inspection of proposed location SD13 revealed that a sediment sample could not be collected from this location. FCR #1 documents the reason for the deletion of this sampling location from the field program. FCR #2 was filed because the locations for sediment sample numbers 13 through 19 (as labeled on figure 4-1 of the WP) were misidentified on table 5-1 of the WP; FCR #2 contained information which corrected table 5-1, making it consistent with figure 4-1.

2.2 SAMPLING PROGRAM AND PROCEDURES

Sample collection at the 18 locations was completed following the procedures described in section 4.0 of the WP; a summary of the site-specific procedures is presented in the following discussions.

2.2.1 SAMPLE EQUIPMENT DECONTAMINATION

All sampling was completed using dedicated stainless steel instruments and bowls. This equipment was decontaminated prior to the initiation of sampling using the following procedures:

- deionized water and laboratory-grade detergent wash
- deionized water rinse
- second deionized water rinse
- equipment was allowed to air dry.
- wrapped in atuminum foil until used

The used decontamination water was disposed of following procedures discussed in section 2.2.4 of this report.





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2.2.2 CONCRETE CORING PROCEDURES

Locations SD19, SD17, and SD4 were located in culverts/drainage areas that were covered with concrete; these locations required coring to provide the field team access to the sediment underlying the culverts. Memphis Concrete Cutting was subcontracted to core three 10-inch diameter holes in the concrete at these locations. The concrete was approximately 4 inches thick at the three locations. Because the sediment immediately below the core could have potentially contacted the coring equipment, these sediment samples were collected after removing and discarding the sediment immediately underlying the concrete. The holes in the concrete were repaired using a quick-drying, commercially available concrete patching material.

2.2.3 SAMPLING PROCEDURES

Prior to sampling each of the proposed locations, an attempt was made to identify the sediment/native soil interface. In general, the sediment/native soil interface could not be determined, and grab samples of the upper 0 to 8 inches below ground surface interval were obtained from each location. The sampling horizon and depths are included in the section 3.0 discussions. Sediment samples were collected using dedicated, decontaminated stainless steel spoons and bowls. If required, a dedicated, decontaminated, stainless steel knife was used to remove vegetation and other debris from around the sampling location. From each location, the sample volume required for volatile organic compound (VOC) analysis was collected by directly transferring sediment into the sample jar; these jars were filled completely, such that no headspace remained in the jars. The remaining sample, for non-purgeable organic and inorganic analysis, was placed in a dedicated, decontaminated stainless steel bowl and composited before filling the remaining sample containers supplied by the analytical lab.

After collection, each sample was labeled and placed on ice; chain of custody was initiated at this time. Each location was referenced to existing permanent site features using a 100-foot fiberglass tape measure and/or photographed. Logbook entries, soil sampling forms, and photographs are included as appendices B, C, and D, respectively.

2.2.4 DISPOSITION OF INVESTIGATION-DERIVED WASTE

Used wash and rinse water derived from washing the new dedicated sampling equipment was disposed of through the DDMT sanitary sewer. Miscellaneous solid waste such as used gloves, dedicated stainless steel bowls and instruments, cardboard boxes, etc., were disposed of as trash in the dumpsters located on the facility. Loose sediment was removed from all equipment before the equipment was disposed of as trash.

2.3 ANALYTICAL AND QUALITY ASSURANCE PROGRAM

The analytical program developed for the sediment sampling program was structured to meet U.S. Environmental Protection Agency (EPA) Level 3/Level 4 QA/QC requirements. Table 2-1 presents the analytical program selected for the sediment samples collected during this field event. The field quality assurance samples collected in association with these samples are also presented in table 2-1. This analytical matrix was developed based

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Table 2-1: Analytical Program-Sediment SamplingDefense Distribution Depot, Memphis. Tennessee

Map No./Sample No.	VOCs (e)	SVOCa (b)	TAL Metals (c)	Pesticides (d)	PCBs (d)	Dioxins (e)	Thiedyglycol (1)
SD1 through SD9/ M-SD1-101195 through M-SD9-101295	9	9	9	9	9	9	9
SD10 through SD12/ M-SD10-101095 through M-SD12-101095	3	3.	3	3	-	3	-
SD14/M-SD14-101295	1	1	1	1	_	1	_
SD15/M-SD15-101095	1	1	1	1	_	-	-
SD16/M-SD16-101095	1	1	1	٦	_	-	—
SD17/M-SD17-101095	١	1	1	1	_	-	-
SD18/M-SD18-101095	Ŧ	1	1	1	_	-	-
SD19/M-SD19-101195	1	1	1	1		1	_
Subtotal	18	18	18	18	9	14	9
QA Samples				,			
Field Duplicates:							
M-SD20-101195 (g)	1	1	1	1	1	1	٦
M-SD21-101295 (h)	١	, 1	1	1 '	T	-	-
Trio Blanks:							
M-TB1-101095	1	-	-	-	-	-	_
M-TB2-101195	1	_	· —	-	_	-	_
M-TB3-101295	1	_	-	-	_	_	_
Field Blank:							
M-FB1-101095 (i)	1	1	1	1	1	1	1
Matrix Spike:							
M-SD1-101095	1	1	۱	1	1	1	1
Matrix Spike Duplicate:							
M-SD1-101095	1	1	1	1	1	1	1
Total	26	23	23	23	14	18	13

(a) VOCs by EPA Statement of Work (SOW) OLMO1.8

(b) Semivolatile organic compounds (SVOCs) by EPA SOW OLMO1.8

(c) Target analyte list (TAL) metals plus cyanide by EPA SOW ILMO2.0

(d) Pesticides and polychlorinated biphenyls (PCBs) by EPA SOW OLMO1.8

(e) Dioxins by EPA SW846 method 8290

(f) Thiodyglycol by EPA SW846 method 8015 (modified)

(g) M-SD20-107095 is a duplicate of M-SD1-101095

(h) M-SD21-101295 is a duplicate of M-SD14-101295

(i) This sample is a blank of the deionized water used during decontemination

on guidance received from the DDMT Environmental Protection and Safety Office and from the *Draft Final Screening Sites Field Sampling Plan* (U.S. Army Corps of Engineers, 1995).

The sediment samples and the associated QA samples were packed on ice and shipped via overnight courier to Southwest Laboratory of Oklahoma for analysis. Southwest Laboratory of Oklahoma is approved by the U.S. Army Corps of Engineers Missouri River Division.

The data were evaluated and validated following the process outlined in *Functional Guidance for Evaluating Data Quality* (U.S. Environmental Protection Agency, 1991) and, as required, data validation qualifiers were added to the analytical results. An assessment of data quality objectives, as defined by precision, accuracy, representativeness, comparability, and completeness of the data set is presented in appendix E of this report. Data validation summaries were created as part of the evaluation and validation procedure. These summaries, chain of custody forms, and a complete listing of the analytical results, are included as appendix F of this report.



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3.0 SAMPLING LOCATIONS AND ASSOCIATED ANALYTICAL RESULTS

A brief description of the sampling locations and their associated analytical results are included in the following section.

3.1 SAMPLE LOCATION DESCRIPTIONS

Location SD1

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Sample M-SD1-101195 was collected from the location labeled SD1 on drawing 1 (photograph #1, appendix D). This sample was collected from the western edge of Dunn Field (DDMT property) at the fenceline/discharge point of a bottomless concrete culvert located adjacent to the DDMT National Pollutant Discharge Elimination System (NPDES) Outfall #009. The sediment/native soil interface could not be identified here; this sample was collected from a depth of 6 to 8 inches below grade and consisted of a well-graded gravel with 30 to 40 percent sand.

Location SD2

Sample M-SD2-101195 was collected from the location labeled SD2 on drawing 1 (photographs #2 and #3, appendix D). This sample was collected immediately west of DDMT property in a shallow drainage ditch located approximately 24 feet north of a storm water outfall and 11.5 feet west of the western boundary of Dunn Field (DDMT property). The drainage from which sample M-SD1-101195 was collected commingles with this ditch approximately 20 feet north of location SD2 (north and west of location SD1). The sediment/native soil interface could not be identified here; this sample was collected from a depth of 2 to 4 inches below grade and consisted of a well-graded gravel with sand.

Location SD3

Sample M-SD3-101195 was collected from the location labeled SD3 on drawing 1 (photograph #4, appendix D). This sample was collected immediately west of Dunn Field (DDMT property) in a shallow drainage ditch located approximately 50 feet north of sediment sampling location SD2. The sediment/native soil interface could not be identified here; this sample was collected from a depth of 2 to 4 inches below grade and consisted of a very moist sand/gravel mixture.

Location SD4

Sample M-SD4-101195 was collected from the location labeled SD4 on drawing 1 (photographs #5, appendix D). This sample was collected from the western edge of Dunn Field (DDMT property) below the concrete culvert located adjacent to the DDMT NPDES Outfall #010. This location required coring. The sample was collected from a depth of 4 to 7 inches below grade and consisted of a very moist/wet gravel with sand and silt.

Location SD5

Sample M-SD5-101295 was collected from the location labeled SD5 on drawing 1 (photograph #6, appendix D). This sample was collected from a shallow ditch which carries runoff away from Dunn Field (off DDMT property) west and south of NPDES Outfall #010. Sample M-SD5-101295 was collected from the centerline of a shallow ditch approximately 45 feet downstream of location SD4. The ditch contains abundant pieces of 8- to 12-inch diameter rip-rap; the sediment/native soil interface could not be identified here. This sample was dry and consisted = gravel/sand mixture with a trace of organics (root hairs).

Location SD6

Sample M-SD6-101295 was collected from the location labeled SD6 on drawing 1 (not photographed, appendix D). This sample was collected from a shallow ditch that carries runoff away from Dunn Field (off DDMT property) west and south of NPDES Outfall #010. Sample M-SD6-101295 was collected from the centerline of a shallow ditch approximately 45 feet downstream of location SD5. The ditch contains abundant pieces of 8- to 12-inch diameter rip-rap; the sediment/native soil interface could not be identified here. This sample was dry and consisted of a well-graded sand containing minor gravel and silt.

Location SD7

Locations SD7, SD8, and SD9 were selected based on discussions between representatives of the DDMT Environmental Protection and Safety Office, Tennessee Department of Environment and Conservation (TDEC), and the DDMT environmental advisory board. The rationale for selection of these locations follows. A series of small topographic depressions exists extending from the DDMT property (Dunn Field) to a small east-west drainage ditch that crosses under Rozelle Street south of the powerlines (drawing 1). These depressions are the likely pathway for overland storm flow exiting the western boundary of the facility and migrating to the small east-west trending drainage ditch. M-SD7-101295 was collected from the location labeled SD7 on drawing 1 (not photographed). This sample was collected from a topographic depression located 116 feet west of the DDMT fenceline and 93 feet south of the tree/brushline. The sediment/native soil interface could not be identified here. This sample was collected from 1 to 3 inches below ground surface, was dry, and consisted of silt with clay and organic material (root hairs).

Location SD8

M-SD8-101295 was collected from the location labeled SD8 on drawing 1 (photograph #7, appendix D). This sample was collected from a topographic depression at an elevation lower than location SD7 and 153 feet east of the southern electrical utility pole adjacent to Rozelle Street and 27 feet north of the tree/brushline west of 1806 Rozelle Street. The sediment/native soil interface could not be identified here. This sample was collected from 1 to 3 inches below ground surface, was dry, and consisted of silt with a trace of sand, clay, and organic material (root hairs).

Location SD9

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M-SD9-101295 was collected from the location labeled SD9 on drawing 1 (not photographed). This location was collected in the centerline of the shallow east-west trending drainage ditch, 100 feet east of the eastern edge of Rozelle Street. The sediment/native soil interface could not be identified here. This sample was collected from 1 to 3 inches below ground surface, was dry, and consisted of silt/clay mixture with organics (root hairs) and a trace of gravel.

Location SD10

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Sample M-SD10-101095 was collected from the location labeled SD10 on drawing 1 (not photographed). This sample was collected from a shallow, open ditch that carries runoff north away from the DDMT (Dunn Field) and under the Illinois Central Gulf Railroad tracks. The sample was collected 37.5 feet north of the DDMT fenceline and 36 feet south of Person Street. The sediment/native soil interface could not be identified here. This sample was collected from depths of 1 to 2 inches below ground surface and consisted of sand with minor gravel and some organics (root hairs and leaves).

Location SD11

Sample M-SD11-101095 was collected from the location labeled SD11 on drawing 1 (not photographed). This sample was collected near the intersection of Boyle and Hays Streets. The collection point was 9.6 feet east of the DDMT Dunn Field fenceline and 8.8 feet downstream (west) from a storm sewer outfall. This storm sewer outfall probably drains private and municipal property east of the DDMT. The sediment/native soil interface could not be identified here. This sample consisted of sand/silt mixture containing organics (root hairs and leaves) and a trace amount of gravel and clay.

Location SD12

Sample M-SD12-101095 was collected from the location labeled SD12 on drawing 1 (not photographed). This sample was collected near the intersection of Carver and Hays Streets. The collection point was 2.5 feet east of the DDMT Dunn Field fenceline and 2.5 feet downstream (west) from a storm sewer outfall. This storm sewer outfall probably drains private and municipal property east of the DDMT. The sediment/native soil interface could not be identified here. This sample was a moist, mottled clay containing trace amounts of sand, silt, and organics (root hairs and leaves).

Location SD13

This proposed location (LaPaloma and Murley Streets) was not sampled during this field event (see FCR #1).

Location SD14

Sample M-SD14-101295 was collected from the location labeled SD14 on drawing 2. This sample was collected near the intersection of Dunn Avenue and Custer Street. This sample was collected from the bottom of a shallow ditch, 12.5 feet east of the outfall of a large



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box culvert and 26 feet north of the northern edge of Dunn Avenue. Several NPDES outfalls from the northern portion of the main installation drain through the box culvert into this ditch. It is not known whether any municipal storm sewer drains discharge storm water through the box culvert into the ditch. A strong hydrocarbon odor existed within the ditch, and an oil layer was ponded behind debris at the eastern end of the box culvert (photograph #8, appendix D). The sediment/native soil interface could not be identified here. This sample was collected from 3 to 6 inches below ground surface, was moist, and consisted of gravel with sand containing trace amounts of organics (root hairs and sticks).

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Location SD15

Sample M-SD15-101095 was collected from the location labeled SD15 on drawing 2 (photographs #9, #10, and #11, appendix D). This sample was collected near the intersection of Ball Road and Mullen Road, 1 foot south of a storm sewer outfall and 26.5 feet north of the northern edge of Ball Road. This storm sewer outfall contains many unidentified connections (see photographs #10 and #11). The sediment/native soil interface could not be identified here as the sampling location was under approximately 6 inches of water. This sample was wet and consisted of sand with abundant organic material (root hairs and leaves).

Location SD16

Sample M-SD16-101095 was collected from the location labeled SD16 on drawing 2 (not photographed). This sample was collected from the base of a shallow ditch which carries runoff away from the southern portion of the main installation (NPDES Outfall #012), further described as being 5.5 feet south of a storm sewer outfall (by the DDMT fenceline) and 25.5 feet north of the northern edge of Mullen Road. The sediment/native soil interface could not be identified here. This sample was collected at a depth of 2 to 6 inches below ground surface and consisted of a send/gravel mixture containing a trace amount of clay and silt.

Location SD17

Sample M-SD17-101095 was collected from the location labeled SD17 on drawing 2 [photograph #12, appendix D]. The location required concrete coring. This sample was collected from below the concrete downstream of the confluence of two shallow culverts that carry runoff away from the southern portion of the main installation (NPDES Outfall #004). The sample was collected 5.5 feet south of a storm sewer outfall and 8.5 feet north of the DDMT fenceline bordering Ball Road and near the intersection of "N" Street and 2nd Street. The sediment/native soil interface could not be identified here. This sample was collected at a depth of 5 to 7 inches below ground surface, was moist, and consisted of a clay with silt, sand, and gravel.

Location SD18

Sample M-SD18-101095 was collected from the location labeled SD18 on drawing 2 (photographs #13, #14 and #15, appendix D). This sample was collected from below a box culvert which trends southeasterly under Ball Road and connects the main installation (at NPDES #004) to an off-site area. Sediment sample M-SD17-101095 was collected

from the on installation end of the culvert. The outfall of this box culvert is approximately 6 feet above the ground surface; M-SD18-101095 was collected at the base of the culvert beneath approximately 1 foot of water. The sample was collected 49 feet southeast of the southern edge of Ball Road and approximately 5 feet east of the centerline of the end of the box culvert. The sediment/native soil interface could not be identified here, as the sample was collected under approximately 1 foot of water. This sample consisted of silt with sand and clay and minor amounts of organics (roots and leaves).

SD19

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Sample M-SD19-101195 was collected from the location labeled SD19 on drawing 2 (photographs #16, #17 and #18, appendix D). This sampling location required coring and was collected from below a concrete drainage culvert that drains the western portion of the main installation. This culvert continues under Perry Street and passes to the south of the Macedonia Baptist Church. The sample was collected 45 feet south/southeast of the eastern edge of Perry Street and 100 feet west of the edge of the DDMT main installation. The sediment/native soil interface could not be identified here. This sample was a well-graded sand/gravel mixture. The water in the ditch was diverted using absorbent material, and the core hole was bailed empty before the collection of the sample.

3.2 ANALYTICAL RESULTS

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Sediment sampling results are presented in table 3-1, which lists numerical values only for compounds which were detected in one or more samples in the data set. Because thiodyglycol was not detected in any sediment sample collected and analyzed during the field event, this compound was not included in table 3-1. A brief discussion of the analytical results, presented by compound group, is described in the following subsections of this report.

3.2.1 VOLATILE ORGANIC COMPOUNDS

Four VOCs—acetone (a common laboratory contaminant), carbon tetrachloride, toluene, and xylene (total)—were detected in one or more of the sediment samples. Concentrations of VOCs ranged from 4 to 110 micrograms/kilogram (μ g/kg).

3.2.2 SEMIVOLATILE ORGANIC COMPOUNDS

Semivolatile organic compounds (SVOCs) detected in the data set include phthalate ester compounds (common laboratory contaminants), carbazole, dibenzofuran, and polynuclear aromatic hydrocarbons (PAHs). The PAHs benzo (a) anthracene, benzo (a) pyrene, benzo (b) fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene were detected very frequently in the data set, occurring in 17 of the 18 samples collected. Individual SVOCs were detected in concentrations ranging from 9 to 55,000 µg/kg.

3.2.3 PESTICIDES AND POLYCHLORINATED BIPHENYLS

Pesticide compounds detected in the sediment samples include 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, aldrin, alpha-chlordane, beta-BHC, delta-BHC, dieldrin, endosulfan I, endrin, endrin aldehyde, gamma-chlordane, heptachlor, heptachlor epoxide, and methoxychlor. Concentrations of individual detections of pesticides ranged from 1.8 to 310 µg/kg. No polychlorinated biphenyls (PCBs) were detected in the data set.

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3.2.4 DICXINS

Dioxin and furan compounds detected in the sediment samples include 1,2,3,4,6,7,8-heptachlorodibenzodioxin (1,2,3,4,6,7,8-HPCDD), 1,2,3,4,6,7,8-heptachlorodibenzofuran (1,2,3,4,6,7,8-HPCDF), 1,2,3,4,7,8-hexachlorodibenzofuran (1,2,3,4,7,8,9-HPCDF), 1,2,3,6,7,8-hexachlorodibenzofuran (1,2,3,4,7,8,9-HPCDF), 1,2,3,6,7,8-hexachlorodibenzofuran (1,2,3,6,7,8-HXCDD), 1,2,3,6,7,8-hexachlorodibenzofuran (1,2,3,6,7,8-HXCDD), 1,2,3,6,7,8-hexachlorodibenzofuran (1,2,3,7,8,9-HXCDD), 2,3,7,8-tetrachlorodibenzofuran (TCDF), octachlorodibenzodioxin (OCDD), octachlorodibenzofuran (OCDF), total heptachlorodibenzodioxin (PECDD), total heptachlorodibenzofuran (PECDF), total tetrachlorodibenzodioxin (TCDD), and total tetrachlorodibenzofuran (TCDF). Dioxin and furan concentrations range from 0.003 to 61.6 µg/kg.

3.2.5 METALS

Twenty-two metals were detected in the sediment samples. Aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, mercury, nickel, potassium, silver, thallium, vanadium, and zinc were detected in one or more of the samples in concentrations ranging from 0.18 to 158,000 milligrams (mg)/kg.

3.2.6 CYANIDE

Cyanide was detected in ten sediment samples at concentrations ranging from 0.18 to 0.70 mg/kg.



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Table 3-1 Defense Distribution Depot, Memphis, Tennessee Sediment Sampling Analytical Results

	1295 95	FB1 10109	QUAL		8		33	•		Ξ	5 =	>:	2	-					11.	; >	-		∍	3	=	2	∍	⊃.	1	Ī	8	2		ź
	SD5 M-SD5-10 10/12/	M (183-10129), M	RESULT	2 6.	23	10	2:	2		1700	090			D D D D D D D D D D D D D D D D D D D			3000	4600	1700	1700	660	4600	1700	1700	480	1700	1700	1700	0066	220	3200	4700	0000	>>>>
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	1195 95 401-101095 1	CILIAI		:	5	D	Э		:		-	=:	=				=	2	1		•	94	2 -			ı≏	: ⊃	I	•	1	5			
1	5D2 M-5D2-10 10/11/ 10/12	RESULT		:	=	=	=		010 0	2	10					0071	370		120	22	510	44	370	120	370	27	016	020	6 E	620	0/E	460	202	
•	1195 5 81 101095 1	QUAL		=) =	⇒:	∍		=) =	2 =	==	2					08	حا	-	:	BII	∍	=	=	∍	2		=		-			
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	SD1 M-SD1-10 M-SD1-10/ 10/11/01 M-30/195, M-3	LIUS3R		7	~ ;	= ;	2	90	18	69	58	200	890	960	1300	0/1	720	82	350	170				007			0001				1500	2500		
	LDCATOR: SAMPLE ID: STION DATE: DCIATED OC: M	UNITS:	6 by CLP 3/90	pa/ko		en leo		unde by CLP 3/	pg/kg	1/0/kg	p/8/	. µ9/kg	0%/8n	Bayer	01VBn/	Cafe and Ang	63/0r		e hBrkg				Avaluat									pa/bu		
	COLLEC		Volatila Organic Compound:	ALETONE CABRON TETRACUI ODISC		XYLENE (TOTAL)	-	semivolatije Organic Compo	2-MEINTLAPHTHALENE ACENAPUTUSUS	STENADUTUV TUS	ALENENENE ANTURACINI	DENTOTIAL ENE	JENEOJAJANI HRACENE	SENZURAJPYRENE JENZORSELLIOO A UZUDUG		SENZUIG, H, IJPERYLENE	JIS(2-ETHYLHEYYL)BUTUAL	NUTYI RENTYI BUTUALAT	ARRANIE - CONFERENCE	HRYSENE	N-N-BUTYL PHTHAI ATE	1-N-DCTYL PHTHALATE	MBENZIA. HJANTHRACENE	VIBENZOFURAN	METHYLPHTHALATE	WAETHYL PHTHALATE	LUORANTHENE	LUDAENE	NDENO(1,2,3-CD)PYRENE	IAPHTHALENE	HENANTHRENE	YRENE		

5W Sold Weils C. C.P. Cardinel Jaboratory Program I mylog milligrams/Abgram V. Poling microspanu/Abgram

This sample is a field duplicate of M-6D1-101185 This sample is a field duplicate of M-6D14-101295 ...

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Data Validation Qualifiers 11. Handl 15 between Verdistricen finit and the nuamitation by 1. Fortible black contamitation 1. Reported value is entimated 1. Compound analyzed for but not detected

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		-	Fable 3-1	l Defense D Sediment	istributi Samplir	ion Depat, Memp ng Analytical Res	ohis, Tennessee sults		
	LOCATO SAMPLE 1 COLLECTION DA1 ASSOCIATED O	DR: SD1 1D: M-SD1-1(1E: 10/11/ 2C: M-102-10/195.M	01195 195 Fot-101095	SD1 ¹⁴ M-SD20-101 12/11/95 M-T82 101195,MF8	1195 5 16-101 095 M	SD2 M-SD2-101195 10/11/95 10/11/95	SD3 M-SD3 101195 10/11/95 i m 182-101195, m f81-101095	SD4 M-SD4-101195 10/11/95 M-102-101195,M FB1-001095	S05 M-S05-101295 10/12/95 M-T83-101295.M FB1-101095
	LINN	TS: RESULT	OUAL	HESULT	QUAL	HESULT OUAL	RESULT QUAL	RESULT OUVE	RESULT QUAL
PCB/Pesticides by (CLP 3/90					-			
4,4,-000	187	/kg 11	- , .	16	- - , '	5.80 J	3.50 U	3.80 U	ſ 9
4.4.101	2	/kg 29	- -	26		8.10 J	3.50 U	18	15
		שו קון האין	י ד בי	180	ב ר			09.5	[- 44
ALPHA-CHLORDAL	NE 701	/ka 14	- د د	26	, -,	9-60 1	0.00.4		
BETA-BHC		/kg 1.8		1.80	2	1.90	1.80	U 06.1	1.80
DELTA-BHC		/kg 1.6	0	1.80	2	1.80 U	1.80 U	1.90	0.00
DIELORIN	Br	/kg 12	ר	8.10	٦	6 .30 J	Г В	3.80 U	38
ENDOSULFANI	Ē	/kg -1.6	D O	6.60	· ر	7.60 L	4.60 1	1.90 U	1.80 U
	Ê	/kg 14	י ר: י	26	. ,	15	10	3.80	18 70
ENDRIN ALDEHYD		/kg 3.5	0.	4.60	-, ·		9.70 J	3.80 U	3.40 U
GAMMA-CHLOHD	ANE	116 115 115	 9	12	-, -		5,10 J		4.80
				1 00	י =			1) 06.1 10 06.1	1.80
METHOXYCHLOR		jkg 18	- = 2	18))	0 08.1	19.00 19		19 08. U 08
ois-t- to the our	0000 010							•	
1.2.3.4.6.7.8-HPC	200 2700 1101	rika 6.4	14	6.08		1.31 0	0.83 0	0.39 0	3 10 11
1.2.3.4.6.7.8-HPC	LOL LOL	1/kg	56	0.43	_	0.31	0.23	0.06	0.45
1.2,3,4,7,0-HXCD	ŝ	0.0	5	0.01	∍	0.01 U	0.01 U	0.002	0.28 U
1,2,3,4,7,8,9-HPC		0.1 0		60.0 200	•	0.09	0.0	0.04	0.42 U
1774-8','0'5'7'I			-==		=			0.01 0	
1.2.3.7.8.9-HXCD			15	0.08	,		0.02	0.003 0	
2, 3, 7, 8-TCDF		0.0	002 O	00.0	0	0.004	0.004	0.005 U	0.14 U
ocdd	Ę	h/ng 51		61.60	_	15.40	0.44	4.30 ()8	20
OCDF	Ę	1/kg 2.1	36 ()8	1.90	68	1.06 (JB	0.63 ()8	0.12 (18	2.40 0
	Ę			12.60	-	2.62	1.45	87.0 51.5	000 P
						0.10	0.18 0.18	900	0.00.1
TOTAL HXCDF			20	0.60		0.35	0.29	0.003 U	
TOTAL PECOD		////	10	0,00	0	0.004	0.002 U	0.003	
TOTAL PECOF	1	1/kg 0.	11	0.08	-	0.03	0.04	0.004 U	0.30
TOTAL TCDD	87	1/kg 0.4	001 001	0.0	2	0.003 U	0.002 U	0.003 U	0.16 U
TOTAL TCDF	Ę	1/kg 0.(5	0.01	_	0.004 U	0.004 U	0.005 U	0,14 U
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Table 3-1 Defense Distribution Depot, Memphis, Tennessee Sediment Sampling Analytical Results

SD5 M-SD5-101295 10/12/95 M-183 101295, M-11 101095	RESUL COUAL	1	6320 0.42 U	47.60 6 2 3 10	0.40 II 0.40 II 43100	2.60 0	7.40	42.60 9390	697 J	4.80	375 II 0.42 U	68.80 0 12,90	69.60	0.34 0			14	8
SD4 M-SD4-101195 10/11/95 M-T82-101195,M F81-101095	RESULT OUAL	3500	0.46 U 2.50	74.90	0.23 U	14.60 219	34.70 6870	786 (j	160 J 0.12 U	26.20	9,10	6.70 C	0711	0,17 U				
SD3 M-SD3-101195 10/11/95 10/11/95	RESULT QUAL	2420	0.44 0 1.80 0	53 0.22 ()	2.40 148000	10.70 1.50 0	4500 78 20	00161	- D 1.0	409 0 0 0 0 0 0 0	0.42		2	0.16 U				
SD2 M-SD2-101195 10/11/95 A 182 10195,M F81-101035 M	RESULT QUAL	6580	0.47 U 1.70 ()	1.20 +	37900 5 10	0.80 110 110 110	2470 19.90	5830 232	0.12	1150 11	0.47 U 282 D	4.70 () 68.90		0.17 U				
SD1 ⁴⁴ M-SD20-101195 10/11/95 1102 HD1195, M HB1-101095 M		2810	0.433 U 1.80 U 45 30 U	0.29	19200 6.90	4.30	2810	1210 115 J	0.11 0.12 0.0	253	B7.70 []	6.70 D 40,60	- - -					
SD1 M-SD1-101195 10/11/95 102-101195,M fe1-101095 M RESULT OUAL		2170 0.43 11	24,10	0.23	19200 8.40	0.76 D	17.70	74	2.30	180 0	57.50	33.94	0.16	•				
LUCCATOR: SAMPLE ID: SAMPLE ID: COLLECTION DATE: ASSOCIATED UC: M UNITS:		ang/ka mg/ka	т <u>ө</u> /ка тө/ка	Day/Duu Day/Buu	0,kg 0,kg	вж)бш С 400ш	04/04 04/04	ByjGu ByjGu	53/8u	mg/kg mg/ka	mg/kg	By/Bu	mg/kg	•	•			
	Metals by CLP	ALUMINUM ANTIMONY	BARIUM BARIUM DEBVILIUM		CHROMIUM CORALT	COPPER	LEAD MAGNESIUM	MANGANESE MERCURY	NICKEL	SILVER	SODIUM	ZINC	Cyanide by CLP CYANIDE					

5V Solid Weste CD CP Contract Lebonstray Phogram | mgug miligramaAbgram CD Pol/ng microgramaAbgram

This sample is a field duplicate of M-SD1-101105 This sample is a field duplicate of M-SD14-101295

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		Ta	ible 3-1	Defense D Sediment	istributi Samplii	ion Depot ig Analyti	, Memph ical Resu	iis, Tenne: Its	ssee				
¢ CC	LOCATOR: SAMPLE ID: LECTION DATE: SSOCIATED DC:	SDB- M-SD6-1012 10/12/95 M-183-10/295.M1	295 5 101095	SD7 N-SD7-101 101-712/95	296 5 81-101095 u	SDB M-SOB-10 10/12/ 10/12/	і 11295 95 ғы-тотоозы	902 01-602-M 9/2 1/01	11 295 95 FB1-101095	MUSSUIDI-181-W) 01095 15 181-101035	105 1-1102-M 101/01 M,220101-101 M	01095 95 181-101095
	OMITS:	RESULT	QUAL	RESULT	OUAL	RESULT	QUAL	RESULT	OUAL	RESIJLT	QUAL	RESULT	DUAL
Velatila Organic Compa ACETONE CARBON TETRACHLO TOLUBNE XYLENE (TOTAL)	unda by CLP 3/9 19/kg 10E 109/kg 10/kg	8	222	8 0 40	7323	52 11	-333	5 2 2 1 1 1	7333	13 13 13	33 33	<u>989</u>	3333 ;
Semivolatile Crgenic Cr 2-METHYLNAPHTHAL ACENAPHTHENE ACENAPHTHYLENE ANTHRACENE BENZOIAJANTHRACEN	mpounds by CLF Jug/kg Jug/kg Jug/kg Jug/kg Jug/kg	7 3/90 1400 1400 1400 1400 1400 170 2300	32331	350 350 350 350 350 350	2000 -		33332	350 350 350 350 350 350 350 350 350 350	333223	390 390 140 140 140 140 140 140 140 140 140 14	2635	420 86 24 270 1000	33337
BENZOJAJPYRENE BENZOJBJALUORANTH BENZOJGJALJIPERYLEN BENZOJKIFLUUORANTH BIS(2.ETHYLHEXYLIP BUTYL BENZYL PHTH, CARBAZOLE	2014 ENE 20140 ENE 20140 ENE 20140 1014 11141.001 11141.0001 11141.00010000000000	2000 3000 400 640			=======================================	360 360 360 360 360 360 360 360 360 360	2232 83 3		2°33°32;	2000 2000 400 2000 400 200 200 200 200 2	•: c•	1300 2100 420 2900 2160 216	23-22
CHRYSENE DI-N-BUTYL PHTHALA DI-N-CTYL PHTHALA DIBENZ(A,H) ANTHRALA DIBENZ(A,H) ANTHRALA DIBENZOFURAN DIBENZOFURAN DIBENZOFURAN FLUORENE FLUORENE FLUORENE FLUORENE MAPHTHALENE MAPHTHALENE PYRENE			- 333 233-2-3- ^	2 380 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	=33=33=======	22222222222222222222222222222222222222	3333 33 333333322		223333322333327		#20202 002	7400 7400 7400 7400 7400 7400 7400 7400	783333333777
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Stv Sold Warts CLP Connact Laboratory P moving mildigram poling mic regimentalitigram	5					0==-3	Vebdetlan Guel Peted stan Guel Peted Man Repeted Man Repeted a	digra Mgra Jue draecic D. Collearuration nglyzed for Lod or	it form and the of defected	nin - sile (itter)			2.9

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This sample is a field displace at M-601-101195 This sample is a field displace of M-6014-101295 B.V. Sould Waats C.P. Contract Laboratory Program Tooling middingram Joglug mitologiumstallingram - This tempise is a field displayers of - This tempise is a field displayers of

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Table 3-1 Defense Distribution Depot, Memphis, Tennessee Sediment Sampling Analytical Results

M T81-101095,M F81, 101055 SD11 M-SD11-101095 10/1095 QUAL 373773737377333 ÷ **22333333322**277373833 ų, 148 4.20 5.30 2.20 2.20 2.20 2.20 2,200 2,0000 RESULT M-TB1-101095.M FB1-101095 OUAL SD10 M-SD10-101095 10/10/95 27272 **2**27272 ==>**2**=> ₿ ⊃ ∍ RESULT · Vatula tron Undelliers Reads to between the derections tensi and the quantitations tensi Phatable Deard constituention Reported value is astismated Comploared Innity and for dual real defaulted M-TBJ-101295,M181-101095 M TBJ-101295,M F81-101095 SD9 M-SD9-101295 10/12/95 OUAL ***>* _⊃ **⇒** 6.30 22 140 3.10 1.80 1.80 RESULT 260 SD8 M-SD8-101295 10/12/95 OUAL --RESULT 4 783 101295,M F81-101005 QUAL ≎=>=>===== 22222 507 M-507-101295 10/12/95 RESULI 200101-184 M,207101-E07 M -----OUAL 73333333**7**2733333333 M-S06-101295 10/12/95 5.90 34 1.80 1.80 1.80 1.80 SD6 RESULT LOCATOR: SAMPLE 1D: SOULECTION DATE: ASSOCIATED QC: 83/84 SUNUS: 84/8/8 Dioxin by EPA SWB48 B280 1.2.3.4.6.7.8.HPCDD 1.2.3.4.6.7.8.HPCDF 1.2.3.4.7.8.HXCDF 1.2.3.4.7.8.9.HPCDF 1.2.3.6.7.8.HXCDF 1.2.3.6.7.8.HXCDD 1.2.3.6.7.8.HXCDD 1.2.3.6.7.8.HXCDD 1.2.3.6.7.8.HXCDD 2.3.7.8.TCDF 0CDD PCB/Pesticides by CLP 3/90 Sold Waije Conuati Leboratory Program midigramajikilogram micrograma/kilogram ENDRIN ALDEHYDE Gamma-Chlordane Heptachlor Heptachlor Epoxide Methoxychlor ALPHA-CHLORDANE BETA-BHC ENDOSULFAN J ENDRIN 000F 101AL HPCDF 101AL HPCDF 101AL HPCDF 101AL HXCDF 101AL PECDF 701AL PECDF 701AL PECDF 701AL TCDD 101AL PECDF DELTA-BHC 4.4⁻⁰⁰⁰ 4,4'-00E 4,4'-00T DIELORIN ALDRIN

(12) semple to e liets duplicers of M-5001-101195 This semple is a field duplicars of M-5014-101395 ...

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Table 3-1 Defense Distribution Depot, Memphis, Tennessee Sediment Sampling Analytical Results

M TB1- J01095, M full 101095 SD11 M-SD11-101095 10/10/95 ≑≎ ÷ - D ____ QUAL = 2400 2400 216 0.14 313 313 56.05 56.05 56.05 547 247 **B100** RESULT M-101 101095.M F81-101095 ----- \Rightarrow ÷ \supset SD10 M-SD10-101095 10/10/95 OUAL 8.40 5.40 14.30 91120 76.70 11.10 428 0.11 8.80 6.14 8.130 8.130 8.130 8.130 8.130 8.130 8.130 8.130 3-:70 0.46 6.30 77,30 0.35 0.35 17:00 RESULT 460101-181 W \$62101 COL M \$60101-101 W \$02101 COL M \$60101 LET W \$662101 COL COL M $\supset \square$ QUAL --SD9 M-SD9-101295 10/12/95 2040 746 0.25 793 793 743 743 743 20.70 217 6700 0.67 10.60 142 0.58 9.40 12 13.70 4190 17000 173 RESULT ¢⊐≎ **~ >** = ∍ \supset QUAL SD8 M·SD8·101295 10/12/95 15200 35.40 1550 369 0,11 10.80 810 0.43 21.80 7410 0.43 0.43 94.10 94.10 0.47 0.47 0.22 1180 6,10 37.40 RESULT = **>** = OUAL ⊅ 00 Ŧ **~** > SD7 M SD7-101295 10/12/95 6210 8,20 97,80 0.48 0.48 0.48 0.21 1160 7.60 7.60 0.11 9.60 618 0.42 33.20 19.90 70.50 61.80 1340 14900 RESULT LOCATOR: 5D6 SAMPLE ID: M-5D6-101295 COLLECTION DATE: 10/12/95 ASSOCIATED OC: M ID3 10/295, M ED1-101015 **~** > $\odot \supset \odot$ ⊃ ----QUAL 2410 2410 908 0.11 900 0.43 8.70 98.40 0.28 0.28 15500.28 17.70 13600 13600 27.90 0.43 62.90 RESULT 18400 0,49 mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg UNITS: Cyanida by CLP CYANIDE Metals by CLP ALUMINUM ANTIMONY ARSENIC BARIUM BARIUM CADMIUM CADMIUM CALCIUM COPPER IAON COPRIA COPPER IAON COPPE SODIUM VANADIUM ZINC SILVER

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This service is a field dupbents of M-501-101195 This sample is a field dupbents of M-5014-101295

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Table 3-1 Defense Distribution Depot, Memphis, Tennessee Sediment Sampling Analytical Results

	OCATOR: MPLE ID: NN DATE: NTED OC:	5D12 M-SD12-10 10/10/9 M-101-1010/95,M f	01095 95 01-renau	SD14-1 M-SD14-1 10/12/ M-10/12/12/	л 01295 195 Fui (арез, м	SD1 M-SD21- 10/12 10/12	4 ^m 101 295 2/95 M Fat.101065	105 11/01 102	5 01195 /95	SD16 M-SD16-11 10/101	5 01095 95	501 1-7102-M 11/01	7 01195 /95
	UNITS:	RESULT	OUAL	AESULT	OUAL	REGULT			560101 1811	M 101-101095,M	FBI IN1095	M. 201 101 201 W	560101 IRJ 1
Volatile Organic Compounds by	CLP 3/90						התאו		TUAL	RESULT	OUAL	RESUL T	QUAL
ACETONE CARBON TETRACHLORIDE	63/6/	13	33	12	C	<u>e</u> :	3	14	9	2	=	-,	=
TULUENE XYLENE (TOTAL)	03/0/1	13	33	2 E E	33 '		337	44	>>:	22	22	122	
Semivalatile Organic Compount 2-METHYI NAPHTHAI ENE	te by CLP (06/6			I	3	•	4	Ð	2	Þ	12	5
ACENAPHTHENE ACENAPHTHYI FNE	63/67	420	22	10000	-3	7200	73	460	33	040	Þ	390	6
ANTHRACENE		420		1700	<u>5</u> -	4200	33	999 999	33	340 340	> >	060	33
BENZO(A)PYRENE	84/84 84/84	99 99 99	==	20000	. د ا	12000	27	120	22	150	= =	066	33
BENZO(B)FLUORANTHENE BENZO(G.H.II)PERYI ENF	64/8rf	120		17000	רי	11000		68 1 0 2 1	33	021		22	32
BENZO(K)FLUORANTHENE		\$Ş	=>	4300		9500	. – -	69	33	007 16	==	00 92	33
BUTYL BENZYL PHTHALATE	16 1/0/10 1/10/140	85 420	8	1500	3	1200	°8	970	3	340	Þ	96E	131
CARBAZOLE CHRYSENE	E3/67	420))	2300	33	2100	33	460	33	48	<u>i</u> =:	390	83
DI-N-BUTYL PHTHALATE	8308 <i>1</i>	20	Ē	30000	<u>ה</u>	13000	.	140	32	170	- -	390	33
UI-N-OCTYL PHTHALATE DIBENZIA,HIANTHRACENE	pa/kg	420		4300	33	4200	33	28 460	83	22	: E	45	38
DIBENZOFURAN	0y)0r	420		3400 1600	32	0000	2:	960	33	28	==	64	33
DIMETHYL PHTHALATE	lug/teg us/teg	60 00 00	÷:	4300	33	4200	33	460 520	37	340	: - :	390	33
FLUGRANTHENE FLUGRENE		011) -	29000	37	4200 32000	37	140	2	340	;⊃	64	23
INDENO(1,2,3-CD)PYRENE		420 39	•=	7200 9700	-, -	4300	• •• •	460	33	340	=⊃	99 190	33
PHENANTHRENE	pa/ko vo/ko	420 41	5=	0064	3	4200	5	460	33	92 92	=:	28	33
PYRENE	pa/64	81	==	55000		31000		310 310	33	63 150	•==	067 57	32:
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20 CLP Contract Refer and a Program monto metros falos antos Program setto microstana Atlogram						> 0=∞	ikdation Dinphie Result is being Princhta haar -	15 en the delection	b mid thu g	factoria in succession of the second s		3	
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This campta is a field duplicate of MSD1-101195 This campta is a field duplicate of MSD14-101295

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Table 3-1 Defense Distribution Depot, Memphis, Tennessee Sediment Sampling Analytical Results

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Table 3-1 Defense Distribution Depot, Memphis, Tennessee Sediment Sampling Analytical Results

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4.0 REFERENCES

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Appendix A Field Change Request Forms

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ai Disposition	Accepted (Required prior to b) Accepted (Required prior to b) Accepted (Required prior to b) Accepted (Required prior to b) Accepted (Required prior to b)	Acjected Completed work	k: Signature Signature r changes) Signature Signature ges with major pu Signature	Project QA/Q Project QA/Q Program M. Program QA/ roject Impact)	S A 22 naget C Officer anager DC Officer		/95
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	Accepted Acc	and completed work Rejected	k: Signature - Signature - r changes) Signature - Signature - ges with major p Signature -	Project QA/Q Project QA/Q Program M Program QA/ roject Impact) CLIENT Proje	S A Area Daget C Officer anager OC Officer	Date	./95

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		Teld Change Request	· ····································
D	Defense Detal.	has back see the	
Ртојест латте -	home C	Project	# Number
Applicable Doc	Cameri DDDMI S	an 28 Sept 1991 0 Date	10-16-95
Description; 7	abe 5-10		
descript	vor provide	Grine Hol o '0'	ent with the
this does	ement. The	table has been und	in proving 4-1 of
dinor chance	7 attaching		-
	TC BAL		Major project impact
		10-12-95	Knie Cooper, DOOMT)
Reason for chang	ie: ; ;		
and in v	sork plan		
	;	<u>F</u> 	
	Rejected	Signature Description	Frence Date 15/16/15
	Rejected	Signature	That Date take 145
Accepted X	Rejected	Signature Project GA/QC Officer	Date
Accepted X	Rejected	Signature Project OA/QC Officer hanges)	Date
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Table 5-1 Analytical Program - Sediment Sampling Defensa Distribution Depot, Memphils, Tennessee 54

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Mep # (Area)	0008 (e)	SVOC3	TAL Metale (c)	Pesticides	PCBs 8	Dioxine	Thiodyglycol
Nos. 1 through 9 (Rozelle Street)	<i>a</i>	σ	57	Į o	<u> </u>	ē	5 o
Nos. 10, 11, and 12 (Screening Site 50)		~	~	ę	1	67	
No. 16 (Screening Site 52)	-		-				
Nos. 17 and 18 (Screening Site 51)	2	8	2	2		: 1	: :
No. 14 (Screening Site 54)		-	-	-			
No. 19 (Screening Site 56)	<u> </u> _	-	_			- •	1
No. 13 (Lapaloma and Murley Roads)	-	-	-	_		-	1
No. 15 (Bel) and Muller Roads)	-	-	-				
Subtotal	19	5	18	¢	0	:	
QA samples (g)					,	2	
Held duplicates	7	2				1	
Trip blanka		.			_		
Field blanks	-	_	-		, _		
Matrix Spike	-				- ,	-+- - ,	
			•			_	_

attachment I

Field Change Request # 2 10/16/95

					5	065566		
Map # (Arca)	VOCs (a)	SVOCs (b)	TAL Metals (c)	Pestickdes (d)	PCBs (d)	Dloxins	Thiodygiycol	-
Metrix Spike Ouplicates	-	-	-	-	-	2 -	-	
Total	27	24	24	24	2	18	13	
ter the "Craft Final - Generic C 1ethods may be CLP or SW-8	tuality Assur 48	rance Proje	et Plan for De	afense Distrib	utlon Dep	ot Memphi	s", CH ₃ M I III, Febru	ary 1995 analytic
 a) Voletila Organic Compound b) Semivolatile Organic Compound c) Target Analyre List (TAL) n d) Pesticidas and Polychlorina: a) Dioxins by EPA SWB46 me a) Dioxins by EPA SWB46 me b) Thiodygiycol by EPA SWB d) Thiodygiycol by EPA SWB d) Cuality mssurence samples natysis work plan. 	is (VOCs) by ounds (SVO netals plus c ted biphen thod 8290 48 method 1 are comput	EPA Stete Cel by EPA yanide by I e (PCBs) by i O16 (mod) ed based o	ument of Wor SOW CLMO FPA SOW ILA y EPA SOW y EPA SOW ified	k (SOW) OLA 1.8 402.0 0LM01.8 0LM01.8	A01.8	irotacale d	efined in the abbrav	ated sampling a
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Appendix B Logbook Entries

tr t	Dertn FRANT 200 Spac	of: SCH Knan I	* (423) 483-9404 * (205) 837 - 0199 Mr. Smite 100
1	Netional® Brand	ACCOUNT BOOKS	94x7
	Patina Blue Granite	Grain Covers	
	item No.	Numbered Pages	Ruling
	Item No. 56-301	80	Record
× L	hem No. 56-302	-	2 Column
• •	Item No. 56-303	-	3 Column
	12em No. 56-304	, •	4 Cotumn
	Item No. 58-308	-	6 Calumn
	Item No. 55-308	-	6 Column
	Item No. 56-312	_	12 Column

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Assorted Colors Grani	te Grain Covers	·. ·.	
item No. 55-401	80	Record	
tem No. 58-402	•	2 Column	
Item No. 56-403	-	3 Cotume	
item No. 55-404	-	4 Column	
tem No. 55-406	-	6 Column	Í
Item No. 56-408	-	8 Cotumn	
Item No. 56-412	-	12 Column	1
(tem No. 55-431	-	Single Entry Ledger	
liem No. 55-441	ч	Cash	



Chicopee, MA 01022

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Avery Division, Consumer Service Center P.O. Box 5244 Diamond Bar, CA 91765-4000

Benine Shu Links

9005-6379 (919)847-**9**005 ____

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148 48 : . : : Site Loguest: Defense Distribution Jed ment . . _____ Depoty Memo mpline por So 954214-01 TÈCH E14(C 799 Patrick H Lang JSG ദ Oal Rdge (PHC) t dri to beech sample Mem on $\mathbf{t}_{\mathbf{L}}$ for sam \mathcal{O} oseo paste pm. ۰. L 355 10/2/35 8-2

I 148 49 Tuesday October 10, 1995 Weather: clean, wern (532-80°) EACH TECH Personnel on site - 155 PHC 5715 Begin preparing for dimp 5 maples action his - look tracky - get ice at hatel field check photo ionization ditector (PID) MIDI- RAE - PID Hendrid from HAZLE # 711 see daily calibration shirt for detiling 0500 to fact yes -0830 anne af DOMT; ment wil Frank Nevitzki, Denne and China, Denne (ooper (DC); DONT man env. ronmentil co-o: denitors planc; 775-6372 obtime first new porce phone musicality from Frank Novitzki: -PHL calles Tom Schroelen - M. Concribe an Hom will meet him at 200 at min je Tie Boulding 145 For passes 0550 JSG, PHL to security (Bidy 14(5) to get pense; Danie Cupar in a crompany - we will containing with and place in is have have 1025 ESS/PHR meet -/ Frank N. (FN). decon weatof Rom I dang 7200 -1033 JSO/PHI to la com - we menning RICCA Chemical Co Water (desiringed) Catilog the 9150-5; Lot # SI30; Expiration dete any.96 decon 12 in fillows Wash w/ DI motin / a / conor -DI water reacy Auto BC DI water rense / in dry / wrap in hil

B-3

148 50 Tuesday October 13, 1995 -1045 - PHL contects DI water fild blank: 2HC _____ M-FB: - 10/095 - VOCS STOCK PCBS Pasts -}----- , mula, diverse Hundy glycol functione decon wreap any un alle : 1100 De upment. lord up for proch to burn he meet Famh Nov. An: Torry 711<u>4</u> <u>چې</u> Templi bon (TDEC); - EDAW; anger frys 1230 . cete John Porne e Se Lola (motion) ------1245 to Machean/Person (map laceture #10); all . Ł____ ve loanton to somethinde -----5-6372 ್ MACLEAN in Hung -7-----Tiving Templetum, FN, DC, JSB/PHL agree -to more samples: RICLA _ Eng. 9.6___ 1300 to Perry / Elliston; 5 will more than 10 fr. PEREN back to me at -1 ---- t , sq - ----6----more to beau

! '

148 51 location of the mast of Ball hillen 545 1. 1145 1325 156 PHL DC to BETH Show se Port + DIZ JIG/11h party with at withom of dramine show (can't his icom che (1-24) pres.) (1) Looka <u>, (i)</u> h trul in channel looks like had man 1-17 many sector 7. I spoon / bour and server a -h- - 6' senter & hom M- 50 - 1010 95 1345 Sam Veci Doc metals Siec, pesticula Ly:----8 m in (imported) PID_he - min - RAE PID IN ALL reperate in = + 25 in complement min - will not although headspects reading "105" to be he I to meet Tom Schneden - Memphis Concrete County. Snc. to 145 to 444 Tom a Pmin . 1420 many locations - Bella Muller, Perny / 67/12 to ange 14 St. 144 - get Denise Cooper - hill w/ French N. 1460 Ь. about tomorrows Schol 1500 of weak water at vehicle wash neck 251 (san trong seever dring Pran I dramage 1520 350 (Pitc, Denne Concent to loin hm_# 12 Hanger and time Sments: Pith to from our full : PAL cleans have from lors from 1555 Screepen ~ 0.5" Soil R sampling location hill 4.02 jes composites sample bills 8 in in from sister bourt - M-Stor2-10/095 250 Inth 1555 voci Svor matici pestimles to ile charl diviens - get measurements; location =11; Borghe and Stranger : PALL WILL ، ، ، ، ، در down stream it has sampling point طىم to de harmone the shickman it seden 355 01011

8-5

148 52 Tuesday October 10 1995 the was not completed at location 12 become there was only a 1' crea to sumple; <u>_l</u> here theres 3 to 4 freet . -1 Collect Sumply M-SD+1-101045; 1 Veg jer / 1 8-07 .ل____ jor. VOCS SVOCS Pesticias makes droking sedunant is dh brown, organic uch , as by the entre chur - get meaning make comple <u>д</u> 1' Halon goude at a total location down here 1_____ of the sampling location -1040 Location 10 - Person / Machenny Pill has cleaned a Sport in the ditch N of Lance; "" sedimet - . .___ - m top it clay (s. 1+ - will sample sediment in top of clay x. 1+; -1645 M-SDID-101095 entertert 1 Yog jor - 1802 in vic sver, metals perhade during olistm. (assuming the crong/silt is the old soil/ redemant In her face we sampled 1"-2" is her face -----1705 DC, 150/21+4 tone sampling her the damage ____ all sampeden on ice and in a counter of the trip blank (m. TB .- 101395) 1720 BOLLHL Come Ball/Mallin Rds - descover M-SD15 was achieved with at location 16 therefore all SDIS's will be chataged to SDIG. 1735 558 /11 sff care; Ice samples; make M-TBI-101075 was placed in the coolers at 0745 am this 25 1820 Finish prepping Sampling; and it days entries 701075 t _

148 53 (e) ; "The down day Och ber 11, 1995 Wanther: cent in none climan bothingh. projected for the the busing crio prep til danp sampling offic I-13/fire anne Blag 145 (Security) - te at her parsies for Menyilus Conce to wing Dennin M. 13 Millicutting May 0805 Level M- 732-1011 As place on the 15 contin remainder of sampling one sector the in JSD have from ____ 0825 JS3/ Ht Memphine C. Cring at location # 17 Piti to Store to get imposed CESS . Begin wormy (10" how); JSB; M.CC. 0705 hunch correction is - 4" thick were 03 15 Job 144: Dunne Cooper cell's for Security to let up in al Reing / Elliston CAZO JSB/MLLCome at Ronny/Eliston : sounday me, he to apar you the 0930 Set up : Pite back from Store: 150 culture photog tapks of cur, my open hume O josking west is deter -1) looking east in dit he (1) looking at come device ----begin con ing : ____ 0975 150 to make show all por / fun mile ----156 calls office and Surleta: Dample. alshitt Project manage for Sui intra-From PHL: 0955 Termine Company on site 1000 Lavy Smith - on site 1015 all to Rogella Street by the trong JSP/ PILL / Lang In the / D.C. / M.C.C. Mr Smith is a copressinte time (workham) of the invisionental ideason board for the fact by

8-7

Wednesday October 11, 1995 1000 begins coring at N location (cell this lucation = 4 ; two pineto yraphy of them loca how -(4) locking towards France - mest (5) if her the coring is donne ---uss Larry Som, the , ff site - Memphis concrete in Hung offsile -لاس___ 115 clean hole co much as possible; 110 M-SD4-101195 willetal 1 4. jan 1 bor jar VOCE SUCCE PERE PERE metele (cost) divinis Missinglycol: PHL/155 day down below sampling ____ _ interval to make sure we deduct sprople in growing up concrete and - we are calle by water a flament _____ below concrete was & madel. 1145 to location 19 - Perry / Silvetion Roads - buil webs (surface wales) out of hale wang a clean 4-on samper jor collect 1.4. 7.3 on jan if redement @ 1200 for VOC, SUOC ments cr- mindun durans definition surplus ____ istimume (5" h 7' below goods) beneath det - la -1255 Demos Cooper of either - ISB Pisc clear no to buch 1215 timet 1900 will sumple lace twee + if your le ferrer put that C04 1310 - Employ M- S1017 - 1011 155 - 1 Mag 1 Eug por 1 VOC LUOC, melale car perturbing take photograph (n C) -----1325 to 145 to get Dense Cooper, pho/ 156/DC to low-two # 15 Ball and Mullim. This location is word 1355 ME TOIS-101195 Collectures I to 1 Day 100 Voc Svoce, materia Crut pasticulus mesting redement moderately shime Engl/genoline ? idor in diter (BB

(8) Wednesday istuition 148 55 - potographs 7, 8 - 9 collected here 1400 to offerte sampling location #15 South of out hill OCV: location is heavily merground and time - 3-6 water south . I and hel under Build HIS M-SDIS. 101115; VOC, SVOC, My La(1, CNT, PRIE. 1400 june 18 m jen locktim 11 49' home Side of Ball Ra to out this hop of out they PHL bak the photos (10,11,12,13,14) - of the site to degette chier sampling locations; 10 r. d.c. Dura for le 1453 pup to cample . 1505 M-SDI-101195 Collected & V-12 jors 2 Pog jan (entre volume For MS/MSD) - VOL: SUDCE mulars Cast, pest, PCB divin, Him dy aly wil Blind complicate massion is not with for from this live how (have for dup = (515); Pinc/ 335 day a 1.5' fort hale have comment when to the a deeper lamer; can't have have open include - converter I have due to course grame ature of more the 1545 Anna march Projette Straty mill with me hance the to semple to contrare 2 and 3 offence; stammalls at outful from brack wach ---15:5 sering 24' Not ontheir from Truck was face ling. M-SD2-101115 whether 1"-4" wetter a 5" below grade in hitch + 1'- 2" of your smill a longe letter is the destriction 1415 setup 50' N of location # 2 (M-SD2-101195) M-SD3-101125 willerfel ; both M-SD2-100125 cml-M-SD3-101155 collected for voc, Froc arit PCB, metals CNT, Livrin, Huchyglycel - 2" - 4" by-1025 Pitc/156 to care: Pitc mil milk back in to prot-graph offsite sampling low home SP

8-9

148 56 <u>(</u> Wednesday 10/11/95 _____ · ____ wasterle of Dung Fride photos 15+16 - at lo cu tron Photos 17 18+19; out full an 1 . location ; 150 JOG /PHR. Denne Cooper of Failer PHL/JED to hole to pack samples 1800 denner -345 to Feder to drop off sumples ; Feder annu + 6938169763 in to Centur ! dea to being peter-1930 end " Lang in have 6-10

Thursday October 12, 1995 0713 Weather clean mould 60° - projected higher 85°: PHL, JSD Renne To- bane _ 1600_ 350 / Denne Couper go over damp sampling active ____ 1815 JSB/PHL discus days - 3ampling : Plte mill go to enthall 4 to patch concrete -0340 SCIJSD to mthilly - JSB/ PHL Fingh patch - DC will must us at Perry / Ellestron in ~ 20 minutes -Osci surg (Eliston warting on DC. _____JSB prepenses hep blank; M-TB3-101295 - 7 loc vices - placeton in marching. -120 begin taking hale - wany wet; patch man not hold. DC/ JSB/ Pite office 0430 h Dema Field . patch conside hole 0933 Carge Dun - Public affins on safe-____ all to lice him 14 - Demon and Cure ben to Single - George will film gaugeling _____ 1010 M-SDIY-141295 and dylante M-SDZI-161255 (have 1020) Willerfed, 1 goz 1 4 a jor each. For Voc Sice past, makely Chit, during 1000 clean my - there is a motor cil lunger in the standing ment of the date is simpling ischan - shing hy Location side in Somples / ____ dien - Fange Durn off site 1030 all offsile - 2 photos her () bo when t -- (2) Surgerie Ivention -----1045 to Le Paloma and Munling to want for Frank Nontite Curl they templetion TOOL 150 -----

8-11

148 58 · . to Ringelle St to discuss completing la century 100 J26 PHL park experiment 1 to Iscations 5 and 6 north line witch him outher to co 1124 M-505-101295 willer fail 140 1 to 505-Vac, succes mately Ching perhading PCBs, dimen, this dygly w 1 - 2" - 4" helen 3 rule within sheen chimel -1140 M. SDL. 10.295 collected 3403 jars - 1 For VOCS 200 jac To Svacs, PCB. Part makels _ Cour Lover, Run day 9/ y cel 3"-5" below yound sompre -----Collect distances pack mp take 1 picture 1205 JIBICHE DEvoper to funct. 1310 th Rugelle St. 355 / Pite meet terry temple home Mac set up in SDB; Derpica eite 1340 M-SDB-101295 collected 14m jon (USC) and 2 4-m jurs (SUDC. PCB, pest, metels CN divering and this day gly col) 1355 George Dume (PA) one tag the George will Fim. the seducent surplume -1400 m-507-10,215 Collected 14- (va)? 11-m (Sroe - PCB, Pest makel, (N. dimin, Hundary 1-col) 1410 DC. George Dunne throng Frengetation of Frite 1425 JSN/Pite will sample in Ele trendung ditch 100' east of east edge if Reyelle St 1435 M-SDS-101295 cullested in Liteh Ity (Loc) 2 4 (Svor, Pen, pest, metel), CNdearing this day glycall 150 Laboloma and Munley - OHLIJSD can't had a piece to sample --will must for DC B-12

- E 148 59Thurn may . 21295 cf le palome/Music April read comparety pop PIPE taler normal car & Han ź LePierre They I suplation is there - in form I conseqmine looking for Frank or Demise so me can talk about this is called 1515 to decon anea - Steve from Cili m Itil - JSB talks to French Niem hyki est appenn to be a good or idan the to get a sample at LaPilr Munding - DC will mee m the - think goves in the ok to pass on louton 15 we came get on _____ 1530 Iso/ Cin, De sent le Palome / Menle it final a place be sample , mill - real patrice to Dun Fuld - ptch 10 545 the Perry / Elliston - partale is oleto CHIM Will iffine to ment _1600 Frank North to Outally to inspect to face patel ____]610 give FN an out brue fine: inform Dense -Cooper the lady while leaves in 1803 Rogalle - wants to balk to <u>some ine</u> ne 1630 JOB/PHA to park somples 1600 ale Su labo; Sample, unel 06 B-13 ~

148 60 13 1715 Anne hold; pack samples 1800 JS13 to Feder - aufrill 7224556242 1830 JS35 / Pitt to Kinkalle - end of trop \mathcal{O} 21. ٠ B-14



Appendix C Soil/Sediment Sampling Forms The Earth Technology Corporation

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Soil / Sediment Sampling Record

148

Project Name Defense Dist. Depct, Memphis Project Number _954214-01 Location Memphis, Innener Sample Number M-SDI-LOUST Recorded By _153 / Pite Duplicate Number M = SD22 -10115 5 (5.5) 1505 Date 10- 11-95 Checked by Rand why h Site Rozeile St/West side Dunn Field Date 10/20/95 Nº 10 cono boui/scrop strinless sheet Sampling Equipment 🙇 Sediment Sample Type: 🗔 Soii C Rock Sample Type Description USCS Soil Type _ Give will graded groved with 30-40% und ; were for «ት_ት, አሎፍ» Color _ rust how / b Odor ____ below yourse granface 6" - B Depth _____ Number of Samples (3) 3 5 01 3 400 1045 MS/NSD pens duplice te **6**~ Comments ____ volume VOC, SVOC, metals, yest ICB (Nthrowing aly col doren. Sampling Point (sketch): -Uman Fuld N Fouching Company / Park 5194 8 NEDES Brush LI KIL #4 hun sunth ٠ ĥ Ē MSDI 91635 وَ

Form F-1025 9/1/91

2	The	Earth	Techn	ology
	C			Б



The Earth Technology Corporation	148 64
Soil / Sediment	Sampling Record
Project Name Defense Dist. Depot. Me Location Mempine Tennissee Recorded By JSB (PHL Date 10-11-45 1615 Site Forgelie St. West Side Dunn Field WP Literin # 3]	Implie Project Number 9542i4-01 Sample Number M-5D3-10041 Duplicate Number
Sampling Equipment Stanless Steel bo	~1/scoop
Sample Type: 🖸 Soil 🖉 Sedin	nent 🗂 Rock
Depth <u>2" - 4" logs</u> Number of Samples <u>1 400 + 8</u> Comments <u>Shiring m / inform</u> <u>form track inst</u>	L'increter per containing out his
Sampling Point (sketch):	b- 1 duing
N-SDI E LAL	aute (shund) (oil) Ospher 17 truch
n - 50i n - 50i m - 50i	arte (chund) (oil) acphallt truch portug

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Form F-1026 9/1/91 C-3



Form F-1026 9/1/91

C-4

	148 66
Soil / Sediment Sam	ipling Record
Project Name Defense Dist. Dupo + Memphi	Project Number 954214_21
Location Memphin, Tennessee	Sample Number SD5 - Loil 1
Recorded By Pitc	Duplicate Number
Date 10-12-91	_ Checked by PATE ich H Lay
Site Dana Full + 1 Give cat hall OLO (# 5) Date <u>10/2-/15</u>
	······································
Sampling Fouriement Structures shull be	out Spron.
Sample Type: Soil X Sediment	
Sample Type Description	
USCS Sail Type Cher, Same Us wat a	mustine here organ is (nort haven)
Color brown / light brown	
Odor he oder	
Depth 2" - 4" by low ground	l sin face
Number of Samples 1 400 1 900	jec
Comments VOC, SUCCE perte PC	Bs. mehls (Nº doring
three day al y cui	
Sampling Point (sketch):	", DOMT
	TT S
	100-
	r Slow
5 05 -	1 °Curris
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vere to the	(
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detail is shellow wide a b	l I
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Form F-1025 C=5

148 67

Soil / Sediment Sampling Record

Project Name Defense Dist. Depit, Menphi Location <u>DD Menphis</u> , Tennassie Recorded By <u>JSB Pitc</u> Date <u>10-12-95</u> Site <u>Regrille St. Funthest Jouristics of</u>	Project Number <u>954214-01</u> Sample Number <u>M-SOCHICIZIS</u> Duplicate Number <u></u> Checked by <u>PATECN HLAT</u> Date <u>10/2015</u>	
Sampling Equipment <u>Stanless Steel boul / Sport</u> Sample Type: Soil Sediment Rock Sample Type Description USCS Soil Type <u>SW' Sample well graded w/ m.m.r. govel</u> and USCS Soil Type <u>SW' Sample well graded w/ m.m.r. govel</u> and Color <u>brown</u> Odor <u>no edor</u> Depth <u>3'' - 5''</u> Number of Samples <u>I dag (vecs)</u> <u>2 Mag (Svecs, PcBc, *rstandes</u> Comments <u>metals, Cwt, dureng Hundy Slycol</u>)		
Sampling Point (sketch): Heavily veyetable ditebus (scattow/wile) and contains chundent rip (49(8"-12")) Sois 1 1 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3	DOMT property	

Form F-1026 91/91 The Earth Technology

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Soil / Sediment Sampling Record

Project Name <u>Defense Dest. Depot. Memphis</u> Location <u>Memphis Tennessee</u> Recorded By <u>JSB/PHL</u> Date <u>10-12-95</u> 1340	Project Number <u>954214-01</u> Sample Number <u>M-SDB-101295</u> Duplicate Number <u></u> Checked by <u>PATRICH HLAN</u>		
Site Kozelle St / Location # 8;	Date 19/7_>/9/5		
Sampling Equipment <u>Structures steel bowlyscop</u> Sample Type: D Soil Sediment			
Sample Type Description			
USCS Soil Type ML: Silt w/ hace se	clay; try some organic		
Color light brown mother (root hairs)			
Odor ho odor			
Depth $1'' = 3'' + b \leq 5$			
Number of Samples 1 4 on jac 2	Number of Samplas 1 4 on inc 2 4 42 ince		
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Sampling Point (sketch):			
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Soil / Sediment Sampling Record



148 The Earth Technology 70 Corporation Soil / Sediment Sampling Record Project Number 551214-0/ Project Name Defense Dist Depot, Memphis Location _ Memphis Tennesses Sample Number M-SD9-101295 Recorded By PHL / JSB Duplicate Number ____ ---Date 10 - 12 - 95 Checked by PATEC HLAN • Sile Rozelle St/ Location + 9 Date 19/20/95 Sampling Equipment Starnless sheet bow// Sport Sectiment Sample Type: 🔲 Soil Rock Sample Type Description USCS Soil Type Mhi silt/clay mirtine troot have; dry. trace grevel Color light troun Odor hon a day Deptn ______ 5. ____ Hoz : 1802 ju Number of Samples ____ Comments _ Sampling Point (sketch): JUNY ç Brush Trush Fin 2/2 1603 Trics 505 Ø - 153 1.1.04

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The Earth Technology Corporation 148 71 Soil / Sediment Sampling Record	
Project Name <u>Defense Dirt Depit Me</u> Location <u>Parcis/Machen (#10)</u> Recorded By <u>PITL/55B</u> Date <u>101095</u> 1645 Site <u>SFLSite Dirin Field Sediment</u>	Project Number 957219-01 Sample Number M-5010-101095 Duplicate Number
Sampling Equipment Sample Type:	ediment
USCS Soil Type Color Odor Odor Depth Number of Samples Comments Comments VCC, SYOSs, /	dut miner grienet, some ugenin-roots/le odor weln grile "I Yez jan I Bez jan metals, preheider duran
Sampling Point (sketch):	D' Joi N & Comman D' Joi N & Comman D' Joi S & T med D' Ho' to trastle D Drecs
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Soil / Sediment Samplir	ig Record
Project Name Defense Dist. Depit. Memphis Location Examples Sheets (#11) Recorded By J36/Pitc Date 10:095 1620 Site Official sedent simpline	Project Number 954214-07 Sample Number Duplicate Number Checked by Pare.cut k Lan Date
Sampling Equipment <u>stantess start bawi/sjow</u>	
USCS Soil Type <u>Cth Swi</u> simil/silt n Color <u>brown - 1h brown</u> the use Odor <u>none (no implecention o dor</u> Depth <u>1" - 4" helow grownel'sm</u> Number of Samples <u>1 402/1 8 02 jer</u> Pesh white, dioxinan	have voc succe metals
Sampling Point (sketch): DDMT	isye itaye

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Project Name Defense Dist. Depot, Menghis Project Name Defense Dist. Depot, Menghis Pro- location <u>Convert (Hayes (4:2)</u> Sail Recorded By <u>JSBrugel (Pith</u> During) Date <u>(a:c35)</u> (553) Chi Site <u>Convertilation</u> (4:2) Date Sampling Equipment <u>Sister (4:2)</u> Date Sample Type: Description USCS Soil Type <u>CH</u> ; class mattled grand Stight - med the bisic cutors of Color <u>Answer</u> brown of the bisic cutors of Odor <u>Singht - med the bisic cutors of</u> Depth <u>)'' - 4''</u> below ground sing for Number of Samples <u>1.403 jac</u> <u>1.3:4 jac</u> Number of Samples <u>1.403 jac</u> <u>1.3:4 jac</u>	Rock
Location Convert (Hoges (Hiz) Sa Recorded By JSBrough (Pith Dui Date (a:c35 (555) Site Converting (Higes (Hiz)) Date Date (a:c35 (555) Site Converting (Higes (Hiz)) Date Site Converting (Higes (Hiz)) Date Site Converting (Higes (Hiz)) Date Sampling Equipment S. Sheet (Sport / Horse) Date Sample Type: Date Soil Description USCS Soil Type CHight - mode the production of Color Sample three on the horizon of Color Odor Staget - mode the hight of Calor Sample three on the horizon of Color Odor Staget - mode the hight of Calor Sample three of Samples Depth 1° - 4° below of Sample three the hight of Calor Number of Samples 1 400 for 1 300	Rock
Recorded By 138 much (Pitt Dut Date 1010 95 1555 Chi Site Comment (* 10) Date Date Sampling Equipment 3.5 Least \$point / bowl Date Sample Type: Image: Solit Date Sediment Sample Type: Image: Solit Date Sediment Image: Solit Sample Type: Image: Solit Date Sediment Image: Solit Image: Solit Sample Type: Image: Solit Date Sediment Image: Solit	Rock hown-multiplicate number Rock hown-multiplicate history monst dor; track similarit; track lesses i.i.o.r Freck No. VUCS, SVOCs
Date for CAS Oat Site (* : c) Oat Sampling Equipment S. steel spond/bowl Sample Type: Soil Sediment Sample Type Description USCS Soil Type CH; clang, marticed grang USCS Soil Type CH; clang, marticed grang Odor Stight - middre thights clanker Odor Stight - middre thights clanker Number of Samples Yog for Stight - middre thights clanker Comments	Rock how in the how in the level a contract how in the level a contract for the level a cont
Site Data	Rock how - much history, monst dor; trace semificit; prove lesses i.e Free Free VUCS, SVOCS
Sampling Equipment <u>s.s.Leal spore / bourd</u> Sample Type: Soil S. Sediment Sample Type Description USCS Soil Type <u>C.H.; clay</u> , monthed gray Color <u>strath</u> - moderate higher carbon Odor <u>Strath</u> - moderate higher carbon Depth <u>1" - 4" below ground fra</u> Number of Samples <u>1.403 jar 1.3 m je</u> Comments <u>strats</u> , pershardes, dicenter Comments <u>Strath</u> - M.	Rock haven much history mains t dor; track semilarit; trac leaves shor Free Free Free VUCS, SVOCS
Sample Type: Soil Sediment Sample Type Description USCS Soil Type <u>CH</u> ; claw, mattled gram USCS Soil Type <u>CH</u> ; claw, mattled gram Color <u>and branch</u> have been to be a first the former of the form	Rock haven much horm, monst dar; trace semilarit; mu leaves sear Free Free Free VUCS, SVOCS
Sample Type Description USCS Soil Type <u>CH</u> ; claw, monthed gray Color <u>area</u> brown - mathematic the procession Odor <u>Stakt - mathematic happing dro cachern</u> Odor <u>Stakt - mathematic happing dro cachern</u> Depth <u>1" - 4" below ground for</u> Number of Samples <u>1 402 jac 1 3 m je</u> mathematic, pestheredie, dicking comments <u>mathematics</u> and the form	have much history, monst dor; track semilarit; providence ion Free r Rur VUCS, SVOCS
USCS Soil Type <u>CH</u> ; claw, mattled gray Stight a much high occurrent Color <u>any browned high occurrent</u> Odor <u>Stight - michara ha high occurrent</u> Depth <u>1" - 4" below ground fin</u> Number of Samples <u>1 403 jar 1 3 m jo</u> michais, pesticulus, dicking Comments <u>Comments</u>	have much history monst dor; trace semifactif; trac lesses i to r Free r Rur VUCS, SVOCs
Color <u>any brown - muthated</u> Odor <u>Slight - muthated</u> Depth <u>1" - 4" below ground (no</u> Number of Samples <u>1 403 jar 1 3 m jc</u> mutatels, pesticulus, dicking Comments <u></u>	Lor; How windfillt; from leaves
Odor <u>Sight - medera ka hugdro cachen</u> Depth <u>)" - 4" balum giornal sin</u> Number of Samples <u>1 403 jar 1 3 in je</u> metalis, pestrandio, dioxini Comments <u></u> ampling Point (sketch):	Rece Rece Recever, Svor,
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Number of Samples 1 403 jac 1 304 jec Comments	- W VUCK, SVOC,
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Soil / Sediment Sampling Record 148 74

Project Nam	B Deterne Dist. Depot. Memphy	Project Number $\frac{954214-01}{152041}$	
Location _M	Unyshis, Tenning	Sample Number	<u>-</u>
Recorded By	JSB/PIN	_ / Duplicate Number <u>NA</u>	
Date I	x-(2-45	- (Checked by PATE CL H LAL	
Site LePa	Ima + Murley Lowhon 13	Date 1-12 a 195	
546			_
[Location +13	_
Sampling Eq	Jipment		
Sample Type	: Soil A Sediment	Rock	
	Sample Type Description		
	USCS Soil Type		
	Color		
	Odor		
	Death	· · · · · · · · · · · · · · · · · · ·	
	Number of Complex		
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	Comments	<u> </u>	
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Soil / Sediment Samplin	ig Record
Project Name Defense Distrib. Depot, Memplus Location Memphis, Tennessee Recorded By <u>)SB/PH4</u> Date <u>101295</u> 1010 Site Dunn/Custer (Site # 14)	Project Number <u>954214-01</u> Sample Number <u>M-SD14-101244</u> Duplicate Number <u>M-SD21-101244</u> Checked by <u>PATIZICK H LAU</u> Date <u>19/29/95</u>
Sampling Equipment <u>Standers steel 15 sul/se</u> Sample Type:	کھی ہے۔
Sample Type Description USCS Soil Type <u>GW</u> , <u>AMAREL w/ Som</u> Color <u>Alk brown</u> Odor <u>shone citer</u> (<u>My dro centre</u> Odor <u>shone citer</u> (<u>My dro centre</u> Depth <u>3"-6" betwe yrade</u> Number of Samples <u>2 403 jers</u> 2 Comments <u>Voci 1000s mutats</u> <u>cruz</u> <u>will 100 ger in water</u> (shighen	-) -) -) -) -) -) -) -) -) -) -) -) -) -
Sampling Point (sketch): N. DOMT DOMT DOMT Stesmeter under opendikter 26- 107 107 107 107 107 107 107 107	
spine spine spine true lung company	En 12.5' sast of sest and of box cultert 35' from lieahow to sutfall under track, 26' Number of

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Soil / Sediment Sampli	ng Record 148 76
Project Name DeCence Dist. Depot, Alemphis Location Memphis, Tennessee Recorded By JSB / Pith Date 10-11-1975 1335 Site Ball/Multon (Southeast conver of fearling)	Project Number <u>954214 - 01</u> Sample Number <u>M - SD15 - 10119</u> Duplicate Number <u>-</u> Checked by <u>PATE1CK H Lay</u> Date <u>1920/95</u>
Sampling Equipment <u>Stain less steel bruils</u> Sample Type: Soil Sediment Sample Type Description USCS Soil Type <u>SW</u> same with abruin Color <u>gram deak gray</u> Odor <u>bried deak gray</u> Depth <u>Surface</u> Number of Samples <u>1403</u> 18-00 Comments <u>detch had a fault - 5</u> <u>not in Somplea</u>	E Rock dent organies (nots leaves) very w hight hydrosen im v dor
Sampling Point (sketch):	

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Soil / Sediment Sampling Record

Project Name	Do fense Dist. Deput, Manny			
Location M	emphis, Tennesen		Sample Number	5517-101
Recorded By	JSO/PIN		Duplicate Number	
	1-95 1320		Checked by PATELL	<u>C H. Lay</u>
sia Ontfa	11 # 004; inside Gence		Date 10/20195	
	huma plan 10 con			
		boules	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Sampling Equip	ment <u>SPAIN QUE SPACE</u>			
Sample Type:	طر Soil ا	- Sediment	HOCK	
	Sample Type Description	,		
	USCS Soil Type,	in the set His and	gravely mont	
	Color any Carey Gover	mitted		
	Odor shakt - famt i	my the carbon	chr?	<u> </u>
	Depth5'' 7''			-
				,
	Number of Samples	14-1 jar VOC	SVOC, CN, makels, pri	<u>, ,</u>
	Number of Samples	14- jar Voc . dr. carel;	- 4" of concrete of	cond
	Number of Samples 15037	14-9 in Voc.	- 4" of concrete of	cond_
	Number of Samples <u>1507</u> Comments <u>10 cr hum num</u>	1 tog for VOC . dr. carel;	<u>~ 4" of concrete a</u>	cond_
Sampling Point	Number of Samples <u>15077</u> Comments <u>10 cs how new</u> (sketch):	grandit	en (open) simple 10	<u>cond</u> <u>cond</u> <u>u hm (13)</u>
Sampling Point	Number of Samples <u>15077</u> Comments <u>10 cs how new</u> (sketch):	I tag jor VOC dr. cared; grandit	en (open) simple 10	cond
Sampling Point	Number of Samples <u>15077</u> Comments <u>10 ce hon nue</u> (sketch):	1 tog jor VOC dr. cored; grandition	en (open) fingle 10.	<u>corrd</u> <u>ic hm (13)</u>
Sampling Point	Number of Samples <u>15077</u> Comments <u>10 ce hum num</u> (sketch):	1 tog jor VOC dr. cored; gr- det	en (open) simple 10	<u>corrd</u> <u>ic hm (13)</u>
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Sampling Point	Number of Samples <u>15077</u> Comments <u>1000 horn neuro</u> (sketch):	grandet	en (open) simple los	cored is hom (13)
Sampling Point	Number of Samples <u>15077</u> Comments <u>1000 horn num</u> (sketch): [Ball <u>M-SDI7-</u> 5.5' Sonth stant fall	gen det	en (open) comple los "ij" St	cored is hom (13)
Sampling Point	Number of Samples <u>15017</u> Comments <u>10 ch hum num</u> (sketch): (sketch): Bail <u>M-SDI7-</u> S. 5' Son Hubb cht fall S. 5' Son Hubb cht fall S. 5' Son Hubb cht fall	gen dit	<pre></pre>	ichum (13)
Sampling Point	Number of Samples <u>1 Sorr</u> Comments <u>1 o ch hum num</u> (sketch): (sketch):	Jen det	<u>voc.</u> (1) ⁻ , <u>mehols</u> , <u>pri</u> - 4 ["] of concrete of en (open) simple 10 	cored is him (13)
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Sampling Point	Number of Samples <u>15077</u> Comments <u>1000 hom name</u> (sketch): (sket	grandit	Evol, (1), methods, print - 4" of concrete (en (0, pen) (s. mpter 10) 	ichm (13)
Sampling Point	Number of Samples <u>1501;</u> Comments <u>1000 hom num</u> (sketch): (sketch): Bail <u>Pail</u> S. 5' Son Hubb cut fall S. 5' Son Hubb cut fall S. 5' Son Hubb cut fall 4 /	gen dit	E	cored is him (13)
Sampling Point Gol F Course	Number of Samples <u>1 Sorr</u> Comments <u>1 o ca harn name</u> (sketch): (sketch):	gen det Gol	F Course	cored is him (13)

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Soil / Sediment Sampling Record

Project Name Location Recorded By Date Site	Definie Dist. Dep: Memphis, Tr JSB/PHL 11-95 1425 Le outfail oct (Himphis (10 ceture #18)	Project Number <u>954214-01</u> Sample Number <u>M-SDIS-101195</u> Duplicate Number Checked by <u>PATRICH H LAU</u> Date <u>10/20/45</u>
Sampling Equi	ipment <u>Stainless</u>	Leel spoon /	bews 1
Sample Type:	🖂 Soil	Sediment	Rock
	Sample Type Description		
	USCS Soil Type	silt w/ trace	sand/clay: saturated, miner wigh
	Color <u>grand</u>	bown	
	Depth Town has	(under ~	(units)
	Number of Samples	402 1 802 1	(voe, svoc, mehrly, CNT pest)
	Comments		
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Sampling Point	(sketch):		
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	Soil / 3	Sediment Samp	ing Record	
Project Name Def	ense Dist. De	pet, Hemphis	_ Project Number	54214-01
Location	phis, Tenne	yard	_ Sample NumberP	1-5017-101195
Recorded By3	ib/Pitz		_ Duplicate Number _	
Date	<u>ن ن</u>		Checked by Parking	cre H. Lty
Sile Colour Perm	y/Ellisten Ran	(10 control # 19)	Date 19/20/15	·····
Sampling Equipmen	t stanless 5	teel bourdsp	c::	
Sample Type:	🖾 Soil	X Sediment	Rock	
Sam	ple Type Description	Acis and	1 cultivate	and and
US	SCS Soil Type _ <u>Gu</u>	duna 2	a same fig. met in	
Co	olor <u>waters seen</u>		<u> </u>	-
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Sampling Point (ske	etch):	- 4" Utraline og Gravis 45- 2019	nde	DD~T
Sampling Point (ske	etch):	Gravi 45-	nde	DD~T
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Appendix D Photographs

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#13 Sampling location SD18: looking west towards the discharge point of the culvert. The concrete structure is the pier which supports the culvert.









#16 Sampling location SD19; looking north prior to beginning coring operations. The water in the ditch is present due to normal drainage from the main installation.





#17 View of SD19 looking towards the west; Mount Olive Baptist Church is in the upper right hand corner of the photograph.



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Precision, Accuracy, Comparability, Completeness

Appendix E



E.1 Introduction

A standardized Quality Assurance/Quality Control (QA/QC) program was followed during the field effort at the Defense Distribution Depot, Memphis, Tennessee, to ensure that analytical results accurately represent the environmental conditions at the depot. The field effort was conducted using the guidelines and specifications described in the Draft Final Quality Assurance Project Plan and Work Plan.

Eighteen environmental sediment samples, two duplicate sediment samples, one field blank (FB), and three trip blanks (TBs) were submitted for laboratory analyses. Samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCB)/ pesticides (PCB/Pest), dioxins, thiodyglycol, target analyte list metals, and cyanide. TBs were only analyzed for VOCs. A summary of the analyses performed is presented in table E-1.

Sampte	voc'	SVOC1	PCB/Pest ¹	Dioxin ²	Thiodyglycol ³	TAL Metals ⁴
Sediment	18	18	18	. 14	9	19
Duplicate	2	2	2	1	1	2
Field Slank	1	1	1	1	1	1
Trip Blank	3					

Table E-1: Summary of Analytical Program Defense Distribution Depot, Memphis, Tennessee

NOTES:

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1. Samples analyzed using Contract Laboratory Program (CLP) 3/90 Statement of Work (SOW)

Samples analyzed using SW-846 Method 8290

3. Samples analyzed using SW-846 Method BD15 Modified

Samples analyzed using CLP (Target Analyte List [TAL] metals and cyanide)

E.1.1 Data Quality Objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements developed by data users to specify the quality of data obtained from field and laboratory data collection activities to support specific decisions or regulatory actions. DQOs also establish numeric limits for the data to allow the data user to determine if the data collected are of sufficient quality for use in their intended application. The data collected during the field effort will be used to (1) confirm the presence or absence of suspected contamination at the identified sites and (2) evaluate the human health or environmental implications. DQOs were established for precision, accuracy, representativeness, comparability, and completeness (PARCC). The following sections summarize the DQOs established for the PARCC parameters and the levels of agreement obtained during the field effort.

E.1.1.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Precision is expressed quantitatively as the measure of the variability of a group of

measurements compared to their average value. The closer the numerical value of the measurements are to each other, the more precise the measurement. Precision was defined as the reproducibility, or degree of agreement, among replicate measurements of the same quantity. Precision was expressed as the percentage of the difference between results of duplicate samples for a given compound or element. Relative percent difference (RPD) was calculated as:

$$RPD = \frac{Abs (C_1 - C_2)}{\frac{C_1 + C_2}{2}} \times 100$$

Where: $C_1 = Concentration of the compound or element in the sample.$ $<math>C_2 = Concentration of the compound or element in the duplicate.$

The RPD was then compared to established limits to determine the level of precision achieved. For this project overall precision was comprised of analytical and sampling precision. The objectives for analytical precision, sampling precision, and overall precision were to have 90% of the values calculated within the specified RPD range.

Analytical precision refers to the ability of the laboratory to reproduce measurements of a sample concentration. Analytical precision was assessed through the use of analytical replicate samples. Precision was determined using Matrix Spike/Matrix Spike Duplicates (MS/MSDs) and duplicate sample analyses conducted on samples collected for VOCs, SVOCs, PCB/Pest, dioxin, thiodyglycol, and TAL metals analyses. The laboratory selected one sample in 20 and split the sample into two aliquots, to be used for MS/MSD analysis. MS/MSD samples were prepared by routinely screening the first aliquot for the parameters of interest before analysis, while the remaining aliquot was spiked with known quantities of parameters of interest and analyzed twice. The RPD between the spike results was calculated and used as an indication of the analytical precision for the VOC, SVOC, PCB/Pest, Dioxin, and thiodyglycol analyses. Duplicate samples for PP metals analyses were prepared by subdividing one sample of every 20 samples received and analyzing both samples of the duplicate pair. The RPD between the two sample concentrations was calculated and used as an indication for the analyses performed.

None of five RPD values calculated from the VOCs analyses exceeded the established control limits. None of the eleven RPD values calculated from the SVOCs analyses exceeded the control limits. One of six RPD values calculated from the PCB/Pest analyses exceeded the established control limits. Two of the thirty-four RPD values calculated from the Dioxin analyses exceeded the control limits. The RPD value calculated from the thiodyglycol analyses did not exceeded the established control limit. One of eighteen RPD values calculated from the TAL metals analyses were outside control limits.

These results are considered to have little impact on the environmental data quality and considered more likely to be the result of the matrix variability that could not be overcome by the sample mixing prior to the analysis of the samples.

Sampling precision refers to the ability of the sampling procedure to reproduce the conditions at the site. Sampling precision was assessed through the collection of field duplicates. Duplicate samples were collected at a rate of 1 in 10 and submitted with the environmental samples for VOCs, SVOCs, PCB/Pest, Dioxin, thiodyglycol, and TAL metals analyses. RPD values were calculated for all compounds and elements. The RPDs were then used to measure sampling precision. The duplicate samples were collected using the same procedures used to collect the environmental samples. The overall project objective for sampling precision outlined in the Sampling and Analysis Plan is to have 90% of the values calculated for the sampling program within the specified RPD range of $\pm 35\%$ for soil samples.

RPD values were calculated for all compounds and elements analyzed for in the environmental samples. Two duplicate sediment pairs were used to evaluate sample collection reproducibility and matrix variability at the depot. Three hundred and forty-nine RPD values were calculated from the sample/duplicate pairs. Forty-six exceeded the 35% control limit for soils. These results are considered to have little impact on the environmental data quality and may be the result of the variability of the soil matrix.

The RPD values calculated from MS/MSD data yields an analytical precision of 95%. The RPD values calculated from the duplicate pairs report a sampling precision of 87%. Based on the RPD values calculated, the control limits were met for analytical precision, but not for sampling precision. Analytical and sampling results indicated that 88% of the RPD results met control limits and acceptable laboratory QC requirements. Thus, the overall DQO for precision has not been met. However, these results are considered to have little impact on the analytical data quality, as the poor agreement between the samples and duplicates is most likely due to non-homogeneous soil. No corrective action was taken based on RPD values. A complete discussion of all duplicate samples is presented in section £.2.4.

E.1.1.2 Accuracy

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Accuracy measures the bias in a measurement system. Accuracy was defined as the degree of difference between measured or calculated values and the true value. The closer the numerical value of the measurement approaches the true value, or actual concentration, the more accurate the measurement. Overall project accuracy consists of both analytical and sampling accuracy.

Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at a known concentration before analysis. Analytical accuracy was determined using MS/MSD and surrogate recovery data. The following equation was used to calculate percent recovery:

$$%R = \frac{(A_r - A_0)}{A_r} \times 100$$

A_o = Concentration detected in the unspiked sample.

 $A_f \simeq$ Concentration added to the sample.

Objectives for accuracy were to have 90% of the data within the specified percent recovery levels for that compound or element. Analytical accuracy was qualitatively assessed by

evaluating the following laboratory QC information: sample holding times, method blanks, tuning and mass calibrations, gas chromatography/mass spectroscopy (GC/MS), internal standards (GC/MS), laboratory control samples and method blank spike recoveries, and initial and continuing calibration results calculated from all analyses conducted on environmental samples. Analytical accuracy was quantitatively assessed by evaluating the percent recoveries of spikes and surrogates.

Percent Recoveries

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None of the ten percent recoveries was outside the control limits for MS/MSD analyses conducted on the samples collected and analyzed for VOCs. All supporting VOCs QC data cited above was also qualitatively evaluated with respect to the analytical accuracy DQOs.

One of twenty-two percent recovery values calculated was outside the control limits for the MS/MSD analyses conducted on the samples analyzed for SVOCs. All supporting SVOCs QC information cited above was also qualitatively evaluated with respect to the analytical accuracy DQOs.

Three of twelve percent recovery values calculated were outside the control limits for the MS/MSD analyses conducted on the samples analyzed for PCB/Pests. All supporting PCB/Pests QC information cited above was also qualitatively evaluated with respect to the analytical accuracy DQOs.

Four of forty percent recovery values calculated were outside the control limits for the MS/MSD analyses conducted on the samples analyzed for dioxins. All supporting dioxins QC (information cited above was also qualitatively evaluated with respect to the analytical accuracy DQOs.

None of two percent recovery values calculated were outside the control limits for the MS/MSD analyses conducted on the samples analyzed for thiodyglycol. All supporting thiodyglycol QC information cited above was also qualitatively evaluated with respect to the analytical accuracy DQOs.

None of twenty-four TAL metals percent recovery values from the matrix spike analysis conducted on the samples exceeded recovery limits of $\pm 25\%$. All supporting PP metals QC data cited above were also qualitatively evaluated with respect to the analytical accuracy DQO. These results are not considered to have any adverse impact on the environmental data quality.

A total of eight of all one hundred and ten calculated percent recovery values exceeded control limits indicating that on average 93% accuracy was achieved. The above results are not considered to have any adverse impact on the environmental data quality.

Sampling accuracy was maximized by adherence to the strict QA program presented in the Quality Assurance Project Plan (QAPP). All procedures (i.e., sample collection procedures and health monitoring equipment calibration and operation) used during the field effort were documented as standard operating procedures (SOPs). Field QA samples (i.e., TBs and FBs) were prepared such that all samples represented the particular site from which they were

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collected, and assessed any cross-contamination that may have occurred. The environmental samples associated with the appropriate field QA samples were qualified based on the contaminants detected in the field QA samples. Compounds and elements detected in associated environmental samples with concentrations less than five times (ten times for common laboratory contaminants) that detected in the blank were considered as estimates and were qualified "B" accordingly. A discussion of compounds and elements detected in QC samples is presented in section E.2.

E.1.1.3 Representativeness

Representativeness expresses the degree to which the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Sample representativeness was ensured, during the field effort, by collecting sufficient samples of a population medium, properly distributed with respect to location and time. Representativeness was assessed by reviewing sample collection methods used during the field effort at the depot. The reproducibility of a representative set of samples reflects the degree of heterogeneity of the sampled medium, as well as the effectiveness of the sampling techniques.

E.1.1.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another and is limited to the other PARCC parameters, because only when precision and accuracy are known can one data set be compared to another. To optimize comparability, only the specific methods and protocols that were specified in the QAPP were used to collect and analyze samples during the field effort. By using consistent sampling and analysis procedures, all data sets are comparable within the depot and sites worldwide.

All samples collected for VOCs, SVOCs, and PCB/Pests were analyzed using CLP 3/90 SOW. Samples collected for dioxin were analyzed using SW-846 Method 8290. Samples collected for thiodyglycol were analyzed using SW-846 Method 8015 Modified. Samples collected for TAL metals and cyanide were analyzed by CLP 3/92 methods.

Based on the precision and accuracy assessment presented above, the data collected during the field effort are considered to be comparable with the data collected during previous efforts.

E.1.1.5 Completeness

Completeness was defined as the percentage of usable data obtained from a measurement system. Usable data are those data not rejected during the data validation process. Compounds or elements qualified "B" are excluded from use in the report due to increased risk of indicating false positives or omitting compounds or elements that are present. Project completeness was defined as the percentage of data points not rejected during data validation. The objective for project completeness was set at 90%.



Based on the evaluation of the laboratory QC results for the 3390 data points presented in appendix F, these data were considered equal to 98% complete, and as such, were used as the basis of all recommendations presented in this report. Seventy data points were rejected for use because the data was qualified "B" indicating possible contamination from an outside source.

E.2 Field Quality Control Assessment

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In an effort to assess field QC, field QC samples were collected. These samples include 3 TBs, 1 FB, and 2 field duplicate samples. The number of field QC samples collected was in accordance with guidance as presented in Draft Final QAPP. All field QC samples were collected and analyzed by the same SOPs and methods used for the 18 environmental samples.

E.2.1 Trip Blanks

Three TBs were prepared and analyzed by Southwest Laboratory of Oklahoma. TBs were prepared in the labs using American Society for Testing and Materials (ASTM) Type II water. TBs were stored with the unused sample bottles, placed in the appropriate cooler before sampling, and returned to the laboratory with each cooler containing environmental samples to be analyzed for VOCs. No target analytes were detected in the TBs.

E.2.2 Field Blanks

One FB was collected and analyzed with the environmental samples. The FB consisted of ASTM Type II water provided by Southwest laboratories. Levels of carbon tetrachloride, chromium, cobalt, copper, iron, magnesium, potassium, sodium, thallium, and zinc were detected in the FB collected during the field effort. Since these compounds and elements were also detected in associated environmental samples the concentrations detected less than five times the concentration detected in the FBs were considered estimates and were qualified "B".

E.2.3 Field Duplicates

One duplicate sample was collected for every ten environmental samples, as required by Draft Final QAPP. Sample collection reproducibility and media variability were measured in the laboratory by the analysis of field duplicates. RPD values were calculated for all compounds and elements analyzed for in the sample/duplicate pair. The RPD values were reviewed to assess sample collection reproducibility and matrix variability. A total of 18 environmental sediment samples and 2 duplicate sediment samples were collected. Three hundred and forty-nine RPD values were calculated from the sample/duplicate pairs. Forty-six exceeded the 35% control limit for sediments. These results are considered to have little impact on the environmental data quality and may be the result of the variability of the soil matrix.

Average values for field replicates were obtained using the following guidelines:

(1) If the analyte was detected in both samples the results were averaged.

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- (2) If the analyte was detected in one sample, and was qualified "B" or "R" in the other sample the value not qualified "B" or "R", was used.
- (3) If the analyte was detected in only one sample and the detected value was greater than ½ the quantitation limit, the detected value was averaged with ½ the quantitation limit.
- (4) If the analyte was detected in only one sample and the detected value was less than ½ the quantitation limit, the detected value was used.

E.3 LABORATORY QUALITY CONTROL ASSESSMENT

All environmental samples collected at the depot were analyzed using the test methods and general chemical methodology from the following references:

- Statement of Work For Organic Analysis, Multi-Media, Multi-Concentration, Environmental Protection Agency (EPA) Contract Laboratory Program, 3/90
- Statement of Work For Inorganic Analysis, Multi-Media, Multi-Concentration, EPA Contract Laboratory Program, 3/92
- Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods, SW-846, Third Edition, September 1986, with 1989 revisions
- Methods for Chemical Analyses of Water and Wastes, EPA 600/4-79-020, EPA 1983, with revisions

EPA Level 3 documentation was required and submitted by the laboratory for all analyses. All data were validated and qualified using the guidelines and specifications described in the following documents and modifications:

- Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses, EPA Contract Laboratory Program, June 1991
- Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, EPA Contract Laboratory Program, February 1988 (Region III modifications, June 1992)

In addition to the above guidelines, additional steps were taken to make the data validation process clearer to the reviewer. In the validation processes the "B" qualifier is used to indicate potential contamination resulting from the laboratory process. An example of the modification of the guidelines is presented for VOCs. According to EPA guidelines for VOC data validation analyzed by gas chromatography, any compound detected in the sample, and in the associated blank must be qualified when the sample result is less than 5 times the highest concentration found in any blank. Sample results greater than the quantitation limit, but less than 5 times the highest concentration found in any blank should be qualified "U". If the sample result is greater than the quantitation limit and greater than 5 times the blank concentration no qualification is required. The rule is modified for common laboratory contaminants (methylene chloride, acetone, toluene, 2-butanone, and common phthalate esters) to require a concentration ten times the highest concentration found in any blank.

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The use of the "U" qualifier in the first two cases could cause confusion as to the actual presence of the compound for results above the quantitation limit and possibly for those results below the quantitation limit. The "B" qualifier clearly indicates that the result may be suspect and may be a result of laboratory contamination. The use of the "B" qualifier is consistently applied to VOCs, TAL metals, SVOCs, Dioxins and Thiodyglycol analyses. The proper application of the 5X and 10X rule is used where applicable.

While it is a general practice in the validation of CLP organic methods to retain the laboratory added laboratory "J" qualifier, "B" qualifier for metals, for sample results below the quantitation limit, all laboratory added qualifiers were stripped from the data during the validation process. By applying a "J" qualifier only in cases where specific QC requirements were not met, the potential for confusion is reduced. In general, in the CLP process where a "U" qualifier would be applied to indicate a result below the quantitation limit, a () qualifier has been added to indicate a result below the quantitation limit. Any other qualifier added to the results below the quantitation limit indicates QC concerns. A complete summary of all data obtained and the qualifiers applied to that data is presented in appendix F.

Appendix F Validation Summaries, Chain of Custody Forms, and Analytical Database

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DATA VALIDATION SUMMARY

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Data Validation Summary

Defense Distribution Depot Memphis, Tennessee Dioxin Data Analyzed Using SW-846 Method 8280 Sampling Dates: October 1995

Samples in SDG# 23784

Sediment samples:

M-SD1-101195	M-SD2-101195	M-SD3-101195	M-SD4-101195
M-SD10-101095	M-SD11-101095	M-SD12-101095	M-SD19-101195
M-SD20-101195			

Water Samples:

M-FB1-101095

I. Sample Holding Times: Acceptable/All criteria met

Discussion:

All sediment samples were extracted within 14 days and analyzed within 40 days.

II. Internal Standard: Acceptable/With the following exceptions

Discussion:

Sample M-SD1-101195 reported a single internal standard above the recovery limit of 150%. Samples M-SD11-101095 reported recoveries for internal standards 2% below the acceptable recovery limit range of 25-150%. All detects were qualified "J", and all non-detects were qualified "UJ" for sample M-SD11-101095.

III. PCDD/PCDF Spiked Sample Summary: Acceptable/With the following exceptions

Discussion:

1.2,3,7,8-PeCDF reported a high percent recovery in two spike summaries (%R above 150%) for the water sample. 1.2,3,4,6,7,8-HpCDD and OCDD reported % recoveries and %RSD outside QC limits for the sediment samples. All other percent recoveries and percent differences were acceptable. No qualifiers were added.

IV. Blank Analyses: Acceptable/With the following exceptions

Discussion:

Method blanks and field blanks were analyzed at the required frequency. No target compound
was detected in the field blank associated with the samples. OCDD and OCDF were detected in one of the two method blanks associated with the samples. All sample detects less than stimes the concentration detected in the associated method blank were qualified "B". All nondetects and sample detects greater than 5 times the method blank concentration were not qualified.

Compound	Associated Sample	Qualifier	
OCDD	M-SD4-101195 M-SD12-101095 M-SD19-101195	В	
OCDF	M-SD1-101195 M-SD2-101195 M-SD3-101195 M-SD4-101195 M-SD10-101095 M-SD12-101095 M-SD19-101195 M-SD20-101195		

Qualified Data:

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V. Initial and Continuing calibrations: Acceptable/All criteria met

Discussion:

All PCDD/PCDF initial calibration responses and ion abundance ratios met the appropriate QC limits for the initial calibration of instruments G and Autospec. All PCDD/PCDF continuing calibration %D and ion ratios met the appropriate QC limits during continuing calibrations.

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Data Validation Summary

Defense Distribution Depot Memphis, Tennessee Volatile Organic Data Analyzed Using CLP 3/90 SOW Sampling Dates: October 1995

Samples in SDG# 23784

Sediment Samples:

M-SD1-101195	M-SD2-101195	M-SD3-101195	M-SD4-101195
M-SD5-101295	M-SD6-101295	M-SD7-101295	M-SD8-101295
M-SD9-101295	M-SD10-101095	M-SD11-101095	M-SD12-101095
M-SD14-101295	M-SD15-101195	M-SD16-101095	M-SD17-101195
M-SD18-101195	M-SD19-101195	M-SD20-101195	M-SD21-101295

Water Samples:

M-FB1-101095	M-TB1-101095	M-TB2-101195	M-TB3-101295
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Sample Holding Times: Acceptable/All criteria met.

Discussion:

All samples analyzed within the required holding time of 14 days.

II. GC/MS Instrument Performance Check: Acceptable/All criteria met

Discussion:

Bromofluorobenzene (BFB) was analyzed at the beginning of each 12 hour calibration period. All samples were analyzed within 12 hours the BFB tune.

III. Initial and Continuing Calibration: Acceptable/With the following exceptions.

Discussion:

All relative response factors (RRF) were above the 0.05 lower control limit for all target compounds. No target compound reported a percent relative standard deviation (%RSD) above 30% for any sediment sample. 2-Butanone, 4-methyl-2-pentanone, and 2-hexanone reported %RSDs above 30% in the initial calibration of instrument UI, used for the water samples. The %RSDs were below 50% and the compounds were not detected in any sample, therefore qualifiers were not added.

Continuing calibrations were performed at the proper frequency. All RRF were above the 0.05 control limit. Bromomethane, 1,1,2-trichloroethane, and 1,1,2,2-tetrachloroethane reported percent differences (%D) greater than the maximum allowable value of +/-25%, for some of the sediment samples. Methylene chloride and acetone reported percent differences

(%D) greater than the maximum allowable value of \pm /- 25%, for all of the water samples. Data was qualified "J", estimated, for all outliers.

Compounds	Associated Samples	Qualifiers
Bromomethane	M-SD6-101295 M-SD7-101295RE M-SD8-101295RE M-SD9-101295RE M-SD14-101295 M-SD14-101295RE M-SD14-101295RE M-SD21-101295RE	J, UJ
1,1,2-Trichloroethane 1,1,2,2-Tetrachloroethane	M-SD5-101295	
Methylene chloride Acetone	M-FB1-101095 M-TB1-101095 M-TB2-101195 M-TB3-101295	

Qualified Data:

IV. Blank Analyses: Acceptable/With the following exceptions

Discussion:

Method blanks, field blank, and trip blanks were analyzed at the required frequency. No target compounds were detected in the trip blanks associated with the samples; carbon tetrachloride was detected in the field blank below the quantitation limit. Methylene chloride was detected in all five of the method blanks, acetone was detected in four of the five method blanks, and carbon tetrachloride was detected in one of the method blanks associated with the samples. All method blank detects were below the quantitation limit. Sample detects for methylene chloride and acetone less than 10 times the concentration detected in the associated method blank were qualified "B". Sample detects for carbon tetrachloride less than 5 times the concentration detected in the associated method blank were qualified "B". Non-detects and detects exceeding the 5X/10X rule were not qualified.

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Qualified Data:

Compounds	Associated Samples	Qualifiers
Methylene Chloride	M-SD2-101195	8
	M-SD3-101195	
	M-SD4-101195	
	M-SD5-101295	
	M-SD6-101295	
	M-SD7-101295	
	M-SD7-101295RE	
	M-SD8-101295	
	M-SD8-101295RE	
	M-SD9-101295	
	M-SD9-101295RE	
	M-SD10-101095	
	M-SD11-101095RE	
	M-SD12-101095	
	M-SD14-101295	
	M-SD14-101295RE	
	M-SD16-101095	
	M-SD21-101295	
	M-SD21-101295RE	
	M-FB1-101095	
	M-TB1-101095	
	M-TB2-101195	
	M-TB3-101295	
Acetone	M-SD1-101195	
	M-SD5-101295	
	M-SD7-101295	l A
	M-SD18-101195	
	M-FB1-101095	
	M-TB3-101295	
Carbon tetrachloride	M-SD3-101195RE	
	M-SD8-101295	

V. Surrogate Recovery: Acceptable/with the following exceptions

Discussion:



Sample's M-SD3-101195, M-SD3-101195RE, M-SD7-101295, M-SD8-101295, M-SD9-101295, M-SD10-101095RE, M-SD11-101095RE, M-SD14-101295, and M-SD14-101295RE reported a high recovery for one or more surrogates. All detects were qualified "J" in the associated samples; non-detects were not qualified. VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analysis: Acceptable/All criteria met

Discussion.

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All spike recoveries (SR) and relative percent differences (RPD) were within the appropriate control limits.

VII. Internal Standards Area Performance: Acceptable/with the following exceptions

Discussion:

Samples M-SD3-101195, M-SD7-101295, M-SD8-101295, M-SD9-101295, M-SD11-101095, M-SD11-101095, M-SD14-101295, M-SD21-101295 reported low internal standard area counts. All samples were reanalyzed; the reanalyses also reported low internal standard area counts. All samples reporting low internal standard area counts were qualified "J", and non-detects were qualified "UJ".

Data Validation Summary

Defense Distribution Depot Memphis, Tennessee Semi-volatile Organic Data Analyzed Using CLP 3/90 SOW Sampling Dates: October 1995

Samples in SDG# 23784

Sediment Samples:

M-SD1-101195	M-SD2-101195	M-SD3-101195	M-SD4-101195
M-SD5-101295	M-SD6-101295	M-SD7-101295	M-SD8-101295
M-SD9-101295	M-SD10-101095	M-SD11-101095	M-SD12-101095
M-SD14-101295	M-SD15-101195	M-SD16-101095	M-SD17-101195
M-SD18-101195	M-SD19-101195	M-SD20-101195	M-SD21-101295

Water Samples:

M-FB1-101095

Sample Holding Times: Acceptable/All criteria met

Discussion:

All sediment samples were extracted within 14 days; the water sample was extracted within 7 days. All samples were analyzed within the required holding time of 40 days.

II. GC/MC Instrument Performance Check: Acceptable/All criteria met

Discussion:

Decafluorotriphenylphosphine (DFTPP) was analyzed at the beginning of each 12 hour calibration period. All samples were analyzed within 12 hours the DFTPP tune.

III. Initial and Continuing Calibration: Acceptable/With the following exceptions.

Discussion:

All relative response factors (RRF) were above the 0.05 lower control limit for all target compounds. Hexachlorocyclopentadiene reported a percent relative standard deviation (%RSD) above 30% during the initial calibration of instrument T used for some sediment samples. The compound was not detected in any sample and qualifiers were not added, since the %RSD was less than 50%. All compounds met criteria for the water sample during initial calibration.

Continuing calibrations were performed at the proper frequency. All RRF were above the 0.05 control limit. Several continuing calibrations reported compounds with response factor percent difference (%D) greater than the maximum allowable value of +/-25%. The

compounds are listed in the data validation worksheets. Data was qualified "J", estimated, for all outliers.

Qualified Data:

Compounds	Associated Samples	Qualifiers
N-nitroso-di-n-propylamine Hexachlorocyclopentadiene 2,4-Dinitrotoluene Diethylphthalate 4,6-Dinitro-2-methylphenol	M-FB1-101095	LU ,L
2,2'-Oxybis(1- Chloropropane) 4-Methylphenol N-nitroso-di-n-propylamine Hexachlorobutadiene Hexachlorocyclopentadiene Diethylphthalate Di-n-butylphthalate bis(2-Ethylhexyl)phthalate Di-n-octylphthalate	M-SD6-101295RE M-SD7-101295 M-SD21-101295 M-SD21-101295RE	
Hexachlorocyclopentadiene	M-SD6-101295 M-SD8-101295 M-SD9-101295 M-SD14-101295RE M-SD15-101195RE M-SD17-101195RE M-SD18-101195	
N-nitroso-di-n-propylamine 2,4-dinitrophenol 4,6-Dinitro-2-methylphenol Pentachlorophenol 2,2'-Oxybis(1- Chloropropane) N-nitroso-di-n-propylamine Hexachlorobutadiene 2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol bis(2-Ethylhexyl)phthalate Di-n-octylphthalate	M-SD3-101195 M-SD5-101295	

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IV. Blank Analyses: Acceptable/With the following exceptions

Discussion:

Method blanks and field blanks were analyzed at the required frequency. No target compound was detected in the field blank associated with the samples. Bis(2-ethylhexyl}phthalate was detected in all three method blanks, di-n-butyl phthalate was detected in one method blank, and diethylphthalate was detected in one method blank. All method blank detections were below the quantitation limit. All sample detects less than 10 times the concentration detected in the associated method blank were qualified "B". All non-detects and sample detects greater than 10 times the method blank concentration were not qualified.

Compounds	Associated Samples	Qualifiers
bis(2-Ethylhexyl)phthalate	M-SD1-101195 M-SD2-101195 M-SD3-101195 M-SD3-101195 M-SD4-101195 M-SD7-101295 M-SD8-101295 M-SD9-101295 M-SD9-101295 M-SD12-101095 M-SD16-101095 M-SD17-101195 M-SD17-101195 M-SD18-101195 M-SD19-101195 M-SD19-101195	В
Di-n-butyiphthalate	M-SD1-101195 M-SD2-101195 M-SD3-101195 M-SD4-101195 M-SD10-101095 M-SD11-101095 M-SD11-101095 R-SD12-101095 M-SD15-101195 M-SD15-101195 M-SD16-101095 M-SD16-101095 M-SD18-101195 M-SD19-101195 M-SD20-101195	
Diethylphthalate	M-FB1-101095	

Qualified Data:



V. Surrogate Recovery: Acceptable/with the following exceptions.

Discussion:

Samples M-SD-101295RE, M-SD17-101195, and M-SD18-101195 reported high recoveries for one surrogate. Since only one surrogate reported a high recovery, qualifiers were not added to the data.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analysis: Acceptable/With the following exception.

Discussion:

Pyrene reported a high recovery associated with the MS. All other spike recoveries (SR) and relative percent differences (RPD) were within the appropriate control limits. No qualifiers were added based on MS/MSD data alone.

VII. Internal Standards Area Performance: Acceptable/with the following exceptions

Discussion:

Samples M-SD6-101295, M-SD8-101295, M-SD9-101295, M-SD11-101095, M-SD14-101295, M-SD15-101195, M-SD17-101195, and M-SD21-101295 reported low internal standard area counts. All samples reporting low area counts were reanalyzed; the reanalyses reported similar results. All samples were qualified "J", and non-detects were qualified "UJ".

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Defense Distribution Depot Memphis, Tennessee PCB/Pesticide Data Analyzed Using EPA OLM01.8 SOW Sampling Dates: October 1995

Samples in SDG# 23784

Sediment Samples:

M-SD1-101195	M-SD2-101195	M-SD3-101195	M-SD4-101195
M-SD5-101295	M-SD6-101295	M-SD7-101295	M-SD8-101295
M-SD9-101295	M-SD10-101095	M-SD11-101095	M-SD12-101095
M-SD14-101295	MSD-15-101195	M-SD16-101095	M-SD17-101195
M-SD18-101195	M-SD19-101195	M-SD20-101195	M-SD21-101295

Water Samples:

M-FB1-101095

I. Sample Holding Times: Acceptable/All criteria met

Discussion:

All sediment samples were extracted within 14 days; the water sample was extracted within 7 days. All samples were analyzed within the required holding time of 40 days.

II. Initial and Continuing Calibration: Acceptable/Acceptable with the following exceptions

Discussion:

Initial and continuing calibration criteria were met during the initial and continuing calibrations of instruments HP_02 and HP_03 with the following exception. Samples M-SD10-101095, M-SD11-101095, M-SD12-101095, M-SD15-101195, M-SD16-101095, M-SD17-101195, M-SD18-101195, and M-SD19-101195 reported a breakdown on 4,4'-DDT and methoxychlor in the calibration verification following injection. The laboratory reanalyzed the affected samples.

III. Blank Analyses: Acceptable/With the following exceptions

Discussion:

Method blanks and field blanks were analyzed at the required frequency. No target compound was detected in the field blank associated with the samples. No target compounds were detected in the method blanks associated with the samples.

IV. Surrogate Recovery: Acceptable/With the following exceptions

Discussion:

Samples M-FB1-101095, M-SD1-101195, M-SD2-101195, M-SD3-101195, M-SD5-101295, M-SD6-101295, M-SD8-101295, M-SD10-101095, M-SD11-101095, M-SD12-101095, M-SD12-101095, M-SD14-101295, M-SD15-101195, M-SD15-SD1195RE, M-SD16-101095, M-SD17-101195, M-SD18-101195, and M-SD20-101195 reported one or more high surrogate recoveries. In the case of high surrogate recovery all detects in the samples were qualified "J", non-detects were not qualified. Samples M-SD10-101095RE, M-SD11-101095RE, and M-SD18-R reported one or more low surrogate recoveries. In the case of low surrogate recovery all sample detects were qualified "J", non-detects were qualified "UJ". Samples M-SD16-101095RE, M-SD17-R, and M-SD21-101295 reported both high and low surrogate recovery all sample detects were qualified "UJ".

V. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analysis: Acceptable/With the following exception.

Discussion:

A low spike recovery was reported for endrin in both the MS and MSD analyses and a low spike recovery was reported for aldrin in the MS analysis. Aldrin reported a high RPD in the MSD. All other spike recoveries and relative percent differences were within acceptable firmits. No qualifiers were added based on MS/MSD data alone.

VI. Laboratory Control Sample Analysis: Acceptable/With the following exception

Discussion:

The LCS for the sediment samples analyzed on HP_028 on 10/20/95 reported a 1 of 12 outside LCS recovery limits, a low recovery for endrin, the samples include M-SD1-101195, M-SD3-101195, M-SD4-101195, M-SD10-101095, M-SD11-101095, M-SD12-101095, M-SD15-101195, M-SD16-101095, M-SD17-101196, M-SD18-101195, M-SD19-101195, M-SD2-101195, and M-SD20-101195. The LCS for the sediment samples analyzed on HP_03 on 10/21/95 reported 10 of 12 outside LCS recovery limits, all outliers reported high recovery the samples include M-SD5-101295, M-SD6-101295, M-SD6-101295RE, M-SD7-101295, M-SD8-101295RE, M-SD8-101295RE, M-SD9-101295, M-SD9-101295RE, M-SD14-101295, M-SD14-101295, M-SD14-101295RE, M-SD21-101295, M-SD14-101295RE, M-SD14-101295, M-SD14-101295RE, M-SD14-101295, M-SD14-101295RE, M-SD14-101295, M-SD14-101295RE, M-SD21-101295RE, M-SD21-101295RE, M-SD14-101295, M-SD14-101295RE, M-SD21-101295RE, M-SD21-101295RE, M-SD14-101295, M-SD14-101295RE, M-SD21-101295RE, M-SD14-101295, M-SD14-101295RE, M-SD21-101295RE, M-SD14-101295, M-SD14-101295RE, M-SD21-101295RE, M-SD14-101295, M-SD14-101295RE, M-SD21-101295RE, M-SD14-10285, M-SD14-10285, M-SD14-10285, M-SD14-10285, M-SD14-10285RE, M-SD21-101295RE, M-SD14-10285, M-SD14-10285RE, M-SD21-101295RE, M-SD14-10285, M-SD14-10285RE, M-SD21-101295RE, M-SD14-10285, M-SD14-102

VII. Pesticide Cleanup Checks: Acceptable/All criteria met

Discussion:

All florisil cartridge check recoveries were within the 80-120% recovery limits.

F-14

Defense Distribution Depot Memphis, Tennessee Metals/Cyanide Data Analyzed Using EPA ILM02.1 SOW Sampling Dates: October 1995

Samples in SDG# 23784

Sediment Samples:

M-SD1-101195	M-SD2-101195	M-SD3-101195	M-SD4-101195
M-SD5-101295	M-SD6-101295	M-SD7-101295	M-SD8-101295
M-SD9-101295	M-SD10-101095	M-SD11-101095	M-SD12-101095
M-SD14-101295	M-SD15-101195	M-SD16-101095	M-SD17-101195
M-SD18-101195	M-SD19-101195	M-SD20-101195	M-SD21-101295

Water Samples:

M-FB1-101095

Sample Holding Times: Acceptable/All criteria met

Discussion:

All samples were analyzed within the holding time of 180 days for metals, 28 days for mercury, and 14 days for cyanide.

II. Initial and Continuing Calibration: Acceptable/All criteria met.

Discussion

All percent recoveries were within the appropriate control limits of 90-100% for most metals (80-120% for mercury, 85%-115% for cyanide).

III. Blank Analyses: Acceptable/All criteria met

Discussion:

Method blanks (preparation blanks and initial and continuing calibration blanks) and field blanks were analyzed at the required frequency. Calcium, potassium, and selenium were detected in the preparation blank associated with the sediment samples. Aluminum, iron, and potassium were detected in a continuing calibration blank associated with the sediment samples. Aluminum and calcium were detected in the preparation blank associated with the water sample. Aluminum was detected in a continuing calibration blank associated with the water sample. Aluminum was detected in a continuing calibration blank associated with the water sample. Sample detects less than 5 times the concentration detected in the associated blank were qualified "B". Non-detects and sample detects greater than 5 times the concentration detected in the associated blank were not qualified.

F-15

Qualified Data:

Compounds	Associated Samples	Qualifiers
Selenium	M-SD1-101195 M-SD2-101195 M-SD6-101295 M-SD7-101295 M-SD8-101295 M-SD9-101295 M-SD10-101095 M-SD11-101095 M-SD12-101095 M-SD14-101295 M-SD18-101195 M-SD20-101195 M-SD21-101295	В
Aluminum	M-FB1-101095	
Calcium	M-FB1-101095	

IV. ICP Interference check Sample (ICS) Analyses: Acceptable/All criteria met

Discussion:

Interference check samples were analyzed at the beginning and end of each ICP analytical run, as required. All percent recoveries were within the 80-120% recovery control limits.

V. Laboratory Control Sample (LC3' Analyses: Acceptable/All criteria met

Discussion:

Two laboratory control samples (one solid and one aqueous) were analyzed by the laboratory. All criteria was met.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample analyses (Percent Recoveries): Acceptable/With the following exception

Discussion:

Manganese reported a low recovery for the spike sample associated with the sediment samples. Sample detects for manganese were qualified "J". Manganese was detected in all sediment samples.

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Compounds	Associated Samples	Qualifiers
Manganese	Associated Samples M-SD1-101195 M-SD2-101195 M-SD3-101195 M-SD4-101195 M-SD5-101295 M-SD6-101295 M-SD7-101295 M-SD9-101295 M-SD10-101095 M-SD12-101095 M-SD12-101095 M-SD14-101295 M-SD15-101195 M-SD16-101095 M-SD16-101095 M-SD18-101195 M-SD18-101195 M-SD20-101195 M-SD21-101295	B

VII. Duplicate Sample Analyses (MS/MSD Relative Percent Differences): Acceptable/All criteria met.

Discussion:

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All metals met the appropriate control limit for sediment and water samples.

VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable/all criteria met

Discussion:

All spike recoveries met the control limit of 20%.

IX. ICP Serial Dilution: Acceptable/All criteria met

Discussion:

All criteria were met for both the sediment and water serial dilutions.

Data Validation Summary

Defense Distribution Depot Memphis, Tennessee Thiodyglycol Data Analyzed Using SW-846 Method 8015 Modified Sampling Dates: October 1995

Samples in SDG# 23784

Sediment Samples:

M-SD1-101195M-SD2-101195M-SD3-101195M-SD4-101195M-SD5-101295M-SD6-101295M-SD7-101295M-SD8-101295M-SD9-101295M-SD20-101195

Water Samples:

M-FB1-101095

Sample Holding Times: Acceptable/All criteria met

Discussion:

All samples were extracted within 7 days and analyzed within 40 days.

II. Initial and Continuing Calibration: Acceptable/All criteria met

Discussion:

All criteria were met for initial and continuing calibrations.

III. Blank Analyses: Acceptable/With the following exceptions

Discussion:

Method blanks and field blank were analyzed at the required frequency. No target compounds were detected in the blanks associated with the samples.

IV. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analysis: Acceptable/All criteria met

Discussion:

All spike recoveries (SR) and relative percent differences (RPD) were within the appropriate control limits of +/-25% recovery and 15% relative percent difference.

Data Validation Summary

Defense Distribution Depot Memphis, Tennessee Dioxin Data Analyzed Using EPA SW-846 Method 8280 Sampling Dates: October 1995

Samples in SDG# 23793

Sediment Samples:

M-SD5-101295	M-SD6-101295	M-SD7-101295	M-SD8-101295
M-SD9-101295	M-SD14-101295	M-SD21-101295	

I. Sample Holding Times: Acceptable/All criteria met

Discussion:

All sediment samples were extracted within 14 days and analyzed within 40 days.

II. Internal Standard: Acceptable/With the following exceptions

Discussion:

Samples M-SD5-101295, M-SD14-101295, and M-SD21-101295 reported percent recoveries for one or more internal standards below the recovery limits of 25-150%. All detects were qualified "J", and all non-detects were qualified "UJ".

III. PCDD/PCDF Spiked Sample Summary: Acceptable/With the following exceptions

Discussion:

1,2,3,7,8-PeCDF and 1,2,3,7,8-PeCDD reported high percent recoveries in two spike summaries (%R above 150%). All other percent recoveries and percent differences were acceptable. No qualifiers were added.

IV. Blank Analyses: Acceptable/With the following exceptions

Discussion:

Method blanks and field blanks were analyzed at the required frequency. No target compound was detected in the field blank associated with the samples. 1,2,3,4,6,7,8-HpCDF, DCDD, and OCDF were detected in one of the two method blanks associated with the samples. All sample detects less than 5 times the concentration detected in the associated method blank were qualified "8". All non-detects and sample detects greater than 5 times the method blank concentration were not qualified.



Qualified Data:

Compound	Associated Sample	Qualifier
OCDF	M-SD7-101295	В

V. Initial and Continuing calibrations: Acceptable/All criteria met

Discussion:

All PCDD/PCDF initial calibration responses and ion abundance ratios met the appropriate QC limits for the initial calibration of instruments G and Autospec. All PCDD/PCDF continuing calibration %D and ion ratios met the appropriate QC limits during continuing calibrations.

ANALYTICAL DATABASE - DEFENSE DISTRIBUTION DEPOT, MEMPHIS, TENNESSEE

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-22	•	Analyti	cal Dat	abase - (Defense	e Distribu	ution D(epot Mei	nphis,	Tenness	993		
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F-24	Analyti	cal Data	abase - C	Jetense	Distribu	ıtìon Df	epot Mer	nphis,	Tenness	99			
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epot Mem	503 M-503-1011 1011/05	BESULT	06	35		35	32	SE	1,60	1.60	4	4.50	3.60	3.50	2	8.70 2.51	3.50	08.1	5.10	1.80	1.80	18	180		0.63	E6 0	0.0	0.007	0.10	0.02	0.008	0.002	0,003	0,02	0.02	0,01	0.003
Ū u	5	UAL	2	2	2	Þ	Þ	Þ	>	5	۲	- ;	2	> .	- -	• :	; ;	- -	- :	2	7	Þ	∍		c	;	5	Þ	5	∍	2	⊐	5	Þ	>	>	∍
Distributio	502 M·SD2-10115 10/11/95	RESULT	75	37	37	37	37	¢e	1.90	1.90	6.30	097	0/ °C	0/ F	<u>e</u> :		9/ ·F	D R.1	=	06.1	1.90	61	190		1.31	10.0	0.0	0.01	0,08	0,0069	0'0	0.0041	0.0045	0.01	0.02	0.02	0.0043
ense	ur E	٦¥٢	∍	5	5	∍	∍	> :	•	•		• :	• :	• •	• •	• =	• :	• •		• :	> :	> :	>				2	>	∍		2	þ	þ		þ	2	2
Del	1/95 1/95	ð		-				:	9	<u>s</u> :	28				Q9			Ş		2	22				60	54.	6800.	6800	60	80	5	1E00.	0023	80	02	62	.0022
tabase -	5(M-SD20 10/1	RESULT	17	35	36	35	ŝ	35					7	96	, •		· -	- r	7				180		9	0	0	0	0	0	0	0	0	0	0	o	0
I Dal	5	INAL	>	∍	∍	∍	•	> :	• :	•	•	•	• =		• =	-	• =	- -	- -		: י) :	2				2 0	Э	כ	Ŧ	2	⊐ 6]	=	2	2	, ,
ytica	101 1011	5	5	ŝ	un,	ŝ	د د			20.5	5				3.50	1 50		2	- -		2.0		5		6.44	0.68	0.004	0.01	0.13	0.09	0.0	0.0	0.004	0.15	0.03	0.02	600 0
Analy	M-S01	RESUL	~	•	(**)	~	e ., (-		•	•			-	•			-	-		•	- :	-														
-	LOCATOR; SAMPLE ID; LECTION DATE;	RITERIA UNITS:	նդ/ծո	Bay Bn	6v/Ոn	6 yBn	C WSn			6 y/Bro	fuile.			no/ka	uo/ko	tuo/ka			6 yini		Av/Bo	BariBn	û willin		01/811	მუმი	եմնո	ng/kg	ug/kg	By/Bn	By/6n	ng/kg	ug/kg	ug/kg	04/Bn	ByBn	Bą/Bn
	COLL	ū	AROCLOR 1221	ARDCLOR/1232	AHOCLOH-1242	AHOCLOR-1248	ABOCI 00-1204	RFTA.RHC	DELTA.AHC	DIFLORIN	ENDOSUL FAN J	ENDOSULFAN I	ENDOSULFAN SULFATE	ENDRIN	ENDRIN ALDEHYDE	ENDRIN KETONE	GAMMA-BHC (LINDANE)	GAMMA-CHLORDANF	HETACHLOR	HEPTACHIOR EPOXIDE				Dioxín by EPA OFLM1.1	1234878-HPCDD	1234078-HPCDF	123478-HXCDD	123479-HXCDF	1 2 3 4 7 89-HPCDF	1 238 /8-HXCDD	123678-HXCDF	12378-PECDD	12378-PECDF		400XH-687 PZ I	234570 5500F	23478-FECUF

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-26		Analytical	Data	base - De	fense	e Distributi	on De	epot Memph	is, T	ennessee				
i	LOCA TOR: SAMPLE ID: COLLECTION DATE:	501 M-501-10119 10/11/95	<u>s</u>	105 101 025 M 101 101	195	SD2 M·SD2-1011 10/11/95	56	SD3 M·SD3·101195 10/11/95		5D4 M-\$D4-101195 10/11/95	~	SD5 A-SD5-101 10/12/9	ភូមិ សិង្ហ	
	CRITERIA UNITS:	AESULT OL	זאנ	HESULT (JAAL	RESULT O	INAL	RESULT OUA	Ļ	AESULT QUA	_	tesur T	OUA	
2378-TCOD	Byj6n	0.0014	∍	0.002	л с	0.0031	3	0.0071	-					_
2378-TCDF	ByBn	0.0020	2	0.002	1) =					0.10	>	_
0000	uaAn	5		UH H	•		2		,	0-0046	5	0.14		_
OCDF		37.6			-	04.01		8.44		4.30	æ	20		
TOTAL HPCDD		00.2 2		07.1	90	1.08	80	0.83 ()	Ē	0,12	8	2.40	-	
TOTAL MOCDE		06.21		12.00		2.62		1.45		0.78		4.30	_	
	By/6n	1.38		1.67		0.88		0,78		0.17			-	
	84/81	1.03		0.65		0.17		0.18		0.06			= :	
TOTAL HXCDF	ng/kg	0.50		0.60		0.35		90.0		0.0036				
TOTAL PECDD	0.0/kg	10'0		0.003	n F		=	0.001	-		5 :	0.20	-	
TOTAL PECOF	ua/ko	0.11		80.0	•		>	1200.0	5	0.0030	5	0.30	-	
TOTAL TCDD			=		=	50.0 0	:	0.04		0.0038	5	00'30	> -	
TOTAL TODE			2			1000.0	2	0.0022	2	0.0030	2	0.16	>	
	fiy/fin	10.0		800.0		0.0043	>	0.0038	5	0.0046	3	0.14	5	
Thindialycel by SV	W-846 Method 8015													
THIODIGLYCOL	ðjðn	20	₽	20	∍	20	5	20	⇒	50	5	20	3	
Metals by CLP											1)	
		2170		2810		6580		2420		3500		6320		
	0 v Buu	0.43	∍	0.43	⊐	0.47	2	0.44	÷	0.46		0.45	=	_
ANSENIC	By/Bru	7	÷	1.80	¢	1.70	c	1 AD		5	1			_
BARIUM	84/6w	24.10	=	45.20		142	;	53	÷					
BERYLLIUM	0 4/8 w	0.23	=	0.29	•	1.20	-	0.33	4		-			
CADMIUM	Ing/kg	0.38	=	0 44	-		2	4 C	-			й. О	=	_
CALCIUM	ma/ka	19200	:	19200	•	17900		140000		0.23	5	0,10	÷	_
CHROMIUM	motha	8.40		6 90								00166		
COBALT		0.78	=				:	10.10	:	14.80		16.70	_	
COPPER			=	- 1	=	0.80	÷	1.50	=	219		2.60	-	_
		11.30		4,30	-	6,90		15.40		34.70		7.40	_	
UTANIDE	84/644	0.16	7	0.23	=	0.17	2	0.16	₽	0.17		000		_
RON	աց/չց	3470		2810		2470		4500		RUTO	;		5	_
LEAD	mg/t g	17.70		22.40		19 90		06 06				00.4		
MAGNESIUM	naha	884	0	1210		6830		07.07				10.21	_	
MANGANESE		42	; -	4	-		•	20161		087	-	9390		
MERCHRY			• :		• :	707	٦		-	150	,	109		
	E a/Bru		2 :	1.0	2	0,12	5	0.11	2	0.12	5	0,11	2	_
NUMBER Dot Appliede	5×/Biu	05.2	0	2,10	÷	2.20	c	4.30	-	28.20		4,60	=	
	ទីមាមិល		e	253	÷	1150	٥	409	=	271	=	376	; =	
SELENIUM	64/0w	0.71	9 7 7	0.73	8	0.79	80	0.42	: >	0.46	: =	10.42		
							:		,		5)	-

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Analytical Database - Defense Distribution Depot Memphis, Tennessee

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\$D5 M-SD5-101295 10/12/95	RESULT QUAL 0.42 U 68,80 () 0.62 U 12.90	69.60
504 M·SD4-101195 10/11/95	HESULT QUAL 9,10 45,70 () 0,69 () 6,70 ()	0/11
5D3 M-SD3-101195 10/11/95	RESULT QUAL 134 0 134 0 7.10 0	071
SD2 M·SD2-101195 10/11/95	RESULT OUAL 0.47 U 282 († 0.70 U 4.70 (†	06'80
501 M-SD20-101195 10/11/95	RESULT QUAL 0.43 U 87.70 U 0.64 U 0.64 U 0.670 H	00.04
SD1 M-SD1-101195 10/11/95	RESULT OUAL 0.43 U 57.50 (1 0.65 U 6.30 (1)	3
LOCATOR: SAMPLE ID: COLLECTION DATE:	CRITERIA UNITS: mg/kg mg/kg mg/kg mg/kg	
	SILVER SODIUM THALLIUM VANADIUM ZINC	

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LOC SAMI COLLECTION	ATOR: PLE ID: DATE:	5D6 M-SD6-10 10/12/	1 295 95	SD7-10 M-\$D7-10 10/12/	11 295 95	5D8 M-SD8-10 10/12/	11295 95	SD9 M-SD9-10 10/12/	H 205 95	50101 1.0102-M	0 1045 36	SD1.1102 M SD1.1101 01.101	1015 96	
CAITERIA I	UNITS:	RESULT	QUAL	RESULT	DUAL	RESULT	OUAL	RESULT	QUAL	RESULT	OUAL	RESULT	QUAL	
Volatile Compounds by CLP 3/90														
1,1,1-TRICHLOROETHANE	B⊮8n	Ξ	∍	10	I.L	ļ	Ξ	:		:				
1,1,2,2-TETRACHLORDETHANE	18 1 /81	Ξ	>	2	33	: ;	3 3	::	33	12	3	13	3	
1.1.2-TRICHLOROETHANE	ug/ka	=	5	2	3 3	:;	33	::	3:	12	5	<u>~</u>	3	
1.1.DICHLOROETHANE	04/60	=		9	33	::	3 3	::	3:	12	3	El	3	
1,1-DICHLOROETHENE	9.Agu	Ξ	5	2	33		3 3	::	33	12	3	<u>-</u>	3	
1,2-DICHLOROETHANE	նդ/Ոս	=	5	2	3	: =	3 3	::	3 3	29	3 3		77	
1, 2-DICHLOROETHENEITOTAL	v0/kg	Ξ	∍	2	3		33	: :	3 3	2;	33	<u>1</u>	3	
1.2.DICHLOROPROPANE	ոց/եց	=	∍	10	3	=	33	: =	3 3	25	33			
2-BUTANONE	Ng/Ng	=	∍	01	3	=	3		3 3		3 3	5 C C	33	
ZHEXANONE	მუ/მი	=	þ	01	3	=	3	-	3 Ξ	2 5			3:	
4-METHYL-2-PENTANONE	նկ/մո	Ξ	∍	10	3	=	33	=	3 3	2 5	2 3	2 2	3 :	
ACETONE	01/6n	12		28	-	29	ר ;	24	3 -	2 5	2 3	י <u>ה</u>	33	
	nB/kg	Ξ	∍	2	3	Ξ	3	; =	' 3	: :	3		33	
BROMODICHLOROMETHANE	ug/kg	Ξ	>	9	5	=	3	=	3	: 2	33	2 0	3 3	
BROMO FURM	Baj/Gn	Ξ	2	2	3	F	3	: =	3	: 2	3 3	2 -	33	
DRUMUME HANE CABRON DISTURIES	ug/kg	= :	∍	0	3	Ξ	3	=	3	12	33	<u>;</u>	3 E	
Салаия Изиције Саври тетоали дарг	ng/kg	= :	2	2	3	Ξ	5	=	3	12			3 E	
	8×/8×	= :	- :	2	3	Ξ	3	Ξ	3	12	=	-	3 3	
	83,6n	= :	•	2	3	=	5	=	3	12	Ē	-	33	
CHLOROFORM	6+/6n	= =	23	2∶	3 :	=	3	=	n	12	5	-	13	
CHLOROMETHANE	no/pu	: =	> =	2 2	33	= :	3	=	3	12	'n	2	5	
CIS-1, 3-DICHLOROPROPENE	ua/ka		• =	2 9	3 3	::	33	2:	33	12	Ľ	-	3	
DIBROMOCHLDROMETHANE	ug/kg	Ξ	Þ	2	33	: :	3 3	::	33	2	Ξ	<u> </u>	3	
ETHYLBENZENE	ug/kg	=	Э	2	3	: =	3 3	::	33		33		3	
METHYLENE CHLORIDE	ug/kg	22	63	£E	ß	2.8	2		3 a	-	2 9	<u>-</u>	3 9	
STYRENE	նդյնո	Ξ	∍	10	3	1	' 3	: :	• Ξ	•		Þ :	8 = :	
TETRACHLORDETHENE	Յդ/Ծո	=	5	2	3	:=	3	: :	3 3	2 2	3 3		33	
TOLUENE	ելինո	=	∍	4	5	1	13	: =	3 =	2	3 3	2 :	33	
TRANS-1, 3-DICHLOROPROPENE	მ₩₿ი	=	5	01	3	Ξ	3	: =		: 2	3 3	25	3 3	
THICHLOHOETHENE	0 1 /8n	Ξ	⊃	2	3	Ξ	3	Ξ		1	53	2 2	33	
	0 3/1 60	Ξ	2	9	3	Ξ	3	=	3	- 1			33	
ATLENE (IDIAL)	ՅլյլՅո	=	∍	2	3	=	3	2	3	12	33		3 3	
Semivolatile Digaric Compounds by	4 CLP 3/90	_												
1, 2, 4 TRICHLOROBENZENE	0V0	1400	3	350	٦	360	-	0.91		000	=			
							3	2	3	מחכ	2	970		

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Analytical Database - Defense Distribution Depot Memphis, Tennessee

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33 3 3 3 3 2323 3 3 33 **'** ' ' OUAL M-SD11-101095 10/10/95 SDI1 1000 **B**00 801 000 420 420 420 000 420 420 420 420 80 270 RESULT 420 420 80 420 420 ĝ ĝ 2100 420 420 420 120 420 420 420 420 8 2 400 420 420 420 OUAL þ 5 2 2 \square Þ ⇒ ⇒ ∍ ⇒ 2 2 2 2 M-\$D10-10105-M 10/10/95 **SD10** 390 **390** 950 390 390 390 120 550 530 RESULT 390 OGE 060 950 390 260 300 065 0000 QUAL 3 3 3 З Б З 3 З З 3 3 3 33 3 33 З З 3 3 З 3 З З 3 3 3 З 33 3333 M-SD9-101295 10/12/105 509 350 056 680 350 350 350 350 350 350 350 860 350 350 350 350 350 350 RESULT 350 350 880 350 **05E** 860 350 350 350 860 350 880 210 240 530 50 220 QUAL 3 3 3 3 З 333 3 З З 3 Ξ 3 3 З 3 3 З 3 З 33 3 33 З 3 3 222 3233 508 M-508-101295 10/12/95 380 360 970 360 360 870 RESULT 380 380 870 380 360 870 360 380 360 360 870 380 670 360 360 88 140 360 OBE 380 ŝ 085 QUAL ∍ 2 3 ∍ ⇒ ∍ ∍ ⊅ ⊅ ∍ ∍ ∍ ∍ ⇒ ∍ ∍ ⊐ \supset Ξ ∍ ∍ \supset 5 ≂ ∍ ≂ ∍ □ $\supset \supset$ M-SD7-1012U5 10/12/95 202 RESULT 350 350 340 **0**9E **350** 840 350 350 350 350 840 350 350 350 350 840 350 840 350 350 350 350 840 350 **350** 350 89 2 89 1<u>60</u> 350 QUAL 3 З 3 33 З 3 3 З З З 3 3 3 3 3 З 3 3 З 3 3 333 333 З 33 M-SD6-101295 10/12/95 SDG **RESULT** 400 400 1400 1400 1400 3400 1400 3400 400 1400 1400 1400 1400 1400 3400 1400 1400 3400 3400 1400 1400 1400 3400 1400 1400 3400 260 470 2300 2900 1400 3000 2800 3500 1400 1400 ug/kg COLLECTION DATE: CRITERIA UNITS: ug/kg ug/kg Bx/On წყემი նչնո 0.9/6n ₿ұбп Ва/вп ng/kg Ba/Bn ug/kg იც/ცი 01/Bn 81/Bn ug/kg LOCATOR: SAMPLE (D: 61/0n By/Bn ug/kg 1. ВКОМОРНЕМУЦ-РНЕМУLETHER Ug/kg Byjen ug/kg 0 y Dn ug/kg Bygu 83/8n u0/kg ug/kg 03/Bn 4-СНLОЯОРНЕNYL-РНЕNYLETHERug/A ng/kg 03/Bn 67/6n 08∕kg 878v BIS(2-CHLOROETHDXY)METHANEug/10 1.B-DINITRO-2-METHYLPHENOL 4-CHLORO-3-METHYLPHENOL BISI2-CHLOROETHYLJETHER 2-CHLORONAPHTHALENE 2,4,5-TRICHLOROPHENOL **Z-METHYLNAPHTHALENE** 3, 3"-DICHLOROBENZIDINE 2.4.6-TRICHLOROPHENOL BENZO(BIFLUORANTHENE **BENZOIKJELUORANTHENE** I, 3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 1.2-DICHLOROBENZENE BENZOIAJANTHRACENE BENZO(G,H,IIPERYLENE 2.4-DICHLOROPHENOL 2,4 DIMETHYLPHENOL 2.4-DINITRDTOLUENE 2, B-DINITROTOLUENE 2,4-DINITROPHENOL ACENAPHTHYLENE 2-CHLOROPHENOL 2-METHYLPHENOL 4-CHLOROANILINE 4-METHYLPHENOL **BENZO(A)PYRENE 3-NITRDANILINE** 4-NITROPHENOL 2-NITROANILINE ACENAPHTHENE 2-NITROPHENOL **4-NITROANILINE** ANTHRACENE

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-30	Analyli	cal Dati	abase - D	efense	EDistribu	ution D	epot Mei	npliis,	Tenness	e			
COLLECTION: SAMPLE ID: COLLECTION DATE:	SDU M-SD6-10 10/12/	; 01295 /95	SD/ M-S07-10 10/12/9	1 295 15	SD8-10 M-SD8-10 10/12/	1295 95	509 M-SD9 10 10/12/	1295 95	01 01 01 01 01 01 01 01 01 01 01 01 01 0	1095 15	5011 1.1108-M	01095 95	
CRITERIA UMITS:	RESULT	QUAL	RESULT	מחאו	RESULT	OUAL	RESULT	GUAL	AESULT	OUAL	RESUNT.		
ВІЗ(2-СНІ.О.8.О.150 РАОРУІ) ЕТНЕЙ 4 <u>0</u> /kg	1400	3	, 350	Þ	380	Ξ	160	3					
BISIZ-ETHYLHEXYLIPHTHALATE ugAg	1400	3		Ē	80	3 9		3 '	065	∍	420	'n	
BUTYL BENZYL PHTHALATE ug/ka	1400	5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	23			0/5	• :	0011		2900	٦	
CARBAZOLE	54D	2		> :		33	045	3	78	0	210	₽	
CHRYSENE UD/LD	0022	<u>1</u> -	202	> =	095	3	22	3	66	•	180	3	
DI-N BUTYL PHTHALATE	1400	2	3	• :		23	316	2	609		1400	٦	
		33		33	360	3	91) 19	2	45	0	44	60	
		3 3	095	3	380	3	350	3	390	=	420	3	
		3	350	5	380	3	350	3	120	-		3 3	
		₽	350	5	380	3	350	77	390	; =]]	
	1400		0 9E	3	300	3	350		00	• =	7	2	
	1400	3	350	∍	360	3	360	3 Ξ		• :		3	
	4600	-	140	=	140	12	181	3 2	0011	-	024		
-LUGHENE ug/hg	180	3	350	>	380		350	3 =		-	19062	ר י	
HEXACHLOROBENZENE UGAD	1400	3	350	9	360	33	350	3 3		= :	89	2 :	
HEXACHLOROBUTADIENE ug/kg	1400	3	350	3	360	33		33			420	77	
HEXACHLOROCYCLOPENTADIENEIIg/kg	1400	Ĵ	350	3	360	3 3	150	3 3	065	• :	420	3	
HEXACHLOROETHANE UG/kg	1400	3	350	⊐	360	33	200	33	065	> :	420	ſ	
NDENO(), 2, 3-CO/PYRENE Ug/kg	2700	ر	350	• =	360	3 3		3 3	065		420	3	
SOPHORONE UB/kg	1400	3	350	, =	000	3 3	000	33	260	= :	390	3	
V-NITROSO-DI-N-PROPYLAMINE UR/kg	1400	3	150	2		3 3	065	33	066	>	420	5	
N NITROSODIPHENYLAMINE 110/kg	1400	33	096	3 =		33	065	33	390	∍	420	ī	
VAPHTHALENE ug/ko	1400	Ξ				33		33	390	>	420	Ξ	
VITROBENZENE Land	1400	3 E			nor	33	350	3.	060	∍	420	3	-
	0046	3 3		• :	105	3	350	3	390	∍	420	3	
PHENANTHRENE USING USING		3 -		> :	870	3	880	3	950	Ŧ	0001	3	
	0001	<u>:</u> ۱		= :		2		3	610		0051	-	
		3.		2	360	3	350	3	390	∍	420	'n	
	2057	-	210	-	260	2	660	-	840		1900	-	
CB/Pasticides by CLP 3/90								-					
1,4*-DDD ug/kg	5,9(- 0	3.50	3	3.6(2	jr a	-	10 5		,		
1,4'-DDE vg/kg	81	٦	3,50	7	3.60	• =		 -		3 -	7.6	53	
1,4'-00T wg/kg	34	-	3,50	5			141	1 -				6	
upRiv ug/Ag	1,8(• •	1,80	3	1 BC			י י •	9 ł	י : :	_	-	
LPHA-BHC un/ta	1.6() =		•	5	; c	~ ~	3.	2.2		
NLPHA-CHLORDANE ugha	-	, -	20.	> =		• •			~ ;	3	2.2	- FTT - 0	
ROCLOR-1016 units	i ji) =				5:	3.10	- -	13	- ;	5.3	-	
	7	>	ç	2	ŋ	2	35	>	6E	6	42	(11)	

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Analytical Database - Defense Distribution Depot Memphis, Tennessee

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8D9 M-SD9-1012(10/12/95	REULT Q	1	72	35	59	35	цг.	3 E	1.80	081	760	1 80					0.0	04. F	1,80	3.20	1.80	1.80	81	160			62.0		0.0081	0,06	0.01	00	0.03	0.0022	0,0033	0,0034	0.02	0.02	0.0030	
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506 5-10125 112795	т Б	~	11	۰ د		. .	ģ	Ю	1.80	1.80	G	1.80	3.50	3.50	-	3.50	3.50	1.80		8		2		_		_	0.45	0.65	0.62	A B B					ę :		N C	9 i	59.	
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LOCATOR: SAMPLE ID: CTION DATE;	FERIA UNITS:	00/80	note			Dy/An	0x/0n	ngrup	ByBn	By/8n	Յւլնո	ngAkg	ng/kg	ng/kg	ug/kg	ug/kg	ug/kg	u0/kg	00/00	nafte				01/0n		ug/kg	ng/kg	uq/ku	ug/ko	volka		a dina		Burden			6 w 6n	ng/kg	6x/fin	
COLLE	CRII	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOB. 1 248	ABUC: 00.1364		BRUCLUM-1 260 BETA BUD						ENUDSULFAN SULFATE	ENDRIN	ENDRIN ALDEHYDE	ENDRIN KETONE	GAMMA-BHC (LINDANE)	GAMMA-CHLORDANE	HEPTACHLOR	HEPTACHLOR EPOXIDE	METHOXYCHLOR	TOXAPHENE		Dioxin by EPA DFLM1.1	1234878-HPCDD	1234679-HPCDF	123478-HXCDD	123478-HXCDF	1234789.HPCDF	123878-HXCDD	123878-HXCDF	12378 PECDD	12378.PECDF	123789.HXCMD	127789.HXCDF	234670.HYCDE	20210-00-00-00-00-00-00-00-00-00-00-00-00-0		

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6-20		Analytica	l Dat	abase - Def	ense	Distributio	n De	epot Memp	, 'ihis	Tenness	88			- F -
	LOCATOR: SAMPLE ID: COLLECTION DATE:	506 M-SD0-1012 10/12/95	562.	507 M-SD7-10129 10/12/95	ធ្ន	508 M-508-10128 10/12/95	5 S	SD9 M-SD9-10129 10/12/95	ş	01.0102-M 01.0102-M	11 (1915 26	1102 M-S0111-1102-M 10/107	095	•
	CRITERIA UNITS:	RESULT (JAUD	RESULT OL	JAL	HESULT OL	JAL	RESULT O	UAL	RESULT	QUAL	RESULT		
378-TCDD	ոցեց	0.32	3	2100'0	∍	0.0015	Ŧ		=					
378-TCDF	ug/kg	0,11	3	0,0018	þ	0.0017				50		0.02	33	
	64/fin	20	-,	4.98	Đ	5.78	•	90.1	F	500		0.02	3	
CDF	03/f0	2.10	3	0,02	8	0.07	5	07.0	4		:	4.60	2	
OTAL HPCDD	ug/tg	6.30	-	0.10	;	95.0	2		•		₽	0.25	3	
OTAL HPCDF	10,769	0.45	3	0.02		0.04					• •	1.30	-	
DIAL HXCDD	119/kg	2E.0	5	0.03		500					.	0.13	-	
OTAL HXCDF	ugha	91.0	33	0.0014	=		:	5 C C		0		0.02	3	
DIAL PECDO					> =	0.002	> :	62.0		0.5	-	0.07	7	
OTAL PECDE			3 3		• :	0,0015	3	0.0022		ō	036 L	0.0UI		
OTAL TOPO	Ballan .		3 3	00012 0	5	0.0013		0.13		0. 1	_	HUHO () .	111 111	
	5y/Bn	0.32	3	0.0017	∍	0,0015	5	0.01		0.0	0.015 U	0.03		
	By/Bn	0.11	3	0.0018	∍	0.0017		0.08		00		000	3 3	
indiation ha Ch	1.048 64 0216												}	•
	GING DOULOW ALSo .	02	3		:	ç	-	;	:					
		2	3	2	5	707	5	20	>	٠				
etals by CLP														
TUMINUM	0W0m	18400		6210		7410		A TOO		00.00				
NTIMONY	04/0m	0.43	∍	0.42	5	EF O	=		z		:	2750		
RSENIC	0 y/0 w	9.70		8.20	,		>		2		> •	0.82	÷	
ARIUM	marka	38.40		47 BO				10,01		5	-	2,80		
ERYLLIUM	a Wam	0.44	-	90.0	-		-	142	:	11.30	-	08.10		
ADMIUM		0.28	; :		2 3		= :	89.0	0	0.3	=	0.20	÷	
ALCIUM		15500	=	1160	2	77.0	>	1,20		0,4	-	1,10	=	
HROMIUM		17 20		00.01						17500		15000		
OBALT			4	24.0	:	09.01		12		8.¥	-	12.10		
OPPED			2	no.,	Ŧ	¢.10	=	9.40	=	6.4	=	3.20	=	
	B 4/Bin			01'61		14.10		83.70		14. .		41.50		
	64/610	0.18	=	0.31	÷	0.23	0	0.59		0.2	-	0.28	=	
	Ballgroup	13600		14900		15200		1 7000		9820	2	B100	•	
	6 y/But	29.40		61.80		35.40		173		76 74	_	140		
AGNESIUM	e al glue	2410		1340		1550		2040		1680	1	0446		
ANGANESE	mg/kg	906	7	497	٦	359	٦	740	-	526	-	0062	•	
ERCURY	By/Bu	0.11	∍	0,11	>	0 11 0	' =	0.35	•		: י -		۰:	
ICKEL	mg/kg	=		9.60	I	10.80	3			- 0			∍	
OTASSIUM	6 W/But	006	ŧ	518	c	B10	4	101	4	10.0	= :	0F.11		
ELENIUM	mg/kg	0:50	80	0.75	ene ene	0.85	ģ	0 44	2 9		= =		° (
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Analytical Database - Defense Distribution Depot Memphis, Tennessee

5011 211-101095 2010/015	ULT QUAL	0.55 11 56.40 0 0.82 U 11.20 () 247
SD10 M-SD10-101095 M-SD10/95	AESULT QUAL RES	0.46 U 61.30 D 0.69 U 12.20 U
SD9 M·5D9·101295 10/12/95	RESULT QUAL	0.43 U 74.70 U 0.65 U 20.70 217
509 M-S08-101295 10/12/95	RÉSULT QUAL	0.43 U 37.40 U 0.65 U 21.80 68.80
SD / M·SD7-101295 10/12/95	RESULT, QUAL	0.42 U 33.20 U 0.63 U 19.90 70,50
\$D6 M-SD6-101295 10/12/95	RESULT OUAL	0.43 0.82 0.84 0.84 0.84 0.08 0.08 0.08 0.08 0.08
LOCATOR: Sample ID: Collection Date:	CRITERIA UNITS;	8դ/6ւս Ա/ն 1/8 1/6 1/6
		SIL VER SODIUM THALLIJUM VANADIUM ZINC

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LOU SAN GULECTION	CATOR; APLE IO; 4 DATE;	102 M-SD12-1 01/01	2 56010 26/	501 M-5014 10/12	4 101295 795	SD1- (-12021-) 10/12(4 01296 /95	SD1 M-SD15-1 10/11	6 01195 /95	5D1 M-S016-1 10/10	ن 1095 105	5D1 M-5D17-1	7 01116 /95	• • ·
CRITERIA	UNITS:	AESULT	OUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RÉSULT	סחאנ	RESULT	UIAL	
Volatila Compounds by CLP 3/90														
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1,1,2,2-TETRACHLOROETHANE	na/ta				3 3	2 5	33	2 3		2 :	3	12	∍	
1.1.2-TRICHLOROETHANE	un/ka		3 3	2 5	3	1 :	3 3	• :	•		2	12	2	
1.1-DICHLORDETHANE		2 5	3 3	2 5	3	2	33	4	2	<u>c</u>	⇒	12	2	
1.1.DICHLORDETHENE			3 3	2 \$	33	-	3 :		2	<u>c</u>	2	12	D	
	Autor.	2	33	2 2	33	2	3	4	c	2	Þ	12	C	
		2:	33	2:	3		3	14	2	01	∍	12	3	
1,2-Dicticonde Ineligito I ALI 1,3 Dictil Abadeora Alie	Buißn	-	5		5	13	3	5	2	01	J	12	0	
1,4-UIURURURUPANE 2 BHT 440445	6 triðn	F	3.	6	3	2	5	4	þ	01	þ	12		
	Ca)/Bn		3	C [3	E	3	Ē	c	2	5	1) =	
Z-HEAANUNE	03/60	61	3	6	7	5	3	14	2	01	2) =	
9-METHYL-Z-FENTANONE	B4/6n	-	3	C	3	EL	5	14	þ	2		-		
ACETONE	6 y 6n	-	3	12	3	EL	3	4	2	2		2) =	
	64/Bn	-	3	61	3	5	3	4	Ċ	01	2	1	. 2	
BHOMODICHLOROMETHANE	By/Bn	-	3	C)	3	Ef	3	4	Ċ	2		2	. 2	
BHUMOPORM	01/6n	2	3	13	5	51	3	4	2	2		12	. =	
BHUMUMETHANE	63/6n	-	3	2	3	.	3	14)	01	0	2) =	
CARBON DISULFIDE	og/kg	2	3	13	3	E (3	4			• =	: 2) <u>-</u>	
CARBON TETRACHLORIDE	ug/kg	2	3	:	3	Eţ	3	1	2	2	• =	: :	2 =	
CULOROBENZENE	ng/kg	2	5	C1	3	61	3	14) =	: :		
CHLOROETHANE	ug/kg	33	3	ť:	3	13	3	-) =	2 2	> =	22		
CHLOROFORM	ug/kg	1	3	E1	3	Et	5	14		9	=	: 2		
CHLOROMETHANE	նչնո	11	3	EL	3	E (3	4		2	⇒⇒	: :	; ;	
CIS-1, 3-DICHLOROPROPENE	n0yr8	2	3	13	3	C [3	4	5	01	=	: 2	> =	
	8 1 /80	2	3	13	3	El	3	14		2	3	2	; =	
ETHYLBENZENE	8¶/6n	2	3	13	'n	C -	3	14	∍	2	>	2	: ⊃	
	ng/kg	N	Ē	40	Ċ	32 2	Ð	14	5	¥7	B ()	12	5	
SITNENE	By/Gn		3	13	3	.	3	14	-	2	5	12		
	ug/kg	-	5	13	3	C		14	Ģ	01	5	12		
IDLUENE	ng/kg	6	3	13	3	C1	3	Ē	7	9		1	• =	
TRANS-1, 3-DICHLOROPROPENE	ug/kg	-	3	5	3	EL	'n	14	2	01		1	: =	
TRICHLORDETHENE	ug/kg	-	3	13	3	13	3	4		2			> =	
VINYL CHLORIDE	04/8n	•	5	El	3	ť:	3	14	5	01		1	: =	
XYLENE (TOTAL)	ug/kg	1	3	18	7	90	-	4	Þ	9	• >	2	: ⊃	
Semivolatide Oroanie Compositorie I	67 E B 270													
1,2,4-TRICHLOROBENZENE	ua/ha	420	2	4300	10	4200	=	ABG	Ę		-	, and		
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Analytical Database - Defense Distribution Depot Memphis, Tennessee

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105 11-7 102-M 11-7 101	RESULT		390	390	390	940			0.65	190	940	390	390	390	000	060				ייכ	062	940	940	390	390	390	390	390	940	940	390	390	390	69							060			
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5018 M-5016-10 10/101	RESULT	1	340	340	340	820	340	072		140	029	340	340	340	340	340	340	0.0			040	820	820	340	340	340	340	340	820	820	340	340	19	150	170	260	10							
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SD15 M-SD15-10 10/11/01	RESULT		460	460	460	1100	460	460	400			400	460	460	460	460	460	1100	400	180				480	460	460	460	460	1100	1100	460	460	24	120	83	150	480	480	950		400			
1 01295 95	DUAL	-	33	3	3	3	3	3		3 3	3 3	33	3	3	3	٦	3	'n	3	Ξ	3 3	33	3 3	33	33	3	3	3	3	3	3	3	3	-	-	-	. –	. –	3	3 3	3			
5D14 M-SD21-11 10/12/	RESULT	10000	0025		4200	10000	4200	4200	4200		00201			4200	4200	7200	4200	10000	4200	4200	10001			4 200	1004	4200	4200	4200	10000	10000	4200	4200	2600	12000	11000	11000	9500	11000	4200	4200				
1 01295 95	OUAL	-	3 3	3 3	33	3	3	3	3	1	3	3 3	33	33	3.	7	3	3	n	5	3	3 E	3 3	3 3	3 3	33	33	33	3	3	3	3	ר	. ,	7	7	٦	٦	3	1	3			
5D14-1 M-SD14-1 10/12/	RESULT	4200	4100			00001	4300	4300	4300	10000	4300			10004		00001	4300	10000	4300	4300	10000		4300					4300		10000	4300	00/1	4900	20000	19000	17000	4300	25000	4300	4300				
ر 01095 95	QUAL	5	• =	• =			5	2	5	∩	5	. 2	2 =			•	5	∍	þ	C	C			. =	• =		• :) :	. כ	• :	> :	•	=		=	=	∍	2	5	I			
5012 M-SD12-110/10/	RESULT	420	420	000		0001	420	420	420	1000	420	420	420			025	420	1000	420	420	1000	1000	420	470	420	120						026	120	66	69	120	40	420	420	420				
LOCATOR SAMPLE ID: ECTION DATE:	RITERIA UNITS:	ud/ko	ua/ka			flybn -	1. v9/x9	ng/kg	64/6n	ug/kg	ugika	ualita	E 1000		e yon y		63/8n	09/80	01/0ո	E սց/ևց	ոցդեր	HENOL UNIT	LETHER under	ENDL UDAD		A THERMAN				Bullon	By Ba	ទីមុសិក	ByjBn	ByBn	64/6n	E ug/kg	By/6n	E ug/kg	IETHANE49Ag	HER UD/NG	•			
COLL	ť	1,2-DICHLOROBENZENE	1, 3-DICHLOROBENZENE	1.4-DICHLOROBENZENE	2.4.5-TRICHLOROPHEND				2.4-DIMETHYLPHENOL	2,4-DINITROPHENOL	2,4-DINITROTOLUENE	2.6-DINITROTOLUENE	2-CHLORONAPHTMALEN	2-CHLOROPHENGL	2-METHYLNAPHTHALENE	2.METHY PHENOI			Z-WI HOPHENDL	3.3 - DICHLOROBENZIOINI	3-NITROANILINE	4,6-DINITRO-2-METHYLP	4-BROMOPHENYL PHENY	4-CHLORD-3-METHYLPHE	4-CHLOROANILINE	4-CHLOROPHENYL PHENN	4-METHYLPHENDI	4-NITROANILINE	4-NITROPHENDI	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BENZOVALANTUDA CENT	JENZO (JAMINI ANA CON	DCN2U(A)FTHENE		BENZO(G.H.IIPERYLENE	BENZO(K)FLUORANTHEN	BIS(2-CHLOROETHOXYIM	BIS(2-CHLOROETHYLJETh				

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ILCATOR: SD14														
CHITERA UNITS FESULT GIAL RESULT GUAL	LOCA SAMPI COLLECTION C	ATOR: LE ID: D'ATE:	5012 M-5012-10 10/10/		SD14-1 M-SD14-1 10/12/	4 01295 195	5D11 10/12/ 10/12	4 01295 95	108 1-3108-M 1-1/01	5 01195 95	SD18 105-M 10/10	97 : - ÷	501 1.7103-M 1.7101	7 01195 /95
Size Childenberkung size und s	CRITERIA U	INTS:	RESULT	DIAL	RESULT	QUAL	RESULT	QUAL	RESULT	DUAL	RESULT	JAUD	RESULT	DUAL
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ристальнитиналие орда 720 и 7	DI-N-OCTYL PHTHALATE		110	-		33	0026	3	28	8 1	20	81	45	Ē
рантитичната Мантитичната Мантитична составии Мантитична составии	DIBENZIA MANTHRACENF			• =		33	4200	3 :	460	Ξ	21	-	40	6
WETHYTHITTIKE WAS YR Y	DIBENZOFINAN			:		2	nnn F	2	460	3	2B	=	σ	6
MIETINT: Under Nature Upped Zoo Upped Upped <thupped< th=""> Upped Upped</thupped<>	DIFTHYI PH MAI ATF	Fa / Fin	27			3	4200	3	460	3	340	7	350	3
UURANTIFIKE UNA TO U TO TO <thto< th=""> TO <thto< th=""> <thto< td="" tht<=""><td></td><td></td><td></td><td>• :</td><td>4 4 4 4 4</td><td>3 3</td><td>4200</td><td>5</td><td>520</td><td>.</td><td>2B</td><td>¢</td><td>. 76</td><td>0</td></thto<></thto<></thto<>				• :	4 4 4 4 4	3 3	4200	5	520	.	2B	¢	. 76	0
Control Contro <thcontrol< th=""> <thcontrol< th=""> <thco< td=""><td></td><td></td><td>120</td><td></td><td>4300</td><td>3</td><td>4200</td><td>3</td><td>140</td><td>⊒</td><td>340</td><td>7</td><td>64</td><td></td></thco<></thcontrol<></thcontrol<>			120		4300	3	4200	3	140	⊒	340	7	64	
CARCHENCHORENZENE UNR 420 U 7200 J 4300 J 4300 U 4300 <thu< th=""> 4</thu<>		6 1 /0:		•	29000	-	32000	-	280	2	160	=	88	3
Control Contro <thcontrol< th=""> <thcontrol< th=""> <thco< td=""><td></td><td>ug/kg</td><td>420</td><td>2</td><td>7200</td><td>-</td><td>4300</td><td>-</td><td>460</td><td>7</td><td>340</td><td></td><td>390</td><td></td></thco<></thcontrol<></thcontrol<>		ug/kg	420	2	7200	-	4300	-	460	7	340		390	
Texaction control model Unit 420 U 4300 U1 4200 U1 4200 <thu1< th=""> 4200 <thu1< th=""></thu1<></thu1<>		03/FB	420	∍	4300	3	4200	3	460	3	340		390	3 3
It SACHLORIGCYCLOPENTADIENNigning 420 U 4300 U 4300 <thu< th=""> 4300 U 4300<!--</td--><td></td><td>ug/kg</td><td>420</td><td>∍</td><td>4300</td><td>3</td><td>4200</td><td>3</td><td>480</td><td>3</td><td>340</td><td>) =</td><td>190</td><td>3 3</td></thu<>		ug/kg	420	∍	4300	3	4200	3	480	3	340) =	190	3 3
Ite XACHARGE THANE ughg 420 U 4300 U 4200 U 4200 <thu< th=""> <th< td=""><td>HEXACHLOROCYCLOPENTADIEND</td><td>6y/8n</td><td>420</td><td>5</td><td>4300</td><td>3</td><td>4200</td><td>3</td><td>480</td><td>3</td><td>340</td><td>> =</td><td></td><td>33</td></th<></thu<>	HEXACHLOROCYCLOPENTADIEND	6y/8n	420	5	4300	3	4200	3	480	3	340	> =		33
МОНОЛ.2.3-СЛРҮКЕМЕ UPAG 39 I 9700 J 9100 J 9100 J 960 U 320 U 2000 SPHORINE UPAG 420 U 4300 U 4200 U 340 U 360 U 370 U 360 U 370 U 360 U 370 U 360 U 370 U 370 U 460 U 370 U 370 U 470 U		ug/kg	420	5	4300	3	4200	3	480	В	340	=	066	3 3
SOPHORANE ugha 4.20 U 4.300 U 4.200 U 4.300 U 4.300 <thu< th=""> 4.300 <thu< th=""> 4.3</thu<></thu<>	NDENO[1,2,3-CD]PYRENE	By/Gn	9 6	=	9700	-	9100	7	480	3	92) =	96	33
HNITROSS-OF/VLAMINE ugha 420 U 4300 U 4200 U 4300 U 4200 U 4300 U 4200 U 4300 U 4200 U 4300 U 4200 U 4300 U 4300 U 4200 U 4300 U 4300 U 4300 U 4300 U 4200 U 4300 U 4200 U 4300 U 4200 U 4300 U 4300 <thu< th=""> <</thu<>	SOPHORONE	61/8n	420	=	4300	3	4200		480	3	340	= =		2 3
Intracsonprime ughe 420 U 4300 U 4200 U 4300 U 4200 U 4300 U 430 U 300 U 100 <	V-NITROSC-OL-N-PROPYLAMINE	61/8n	420	∍	4300	3	4200	3	480	3	340	> =		33
(APITHALENE ught 420 U 4300 U 4200 U 4200<	4-NITROSODIPHENYLAMINE	ng/kg	420	∍	4300	5	4200	3	460	Ξ		3 2		3 :
IFAOBENZENE ugfkg 420 U 4300 UJ 4200 UJ 460 UJ 340 UJ 340 UJ 330 UJ 1100 UJ 340 UJ 330 UJ	VAPHTHALENE	ByBn	420	∍	4300	ŋ	4200	33	980	3 3		> =	005	33
ENTACHLOROPHENGL ug/kg 1000 u 10000 u 10000 u 1000 101 1000 101 1000 101 1000 101 1010 1010 1010 1010 1010 1010 1010 1010 1010 1010 1010 1010 1010	VITAOBENZENE ,	ng/kg	420	∍	4300	'n	4200	ìΞ					1000	3 :
HENANTHRENE ught 41 th 33000 1 31000 1 400 01 940 01 HENAL ught 420 th 33000 1 31000 1 31000 1 3200 01 HENOL ught 420 th 55000 1 27000 1 3100 11 530 11 340 11 330 11 YRENE ught 4.20 th 55000 1 27000 1 310 11 150 1 330 11 CiPrositios by CLP 3/90 ught 4.20 U 92 J 310 1 150 1 330 11 CiPrositios by CLP 3/90 ught 4.20 U 92 J 310 1 320 1 330 1 330 1 330 1 320 1 1 320 1 1 320 1 1 320 1 1 320 1 1 22 1 1 22 1 </td <td>PENTACHLOROPHENDL</td> <td>n0/kg</td> <td>1000</td> <td>2</td> <td>10000</td> <td></td> <td></td> <td>3 3</td> <td></td> <td>3 3</td> <td>010</td> <td></td> <td>005</td> <td>3 :</td>	PENTACHLOROPHENDL	n0/kg	1000	2	10000			3 3		3 3	010		005	3 :
HENOL ugha 420 U 4300 U 4200 U 4300 U 4200 U 23 U 330 U 130 U 130 U 130 U 130 U 130 <th1< td=""><td>PHENANTHRENE</td><td>ug/kg</td><td>4</td><td>đ</td><td>33000</td><td>-</td><td>31000</td><td>3 -</td><td></td><td>33</td><td></td><td></td><td>160</td><td>3</td></th1<>	PHENANTHRENE	ug/kg	4	đ	33000	-	31000	3 -		33			160	3
VRNE ug/kg B1 1 55000 J 7000 J 300 U 390 U CB/Pesticides by CLP 3/90 ug/kg 4.20 U 92 J 79 J 53 J 130 U 390 U .4·DDE ug/kg 4.20 U 92 J 79 J 53 J 130 U 39 U .4·DDE ug/kg 4.20 U 79 J 53 J 130 J 39 U .4·DDT ug/kg 4.20 U 79 J 53 J 130 J 220 U 220 U 220 J 220 J 220 U 220 J 220 J 230 U 230 U 220 J 220 J 220 J 220 J 230 U J 230 U J 230 U<	HENOL	ua/ka	420	-	4300	Ξ	4700	' :				= ;		2
28/Pesticides by CLP 3/90 9/9 4.200 92 1 79 1 10 11 10 11 10 11 10 11 10 11 </td <td>YRENE</td> <td></td> <td>1</td> <td></td> <td>6000</td> <td>} -</td> <td></td> <td>3</td> <td>100</td> <td>3</td> <td>065</td> <td>2</td> <td>062</td> <td>ľ'n</td>	YRENE		1		6000	} -		3	100	3	065	2	062	ľ'n
26/Pesticides by CLP 3/90 ug/kg 4.20 U 92 J 79 J 53 J 130 210 .4*DDE ug/kg 4.20 U 79 J 63 J 130 21 72 .4*DDE ug/kg 4.20 U 79 J 62 J 130 18 22 J 22 J 22 J 120 11 22 J 130 11 22 J 130 11 22 J 130 J 120 J J 22 J J 120 J J 120 J J 22 J <			5	=		•	nno 7	-	OLE	3	150	=	GE	-
.4 ⁻ DDD ug/kg 4.20 U 92 J 79 J 53 J 130 710 .4 ⁻ DDE ug/kg 4.20 U 79 J 62 J 130 16 J 72 J .4 ⁻ DDT ug/kg 4.20 U 79 J 62 J 130 16 J 72 J 32 J 130 11 72 J 310 UJ .4 ⁻ DDT ug/kg 2.20 U 100 J 7.80 J 42 J 310 UJ .4 ⁻ DT ug/kg 2.20 U 100 J 7.80 J 42 J 310 UJ .4 ⁻ DT ug/kg 2.20 U 7.80 J 2.40 U 1.80 UJ 2.80 J 2.40 U 1.80 UJ 2.30 L 2.30 J 2.30 J 2.20 J<	CB/Pesticides by CLP 3/90													
-4-DDE ug/kg 4.20 U 79 J 62 J 130 16 J 22 J 23 J 22 J 23 J 22 J 23 J 22 J 23 J 1 22 J 23 J 1 23 J J 33 J <thj< th=""> <thj< th=""> <thj< th=""> <thj< tr=""></thj<></thj<></thj<></thj<>	1'4DDD	იე/სც	4.20	ے ۔	92	7	79	-	5	-	061		111.6	
.4 ^{-DDT} ug/kg 4.20 U 200 J 180 J 28 J 42 J 300 UJ LDRIN ug/kg 2.20 U 10 J 7.60 J 12 12 12 1300 UJ LPHA-BHC ug/kg 2.20 U 7.60 J 12 1 12.80 U 16.80 J 1.80 UJ 2.40 U 1.80 UJ 2.60 J 2.50 J 2.50 U 2.50	1,4'.DDE	ug/kg	4.20	> -	79	7	62	, ,	130	•		-	5	•
LDRIN ug/tg 2.20 U 10 J 7.80 J 2.00 U 3.00 J 3.00 J <thj< th=""> <thj< th=""> <thj< th=""> <t< td=""><td>1.4.DDT</td><td>ոց/եց</td><td>4.20</td><td>> -</td><td>200</td><td>7</td><td>180</td><td></td><td></td><td>-</td><td>: ;</td><td>- -</td><td></td><td></td></t<></thj<></thj<></thj<>	1.4.DDT	ոց/եց	4.20	> -	200	7	180			-	: ;	- -		
LPHA-BHC ught 2.20 U 2.20 U 2.20 U 2.20 U 0.60 J LPHA-CHLORDANE ught 3.70 U 2.20 U 2.20 UJ 2.40 U 1.80 UJ 2.11 AOCIORIDIE ught 3.70 U 3.00 UJ 2.11 J 2.5 J 8.10 J 72 J 7.30 J		ualta	2.20	=	2	-		, -		- r	7	י ד נ		
(PHA-CHLORDANE ug/kg 3.70 J 3.6 J 25 J 8.10 J 72 J 7.34 J RocioRilote indua 42 L 42 J 72 J 7.34 J	ALPHA-BHC	ua/ka	2.20) = _		בי ב		י בי אפ	27				5.5	- 2
	ALPHA-CHLORDANE	ua/ka	07 E	-	5	, -		3 -				CU .		3
	AROCLOR-1016			> =	Ş	• :		•			12	-		- -

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			5		Suata	e Distriou		epot mer	nphis,	Tenness	e.
	LOCATOR:	5012		SD14		SD14		SOIS		0140	
COLLECT	SAMPLE ID: FION DATE:	M-SO12-10 10/10/	11095 15	M-S014-1(10/12/) i 295 35	M-5D21-10 10/12/9	1295 5	W-SD1-4108-M	11195 36	01-81 02-W	1095
CRITE	RIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	0UAL	RESULT	QUAL	RESULT	DUAL
AROCLOR-1221	oliko	85	þ	67	=	86	Ξ	*0	:	:	
AROCLDR-1232	unAn	42		19	. =	3 5	3 3	. .	. כ	63	3
AROCLOR-1242	1010					¥	3	44	•	34	3
AROCI OR-1246			. :		> :	42	3	46	∍	99	G
	01/61	28	> :	- -	-	42	3	46	∍	46	3
	ng/kg	42	2	40	⊐	42	3	46 4	5	34	3
ARUCLUR-1200	0 y/Bn	42	5	43	⊐	42	L IJ	46		34	3 3
	0a/6n	2.20	<u> </u>	5.1	ר -	4.10	7	9.40	-	191	3 3
VELLA-BHC	ug/kg	2.20	-	ę	,	5.80	-	2.40			33
	Յւնըս	39	7	310	-	300	-	160	>		3 -
ENDOSULFAN	ng/kg	2.20	>	22	J	32		10 6	=		•
ENDOSULFAN IJ	Ծւյնո	4.20	>	4.3(4.20	3) =		3 3
ENDOSULFAN SULFATE	Յկ/Յո	4.20	>	4.3(, ,	4.20	33				3 3
ENDRIN	ugikg	4.20	>	48	-	45	; -	20.1	> =	1.01	3 .
ENDRIN ALDEHYDE	B կ/8a	4.20	>	61	ر .	27	-				'
	6y)8n	4.20	> -	4.3(4.20	3	4 80	• =		3 3
GAMMA-BHC (LINDANE)	ByBn	2.20	>	2.2(> ~	2.20	3	DP C			3 3
GAMMA-CHLORDANE	Bygu	n	-	44	7	90	-	5.8(, -	19	3 -
HEPTACHLOR	Bwgu	2.20	>	13	7	n	. –	14.0		1 80	י = בי
	ոց/եց	2.20	>	7,8(ר _	ŕ	-	2,40			33
METHOXYCHLOR	B∦Gn	22	∍	22	>	29	- -	24		81	3 E
JUXAPHENE	Baγ8n	220	>	220	Þ	220	3	240)]	180	33
Cioxin by EPA DFLM1.1											
1234678·HPCDD	ug/kg	0.18	ŧ	5.40	-	u	•				
1234878-HPCOF	ug/kg	0.04	÷	1.90	2	1.80	' 2				
123478-HXCDD	AyDa	0,0	0 OB	0.10	5	D.95	3			•	
123478-HXCOF	ngrkg	0.00	13 U	0.40	3	0.40	33				
1234789-HPCDF	մլանո	0.02	⇒	-	5	-	33				
123678-HXCDD	61/8n	00'0	28 U	2.50	3	1.20	3				
123678·HXCDF	8¶/8n	00.0	20 U	0.95	3	0.82	3	•		•	
	ng/kg	0.00	20 20	0.0	3	0.55	3				
1 24/8-PECDF	ug/kg	0.00	18	2	3	0.40	3				
	ng/kg	0.00	D 60	1.60	3	0.80	7	•			
	04/6n	0.00	41 C	0.75	3	0.90	3				
23478 PCCUP	0 yBn	00.0	13 N	0.40	5	0.3B	3	•			
234 / 0-rcur	Bt/Bn	0.00	17 U	0.92	3	2.30	3	•		,	

F 2 4 C Analytical Database - Defense Distribution .

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F-38		Analytica	al Dat	abase - D	efens(e Distribut	ion D	epot Mem	phis,	Tennesse	e		
i	LOCATOR: SAMPLE ID: COLLECTION DATE:	5012 M-5012-101 10/10/95	095	SD14 M-SD14-10 10/12/9	1295 5	5014 M-\$021101 99(51/01	295	8015 M-S015-101 10/11/99	- 145 5	SD16 M-SD18-10 10/10/9	1095 5	7102 101-7103 M 39/11/01	195
	CRIFERIA UNITS:	RESULT	OUAL	RESULT	OUAL	RËSULT	DAL	RESULT	QUAL	RESULT	01141	RESULT	
2401 alos	!								!				
2378-1CDD	նկնո	00,0	2 8 8	0.58	3	0.17	3						
23/8-TCDF	ByyBn	0,002	D 91	0.08	3	0.62	3					•	
ocod	Եւլյնո	2.50	8	29	-,	28	-						
OCDF	Յչլնո	0,10	811	3,80	3	3.50	2			•		•	
TOTAL HPCDD	0 VGn	0.18		9.30	-	9.40	1			•			
TOTAL HPCDF	E 4/4511	0.04		4.30	. –		' -			-			
TOTAL HXCDD	10/60	0.03		01.0	,Ξ							•	
TOTAL HXCDF		0.07			3 3		33			•			
TOTAL PECDD		10.0	2		3 3		3	-				,	
TOTAL PECHE			2	(18°.)	33	0.55	3	•				ı	
	Galas	0.02		0.92	3	0.40	3			•			
	6x/6a	0'00	> ®	0.58	3	0.17	3						
TOTAL TCDF	սց/կց	0,002	0 9	90.0	3	0.62	3	•					
Thiodiglycal by SW	-846 Method 8015												
THIODIGLYCOL	6/8n			•						,			
	1							I					
Mataly by CLF								-					
	8y/Bui	89 6 0		3160		3450		1130		A.C.D		42.54	
ANTMONY	eng/kg	0.52	∍	1.30	=	1 40	t	53 G	=		:	42/0	:
ARSENIC	mailte	5 90			•		5		2 :		>	0.52	C
BARIUM		OF AB							÷	2.10	_	9	
BERYLLIUM			=		1	19.67	;	16.70	÷	18.70	÷	62.80	
C A DMARINA			= :		;	67. 0	-	0.23	2	0.21	5	0.40	Ŧ
CALCINA		07.0	2	2.60				0.29	∍	0.26	•	0.46	=
				24800		27900		4470		158000		1820	
	BajBeu	10.60		38.20		28		3.10		5.60	_	7.60	
	0t/0u	8.30	0	4.80	=	5.10	-	2.60	-	1.60	=		-
COPPER	mg/kg	20.90		53		58.50		9.60		2.10	2	15.30	2
CYANDE	8դ/նա	0.19	5	0.60	∋	0.70		0.21	=	11.0	=		-
IHON	6y/6ui	12900		11200		12200		100	,		2	U. 13	2
LEAD	mg/kg	68		484		285		2010					
MAGNESIUM	mn/kg	1860		0661		33EO			ł			2	
MANGANESE		202	-		-		-		• •	02.05		1030	=
MERCINEY			• =		• :		י	23.60	-	112	٦	218	-:
NICKEI	A siAm		2		2	El'O	3	0.14	∍	0.10	>	0.13	=
DATASSINA	Anifin) 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	4	20.00	:	17.70		3.40	÷	3.70	=	00.8	c
	n an i	100	e (207	≏ .	303	=	100	÷	120	=	42F	0
DELENIUM	64/644	0.74	e II	0.87	₿	1.10	(1B	D.57	5	0.41	=	0.52	; =
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Analytical Database - Defense Distribution Depot Memphis, Tennessee

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5017 M-SD17-101195 10/11/95	RESULT QUAL	0.52 U 74 U 0.77 U 13.10
SD16 M-SD16-101095 10/10/95	RESULT OUAL	0.41 U 149 D 0.62 U 4.80 D 66,90
SD15 M-SD15-101195 10/11/95	RESULT QUAL	0.57 U 40.60 U 0.86 U 5.80 U 42.60 U
\$D14 M-SD21-101295 10/12/95	RESULT OUAL	0.52 U 63.30 () 0.79 U 14.20 U 288
SD14 M-SD14-101295 10/12/95	RESULT DUAL	0.51 U 84.20 0 0.78 U 12.40 D 260
5012 M-5012-101095 10/10/95	RESULT QUAL	0.52 U 78.50 H 0.78 U 20.80 92.10
LOCATOR: SAMPLE ID: COLLECTION DATE:	CRITERIA UNITS:	84/8 64/8 04/8 04/8 0 1 0 4/8 0 1 0 4/8 0 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1
		SIL VER SODIUM THALLIUM VANADIUM ZINC

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	CATOR:	210s	~	las	5	
COLLECTION	I DATE:	/10/01	01195 95	M-SD19-1	01195 /95	
CRITERIA	UNITS	RESULT	DUAL	RESULT	GUAL	
Volatile Compounds by CLP 3/30						
1, 1, 1, TRICHLOROETHANE	n0/kg	14	3	12	2	
1.1.2.2-TETRACHLOROETHANE	400 A	4	5	12	2	
1. 1. 2-TRICHLOROETHANE	03/80	4	>	12	0	
1. J. DICHLOROETHANE	ug/kg	2	⊃	12		
1. 1-DICHLOROETHENE	04/8n	ž	5	2	2	
1.2.DICHLOROETHANE	ng/kg	Ξ	Þ	12	n	
1.2 DICHLORDETHENEITOTAL)	n9/kg	ī	>	12	þ	
1,2-DICHLORDPROPANE	նդ/նո	ž	5	12	Ċ	
2-BUTANONE	Յւլյնո	4	7	12	Ċ	
Z-HEXANONE	նչնես	14	=	12	2	
4-METHYL-2-PENTANONE	n0/kg	4	5	12	c	
ACETONE	ug/kg	61	811	12	c	
BENZENE	04/6n	₽	∍	12	C C	
BHUMODICHLOROMETHANE	ug/kg	Ā	>	12	5	
	64/8n	ž	∍	12	5	
	ByBn	7	⇒	12	Þ	
	0 1/0 1	4	∍	12	-	
CARBON TETRACHLORIDE	ug/kg	4 4		78		
CHLOROBENZENE	ug/kg	14	2	12	0	
CHLORDETHANE	նդ/Յո	14	2	12	5	
CHLOROFORM	ug/kg	14	þ	12	2	
CHLOROMETHANE	ug/kg	14	2	12		
CIS-1, 3-DICHLOROPROPENE	ugikg	14	2	12	D	
DIBROMOCHLOROMETHANE	. 03/Bn	14	2	12	П	
E I H YLBENZENE	04/6n	14	3	12	Þ	
METHYLENE CHLORIDE	0¥/8n	4	-	- 12	5	
STYRENE	By/Bn	4	∍	12	5	
TETRACHLOROETHENE	og/kg	Y	∍	12		
TOLUENE	նդ/նո	4	>	12		
TRANS-1, 3-DICHLOROPHOPENE	Byjßn	2	∍	12		
TRICHLOROETHENE	Յւլյնո	1	>	12		
VINYL CHLORIDE	61/Bn	Ξ	∍	12	. 5	
XYLENE (TOTAL)	ՅլլՅո	Ξ	5	12	5	
Semivolatite Organic Compounds b • • • • • • • • •	W CLP 3/90					
ניליאי ועירורטאטספאלנאב	ugukg	460	>	390	c	

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Depot Memphis, Tennessee Analytical Database - Defense Distribution

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5013 M-5019-10 711/11	RESULT	390	350	300	950	390	06E	066	950	390	390	06E	390	26	06E	950	390	390	950	950	390	390	390	080	390	056	960	390	390	390	390	OGE	390	390	06E	390	390
3 01195 95	QUAL	Þ	2	2	2	5	Þ)	>	Þ	2	2	2	- :	∍	>	∍	2	2	c	2	2	∍	>	9	∍	5	∍	∍	Ð	=	÷	•	-	÷	þ	>
5018 M·SD18-11 11/01	RESULT	480	460	460	1100	460	460	460	1100	460	480	460	460	960	460	1100	460	460	1100	1100	460	460	460	460	480	0011	1100	460	460	25	63	41	56	Ē	4	460	460
LOCATOR: SAMPLE ID: COLLECTION DATE:	CRIFERIA UNITS:	1.2-DICHLOROBENZENE ug/hg	1.3-OICHLOROBENZENE UG/RB	1.4 DICHLOROBENZENE UB/kg	2.4.5-TRICHLOROPHENOL ug/kg	2,4,6-1 HICHLOROPHENOL N0/kg	2.9-DIGHLUHUPHENOL UB/Kg	2,4'UIMETHYLPHENOL UG/NG 2,4.DIMITBOOUE44A1			2-СН ОВОМАРИТНАТЕМС И ИЗ/КВ 2-СН ОВОМАРИТНАТЕМС	2-СНІ ПРОРНЕМЫ Э-СНІ ПРОРНЕМЫ	2. METHYI NAPHTHALENE	2 METHYL PHEMOL			2. MINUMENOL UG/kg	a, a fuichtundbenzilding ug/kg	A P DIVITION DATE DATE DATE DATE DATE DATE DATE DATE	4.0-UINI KU-Z-METHYLPHENOL Ug/kg	4-0KUMUPHENYL-PHENYLETHER UG/kg	4 CHLOHO-3-METHYLPHENOL UGAR	A CHLOROANILINE UG/HB	ч-сисокистемустриемустиелиелие А стерно станости	4-METRYLFMENUL ug/kg					ARTHACENE UG/kg				senzo(G.H.IJPERYLENE ug/kg		disf2-CHLOROETHOXY)METHANEug/Lg	выгуснцовоетнуцетнея одде

-43		Analytica	L Uate	ibase - L	efense Distribution De	pot Memphis, '	Tennessee
LOCA SAMPA COLLECTION D	ATE: DATE: DATE:	SD18 M-SD18-101 10/11/95	56 1	5019 01-6102-W 10/11//	105		
CRITERIA U	NITS:	RESULT	DUAL	RESULT	OUAL.		
BIS(2·CHLOROISOPROPYL)ETHER I	64/64	460	∍	390	-		
BIS(2-ETHYLHEXYLIPHTHALATE	ug/ka	130	8()	74	80		
BUTYL BENZYL PHTHALATE	ug/kg	460	∍	06C	j		
CARBAZOLE	101/60	23	=	390			
CHAYSENE	ua/ka	65	=	390) =		
DI-N-BUTYL PHTHALATE	ug/ha	•	8	46	9 8		
PI-N-OCTYL PHTHALATE	ng/kg	460	₽	390			
INBENZIA, INANTHRACENE	04/8n	460	∍	390			
LIBENZOFLIRAN	Byjßn	400	∍	390	Ċ		
DIETHYLPHTHALATE	Billigu	380	=	390	c		
DIMETHYL PHTHALATE	ng/kg	011	=	390	0		
FLUORANTHENE	DyOn	150	=	300	2		
FLUORENE	0 y 6n	29	=	390	n		
HEXACHLOROBENZENE	ngrìg	460	>	390	5		
	ug/kg	460	•	390	п		
HEXACHLOROCYCLOPENTADIENE	BwBn	460	7	06E	J		
HEXACHLOROETHANE	ug/kg	460	2	390	c		
INDENO(1,2,3-CO)PYRENE	Յղ/Յո	33	=	390	5		
SOPHORONE	ug/kg	460	>	390	c	-	
N-NITROSO-OI-N-PROPYLAMINE	Յղյո	460	∍	390	C		
N-NITROSODIPHENYLAMINE	0¥8n	460	7	390	П		
VAPHTHALENE	03/6n	460	⊐	390			
VITRÖBENZENE	ug/kg	460	5	390			
PENTACHLOROPHENOL	6a/6o	1100	∍	950	c		
HENANTHRENE	ug/kg	130	=	20	0		
HENOL	ug/kg	460	∍	390	D		
YRENE	ug/kg	230	÷	06E	D		
CB/Posticidos by CLP 3/90							
1.4'-DDO	6 Y Br	4.60	3	3,90	Þ		
1,4'-DDE	94.6	5,50	-	3.90	J		
1.4'-DDT	მუმი	4.60	3	3.90	П		
ALDRIN (0 1/ 0r	2.40	3	N	D		
ALPHA-BHC	07/8n	2.40	3	N	п		
ALPHA-CHLORDANE	ug/kg	2.40	3	2	Þ		
ARDCLOR-1016	By/Bn	46	3	39	Þ		

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Analytical Database - Defense Distribution Depot Memphis, Tennessee

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SD19-1011 SD19-1011 10/11/95	SULT Q	6			5 C	5			(PA	3.90	2	3.90	05.0	3.90	3,90	3.90	N	N	N	N	20	200		0.02	0.0040	0 0083	0.0021	0.0070	0.0039	0.0022	0.0029	0.0024	0.0054	0.0045	0.0036	10000
ž	H																																			
1195 5	QUAL	Ξ	3 3	3 3	33	33	3 3	33	3	3	3	3	'n	3	3	3	3	3	3	3	3	3														
8102 M-8102-M 911001	RESULT	20	99			0 e 7 7		2.40	2.40	4.60	2.40	4.60	4.60	4.80	4.60	4.60	2.40	2.40	2.40	2.40	24	240														•
LOCATOR: SAMPLE ID: CTION DATE:	tèria units:	unha			Ruffer Ruffer	finite finite		un/ka	ByBn	og/Bn	u0/kg	Յչլքո	64/8n	og/kg	ug/kg	ng/kg	0a/6n	64/8n	Bx/fin	By/0n	04/6a	01/8n		μηλα	10/kg	ug/trg	ng/kg	03/6n	ng/kg	ug/kg	61/8ո	მუმი	ng/hg	ng/kg	04/8n	ug/kg
COLLE	CRIT	AROCLOR-1221	AROCLOR-1232	APOCLOR-1242	AROCLOR 1248	AROCLOR-1254	AROCLOR-1280	BETA-BHC	DELTA.BHC	DIELORIN	ENDOSULFANI	ENDOSUI, FAN II	ENDOSULFAN SULFATE		ENDRIN ALDEHYDE	EMDRIN KETONE	GAMMA-BHC (LINDANE)	GAMMA CHLDRDANE	HEPTACHLOR	HEPTACHLOR EPOXIDE	METHOXYCHLOR	TOXAPHENE	Dioxin by EPA DFLM1.1	1234676-HPCDD	1234678-HPCDF	123478-HXCDD	123478-HXCDF	1234789-HPCDF	123878-HXCOD	123678-HXCDF	12378-PECDD	12378 PECDF	123789-HXCDD	123789-HXCDF	234878-HXCDF	23478.PECDF

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4	LOCATOR: SAMPLE ID: COLLECTION DATE:	H105 H101-B105-W H105	195	SD19 M SD19-10[19 10/11/95	96
	CRITERIA UNITS:	RESULT (JAU	RESULT OU	JAL
378-TCDD	uq/ka			0,0018	5
2378-TCDF	tuarka			0,0019	
DCDD	varka			0.21	
JCDF	40/k0	•		0.02	
TOTAL HPCDD	uatko	•		0.02	ŗ
TOTAL HPCDF	Da/len	•		0.0069	
TOTAL HXCDD	ng/hg			0.0039	П
TOTAL HXCDF	na/ku			0.0022	
TOTAL PECOD	ua/ka			0.0029	
TOTAL PECOF	na/ka			0.0023	
TOTAL TCDD	ug/ka	•		0.0018	
TOTAL TCDF	ng/kg	•		0,0019	. D
hiodiglycod by SW	1.848 Method 8015				
rhiopici, ycol	8,8n				
letals by CLP					
MUNIMUM	maAta	5340		203	
NTIMONY	mofto	0.55	D	14.0	Ţ
VASENIC	reo (ko	i en	>	194	. =
MUIM	marke	145		5.80	. 0
JERYLLIUM	mg/kg	0.82	0	0.23	. 0
	mg/hg	0.27	• >	0.23	0
:ALCIUM	mg/kg	1820		134000	
MUIMORH	mg/kg	10.70		3.70	
COBALT	mg/kg	6.30	0	10.80	•
COPPER	mg/kg	11.20		4.50	•
CYANDE	INDAO	0.20	5	0,18	0
RON	mg/hg	9640		3490	
.EAD	mg/kg	38.40		1.80	
MAGNESIUM	01/8m	1130	=	3020	
MANGANESE	0 WBm	181	٦	37.30	-
MERCURY	mg/kg	0,14	þ	0.12	C
VICKEL	ByBu	9.50	-	3.90	0
OTASSIUM	Eng/kg	408	÷	76	
SELERIUM	вувш	0.77	80	0.47	D

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Analytical Database - Defense Distribution Depot Memphis, Tennessee

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\$D19 M-5D19-101195 10/11/95	RESULT QUAL	0.47 LU 0.47 LU 0.70 U 2.10 U
SD18 M-SD18-101195 10/11/95	RESULT DUAL	0.55 U 42.40 () 0.82 U 22.10 40.30
LOCATOR: SAMPLE ID: COLLECTION DATE:	GRITERIA UNITS:	то/ко то/ко то/ко то/ко то/ко то/ко
		SILVER SDDIUM THALLIUM VANADIUM ZINC

4								iaini 10da	mpnis,	
<u>0</u>	CATOR:	M-FB	-	M-TB	_	AT 11				
SANCOLLECTION	APLE ID: N DATE:	M-FB1-10 10/101	1095 15	M-TB1-10 10/10/	1095 95	M-TB2-10 10/11/	1195 95	M-TB3-10 10/12/	.4 11295 195	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	סחאנ	RESULT	QUAL	RESULT	QUAL	
Volatile Compounds by CLP 3/90	_									
1,1,1-TRICHLOROETHANE	NG/L	04		0	=	9	3	5	:	
1,1,2,2-TETRACHLORDETHANE	NGA	2		2) =	2 9	> :	2:		
1.1.2. TRICHLOROETHANE	UGA	2		2) :	2 9	> :	2:		
1, 1-DICHLOROETHANE	VG/L	9) =	2		2 9	• :	2:	3	
1. P-DICHLOROETHENE	NG/L	2	ı⊃	2	• =	2 2		2 :	⊋:	
1.2-DICHLOROETHANE	VGV	2	5	2	1 2	2 5		2:	. כ	
1,2-DICHLOROETHENE(TOTAL)	הפיר	2		0		2 2	• =	2:		
1,2-DICHLORDPROPANE	UG/L	<u>0</u>	5	01	. J	2 2) =	2 9		
2-BUTANONE	ng/L	₽	∍	01	5	2	, =	2 2	> =	
Z-HEXANONE	חפיר	10	∍	21	>	0	5	2		
4-METHYL-2-PENTANONE	г 0уг	2	∍	2	∍	5		2) =	
ALETUNE	NG/L	0	68	e I	3	10	3	T	9	
DENZENE PSettopiciul 2004 Internet		₽.	Þ	01	>	10	5	01	i ⊃	
BAAADEADAA BAAADEADAA	00V	<u>e</u> :) :	10	>	2	∍	0	Þ	
	190	0	>	₽	>	0	2	2	5	
	יייי	2)	2	5	10	∍	Ċ	5	
CANDON DISULIUS CABON TETOACUM DUIST		2	5	2	2	2	2	₽	5	
	0.61	m į	= ;	01	∍	01	P	2	⇒	
	100			2	∍	2	5	₽	∍	
		23	= :	0	∍	0	D	2	٦	
		2 9	•	2:		<u>e</u>	Þ	2	>	
		29	•	10	3	2	2	2	2	
DIBROMOCHI OROMETHANE		29	•	2 :	⇒ :	10	Þ	2	5	
ETHYLBENJENE		2 9	> 2		•	2	Ċ	2	5	
METHYLENE CHI DRIDE		2 •	9 9	2,	> ;	2:	7	2	2	
STYRENE		9	2:	ġ	₽	= :	8	ю	8 ()	
TE FRACHLOROETHENE		2 5	> =	2 9	- -	2 :	3	<u>0</u>	∍	
TOLUENE		2 -	• :	2 ;	יב	2	5	2	•	
TRANS-1.3-DICHLOROPROFENF		2 2	> :	2	. :	2 :	∍ :	2	2	
TRICHLDROETHENE		2		2:			>	10	∍	
VINYL CHLORIDE		2 5	• :	2 9	. כ	2 :		0	2	
		2:	5:	2:	5	0	∍	0	2	
	חטר	2	>	0	-	2	∍	10	þ	
Samivolatila Organic Compounds t	by CLP 37	06								
1.2.4 TRICHLOROBENZENE	NGA.	-	=							
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Analytical Database - Defense Distribution Depot Memphis, Tennessee

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LDCATOF SAMPLE IC COLLECTION DATI	10 10 10	F81 -101095 10/95	M-TB M-TB1-M 10/101	1 1095 05	M-TB M-TB2-10 10/11/	2 11) 95 95	M-TB3-10 M-TB3-10 10/12/	3 1295 45
CRITERIA UNITS	S: RESUL		BECAN T		F			
							LINCON	TYNN
1,2-DICHLOROBENZENE UG	≍ ≺	>	'		•		•	
1,3-DICHLOROBENZENE UG/	≍ ب	2			•			
1,4-DICHLOROBENZENE UG/		0	•				•	
2,4,5-TRICHLOROPHENOL UG	2						•	
2,4,6-TAICHLOROPHENOL UG			•		•		•	
2.4-DICHLOROPHENOL UG	2						•	
2.4-DIMETHYLPHENOL UG/	. <u>-</u>				•			
2.4-DINITROPHENOL UG/	5	د د			•			
2.4 DINITROTOLUENE UG/	2	3			•		• •	
2.8-DINITROTOLUENE UG/	۲ ۲				•••			
2-CHLORONAPHTHALENE UG/							• •	
2-CHLOROPHENOL UG/	ž	- -			•			
2-METHYLNAPHTHALENE UD/					•			
2-METHYLPHENOL UG/		ے د			,		•	
2-NITRDANILINÉ UG/					•			
2-MITROPHENOL UG/	۔ ب	•	•				• •	
3,3" DICHLOROBENZIDINE UG/		•			٠			
3-NITROANJLINE UG/	г 5	۰ د	•				•	
4.6-DINITRO-2-METHYLPHENOL UG/	۲. ۲.	3						
4-BROMOPHENYL-PHENYLETHER UG/	۲ ۲	• •	•		,		-	
4-CHLOR0-3-METHYLPHENOL UG/	۲ ۲	• •	'		,		, ,	
4-CHLOROANILINE UG/	¥ ب	>	•		,			
4-CHLOROPHENYL-PHENYLETHER UG/	≍ ب	2						
4-METHYLPHENOL UG/	≍ ب	•			•		•	
4-NITROANLINE UG/	ی با	>	•		'			
4-NITROPHENOL UG/	1 2	0			,			
ACENAPHTHENE UGA	≍ ب	•	•				•	
ACENAPHTHYLENE UG/	¥ ۲	•						
ANTHRACENE UG/	¥ ۲	•						
BENZO(A)ANTHRACENE UG/	≍ ي	• •	•				•	
BENZO(A)PYRENE UG/	۲ ۲	•						
BENZO(B)FLUDRANTHENE UG/	≍ 1	•				•		
GENZO(G,H.I)PERYLENE UG/	≍ ب	•	•				-	
BENZO(K)FLUORANTHENE UG/	≍ ب	>			•		-	
BISI2-CHEOROETHOXYIMETHANE UGA	≍ ب	2			•		,	
BISI2-CHLOROETHYLJETHER UG/	≍ د	•	•		·		,	

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M-TB1 M-TB2 M-TB1-101095 M-TB2-101195 M-1 10/10/95 10/11/95	RESULT QUAL RESULT QUAL RES			•	•		•		· .								-			•								•		•	•				•
M-FB1 M-FB1-101095 10/10/95	RESULT QUAL	01						2	10	10	2 (jB	01	10 U	10	10	10 1	C) 01	10 0	л ф	10	10 M	D 01	10 U	10 U	255 U	0 01	10	10 U				0.05	5 10 0	0.05	
L ICATOR: A MPLE (D: HON DATE:	CALTER: A UNITS: 1	IOPYLIETI ER UGA	PHIMALA E UGA	HALATE UGL	nev	NON	LATE UGA	ALATE UGA	RACENE LIGA	10V	TE UGA	LATE UGA	na/r	NGA	IZENE UG/L	radiene uga	CLOPENTADIENEUGA	1ANE UGA	DPYRENE UG/L	NGA	PROPYLAMINE UGA	NYLAMINE UG/L	nevr	1/9/1	IENOL UGA	nGA	NGA	Von	C1 P 1/80	ngu		nen	UG/I	INE INGIL	

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LOI SAN COLLECTION	CATOR: APLE (D: V DATE:	M-F81 M-F81.10 101.101 2/01/01	1095 15	M 181-M 01 181-M 1011/01	1 1095 05	M-TB M-TB2-10 10/11/	2 1195 95	M-TB M-T83-10 10/12/	3 1295 95
CRITERIA	UNITS:	RESULT	QUAL	AESULT	QUAL	RESULT	QUAL	RESULT	OUAL
AROCLOR-1221	UGA	2	2						
AROCLOR-1232	UG/L	-	• >					•	
AROCLOR-1242	10 0	-	>	,		•			
ARDCLOR-124B	NGA		-						
AROCLOR-1254	NGA		5	-				•	
AROCLOR-1260	NGA					•			
BETA-BHC	NGA	0.05		•				•	
DELTA-BHC	NGA	0.05	• >						
DIELDRIN	NGA	0.10	ے د						
ENDOSULFAN I	NGA	50.0	2			•			
ENDOSULFAN II	νon	0,10	⊐	•		'		•	
ENDOSULFAN SULFATE	NGA	0.10	2			•			
ENDRIN	UGA	0,10	>			•			,
ENDRIN ALDEHYDE	NG/L	0.10))	•		•		• •	
ENDRIN KETONE	NG/L	0.10]			•			
GAMMA-BHC (LINDANE)	7/9/1	50°0	>			'		•	
GAMMA-CHLORDANE	LO/L	0.05	2			•			
HEPTACHLOR	UG/L	0.05	>			•		•	
HEPTACHLOR EPOXIDE	תפיר	0.05	⊃ 	•		•			
METHOXYCHLOR	nor	0.50	⊃ -			•			
TOXAPHENE	חפיר	œ	>					•	
Dioxin by EPA DFLM1.1									
1234678-HPCDD	NGA	9.80	3	,		1			
1234678.HPCDF	U6A U6A	6.80	>						
123478-HXCDD	79U	18	Þ	•				, ,	
123478-HXCOF	NG/L	5.50	2			•			
1234769-HPCDF	תפיר	8.20	2			,		•	
123678-HXCDD	ายก	=	>			•			
12367B-HXCDF	NGA	2.80	2			,			
12378-PECOD	UGA	7,80	>						
12378-PECOF	UGA	22	∍						
123783-HXCDD	UGA	2.80	>			'		•	
123789-HXCDF	UGL	0.50	> -			,		•	
234878-HXCDF	NGIL	8.50	2			'			
23478-PECDF	חפיר	4.80	>						

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epot Mer	M-TB: M-TB3-10 10/132	RESULT				'			· •					• •					•		•		•	•	•		•			•	•	•		•	,	
ution D	12 01195 195	DIAL																																		
Distrib	M TB M-TB2-10 10/11	RÉSULT			•	•	•		ı	•	•	'				·							,	•	ı	•			•		•		,	•	•	•
)efense	1 -1095 95	DUAL																																		
lbase - [M 18 M-181-10 10/10/	RESULT			•						'		'			•			•																•	
l Data	95	JNAL	=		. =	2		>	∍	>	Þ	∍	2	þ		þ		(IB	כי	5	5	5	∍	80	=	=	=	5	÷	∍	ŧ	∍	>	∍	•	∍
Analytica	M-FB1 M-FB1-1010 10/10/95	RESULT (0 C 6	- E E	3.80	10	9.80	6.60	2.80	2.80	7,60	4,80	9.20	51		10		19.20	Ņ	4	-	-	-	60.60	1.50	1.10	1.50	•	24.10	2	11.70	-	0.20	1	75.20	2
	LOCATOR: SAMPLE ID: COLLECTION DATE:	CRITERIA UNITS:	UGA	ng/r	NGA	חפאר	ngıl	NG/L	nG/L	NG/L	NOV	C GA	NGN	UGA	-846 Mathod 8015	Yon		1/9ri	nG/L	NGN	UGN	NGA	UGA	תפער	NG/L	NGA	NG/L	NG/L	NGN	VDN	NGA	NGA	NGV	NGN	תפור	NG/L
							ę	5	8	ä	ò	5	<u>م</u>	"	uy SW.	ត្ត	۵.														_					

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M-TB3 - TB3 -101295 10/12/95	SULT QUAL					
42 01195 M	QUAL RE					
M-T82-10 M-T82-10/11	RESULT	•	•	•	•	
81 01095 1/95	QUAL					
T-181-M 1-181-M 10/10	RESULT					1
1 1095 95	OUAL	þ	0 0	- 0	5	- 0
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