AP - 002

STAGE 1 & 2 REPORTS

DATE:

Feb., 1998

TASKER ROAD
SITE ASSESSMENT REPORT

February, 1998

Prepared For

Shell Exploration and Production Technology Company
Houston, Texas

Project 18906

Prepared By

PHILIP SERVICES CORPORATION
7904 Interstate 20 West
Midland, Texas 79706
(915) 563-0118

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1.0 INTRODUCTION

Philip Services Corporation (Philip) has completed an initial assessment of two properties located on Tasker Road, Hobbs, New Mexico. **(Figure I-Topographic Map, Appendix I-Aerial Photographs)**. This report details the sampling of soils and an asphalt-like layer present at the site. The purpose of the site investigation was to collect representative samples, and to perform laboratory analysis of the samples to identify if constituents are present at the site. Further, the purpose of this investigation was to delineate the horizontal extent of the asphalt-like layer.

The site investigation was conducted in accordance with the revised workplan submitted to and approved by the New Mexico Oil Conservation Division (NMOCD), Environmental Bureau on January 14, 1998. The Workplan, Revised Workplan (Sampling Plan), and NMOCD approval letter are included in **Appendix II.**

2.0 SITE HISTORY

The subject site is located at 1331 and 1329 Tasker Road, Hobbs, New Mexico. The site consists of two residential properties; one currently occupied and one under construction. As a result of the construction activities, an asphalt-like layer was observed to be present at the site. The layer occurs at a depth of approximately one to two feet below ground surface (bgs) and varies in thickness from several inches to several feet across the properties. The asphalt-like substance appears to be oil that may have been spread on the ground under then-normal operating practices in the 1940's.

Shell representatives sampled the material in November 1997, and analyzed the samples for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); total chlorides, and TCLP metals. Results of the analysis are included in this report in **Appendix II-Workplan**.

Analysis of TCLP metals indicates that all constituents analyzed are below detection limits. Total chlorides were detected at a concentration of 128 milligrams per kilogram (mg/kg) indicating that chloride concentrations are not present in the soil sample. Benzene, toluene, and ethylbenzene concentrations were below detection limits, and minor concentrations of total xylenes were detected at a concentration of 0.017 mg/kg. TPH compounds were analyzed using GS/MS scan. Analytical results indicate the presence of n-Alkanes C13-C40. The chromatography exhibited characteristics described by the laboratory as those of weathered oil. The value for numerous branched alkanes and cyclic hydrocarbons (unresolved, 4122 mg/kg) are representative of USEPA Method 8015 analysis.

3.0 HYDROGEOLOGY

The Ogallala Formation is the principal source of groundwater in the subject area. Depth to groundwater in Lea County ranges from approximately 12 feet bgs to approximately 300 feet bgs. The Ogallala consists of predominantly coarse fluvial conglomerate and sandstone and fine-grained eolian siltstone and clay. Where present in the subject area, the Ogallala unconformably overlies Triassic red-beds. The regional groundwater gradient is to the south/southeast.
Based on the recent installation of a monitor well and temporary monitor well approximately 400 feet west of the site, groundwater is expected to occur at this location at a depth of approximately 65 feet bgs.

4.0 SUBSURFACE INVESTIGATION

A subsurface investigation was performed by Philip representatives January 20 and 26, 1998. Field activities were witnessed by Mr. Wayne Price of the NMOCD Hobbs District, a Shell representative, the resident of 1331 Tasker Road, and the landowner and developer of 1329 Tasker Road.

4.1 SITE SAMPLING

Philip representatives were on-site January 20, 1998, to obtain representative samples of the asphalt-like layer. As approved by the NMOCD, the scope of the subsurface investigation was to collect two samples at each of five sample locations. The sample locations consisted of each of the four corners and the center of the suspected area of asphaltic material. The sample locations were selected based on the use of an aerial photograph and on accessibility of a backhoe. Sample locations are shown in **Figure 2** and photographs of site activities are included in **Appendix III.**

One sample was collected from the asphaltic material at a depth of approximately 1-2 feet bgs, and one sample was collected from soil beneath the asphaltic material at a depth of 5-6 feet bgs in each location. The samples were screened in the field for Volatile Organic Compounds (VOCs) by a Philip representative using a photoionization detector (PID) and were inspected for evidence of staining or odor. **Table 1** is a summary of field observations.

Table 1
FIELD OBSERVATION OF SAMPLES

Sample ID	Staining	Odor	PID Reading
SS-1, 2-3 feet	Asphaltic Material	Hydrocarbon	8 du*
SS-1, 5 feet	None observed	Hydrocarbon	50 du
SS-2, 2-3 feet	Asphaltic	Hydrocarbon	346 du
SS-2, 6 feet	None observed	Hydrocarbon	511 du
SS-3, 2-3 feet	Asphaltic	Hydrocarbon	189 du
SS-3, 5.5 feet	None observed	Hydrocarbon	178 du
SS-4,1 foot	Asphaltic	Hydrocarbon	0 du
SS-4, 5 feet	None observed	Hydrocarbon	1 du
SS-5, 2 feet	Asphaltic	Hydrocarbon	60 du
SS-5, 5 feet	None observed	Hydrocarbon	320 du

* du = Deflection Units

Each of the samples were submitted to Trace Analysis in Lubbock, Texas for analysis of the compounds listed in New Mexico Water Quality Control Commission, Title 20, Chapter 6, Part 2, sections 3103 and 1101 (20 NMAC 6.2. 3103 and 1101) as requested by the NMOCD. Analytical results are discussed in Section 5.0 and included in **Appendix IV**.

4.2 DELINEATION

Philip representatives returned to the site on January 26, 1998 to perform additional site assessment activities. The purpose of this investigation was to identify the horizontal extent of the asphaltic material based on visual observation. A backhoe was used to trench the site, thereby allowing visual observation of the presence or absence of the asphaltic material. No samples were collected during this phase of the investigation. **Figure 3** is a site map depicting the horizontal extent of the asphaltic material as observed in the field.

5.0 ANALYTICAL RESULTS

Two soil samples were collected from each of five sample locations and submitted for analysis to Trace Analysis in Lubbock, Texas. The samples were analyzed for the compounds listed in 20 NMAC 6.2, sections 1101 and 3103 as requested by NMOCD. Table 2 is a summary of compounds analyzed for and the analytical results. Laboratory analysis is included in this report in **Appendix V**.

No pesticides, chlorinated compounds, polycyclic aromatic hydrocarbons (PAHs), or semi-volatile compounds (SVOCs) were detected. With the exception of tetrachlorethane, ethylbenzene and m&p-xylenes, no volatile organic compounds were detected. Metals identified in the samples include barium, nickel, zinc, aluminum, iron, manganese, copper, cadmium, selenium, and arsenic. Minor concentrations of radium 226 or radium 228 were detected in some of the samples.

TPH concentrations were detected in each of the samples and range from 1,800 mg/kg to 200,000 mg/kg. Ethylbenzene was detected in six of the ten samples at concentrations ranging from 0.1 mg/kg to 9.7 mg/kg. M&p-Xylenes were detected in six samples at concentrations ranging from 0.13 to 39 mg/kg. Tetrachloroethane was detected in sample SS-3, 5.5 feet at a concentration of 0.54 mg/kg.

6.0 CONCLUSIONS

The asphaltic material and soils at the subject site exhibit TPH concentrations. TPH concentrations in the samples range from 1,800 mg/kg to 200,000 mg/kg. Benzene and toluene were not detected in any of the samples. Ethylbenzene was detected in six of the ten samples at concentrations ranging from 0.1 mg/kg to 9.7 mg/kg. M&p-Xylenes were detected in six samples at concentrations ranging from 0.13 to 39 mg/kg. Tetrachloroethane was detected in sample SS-3, 5.5 feet at a concentration of 0.54 mg/kg. No other VOCs, SVOCs, PAHs, chlorinated compounds, or pesticides were detected in the samples. No background sample was collected and analyzed, and therefore it is not known what background concentrations of analytes (particularly inorganic compounds and metals) are present in native soil at the site.

7.0 RECOMMENDATIONS

Philip recommends that Shell perform a risk assessment of this site to determine a clean-up level that is protective of human health and the environment. The risk assessment should address potential receptors and should be conducted in accordance with ASTM 1739, Risk Based Closure Assessment for Petroleum Release Sites.

8.0 REFERENCES

Hydrology and Hydrochemistry of the Ogallala Aquifer, Southern High Plains, Texas Panhandle and Eastern New Mexico; Report Number 177; Bureau of Economic Geology; 1988

Hydrogeochemistry and Water Resources of the Lower Dockum Group in the Texas Panhandle and Eastern New Mexico; Report Number 161: Bureau of Economic Geology; 1986

New Mexico Water Quality Control Commission, Title 20 Chapter 6, Part 2, Subpart I

TABLE 2
SUMMARY OF ANALYTICAL RESULTS

ANALYTE	SAMPLE IDENTIFICATION									
	SS-1 @ 2-3' (mg/kg)	SS-1 @ 5' (mg/kg)	SS-2 @ 2-3' (mg/kg)	SS-2 @ 6' (mg/kg)	SS-3 @ 2-3' (mg/kg)	SS-3 @ 5.5' (mg/kg)	SS-4 @ 1' (mg/kg)	SS-4 @ 5' (mg/kg)	SS-5 @ 2' (mg/kg)	SS-5 @ 5' (mg/kg)
EPA Method 8260										
1,1,1,2-Tertachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Isopropyltoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = NOT DETECTED

TABLE 2
SUMMARY OF ANALYTICAL RESULTS

ANALYTE	SAMPLE IDENTIFICATION									
	SS-1 @ 2-3' (mg/kg)	SS-1 @ 5' (mg/kg)	SS-2 @ 2-3' (mg/kg)	SS-2 @ 6' (mg/kg)	SS-3 @ 2-3' (mg/kg)	SS-3 @ 5.5' (mg/kg)	SS-4 @ 1' (mg/kg)	SS-4 @ 5' (mg/kg)	SS-5 @ 2' (mg/kg)	SS-5 @ 5' (mg/kg)
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene J	ND	ND	[7.00] J	[9.70] J	[1.40] J	[0.66] J	ND	ND	[0.100] J	[9.200] J
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m & p-Xylene	ND	ND	[31.00] J	[37.00] J	[4.90] J	[2.00] J	ND	ND	[0.130] J	[39.000] J
Methylene chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene J	ND	ND	ND	ND	ND	[0.540] J	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA Method 8270										
1,2,4,5-Tetrachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Napthylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,3,4,6-Tetrachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = NOT DETECTED

TABLE 2
SUMMARY OF ANALYTICAL RESULTS

ANALYTE	SAMPLE IDENTIFICATION									
	SS-1 @ 2-3' (mg/kg)	SS-1 @ 5' (mg/kg)	SS-2 @ 2-3' (mg/kg)	SS-2 @ 6' (mg/kg)	SS-3 @ 2-3' (mg/kg)	SS-3 @ 5.5' (mg/kg)	SS-4 @ 1' (mg/kg)	SS-4 @ 5' (mg/kg)	SS-5 @ 2' (mg/kg)	SS-5 @ 5' (mg/kg)
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Napthylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Picoline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylcholanthrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Aminobiphenyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol/3-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7,12-Dimethylbenz(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
a,a-Dimethylphenethylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[a]anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[a]pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[b]fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[g,h,i]perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[k]fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = NOT DETECTED

TABLE 2
SUMMARY OF ANALYTICAL RESULTS

ANALYTE	SAMPLE IDENTIFICATION									
	SS-1 @ 2-3' (mg/kg)	SS-1 @ 5' (mg/kg)	SS-2 @ 2-3' (mg/kg)	SS-2 @ 6' (mg/kg)	SS-3 @ 2-3' (mg/kg)	SS-3 @ 5.5' (mg/kg)	SS-4 @ 1' (mg/kg)	SS-4 @ 5' (mg/kg)	SS-5 @ 2' (mg/kg)	SS-5 @ 5' (mg/kg)
Benzyl alcohol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroisopropyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octlphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz[a,h]anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,j)acridine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diphenylhydrazine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl methanesulfonate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno[1,2,3-cd]pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl methanesulfonate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-butylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodi-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodimethylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodiphenylamine & Diphenyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosopiperidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Dimethylaminoazobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachloronitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenacetin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = NOT DETECTED

TABLE 2
SUMMARY OF ANALYTICAL RESULTS

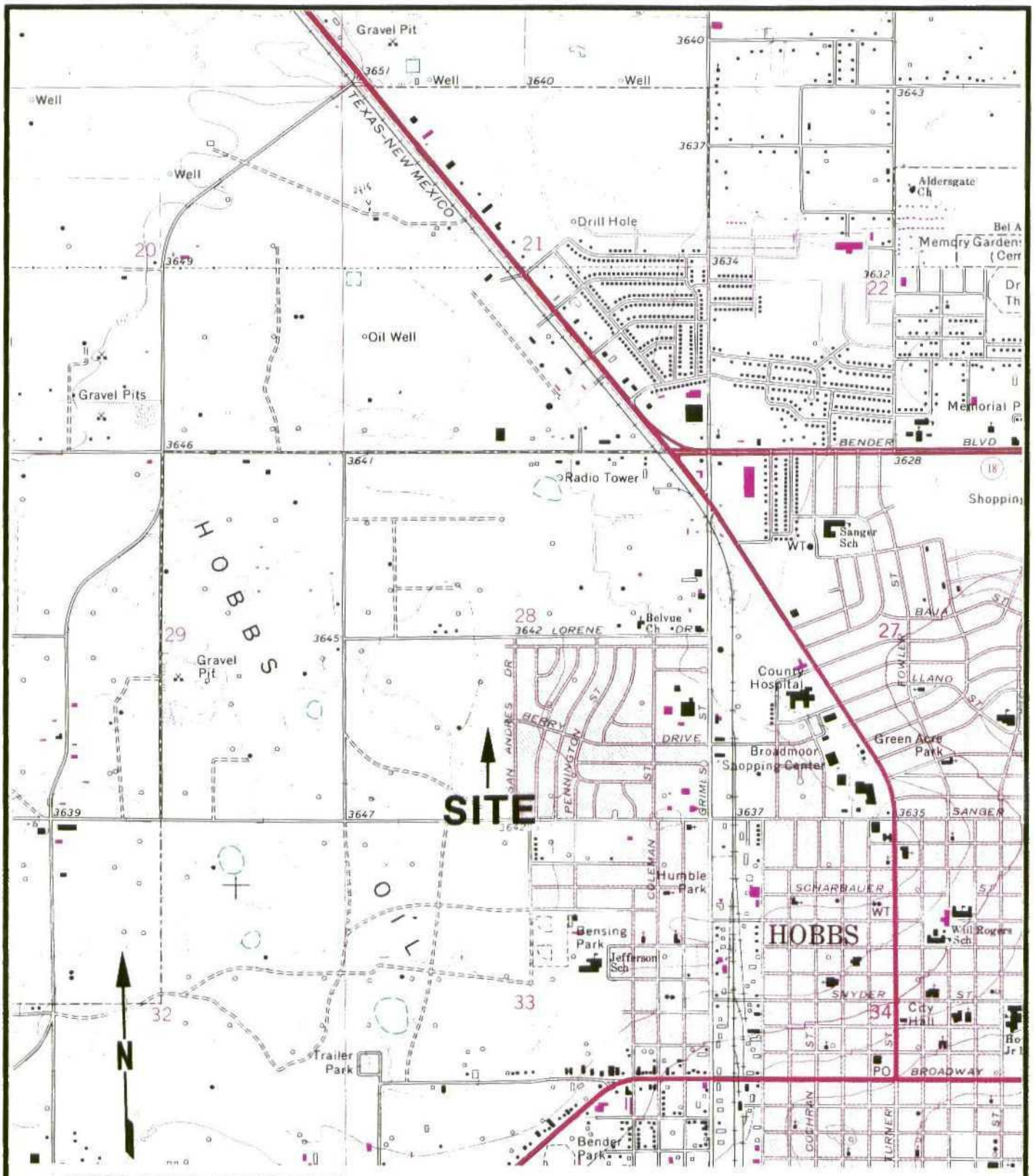
ANALYTE	SAMPLE IDENTIFICATION									
	SS-1 @ 2-3' (mg/kg)	SS-1 @ 5' (mg/kg)	SS-2 @ 2-3' (mg/kg)	SS-2 @ 6' (mg/kg)	SS-3 @ 2-3' (mg/kg)	SS-3 @ 5.5' (mg/kg)	SS-4 @ 1' (mg/kg)	SS-4 @ 5' (mg/kg)	SS-5 @ 2' (mg/kg)	SS-5 @ 5' (mg/kg)
Phenanthrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pronamide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHODS 200.7, 245.1)										
Aluminum (Al)	4,900	4,700	1,900	4,100	5,800	5,700	9,200	7,500	7,800	4,200
Arsenic (As)	ND	ND	ND	ND	ND	3.8	ND	ND	ND	<0.50
Barium (Ba)	87	320	37	650	130	170	95	310	73	73
Boron (B)	ND	ND	ND	ND	ND	ND	ND	ND	ND	<10
Cadmium (Cd)	ND	ND	ND	ND	ND	ND	0.06	0.21	0.06	<0.05
Chromium (Cr)	ND	ND	ND	ND	ND	ND	ND	ND	ND	<10
Colbalt (Co)	ND	ND	ND	ND	ND	ND	ND	ND	ND	<10
Copper (Cu)	13	ND	ND	ND	ND	ND	ND	ND	ND	<10
Iron (Fe)	7,300	3,300	1,800	2,400	5,900	4,300	7,600	5,500	5,800	2,800
Lead (Pb)	ND	ND	ND	ND	ND	ND	ND	ND	ND	<10
Manganese (Mn)	91	38	47	20	93	51	120	60	81	19
Molybdenum (Mo)	ND	ND	ND	ND	ND	ND	ND	ND	ND	<2.0
Nickel (Ni)	11	6.1	7.6	8.1	8.9	6	9	7.7	7.1	6.1
Selenium (Se)	ND	ND	ND	ND	ND	1.8	ND	ND	ND	<1.0
Silver (Ag)	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.50
Zinc (Zn)	21	9.5	6.7	6.6	17	14	22	15	17	6.9
EPA METHODS SW 846-3051, 6010B, 7471.										
TOTAL Hg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL U	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHODS SW 846-3550, 8080										
TOTAL PCB	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHODS: 150.1, 160.1, 375.4, SM 4500 Cl-B, 353.3, 335.2, 340.2.										
CHLORIDE	340	220	300	350	120	79	39	59	99	260
CYANIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FLUORIDE	0.26	8.0	0.77	11	0.85	3.3	0.92	7.0	0.66	11
N03-N	0.64	ND	ND	ND	ND	ND	0.40	2.5	ND	ND
pH	8.1	7.9	8.4	9.2	8.2	8.1	7.8	8.1	7.7	9.2
SULFATE	702	240	590	82	350	310	880	720	860	36
TDS	1,600	900	2,600	2,000	2,000	2,200	2,400	3,000	2,800	1,700
EPA METHODS 3550, 418.1										
TRPHC	24,800	14,100	200,000	30,900	134,000	21,900	2,930	1,800	68,200	50,200

ND = NOT DETECTED

TABLE 2
SUMMARY OF ANALYTICAL RESULTS

ANALYTE	SAMPLE IDENTIFICATION									
	SS-1 @ 2-3' (mg/kg)	SS-1 @ 5' (mg/kg)	SS-2 @ 2-3' (mg/kg)	SS-2 @ 6' (mg/kg)	SS-3 @ 2-3' (mg/kg)	SS-3 @ 5.5' (mg/kg)	SS-4 @ 1' (mg/kg)	SS-4 @ 5' (mg/kg)	SS-5 @ 2' (mg/kg)	SS-5 @ 5' (mg/kg)
EPA METHOD 901.1M										
	pCi/gm	**pCi/gm**	**pCi/gm**	**pCi/gm**	**pCi/gm**	**pCi/gm**	**pCi/gm**	**pCi/gm**	**pCi/gm**	**pCi/gm**
Ra-226	ND	ND	2.17	ND	ND	ND	ND	ND	ND	ND
Ra-228	ND	ND	ND	ND	0.78	ND	1.28	ND	0.76	ND
	Bq/gm	**Bq/gm**	**Bq/gm**	**Bq/gm**	**Bq/gm**	**Bq/gm**	**Bq/gm**	**Bq/gm**	**Bq/gm**	**Bq/gm**
Ra-226	ND	ND	0.08	ND	ND	ND	ND	ND	ND	ND
Ra-228	ND	ND	ND	ND	0.029	ND	0.047	ND	0.028	ND

ND = NOT DETECTED



HOBBS WEST QUADRANGLE
NEW MEXICO - LEA Co
7.5 Minute Series (Topographic)
1969
Photo Revised 1979

PSC PHILIP SERVICES CORP

TITLE:
SHELL EXPLORATION & TECHNOLOGY COMPANY
TASKER ROAD
SITE LOCATION MAP

DWN:	DES.:
CHKD: seh	APPD: seh
DATE: FEB. 1998	REV.: 1

PROJECT NO.: 18906
TASKER ROAD
Hobbs, New Mexico

FIGURE 1

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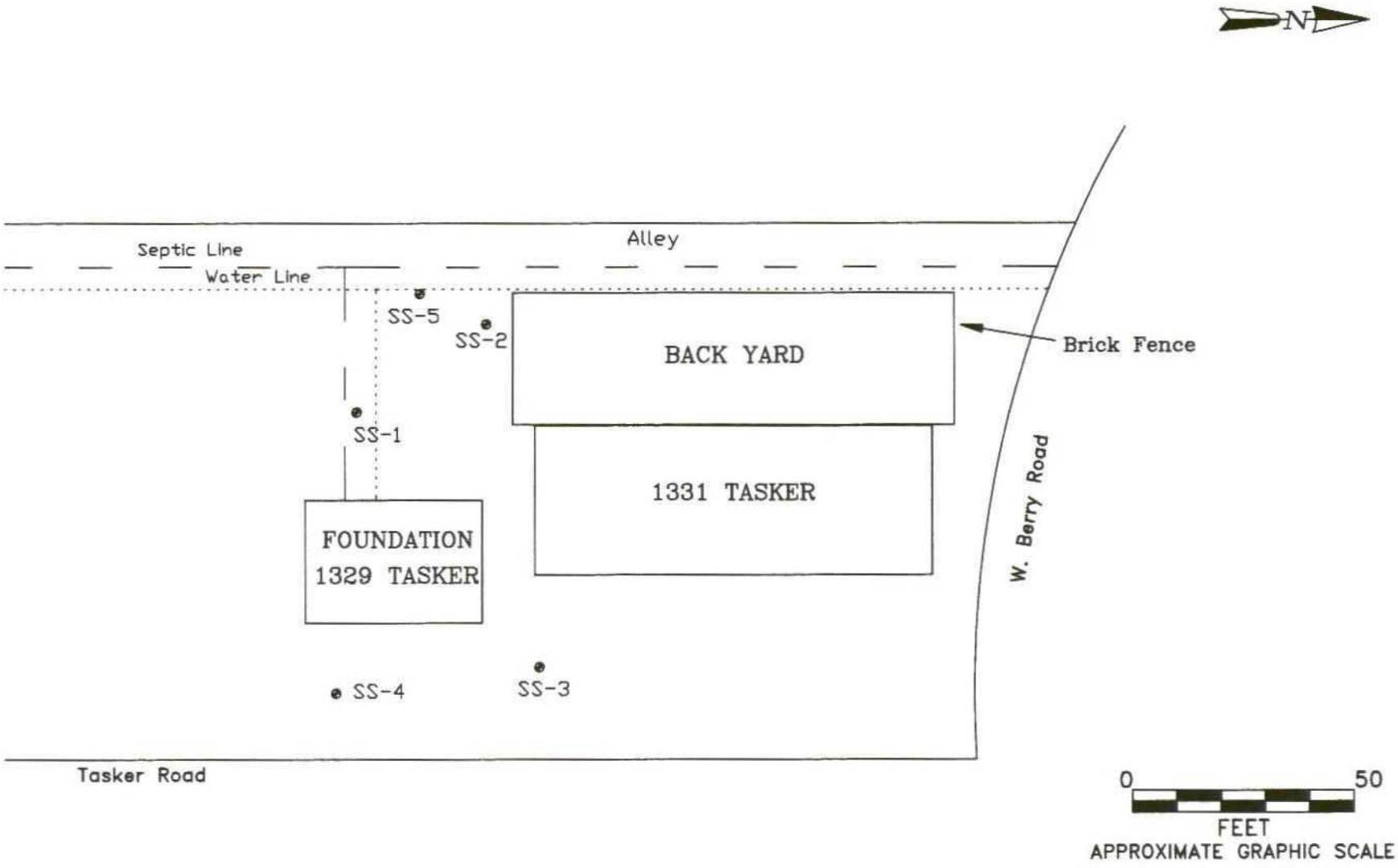
ko



PHILIP SERVICES CORP

TITLE:
SHELL EXPLORATION & TECHNOLOGY COMPANY
TASKER ROAD
SAMPLE LOCATIONS

DWN:	DES.:
koa	jwk
CHKD:	APPD:
seh	seh
DATE:	REV.:
Jan 1998	2

PROJECT NO.: 18906
TASKER ROAD
Hobbs, New Mexico

FIGURE 2

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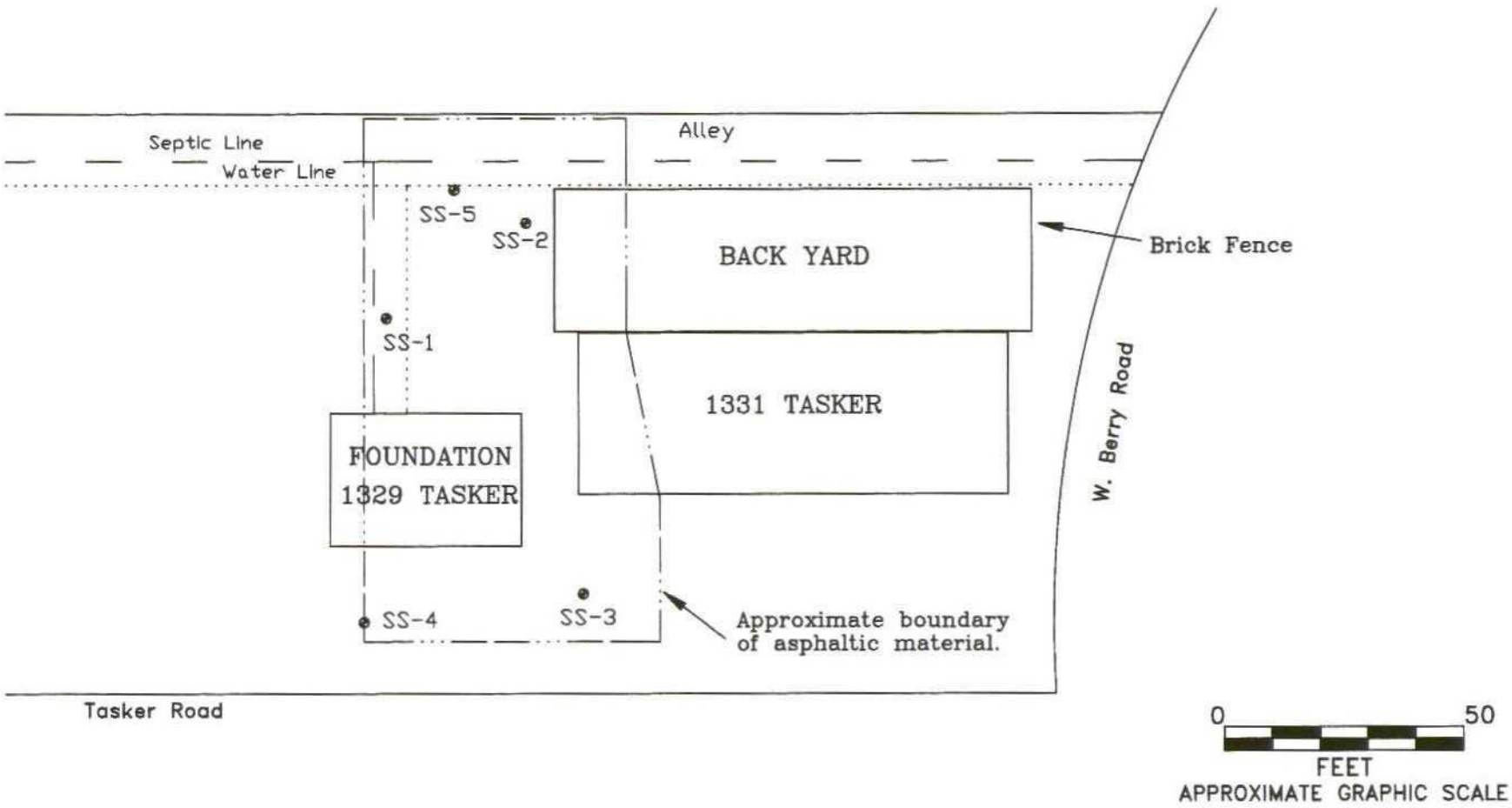
ko



PHILIP SERVICES CORP.

TITLE:

SHELL EXPLORATION & TECHNOLOGY COMPANY
TASKER ROAD
VISIBLE EXTENT OF ASPHALTIC MATERIAL

DWN:	DES.:
koa	jwk
CHKD:	APPD:
seh	seh
DATE:	REV.:
Jan 1998	2

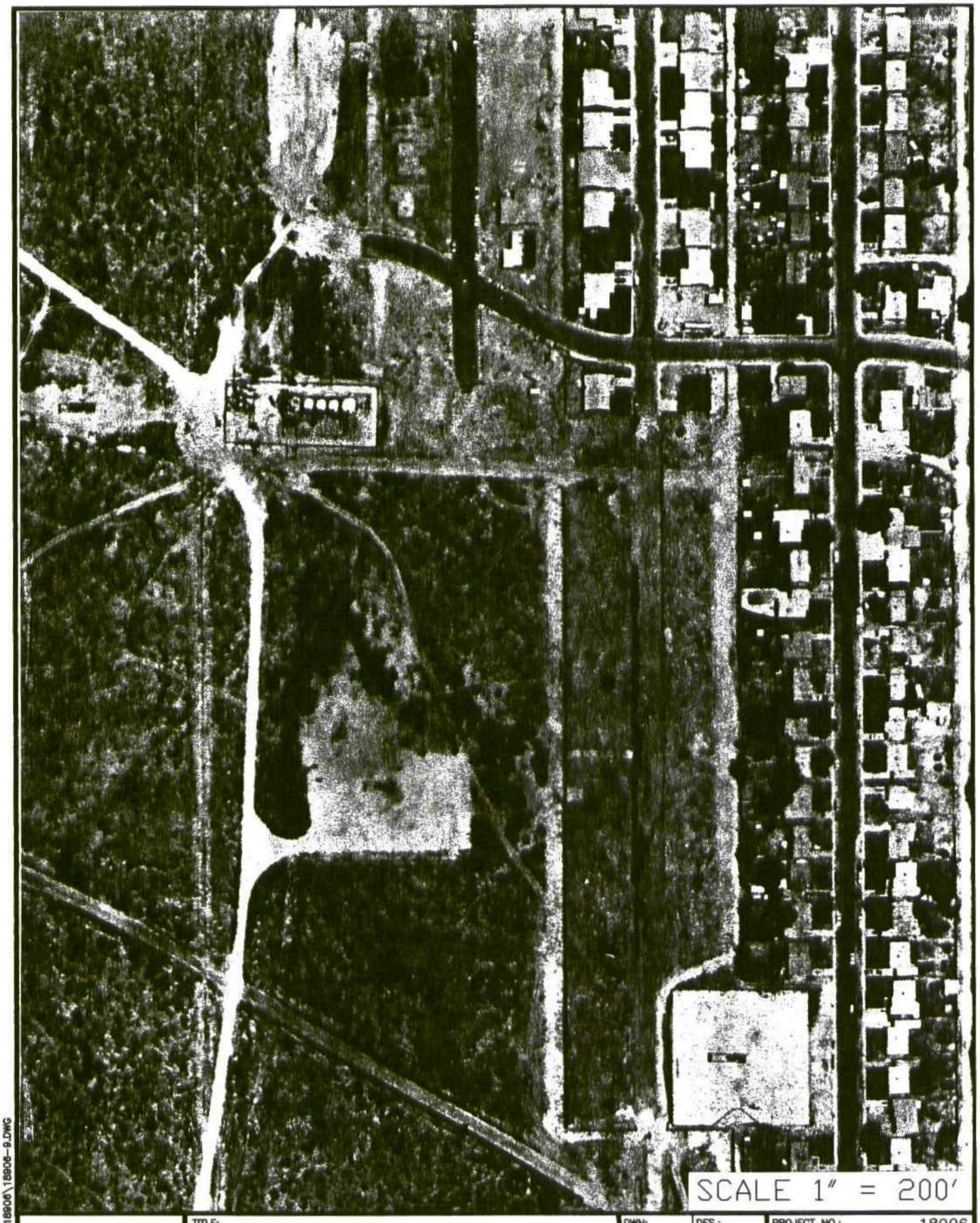
PROJECT NO.: 18906
TASKER ROAD
Hobbs, New Mexico

FIGURE 3

C:\PROJECTS\18906\18906-5.DWG
ko

APPENDIX I

AERIAL PHOTOGRAPHS



PSC PHILIP SERVICES CORP

TITLE:
SHELL EXPLORATION & TECHNOLOGY COMPANY
AERIAL PHOTOGRAPH
1978 HOBBS, NEW MEXICO

DWN:	DES.:
CHKD: seh	APPD: seh
DATE: FEB. 1998	REV.: 1

PROJECT NO.: 18906
TASKER ROAD
Hobbs, New Mexico

FIGURE I-A

ko C:\PROJECTS\18906\18906-9.DWG

SCALE 1" = 200'

PHILIP SERVICES CORP

TITLE:

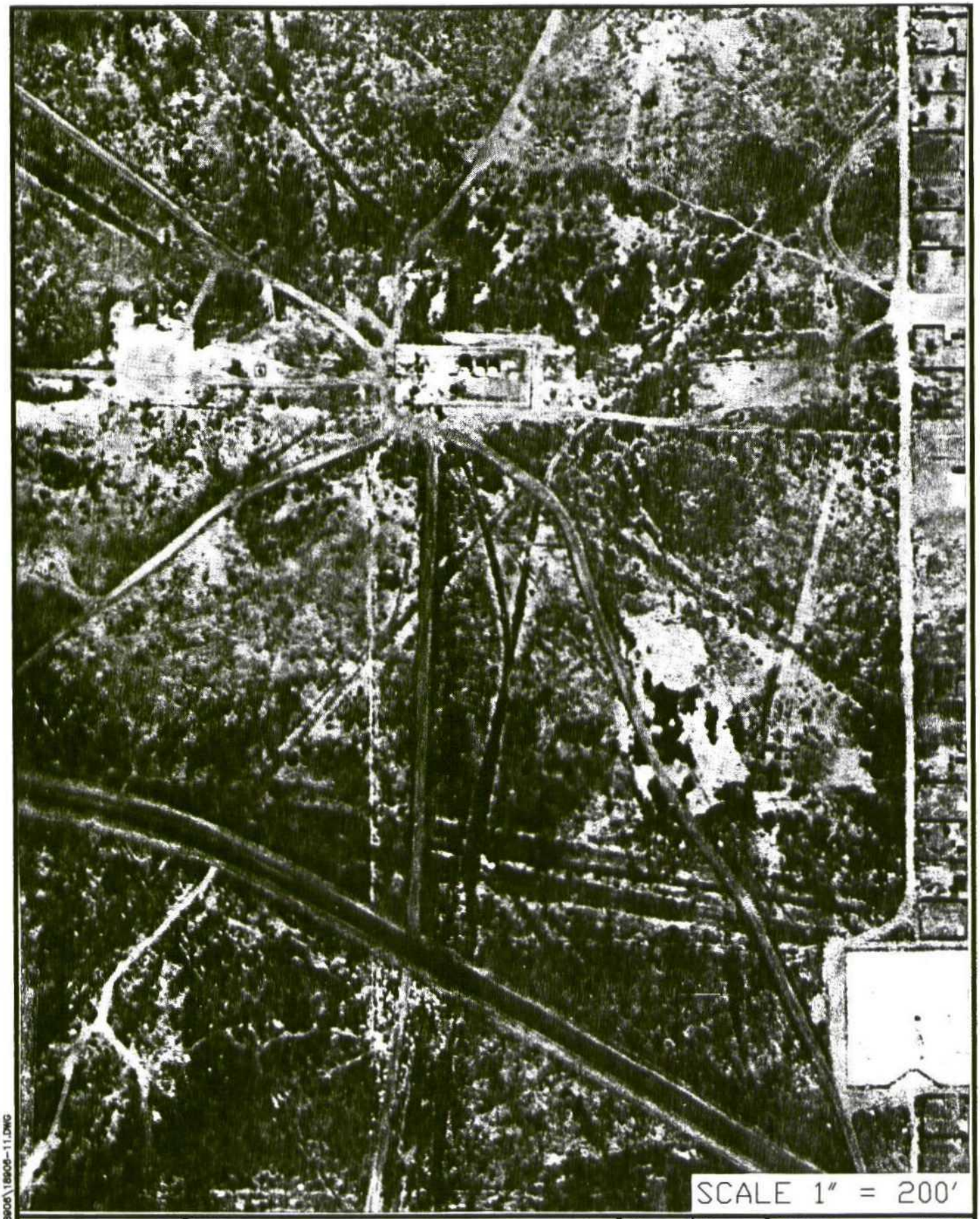
SHELL EXPLORATION & TECHNOLOGY COMPANY
AERIAL PHOTOGRAPH
1988 HOBBS, NEW MEXICO

DWN:	DES.:
CHKD: seh	APPD: seh
DATE: FEB. 1998	REV.: 1

PROJECT NO.: 18906
TASKER ROAD
Hobbs, New Mexico

FIGURE I-B

ko C:\PROJECTS\18906\18906-10.DWG



SCALE 1" = 200'

PSC PHILIP SERVICES CORP	TITLE: SHELL EXPLORATION & TECHNOLOGY COMPANY AERIAL PHOTOGRAPH 1964 HOBBS, NEW MEXICO	DWN:	DES.:	PROJECT NO.: 18906 TASKER ROAD Hobbs, New Mexico
		CHKD: seh	APPD: seh	
		DATE: FEB. 1998	REV.: 1	FIGURE I-C

kp C:\PROJECTS\18906\18906-11.DWG

APPENDIX II

WORKPLAN, REVISED WORKPLAN, APPROVAL LETTER

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

January 14, 1998

CERTIFIED MAIL
RETURN RECEIPT NO. Z-235-437-218

Mr. Wayne A. Hamilton
Shell E&P Technology Company
P.O. Box 481
Houston, Texas 77001-0481

RE: GRIMES LEASE CONTAMINATION
HOBBS, NEW MEXICO

Dear Mr. Hamilton:

The New Mexico Oil Conservation Division (OCD) has reviewed Shell E&P Technology Company's (SHELL) January 14, 1997 "GRIMES LEASE, TASKER ROAD, HOBBS, NEW MEXICO SAMPLING PLAN" which was submitted on behalf of SHELL by their consultant Philip Services. This document contains SHELL's requested modification of the schedule for submission of investigation sampling data and an investigation report regarding contamination related to a former unlined pit located in the Westgate residential subdivision at 1329 Tasker Road Hobbs, New Mexico.

The above referenced schedule modification is approved.

If you have any questions, please contact me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: Jennifer A. Salisbury, Secretary, NM Energy, Minerals and Natural Resources Department
Kathleen Garland, Acting Director
Chris Williams, OCD Hobbs District Supervisor
Jose Jaques, Westgate Subdivision
Sharon Hall, Philip Services

PHILIP SERVICES CORP
INDUSTRIAL SERVICES GROUP
Central Region

January 14, 1998

Mr. William C. Olson
New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pachecho
Santa Fe, New Mexico 87505

Subject: Grimes Lease, Tasker Road, Hobbs, New Mexico Sampling Plan

Dear Mr. Olson,

Pursuant to my telephone conversation with Mr. Roger Anderson and you yesterday, Philip Services Corporation (Philip) respectfully submits this revised work plan on behalf of Shell Exploration and Production Technology Company (SEPTCO) for sampling of the above-referenced site. This revised plan replaces the letter submitted to you by Mr. Wayne Hamilton of SEPTCO on January 9, 1998.

Philip representatives will be on site January 20, 1998 to perform sampling activities. Two samples will be collected at each of five sample locations. The sample locations will consist of each of the four corners and the center of the suspected area of asphaltic material impact. One sample will be collected from the asphaltic material at each location, and one sample will be collected from soils beneath the asphaltic material at an anticipated depth of five feet below ground surface. Each of the soil samples (a total of ten) will be submitted for laboratory analysis for the constituents listed in 20 NMAC 6.2.3103 and 20 NMAC 6.2.1101.

The anticipated schedule for providing you with results of the sampling activities is as follows:

Laboratory analysis, Organic Constiuents and Metals	January 23, 1998
Laboratory analysis, Inorganic Constiuents	February 10, 1998
Laboratory analysis, Radioactive Constituents	February 17, 1998

This schedule is based on the time required by the laboratory to perform these analyses.

A report of these activities will be submitted to you by February 23, 1998 and will include the information you requested in your letter dated December 30, 1997.

Your approval of this revised plan will be appreciated. If you have any questions, please call Mr. Wayne Hamilton (SEPTCO) at 713 245-7782 or me at 915 563-0118.

Sincerely,
PHILIP SERVICES CORPORATION

Sharon E. Hall

Sharon E. Hall
Operations Manager

cc: Wayne Price, NMOCD
Wayne Hamilton, SEPTCO

Helping Clients Obtain a Competitive Advantage in a Global Market

7904 I-20 WEST, MIDLAND, TEXAS 79706, MAIN (915) 563-0118 FAX (915) 563-9526

ASSESSMENT WORK PLAN
1329 TASKER ROAD
HOBBS, NEW MEXICO

for

SHELL E&P TECHNOLOGY COMPANY

HOUSTON, TEXAS

December 15, 1997

1.0 INTRODUCTION

The subject property is located at 1329 Tasker Road, Hobbs, New Mexico. Portions of site are currently under construction of residential structures (**Figure 1**). Several weeks ago, Shell's environmental engineering group learned of an asphalt-like layer present at the construction site. The layer occurs at a depth of approximately one foot below the ground surface, and is approximately one inch thick.

2.0 PROJECT BACKGROUND

Based on observation of the site following recent construction activities and an aerial photograph dated 1954 (**Figure 2**), the subject impacted area appears to measure approximately 80 feet by 160 feet.

Shell representatives have sampled the material and analyzed the samples for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); chlorides, and TCLP metals. Sample locations of the five-point composite sample are shown in **Figure 3**. Analysis of TCLP metals indicate that all analytes analyzed for are below detection limits. Total chlorides were detected at a concentration of 128 milligrams per kilogram (mg/kg), indicating that elevated chloride concentrations are not present in the soil sample. Benzene, toluene, and ethylbenzene concentrations were below detection limits, and minor amounts of total xylenes were detected at a concentration of 0.017 mg/kg. TPH compounds were analyzed using GC/ MS scan. Analytical results indicate the presence of n-Alkanes C13-C40. The chromatograph exhibited characteristics described by the laboratory as those of weathered oil. The value for numerous branched alkanes and cyclic hydrocarbons (unresolved mixture, 4122 mg/kg) are representative of USEPA method 8015 TPH analysis. Sample results are included in **Appendix I**.

Groundwater occurs at the location at a depth of approximately 65 feet below ground surface based on the recent installation of two monitor wells approximately 400 feet west of the site.

3.0 ASSESSMENT WORKPLAN

3.1 Delineation Sampling Methodology

The subject site located at 1329 Tasker Road, and the adjacent property to the north located at 1311 Tasker Road will be assessed for the presence of the asphaltic material using a relatively non-invasive technique such as a shovel or hand auger. Soil samples will be collected from each sample location and will be screened in the field for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). The soil samples will also be examined for visual evidence of staining and the presence of the asphaltic material. Each sample location will be investigated to a depth where no evidence of the asphaltic material is observed and no PID readings are detected.

3.2 Delineation Sampling Locations

The subject site and the adjacent property will be sampled on twenty-foot grids (**Figure 4**). The center of each twenty foot grid will be sampled as described above. If presence of the asphaltic material is observed in the sample collected from the center of the grid, additional sample locations will be placed at ten-foot intervals north, south, east, and west of the grid sample until no visible evidence of the material is observed and no PID readings are detected. If housing foundations or other immovable features exist at the grid sample location, the sample will be collected at the edge of the feature.

3.3 Laboratory Analysis of Samples

One sample of the asphaltic material (the sample exhibiting the highest PID value or if not applicable, a sample observed to be representative of the asphaltic material at the site) will be submitted for laboratory analysis of the following constituents:

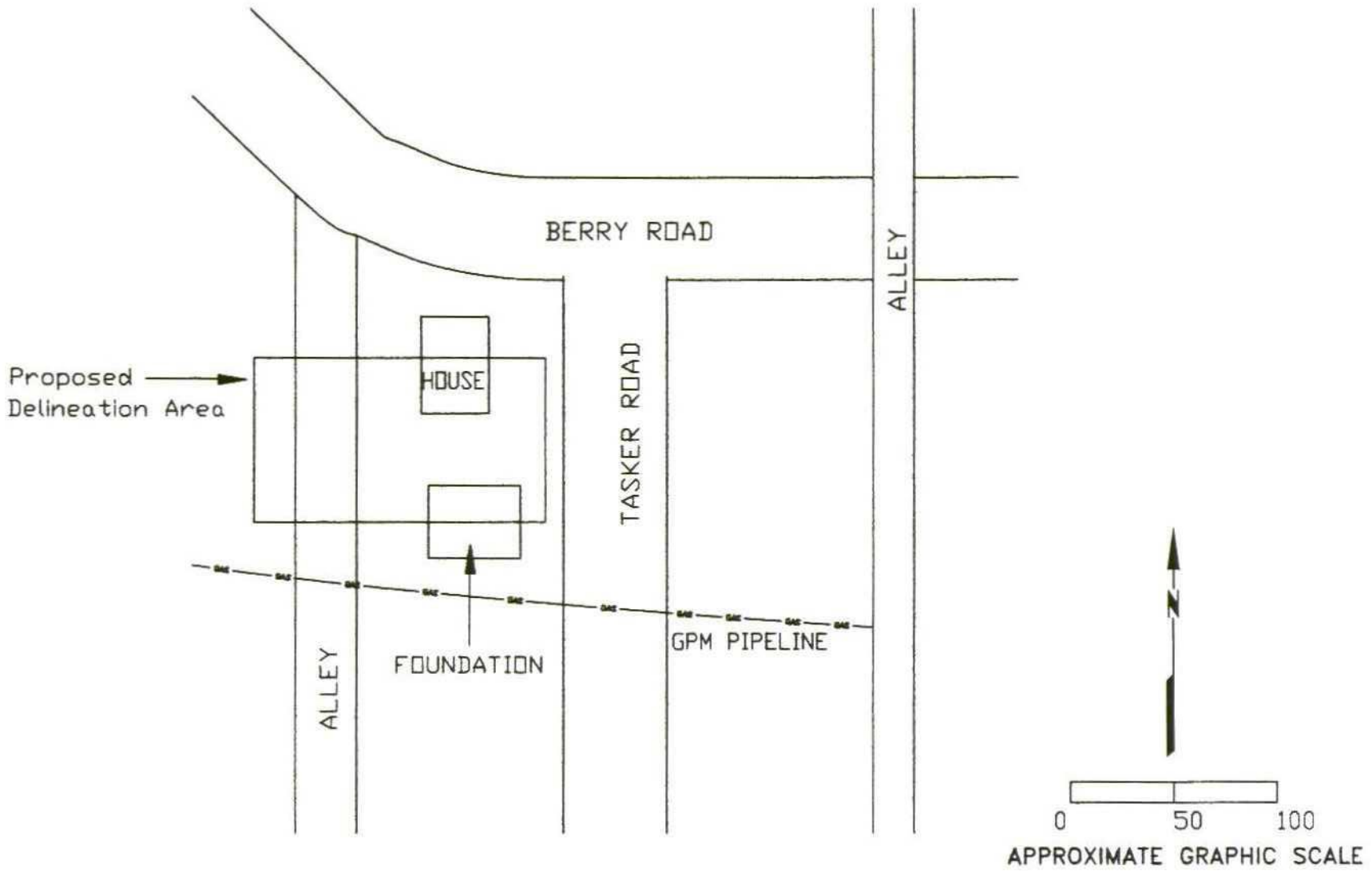
- Polynuclear Aromatic Hydrocarbons, USEPA Method 8270
- Volatiles, USEPA Method 8260
- Semi-Volatiles, USEPA Method 8270
- Chlorinated Pesticides, USEPA Method 8080
- Polychlorinated biphenyl's, USEPA Method 8080
- Naturally Occurring Radioactive Materials (Uranium 238, Radium 226, Lead 210)

The sample will not be analyzed for previously analyzed constituents (TPH, BTEX, TCLP Metals, and Chlorides).

If the presence of the above listed constituents are detected in the sample at levels in excess of Regulatory or Human Health standards, Shell E&P Technology Company will submit a workplan for additional analysis of soils at the subject site for the constituents of concern. The plan may be to either conduct additional sampling or to conduct an interim removal of visibly impacted soil (weathered crude oil layers) before resampling.

3.4 Assessment Report

Upon completion of the project, Shell E&P Technology Company will submit a report and Remediation Workplan for NMOCD approval. The report will include a description and photographs of field activities, a plot-plan showing soil sampling locations and depths, a description of field findings, a map showing the distribution of the asphaltic material, a map showing PID values, results of laboratory analysis (tables and laboratory reports), and recommendations for further assessment or remediation of the site.



PHILIP SERVICES CORP

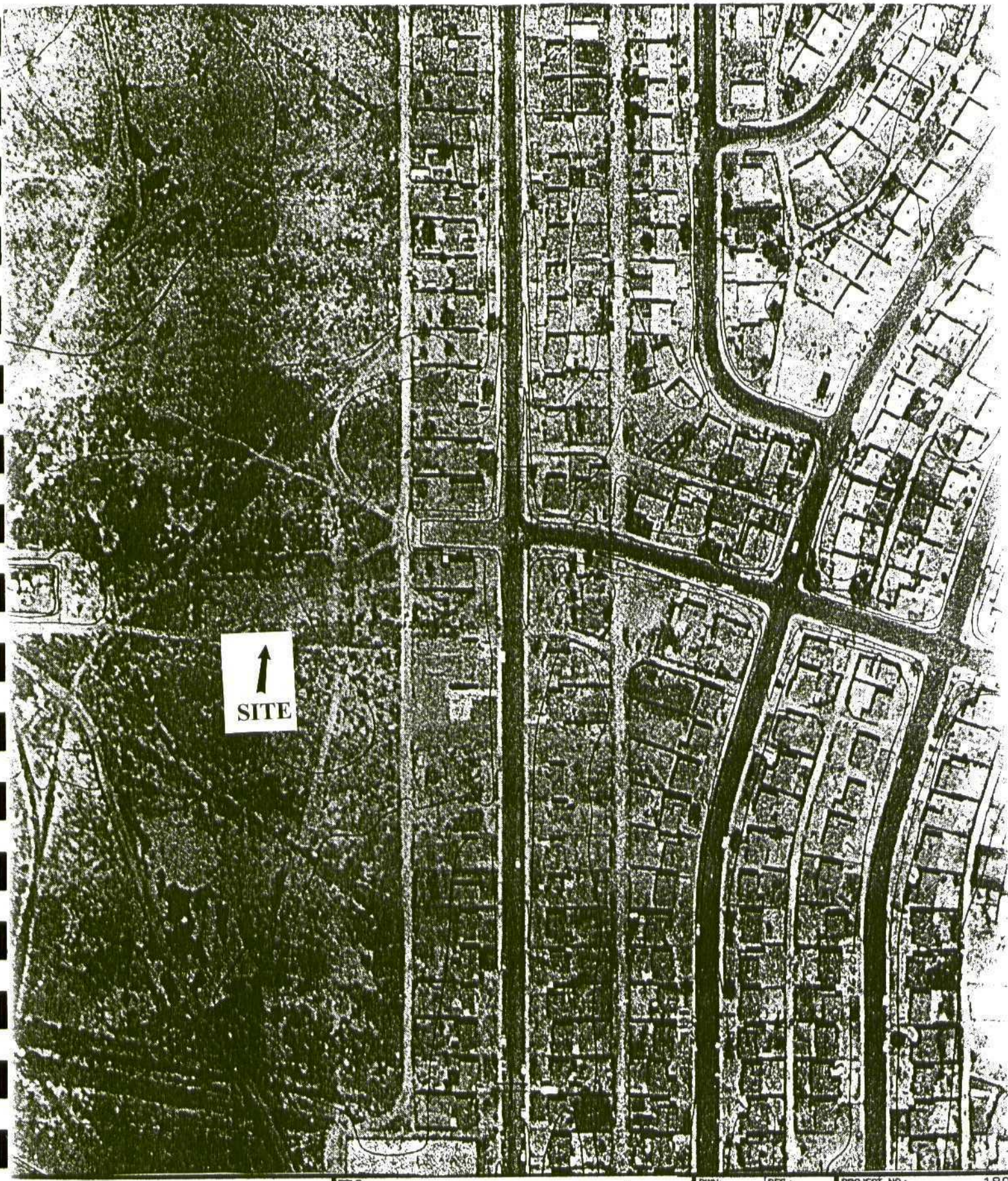
TITLE:
SITE MAP
1329 Tasker Road
Hobbs, New Mexico

DWN:	DES.:
kmo	seh
CHKD:	APPD:
seh	seh
DATE:	REV.:
12/97	1

PROJECT NO.: 18906
SEPTCO TASKER ROAD
HOBBS, NM

1

kmo projects\18906\18906-1.dwg



PHILIP SERVICES CORP

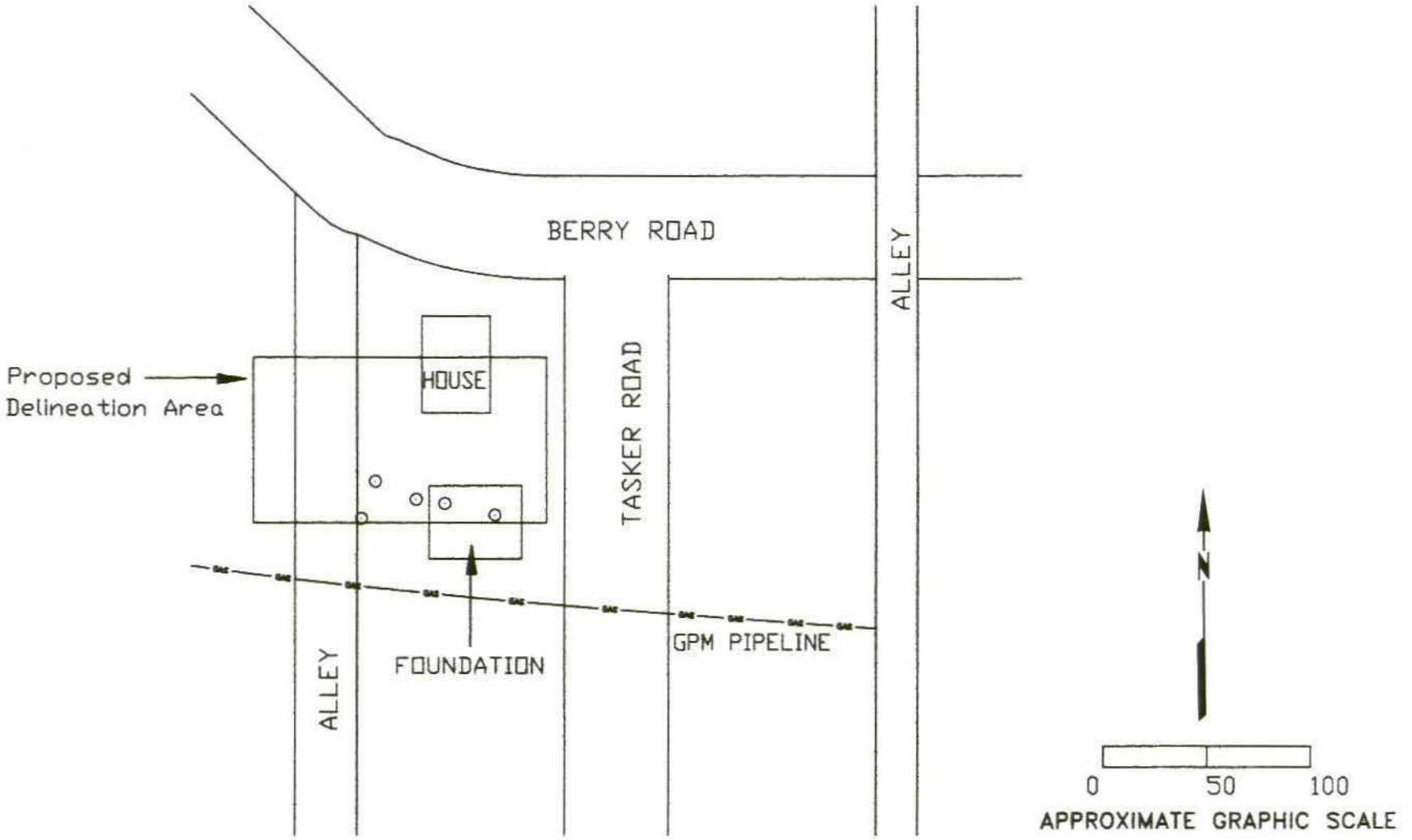
TITLE:
AERIAL PHOTOGRAPH
1329 Tasker Road
Hobbs, New Mexico

N

DWN:	DES.:
CHKD:	APPD:
seh	seh
DATE:	REV.:
12/97	1

PROJECT NO.: 189(
SEPTCO TASKER ROAI
Hobbs, NM

2

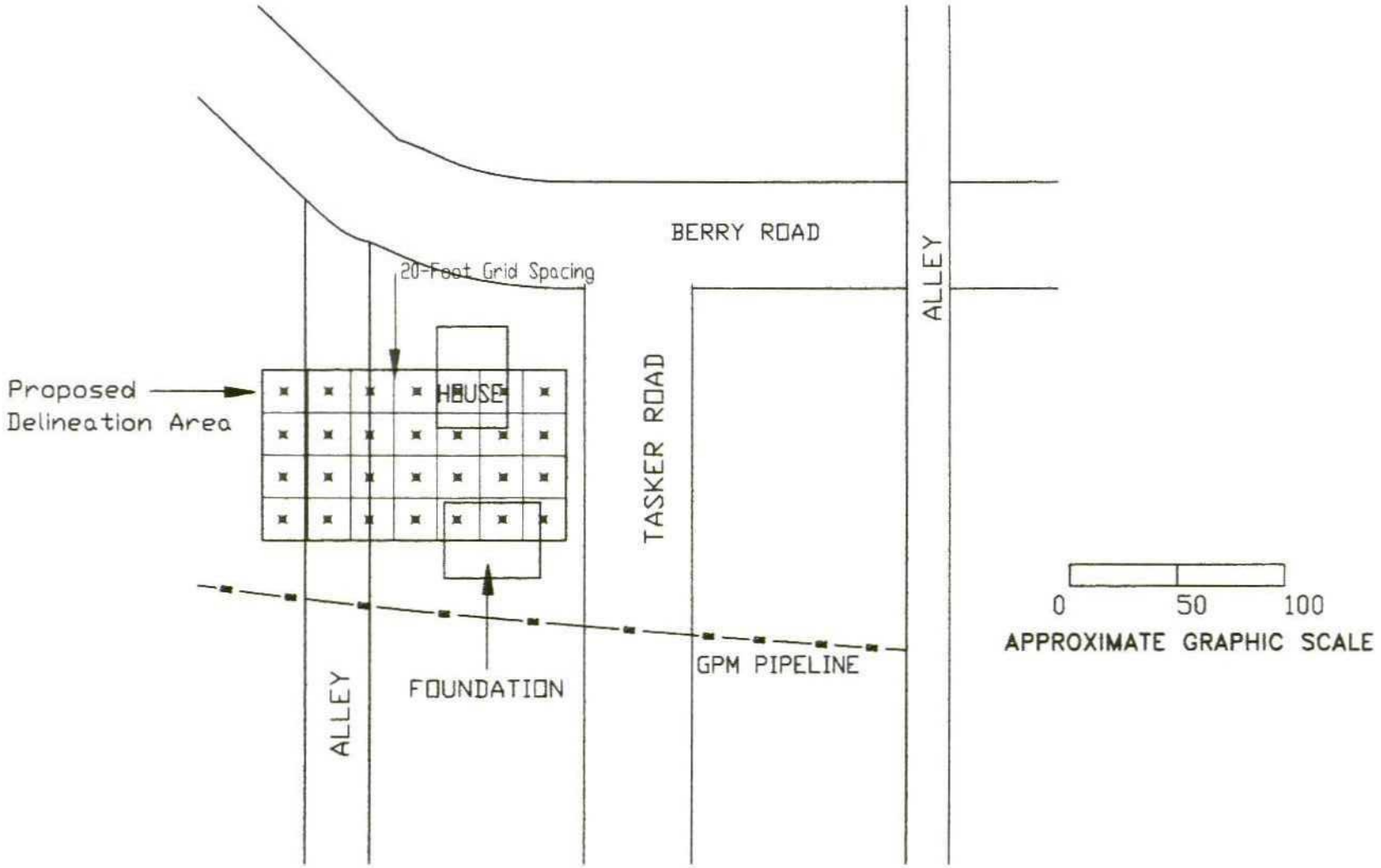


PHILIP SERVICES CORP.

TITLE:
FIVE-POINT COMPOSITE SAMPLE LOCATIONS
1329 Tasker Road
Hobbs, New Mexico

DWN:	DES.:	PROJECT NO.: 18906
kmo	seh	SEPTCO TASKER ROAD Hobbs, NM
CHKD: seh	APPD: seh	
DATE: 12/97	REV.: 1	3

kmo projects\18906\18906-3.dwg



PHILIP SERVICES CORP

TITLE:
PROPOSED SAMPLE LOCATIONS
1329 Tasker Road
Hobbs, New Mexico

DWN:	DES.:
kma	seh
CHKD:	APPD:
seh	seh
DATE:	REV.:
12/97	1

PROJECT NO.: 18906
SEPTCO TASKER ROAD
Hobbs, NM

4

APPENDIX III

SITE PHOTOGRAPHS

Trenching to the North in Front Yard
at 1331 Tasker Road

Trenching to the North in Back Yard
at 1331 Tasker Road

Tasker Road Excavation at SS #1

Tasker Road Trench at SS #2

Tasker Road Trench - SS #3 at 2'

Tasker Road Trench at SS #4

Tasker Road Trench at 5'

Tasker Road Delineation Trench to the East

Trenching to the North in Front Yard at 1331 Tasker Road

Trenching to the North in Backyard at 1331 Tasker Road

Trenching North on West Side of Alley

APPENDIX IV

LABORATORY ANALYSIS

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89559
FIELD CODE: SS-1 @ 2-3'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND				
Vinyl chloride	100	ND	107			107
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	84	2	107	84
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND				
cis-1,2-Dichloroethene	50	ND				
Chloroform	50	ND	101			101
2,2-Dichloropropane	50	ND				
Bromochloromethane	50	ND				
1,2-Dichloroethane	50	ND				
1,1,1-Trichloroethane	50	ND				
Carbon Tetrachloride	50	ND				
1,1-Dichloropropene	50	ND				
Benzene	50	ND		1	115	
1,2-Dichloropropane	50	ND	104			104
Trichloroethene	50	ND		0	113	
Dibromomethane	50	ND				
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	103	1	112	103
1,1,2-Trichloroethane	50	ND				
1,3-Dichloropropane	50	ND				

PHILIP ENVIRONMENTAL
Shell Hobbs

TA #: T89559
Field Code: SS-1 @ 2-3'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	50	ND				
1,2-Dibromoethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	104	1	114	104
1,1,1,2-Tertachloroethane	50	ND	106			106
Ethylbenzene	50	ND				
m & p-Xylene	50	ND				
Bromoform	50	ND				
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND				
1,2,3-Trichloropropane	50	ND				
Isopropylbenzene	50	ND				
Bromobenzene	50	ND				
2-Chlorotoluene	50	ND				
n-Propylbenzene	50	ND				
4-Chlorotoluene	50	ND				
1,3,5-Trimethylbenzene	50	ND				
tert-Butylbenzene	50	ND				
1,2,4-Trimethylbenzene	50	ND				
1,4-Dichlorobenzene	100	ND				
sec-Butylbenzene	50	ND				
1,3-Dichlorobenzene	100	ND				
4-Isopropyltoluene	50	ND				
1,2-Dichlorobenzene	100	ND				
n-Butylbenzene	50	ND				
1,2-Dibromo-3-chloropropane	250	ND				
1,2,3-Trichlorobenzene	250	ND				
Naphthalene	50	ND				
1,2,4-Trichlorobenzene	250	ND				
Hexachlorobutadiene	250	ND				

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/kg)

	RT	CONC.
(1) ethyl-cyclohexane	16.64	1,100
(2) 1,1,3-trimethylCyclohexane	16.72	1,700
(3) 2,6-drimethyl-2-Octane	19.82	2,100
(4) 1-ethyl-2,2,6-trimethylcyclohexane	22.05	1,100
(5) trans-decahydro-napthalene	22.54	2,200
(6) decahydro-2-methyl-Napthalene	24.54	960

	% Recovery
Dibromofluoromethane	100
Toluene-d8	100
4-Bromofluorobenzene	106

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

BL

Director, Dr. Blair Leftwich

1-29-98

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89560
FIELD CODE: SS-1 @ 5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND				
Vinyl chloride	100	ND	107			107
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	84	2	107	84
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND				
cis-1,2-Dichloroethene	50	ND				
Chloroform	50	ND	101			101
2,2-Dichloropropane	50	ND				
Bromochloromethane	50	ND				
1,2-Dichloroethane	50	ND				
1,1,1-Trichloroethane	50	ND				
Carbon Tetrachloride	50	ND				
1,1-Dichloropropene	50	ND				
Benzene	50	ND		1	115	
1,2-Dichloropropane	50	ND	104			104
Trichloroethene	50	ND		0	113	
Dibromomethane	50	ND				
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	103	1	112	103
1,1,2-Trichloroethane	50	ND				
1,3-Dichloropropane	50	ND				

PHILIP ENVIRONMENTAL
Shell Hobbs

TA #: T89560
Field Code: SS-1 @ 5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	50	ND				
1,2-Dibromoethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	104	1	114	104
1,1,1,2-Tertachloroethane	50	ND	106			106
Ethylbenzene	50	ND				
m & p-Xylene	50	ND				
Bromoform	50	ND				
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND				
1,2,3-Trichloropropane	50	ND				
Isopropylbenzene	50	ND				
Bromobenzene	50	ND				
2-Chlorotoluene	50	ND				
n-Propylbenzene	50	ND				
4-Chlorotoluene	50	ND				
1,3,5-Trimethylbenzene	50	ND				
tert-Butylbenzene	50	ND				
1,2,4-Trimethylbenzene	50	ND				
1,4-Dichlorobenzene	100	ND				
sec-Butylbenzene	50	ND				
1,3-Dichlorobenzene	100	ND				
4-Isopropyltoluene	50	ND				
1,2-Dichlorobenzene	100	ND				
n-Butylbenzene	50	ND				
1,2-Dibromo-3-chloropropane	250	ND				
1,2,3-Trichlorobenzene	250	ND				
Naphthalene	50	ND				
1,2,4-Trichlorobenzene	250	ND				
Hexachlorobutadiene	250	ND				

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/kg)

	RT	CONC.
(1) 1,1-dimethyl-2-propyl-cyclohexane	22.05	690
(2) decahydro-Napthalene	22.55	2,000
(3) decahydro-2-methyl-napthalene	23.99	1,100
(4) 1-ethyl-3,5-dimethyl Benzene	24.17	690
(5) decahydro-2-methyl-napthalene	24.54	1,400
(6) 1,2,4,5-tetramethylbenzene	25.36	890

	% Recovery
Dibromofluoromethane	97
Toluene-d8	97
4-Bromofluorobenzene	102

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

BS

Director, Dr. Blair Leftwich

1-29-98

Date

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89561
FIELD CODE: SS-2 @ 2-3'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	500	ND				
Chloromethane	500	ND				
Vinyl chloride	1,000	ND	107			107
Bromomethane	2,500	ND				
Chloroethane	500	ND				
Trichlorofluoromethane	500	ND				
1,1-Dichloroethene	500	ND	84	2	107	84
Methylene chloride	2,500	ND				
trans-1,2-Dichloroethene	500	ND				
1,1-Dichloroethane	500	ND				
cis-1,2-Dichloroethene	500	ND				
Chloroform	500	ND	101			101
2,2-Dichloropropane	500	ND				
Bromochloromethane	500	ND				
1,2-Dichloroethane	500	ND				
1,1,1-Trichloroethane	500	ND				
Carbon Tetrachloride	500	ND				
1,1-Dichloropropene	500	ND				
Benzene	500	ND		1	115	
1,2-Dichloropropane	500	ND	104			104
Trichloroethene	500	ND		0	113	
Dibromomethane	500	ND				
Bromodichloromethane	500	ND				
cis-1,3-Dichloropropene	500	ND				
trans-1,3-Dichloropropene	500	ND				
Toluene	500	ND	103	1	112	103
1,1,2-Trichloroethane	500	ND				
1,3-Dichloropropane	500	ND				

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E-Mail: lab@traceanalysis.com

January 30, 1998

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

TA # T89559
Field Code: SS-1 @ 2-3'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	125	ND				
2-Picoline	125	ND				
Methyl methanesulfonate	125	ND				
Ethyl methanesulfonate	125	ND				
Phenol	125	ND	75	1	66	94
Aniline	625	ND				
bis(2-Chloroethyl)ether	625	ND				
2-Chlorophenol	625	ND		2	65	
1,3-Dichlorobenzene	125	ND				
1,4-Dichlorobenzene	125	ND	81	7	66	101
Benzyl alcohol	625	ND				
1,2-Dichlorobenzene	125	ND				
2-Methylphenol	125	ND				
bis(2-chloroisopropyl)ether	625	ND				
4-Methylphenol/3-Methylphenol	125	ND				
Acetophenone	625	ND				
n-Nitrosodi-n-propylamine	125	ND		0	68	
Hexachloroethane	125	ND				
Nitrobenzene	125	ND				
N-Nitrosopiperidine	625	ND				
Isophorone	625	ND				
2-Nitrophenol	625	ND		73		91
2,4-Dimethylphenol	625	ND				
bis(2-Chloroethoxy)methane	125	ND				
Benzoic acid	1,250	ND				
2,4-Dichlorophenol	625	ND	74			92
1,2,4-Trichlorobenzene	125	ND		3	76	
a,a-Dimethylphenethylamine	1,250	ND				
Naphthalene	125	ND				

TA# T89559
FIELD CODE: SS-1 @ 2-3'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	625	ND				
2,6-Dichlorophenol	625	ND				
Hexachlorobutadiene	125	ND	73			91
N-Nitroso-di-n-butylamine	625	ND				
4-Chloro-3-methylphenol	625	ND	74	0	79	92
2-Methylnaphthalene	125	ND				
1,2,4,5-Tetrachlorobenzene	125	ND				
Hexachlorocyclopentadiene	125	ND				
2,4,6-Trichlorophenol	625	ND	71			88
2,4,5-Trichlorophenol	625	ND				
2-Chloronaphthalene	125	ND				
1-Chloronaphthalene	125	ND				
2-Nitroaniline	625	ND				
Dimethylphthalate	125	ND				
Acenaphthylene	125	ND				
2,6-Dinitrotoluene	125	ND				
3-Nitroaniline	625	ND				
Acenaphthene	125	ND	73	1	89	91
2,4-Dinitrophenol	625	ND				
Dibenzofuran	625	ND				
Pentachlorobenzene	125	ND				
4-Nitrophenol	625	ND		6	43	
1-Napthylamine	625	ND				
2,4-Dinitrotoluene	125	ND		1	85	
2-Napthylamine	625	ND				
2,3,4,6-Tetrachlorophenol	625	ND				
Fluorene	125	ND				
Diethylphthalate	125	ND				
4-Chlorophenyl-phenylether	125	ND				
4-Nitroaniline	625	ND				
4,6-Dinitro-2-methylphenol	625	ND				
n-Nitrosodiphenylamine & Diphenylamine	125	ND	76			
Diphenylhydrazine	625	ND				

TA# T89559
FIELD CODE: SS-1 @ 2-3'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	125	ND				
Phenacetin	625	ND				
Hexachlorobenzene	125	ND				
4-Aminobiphenyl	625	ND				
Pentachlorophenol	625	ND	71	12	49	
Pentachloronitrobenzene	625	ND				
Pronamide	125	ND				
Phenanthrene	125	ND				
Anthracene	125	ND				
Di-n-butylphthalate	125	ND				
Fluoranthene	125	ND	72			
Benzidine	1,250	ND				
Pyrene	125	ND		3	118	
p-Dimethylaminoazobenzene	125	ND				
Butylbenzylphthalate	125	ND				
Benzo[a]anthracene	125	ND				
3,3-Dichlorobenzidine	625	ND				
Chrysene	125	ND				
bis(2-Ethylhexyl)phthalate	125	ND				
Di-n-octlphthalate	125	ND	69			
Benzo[b]fluoranthene	125	ND				
7,12-Dimethylbenz(a)anthracene	125	ND				
Benzo[k]fluoranthene	125	ND				
Benzo[a]pyrene	125	ND	77			
3-Methylcholanthrene	125	ND				
Dibenzo(a,j)acridine	125	ND				
Indeno[1,2,3-cd]pyrene	125	ND				
Dibenz[a,h]anthracene	125	ND				
Benzo[g,h,i]perylene	125	ND				

TA #T89559
Field Code: SS-1 @ 2-3'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	2**
Phenol-d6 SURR	18**
Nitrobenzene-d5 SURR	10**
2-Fluorobiphenyl SURR	10**
2,4,6-Tribromophenol SURR	0**
Terphenyl-d14 SURR	17**

*NOTE: Elevated reporting limits due to sample matrix interference.
**NOTE: Surrogate recovery over standard range due to matrix effect.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

1-30-98
Date

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

January 30, 1998

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

TA # T89560
Field Code: SS-1 @ 5'

EPA 8270	Reporting Limit	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	25	ND				
2-Picoline	25	ND				
Methyl methanesulfonate	25	ND				
Ethyl methanesulfonate	25	ND				
Phenol	25	ND	75	1	66	94
Aniline	125	ND				
bis(2-Chloroethyl)ether	125	ND				
2-Chlorophenol	125	ND		2	65	
1,3-Dichlorobenzene	25	ND				
1,4-Dichlorobenzene	25	ND	81	7	66	101
Benzyl alcohol	125	ND				
1,2-Dichlorobenzene	25	ND				
2-Methylphenol	25	ND				
bis(2-chloroisopropyl)ether	125	ND				
4-Methylphenol/3-Methylphenol	25	ND				
Acetophenone	125	ND				
n-Nitrosodi-n-propylamine	25	ND		0	68	
Hexachloroethane	25	ND				
Nitrobenzene	25	ND				
N-Nitrosopiperidine	125	ND				
Isophorone	125	ND				
2-Nitrophenol	125	ND		73		91
2,4-Dimethylphenol	125	ND				
bis(2-Chloroethoxy)methane	25	ND				
Benzoic acid	250	ND				
2,4-Dichlorophenol	125	ND	74			92
1,2,4-Trichlorobenzene	25	ND		3	76	
a,a-Dimethylphenethylamine	250	ND				
Naphthalene	25	ND				

TA# T89560
FIELD CODE: SS-1 @ 5'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	125	ND				
2,6-Dichlorophenol	125	ND				
Hexachlorobutadiene	25	ND	73			91
N-Nitroso-di-n-butylamine	125	ND				
4-Chloro-3-methylphenol	125	ND	74	0	79	92
2-Methylnaphthalene	25	ND				
1,2,4,5-Tetrachlorobenzene	25	ND				
Hexachlorocyclopentadiene	25	ND				
2,4,6-Trichlorophenol	125	ND	71			88
2,4,5-Trichlorophenol	125	ND				
2-Chloronaphthalene	25	ND				
1-Chloronaphthalene	25	ND				
2-Nitroaniline	125	ND				
Dimethylphthalate	25	ND				
Acenaphthylene	25	ND				
2,6-Dinitrotoluene	25	ND				
3-Nitroaniline	125	ND				
Acenaphthene	25	ND	73	1	89	91
2,4-Dinitrophenol	125	ND				
Dibenzofuran	125	ND				
Pentachlorobenzene	25	ND				
4-Nitrophenol	125	ND		6	43	
1-Napthylamine	125	ND				
2,4-Dinitrotoluene	25	ND		1	85	
2-Napthylamine	125	ND				
2,3,4,6-Tetrachlorophenol	125	ND				
Fluorene	25	ND				
Diethylphthalate	25	ND				
4-Chlorophenyl-phenylether	25	ND				
4-Nitroaniline	125	ND				
4,6-Dinitro-2-methylphenol	125	ND				
n-Nitrosodiphenylamine & Diphenylamine	25	ND	76			
Diphenylhydrazine	125	ND				

TA# T89560
FIELD CODE: SS-1 @ 5'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	25	ND				
Phenacetin	125	ND				
Hexachlorobenzene	25	ND				
4-Aminobiphenyl	125	ND				
Pentachlorophenol	125	ND	71	12	49	
Pentachloronitrobenzene	125	ND				
Pronamide	25	ND				
Phenanthrene	25	ND				
Anthracene	25	ND				
Di-n-butylphthalate	25	ND				
Fluoranthene	25	ND	72			
Benzidine	250	ND				
Pyrene	25	ND		3	118	
p-Dimethylaminoazobenzene	25	ND				
Butylbenzylphthalate	25	ND				
Benzo[a]anthracene	25	ND				
3,3-Dichlorobenzidine	125	ND				
Chrysene	25	ND				
bis(2-Ethylhexyl)phthalate	25	ND				
Di-n-octlphthalate	25	ND	69			
Benzo[b]fluoranthene	25	ND				
7,12-Dimethylbenz(a)anthracene	25	ND				
Benzo[k]fluoranthene	25	ND				
Benzo[a]pyrene	25	ND	77			
3-Methylcholanthrene	25	ND				
Dibenzo(a,j)acridine	25	ND				
Indeno[1,2,3-cd]pyrene	25	ND				
Dibenz[a,h]anthracene	25	ND				
Benzo[g,h,i]perylene	25	ND				

TA #T89560
Field Code: SS-1 @ 5'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	47
Phenol-d6 SURR	58
Nitrobenzene-d5 SURR	55
2-Fluorobiphenyl SURR	64
2,4,6-Tribromophenol SURR	38
Terphenyl-d14 SURR	109

*NOTE: Elevated reporting limits due to sample matrix interference.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

1-30-98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA# FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89559 SS-1 2-3'	<0.50	<1.0	<10	<0.05	<10	<0.50	87	11	<2.0	21
ICV	4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV	4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT	0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD	1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy	85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy	98	104	102	100	98	100	98	102	100	100

	Al (mg/kg)	Fe (mg/kg)	Co (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89559 SS-1 2-3'	4,900	7,300	<10	<10	91	13
ICV	5.0	5.0	5.3	4.9	5.0	4.7
CCV	4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT	20	10	10	10	0.30	2.0
RPD	15	2	0	1	5	2
% Extraction Accuracy	104	120	97	95	91	93
% Instrument Accuracy	98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

Director, Dr. Blair Leftwich

1-23-98
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA#	FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89560	SS-1 5'	<0.50	<1.0	<10	<0.05	<10	<0.50	320	6.1	<2.0	9.5
ICV		4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV		4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT		0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD		1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy		85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy		98	104	102	100	98	100	98	102	100	100

TA#	FIELD CODE	Al (mg/kg)	Fe (mg/kg)	Co (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89560	SS-1 5'	4,700	3,300	<10	<10	38	<10
ICV		5.0	5.0	5.3	4.9	5.0	4.7
CCV		4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT		20	10	10	10	0.30	10
RPD		15	2	0	1	5	2
% Extraction Accuracy		104	120	97	95	91	93
% Instrument Accuracy		98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

Director, Dr. Blair Leftwich

1-23-98
DATE

TRACE ANALYSIS, INC.

ANALYTICAL REPORT

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

CLIENT Phillip Environmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89559
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-1 2-3'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-23-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferences.
No surrogate recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<165.	ug/Kg	165.
4,4'-DDE	<170.	ug/Kg	170.
4,4'-DDT	<220.	ug/Kg	220.
Aldrin	<355.	ug/Kg	355.
alpha-BHC	<180.	ug/Kg	180.
beta-BHC	<270.	ug/Kg	270.
delta-BHC	<200.	ug/Kg	200.
Chlordane	<3830.	ug/Kg	3830.
Dieldrin	<95.	ug/Kg	95.
Endosulfan I	<200.	ug/Kg	200.
Endosulfan II	<210.	ug/Kg	210.
Endosulfan sulfate	<280.	ug/Kg	280.
Endrin	<120.	ug/Kg	120.
Endrin aldehyde	<380.	ug/Kg	380.
Heptachlor	<260.	ug/Kg	260.
Heptachlor Epoxide	<190.	ug/Kg	190.
Lindane	<170.	ug/Kg	170.
Methoxychlor	<1720.	ug/Kg	1720.
Toxaphene	<3010.	ug/Kg	3010.

(1) Copy to Client

MANAGING DIRECTOR

TRACE ANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL REPORT

CLIENT Philip Environmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89560
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-1 5'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-26-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferences.
No surrogate recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<140.	ug/Kg	140.
4,4'-DDE	<140.	ug/Kg	140.
4,4'-DDT	<185.	ug/Kg	185.
Aldrin	<300.	ug/Kg	300.
alpha-BHC	<150.	ug/Kg	150.
beta-BHC	<225.	ug/Kg	225.
delta-BHC	<165.	ug/Kg	165.
Chlordane	<3180.	ug/Kg	3180.
Dieldrin	<80.	ug/Kg	80.
Endosulfan I	<165.	ug/Kg	165.
Endosulfan II	<175.	ug/Kg	175.
Endosulfan sulfate	<230.	ug/Kg	230.
Endrin	<100.	ug/Kg	100.
Endrin aldehyde	<315.	ug/Kg	315.
Heptachlor	<220.	ug/Kg	220.
Heptachlor Epoxide	<160.	ug/Kg	160.
Lindane	<140.	ug/Kg	140.
Methoxychlor	<1430.	ug/Kg	1430.
Toxaphene	<2510.	ug/Kg	2510.

(1) Copy to Client

MANAGING DIRECTOR

TA #: T89561
Field Code: SS-2 @ 2-3'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	500	ND				
1,2-Dibromoethane	500	ND				
Tetrachloroethene	500	ND				
Chlorobenzene	500	ND	104	1	114	104
1,1,1,2-Tertachloroethane	500	ND	106			106
Ethylbenzene	500	7,000				
m & p-Xylene	500	31,000				
Bromoform	500	ND				
Styrene	500	ND				
o-Xylene	500	ND				
1,1,2,2-Tetrachloroethane	500	ND				
1,2,3-Trichloropropane	500	ND				
Isopropylbenzene	500	ND				
Bromobenzene	500	ND				
2-Chlorotoluene	500	ND				
n-Propylbenzene	500	ND				
4-Chlorotoluene	500	ND				
1,3,5-Trimethylbenzene	500	ND				
tert-Butylbenzene	500	ND				
1,2,4-Trimethylbenzene	500	ND				
1,4-Dichlorobenzene	1,000	ND				
sec-Butylbenzene	500	ND				
1,3-Dichlorobenzene	1,000	ND				
4-Isopropyltoluene	500	ND				
1,2-Dichlorobenzene	1,000	ND				
n-Butylbenzene	500	ND				
1,2-Dibromo-3-chloropropane	2,500	ND				
1,2,3-Trichlorobenzene	2,500	ND				
Naphthalene	500	ND				
1,2,4-Trichlorobenzene	2,500	ND				
Hexachlorobutadiene	2,500	ND				

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/kg)

	RT	CONC.
(1) Cyclohexane	12.02	31,000
(2) ethyl-cyclohexane	16.64	33,000
(3) 2,6-dimetyl Octane	18.53	21,000
(4) 1,3,5-trimethyl-benzene	20.10	20,000

	% Recovery
Dibromofluoromethane	97
Toluene-d8	103
4-Bromofluorobenzene	102

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

Director, Dr. Blair Leftwich

1-29-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89562
FIELD CODE: SS-2 @ 6'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	500	ND				
Chloromethane	500	ND				
Vinyl chloride	1,000	ND	107			107
Bromomethane	2,500	ND				
Chloroethane	500	ND				
Trichlorofluoromethane	500	ND				
1,1-Dichloroethene	500	ND	84	2	107	84
Methylene chloride	2,500	ND				
trans-1,2-Dichloroethene	500	ND				
1,1-Dichloroethane	500	ND				
cis-1,2-Dichloroethene	500	ND				
Chloroform	500	ND	101			101
2,2-Dichloropropane	500	ND				
Bromochloromethane	500	ND				
1,2-Dichloroethane	500	ND				
1,1,1-Trichloroethane	500	ND				
Carbon Tetrachloride	500	ND				
1,1-Dichloropropene	500	ND				
Benzene	500	ND		1	115	
1,2-Dichloropropane	500	ND	104			104
Trichloroethene	500	ND		0	113	
Dibromomethane	500	ND				
Bromodichloromethane	500	ND				
cis-1,3-Dichloropropene	500	ND				
trans-1,3-Dichloropropene	500	ND				
Toluene	500	ND	103	1	112	103
1,1,2-Trichloroethane	500	ND				
1,3-Dichloropropane	500	ND				

PHILIP ENVIRONMENTAL
Shell Hobbs

TA #: T89562
Field Code: SS-2 @ 6'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	500	ND				
1,2-Dibromoethane	500	ND				
Tetrachloroethene	500	ND				
Chlorobenzene	500	ND	104	1	114	104
1,1,1,2-Tertachloroethane	500	ND	106			106
Ethylbenzene	500	9,700				
m & p-Xylene	500	37,000				
Bromoform	500	ND				
Styrene	500	ND				
o-Xylene	500	ND				
1,1,2,2-Tetrachloroethane	500	ND				
1,2,3-Trichloropropane	500	ND				
Isopropylbenzene	500	ND				
Bromobenzene	500	ND				
2-Chlorotoluene	500	ND				
n-Propylbenzene	500	ND				
4-Chlorotoluene	500	ND				
1,3,5-Trimethylbenzene	500	ND				
tert-Butylbenzene	500	ND				
1,2,4-Trimethylbenzene	500	ND				
1,4-Dichlorobenzene	1,000	ND				
sec-Butylbenzene	500	ND				
1,3-Dichlorobenzene	1,000	ND				
4-Isopropyltoluene	500	ND				
1,2-Dichlorobenzene	1,000	ND				
n-Butylbenzene	500	ND				
1,2-Dibromo-3-chloropropane	2,500	ND				
1,2,3-Trichlorobenzene	2,500	ND				
Naphthalene	500	ND				
1,2,4-Trichlorobenzene	2,500	ND				
Hexachlorobutadiene	2,500	ND				

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/kg)

	RT	CONC.
(1) Methyl-cyclohexane	13.71	22,000
(2) Ethyl-cyclohexane	16.64	20,000
(3) (1-methylethyl)-benzene	19.11	21,000
(4) 1,3,5-trimethyl-benzene	20.11	14,000
(5) 1,2,3-trimethyl-benzene	21.74	12,000
(6) 1-methyl-3-propyl-benzene	22.08	14,000

	% Recovery
Dibromofluoromethane	98
Toluene-d8	100
4-Bromofluorobenzene	99

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

Director, Dr. Blair Leftwich

1-29-98

Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA#	FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89561	SS-2 2-3'	<0.50	<1.0	<10	<0.05	<10	<0.50	37	7.6	<2.0	6.7
ICV		4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV		4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT		0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD		1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy		85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy		98	104	102	100	98	100	98	102	100	100

		Al (mg/kg)	Fe (mg/kg)	Co (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89561	SS-2 2-3'	1,900	1,800	<10	<10	47	<10
ICV		5.0	5.0	5.3	4.9	5.0	4.7
CCV		4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT		20	10	10	10	0.30	10
RPD		15	2	0	1	5	2
% Extraction Accuracy		104	120	97	95	91	93
% Instrument Accuracy		98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

BL
Director, Dr. Blair Leftwich

1-23-98
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA#	FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89562	SS-2 6'	<0.50	<1.0	<10	<0.05	<10	<0.50	650	8.1	<2.0	6.6
ICV		4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV		4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT		0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD		1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy		85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy		98	104	102	100	98	100	98	102	100	100

		Al (mg/kg)	Fe (mg/kg)	Co (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89562	SS-2 6'	4,100	2,400	<10	<10	20	<10
ICV		5.0	5.0	5.3	4.9	5.0	4.7
CCV		4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT		20	10	10	10	0.30	10
RPD		15	2	0	1	5	2
% Extraction Accuracy		104	120	97	95	91	93
% Instrument Accuracy		98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

Director, Dr. Blair Leftwich

1-23-98
DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

January 30, 1998

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

TA # T89561
Field Code: SS-2 @ 2-3'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	125	ND				
2-Picoline	125	ND				
Methyl methanesulfonate	125	ND				
Ethyl methanesulfonate	125	ND				
Phenol	125	ND	75	1	66	94
Aniline	625	ND				
bis(2-Chloroethyl)ether	625	ND				
2-Chlorophenol	625	ND		2	65	
1,3-Dichlorobenzene	125	ND				
1,4-Dichlorobenzene	125	ND	81	7	66	101
Benzyl alcohol	625	ND				
1,2-Dichlorobenzene	125	ND				
2-Methylphenol	125	ND				
bis(2-chloroisopropyl)ether	625	ND				
4-Methylphenol/3-Methylphenol	125	ND				
Acetophenone	625	ND				
n-Nitrosodi-n-propylamine	125	ND		0	68	
Hexachloroethane	125	ND				
Nitrobenzene	125	ND				
N-Nitrosopiperidine	625	ND				
Isophorone	625	ND				
2-Nitrophenol	625	ND		73		91
2,4-Dimethylphenol	625	ND				
bis(2-Chloroethoxy)methane	125	ND				
Benzoic acid	1,250	ND				
2,4-Dichlorophenol	625	ND	74			92
1,2,4-Trichlorobenzene	125	ND		3	76	
a,a-Dimethylphenethylamine	1,250	ND				
Naphthalene	125	ND				

TA# T89561
FIELD CODE: SS-2 @ 2-3'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	625	ND				
2,6-Dichlorophenol	625	ND				
Hexachlorobutadiene	125	ND	73			91
N-Nitroso-di-n-butylamine	625	ND				
4-Chloro-3-methylphenol	625	ND	74	0	79	92
2-Methylnaphthalene	125	ND				
1,2,4,5-Tetrachlorobenzene	125	ND				
Hexachlorocyclopentadiene	125	ND				
2,4,6-Trichlorophenol	625	ND	71			88
2,4,5-Trichlorophenol	625	ND				
2-Chloronaphthalene	125	ND				
1-Chloronaphthalene	125	ND				
2-Nitroaniline	625	ND				
Dimethylphthalate	125	ND				
Acenaphthylene	125	ND				
2,6-Dinitrotoluene	125	ND				
3-Nitroaniline	625	ND				
Acenaphthene	125	ND	73	1	89	91
2,4-Dinitrophenol	625	ND				
Dibenzofuran	625	ND				
Pentachlorobenzene	125	ND				
4-Nitrophenol	625	ND		6	43	
1-Napthylamine	625	ND				
2,4-Dinitrotoluene	125	ND		1	85	
2-Napthylamine	625	ND				
2,3,4,6-Tetrachlorophenol	625	ND				
Fluorene	125	ND				
Diethylphthalate	125	ND				
4-Chlorophenyl-phenylether	125	ND				
4-Nitroaniline	625	ND				
4,6-Dinitro-2-methylphenol	625	ND				
n-Nitrosodiphenylamine & Diphenylamine	125	ND	76			
Diphenylhydrazine	625	ND				

TA# T89561
FIELD CODE: SS-2 @ 2-3'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	125	ND				
Phenacetin	625	ND				
Hexachlorobenzene	125	ND				
4-Aminobiphenyl	625	ND				
Pentachlorophenol	625	ND	71	12	49	
Pentachloronitrobenzene	625	ND				
Pronamide	125	ND				
Phenanthrene	125	ND				
Anthracene	125	ND				
Di-n-butylphthalate	125	ND				
Fluoranthene	125	ND	72			
Benzidine	1,250	ND				
Pyrene	125	ND		3	118	
p-Dimethylaminoazobenzene	125	ND				
Butylbenzylphthalate	125	ND				
Benzo[a]anthracene	125	ND				
3,3-Dichlorobenzidine	625	ND				
Chrysene	125	ND				
bis(2-Ethylhexyl)phthalate	125	ND				
Di-n-octlphthalate	125	ND	69			
Benzo[b]fluoranthene	125	ND				
7,12-Dimethylbenz(a)anthracene	125	ND				
Benzo[k]fluoranthene	125	ND				
Benzo[a]pyrene	125	ND	77			
3-Methylcholanthrene	125	ND				
Dibenzo(a,j)acridine	125	ND				
Indeno[1,2,3-cd]pyrene	125	ND				
Dibenz[a,h]anthracene	125	ND				
Benzo[g,h,i]perylene	125	ND				

TA #T89561
Field Code: SS-2 @ 2-3'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	4**
Phenol-d6 SURR	7**
Nitrobenzene-d5 SURR	15**
2-Fluorobiphenyl SURR	13**
2,4,6-Tribromophenol SURR	0**
Terphenyl-d14 SURR	22**

*NOTE: Elevated reporting limits due to sample matrix interference.
**NOTE: Surrogate recovery over standard range due to matrix effect.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

1-30-98
Date

TRACE ANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

January 30, 1998

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

TA # T89562
Field Code: SS-2 @ 6'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	50	ND				
2-Picoline	50	ND				
Methyl methanesulfonate	50	ND				
Ethyl methanesulfonate	50	ND				
Phenol	50	ND	75	1	66	94
Aniline	250	ND				
bis(2-Chloroethyl)ether	250	ND				
2-Chlorophenol	250	ND		2	65	
1,3-Dichlorobenzene	50	ND				
1,4-Dichlorobenzene	50	ND	81	7	66	101
Benzyl alcohol	250	ND				
1,2-Dichlorobenzene	50	ND				
2-Methylphenol	50	ND				
bis(2-chloroisopropyl)ether	250	ND				
4-Methylphenol/3-Methylphenol	50	ND				
Acetophenone	250	ND				
n-Nitrosodi-n-propylamine	50	ND		0	68	
Hexachloroethane	50	ND				
Nitrobenzene	50	ND				
N-Nitrosopiperidine	250	ND				
Isophorone	250	ND				
2-Nitrophenol	250	ND		73		91
2,4-Dimethylphenol	250	ND				
bis(2-Chloroethoxy)methane	50	ND				
Benzoic acid	500	ND				
2,4-Dichlorophenol	250	ND	74			92
1,2,4-Trichlorobenzene	50	ND		3	76	
a,a-Dimethylphenethylamine	500	ND				
Naphthalene	50	ND				

TA# T89562
FIELD CODE: SS-2 @ 6'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	250	ND				
2,6-Dichlorophenol	250	ND				
Hexachlorobutadiene	50	ND	73			91
N-Nitroso-di-n-butylamine	250	ND				
4-Chloro-3-methylphenol	250	ND	74	0	79	92
2-Methylnaphthalene	50	ND				
1,2,4,5-Tetrachlorobenzene	50	ND				
Hexachlorocyclopentadiene	50	ND				
2,4,6-Trichlorophenol	250	ND	71			88
2,4,5-Trichlorophenol	250	ND				
2-Chloronaphthalene	50	ND				
1-Chloronaphthalene	50	ND				
2-Nitroaniline	250	ND				
Dimethylphthalate	50	ND				
Acenaphthylene	50	ND				
2,6-Dinitrotoluene	50	ND				
3-Nitroaniline	250	ND				
Acenaphthene	50	ND	73	1	89	91
2,4-Dinitrophenol	250	ND				
Dibenzofuran	250	ND				
Pentachlorobenzene	50	ND				
4-Nitrophenol	250	ND		6	43	
1-Napthylamine	250	ND				
2,4-Dinitrotoluene	50	ND		1	85	
2-Napthylamine	250	ND				
2,3,4,6-Tetrachlorophenol	250	ND				
Fluorene	50	ND				
Diethylphthalate	50	ND				
4-Chlorophenyl-phenylether	50	ND				
4-Nitroaniline	250	ND				
4,6-Dinitro-2-methylphenol	250	ND				
n-Nitrosodiphenylamine & Diphenylamine	50	ND	76			
Diphenylhydrazine	250	ND				

TA# T89562
FIELD CODE: SS-2 @ 6'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	50	ND				
Phenacetin	250	ND				
Hexachlorobenzene	50	ND				
4-Aminobiphenyl	250	ND				
Pentachlorophenol	250	ND	71	12	49	
Pentachloronitrobenzene	250	ND				
Pronamide	50	ND				
Phenanthrene	50	ND				
Anthracene	50	ND				
Di-n-butylphthalate	50	ND				
Fluoranthene	50	ND	72			
Benzidine	500	ND				
Pyrene	50	ND		3	118	
p-Dimethylaminoazobenzene	50	ND				
Butylbenzylphthalate	50	ND				
Benzo[a]anthracene	50	ND				
3,3-Dichlorobenzidine	250	ND				
Chrysene	50	ND				
bis(2-Ethylhexyl)phthalate	50	ND				
Di-n-octlphthalate	50	ND	69			
Benzo[b]fluoranthene	50	ND				
7,12-Dimethylbenz(a)anthracene	50	ND				
Benzo[k]fluoranthene	50	ND				
Benzo[a]pyrene	50	ND	77			
3-Methylcholanthrene	50	ND				
Dibenzo(a,j)acridine	50	ND				
Indeno[1,2,3-cd]pyrene	50	ND				
Dibenz[a,h]anthracene	50	ND				
Benzo[g,h,i]perylene	50	ND				

TA #T89562
Field Code: SS-2 @ 6'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	23**
Phenol-d6 SURR	30
Nitrobenzene-d5 SURR	37
2-Fluorobiphenyl SURR	41
2,4,6-Tribromophenol SURR	0**
Terphenyl-d14 SURR	53

*NOTE: Elevated reporting limits due to sample matrix interference.
**NOTE: Surrogate recovery over standard range due to matrix effect.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

1-30-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL REPORT

CLIENT Philip Environmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89561
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-2 2-3'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-26-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferences.
No surrogate recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<165.	ug/Kg	165.
4,4'-DDE	<170.	ug/Kg	170.
4,4'-DDT	<220.	ug/Kg	220.
Aldrin	<355.	ug/Kg	355.
alpha-BHC	<180.	ug/Kg	180.
beta-BHC	<270.	ug/Kg	270.
delta-BHC	<200.	ug/Kg	200.
Chlordane	<3830.	ug/Kg	3830.
Dieldrin	<95.	ug/Kg	95.
Endosulfan I	<200.	ug/Kg	200.
Endosulfan II	<210.	ug/Kg	210.
Endosulfan sulfate	<280.	ug/Kg	280.
Endrin	<120.	ug/Kg	120.
Endrin aldehyde	<380.	ug/Kg	380.
Heptachlor	<260.	ug/Kg	260.
Heptachlor Epoxide	<190.	ug/Kg	190.
Lindane	<170.	ug/Kg	170.
Methoxychlor	<1720.	ug/Kg	1720.
Toxaphene	<3010.	ug/Kg	3010.

(1) Copy to Client

MANAGING DIRECTOR

TRACE ANALYSIS, INC.

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ANALYTICAL REPORT

CLIENT Philip Environmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89562
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-2 6'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-26-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferneces.
No surrogate recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<140.	ug/Kg	140.
4,4'-DDE	<140.	ug/Kg	140.
4,4'-DDT	<185.	ug/Kg	185.
Aldrin	<300.	ug/Kg	300.
alpha-BHC	<150.	ug/Kg	150.
beta-BHC	<225.	ug/Kg	225.
delta-BHC	<165.	ug/Kg	165.
Chlordane	<3180.	ug/Kg	3180.
Dieldrin	<80.	ug/Kg	80.
Endosulfan I	<165.	ug/Kg	165.
Endosulfan II	<175.	ug/Kg	175.
Endosulfan sulfate	<230.	ug/Kg	230.
Endrin	<100.	ug/Kg	100.
Endrin aldehyde	<315.	ug/Kg	315.
Heptachlor	<220.	ug/Kg	220.
Heptachlor Epoxide	<160.	ug/Kg	160.
Lindane	<140.	ug/Kg	140.
Methoxychlor	<1430.	ug/Kg	1430.
Toxaphene	<2510.	ug/Kg	2510.

(1) Copy to Client

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89563
FIELD CODE: SS-3 @ 2-3'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	500	ND				
Chloromethane	500	ND				
Vinyl chloride	1,000	ND	107			107
Bromomethane	2,500	ND				
Chloroethane	500	ND				
Trichlorofluoromethane	500	ND				
1,1-Dichloroethene	500	ND	84	2	107	84
Methylene chloride	2,500	ND				
trans-1,2-Dichloroethene	500	ND				
1,1-Dichloroethane	500	ND				
cis-1,2-Dichloroethene	500	ND				
Chloroform	500	ND	101			101
2,2-Dichloropropane	500	ND				
Bromochloromethane	500	ND				
1,2-Dichloroethane	500	ND				
1,1,1-Trichloroethane	500	ND				
Carbon Tetrachloride	500	ND				
1,1-Dichloropropene	500	ND				
Benzene	500	ND		1	115	
1,2-Dichloropropane	500	ND	104			104
Trichloroethene	500	ND		0	113	
Dibromomethane	500	ND				
Bromodichloromethane	500	ND				
cis-1,3-Dichloropropene	500	ND				
trans-1,3-Dichloropropene	500	ND				
Toluene	500	ND	103	1	112	103
1,1,2-Trichloroethane	500	ND				
1,3-Dichloropropane	500	ND				

TA #: T89563
Field Code: SS-3 @ 2-3'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	500	ND				
1,2-Dibromoethane	500	ND				
Tetrachloroethene	500	ND				
Chlorobenzene	500	ND	104	1	114	104
1,1,1,2-Tertachloroethane	500	ND	106			106
Ethylbenzene	500	1,400				
m & p-Xylene	500	4,900				
Bromoform	500	ND				
Styrene	500	ND				
o-Xylene	500	ND				
1,1,2,2-Tetrachloroethane	500	ND				
1,2,3-Trichloropropane	500	ND				
Isopropylbenzene	500	ND				
Bromobenzene	500	ND				
2-Chlorotoluene	500	ND				
n-Propylbenzene	500	ND				
4-Chlorotoluene	500	ND				
1,3,5-Trimethylbenzene	500	ND				
tert-Butylbenzene	500	ND				
1,2,4-Trimethylbenzene	500	ND				
1,4-Dichlorobenzene	1,000	ND				
sec-Butylbenzene	500	ND				
1,3-Dichlorobenzene	1,000	ND				
4-Isopropyltoluene	500	ND				
1,2-Dichlorobenzene	1,000	ND				
n-Butylbenzene	500	ND				
1,2-Dibromo-3-chloropropane	2,500	ND				
1,2,3-Trichlorobenzene	2,500	ND				
Naphthalene	500	ND				
1,2,4-Trichlorobenzene	2,500	ND				
Hexachlorobutadiene	2,500	ND				

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/kg)

	RT	CONC.
(1) ethyl-cyclohexane	16.64	5,300
(2) 1-ethyl-2-methyl-benzene	19.96	7,100
(3) 1,3,5-trimethyl-benzene	20.85	7,400
(4) 1-methyl-3-propyl-benzene	22.07	4,400
(5) 1,4-diethyl-benzene	22.20	4,700

	% Recovery
Dibromofluoromethane	97
Toluene-d8	99
4-Bromofluorobenzene	97

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

Director, Dr. Blair Leftwich

1-29-98

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89564
FIELD CODE: SS-3 @ 5.5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	100	ND				
Chloromethane	100	ND				
Vinyl chloride	200	ND	107			107
Bromomethane	500	ND				
Chloroethane	100	ND				
Trichlorofluoromethane	100	ND				
1,1-Dichloroethene	100	ND	84	2	107	84
Methylene chloride	500	ND				
trans-1,2-Dichloroethene	100	ND				
1,1-Dichloroethane	100	ND				
cis-1,2-Dichloroethene	100	ND				
Chloroform	100	ND	101			101
2,2-Dichloropropane	100	ND				
Bromochloromethane	100	ND				
1,2-Dichloroethane	100	ND				
1,1,1-Trichloroethane	100	ND				
Carbon Tetrachloride	100	ND				
1,1-Dichloropropene	100	ND				
Benzene	100	ND		1	115	
1,2-Dichloropropane	100	ND	104			104
Trichloroethene	100	ND		0	113	
Dibromomethane	100	ND				
Bromodichloromethane	100	ND				
cis-1,3-Dichloropropene	100	ND				
trans-1,3-Dichloropropene	100	ND				
Toluene	100	ND	103	1	112	103
1,1,2-Trichloroethane	100	ND				
1,3-Dichloropropane	100	ND				

TA #: T89564

Field Code: SS-3 @ 5.5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	100	ND				
1,2-Dibromoethane	100	ND				
Tetrachloroethene	100	540				
Chlorobenzene	100	ND	104	1	114	104
1,1,1,2-Tertachloroethane	100	ND	106			106
Ethylbenzene	100	660				
m & p-Xylene	100	2,000				
Bromoform	100	ND				
Styrene	100	ND				
o-Xylene	100	ND				
1,1,2,2-Tetrachloroethane	100	ND				
1,2,3-Trichloropropane	100	ND				
Isopropylbenzene	100	ND				
Bromobenzene	100	ND				
2-Chlorotoluene	100	ND				
n-Propylbenzene	100	ND				
4-Chlorotoluene	100	ND				
1,3,5-Trimethylbenzene	100	ND				
tert-Butylbenzene	100	ND				
1,2,4-Trimethylbenzene	100	ND				
1,4-Dichlorobenzene	200	ND				
sec-Butylbenzene	100	ND				
1,3-Dichlorobenzene	200	ND				
4-Isopropyltoluene	100	ND				
1,2-Dichlorobenzene	200	ND				
n-Butylbenzene	100	ND				
1,2-Dibromo-3-chloropropane	500	ND				
1,2,3-Trichlorobenzene	500	ND				
Naphthalene	100	ND				
1,2,4-Trichlorobenzene	500	ND				
Hexachlorobutadiene	500	ND				

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/kg)

	RT	CONC.
(1) ethyl-cyclohexane	16.65	3,200
(2) 3,6-dimethyl-octane	18.52	4,200
(3) 1,3,5-trimethyl-benzene	20.10	3,900
(4) 4-methyl-decane	20.50	4,300
(5) 1,2,4-trimethyl-benzene	20.85	5,600
(6) 1-methyl-3-propyl-benzene	22.08	3,800

	% Recovery
Dibromofluoromethane	98
Toluene-d8	100
4-Bromofluorobenzene	103

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

BL

Director, Dr. Blair Leftwich

1-29-98

Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA#	FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89563	SS-3 2-3'	<0.50	<1.0	<10	<0.05	<10	<0.50	130	8.9	<2.0	17
ICV		4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV		4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT		0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD		1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy		85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy		98	104	102	100	98	100	98	102	100	100

TA#	FIELD CODE	Al (mg/kg)	Fe (mg/kg)	Co (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89563	SS-3 2-3'	5,800	5,900	<10	<10	93	<10
ICV		5.0	5.0	5.3	4.9	5.0	4.7
CCV		4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT		20	10	10	10	0.30	10
RPD		15	2	0	1	5	2
% Extraction Accuracy		104	120	97	95	91	93
% Instrument Accuracy		98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

BL

Director, Dr. Blair Leftwich

1-23-98

DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA#	FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89564	SS-3 5.5'	3.8	1.8	<10	<0.05	<10	<0.50	170	6.0	<2.0	14
ICV		4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV		4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT		0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD		1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy		85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy		98	104	102	100	98	100	98	102	100	100

		Al (mg/kg)	Fe (mg/kg)	Co (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89564	SS-3 5.5'	5,700	4,300	<10	<10	51	<10
ICV		5.0	5.0	5.3	4.9	5.0	4.7
CCV		4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT		20	10	10	10	0.30	10
RPD		15	2	0	1	5	2
% Extraction Accuracy		104	120	97	95	91	93
% Instrument Accuracy		98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

BL

Director, Dr. Blair Leftwich

1-23-98

DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

January 30, 1998

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

TA # T89563
Field Code: SS-3 @ 2-3'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	125	ND				
2-Picoline	125	ND				
Methyl methanesulfonate	125	ND				
Ethyl methanesulfonate	125	ND				
Phenol	125	ND	75	1	66	94
Aniline	625	ND				
bis(2-Chloroethyl)ether	625	ND				
2-Chlorophenol	625	ND		2	65	
1,3-Dichlorobenzene	125	ND				
1,4-Dichlorobenzene	125	ND	81	7	66	101
Benzyl alcohol	625	ND				
1,2-Dichlorobenzene	125	ND				
2-Methylphenol	125	ND				
bis(2-chloroisopropyl)ether	625	ND				
4-Methylphenol/3-Methylphenol	125	ND				
Acetophenone	625	ND				
n-Nitrosodi-n-propylamine	125	ND		0	68	
Hexachloroethane	125	ND				
Nitrobenzene	125	ND				
N-Nitrosopiperidine	625	ND				
Isophorone	625	ND				
2-Nitrophenol	625	ND		73		91
2,4-Dimethylphenol	625	ND				
bis(2-Chloroethoxy)methane	125	ND				
Benzoic acid	1,250	ND				
2,4-Dichlorophenol	625	ND	74			92
1,2,4-Trichlorobenzene	125	ND		3	76	
a,a-Dimethylphenethylamine	1,250	ND				
Naphthalene	125	ND				

TA# T89563
FIELD CODE: SS-3 @ 2-3'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	625	ND				
2,6-Dichlorophenol	625	ND				
Hexachlorobutadiene	125	ND	73			91
N-Nitroso-di-n-butylamine	625	ND				
4-Chloro-3-methylphenol	625	ND	74	0	79	92
2-Methylnaphthalene	125	ND				
1,2,4,5-Tetrachlorobenzene	125	ND				
Hexachlorocyclopentadiene	125	ND				
2,4,6-Trichlorophenol	625	ND	71			88
2,4,5-Trichlorophenol	625	ND				
2-Chloronaphthalene	125	ND				
1-Chloronaphthalene	125	ND				
2-Nitroaniline	625	ND				
Dimethylphthalate	125	ND				
Acenaphthylene	125	ND				
2,6-Dinitrotoluene	125	ND				
3-Nitroaniline	625	ND				
Acenaphthene	125	ND	73	1	89	91
2,4-Dinitrophenol	625	ND				
Dibenzofuran	625	ND				
Pentachlorobenzene	125	ND				
4-Nitrophenol	625	ND		6	43	
1-Napthylamine	625	ND				
2,4-Dinitrotoluene	125	ND		1	85	
2-Napthylamine	625	ND				
2,3,4,6-Tetrachlorophenol	625	ND				
Fluorene	125	ND				
Diethylphthalate	125	ND				
4-Chlorophenyl-phenylether	125	ND				
4-Nitroaniline	625	ND				
4,6-Dinitro-2-methylphenol	625	ND				
n-Nitrosodiphenylamine & Diphenylamine	125	ND	76			
Diphenylhydrazine	625	ND				

TA# T89563
FIELD CODE: SS-3 @ 2-3'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	125	ND				
Phenacetin	625	ND				
Hexachlorobenzene	125	ND				
4-Aminobiphenyl	625	ND				
Pentachlorophenol	625	ND	71	12	49	
Pentachloronitrobenzene	625	ND				
Pronamide	125	ND				
Phenanthrene	125	ND				
Anthracene	125	ND				
Di-n-butylphthalate	125	ND				
Fluoranthene	125	ND	72			
Benzidine	1,250	ND				
Pyrene	125	ND		3	118	
p-Dimethylaminoazobenzene	125	ND				
Butylbenzylphthalate	125	ND				
Benzo[a]anthracene	125	ND				
3,3-Dichlorobenzidine	625	ND				
Chrysene	125	ND				
bis(2-Ethylhexyl)phthalate	125	ND				
Di-n-octlphthalate	125	ND	69			
Benzo[b]fluoranthene	125	ND				
7,12-Dimethylbenz(a)anthracene	125	ND				
Benzo[k]fluoranthene	125	ND				
Benzo[a]pyrene	125	ND	77			
3-Methylcholanthrene	125	ND				
Dibenzo(a,j)acridine	125	ND				
Indeno[1,2,3-cd]pyrene	125	ND				
Dibenz[a,h]anthracene	125	ND				
Benzo[g,h,i]perylene	125	ND				

TA #T89563
Field Code: SS-3 @ 2-3'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	64
Phenol-d6 SURR	88
Nitrobenzene-d5 SURR	96
2-Fluorobiphenyl SURR	0**
2,4,6-Tribromophenol SURR	0**
Terphenyl-d14 SURR	0**

*NOTE: Elevated reporting limits due to sample matrix interference.
**NOTE: Surrogate recovery over standard range due to matrix effect.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

BJ

Director, Dr. Blair Leftwich

1-30-98

Date

TRACE ANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

January 30, 1998

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

TA # T89564
Field Code: SS-3 @ 5.5'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	125	ND				
2-Picoline	125	ND				
Methyl methanesulfonate	125	ND				
Ethyl methanesulfonate	125	ND				
Phenol	125	ND	75	1	66	94
Aniline	625	ND				
bis(2-Chloroethyl)ether	625	ND				
2-Chlorophenol	625	ND		2	65	
1,3-Dichlorobenzene	125	ND				
1,4-Dichlorobenzene	125	ND	81	7	66	101
Benzyl alcohol	625	ND				
1,2-Dichlorobenzene	125	ND				
2-Methylphenol	125	ND				
bis(2-chloroisopropyl)ether	625	ND				
4-Methylphenol/3-Methylphenol	125	ND				
Acetophenone	625	ND				
n-Nitrosodi-n-propylamine	125	ND		0	68	
Hexachloroethane	125	ND				
Nitrobenzene	125	ND				
N-Nitrosopiperidine	625	ND				
Isophorone	625	ND				
2-Nitrophenol	625	ND		73		91
2,4-Dimethylphenol	625	ND				
bis(2-Chloroethoxy)methane	125	ND				
Benzoic acid	1,250	ND				
2,4-Dichlorophenol	625	ND	74			92
1,2,4-Trichlorobenzene	125	ND		3	76	
a,a-Dimethylphenethylamine	1,250	ND				
Naphthalene	125	ND				

TA# T89564
FIELD CODE: SS-3 @ 5.5'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	625	ND				
2,6-Dichlorophenol	625	ND				
Hexachlorobutadiene	125	ND	73			91
N-Nitroso-di-n-butylamine	625	ND				
4-Chloro-3-methylphenol	625	ND	74	0	79	92
2-Methylnaphthalene	125	ND				
1,2,4,5-Tetrachlorobenzene	125	ND				
Hexachlorocyclopentadiene	125	ND				
2,4,6-Trichlorophenol	625	ND	71			88
2,4,5-Trichlorophenol	625	ND				
2-Chloronaphthalene	125	ND				
1-Chloronaphthalene	125	ND				
2-Nitroaniline	625	ND				
Dimethylphthalate	125	ND				
Acenaphthylene	125	ND				
2,6-Dinitrotoluene	125	ND				
3-Nitroaniline	625	ND				
Acenaphthene	125	ND	73	1	89	91
2,4-Dinitrophenol	625	ND				
Dibenzofuran	625	ND				
Pentachlorobenzene	125	ND				
4-Nitrophenol	625	ND		6	43	
1-Napthylamine	625	ND				
2,4-Dinitrotoluene	125	ND		1	85	
2-Napthylamine	625	ND				
2,3,4,6-Tetrachlorophenol	625	ND				
Fluorene	125	ND				
Diethylphthalate	125	ND				
4-Chlorophenyl-phenylether	125	ND				
4-Nitroaniline	625	ND				
4,6-Dinitro-2-methylphenol	625	ND				
n-Nitrosodiphenylamine & Diphenylamine	125	ND	76			
Diphenylhydrazine	625	ND				

TA# T89564
FIELD CODE: SS-3 @ 5.5'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	125	ND				
Phenacetin	625	ND				
Hexachlorobenzene	125	ND				
4-Aminobiphenyl	625	ND				
Pentachlorophenol	625	ND	71	12	49	
Pentachloronitrobenzene	625	ND				
Pronamide	125	ND				
Phenanthrene	125	ND				
Anthracene	125	ND				
Di-n-butylphthalate	125	ND				
Fluoranthene	125	ND	72			
Benzidine	1,250	ND				
Pyrene	125	ND		3	118	
p-Dimethylaminoazobenzene	125	ND				
Butylbenzylphthalate	125	ND				
Benzo[a]anthracene	125	ND				
3,3-Dichlorobenzidine	625	ND				
Chrysene	125	ND				
bis(2-Ethylhexyl)phthalate	125	ND				
Di-n-octlphthalate	125	ND	69			
Benzo[b]fluoranthene	125	ND				
7,12-Dimethylbenz(a)anthracene	125	ND				
Benzo[k]fluoranthene	125	ND				
Benzo[a]pyrene	125	ND	77			
3-Methylcholanthrene	125	ND				
Dibenzo(a,j)acridine	125	ND				
Indeno[1,2,3-cd]pyrene	125	ND				
Dibenz[a,h]anthracene	125	ND				
Benzo[g,h,i]perylene	125	ND				

TA #T89564
Field Code: SS-3 @ 5.5'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	37
Phenol-d6 SURR	42
Nitrobenzene-d5 SURR	51
2-Fluorobiphenyl SURR	65
2,4,6-Tribromophenol SURR	0**
Terphenyl-d14 SURR	93

*NOTE: Elevated reporting limits due to sample matrix interference.
**NOTE: Surrogate recovery over standard range due to matrix effect.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

1-30-98
Date

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E-Mail: lab@traceanalysis.com

ANALYTICAL REPORT

CLIENT Philip Environmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89563
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-3 2-3'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-26-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferences.
No surrogate recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<205.	ug/Kg	205.
4,4'-DDE	<210.	ug/Kg	210.
4,4'-DDT	<275.	ug/Kg	275.
Aldrin	<440.	ug/Kg	440.
alpha-BHC	<220.	ug/Kg	220.
beta-BHC	<335.	ug/Kg	335.
delta-BHC	<245.	ug/Kg	245.
Chlordane	<4780.	ug/Kg	4780.
Dieldrin	<115.	ug/Kg	115.
Endosulfan I	<245.	ug/Kg	245.
Endosulfan II	<260.	ug/Kg	260.
Endosulfan sulfate	<345.	ug/Kg	345.
Endrin	<150.	ug/Kg	150.
Endrin aldehyde	<470.	ug/Kg	470.
Heptachlor	<325.	ug/Kg	325.
Heptachlor Epoxide	<235.	ug/Kg	235.
Lindane	<210.	ug/Kg	210.
Methoxychlor	<2140.	ug/Kg	2140.
Toxaphene	<3765.	ug/Kg	3765.

(1) Copy to Client

MANAGING DIRECTOR

TRACE ANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL REPORT

CLIENT Philip Envirnmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89564
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-3 5.5'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-26-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferences.
No surrogate recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<140.	ug/Kg	140.
4,4'-DDE	<140.	ug/Kg	140.
4,4'-DDT	<185.	ug/Kg	185.
Aldrin	<300.	ug/Kg	300.
alpha-BHC	<150.	ug/Kg	150.
beta-BHC	<225.	ug/Kg	225.
delta-BHC	<165.	ug/Kg	165.
Chlordane	<3180.	ug/Kg	3180.
Dieldrin	<80.	ug/Kg	80.
Endosulfan I	<165.	ug/Kg	165.
Endosulfan II	<175.	ug/Kg	175.
Endosulfan sulfate	<230.	ug/Kg	230.
Endrin	<100.	ug/Kg	100.
Endrin aldehyde	<315.	ug/Kg	315.
Heptachlor	<220.	ug/Kg	220.
Heptachlor Epoxide	<160.	ug/Kg	160.
Lindane	<140.	ug/Kg	140.
Methoxychlor	<1430.	ug/Kg	1430.
Toxaphene	<2510.	ug/Kg	2510.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89565
FIELD CODE: SS-4 @ 1'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND				
Vinyl chloride	50	ND	107			107
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	84	2	107	84
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND				
cis-1,2-Dichloroethene	25	ND				
Chloroform	25	ND	101			101
2,2-Dichloropropane	25	ND				
Bromochloromethane	25	ND				
1,2-Dichloroethane	25	ND				
1,1,1-Trichloroethane	25	ND				
Carbon Tetrachloride	25	ND				
1,1-Dichloropropene	25	ND				
Benzene	25	ND		1	115	
1,2-Dichloropropane	25	ND	104			104
Trichloroethene	25	ND		0	113	
Dibromomethane	25	ND				
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	103	1	112	103
1,1,2-Trichloroethane	25	ND				
1,3-Dichloropropane	25	ND				

PHILIP ENVIRONMENTAL
Shell Hobbs

TA #: T89565

Field Code: SS-4 @ 1'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	25	ND				
1,2-Dibromoethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	104	1	114	104
1,1,1,2-Tertachloroethane	25	ND	106			106
Ethylbenzene	25	ND				
m & p-Xylene	25	ND				
Bromoform	25	ND				
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND				
1,2,3-Trichloropropane	25	ND				
Isopropylbenzene	25	ND				
Bromobenzene	25	ND				
2-Chlorotoluene	25	ND				
n-Propylbenzene	25	ND				
4-Chlorotoluene	25	ND				
1,3,5-Trimethylbenzene	25	ND				
tert-Butylbenzene	25	ND				
1,2,4-Trimethylbenzene	25	ND				
1,4-Dichlorobenzene	50	ND				
sec-Butylbenzene	25	ND				
1,3-Dichlorobenzene	50	ND				
4-Isopropyltoluene	25	ND				
1,2-Dichlorobenzene	50	ND				
n-Butylbenzene	25	ND				
1,2-Dibromo-3-chloropropane	125	ND				
1,2,3-Trichlorobenzene	125	ND				
Naphthalene	25	ND				
1,2,4-Trichlorobenzene	125	ND				
Hexachlorobutadiene	125	ND				

	% Recovery
Dibromofluoromethane	99
Toluene-d8	96
4-Bromofluorobenzene	97

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

BZ

Director, Dr. Blair Leftwich

1-29-98

Date

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89566
FIELD CODE: SS-4 @ 5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND				
Vinyl chloride	50	ND	107			107
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	84	2	107	84
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND				
cis-1,2-Dichloroethene	25	ND				
Chloroform	25	ND	101			101
2,2-Dichloropropane	25	ND				
Bromochloromethane	25	ND				
1,2-Dichloroethane	25	ND				
1,1,1-Trichloroethane	25	ND				
Carbon Tetrachloride	25	ND				
1,1-Dichloropropene	25	ND				
Benzene	25	ND		1	115	
1,2-Dichloropropane	25	ND	104			104
Trichloroethene	25	ND		0	113	
Dibromomethane	25	ND				
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	103	1	112	103
1,1,2-Trichloroethane	25	ND				
1,3-Dichloropropane	25	ND				

TA #: T89566

Field Code: SS-4 @ 5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	25	ND				
1,2-Dibromoethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	104	1	114	104
1,1,1,2-Tertachloroethane	25	ND	106			106
Ethylbenzene	25	ND				
m & p-Xylene	25	ND				
Bromoform	25	ND				
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND				
1,2,3-Trichloropropane	25	ND				
Isopropylbenzene	25	ND				
Bromobenzene	25	ND				
2-Chlorotoluene	25	ND				
n-Propylbenzene	25	ND				
4-Chlorotoluene	25	ND				
1,3,5-Trimethylbenzene	25	ND				
tert-Butylbenzene	25	ND				
1,2,4-Trimethylbenzene	25	ND				
1,4-Dichlorobenzene	50	ND				
sec-Butylbenzene	25	ND				
1,3-Dichlorobenzene	50	ND				
4-Isopropyltoluene	25	ND				
1,2-Dichlorobenzene	50	ND				
n-Butylbenzene	25	ND				
1,2-Dibromo-3-chloropropane	125	ND				
1,2,3-Trichlorobenzene	125	ND				
Naphthalene	25	ND				
1,2,4-Trichlorobenzene	125	ND				
Hexachlorobutadiene	125	ND				

	% Recovery
Dibromofluoromethane	98
Toluene-d8	98
4-Bromofluorobenzene	96

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

Director, Dr. Blair Leftwich

1-29-98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA#	FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89565	SS-4 1'	<0.50	<1.0	<10	0.06	<10	<0.50	95	9.0	<2.0	22
ICV		4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV		4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT		0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD		1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy		85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy		98	104	102	100	98	100	98	102	100	100

		Al (mg/kg)	Fe (mg/kg)	Co (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89565	SS-4 1'	9,200	7,600	<10	<10	120	<10
ICV		5.0	5.0	5.3	4.9	5.0	4.7
CCV		4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT		20	10	10	10	0.30	10
RPD		15	2	0	1	5	2
% Extraction Accuracy		104	120	97	95	91	93
% Instrument Accuracy		98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

BL

Director, Dr. Blair Leftwich

1-23-98

DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA#	FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89566	SS-4 5'	<0.50	<1.0	<10	0.21	<10	<0.50	310	7.7	<2.0	15
ICV		4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV		4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT		0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD		1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy		85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy		98	104	102	100	98	100	98	102	100	100

		Al (mg/kg)	Fe (mg/kg)	Co (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89566	SS-4 5'	7,500	5,500	<10	<10	60	<10
ICV		5.0	5.0	5.3	4.9	5.0	4.7
CCV		4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT		20	10	10	10	0.30	10
RPD		15	2	0	1	5	2
% Extraction Accuracy		104	120	97	95	91	93
% Instrument Accuracy		98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

Director, Dr. Blair Leftwich

1-23-98
DATE

TRACEANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

January 30, 1998

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

TA # T89565
Field Code: SS-4 @ 1'

EPA 8270	Reporting Limit	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	25	ND				
2-Picoline	25	ND				
Methyl methanesulfonate	25	ND				
Ethyl methanesulfonate	25	ND				
Phenol	25	ND	75	1	66	94
Aniline	125	ND				
bis(2-Chloroethyl)ether	125	ND				
2-Chlorophenol	125	ND		2	65	
1,3-Dichlorobenzene	25	ND				
1,4-Dichlorobenzene	25	ND	81	7	66	101
Benzyl alcohol	125	ND				
1,2-Dichlorobenzene	25	ND				
2-Methylphenol	25	ND				
bis(2-chloroisopropyl)ether	125	ND				
4-Methylphenol/3-Methylphenol	25	ND				
Acetophenone	125	ND				
n-Nitrosodi-n-propylamine	25	ND		0	68	
Hexachloroethane	25	ND				
Nitrobenzene	25	ND				
N-Nitrosopiperidine	125	ND				
Isophorone	125	ND				
2-Nitrophenol	125	ND		73		91
2,4-Dimethylphenol	125	ND				
bis(2-Chloroethoxy)methane	25	ND				
Benzoic acid	250	ND				
2,4-Dichlorophenol	125	ND	74			92
1,2,4-Trichlorobenzene	25	ND		3	76	
a,a-Dimethylphenethylamine	250	ND				
Naphthalene	25	ND				

TA# T89565
FIELD CODE: SS-4 @ 1'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	125	ND				
2,6-Dichlorophenol	125	ND				
Hexachlorobutadiene	25	ND	73			91
N-Nitroso-di-n-butylamine	125	ND				
4-Chloro-3-methylphenol	125	ND	74	0	79	92
2-Methylnaphthalene	25	ND				
1,2,4,5-Tetrachlorobenzene	25	ND				
Hexachlorocyclopentadiene	25	ND				
2,4,6-Trichlorophenol	125	ND	71			88
2,4,5-Trichlorophenol	125	ND				
2-Chloronaphthalene	25	ND				
1-Chloronaphthalene	25	ND				
2-Nitroaniline	125	ND				
Dimethylphthalate	25	ND				
Acenaphthylene	25	ND				
2,6-Dinitrotoluene	25	ND				
3-Nitroaniline	125	ND				
Acenaphthene	25	ND	73	1	89	91
2,4-Dinitrophenol	125	ND				
Dibenzofuran	125	ND				
Pentachlorobenzene	25	ND				
4-Nitrophenol	125	ND		6	43	
1-Napthylamine	125	ND				
2,4-Dinitrotoluene	25	ND		1	85	
2-Napthylamine	125	ND				
2,3,4,6-Tetrachlorophenol	125	ND				
Fluorene	25	ND				
Diethylphthalate	25	ND				
4-Chlorophenyl-phenylether	25	ND				
4-Nitroaniline	125	ND				
4,6-Dinitro-2-methylphenol	125	ND				
n-Nitrosodiphenylamine & Diphenylamine	25	ND	76			
Diphenylhydrazine	125	ND				

TA# T89565
FIELD CODE: SS-4 @ 1'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	25	ND				
Phenacetin	125	ND				
Hexachlorobenzene	25	ND				
4-Aminobiphenyl	125	ND				
Pentachlorophenol	125	ND	71	12	49	
Pentachloronitrobenzene	125	ND				
Pronamide	25	ND				
Phenanthrene	25	ND				
Anthracene	25	ND				
Di-n-butylphthalate	25	ND				
Fluoranthene	25	ND	72			
Benzidine	250	ND				
Pyrene	25	ND		3	118	
p-Dimethylaminoazobenzene	25	ND				
Butylbenzylphthalate	25	ND				
Benzo[a]anthracene	25	ND				
3,3-Dichlorobenzidine	125	ND				
Chrysene	25	ND				
bis(2-Ethylhexyl)phthalate	25	ND				
Di-n-octlphthalate	25	ND	69			
Benzo[b]fluoranthene	25	ND				
7,12-Dimethylbenz(a)anthracene	25	ND				
Benzo[k]fluoranthene	25	ND				
Benzo[a]pyrene	25	ND	77			
3-Methylcholanthrene	25	ND				
Dibenzo(a,j)acridine	25	ND				
Indeno[1,2,3-cd]pyrene	25	ND				
Dibenz[a,h]anthracene	25	ND				
Benzo[g,h,i]perylene	25	ND				

TA #T89565
Field Code: SS-4 @ 1'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	50
Phenol-d6 SURR	69
Nitrobenzene-d5 SURR	61
2-Fluorobiphenyl SURR	72
2,4,6-Tribromophenol SURR	43
Terphenyl-d14 SURR	117

*NOTE: Elevated reporting limits due to sample matrix interference.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

1-30-98
Date

TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

January 30, 1998

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

TA # T89566
Field Code: SS-4 @ 5'

EPA 8270	Reporting Limit	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	25	ND				
2-Picoline	25	ND				
Methyl methanesulfonate	25	ND				
Ethyl methanesulfonate	25	ND				
Phenol	25	ND	75	1	66	94
Aniline	125	ND				
bis(2-Chloroethyl)ether	125	ND				
2-Chlorophenol	125	ND		2	65	
1,3-Dichlorobenzene	25	ND				
1,4-Dichlorobenzene	25	ND	81	7	66	101
Benzyl alcohol	125	ND				
1,2-Dichlorobenzene	25	ND				
2-Methylphenol	25	ND				
bis(2-chloroisopropyl)ether	125	ND				
4-Methylphenol/3-Methylphenol	25	ND				
Acetophenone	125	ND				
n-Nitrosodi-n-propylamine	25	ND		0	68	
Hexachloroethane	25	ND				
Nitrobenzene	25	ND				
N-Nitrosopiperidine	125	ND				
Isophorone	125	ND				
2-Nitrophenol	125	ND		73		91
2,4-Dimethylphenol	125	ND				
bis(2-Chloroethoxy)methane	25	ND				
Benzoic acid	250	ND				
2,4-Dichlorophenol	125	ND	74			92
1,2,4-Trichlorobenzene	25	ND		3	76	
a,a-Dimethylphenethylamine	250	ND				
Naphthalene	25	ND				

TA# T89566
FIELD CODE: SS-4 @ 5'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	125	ND				
2,6-Dichlorophenol	125	ND				
Hexachlorobutadiene	25	ND	73			91
N-Nitroso-di-n-butylamine	125	ND				
4-Chloro-3-methylphenol	125	ND	74	0	79	92
2-Methylnaphthalene	25	ND				
1,2,4,5-Tetrachlorobenzene	25	ND				
Hexachlorocyclopentadiene	25	ND				
2,4,6-Trichlorophenol	125	ND	71			88
2,4,5-Trichlorophenol	125	ND				
2-Chloronaphthalene	25	ND				
1-Chloronaphthalene	25	ND				
2-Nitroaniline	125	ND				
Dimethylphthalate	25	ND				
Acenaphthylene	25	ND				
2,6-Dinitrotoluene	25	ND				
3-Nitroaniline	125	ND				
Acenaphthene	25	ND	73	1	89	91
2,4-Dinitrophenol	125	ND				
Dibenzofuran	125	ND				
Pentachlorobenzene	25	ND				
4-Nitrophenol	125	ND		6	43	
1-Napthylamine	125	ND				
2,4-Dinitrotoluene	25	ND		1	85	
2-Napthylamine	125	ND				
2,3,4,6-Tetrachlorophenol	125	ND				
Fluorene	25	ND				
Diethylphthalate	25	ND				
4-Chlorophenyl-phenylether	25	ND				
4-Nitroaniline	125	ND				
4,6-Dinitro-2-methylphenol	125	ND				
n-Nitrosodiphenylamine & Diphenylamine	25	ND	76			
Diphenylhydrazine	125	ND				

TA# T89566
FIELD CODE: SS-4 @ 5'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	25	ND				
Phenacetin	125	ND				
Hexachlorobenzene	25	ND				
4-Aminobiphenyl	125	ND				
Pentachlorophenol	125	ND	71	12	49	
Pentachloronitrobenzene	125	ND				
Pronamide	25	ND				
Phenanthrene	25	ND				
Anthracene	25	ND				
Di-n-butylphthalate	25	ND				
Fluoranthene	25	ND	72			
Benzidine	250	ND				
Pyrene	25	ND		3	118	
p-Dimethylaminoazobenzene	25	ND				
Butylbenzylphthalate	25	ND				
Benzo[a]anthracene	25	ND				
3,3-Dichlorobenzidine	125	ND				
Chrysene	25	ND				
bis(2-Ethylhexyl)phthalate	25	ND				
Di-n-octlphthalate	25	ND	69			
Benzo[b]fluoranthene	25	ND				
7,12-Dimethylbenz(a)anthracene	25	ND				
Benzo[k]fluoranthene	25	ND				
Benzo[a]pyrene	25	ND	77			
3-Methylcholanthrene	25	ND				
Dibenzo(a,j)acridine	25	ND				
Indeno[1,2,3-cd]pyrene	25	ND				
Dibenz[a,h]anthracene	25	ND				
Benzo[g,h,i]perylene	25	ND				

TA #T89566
Field Code: SS-4 @ 5'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	46
Phenol-d6 SURR	63
Nitrobenzene-d5 SURR	55
2-Fluorobiphenyl SURR	65
2,4,6-Tribromophenol SURR	37
Terphenyl-d14 SURR	135

*NOTE: Elevated reporting limits due to sample matrix interference.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

1-30-98
Date

TRACE ANALYSIS, INC.

ANALYTICAL REPORT

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

CLIENT Philip Envirnmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89565
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-4 1'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-26-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferences.
No surrogate recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<205.	ug/Kg	205.
4,4'-DDE	<210.	ug/Kg	210.
4,4'-DDT	<275.	ug/Kg	275.
Aldrin	<440.	ug/Kg	440.
alpha-BHC	<220.	ug/Kg	220.
beta-BHC	<335.	ug/Kg	335.
delta-BHC	<245.	ug/Kg	245.
Chlordane	<4780.	ug/Kg	4780.
Dieldrin	<115.	ug/Kg	115.
Endosulfan I	<245.	ug/Kg	245.
Endosulfan II	<260.	ug/Kg	260.
Endosulfan sulfate	<345.	ug/Kg	345.
Endrin	<150.	ug/Kg	150.
Endrin aldehyde	<470.	ug/Kg	470.
Heptachlor	<325.	ug/Kg	325.
Heptachlor Epoxide	<235.	ug/Kg	235.
Lindane	<210.	ug/Kg	210.
Methoxychlor	<2140.	ug/Kg	2140.
Toxaphene	<3765.	ug/Kg	3765.

(1) Copy to Client

MANAGING DIRECTOR

TRACE ANALYSIS, INC.

ANALYTICAL REPORT

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
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CLIENT Philip Envirnmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89566
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-4 5'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-26-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferences.
No surrogate or spike recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<205.	ug/Kg	205.
4,4'-DDE	<210.	ug/Kg	210.
4,4'-DDT	<275.	ug/Kg	275.
Aldrin	<440.	ug/Kg	440.
alpha-BHC	<220.	ug/Kg	220.
beta-BHC	<335.	ug/Kg	335.
delta-BHC	<245.	ug/Kg	245.
Chlordane	<4780.	ug/Kg	4780.
Dieldrin	<115.	ug/Kg	115.
Endosulfan I	<245.	ug/Kg	245.
Endosulfan II	<260.	ug/Kg	260.
Endosulfan sulfate	<345.	ug/Kg	345.
Endrin	<150.	ug/Kg	150.
Endrin aldehyde	<470.	ug/Kg	470.
Heptachlor	<325.	ug/Kg	325.
Heptachlor Epoxide	<235.	ug/Kg	235.
Lindane	<210.	ug/Kg	210.
Methoxychlor	<2140.	ug/Kg	2140.
Toxaphene	<11400.	ug/Kg	11400.

(1) Copy to Client

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ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89567
FIELD CODE: SS-5 @ 2'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND				
Vinyl chloride	100	ND	107			107
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	84	2	107	84
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND				
cis-1,2-Dichloroethene	50	ND				
Chloroform	50	ND	101			101
2,2-Dichloropropane	50	ND				
Bromochloromethane	50	ND				
1,2-Dichloroethane	50	ND				
1,1,1-Trichloroethane	50	ND				
Carbon Tetrachloride	50	ND				
1,1-Dichloropropene	50	ND				
Benzene	50	ND		1	115	
1,2-Dichloropropane	50	ND	104			104
Trichloroethene	50	ND		0	113	
Dibromomethane	50	ND				
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	103	1	112	103
1,1,2-Trichloroethane	50	ND				
1,3-Dichloropropane	50	ND				

TA #: T89567

Field Code: SS-5 @ 2'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	50	ND				
1,2-Dibromoethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	104	1	114	104
1,1,1,2-Tertachloroethane	50	ND	106			106
Ethylbenzene	50	100				
m & p-Xylene	50	130				
Bromoform	50	ND				
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND				
1,2,3-Trichloropropane	50	ND				
Isopropylbenzene	50	ND				
Bromobenzene	50	ND				
2-Chlorotoluene	50	ND				
n-Propylbenzene	50	ND				
4-Chlorotoluene	50	ND				
1,3,5-Trimethylbenzene	50	ND				
tert-Butylbenzene	50	ND				
1,2,4-Trimethylbenzene	50	ND				
1,4-Dichlorobenzene	100	ND				
sec-Butylbenzene	50	ND				
1,3-Dichlorobenzene	100	ND				
4-Isopropyltoluene	50	ND				
1,2-Dichlorobenzene	100	ND				
n-Butylbenzene	50	ND				
1,2-Dibromo-3-chloropropane	250	ND				
1,2,3-Trichlorobenzene	250	ND				
Naphthalene	50	ND				
1,2,4-Trichlorobenzene	250	ND				
Hexachlorobutadiene	250	ND				

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/kg)

	RT	CONC.
(1) 1,3,5-trimethyl-cyclohexane	16.72	2,400
(2) cis-1-ethyl-4-methyl-cyclohexane	18.46	2,200
(3) 1,2,3-trimethyl Benzene	20.85	2,000
(4) 1-methyl-3-propyl-benzene	22.06	2,300
(5) 1-ethyl-2,3-dimethyl benzene	22.19	3,000
(6) trans-decahydro-napthalene	22.54	3,600
(7) 1-ethyl-2,4-dimethyl-benzene	25.35	2,800

	% Recovery
Dibromofluoromethane	97
Toluene-d8	98
4-Bromofluorobenzene	112

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

Director, Dr. Blair Leftwich

1-29-98
Date

TRACE ANALYSIS, INC.

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ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89568
FIELD CODE: SS-5 @ 5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	500	ND				
Chloromethane	500	ND				
Vinyl chloride	100	ND	107			107
Bromomethane	2,500	ND				
Chloroethane	500	ND				
Trichlorofluoromethane	500	ND				
1,1-Dichloroethene	500	ND	84	2	107	84
Methylene chloride	2,500	ND				
trans-1,2-Dichloroethene	500	ND				
1,1-Dichloroethane	500	ND				
cis-1,2-Dichloroethene	500	ND				
Chloroform	500	ND	101			101
2,2-Dichloropropane	500	ND				
Bromochloromethane	500	ND				
1,2-Dichloroethane	500	ND				
1,1,1-Trichloroethane	500	ND				
Carbon Tetrachloride	500	ND				
1,1-Dichloropropene	500	ND				
Benzene	500	ND		1	115	
1,2-Dichloropropane	500	ND	104			104
Trichloroethene	500	ND		0	113	
Dibromomethane	500	ND				
Bromodichloromethane	500	ND				
cis-1,3-Dichloropropene	500	ND				
trans-1,3-Dichloropropene	500	ND				
Toluene	500	ND	103	1	112	103
1,1,2-Trichloroethane	500	ND				
1,3-Dichloropropane	500	ND				

TA #: T89568
Field Code: SS-5 @ 5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	500	ND				
1,2-Dibromoethane	500	ND				
Tetrachloroethene	500	ND				
Chlorobenzene	500	ND	104	1	114	104
1,1,1,2-Tertachloroethane	500	ND	106			106
Ethylbenzene	500	9,200				
m & p-Xylene	500	39,000				
Bromoform	500	ND				
Styrene	500	ND				
o-Xylene	500	ND				
1,1,2,2-Tetrachloroethane	500	ND				
1,2,3-Trichloropropane	500	ND				
Isopropylbenzene	500	ND				
Bromobenzene	500	ND				
2-Chlorotoluene	500	ND				
n-Propylbenzene	500	ND				
4-Chlorotoluene	500	ND				
1,3,5-Trimethylbenzene	500	ND				
tert-Butylbenzene	500	ND				
1,2,4-Trimethylbenzene	500	ND				
1,4-Dichlorobenzene	1,000	ND				
sec-Butylbenzene	500	ND				
1,3-Dichlorobenzene	1,000	ND				
4-Isopropyltoluene	500	ND				
1,2-Dichlorobenzene	1,000	ND				
n-Butylbenzene	500	ND				
1,2-Dibromo-3-chloropropane	2,500	ND				
1,2,3-Trichlorobenzene	2,500	ND				
Naphthalene	500	ND				
1,2,4-Trichlorobenzene	2,500	ND				
Hexachlorobutadiene	2,500	ND				

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/kg)

	RT	CONC.
(1) Ethyl-cyclohexane	16.64	30,000
(2) 3,6-dimethyl-octane	18.53	25,000
(3) (1-methylethyl)-benzene	19.11	37,000
(4) 1,2,4-trimethyl-benzene	20.11	22,000
(5) 4-methyl-Decane	20.51	21,000
(6) 1,2,4-trimethyl-benzene	20.85	41,000

	% Recovery
Dibromofluoromethane	95
Toluene-d8	101
4-Bromofluorobenzene	99

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

Director, Dr. Blair Leftwich

1-29-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 29, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase 1001.77
Project Location: Hobbs

Prep Date: 01/22/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA #: T89568
FIELD CODE: SS-5 @ 5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	500	ND				
Chloromethane	500	ND				
Vinyl chloride	100	ND	107			107
Bromomethane	2,500	ND				
Chloroethane	500	ND				
Trichlorofluoromethane	500	ND				
1,1-Dichloroethene	500	ND	84	2	107	84
Methylene chloride	2,500	ND				
trans-1,2-Dichloroethene	500	ND				
1,1-Dichloroethane	500	ND				
cis-1,2-Dichloroethene	500	ND				
Chloroform	500	ND	101			101
2,2-Dichloropropane	500	ND				
Bromochloromethane	500	ND				
1,2-Dichloroethane	500	ND				
1,1,1-Trichloroethane	500	ND				
Carbon Tetrachloride	500	ND				
1,1-Dichloropropene	500	ND				
Benzene	500	ND		1	115	
1,2-Dichloropropane	500	ND	104			104
Trichloroethene	500	ND		0	113	
Dibromomethane	500	ND				
Bromodichloromethane	500	ND				
cis-1,3-Dichloropropene	500	ND				
trans-1,3-Dichloropropene	500	ND				
Toluene	500	ND	103	1	112	103
1,1,2-Trichloroethane	500	ND				
1,3-Dichloropropane	500	ND				

TA #: T89568

Field Code: SS-5 @ 5'

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	500	ND				
1,2-Dibromoethane	500	ND				
Tetrachloroethene	500	ND				
Chlorobenzene	500	ND	104	1	114	104
1,1,1,2-Tertachloroethane	500	ND	106			106
Ethylbenzene	500	9,200				
m & p-Xylene	500	39,000				
Bromoform	500	ND				
Styrene	500	ND				
o-Xylene	500	ND				
1,1,2,2-Tetrachloroethane	500	ND				
1,2,3-Trichloropropane	500	ND				
Isopropylbenzene	500	ND				
Bromobenzene	500	ND				
2-Chlorotoluene	500	ND				
n-Propylbenzene	500	ND				
4-Chlorotoluene	500	ND				
1,3,5-Trimethylbenzene	500	ND				
tert-Butylbenzene	500	ND				
1,2,4-Trimethylbenzene	500	ND				
1,4-Dichlorobenzene	1,000	ND				
sec-Butylbenzene	500	ND				
1,3-Dichlorobenzene	1,000	ND				
4-Isopropyltoluene	500	ND				
1,2-Dichlorobenzene	1,000	ND				
n-Butylbenzene	500	ND				
1,2-Dibromo-3-chloropropane	2,500	ND				
1,2,3-Trichlorobenzene	2,500	ND				
Naphthalene	500	ND				
1,2,4-Trichlorobenzene	2,500	ND				
Hexachlorobutadiene	2,500	ND				

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/kg)

	RT	CONC.
(1) Ethyl-cyclohexane	16.64	30,000
(2) 3,6-dimethyl-octane	18.53	25,000
(3) (1-methylethyl)-benzene	19.11	37,000
(4) 1,2,4-trimethyl-benzene	20.11	22,000
(5) 4-methyl-Decane	20.51	21,000
(6) 1,2,4-trimethyl-benzene	20.85	41,000

	% Recovery
Dibromofluoromethane	95
Toluene-d8	101
4-Bromofluorobenzene	99

ND = Not Detected
Methods: EPA SW 846-5030, 8260.
CHEMIST: AG/MB

Director, Dr. Blair Leftwich

1-29-98

Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA#	FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89567	SS-5 2'	<0.50	<1.0	<10	0.06	<10	<0.50	73	7.1	<2.0	17
ICV		4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV		4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT		0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD		1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy		85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy		98	104	102	100	98	100	98	102	100	100

TA#	FIELD CODE	Al (mg/kg)	Fe (mg/kg)	Co (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89567	SS-5 2'	7,800	5,800	<10	<10	81	<10
ICV		5.0	5.0	5.3	4.9	5.0	4.7
CCV		4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT		20	10	10	10	0.30	10
RPD		15	2	0	1	5	2
% Extraction Accuracy		104	120	97	95	91	93
% Instrument Accuracy		98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

Director, Dr. Blair Leftwich

1-23-98
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

January 23, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

Prep Date: 01/22/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs

TOTAL METALS

TA# FIELD CODE	As (mg/kg)	Se (mg/kg)	Cr (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Ag (mg/kg)	Ba (mg/kg)	Ni (mg/kg)	Mo (mg/kg)	Zn (mg/kg)
T89568 SS-5 5'	<0.50	<1.0	<10	<0.05	<10	<0.50	73	6.1	<2.0	6.9
ICV	4.9	5.5	5.1	4.9	5.1	1.0	4.8	5.2	5.2	4.9
CCV	4.8	4.8	5.0	5.0	4.7	1.0	5.0	5.0	4.8	5.0
REPORTING LIMIT	0.50	1.0	10	0.05	10	0.50	0.50	0.50	2.0	0.30
RPD	1	2	1	0	1	7	9	1	1	0
% Extraction Accuracy	85	82	93	88	86	97	92	87	94	84
% Instrument Accuracy	98	104	102	100	98	100	98	102	100	100

	Al (mg/kg)	Fe (mg/kg)	Cp (mg/kg)	B (mg/kg)	Mn (mg/kg)	Cu (mg/kg)
T89568 SS-5 5'	4,200	2,800	<10	<10	19	<10
ICV	5.0	5.0	5.3	4.9	5.0	4.7
CCV	4.8	4.8	5.0	5.0	5.1	5.0
REPORTING LIMIT	20	10	10	10	0.30	10
RPD	15	2	0	1	5	2
% Extraction Accuracy	104	120	97	95	91	93
% Instrument Accuracy	98	98	104	100	102	98

METHODS: EPA 200.7, 245.1.
CHEMIST: RR
TOTAL METALS SPIKE: 200 mg/kg for all metals
TOTAL METALS CV: 5.0 mg/L all metals except Ag; 1.0 mg/L Ag.

Director, Dr. Blair Leftwich

1-23-98
DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

January 30, 1998

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

TA # T89567
Field Code: SS-5 @ 2'

EPA 8270	Reporting Limit	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	25	ND				
2-Picoline	25	ND				
Methyl methanesulfonate	25	ND				
Ethyl methanesulfonate	25	ND				
Phenol	25	ND	75	1	66	94
Aniline	125	ND				
bis(2-Chloroethyl)ether	125	ND				
2-Chlorophenol	125	ND		2	65	
1,3-Dichlorobenzene	25	ND				
1,4-Dichlorobenzene	25	ND	81	7	66	101
Benzyl alcohol	125	ND				
1,2-Dichlorobenzene	25	ND				
2-Methylphenol	25	ND				
bis(2-chloroisopropyl)ether	125	ND				
4-Methylphenol/3-Methylphenol	25	ND				
Acetophenone	125	ND				
n-Nitrosodi-n-propylamine	25	ND		0	68	
Hexachloroethane	25	ND				
Nitrobenzene	25	ND				
N-Nitrosopiperidine	125	ND				
Isophorone	125	ND				
2-Nitrophenol	125	ND		73		91
2,4-Dimethylphenol	125	ND				
bis(2-Chloroethoxy)methane	25	ND				
Benzoic acid	250	ND				
2,4-Dichlorophenol	125	ND	74			92
1,2,4-Trichlorobenzene	25	ND		3	76	
a,a-Dimethylphenethylamine	250	ND				
Naphthalene	25	ND				

TA# T89567
FIELD CODE: SS-5 @ 2'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	125	ND				
2,6-Dichlorophenol	125	ND				
Hexachlorobutadiene	25	ND	73			91
N-Nitroso-di-n-butylamine	125	ND				
4-Chloro-3-methylphenol	125	ND	74	0	79	92
2-Methylnaphthalene	25	ND				
1,2,4,5-Tetrachlorobenzene	25	ND				
Hexachlorocyclopentadiene	25	ND				
2,4,6-Trichlorophenol	125	ND	71			88
2,4,5-Trichlorophenol	125	ND				
2-Chloronaphthalene	25	ND				
1-Chloronaphthalene	25	ND				
2-Nitroaniline	125	ND				
Dimethylphthalate	25	ND				
Acenaphthylene	25	ND				
2,6-Dinitrotoluene	25	ND				
3-Nitroaniline	125	ND				
Acenaphthene	25	ND	73	1	89	91
2,4-Dinitrophenol	125	ND				
Dibenzofuran	125	ND				
Pentachlorobenzene	25	ND				
4-Nitrophenol	125	ND		6	43	
1-Napthylamine	125	ND				
2,4-Dinitrotoluene	25	ND		1	85	
2-Napthylamine	125	ND				
2,3,4,6-Tetrachlorophenol	125	ND				
Fluorene	25	ND				
Diethylphthalate	25	ND				
4-Chlorophenyl-phenylether	25	ND				
4-Nitroaniline	125	ND				
4,6-Dinitro-2-methylphenol	125	ND				
n-Nitrosodiphenylamine & Diphenylamine	25	ND	76			
Diphenylhydrazine	125	ND				

TA# T89567
FIELD CODE: SS-5 @ 2'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	25	ND				
Phenacetin	125	ND				
Hexachlorobenzene	25	ND				
4-Aminobiphenyl	125	ND				
Pentachlorophenol	125	ND	71	12	49	
Pentachloronitrobenzene	125	ND				
Pronamide	25	ND				
Phenanthrene	25	ND				
Anthracene	25	ND				
Di-n-butylphthalate	25	ND				
Fluoranthene	25	ND	72			
Benzidine	250	ND				
Pyrene	25	ND		3	118	
p-Dimethylaminoazobenzene	25	ND				
Butylbenzylphthalate	25	ND				
Benzo[a]anthracene	25	ND				
3,3-Dichlorobenzidine	125	ND				
Chrysene	25	ND				
bis(2-Ethylhexyl)phthalate	25	ND				
Di-n-octlphthalate	25	ND	69			
Benzo[b]fluoranthene	25	ND				
7,12-Dimethylbenz(a)anthracene	25	ND				
Benzo[k]fluoranthene	25	ND				
Benzo[a]pyrene	25	ND	77			
3-Methylcholanthrene	25	ND				
Dibenzo(a,j)acridine	25	ND				
Indeno[1,2,3-cd]pyrene	25	ND				
Dibenz[a,h]anthracene	25	ND				
Benzo[g,h,i]perylene	25	ND				

TA #T89567
Field Code: SS-5 @ 2'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	44
Phenol-d6 SURR	64
Nitrobenzene-d5 SURR	66
2-Fluorobiphenyl SURR	72
2,4,6-Tribromophenol SURR	49
Terphenyl-d14 SURR	119

*NOTE: Elevated reporting limits due to sample matrix interference.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

1-30-98
Date

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E-Mail: lab@traceanalysis.com

January 30, 1998

Receiving Date: 01/21/98
Sample Type: Soil
Sampling Date: 01/20/98
Sample Condition: I & C
Sample Received by: VW
Project Name: Shell Hobbs
Project No: 18906 Phase 1001.77
Project Location: Hobbs
Extraction Date: 01/21/98
Analysis Date: 01/22/98

ANALYTICAL RESULTS FOR
PHILIP ENVIRONMENTAL
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

TA # T89568
Field Code: SS-5 @ 5'

EPA 8270	Reporting Limit	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	25	ND				
2-Picoline	25	ND				
Methyl methanesulfonate	25	ND				
Ethyl methanesulfonate	25	ND				
Phenol	25	ND	75	1	66	94
Aniline	125	ND				
bis(2-Chloroethyl)ether	125	ND				
2-Chlorophenol	125	ND		2	65	
1,3-Dichlorobenzene	25	ND				
1,4-Dichlorobenzene	25	ND	81	7	66	101
Benzyl alcohol	125	ND				
1,2-Dichlorobenzene	25	ND				
2-Methylphenol	25	ND				
bis(2-chloroisopropyl)ether	125	ND				
4-Methylphenol/3-Methylphenol	25	ND				
Acetophenone	125	ND				
n-Nitrosodi-n-propylamine	25	ND		0	68	
Hexachloroethane	25	ND				
Nitrobenzene	25	ND				
N-Nitrosopiperidine	125	ND				
Isophorone	125	ND				
2-Nitrophenol	125	ND		73		91
2,4-Dimethylphenol	125	ND				
bis(2-Chloroethoxy)methane	25	ND				
Benzoic acid	250	ND				
2,4-Dichlorophenol	125	ND	74			92
1,2,4-Trichlorobenzene	25	ND		3	76	
a,a-Dimethylphenethylamine	250	ND				
Naphthalene	25	ND				

TA# T89568
FIELD CODE: SS-5 @ 5'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	125	ND				
2,6-Dichlorophenol	125	ND				
Hexachlorobutadiene	25	ND	73			91
N-Nitroso-di-n-butylamine	125	ND				
4-Chloro-3-methylphenol	125	ND	74	0	79	92
2-Methylnaphthalene	25	ND				
1,2,4,5-Tetrachlorobenzene	25	ND				
Hexachlorocyclopentadiene	25	ND				
2,4,6-Trichlorophenol	125	ND	71			88
2,4,5-Trichlorophenol	125	ND				
2-Chloronaphthalene	25	ND				
1-Chloronaphthalene	25	ND				
2-Nitroaniline	125	ND				
Dimethylphthalate	25	ND				
Acenaphthylene	25	ND				
2,6-Dinitrotoluene	25	ND				
3-Nitroaniline	125	ND				
Acenaphthene	25	ND	73	1	89	91
2,4-Dinitrophenol	125	ND				
Dibenzofuran	125	ND				
Pentachlorobenzene	25	ND				
4-Nitrophenol	125	ND		6	43	
1-Napthylamine	125	ND				
2,4-Dinitrotoluene	25	ND		1	85	
2-Napthylamine	125	ND				
2,3,4,6-Tetrachlorophenol	125	ND				
Fluorene	25	ND				
Diethylphthalate	25	ND				
4-Chlorophenyl-phenylether	25	ND				
4-Nitroaniline	125	ND				
4,6-Dinitro-2-methylphenol	125	ND				
n-Nitrosodiphenylamine & Diphenylamine	25	ND	76			
Diphenylhydrazine	125	ND				

TA# T89568
FIELD CODE: SS-5 @ 5'

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	25	ND				
Phenacetin	125	ND				
Hexachlorobenzene	25	ND				
4-Aminobiphenyl	125	ND				
Pentachlorophenol	125	ND	71	12	49	
Pentachloronitrobenzene	125	ND				
Pronamide	25	ND				
Phenanthrene	25	ND				
Anthracene	25	ND				
Di-n-butylphthalate	25	ND				
Fluoranthene	25	ND	72			
Benzidine	250	ND				
Pyrene	25	ND		3	118	
p-Dimethylaminoazobenzene	25	ND				
Butylbenzylphthalate	25	ND				
Benzo[a]anthracene	25	ND				
3,3-Dichlorobenzidine	125	ND				
Chrysene	25	ND				
bis(2-Ethylhexyl)phthalate	25	ND				
Di-n-octlphthalate	25	ND	69			
Benzo[b]fluoranthene	25	ND				
7,12-Dimethylbenz(a)anthracene	25	ND				
Benzo[k]fluoranthene	25	ND				
Benzo[a]pyrene	25	ND	77			
3-Methylcholanthrene	25	ND				
Dibenzo(a,j)acridine	25	ND				
Indeno[1,2,3-cd]pyrene	25	ND				
Dibenz[a,h]anthracene	25	ND				
Benzo[g,h,i]perylene	25	ND				

TA #T89568
Field Code: SS-5 @ 5'

ND = NOT DETECTED

SURROGATES	% RECOVERY
2-Fluorophenol SURR	39
Phenol-d6 SURR	46
Nitrobenzene-d5 SURR	68
2-Fluorobiphenyl SURR	69
2,4,6-Tribromophenol SURR	41
Terphenyl-d14 SURR	128

*NOTE: Elevated reporting limits due to sample matrix interference.

METHODS: EPA SW 846-8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

1-30-98
Date

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ANALYTICAL REPORT

CLIENT Philip Envirnmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89567
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-5 2'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-26-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferences.
No surrogate recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<165.	ug/Kg	165.
4,4'-DDE	<170.	ug/Kg	170.
4,4'-DDT	<220.	ug/Kg	220.
Aldrin	<355.	ug/Kg	355.
alpha-BHC	<180.	ug/Kg	180.
beta-BHC	<270.	ug/Kg	270.
delta-BHC	<200.	ug/Kg	200.
Chlordane	<3830.	ug/Kg	3830.
Dieldrin	<95.	ug/Kg	95.
Endosulfan I	<200.	ug/Kg	200.
Endosulfan II	<210.	ug/Kg	210.
Endosulfan sulfate	<280.	ug/Kg	280.
Endrin	<120.	ug/Kg	120.
Endrin aldehyde	<380.	ug/Kg	380.
Heptachlor	<260.	ug/Kg	260.
Heptachlor Epoxide	<190.	ug/Kg	190.
Lindane	<170.	ug/Kg	170.
Methoxychlor	<1720.	ug/Kg	1720.
Toxaphene	<3010.	ug/Kg	3010.

(1) Copy to Client

MANAGING DIRECTOR

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL REPORT

CLIENT Philip Envirnmental
210 West Sand Bank Rd.
P.O. Box 230
Columbia, IL 62236-0230

SAMPLE NO. : 89568
INVOICE NO.: 22101555
REPORT DATE: 01-30-98
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SS-5 5'
SAMPLE TYPE .....: Soil
SAMPLED BY .....: J. Kindley
SUBMITTED BY ....: V. Windham
SAMPLE SOURCE ...: 18906
ANALYST .....: K. Costa

AUTHORIZED BY : J. Kindley
CLIENT P.O. : --
SAMPLE DATE ...: 01-20-98
SUBMITTAL DATE : 01-22-98
EXTRACTION DATE: 01-23-98
ANALYSIS DATE .: 01-26-98

REMARKS -

Detection limits raised because sample was analyzed diluted in order to minimize matrix interferences.
No surrogate recoveries due to dilutions.

Method 8081A- Pesticides

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
4,4'-DDD	<140.	ug/Kg	140.
4,4'-DDE	<140.	ug/Kg	140.
4,4'-DDT	<185.	ug/Kg	185.
Aldrin	<300.	ug/Kg	300.
alpha-BHC	<150.	ug/Kg	150.
beta-BHC	<225.	ug/Kg	225.
delta-BHC	<165.	ug/Kg	165.
Chlordane	<3180.	ug/Kg	3180.
Dieldrin	<80.	ug/Kg	80.
Endosulfan I	<165.	ug/Kg	165.
Endosulfan II	<175.	ug/Kg	175.
Endosulfan sulfate	<230.	ug/Kg	230.
Endrin	<100.	ug/Kg	100.
Endrin aldehyde	<315.	ug/Kg	315.
Heptachlor	<220.	ug/Kg	220.
Heptachlor Epoxide	<160.	ug/Kg	160.
Lindane	<140.	ug/Kg	140.
Methoxychlor	<1430.	ug/Kg	1430.
Toxaphene	<2510.	ug/Kg	2510.

(1) Copy to Client

MANAGING DIRECTOR

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
PHILIP SERVICES CORPORATION
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

February 03, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906 Phase.Task 1001.77
Project Location: Hobbs
COC Serial No.: G 3559

Prep Date: 01/26/98
Analysis Date: 01/26/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA#	Field Code	pH (s.u.)	TDS (mg/kg)	SULFATE (mg/kg)	CHLORIDE (mg/kg)	N03-N (mg/kg)	CYANIDE (mg/kg)	FLUORIDE (mg/kg)
T89559	SS-1 2-3'	8.1	1,600	702	340	0.64	<0.25	0.26
T89560	SS-1 5'	7.9	900	240	220	<0.25	<0.25	8.0
T89561	SS-2 2-3'	8.4	2,600	590	300	<0.25	<0.25	0.77
T89562	SS-2 6'	9.2	2,000	82	350	<0.25	<0.25	11
T89563	SS-3 2-3'	8.2	2,000	350	120	<0.25	<0.25	0.85
T89564	SS-3 5.5'	8.1	2,200	310	79	<0.25	<0.25	3.3
T89565	SS-4 1'	7.8	2,400	880	39	0.40	<0.25	0.92
T89566	SS-4 5'	8.1	3,000	720	59	2.5	<0.25	7.0
T89567	SS-5 2'	7.7	2,800	860	99	<0.25	<0.25	0.66
T89568	SS-5 5'	9.2	1,700	36	260	<0.25	<0.25	11
QC	Quality Control	7.0	---	9.9	503	1.37	0.039	1.01
Reporting Limit		---	---	1.0	0.5	0.25	0.25	0.1
RPD		0	19	4	0	2	3	4
% Extraction Accuracy		---	---	106	99	104	99	102
% Instrument Accuracy		100	---	101	100	103	95	99

METHODS: EPA 150.1, 160.1, 375.4, SM 4500 Cl-B, 353.3, 335.2, 340.2.
CHEMIST: pH/TDS/FLUORIDE: JS SULFATE/CHLORIDE/N03-N/CYANIDE: RC
SULFATE SPIKE: 10 mg/kg SULFATE.
CHLORIDE SPIKE: 500 mg/kg CHLORIDE.
N03-N SPIKE: 1.33 mg/kg N03-N.
CYANIDE SPIKE: 0.04 mg/kg CYANIDE.
FLUORIDE SPIKE: 1.0 mg/kg FLUORIDE.
SULFATE QC: 10 mg/L SULFATE.
CHLORIDE QC: 500 mg/L CHLORIDE.
N03-N QC: 1.33 mg/L N03-N.
CYANIDE QC: 0.04 mg/L CYANIDE.
FLUORIDE QC: 1.0 mg/L FLUORIDE.

Director, Dr. Blair Leftwich

2-3-98
Date

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ANALYTICAL RESULTS FOR
PHILIP SERVICES CORPORATION
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 27, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs
COC# G 3559

Prep Date: 01/21/98
Analysis Date: 01/22/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA#	FIELD CODE	TOTAL U (mg/kg)	TOTAL Hg (mg/kg)
T89559	SS-1 2-3'	<2.0	<0.25
T89560	SS-1 5'	<2.0	<0.25
T89561	SS-2 2-3'	<2.0	<0.25
T89562	SS-2 6'	<2.0	<0.25
T89563	SS-3 2-3'	<2.0	<0.25
T89564	SS-3 5.5'	<2.0	<0.25
T89565	SS-4 1'	<2.0	<0.25
T89566	SS-4 5'	<2.0	<0.25
T89567	SS-5 2'	<2.0	<0.25
T89568	SS-5 5'	<2.0	<0.25
ICV		4.7	5.1
CCV		5.1	4.9
REPORTING LIMIT		2.0	0.25
RPD		9	13
% Extraction Accuracy		99	90
% Instrument Accuracy		98	100

METHODS: EPA SW 846-3051, 6010B, 7471.
CHEMIST: TOTAL U: RR TOTAL Hg: HC
TOTAL U SPIKE: 200 mg/kg TOTAL U.
TOTAL U CV: 5.0 mg/L TOTAL U.
TOTAL Hg SPIKE: 2.5 mg/kg TOTAL Hg
TOTAL Hg CV: 5.0 mg/L TOTAL Hg

Director, Dr. Blair Leftwich

1-27-98
DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
PHILIP SERVICES CORPORATION
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 26, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs
COC# G 3559

Prep Date: 01/23/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T89561	SS-2 2-3'	<2.5
T89567	SS-5 2'	<2.5
QC	Quality Control	0.37
REPORTING LIMIT		2.5
RPD		1
% Extraction Accuracy		88
% Instrument Accuracy		93

METHODS: EPA SW 846-3550, 8080
CHEMIST: MB
TOTAL PCB SPIKE: 0.5 mg/kg TOTAL PCB.
TOTAL PCB QC: 0.5 mg/L TOTAL PCB.

Director, Dr. Blair Leftwich

1-26-98
DATE

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ANALYTICAL RESULTS FOR
PHILIP SERVICES CORPORATION
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 26, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs
COC# G 3559

Prep Date: 01/23/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T89559	SS-1 2-3'	<5.5
T89563	SS-3 2-3'	<5.5
QC	Quality Control	0.37
REPORTING LIMIT		5.5
RPD		1
% Extraction Accuracy		88
% Instrument Accuracy		93

METHODS: EPA SW 846-3550, 8080
CHEMIST: MB
TOTAL PCB SPIKE: 0.5 mg/kg TOTAL PCB.
TOTAL PCB QC: 0.5 mg/L TOTAL PCB.

Director, Dr. Blair Leftwich

1-26-98
DATE

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ANALYTICAL RESULTS FOR
PHILIP SERVICES CORPORATION
Attention: Jeff Kindley
7904 I-20 West
Midland, TX 79706

January 26, 1998
Receiving Date: 01/21/98
Sample Type: Soil
Project No: 18906-1001.77
Project Location: Shell Hobbs
COC# G 3559

Prep Date: 01/23/98
Analysis Date: 01/23/98
Sampling Date: 01/20/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Shell Hobbs

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T89560	SS-1 5'	<0.25
T89562	SS-2 6'	<0.25
T89564	SS-3 5.5'	<0.25
T89565	SS-4 1'	<0.25
T89566	SS-4 5'	<0.25
T89568	SS-5 5'	<0.25
QC	Quality Control	0.37
REPORTING LIMIT		0.25
RPD		1
% Extraction Accuracy		88
% Instrument Accuracy		93

METHODS: EPA SW 846-3550, 8080
CHEMIST: MB
TOTAL PCB SPIKE: 0.5 mg/kg TOTAL PCB.
TOTAL PCB QC: 0.5 mg/L TOTAL PCB.

Director, Dr. Blair Leftwich

1-26-98
DATE

TRACE ANALYSIS, INC.

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ANALYTICAL RESULTS FOR
Philip Environmental
Attention Jeff Kindley
7904 I-20 West
Midland TX 79706

Date: Jan 24, 1998
Date Rec: 1/21/98
Project: 18906
Proj Name: Shell
Proj Loc: Hobbs, New Mexico

Lab Receiving # : 9801000308
Sampling Date: 1/20/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	TRPHC (mg/Kg)
T 89559	SS-1 2-3'	Soil	24,800
T 89560	SS-1 5'	Soil	14,100
T 89561	SS-2 2-3'	Soil	200,000
T 89562	SS-2 6'	Soil	30,900
T 89563	SS-3 2-3'	Soil	134,000
T 89564	SS-3 5.5'	Soil	21,900
T 89565	SS-4 1'	Soil	2,930
T 89566	SS-4 5'	Soil	1,800
T 89567	SS-5 2'	Soil	68,200
T 89568	SS-5 5'	Soil	50,200
Method Blank			<10.0
Reporting Limit			10
QC			104
RPD			0
% Extraction Accuracy			89
% Instrument Accuracy			104

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
TRPHC	EPA 3550	1/22/98	EPA 418.1	1/22/98	MS	100	250

BL

Director, Dr. Blair Leftwich

1-24-98

Date

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 30-012698-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : HEWLETT PACKARD GC-5890 DUAL ECD
ANALYZED BY : K. Costa
ANALYZED ON : 01-26-98

TEST DESCRIPTION ..: Method 8081A- Pesticides

SAMPLES IN THIS RUN: 89559 89560 89561 89562 89563 89564 89565 89566 89567 89568

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
4,4'-DDD	ug/L	200	189.	94.5
4,4'-DDE	ug/L	200	190.	95.0
4,4'-DDT	ug/L	200	184.	92.0
Aldrin	ug/L	200	194.	97.0
alpha-BHC	ug/L	200	191.	95.5
beta-BHC	ug/L	200	193.	96.5
delta-BHC	ug/L	200	190.	95.0
Dieldrin	ug/L	200	189.	94.5
Endosulfan I	ug/L	200	195.	97.5
Endosulfan II	ug/L	200	196.	98.0
Endosulfan sulfate	ug/L	200	193.	96.5
Endrin	ug/L	200	191.	95.5
Endrin aldehyde	ug/L	200	197.	98.5
Heptachor	ug/L	200	189.	94.5
Heptachlor Epoxide	ug/L	200	197.	98.5
Lindane	ug/L	200	193.	96.5
Methoxychlor	ug/L	800	786.	98.3
4,4'-DDD	ug/L	300.	281.	93.7
4,4'-DDE	ug/L	300.	283.	94.3
4,4'-DDT	ug/L	300.	269.	89.7
Aldrin	ug/L	300.	286.	95.3
alpha-BHC	ug/L	300.	283.	94.3
beta-BHC	ug/L	300.	288.	96.0
delta-BHC	ug/L	300.	285.	95.0
Dieldrin	ug/L	300.	294.	98.0
Endosulfan I	ug/L	300.	287.	95.7
Endosulfan II	ug/L	300.	286.	95.3
Endosulfan sulfate	ug/L	300.	278.	92.7
Endrin	ug/L	300.	289.	96.3
Endrin aldehyde	ug/L	300.	274.	91.3
Heptachor	ug/L	300.	283.	94.3
Heptachlor Epoxide	ug/L	300.	291.	97.0
Lindane	ug/L	300.	285.	95.0
Methoxychlor	ug/L	300.	328.	109.3
4,4'-DDD	ug/L	200	191.	95.5
4,4'-DDE	ug/L	200	189.	94.5
4,4'-DDT	ug/L	200	179.	89.5
Aldrin	ug/L	200	191.	95.5

alpha-BHC	ug/L	200	187.	93.5
beta-BHC	ug/L	200	188.	94.0
delta-BHC	ug/L	200	189.	94.5
Dieldrin	ug/L	200	187.	93.5
Endosulfan I	ug/L	200	191.	95.5

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 30-012698-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : HEWLETT PACKARD GC-5890 DUAL ECD
ANALYZED BY : K. Costa
ANALYZED ON : 01-26-98

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Endosulfan II	ug/L	200	193.	96.5
Endosulfan sulfate	ug/L	200	191.	95.5
Endrin	ug/L	200	190.	95.0
Endrin aldehyde	ug/L	200	192.	96.0
Heptachor	ug/L	200	188.	94.0
Heptachlor Epoxide	ug/L	200	194.	97.0
Lindane	ug/L	200	191.	95.5
Methoxychlor	ug/L	800	766.	95.8
4,4'-DDD	ug/L	200	195.	97.5
4,4'-DDE	ug/L	200	192.	96.0
4,4'-DDT	ug/L	200	177.	88.5
Aldrin	ug/L	200	194.	97.0
alpha-BHC	ug/L	200	191.	95.5
beta-BHC	ug/L	200	192.	96.0
delta-BHC	ug/L	200	191.	95.5
Dieldrin	ug/L	200	190.	95.0
Endosulfan I	ug/L	200	195.	97.5
Endosulfan II	ug/L	200	186.	93.0
Endosulfan sulfate	ug/L	200	197.	98.5
Endrin	ug/L	200	193.	96.5
Endrin aldehyde	ug/L	200	196.	98.0
Heptachor	ug/L	200	191.	95.5
Heptachlor Epoxide	ug/L	200	196.	98.0
Lindane	ug/L	200	194.	97.0
Methoxychlor	ug/L	800	770.	96.3
4,4'-DDD	ug/L	200	204.	102.0
4,4'-DDE	ug/L	200	216.	108.0
4,4'-DDT	ug/L	200	191.	95.5
Aldrin	ug/L	200	202.	101.0
alpha-BHC	ug/L	200	197.	98.5
beta-BHC	ug/L	200	201.	100.5
delta-BHC	ug/L	200	199.	99.5
Dieldrin	ug/L	200	201.	100.5
Endosulfan I	ug/L	200	208.	104.0
Endosulfan II	ug/L	200	203.	101.5
Endosulfan sulfate	ug/L	200	206.	103.0
Endrin	ug/L	200	198.	99.0
Endrin aldehyde	ug/L	200	205.	102.5
Heptachor	ug/L	200	194.	97.0
Heptachlor Epoxide	ug/L	200	210.	105.0
Lindane	ug/L	200	201.	100.5
Methoxychlor	ug/L	800	819.	102.4

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 30-012698-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : HEWLETT PACKARD GC-5890 DUAL ECD
ANALYZED BY : K. Costa
ANALYZED ON : 01-26-98

BLANK SPIKES

PARAMETER	UNIT	SAMPLE RESULT	SPIKE CONC.	[- SAMPLE AND SPIKE -] RESULT 1	RESULT 2	% REC1	% REC2	RPD%
4,4'-DDD	ug/Kg	<10.	250.	240.		96.0		
4,4'-DDE	ug/Kg	<10.	250.	229.		91.6		
4,4'-DDT	ug/Kg	<10.	250.	244.		97.6		
Aldrin	ug/Kg	<10.	250.	224.		89.6		
alpha-BHC	ug/Kg	<10.	250.	202.		80.8		
beta-BHC	ug/Kg	<30.	250.	222.		88.8		
delta-BHC	ug/Kg	<25.	250.	224.		89.6		
Dieldrin	ug/Kg	<25.	250.	224.		89.6		
Endosulfan I	ug/Kg	<25.	250.	224.		89.6		
Endosulfan II	ug/Kg	<50.	250.	231.		92.4		
Endosulfan sulfate	ug/Kg	<25.	250.	240.		96.0		
Endrin	ug/Kg	<25.	250.	259.		103.6		
Endrin aldehyde	ug/Kg	<50.	250.	208.		83.2		
Heptachlor	ug/Kg	<25.	250.	233.		93.2		
Hetachlor Epoxide	ug/Kg	<50.	250.	224.		89.6		
Lindane	ug/Kg	<25.	250.	211.		84.4		
Methoxychlor	ug/Kg	<100.	1000.	1110		111.0		

METHOD BLANKS -

PARAMETER	UNIT	RESULT
4,4'-DDD	ug/Kg	<10.
4,4'-DDE	ug/Kg	<10.
4,4'-DDT	ug/Kg	<10.
Aldrin	ug/Kg	<10.
alpha-BHC	ug/Kg	<10.
beta-BHC	ug/Kg	<30.
delta-BHC	ug/Kg	<25.
Chlordane	ug/Kg	<75.
Dieldrin	ug/Kg	<25.
Endosulfan I	ug/Kg	<25.
Endosulfan II	ug/Kg	<50.
Endosulfan sulfate	ug/Kg	<25.
Endrin	ug/Kg	<25.
Endrin aldehyde	ug/Kg	<50.
Heptachlor	ug/Kg	<25.
Heptachlor Epoxide	ug/Kg	<50.
Lindane	ug/Kg	<25.
Methoxychlor	ug/Kg	<100.

Toxaphene	ug/Kg	<50.
PCB 1016	ug/Kg	<100.
PCB 1221	ug/Kg	<100.
PCB 1232	ug/Kg	<100.

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 30-012698-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : HEWLETT PACKARD GC-5890 DUAL ECD
ANALYZED BY : K. Costa
ANALYZED ON : 01-26-98

METHOD BLANKS -

PARAMETER	UNIT	RESULT
PCB 1242	ug/Kg	<100.
PCB 1248	ug/Kg	<100.
PCB 1254	ug/Kg	<100.
PCB 1260	ug/Kg	<100.

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result - Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result - Replicate Result}}{(\text{Sample Result + Replicate Result})/2} \times 100$$

ARS
1728 Woodlake Court • Baton Rouge, Louisiana 70806
1 (800) 401-4277 • Fax (504) 927-6822

ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj. 1R906
Client I.D.:	89559	**ARS Sample I.D.:**	ARS-98-0211
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<1.03	N/A	pCi/gm	<0.038	N/A	Bq/gm	EPA 901.1M	1/30/98 1409	bl
Ra-228	<0.185	N/A	pCi/gm	<0.007	N/A	Bq/gm	EPA 901.1M	1/30/98 1409	bl

Notes:

Quality Assurance Review

Notes: American Radiation Services, Inc assumes no liability for the use or interpretation of any analytical results provided other than the cost of the performed analysis itself. Reproduction of this report in part than full requires the written consent of the client.

1728 Woodside Court • Baton Rouge, Louisiana 70806
1 (800) 401-4277 • Fax (504) 927-6822

ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj 18906
Client I.D.:	89560	**ARS Sample I.D.:**	ARS-98-0212
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<1.85	N/A	pCi/gm	<0.068	N/A	Bq/gm	EPA 901.1M	2/2/98 1121	tf
Ra-228	<0.23	N/A	pCi/gm	<0.009	N/A	Bq/gm	EPA 901.1M	2/2/98 1121	tf

Notes:

Quality Assurance Review

Notes: American Radiation Services, Inc assumes no liability for the use or interpretation of any analytical results provided other than the cost of the performed analysis itself. Reproduction of this report in less than full requires the written consent of the client.

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ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj 18906
Client I.D.:	89561	**ARS Sample I.D.:**	ARS-98-0213
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error ±1σ	Analysis Units	Analysis Result	Analysis Error ±1σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	2.17	1.84	pCi/gm	0.080	0.068	Bq/gm	EPA 901.1M	2/2/98 1227	tf
Ra-228	<0.16	N/A	pCi/gm	<0.006	N/A	Bq/gm	EPA 901.1M	2/2/98 1227	tf

Notes:

Quality Assurance Review

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ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj. 18906
Client I.D.:	89562	**ARS Sample I.D.:**	ARS-98-0214
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error 2σ	Analysis Units	Analysis Result	Analysis Error 2σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<1.47	N/A	pCi/gm	<0.054	N/A	Bq/gm	EPA 901.1M	2/2/98 1405	tf
Ra-228	<0.25	N/A	pCi/gm	<0.009	N/A	Bq/gm	EPA 901.1M	2/2/98 1405	tf

Notes:

Quality Assurance Review

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ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj. 18906
Client I.D.:	89563	**ARS Sample I.D.:**	ARS 98-0215
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error 4.65	Analysis Units	Analysis Result	Analysis Error 2.0σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<1.02	N/A	pCi/gm	<0.038	N/A	Bq/gm	EPA 901.1M	2/3/98 0951	bl
Ra-228	0.78	0.28	pCi/gm	0.029	0.010	Bq/gm	EPA 901.1M	2/3/98 0951	bl

Notes:

Quality Assurance Review

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ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj 18906
Client I.D.:	89564	**ARS Sample I.D.:**	ARS-98-0216
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error +/2σ	Analysis Units	Analysis Result	Analysis Error +/2σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<1.67	N/A	pCi/gm	<0.062	N/A	Bq/gm	EPA 901.1M	2/3/98 1028	ks
Ra-228	<0.32	N/A	pCi/gm	<0.012	N/A	Bq/gm	EPA 901.1M	2/3/98 1028	ks

Notes:

Quality Assurance Review

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ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj. 18906
Client I.D.:	89565	**ARS Sample I.D.:**	ARS-98-0217
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<1.72	N/A	pCi/gm	<0.064	N/A	Bq/gm	EPA 901.1M	2/3/98 1111	bl
Ra-228	1.28	0.46	pCi/gm	0.047	0.017	Bq/gm	EPA 901.1M	2/3/98 1111	bl

Notes:

Quality Assurance Review

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ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj. 18906
Client I.D.:	89566	**ARS Sample I.D.:**	ARS-98-0218
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<1.92	N/A	pCi/gm	<0.071	N/A	Bq/gm	EPA 901.1M	2/3/98 1149	ks
Ra-228	<0.41	N/A	pCi/gm	<0.015	N/A	Bq/gm	EPA 901.1M	2/3/98 1149	ks

Notes:

Quality Assurance Review

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ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj. 18906
Client I.D.:	89567	**ARS Sample I.D.:**	ARS-98-0219
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<0.82	N/A	pCi/gm	<0.030	N/A	Bq/gm	EPA 901.1M	2/3/98 1226	ks
Ra-228	0.76	0.31	pCi/gm	0.028	0.011	Bq/gm	EPA 901.1M	2/3/98 1226	ks

Notes:

Quality Assurance Review

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ARS Tracking Number:	ARS-98-0068	**P.O. Number:**	Proj. 18906
Client I.D.:	89568	**ARS Sample I.D.:**	ARS-98-0220
Date Sampled:	N/A	**Date Received:**	1/22/98
Time Sampled:	N/A	**Time Received**	1214
Type of Sample:	Solid	**Date of Report**	2/4/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Result	Analysis Error ±2σ	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<1.67	N/A	pCi/gm	<0.062	N/A	Bq/gm	EPA 901.1M	2/3/98 1325	bl
Ra-228	<0.34	N/A	pCi/gm	<0.013	N/A	Bq/gm	EPA 901.1M	2/3/98 1325	bl

Notes:

Quality Assurance Review

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Notes:

Comments:

1.0) Soil and Sludge analysis are reported on a wet basis or an as received basis unless otherwise indicated.
2.0) The data in this report are within the limits of uncertainty specified in the reference method unless specified.
3.0) Modified analysis procedures are procedures that are modified to meet the certain specifications. An example may be the use of a water method to analyze a solid matrix due to the lack of an officially recognized procedure for the analysis of the solid matrix.
4.0) Derived Air Concentrations and Effluent Release Concentrations are obtained from 10 CFR 20 Appendix B
5.0) Total activity is actually total gamma activity and is determined utilizing the prominent gamma emitters from the naturally occurring radioactive decay chains and other prominent radioactive nuclides. Total activity may be lower than actual total activity due to the extent of secular equilibrium achieved in the various decay chains at the time of analysis. The total activity is not representative of nuclides that emit solely alpha or beta particles.
6.0) Ra-228 is determined via secular equilibrium with its daughter, Actinium 228. (Gamma Spectroscopy only)
7.0) U-238 is determined via secular equilibrium with its daughter, Thorium 234. (Gamma Spectroscopy only)
8.0) All Gamma spectroscopy was performed utilizing high purity germanium detectors (HPGE).

Method References:

1.0) EPA 600/4-80-032, Prescribed Procedures for the Measurement of Radioactivity in Drinking Water, August 1980.
2.0) Standard Methods for the Examination of Water and Waste Water, 18th, 1992
3.0) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, (9/86). (Updated through 1995)
4.0) EPA 600/4/79-020, Methods for Chemical Analysis of Water and Waste, March 1983.
5.0) HASL 300

Definitions:

1.0)	BDL	Analyte not detected because the value was below the detection limit.
2.0)	ND	Not detected above the detection limit.
3.0)	Detection Limit	The minimum amount of the analyte that ARS can detect utilizing the specific analysis.
4.0)	B	Method Blank
5.0)	D	Method Duplicate
6.0)	MS	Matrix Spike
7.0)	S	Spike
8.0)	RS	Reference Spike
9.0)	*SC	Subcontracted out to another qualified laboratory
10.0)	NR	Not Referenced

PHILIP ENVIRONMENTAL

Chain of Custody Record — Nonchemical Samples

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(618) 281-5120 FAX

COC Serial No. G 3559

Project Name Shell Hobbs
Project Number 18906 Phase . Task 1001 . 77
Samplers Kindley

Lab Name Trace Analysis
Location Lubbock

418.1 TPH | * | Analysis Type

Sample Number	Date	Time	Matrix	TPH	*				Comments
SS-1 2-3'	1/20/98	10:45	Soil	✓	✓	89559			1 liter & 1 4 oz *
SS-1 5'	1/20/98	11:13	Soil	✓	✓		60		
SS-2 2-3'	1/20/98	11:49	Soil	✓	✓		61		*
SS-2 6'	1/20/98	12:00	Soil	✓	✓		62		
SS-3 2-3'	1/20/98	12:22	Soil	✓	✓		63		*
SS-3 5.5'	1/20/98	12:35	Soil	✓	✓		64		
SS-4 1'	1/20/98	13:48	Soil	✓	✓		65		
SS-4 5'	1/20/98	13:54	Soil	✓	✓		66		
SS-5 2'	1/20/98	14:35	Soil	✓	✓		67		*
SS-5 5'	1/20/98	14:42	Soil	✓	✓		68		

* Black, tarry, high TPH

Relinquished by:

Signature	Date	Time
Jeffrey Kindley	01/20/98	1545

Received By:

Signature	Date	Time
Vida Windham	1-21-98	

Carrier: UPS
Airbill No. UPS N141 1279 04 9

Shipping and Lab Notes:
* See attached list of analytes for analysis | Rush!! Must have organics & metals by 1/23

PE-211 (4/95)