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State of New Mexico
ENVIRONMENT DEPARTMENT
Underground Storage Tank Bureau
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-0188
(505) 827-0310 Fax

GARY E. JOHNSON
GOVERNOR

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

[redacted]

Mr. Thomas Ladd
Director, Environment and Safety
STEWS-DES
White Sands Missile Range, NM 88002-5048

RE: NO FURTHER ACTION REQUIRED AT LAUNCH COMPLEX #38 WHITE SANDS MISSILE RANGE, NEW MEXICO

Dear Mr. Pressley:

The New Mexico Environment Department has received a report dated May 1, 1995 which was submitted by Robin Smith. The Department has reviewed the file on this case and has determined that this site does not pose an immediate public health or environmental threat for the following reasons:

1. The vertical and horizontal limits of soil contamination were identified.

2. Groundwater is more than 50' below any contaminated soil exceeding action levels on this site.

3. The landfarmed soil has been remediated to below state action levels.

The Department is not requiring additional work at this time. However, the Department reserves the right to require additional work in the future if data become available that indicate the presence of petroleum hydrocarbon contamination emanating from or in the vicinity of this site resulting in a threat to public health or the environment.

Sincerely,

Bill Skinner

Bill Skinner USTB

cc: Robin Smith, White Sands Missile Range
Anna Richards, Manager, Corrective Action Program

Final

CONTAMINATION DELINEATION REPORT
LC-38 BUILDING 23626

WHITE SANDS MISSILE RANGE ENVIRONMENTAL SERVICES DIVISION

19 April 1993

1.0 INTRODUCTION

A subsurface investigation was conducted by Advanced Sciences, Inc. (ASI) on 29 March through 1 April 1993, located at launch complex 38 (LC-38) near building 23626 on WSMR. The site is currently an operating maintenance and repair facility for launch vehicles, and office use. Environmental Safety and Environmental (ES-E) retained ASI to perform this investigation to comply with the New Mexico Environmental Department (NMED) regarding the definition of the horizontal and vertical extent of contamination. The following sections of this report document the findings of the ASI investigation and present conclusions based upon the results of this investigation. The remainder of section 1.0 discusses the site location, project background, and the purposes and objectives of this investigation. Section 2.0 presents the geological and hydrogeologic setting of the site. Section 3.0 presents a discussion of the field activities conducted at the subject site. Section 4.0 presents analytical results and section 5.0 presents conclusions.

1.1 Site Location

LC-38 is located at White Sands Missile Range (WSMR) approximately 12 miles east of the main post headquarters along Nike Avenue (Figure 1). WSMR, an area of approximately 3,400 square miles in south central New Mexico, is located in the southern part of the Tularosa groundwater basin. LC-38 consists of one large building (#23626) containing maintenance shops and offices. Although the entire LC-38 complex is larger, we are only concerned with the immediate area to the south and east of building #23626 of LC-38 (Figure 2). The subject site is bordered on the south and east by streets and on the north and west by open desert land.

1.2 Project Background

The subject site is currently being operated as a maintenance and office complex for Raytheon. The site contained a 1,764 gallon steel UST which was utilized to fuel vehicles with unleaded gasoline. The UST was removed on February 2-3, 1993. At the time of removal it was determined that the UST had leaked gasoline into the surrounding soils. Further evidence of a leak was determined from analytical, visual, and field screening of the surrounding soils.

Soil analytical results collected during the UST removal indicated total acromatic hydrocarbon values above the NMED limit of 100 ppm. The results of the PID screening of soil during the removal of the UST were also above the NMED limit of 100 ppm. This data is detailed in the Final Closure Report for the Underground Storage Tank Removal and Remediation at LC-38 and McAfee Clinic 17 March 1993.

1.3 Purpose and Objectives

The purpose of this investigation was to assess soil quality, to determine if separate-phase product is present in the subsurface at the site, to delineate the magnitude and extent of potential petroleum hydrocarbon contamination identified, and to determine the potential impact of existing site conditions on the surrounding environment, if any.

3.0 FIELD ACTIVITIES

Field activities completed at LC-38 included a site reconnaissance; drilling and sampling of six soil borings; and submission of soil samples for laboratory analysis. These activities were selected as part of the scope of work to facilitate the acquisition of relevant field data critical to the projects successful completion. Standard Occupational Safety and Health Administration (OSHA) health and safety procedures were followed during field activities to insure the safety of field personnel. The following sections present detailed descriptions of the field activities performed during the subsurface investigation at LC-38.

3.1 Site Reconnaissance

A site reconnaissance was performed on 24 March 1993 by personnel from ES-E and ASI to document the general site layout. The object of the reconnaissance was to locate possible sources and pathways of potential petroleum hydrocarbon releases to the subsurface. Features such as topography and surface soil types near the former UST location, utility locations, and potential pathways of petroleum hydrocarbon migration were observed and noted. Data obtained during the reconnaissance in conjunction with the results of the initial investigation conducted at the site provided the background information necessary to plan the subsurface investigation and sampling program.

3.2 Drilling and Associated Soil Sampling

Six soil borings were completed at LC-38 by Winnek Environmental Drilling Company personnel under the supervision of ASI personnel on April 1, 1993. The borings were numbered B-1 through B-6. All six soil borings were completed to a total depth of 51.5 feet bgs. Boring locations were selected by ES-E personnel. Soil borings were advanced by Winnek personnel utilizing a Mobile Drill Rig with a 4.75 inch I.D. hollow stem auger. The drill rig and down hole tools were steam cleaned prior to the start of drilling activities and between bore holes to mitigate the possibility of sample cross-contamination. All decontamination fluids were placed into Department of Transportation (DOT) approved 55 gallon steel drums to await proper disposal. Drilling activities were completed under the supervision of a qualified ASI geologist. Soil cuttings produced during the drilling were contained in appropriately labeled Department of Transportation (DOT) approved drums and stored on-site pending proper disposal by WSMR. Soil boring logs containing detailed descriptions of subsurface materials encountered during the drilling activities are presented in Appendix B.

Standard 1.5 foot in length split-spoon samples were collected at five foot intervals throughout the entire 51.5 foot bgs depth of each of the six borings. Due to the fact that groundwater was not encountered in any of the soil borings, groundwater monitoring wells were not installed. Split-spoon sampling equipment was decontaminated prior to each use to minimize potential sample cross-contamination. The decontamination procedure consisted of a non-phosphate soap and deionized water scrub followed by a deionized water rinse. Rinseate waters were placed into DOT approved 55 gallon steel drums to await proper disposal.

Soil samples were screened in the field using a photoionization detector (PID) to detect volatile organic compounds (VOC) present. Soil samples were collected in laboratory supplied glass

4.0 ANALYTICAL RESULTS

The following sections present an analysis and discussion of the site conditions observed and relevant data developed during the course of the subsurface investigation conducted at the LC-38 site. Included in these sections are descriptions of the subsurface conditions encountered during the drilling program and the results of laboratory analyses of soil samples. Samples submitted for laboratory analysis were analyzed by Westech Laboratories located in El Paso Texas.

4.1 Field Screening

As outlined above, soil samples collected during drilling activities were field screened using a photoionization detector (PID). The PID was calibrated using 100.6 parts per million (ppm) isobutylene span gas. PID readings ranged from 0.00 ppm to 3,915 ppm and varied between soil boring locations and sample depths. Soil boring logs illustrating these readings are presented in Appendix A.

4.2 Soil Chemistry Data

Ten soil samples were selected from each soil boring, except for soil boring B-6 for reasons previously stated, for laboratory analysis. Analytical results for these soil samples are presented in Table 1.0. Laboratory certificate of analysis and chain-of-custody records are presented in Appendix B of this report. As indicated in Table 1.0, BTEX was detected in all soil borings except boring B-5. BTEX values exceeded 50 ppm in only four soil samples, all of which were contained in soil boring B-1. Benzene values exceeded 10 ppm in only two soil samples from boring B-1. These values 50 ppm total BTEX and 10 ppm benzene are NMED guidelines for determining clean closure status.

5.0 CONCLUSIONS

Based upon the results of the subsurface investigation conducted at the site, the following conclusions have been formulated:

1. Groundwater was not detected in any of the soil borings.

2. No separate-phase petroleum hydrocarbon product was observed in the soil borings emplaced by ASI during this investigation.

3. Soil sample analytical data indicates that subsurface soils from 10-11.5 ft, 15-16.5 ft, 30-31.5 ft, and 40-41.5 ft in boring B-1 exhibit BTEX values above the NMED guidelines of 50 ppm.

4. Soil sample analytical data indicates that subsurface soils from 10-11.5 ft and 15-16.5 ft in boring B-1 exhibit benzene values above the NMED guidelines of 10 ppm.

5. The depth to groundwater was determined to be approximately 230 feet bgs. These readings were collected at the Hazardous Waste Storage Facility located approximately four miles to the west of the subject site.

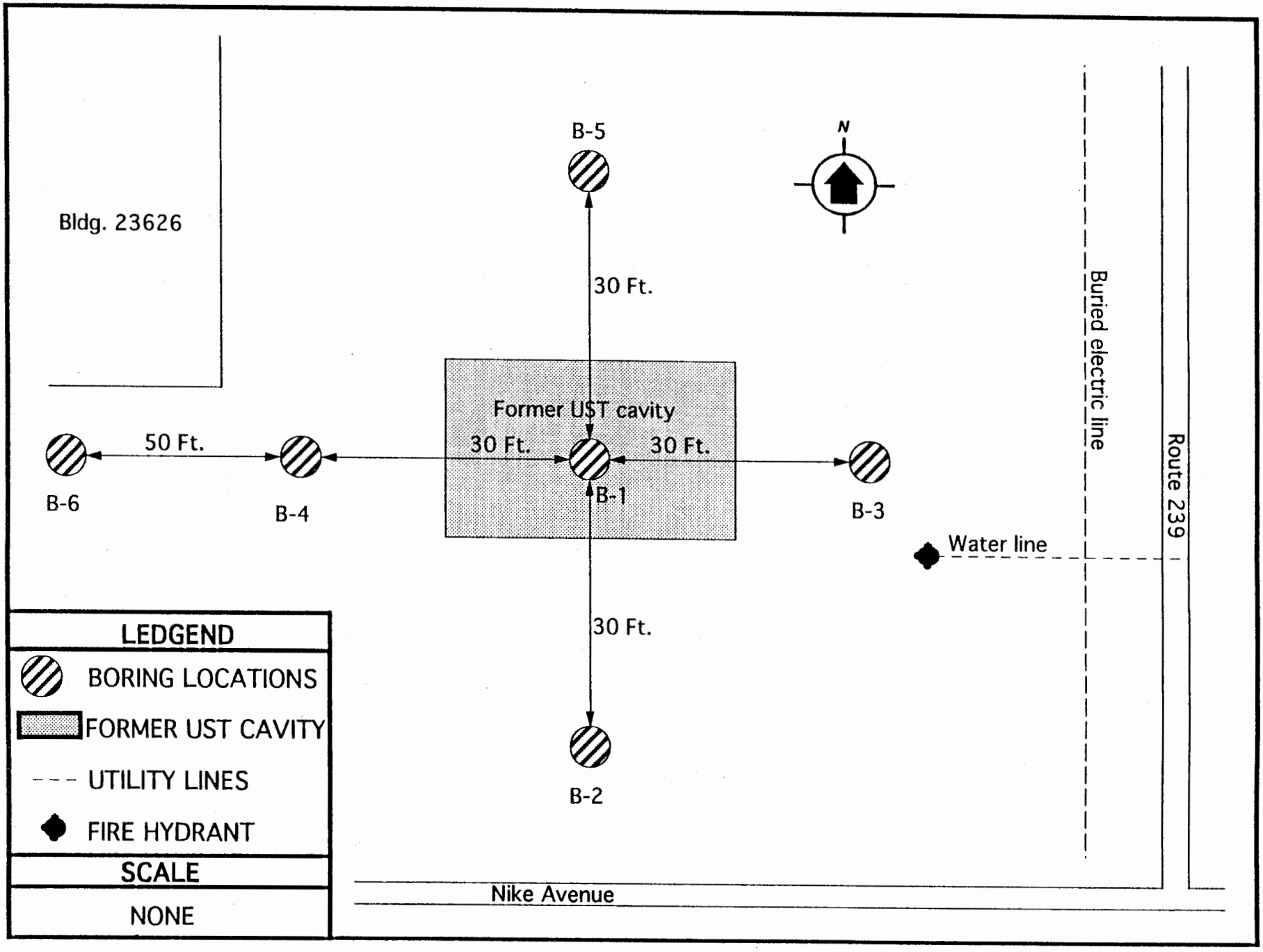

Figure 2 LC-38 Site Plan

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10737 Gateway West, No. 100
El Paso, Texas 79935
(915) 592-3591 • fax 592-3594

CLIENT Advanced Sciences Inc.
555 S. Telshor Ste 310
Las Cruces, NM 88001

SAMPLE NO. : 6301010
INVOICE NO.: 62130259
REPORT DATE: 04-08-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : B-1 5-6.5
SAMPLE TYPE .....: Soil
SAMPLED BY .....: Kevin Sedlak
SUBMITTED BY ....: George Esqueda
SAMPLE SOURCE ...: LC-38 Cavity
ANALYST .....: C. WARNER

AUTHORIZED BY : Kevin Sedlak
CLIENT P.O. : 9967411.001/277
SAMPLE DATE ...: 03-29-93
SUBMITTAL DATE : 03-31-93
EXTRACTION DATE: 04-01-93
ANALYSIS DATE .: 04-07-93

Method 8020 - Aromatic Volatiles

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
Benzene	1200	ug/Kg	1000
Toluene	<1000	ug/Kg	1000
Ethylbenzene	<1000	ug/Kg	1000
Total Xylenes	4600	ug/Kg	300

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CLIENT Advanced Sciences Inc.
555 S. Telshor Ste 310
Las Cruces, NM 88001

SAMPLE NO. : 6301011
INVOICE NO.: 62130259
REPORT DATE: 04-08-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : B-1 10-11.5
SAMPLE TYPE .....: Soil
SAMPLED BY .....: Kevin Sedlak
SUBMITTED BY ....: George Esqueda
SAMPLE SOURCE ...: LC-38 Cavity
ANALYST .....: C. WARNER

AUTHORIZED BY : Kevin Sedlak
CLIENT P.O. : 9967411.001/277
SAMPLE DATE ...: 03-29-93
SUBMITTAL DATE : 03-31-93
EXTRACTION DATE: 04-01-93
ANALYSIS DATE .: 04-07-93

Method 8020 - Aromatic Volatiles

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
Benzene	14000	ug/Kg	1600
Toluene	5500	ug/Kg	1600
Ethylbenzene	<1600	ug/Kg	1600
Total Xylenes	89000	ug/Kg	530

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Las Cruces, NM 88001

SAMPLE NO. : 6301012
INVOICE NO.: 62130259
REPORT DATE: 04-08-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : B-1 15-16.5
SAMPLE TYPE .....: Soil
SAMPLED BY .....: Kevin Sedlak
SUBMITTED BY ....: George Esqueda
SAMPLE SOURCE ...: LC-38 Cavity
ANALYST .....: C. WARNER

AUTHORIZED BY : Kevin Sedlak
CLIENT P.O. : 9967411.001/277
SAMPLE DATE ...: 03-29-93
SUBMITTAL DATE : 03-31-93
EXTRACTION DATE: 04-01-93
ANALYSIS DATE .: 04-07-93

Method 8020 - Aromatic Volatiles

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
Benzene	22000	ug/Kg	5000
Toluene	84000	ug/Kg	5000
Ethylbenzene	<5000	ug/Kg	5000
Total Xylenes	290000	ug/Kg	1700

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SAMPLE NO. : 6301013
INVOICE NO.: 62130259
REPORT DATE: 04-08-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : B-1 20-21.5
SAMPLE TYPE .....: Soil
SAMPLED BY .....: Kevin Sedlak
SUBMITTED BY ....: George Esqueda
SAMPLE SOURCE ...: LC-38 Cavity
ANALYST .....: C. WARNER

AUTHORIZED BY : Kevin Sedlak
CLIENT P.O. : 9967411.001/277
SAMPLE DATE ...: 03-29-93
SUBMITTAL DATE : 03-31-93
EXTRACTION DATE: 04-01-93
ANALYSIS DATE .: 04-07-93

Method 8020 - Aromatic Volatiles

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
Benzene	1800	ug/Kg	500
Toluene	3000	ug/Kg	500
Ethylbenzene	2900	ug/Kg	500
Total Xylenes	29000	ug/Kg	170

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Las Cruces, NM 88001

SAMPLE NO. : 6301014
INVOICE NO.: 62130259
REPORT DATE: 04-08-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : B-1 25-26.5
SAMPLE TYPE .....: Soil
SAMPLED BY .....: Kevin Sedlak
SUBMITTED BY ....: George Esqueda
SAMPLE SOURCE ...: LC-38 Cavity
ANALYST .....: C. WARNER

AUTHORIZED BY : Kevin Sedlak
CLIENT P.O. : 9967411.001/277
SAMPLE DATE ...: 03-29-93
SUBMITTAL DATE : 03-31-93
EXTRACTION DATE: 04-01-93
ANALYSIS DATE .: 04-07-93

Method 8020 - Aromatic Volatiles

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
Benzene	1400	ug/Kg	500
Toluene	1200	ug/Kg	500
Ethylbenzene	2800	ug/Kg	500
Total Xylenes	24000	ug/Kg	170

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SAMPLE NO. : 6301015
INVOICE NO.: 62130259
REPORT DATE: 04-08-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : B-1 30-31.5
SAMPLE TYPE .....: Soil
SAMPLED BY .....: Kevin Sedlak
SUBMITTED BY ....: George Esqueda
SAMPLE SOURCE ...: LC-38 Cavity
ANALYST .....: C. WARNER

AUTHORIZED BY : Kevin Sedlak
CLIENT P.O. : 9967411.001/277
SAMPLE DATE ...: 03-29-93
SUBMITTAL DATE : 03-31-93
EXTRACTION DATE: 04-01-93
ANALYSIS DATE .: 04-07-93

Method 8020 - Aromatic Volatiles

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
Benzene	2300	ug/Kg	1000
Toluene	15000	ug/Kg	1000
Ethylbenzene	13000	ug/Kg	1000
Total Xylenes	58000	ug/Kg	300

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SAMPLE NO. : 6301016
INVOICE NO.: 62130259
REPORT DATE: 04-08-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : B-1 35-36.5
SAMPLE TYPE .....: Soil
SAMPLED BY .....: Kevin Sedlak
SUBMITTED BY ....: George Esqueda
SAMPLE SOURCE ...: LC-38 Cavity
ANALYST .....: C. WARNER

AUTHORIZED BY : Kevin Sedlak
CLIENT P.O. : 9967411.001/277
SAMPLE DATE ...: 03-29-93
SUBMITTAL DATE : 03-31-93
EXTRACTION DATE: 04-01-93
ANALYSIS DATE .: 04-07-93

Method 8020 - Aromatic Volatiles

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
Benzene	670	ug/Kg	200
Toluene	2400	ug/Kg	200
Ethylbenzene	1300	ug/Kg	200
Total Xylenes	6000	ug/Kg	60

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Las Cruces, NM 88001

SAMPLE NO. : 6301017
INVOICE NO.: 62130259
REPORT DATE: 04-12-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : B-1 40-41.5
SAMPLE TYPE .....: Soil
SAMPLED BY .....: Kevin Sedlak
SUBMITTED BY ....: George Esqueda
SAMPLE SOURCE ...: LC-38 Cavity
ANALYST .....: C. WARNER

AUTHORIZED BY : Kevin Sedlak
CLIENT P.O. : 9967411.001/277
SAMPLE DATE ...: 03-29-93
SUBMITTAL DATE : 03-31-93
EXTRACTION DATE: 04-01-93
ANALYSIS DATE .: 04-09-93

Method 8020 - Aromatic Volatiles

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
Benzene	<2500	ug/Kg	2500
Toluene	22000	ug/Kg	2500
Ethylbenzene	18000	ug/Kg	2500
Total Xylenes	71000	ug/Kg	800

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