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PASSIVE SOIL GAS SURVEY REPORT

Fire Training Area No. 4
SWMU Nos. 109, 110, 111, 112
Cannon Air Force Base
Clovis, New Mexico

Prepared for:

U.S. ARMY CORPS OF ENGINEERS
Omaha District

January 1997

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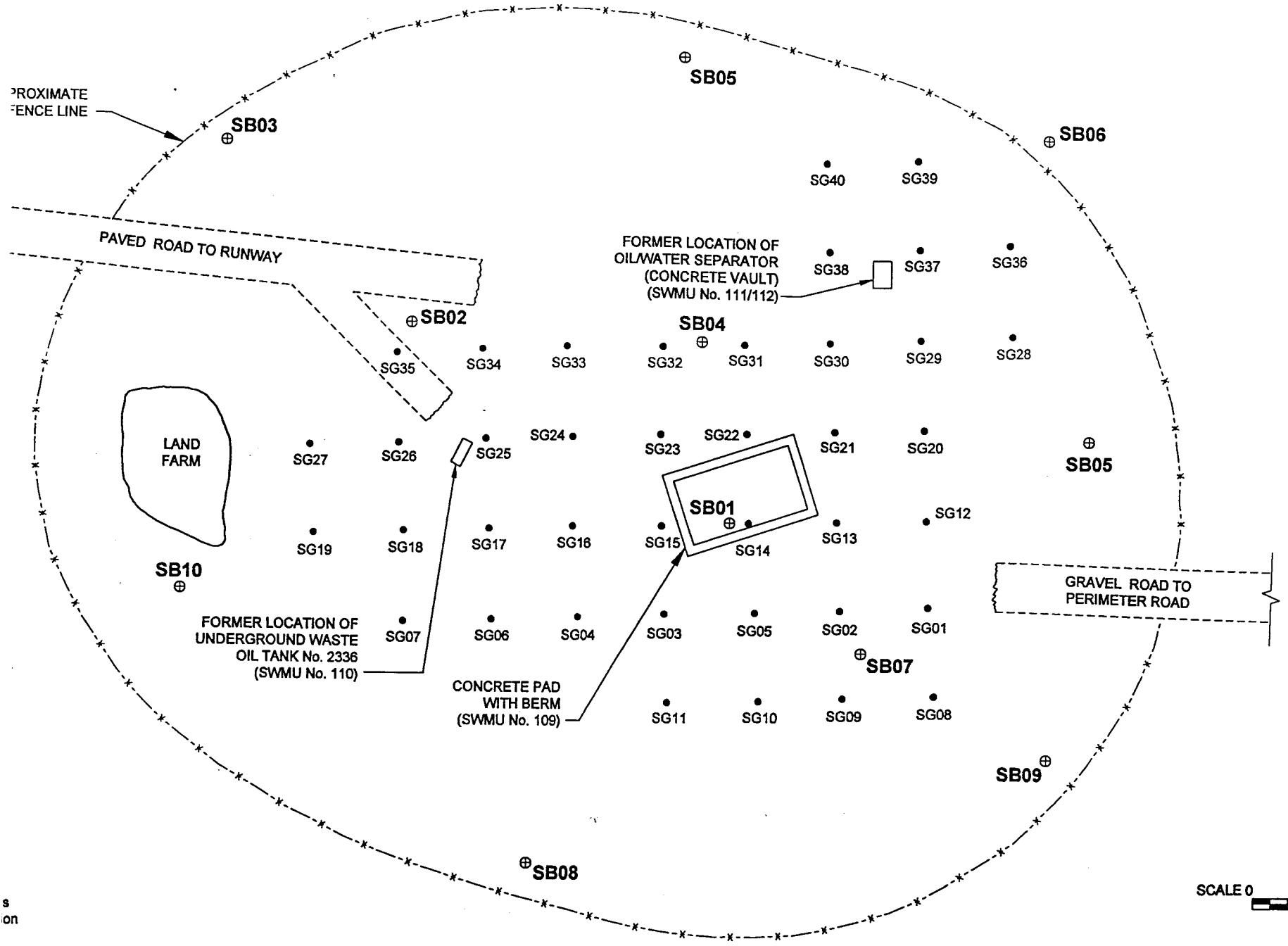

NOTE: SWMU locations are approximated based on available information.

Figure 3

PROPOSED SOIL BORING LOCATION PLAN

FIRE TRAINING AREA No. 4
CANNON AIR FORCE BASE
Clovis, New Mexico

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CANNON AIR FORCE BASE
Clovis, New Mexico

Prepared for:

U.S. Department of the Army
Corps of Engineers, Omaha District
Omaha, Nebraska
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Prepared by:
Harza Environmental Services, Inc.
Chicago, Illinois

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TITLE PAGE

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FIRE TRAINING AREA No. 4
SWMU Nos. 109, 110, 111, 112
CANNON AIR FORCE BASE, CLOVIS, NEW MEXICO

USACE CONTRACT NO. DACW45-94-D-0044
DELIVERY ORDER No. 0006

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LIST OF ACRONYMS

CAFB	Cannon Air Force Base
DQCR	Daily Quality Control Report
FTA4	Fire Training Area No. 4
NMED	New Mexico Environmental Department
PSGS	Passive Soil Gas Survey
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SOP	Standard Operating Procedure
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TPH	Total Petroleum Hydrocarbons
USACE	U.S. Army Corps of Engineers, Omaha District
USEPA	U.S. Environmental Protection Agency
USCS	Unified Soil Classified System
VOC	Volatile Organic Compound

1.0 INTRODUCTION

1.1 Purpose and Scope

This report presents the results of the Passive Soil Gas Survey (PSGS) conducted as part of the Phase II RCRA Facility Investigation (RFI) at Fire Training Area No. 4, Cannon Air Force Base (Cannon AFB), Curry County, New Mexico. The purpose of the PSGS was to obtain soil gas analytical data to identify suitable boring locations for subsequent site investigations.

Investigation activities were performed in accordance with procedures outlined in *RFI Work Plan, Phase II RCRA Facility Investigation, Fire Training Area No. 4, SWMU Nos. 109, 110, 111, 112, Cannon Air Force Base, Clovis, New Mexico*, dated September 1996. The Work Plan was prepared by Harza Environmental Services, Inc. (Harza) for the U.S. Army Corps of Engineers, Omaha District (USACE) and approved by the New Mexico Environmental Department (NMED).

1.2 Report Content and Organization

This report is divided into five (5) sections. Section 1.0, Introduction, briefly describes the purpose and scope of work, and presents the report content and organization. Section 2.0, Background, provides a description of Fire Training Area No. 4 and information pertaining to potential site contaminants. Section 3.0, Field and Laboratory Methods, outlines the methods used to conduct the Passive Soil Gas Survey including; sampling grid establishment; soil gas module installation, retrieval, and chemical analysis; and field documentation procedures. Section 4.0, Data Summary and Evaluation, summarizes the results of the passive soil gas survey and Section 5.0 outlines recommendations for additional investigations based on the results.

2.0 BACKGROUND

The following represents a general description of Fire Training Area No. 4 and includes information concerning potential site contaminants. This summary was abstracted in part from the Work Plan and only includes information relevant to the PSGS. A more detailed summary of information pertaining to the physical geography, land use, climatology, geology, hydrogeology, soils, and biological resources at Cannon AFB is included in the Project Description section in the Work Plan.

2.1 Site Location

Cannon AFB occupies 4,320 acres in Curry County, approximately 7 miles west of Clovis, New Mexico (Figure 1). Fire Training Area No. 4 is located in the southeast corner of Cannon AFB approximately 2000 ft northeast of the end of Runway 31.

2.2 Site Description

Fire Training Area No. 4 was reportedly used for fuel truck cleaning between 1961 and 1974. In 1974, it was activated as a fire training area and has been actively used for this purpose until recently. Fire Training Area No. 4 is comprised of four Solid Waste Management Units (SWMUs):

- SWMU No. 109 - Fire Training Pit
- SWMU No. 100 - Underground Waste Oil Tank #2336
- SWMU No. 111 - Unlined Pit; and
- SWMU No. 112 - Oil/Water Separator #2336

SWMU No. 109 consists of a concrete lined pit and berm. A mock airplane was formerly located in the center of the pit and was used for fire training exercises. The pit contains internal drainage features such that excess fuel/water was drained to the oil-water separator (SWMU No. 112) in the northeast part of the site. The oil-water separator was activated in 1985, allegedly at the location of the former unlined pit (SWMU No. 111). Prior to 1985, the unlined pit had been used to collect runoff from the area after fires were extinguished during fire training exercises. The underground waste oil tank (SWMU No. 110) was a 2,000 gallon storage tank used to store recovered JP-4 fuel for use during fire training exercises. The tank has been removed and soil from around the tank is being land farmed on a plot adjacent to the westernmost site access gate. To prevent the downward migration of contaminants, the land farmed soil was placed on top of heavy gauge plastic.

Reportedly, fuel was introduced to the ground surface between 1961 and 1974. From 1974 to 1975, co-mingled waste oils, solvents, and recovered JP-4 were used as fuel for fire training exercises. Between 1975 and 1995, only recovered JP-4 has reportedly been used as a fuel. During some, but not all training exercises, the ground was saturated with water.

2.3 Potential Site Contaminants

Information concerning potential contaminants at Fire Training Area No. 4 was obtained from excerpted information provided by USACE included in the Work Plan. Previous investigations are summarized as follows:

- In 1985, Radian Corporation completed two deep soil borings; one about 50 feet east of the fire training pit and one about 100 feet south of the fire training pit. Sample results from the boring to the east indicated the presence of oil and grease up to 280 mg/kg and lead between 4.1 and 39 mg/kg at a depth of 10.5 to 11.5 feet. Results from the boring to the south indicated 37 mg/kg oil and grease at a depth of 43 to 45 feet. No purgable organic compounds were detected in these borings.

- In 1988, Walk, Haydel and Associates completed nine borings in the area of SWMU Nos. 11/112 and SWMU No. 110, ranging in depth from 5 to 100 feet. Analytical results indicated the presence of JP-4 constituents ethylbenzene, benzene, toluene, and xylene in soils from three borings near the underground tank. Concentrations above 60 feet ranged from: 2,030 to 15,200 µg/kg benzene; 1,300 to 56,200 µg/kg ethylbenzene; 2,870 to 64,000 µg/kg toluene; and 6,880 to 66,200 µg/kg xylene (total). Concentrations decreased with depth and were not detected below 60 feet. Arsenic, selenium, cadmium, and silver were detected, but only arsenic in two borings and cadmium in one boring exceeded typical concentrations. Arsenic concentrations which exceeded those of typical soils ranged from 86 to 152.5 mg/kg. Cadmium concentrations exceeding typical levels were 11.2 and 12.7 mg/kg.

- In 1991, Woodward Clyde Consultants collected four surface soil samples and completed four soil borings. Analytical results indicated the presence of ethylbenzene and xylenes as well as total petroleum hydrocarbons (TPH) in the area of SWMU No. 109. In a boring immediately south of SWMU No. 109, ethylbenzene was found at an estimated concentration of 19,000 µg/kg from a depth of 4 to 6 feet, xylene (total) between 6,700 and 290,000 µg/kg from depths of 4 to 12 feet, and TPH between 46.7 and 13,600 µg/kg from the surface to depths of 22 feet. In the boring immediately north of SWMU No. 109, TPH was reported between 12,900 and 38,500 µg/kg from the upper 6 feet and between 203 and 215 µg/kg at a depth of 50 to 62 feet. No other organic detections were reported. One elevated lead level (estimated at 19.6 mg/kg) was detected at the surface at the boring completed immediately north of SWMU No. 109.

Based upon the results of previous site investigations and historical uses of the area, potential contaminants may include constituents of JP-4, TPH, oil and grease, solvents, and heavy metals.

3.0 FIELD AND LABORATORY METHODS

This section summarizes the methods used to conduct the PSGS. Field and laboratory methods conform to the requirements in the Standard Operating Procedures contained in the Work Plan and are summarized below.

3.1 Sampling Activities

A total of 44 soil gas screening modules (including four field duplicate modules) were installed at 40 sampling locations identified on Figure 2. Modules were installed over a 2-day period beginning on October 16, 1996, left in-place to react with soil gases for a period of approximately two weeks, and retrieved on October 30, 1996. The actual time of installation and retrieval of each module was recorded on the Sample Chain-of-Custody form and summarized on Table 1. An approximate two week exposure time was specified by W.L Gore & Associates, Inc. to allow for adsorption of target compounds. Following retrieval of the screening modules, each module was analyzed for selected target VOCs and SVOCs. After completion of sampling activities, the dimensions and locations of aboveground physical features were verified from existing site maps and an updated site plan was prepared (Figure 2).

3.2 Sample Location Grid

To determine sample locations, a sampling grid with a 50-ft spacing was established and referenced to the fire training pit (SWMU No. 109). The grid was established using a TOPCON AT-F2 surveying level and a 100 ft measuring tape. Sample locations were marked with 1 inch by 2 inch wooden survey stakes (with fluorescent survey ribbon) with the sample location marked with permanent waterproof marker.

3.3 Sample Locations and Designations

Sample locations were placed between 0.5 and 0.8 feet west of each grid survey stake, which varied with location. At four locations, duplicate screening modules were installed for quality control testing purposes. Duplicate samples were located between 0.5 and 0.7 feet west of the corresponding field sample.

Sample location stakes were labeled with an "SG" designation, followed by a two-digit location identification number. For example, soil gas sample location 1 was identified as "SG01". These numbers were recorded on the site map and in the field notebook.

3.4 Screening Module Description

Soil gas screening modules were provided by W.L. Gore & Associates, Inc., Elkton, Maryland. Gore-Sorber® Screening Modules are pollution detection sensors containing a Passive Sorbent Collection Device constructed of GORE-TEX® expanded polytetrafluoroethylene (ePTFE) tubing. The sorbent mixture is housed in the bottom of a sealed outer length of ePTFE tubing which serves as a means of module insertion and retrieval. The sorbent mixture is formulated to detect a broad range of volatile and semi-volatile organic compounds.

3.5 Screening Module Installation

A Bosch 11209 electric rotary hammer drill with a 36-inch carbide-tipped auger bit was used to create a hole 30-inches deep and 0.75-inches in diameter, at each sample location. Following completion of drilling activities, new latex surgical gloves were worn to remove the screening module from its sealed container. The module identification number and the corresponding sample location were recorded in the field logbook and on the site map. The stainless steel insertion rod, provided by W. L. Gore & Associates, was inserted into the pocket in the bottom of the screening module and lowered to the bottom of the hole. Once the module was completely inserted into the hole, the insertion rod was pressed against the side of the hole, and with a twisting motion, was removed from the module and pulled out of the hole. The module retrieval cord was tied to a screw eye in a cork, and the excess cord was coiled and pushed into the hole along with the module identification tag. The top of the hole was sealed with the cork to prevent the intrusion of rain and atmospheric gases during exposure. Finally, the installation time was recorded and a color photograph was taken.

To minimize the potential for cross-contamination, the auger bit and insertion rod were decontaminated between each use by washing with a solution of Alconox® (phosphate based detergent) and distilled water. Decontamination fluids generated during equipment decontamination were discharged to the ground surface near each sample location.

3.6 Screening Module Retrieval

Upon remobilization to the site, sample location markers were observed to be in place and each sample location appeared to be undisturbed. A color photograph was taken of each site prior to the removal of the soil gas module. Wearing latex surgical gloves, the cork was removed from the top of each hole with a corkscrew. After verifying the module tag number with the installation record, the retrieval cord was wrapped around the fingers once or twice and pulled steadily out of the hole. The cork was cut from the module and the module was examined for evidence of emersion in water and/or the detectable presence of hydrocarbons. This information was recorded in the field notebook and on the chain-of-custody form. The module and remaining retrieval cord were coiled and placed into a correctly labeled storage container. Finally, the storage container was resealed and placed into the storage carton. During screening module retrieval, all modules were recovered with the exception of module #128666 at location SG34 due to a break in the retrieval cord approximately 2.5 feet below the ground surface.

3.7 Sample Handling and Preservation

3.7.1 Sample Designations

The sample designation for all field samples and quality control samples consists of a unique fifteen digit identification in the form:

"CANFTA-XXYY-ZZZZ"

CANFTA4 is the site identifier with "CAN" identifying Cannon AFB and FTA4 referring to Fire Training Area No. 4. The next two digits ("XX") designate the type of sample collected. In this case, soil gas samples are noted as "SG". The next two characters ("YY") indicate the sample location. The last four characters ("ZZZZ") are the sample identifier. The first two digits correspond to the type of sample, in this case all soil gas samples are identified with "03". The last two numbers correspond to the beginning depth of the sample below ground surface. The following is an example of a soil gas sample collected from location 3 at a depth of approximately 3 feet:

CANFTA-SG03-0303

Field duplicates were numbered sequentially with the field samples (e.g. blind to the laboratory) and recorded in the field logbook for compilation with the data review. They were assigned a unique identification number following the same procedure above except for the last eight digits (XXYY-ZZZZ). The first two characters ("XX") of each quality control sample identifier corresponds to the particular type of sample. In this case, "01" denotes a field duplicate. The subsequent two characters ("YY") correspond to the sequential sample number (e.g. 1,2, etc.). The final four characters ("ZZZZ") designate the matrix and depth as described above. The following is an example of an identification number for a soil gas duplicate sample number 2:

CANFTA4-0102-0303

3.7.2 Preservation

Samples were packed in ice in an insulated cooler immediately following module retrieval, until delivery to the analytical laboratory. A temperature blank was included in the cooler for quality control purposes.

3.7.3 Sample Packaging and Shipping

Field samples and associated quality control samples were shipped via overnight delivery to W.L. Gore & Associates, Inc. on the same day that they were retrieved. The cooler was packaged in accordance with procedures outlined in USACE guidance documents and W.L. Gore & Associates, Inc. screening module installation and retrieval information sheet.

3.7.4 Chain-of-Custody

Information on the custody, transfer, handling, and shipping of the samples was recorded on a Chain-of-Custody form and shipped along with the samples to W.L Gore & Associates, Inc.. A copy of the completed Chain-of-Custody form is included in Appendix A.

3.8 Analytical Testing

All screening modules (including field and quality control samples) were analyzed by W.L. Gore & Associates, Elkton, Maryland. Modules were analyzed using a test method developed by W.L. Gore & Associates based upon appropriate components of the USEPA analytical protocols from Methods 8240 and 8270. Analyses were performed for the following target compounds:

- methyl t-butyl ether
- trans-1,2-dichloroethene
- 1,1-dichloroethene
- cis-1,2-dichloroethene
- chloroform
- 1,1,1-trichloroethane
- 1,2-dichloroethane
- benzene
- trichloroethene
- toluene
- octane
- tetrachloroethene
- chlorobenzene
- ethylbenzene
- m-, p-, o-xylene
- 1,3,5-trimethylbenzene
- 1,2,4-trimethylbenzene
- 1,4-dichlorobenzene
- carbon tetrachloride
- undecane, tridecane, and pentadecane (Diesel Range Organics)
- napthalene
- 2-methylnapthalene

3.9 Field Documentation

Field documentation was maintained in accordance with the Work Plan and included Field Logbook entries, Daily Quality Control Reports, photographic documentation, and Field Sample Collection Sheets. All field documentation is maintained in Harza's permanent project files.

4.0 DATA SUMMARY AND EVALUATION

Soil gas analytical results for individual target Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) are summarized on Table 2 as µg per sorber. The following individual compounds and groups of compounds were detected in field samples with the highest relative frequency:

- undecane;
- tridecane;
- pentadecane;
- total target diesel range organics (DRO);
- tetrachloroethene;
- total target volatile organics; and
- toluene.

Toluene was detected in all field samples with the exception of module #128640 at location SG11, but also in quality control (QC) samples (trip blanks). Review of the toluene data indicated that detected concentrations in field samples and the trip blanks were within five times (5x) the trip blank concentrations, except for one sample. According to data validation procedures in *Data Quality Review Guidelines, USEPA, 1994*, any detected volatile compound, that was also detected in any associated blank, is qualified if the sample concentration is less than five times (5x) the blank concentration and should be considered and reported as not detected. Therefore, toluene data is not considered usable for evaluation purposes.

For illustration purposes and based on the relative frequency of detection, isoconcentration maps were prepared for the following individual compounds or groups of compounds:

- Total Target Volatile Organics *(combined masses of methyl t-butyl ether, trans-1,2-dichloroethene, 1,1-dichloroethene, cis-1,2-dichloroethene, chloroform, 1,1,1-trichloroethane, 1,2-dichloroethane, benzene, ethylbenzene, xylene, carbon tetrachloride, trichloroethene, tetrachloroethene, chlorobenzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene and 1,4-dichlorobenzene).*

- Total Target Diesel Range Organics *(combined masses of undecane, tridecane, and pentadecane.*

- Tetrachloroethene.

These maps are representative of other target compounds and are presented in Appendix A, Figures 1, 2, and 3. The highest relative concentrations of volatile organics and diesel range organics in soil gas are located within and immediately adjacent to the fire training pit (SWMU No 109). Appendix A, Figure 1 shows that volatile organic soil gas concentrations generally decrease with lateral distance from the fire training pit area with equivalent concentration

contours skewed to the south and east. Appendix A, Figure 2 shows a similar focus of diesel range organic soil gas concentrations, although relative higher concentrations extend toward the north/northwest toward locations SG31 and SG32, and to the northeast toward location SG20. An anomalous area of concentrations of target volatile and diesel range organics in soil gas is also noted at location SG35.

Appendix A, Figure 3 indicates that the area with the highest relative concentrations of tetrachloroethene in soil gas is located southeast of the fire training pit (SWMU No. 109). In contrast, tetrachloroethene was not detected in soil gas within the fire training pit and several adjacent locations (SG15 and SG16). An anomalous area of tetrachloroethene in soil gas is noted near locations SG18 and SG07 adjacent to SWMU No. 100.

5.0 CONCLUSIONS

Principal conclusions derived from the soil gas survey are as follows:

- Frequently detected target compounds and groups of compounds in soil gas at Fire Training Area No. 4 include total target volatile organics, total target diesel range organics (undecane, tridecane, and pentadecane), and tetrachloroethene.

- Target compounds detected in soil gas at Fire Training Area No. 4, but at a relatively low frequency include methyl t-butyl ether, trans-1,2-dichloroethene, cis-1,2-dichloroethene, chloroform, 1,1,1-trichloroethane, benzene, trichloroethene, octane, chlorobenzene, ethylbenzene, xylene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, 1,4-dichlorobenzene, napthalene, and 2-methyl napthalene.

- The highest relative soil gas concentrations of target volatile organics and diesel range organics correlate with the location of the fire training pit (SWMU No.109).

- The highest relative soil gas concentrations of tetrachloroethene are located southeast of the fire training pit.

- Frequently detected compounds in soil gas extend beyond the limits of the survey area.

6.0 RECOMMENDATIONS

The proposed drilling and sampling program consists of 1,200 linear feet of drilling in twelve (12) borings to investigate the vertical and horizontal extent of soil contamination. Proposed soil boring locations were selected based on the relative spatial distribution of target compounds as discussed in Section 4.0. The proposed locations of ten (10) borings are indicated on Figure 3. The rationale for the location of these borings is provided below:

- One soil boring (SB01) is proposed near SG14 in the area with the highest concentrations of total detected target compounds. This boring is proposed to be completed to primarily define the vertical extent of contamination near the suspected contaminant source.

- Two soil borings (SB02 and SB03) are proposed near the west access road northwest of the fire training pit to examine anomalous concentrations of DRO and VOCs in soil gas.

- Three soil borings (SB04, SB05 and SB06) are proposed to the north/northeast of the fire training pit, where analytical data indicate the presence of DRO beyond the limits of the survey area.

- Three soil borings (SB07, SB08, and SB09) are proposed to the southeast and southwest of the fire training pit, where analytical data indicates total VOCs and tetrachloroethane soil gas concentrations extend beyond the limits of the survey area.

- One soil boring (SB10) is proposed to the west of the soil gas survey area where analytical data suggest relatively high total volatile organics and tetrachloroethane soil gas concentrations extend beyond the limits of the survey area.

In accordance with the project work plans, each boring will be terminated when two consecutive non-detect results are obtained using immunoassay screening or a maximum boring depth of 100 feet is reached. The two (2) remaining borings and any excess footage that may result from termination of borings shallower than 100 feet will be available for use at additional locations, depending upon the results of field screening and immunoassay test results. If so, additional locations will be recommended verbally to CAFB and USACE personnel for approval before proceeding.

TABLES

TABLE 1

Summary of Soil Gas Sampling Activities
Fire Training Area No. 4
Cannon Air Force Base

Sample Location	Sample Number	Module Number	Installation		Retrieval		Comment
			Date	Time	Date	Time	
SG01	CANFTA4-SG01-0303	128629	10-16-96	15:00	10-30-96	08:05	Field Sample
SG02	CANFTA4-SG02-0303	128630	10-16-96	15:10	10-30-96	08:09	Field Sample
SG03	CANFTA4-SG03-0303	128631	10-16-96	15:30	10-30-96	08:11	Field Sample
SG04	CANFTA4-SG04-0303	128632	10-16-96	15:40	10-30-96	08:18	Field Sample
	CANFTA4-0101-0303	128633	10-16-96	15:50	10-30-96	08:14	Field Duplicate Sample
SG05	CANFTA4-SG05-0303	128634	10-16-96	15:55	10-30-96	08:24	Field Sample
SG06	CANFTA4-SG06-0303	128635	10-16-96	16:10	10-30-96	08:28	Field Sample
SG07	CANFTA4-SG07-0303	128636	10-16-96	16:25	10-30-96	08:30	Field Sample
SG08	CANFTA4-SG08-0303	128637	10-16-96	16:40	10-30-96	08:32	Field Sample
SG09	CANFTA4-SG09-0303	128638	10-16-96	16:50	10-30-96	08:33	Field Sample
SG10	CANFTA4-SG10-0303	128639	10-16-96	17:00	10-30-96	08:34	Field Sample
SG11	CANFTA4-SG11-0303	128640	10-16-96	17:10	10-30-96	08:35	Field Sample
SG12	CANFTA4-SG12-0303	128641	10-16-96	17:20	10-30-96	08:37	Field Sample
SG13	CANFTA4-SG13-0303	128642	10-16-96	17:30	10-30-96	08:39	Field Sample
SG14	CANFTA4-SG14-0303	128643	10-16-96	17:40	10-30-96	08:41	Field Sample
SG15	CANFTA4-SG15-0303	128644	10-16-96	17:50	10-30-96	08:46	Field Sample
	CANFTA4-0102-0303	128645	10-16-96	17:50	10-30-96	08:44	Field Duplicate Sample
SG16	CANFTA4-SG16-0303	128646	10-16-96	18:00	10-30-96	08:48	Field Sample
SG17	CANFTA4-SG17-0303	128647	10-16-96	18:10	10-30-96	08:51	Field Sample
SG18	CANFTA4-SG18-0303	128648	10-16-96	18:20	10-30-96	08:53	Field Sample
SG19	CANFTA4-SG19-0303	128649	10-16-96	18:30	10-30-96	08:55	Field Sample
SG20	CANFTA4-SG20-0303	128650	10-16-96	18:40	10-30-96	08:57	Field Sample

TABLE 1 (Page 2)

Summary of Soil Gas Sampling Activities
Fire Training Area No. 4
Cannon Air Force Base

Sample Location	Sample Number	Module Number	Installation		Retrieval		Comment
			Date	Time	Date	Time	
SG21	CANFTA4-SG21-0303	128651	10-16-96	18:50	10-30-96	08:59	Field Sample
SG22	CANFTA4-SG22-0303	128652	10-16-96	19:00	10-30-96	09:00	Field Sample
	CANFTA4-0103-0303	128653	10-16-96	19:00	10-30-96	09:02	Field Duplicate Sample
SG23	CANFTA4-SG23-0303	128654	10-17-96	07:45	10-30-96	09:05	Field Sample
SG24	CANFTA4-SG24-0303	128655	10-17-96	07:55	10-30-96	09:09	Field Sample
SG25	CANFTA4-SG25-0303	128656	10-17-96	08:05	10-30-96	09:12	Field Sample
SG26	CANFTA4-SG26-0303	128657	10-17-96	08:15	10-30-96	09:14	Field Sample
SG27	CANFTA4-SG27-0303	128658	10-17-96	08:30	10-30-96	09:16	Field Sample
SG28	CANFTA4-SG28-0303	128659	10-17-96	08:45	10-30-96	09:18	Field Sample
SG29	CANFTA4-SG29-0303	128660	10-17-96	09:00	10-30-96	09:20	Field Sample
SG30	CANFTA4-SG30-0303	128661	10-17-96	09:15	10-30-96	09:21	Field Sample
	CANFTA4-0104-0303	128662	10-17-96	09:15	10-30-96	09:21	Field Duplicate Sample
SG31	CANFTA4-SG31-0303	128663	10-17-96	09:30	10-30-96	09:22	Field Sample
SG32	CANFTA4-SG32-0303	128664	10-17-96	09:45	10-30-96	09:24	Field Sample
SG33	CANFTA4-SG33-0303	128665	10-17-96	10:00	10-30-96	09:26	Field Sample
SG34	CANFTA4-SG34-0303	128666	10-17-96	10:15	Module Not Retrieved		
SG35	CANFTA4-SG35-0303	128667	10-17-96	10:30	10-30-96	09:33	Field Sample
SG36	CANFTA4-SG36-0303	128668	10-17-96	10:45	10-30-96	09:38	Field Sample
SG37	CANFTA4-SG37-0303	128669	10-17-96	11:00	10-30-96	09:40	Field Sample
SG38	CANFTA4-SG38-0303	128670	10-17-96	11:15	10-30-96	09:42	Field Sample
SG39	CANFTA4-SG39-0303	128671	10-17-96	11:30	10-30-96	09:44	Field Sample
SG40	CANFTA4-SG40-0303	128672	10-17-96	11:45	10-30-96	09:46	Field Sample

TABLE 2

Summary of Soil Gas Analytical Results (μg)[1]
Fire Training Area No. 4
Cannon Air Force Base

Sample Location	Module Number	MTBE	t12DCE	11DCA	c12DCE	CHCl3	111TCA	BENZ	TCE	TOL
SG01	128629	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.12
SG02	128630	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.13
SG03	128631	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	0.14	0.06	< 0.01	0.33
SG04	128632	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	0.10	< 0.02	< 0.01	0.18
	128633	< 0.26	< 0.16	<0.05	< 0.03	0.13	< 0.08	0.04	< 0.01	0.58
SG05	128634	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	0.06	0.15
SG06	128635	< 0.26	< 0.16	<0.05	< 0.03	0.20	0.34	< 0.02	< 0.01	0.17
SG07	128636	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.14
SG08	128637	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	0.12	0.13
SG09	128638	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	0.09	< 0.02	< 0.01	0.16
SG10	128639	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.30
SG11	128640	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	< 0.14
SG12	128641	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.11
SG13	128642	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	0.14	< 0.01	0.23
SG14	128643	< 0.26	1.75	<0.05	12.93	< 0.04	< 0.08	67.96	0.28	5.83
SG15	128644	0.08	3.19	<0.05	74.61	< 0.04	< 0.08	82.40	2.59	120.31
	128645	< 0.26	2.29	<0.05	46.23	< 0.04	< 0.08	78.86	1.69	101.84
SG16	128646	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	0.08	< 0.01	0.20
SG17	128647	< 0.26	< 0.16	<0.05	< 0.03	0.13	< 0.08	< 0.02	< 0.01	0.27
SG18	128648	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	0.06	0.18
SG19	128649	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	0.16	< 0.02	< 0.01	0.32

NOTE:

(1) Shaded cells indicate compound detected above method detection limit.

TABLE 2 (Page 2)

Summary of Soil Gas Analytical Results (μg)[1]
Fire Training Area No. 4
Cannon Air Force Base

Sample Location	Module Number	MTBE	t12DCE	11DCA	c12DCE	CHCl3	111TCA	BENZ	TCE	TOL
SG20	128650	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.20
SG21	128651	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	0.11	0.07	< 0.01	0.19
SG22	128652	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	0.68	0.19	0.11
	128653	< 0.26	< 0.16	<0.05	0.06	< 0.04	< 0.08	0.79	0.24	0.16
SG23	128654	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	0.09	0.03	0.10	0.64
SG24	128655	< 0.26	< 0.16	<0.05	< 0.03	0.13	< 0.08	0.25	< 0.01	0.11
SG25	128656	< 0.26	< 0.16	<0.05	< 0.03	0.12	< 0.08	< 0.02	< 0.01	0.28
SG26	128657	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.14
SG27	128658	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	0.09	< 0.02	< 0.01	0.08
SG28	128659	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	0.13	< 0.01	0.67
SG29	128660	< 0.26	< 0.16	<0.05	< 0.03	0.11	< 0.08	0.03	< 0.01	0.85
SG30	128661	< 0.26	< 0.16	<0.05	< 0.03	0.09	< 0.08	< 0.02	< 0.01	0.17
	128662	< 0.26	< 0.16	<0.05	< 0.03	0.13	< 0.08	< 0.02	< 0.01	0.26
SG31	128663	< 0.26	< 0.16	<0.05	< 0.03	0.10	< 0.08	0.12	< 0.01	0.22
SG32	128664	< 0.26	< 0.16	<0.05	< 0.03	0.09	< 0.08	< 0.02	< 0.01	0.17
SG33	128665	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.14
SG35	128667	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	0.16	< 0.01	0.60
SG36	128668	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.10
SG37	128669	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.25
SG38	128670	< 0.26	< 0.16	<0.05	< 0.03	0.10	< 0.08	0.05	< 0.01	0.40
SG39	128671	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	< 0.02	< 0.01	0.34
SG40	128672	< 0.26	< 0.16	<0.05	< 0.03	< 0.04	< 0.08	0.03	< 0.01	1.09

NOTE:

(1) Shaded cells indicate compound detected above method detection limit.

TABLE 2 (Page 3)

Summary of Soil Gas Analytical Results (μg)[1]
Fire Training Area No. 4
Cannon Air Force Base

Sample Location	Module Number	OCT	PCE	12DCA	CIBENZ	EtBENZ	mpXYL	oXYL	135TMB	124TMB
SG01	128629	< 0.03	3.72	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG02	128630	< 0.03	7.16	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG03	128631	0.56	3.34	<0.02	< 0.03	0.04	0.05	0.05	0.15	0.17
SG04	128632	< 0.03	0.08	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
	128633	< 0.03	0.73	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG05	128634	< 0.03	8.16	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG06	128635	< 0.03	0.06	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG07	128636	< 0.03	0.61	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	0.01	< 0.02
SG08	128637	< 0.03	3.26	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG09	128638	< 0.03	1.28	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG10	128639	< 0.03	3.43	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG11	128640	< 0.03	4.23	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG12	128641	< 0.03	5.21	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG13	128642	0.14	2.17	<0.02	< 0.03	< 0.02	0.03	0.06	1.10	0.68
SG14	128643	167.32	< 0.03	<0.02	< 0.03	45.21	297.64	12.72	33.10	66.61
SG15	128644	34.32	< 0.03	<0.02	0.22	12.05	81.57	30.21	16.12	18.42
	128645	53.28	< 0.03	<0.02	0.07	10.28	80.33	24.76	11.30	22.11
SG16	128646	0.08	< 0.03	<0.02	< 0.03	< 0.02	0.02	< 0.02	< 0.02	< 0.02
SG17	128647	< 0.03	0.47	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG18	128648	< 0.03	0.80	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG19	128649	< 0.03	0.13	<0.02	< 0.03	< 0.02	0.02	< 0.02	< 0.02	< 0.02

NOTE:

(1) Shaded cells indicate compound detected above method detection limit.

TABLE 2 (Page 4)

Summary of Soil Gas Analytical Results (μg)[1]
Fire Training Area No. 4
Cannon Air Force Base

Sample Location	Module Number	OCT	PCE	12DCA	CIBENZ	EtBENZ	mpXYL	oXYL	135TMB	124TMB
SG20	128650	< 0.03	2.08	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG21	128651	0.27	0.99	<0.02	< 0.03	< 0.02	0.02	< 0.02	< 0.02	0.02
SG22	128652	3.47	0.06	<0.02	< 0.03	0.06	0.06	0.07	0.07	0.04
	128653	4.56	< 0.03	<0.02	< 0.03	0.41	0.25	0.42	0.62	1.88
SG23	128654	< 0.03	0.36	<0.02	< 0.03	< 0.02	0.02	< 0.02	< 0.02	< 0.02
SG24	128655	0.18	0.34	<0.02	< 0.03	< 0.02	0.03	0.03	<0.02	0.02
SG25	128656	< 0.03	0.22	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG26	128657	< 0.03	0.25	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG27	128658	< 0.03	< 0.03	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG28	128659	< 0.03	0.13	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG29	128660	< 0.03	0.17	<0.02	< 0.03	< 0.02	0.03	< 0.02	< 0.02	< 0.02
SG30	128661	< 0.03	0.61	<0.02	< 0.03	< 0.02	0.02	< 0.02	< 0.02	< 0.02
	128662	< 0.03	0.30	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG31	128663	0.38	< 0.03	<0.02	< 0.03	< 0.02	0.06	< 0.02	0.01	0.05
SG32	128664	1.34	0.08	<0.02	< 0.03	0.07	0.10	0.18	0.43	0.58
SG33	128665	< 0.03	0.15	<0.02	< 0.03	< 0.02	0.02	< 0.02	< 0.02	< 0.02
SG35	128667	0.28	0.11	<0.02	< 0.03	0.19	0.23	0.13	0.03	0.06
SG36	128668	< 0.03	0.18	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG37	128669	< 0.03	< 0.03	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG38	128670	0.43	< 0.03	<0.02	< 0.03	< 0.02	0.02	< 0.02	< 0.02	< 0.02
SG39	128671	< 0.03	0.14	<0.02	< 0.03	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
SG40	128672	< 0.03	0.11	<0.02	< 0.03	< 0.02	0.05	< 0.02	< 0.02	0.03

NOTE:

(1) Shaded cells indicate compound detected above method detection limit.

TABLE 2 (Page 5)

Summary of Soil Gas Analytical Results (μg)[1]
Fire Training Area No. 4
Cannon Air Force Base

Sample Location	Module Number	14DCB	CCl4	C11, C13, C15	UNDEC	NAPH	TRIDEC	2MeNAPH	PENTADEC
SG01	128629	< 0.03	<0.04	0.01	0.01	< 0.03	< 0.03	< 0.05	< 0.04
SG02	128630	< 0.03	<0.04	0.02	0.02	< 0.03	< 0.03	< 0.05	< 0.04
SG03	128631	0.01	<0.04	3.77	2.46	0.03	1.14	0.03	0.17
SG04	128632	< 0.03	<0.04	0.01	0.01	< 0.03	< 0.03	< 0.05	< 0.04
	128633	< 0.03	<0.04	0.03	0.03	< 0.03	< 0.03	< 0.05	< 0.04
SG05	128634	< 0.03	<0.04	0.49	0.23	< 0.03	0.19	0.01	0.07
SG06	128635	< 0.03	<0.04	<0.02	< 0.02	< 0.03	< 0.03	< 0.05	< 0.04
SG07	128636	< 0.03	<0.04	0.01	0.01	< 0.03	< 0.03	< 0.05	< 0.04
SG08	128637	< 0.03	<0.04	<0.02	< 0.02	< 0.03	< 0.03	< 0.05	< 0.04
SG09	128638	< 0.03	<0.04	0.02	0.02	< 0.03	< 0.03	< 0.05	< 0.04
SG10	128639	< 0.03	<0.04	0.05	0.02	< 0.03	< 0.03	< 0.05	0.03
SG11	128640	< 0.03	<0.04	0.01	0.01	< 0.03	< 0.03	< 0.05	< 0.04
SG12	128641	< 0.03	<0.04	0.25	0.11	< 0.03	0.06	< 0.05	0.08
SG13	128642	0.02	<0.04	10.71	6.03	0.22	4.03	0.23	0.86
SG14	128643	< 0.03	<0.04	284.29	209.87	17.96	47.66	28.68	6.82
SG15	128644	1.93	<0.04	176.77	84.83	10.09	88.81	18.17	5.33
	128645	0.21	<0.04	96.14	66.11	1.88	27.62	4.33	2.40
SG16	128646	< 0.03	<0.04	0.06	0.03	< 0.03	0.03	< 0.05	< 0.04
SG17	128647	< 0.03	<0.04	0.06	0.06	< 0.03	< 0.03	< 0.05	< 0.04
SG18	128648	< 0.03	<0.04	0.03	0.03	< 0.03	< 0.03	< 0.05	< 0.04
SG19	128649	< 0.03	<0.04	0.04	0.04	< 0.03	< 0.03	< 0.05	< 0.04

NOTE:

(1) Shaded cells indicate compound detected above method detection limit.

TABLE 2 (Page 6)

Summary of Soil Gas Analytical Results (μg)[1]
Fire Training Area No. 4
Cannon Air Force Base

Sample Location	Module Number	14DCB	CCl4	C11, C13, C15	UNDEC	NAPH	TRIDEC	2MeNAPH	PENTADEC
SG20	128650	< 0.03	<0.04	2.34	1.27	< 0.03	0.91	< 0.05	0.18
SG21	128651	< 0.03	<0.04	0.24	0.12	< 0.03	0.08	< 0.05	0.03
SG22	128652	0.01	<0.04	40.56	10.05	0.01	25.47	0.02	6.04
	128653	0.02	<0.04	169.36	23.82	0.66	105.94	4.22	39.58
SG23	128654	< 0.03	<0.04	0.33	0.13	< 0.03	0.13	0.01	0.07
SG24	128655	< 0.03	<0.04	0.06	0.04	< 0.03	0.02	< 0.05	0.04
SG25	128656	< 0.03	<0.04	0.01	0.01	< 0.03	< 0.03	< 0.05	< 0.04
SG26	128657	< 0.03	<0.04	<0.02	< 0.02	< 0.03	< 0.03	< 0.05	< 0.04
SG27	128658	< 0.03	<0.04	<0.02	< 0.02	< 0.03	< 0.03	< 0.05	< 0.04
SG28	128659	< 0.03	<0.04	0.03	0.03	< 0.03	< 0.03	< 0.05	< 0.04
SG29	128660	< 0.03	<0.04	0.12	0.03	< 0.03	0.01	< 0.05	0.06
SG30	128661	< 0.03	<0.04	0.02	0.02	< 0.03	< 0.03	< 0.05	< 0.04
	128662	< 0.03	<0.04	0.02	0.02	< 0.03	< 0.03	< 0.05	< 0.04
SG31	128663	< 0.03	<0.04	10.38	6.68	< 0.03	0.96	0.01	5.85
SG32	128664	< 0.03	<0.04	35.23	4.83	0.23	5.14	0.37	22.06
SG33	128665	< 0.03	<0.04	0.10	0.02	< 0.03	< 0.03	< 0.05	0.06
SG35	128667	< 0.03	<0.04	3.24	0.88	0.01	2.34	2.37	0.21
SG36	128668	< 0.03	<0.04	0.17	0.07	< 0.03	0.05	< 0.05	0.06
SG37	128669	< 0.03	<0.04	0.22	0.14	< 0.03	0.04	< 0.05	0.04
SG38	128670	< 0.03	<0.04	0.15	0.04	< 0.03	< 0.03	< 0.05	0.11
SG39	128671	< 0.03	<0.04	0.06	0.03	< 0.03	< 0.03	< 0.05	0.02
SG40	128672	< 0.03	<0.04	0.30	0.11	< 0.03	0.18	< 0.05	0.01

NOTE:

(1) Shaded cells indicate compound detected above method detection limit.

TABLE 2 (Page 7)

Key to Soil Gas Target VOCs/SVOCs
Fire Training Area No. 4
Cannon Air Force Base

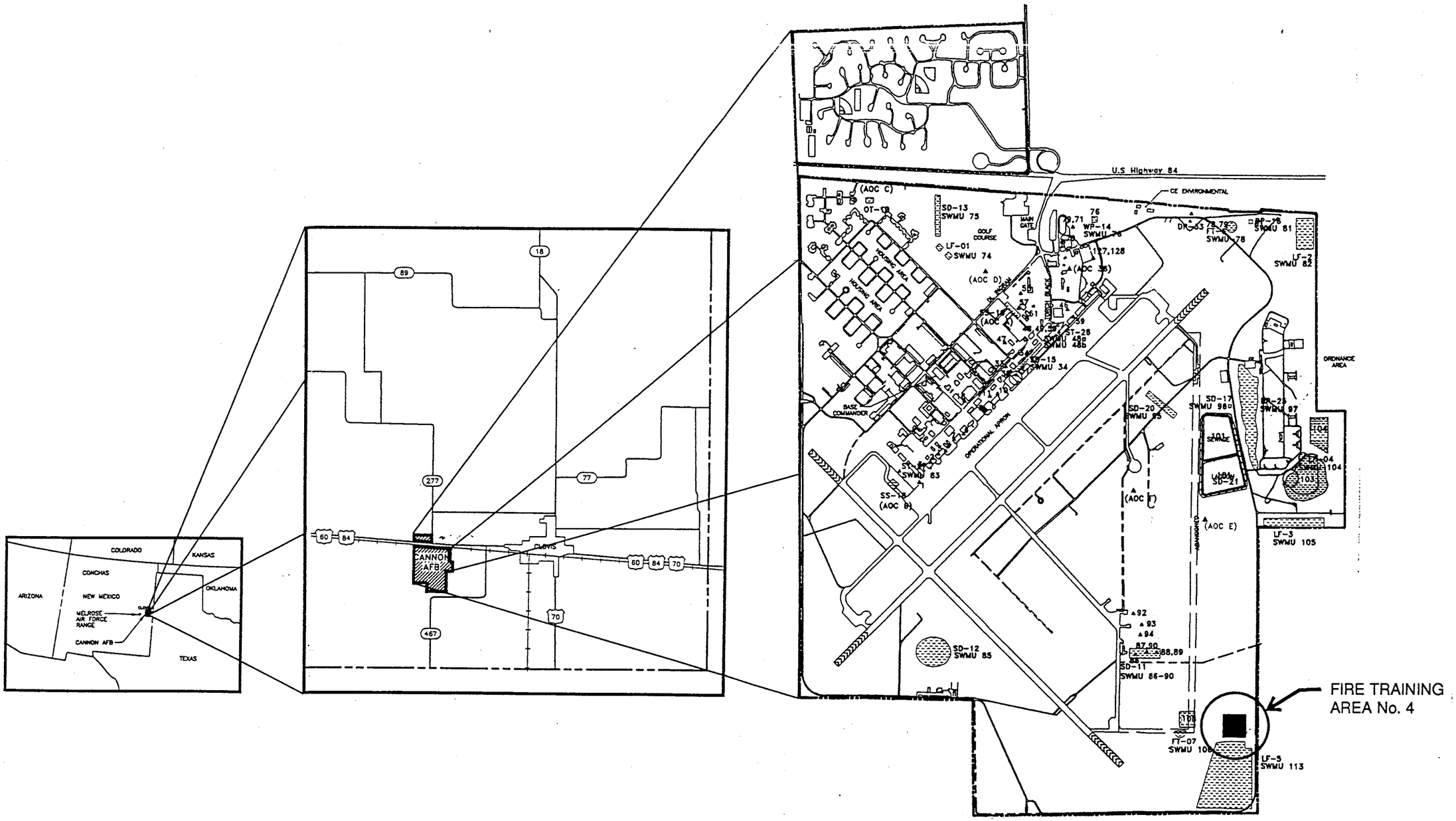
UNITS

µg	micrograms (per sorber), reported for compounds using external standards

ANALYTES

MTBE	methyl t-butyl ether
t12DCE	trans-1,2-dichloroethene
11DCA	1,1-dichloroethene
c12DCE	cis-1,2-dichloroethene
CHCl3	chloroform
111TCA	1,1,1-trichloroethane
12DCA	1,2-dichloroethane
BENZ	benzene
TCE	trichloroethene
TOL	toluene
OCT	octane
PCE	tetrachloroethene
12DCA	1,2-dichloroethane
ClBENZ	chlorobenzene
EtBENZ	ethylbenzene
mpXYL	m-, p-xylene
oXYL	o-xylene
135TMB	1,3,5-trimethylbenzene
124TMB	1,2,4-trimethylbenzene
14DCB	1,4-dichlorobenzene
CCl4	carbon tetrachloride
C11, C13, C15	combined masses of undecane, tridecane, and pentadecane (Diesel Range Alkanes)
UNDEC	undecane
NAPH	naphthalene
TRIDEC	tridecane
2MeNAPH	2-methyl naphthalene
PENTADEC	pentadecane

FIGURES



SCALE 0 1100 2200 Feet
Approximate Scale

HARZA *Consulting Engineers and Scientists*

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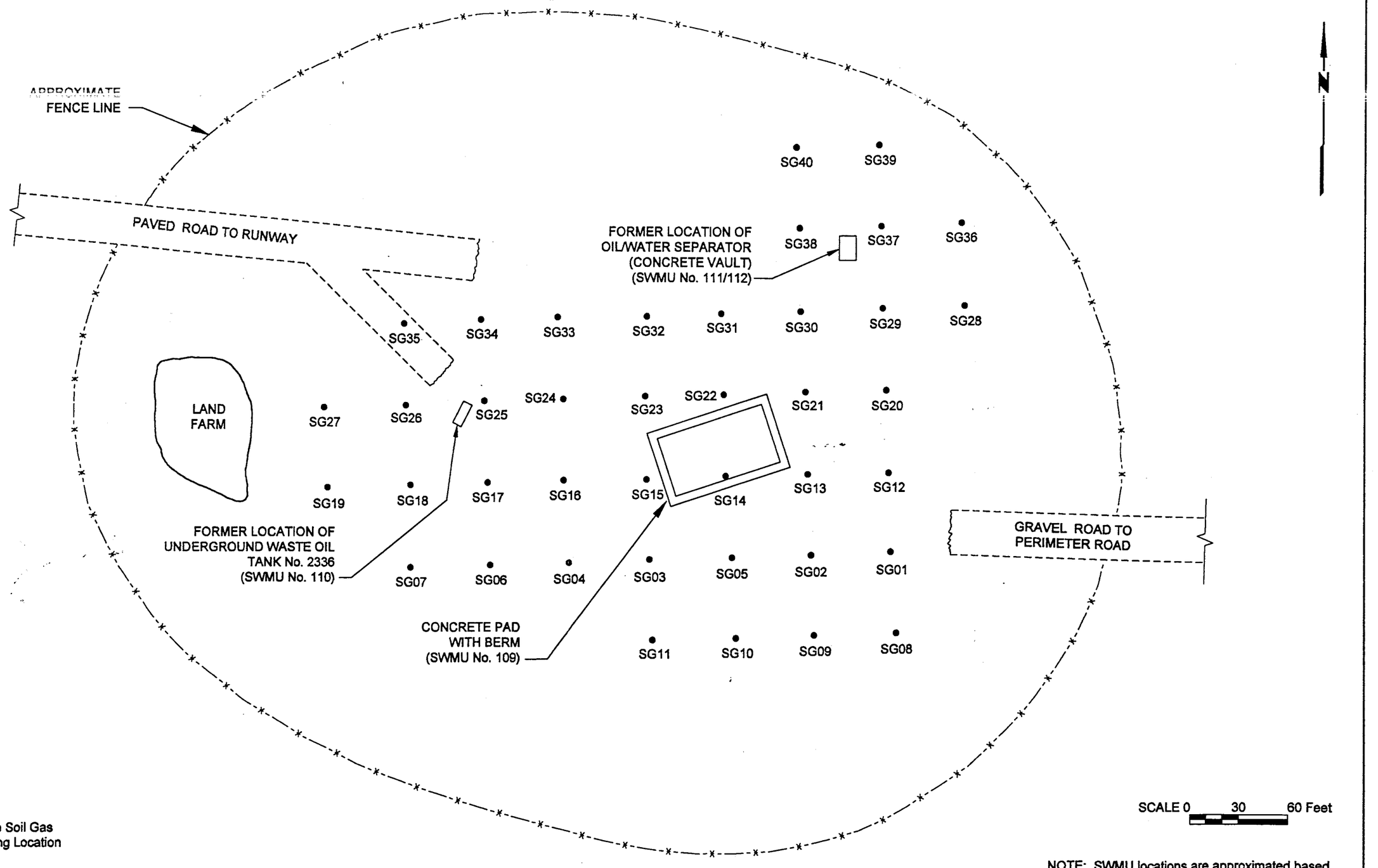
Figure 1
SITE LOCATION MAP
FIRE TRAINING AREA No. 4
CANNON AIR FORCE BASE
Clovis, New Mexico



NOTE: SWMU locations are approximated based on available information.

Figure 2
SITE PLAN
FIRE TRAINING AREA No. 4
CANNON AIR FORCE BASE
Clovis, New Mexico

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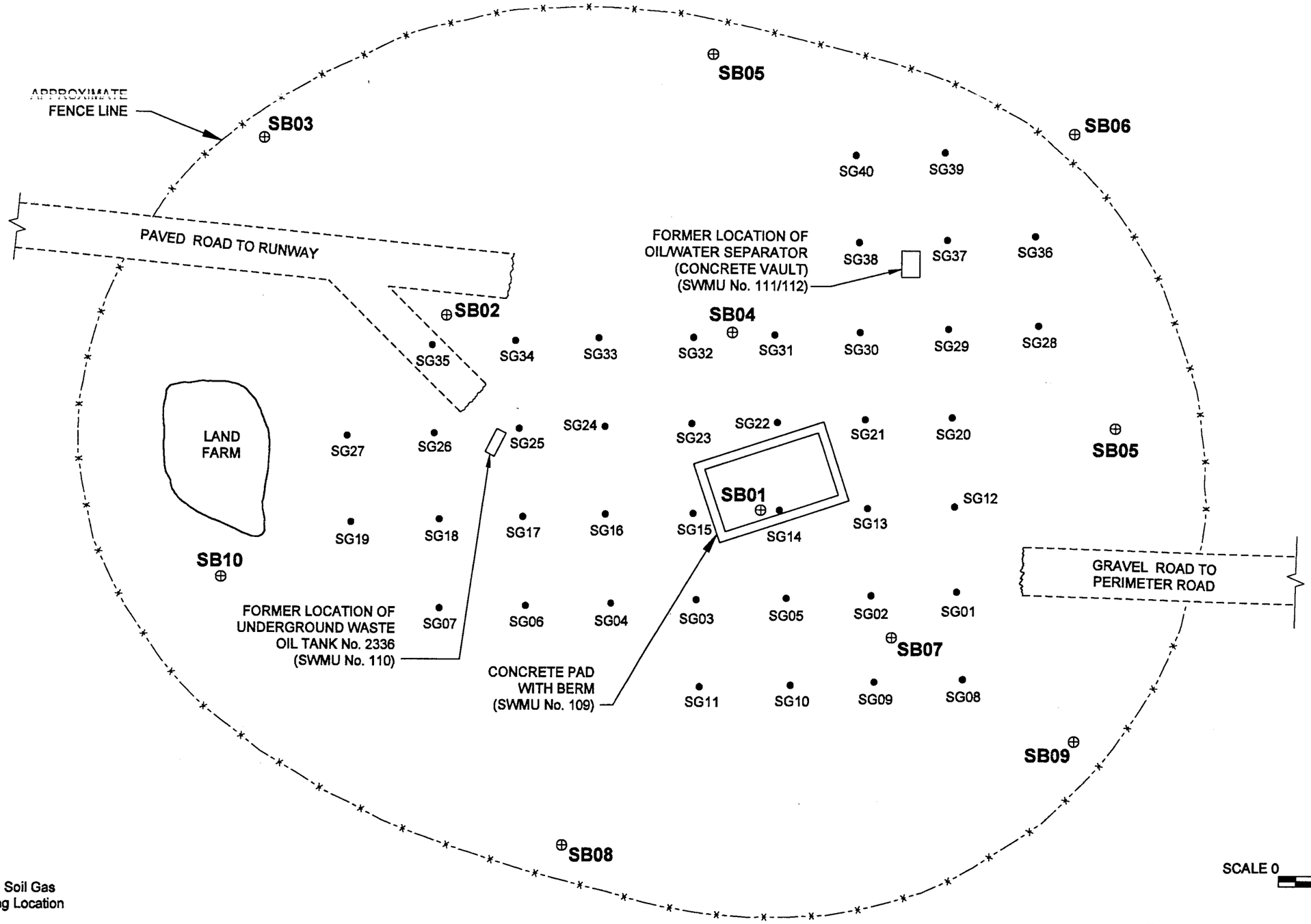
h0005nb/nm2.dgn



LEGEND:

- SG01 — Passive Soil Gas Sampling Location
- Fence
- Proposed Soil Boring

SCALE 0 30 60 Feet

NOTE: SWMU locations are approximated based on available information.

Figure 3

PROPOSED SOIL BORING LOCATION PLAN

FIRE TRAINING AREA No. 4
CANNON AIR FORCE BASE
Clovis, New Mexico

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h0005nb/nm3.dgn

APPENDIX

GORE-SORBER[SM] Screening Survey Final Report

Fire Training Area #4, Cannon Air Force Base
Clovis, NM

November 26, 1996

W. L. Gore & Associates, Inc.

Environmental Products Group

W. L. GORE & ASSOCIATES, INC.
101 LEWISVILLE ROAD • P.O. BOX 1100 • ELKTON, MARYLAND 21922-1100 PHONE: 410/392-3300
FAX: 410/996-3325 • TELEX 467637 GORE FB ELKT
ENVIRONMENTAL PRODUCTS GROUP

GORE-SORBER℠ Screening Survey
Final Report

Fire Training Area #4, Cannon Air Force Base
Clovis, NM

November 26, 1996

Prepared For:
Harza Engineering Company
233 South Wacker Drive, Sears Tower
Chicago, IL 60606

W.L. Gore & Associates, Inc.
Written/Submitted by

Jay W. Hodny, M.S.
Associate

W.L. Gore & Associates, Inc.
Reviewed/Approved by

Ray F. Fenstermacher, P.G.
Associate

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GORE-SORBER[sm] Screening Survey
Final Report

REPORT DATE: November 26, 1996 **AUTHOR:** JWH

SITE INFORMATION

Site Reference: Fire Training Area #4, Cannon Air Force Base, Clovis , NM
Customer Purchase Order Number: 961463
Gore Production Order Number: 070329 **Gore Site Code:** UI

FIELD PROCEDURES

 # Modules shipped: 46
Installation Date(s): 10-16,17-96 **# Modules Installed:** 44
Field work performed by: Harza Engineering Company

Retrieval date(s): 10-30-96 **Exposure Time:** 13,14 **[days]**
 # Modules Retrieved: 43 **# Trip Blanks Returned:** 2
 # Modules Lost in Field: 1 **# Unused Modules Returned:** 0

Date/Time Received by Gore: 10-31-96 @ 11:45am **By:** TS
Recorded Cooler/Water Temperature Control Blank temperature: 3.6 [°C]
Chain of Custody Form attached: √
Chain of Custody discrepancies: None.
Comments: None.

GORE-SORBER[sm] Screening Survey Final Report

ANALYTICAL PROCEDURES

W.L. Gore & Associates' Screening Module Laboratory operates under the guidelines of its Quality Assurance Manual, Operating Procedures and Methods. The quality assurance program is consistent with Good Laboratory Practices (GLP) and ISO Guide 25, "General Requirements for the Competence of Calibration and Testing Laboratories", third edition, 1990. The Laboratory is audited regularly by a quality system design, development and auditing company.

Instrumentation consists of Hewlett-Packard 5890 gas chromatographs and 5971 mass selective detectors, as well as Perkin-Elmer ATD 400 automated thermal desorption units. Sample preparation simply involves cutting the tip off the bottom of the sample module and transferring one or more exposed sorbent containers (sorbers, each containing 40mg of a suitable granular adsorbent) to a thermal desorption tube for analysis. Sorbers remain clean and protected from dirt, soil, and ground water by the insertion/retrieval cord, and require no further sample preparation.

Screening Method Quality Assurance:

Before each run sequence, two instrument blanks, a sorber containing 5µg BFB (Bromofluorobenzene), and a method blank are analyzed. The BFB mass spectra must meet the criteria set forth in our methods before samples can be analyzed. A sorber containing BFB is also analyzed after every 30 samples and/or trip blanks, as is a method blank. Standards containing the selected target compounds at three calibration levels of 5, 20, and 50µg are analyzed at the beginning of each run. The criterion for each target compound is less than 35% RSD (relative standard deviation). If this criterion is not met for any target compound, the analyst has the option of generating second- or third-order standard curves, as appropriate. A second-source reference standard, at a level of 20µg per target compound, is analyzed after every ten samples and/or trip blanks, and at the end of the run sequence. Positive identification of target compounds is determined by the presence of the target ion and at least two secondary ions, retention time versus reference standard, and the analyst's judgment.

NOTE: All data have been archived. Any replicate sorbers not used in the initial analysis will be discarded fifteen (15) days from the date of analysis.

Laboratory analysis: thermal desorption, gas chromatography, mass selective detection
Quality Assurance Level: 2 (ANA-4/A1)
Instrument ID: # 2 **Chemist:** JW **Data Subdirectory:** 070329
Compounds/mixtures requested: Standard VOCs and SVOCs Target List (A1)
Deviations from Standard Method: None.
Comments: Soil vapor analytes and abbreviations are tabulated in the Data Table Key (page 5).

GORE-SORBER[sm] Screening Survey Final Report

DATA TABULATION

 # CONTOUR MAPS ENCLOSED: Three (3) B-size color contour maps
LIST OF MAPS ENCLOSED:

- Total Target Volatile Organics (Total VOCs)
- Undecane, Tridecane, & Pentadecane (C11, C13, & C15)
- Tetrachloroethene (PCE)

Compound Name	Method Detection Limit [µg]	Low Map (gray) Limit [µg]	Highest Detect Level [µg]	Upper Map (purple) Limit [µg]
Total VOCs	0.01	0.01	517.10	517.10
C11, C13, & C15	0.02	0.02	264.29	264.29
PCE	0.03	0.03	8.16	8.16

NOTE: All data values presented in Appendix A represent masses of compound(s) desorbed from the GORE-SORBER Screening Modules received and analyzed by W.L. Gore, as identified in the Chain of Custody (Appendix A). The measurement traceability and instrument performance are reproducible and accurate for the measurement process documented. Semi-quantitation of the compound mass is based on either a single-level (QA Level 1) or three-level (QA Level 2) standard calibration.

Comments:

- The minimum (gray) contour level, for each mapped analyte or group of analytes, was set at the maximum blank level observed or the method detection limit, whichever was greater. The maximum contour level was set at the maximum value observed.
- Four sample locations contained co-located modules, SG04, modules #128632 and -633; SG15, modules #125644 and -645; SG22, modules #128652 and -653; and SG30, modules #128661 and –662. The modules at each of these locations were installed approximately three to four inches apart, in an attempt to evaluate and compare the target analyte levels reported. In Gore's experience, we consider values reported at less than sub-microgram levels difficult to compare. We also consider levels reported in the same order of magnitude as a satisfactory comparison. Small scale soil heterogeneities have been known to affect such comparisons significantly.
- During the field exposure, a heavy precipitation event occurred (as per discussions with Harza). Three of the co-located modules, #128632, -645, and -652, were reported to have been located in water or wet upon retrieval. The reported levels of these modules appear to have been affected by the presence of water. In general, these modules had lower levels of target analytes reported. In evaluating the results from modules #128632 and -633, differences did exist by up to an order of magnitude. For modules #128644 and -645, differences did exist, though generally the results were on the same order of magnitude. Module #128645 (in water) tended to have lower levels reported for most target analytes. The levels reported from module #128652 and -653 generally differed by an order of

magnitude, with -652 (in water) having lower levels. Modules #128661 and -662 were not found in water upon retrieval. Despite low reportable levels, the results compared favorably. Please see the attached graphs of the co-located modules.

- Toluene was reported in the trip blanks at elevated levels. Therefore, toluene was not included in the contour mapping of the Total Target Volatile Organics.

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GORE-SORBER[sm] Screening Survey
Final Report

KEY TO DATA TABLE

Fire Training Area #4, Cannon Air Force Base, Clovis , NM

UNITS

µg	micrograms (per sorber), reported for compounds using external standards.
MDL	method detection limit

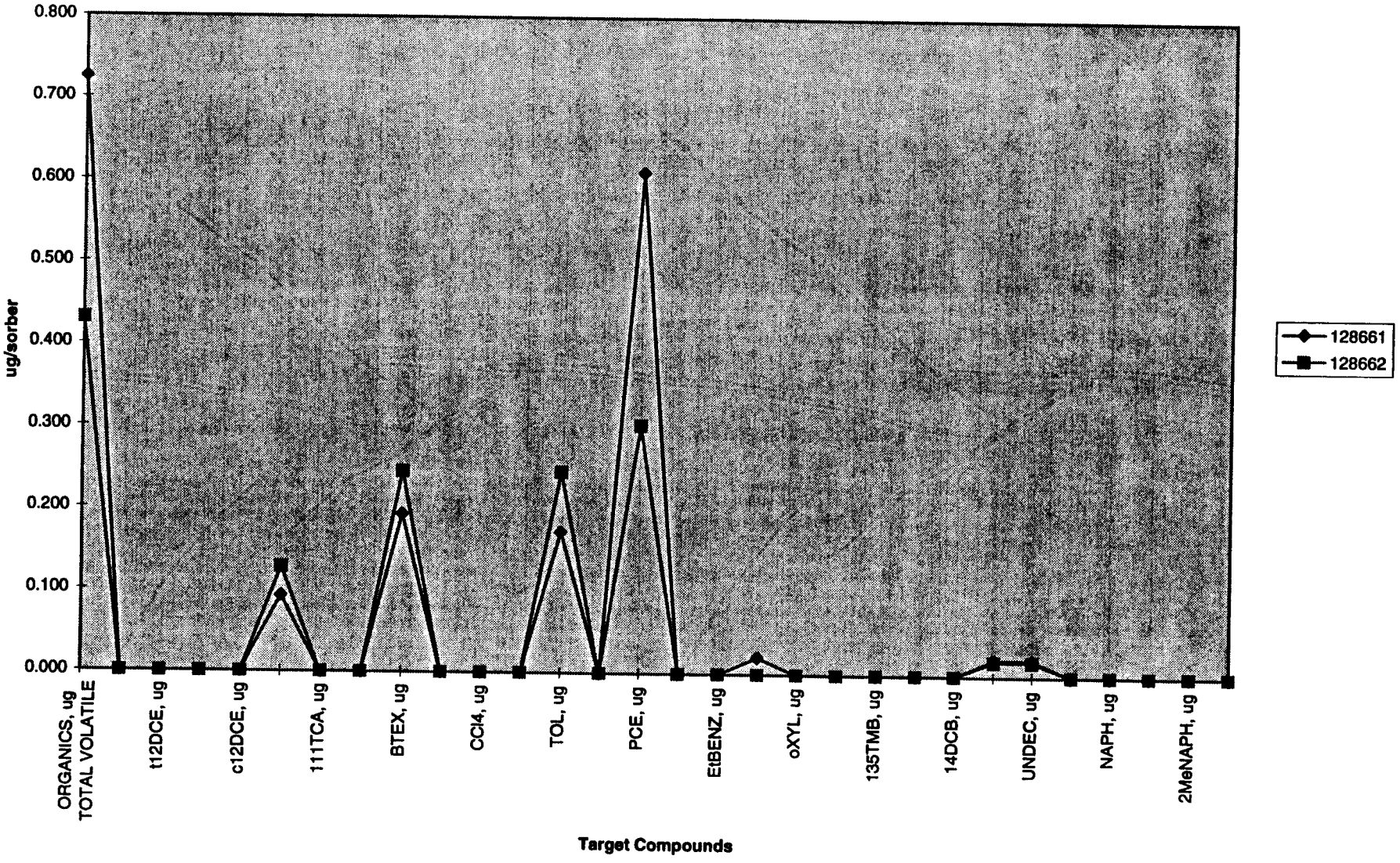
ANALYTES

TOTAL TARGET VOLATILE ORGANICS	methyl t-butyl ether, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, chloroform, 1,1,1-trichloroethane, 1,2-dichloroethane, benzene, carbon tetrachloride, trichloroethene, tetrachloroethene, chlorobenzene, ethylbenzene, m-, p-xylene, o-xylene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene
BTEX	combined masses of benzene, toluene, ethylbenzene and total xylenes (Gasoline Range Aromatics)
C11,C13&C15	combined masses of undecane, tridecane, and pentadecane (C11+C13+C15) (Diesel Range Alkanes)
MTBE	methyl t-butyl ether
t12DCE	trans-1,2-dichloroethene
11DCA	1,1-dichloroethane
c12DCE	cis-1,2-dichloroethene
$CHC1_3$	chloroform
111TCA	1,1,1-trichloroethane
12DCA	1,2-dichloroethane
BENZ	benzene
$CC1_4$	carbon tetrachloride
TCE	trichloroethene
TOL	toluene
OCT	octane
PCE	tetrachloroethene
ClBENZ	chlorobenzene
EtBENZ	ethylbenzene
mpXYL	m-, p-xylene
oXYL	o-xylene
135TMB	1,3,5-trimethylbenzene
124TMB	1,2,4-trimethylbenzene
TMBs	1,2,4- & 1,3,5-trimethylbenzene
N&2MN	naphthalene & 2-methylnaphthalene
14DCB	1,4-dichlorobenzene
UNDEC	undecane
NAPH	naphthalene
TRIDEC	tridecane
2MeNAPH	2-methyl naphthalene
PENTADEC	pentadecane

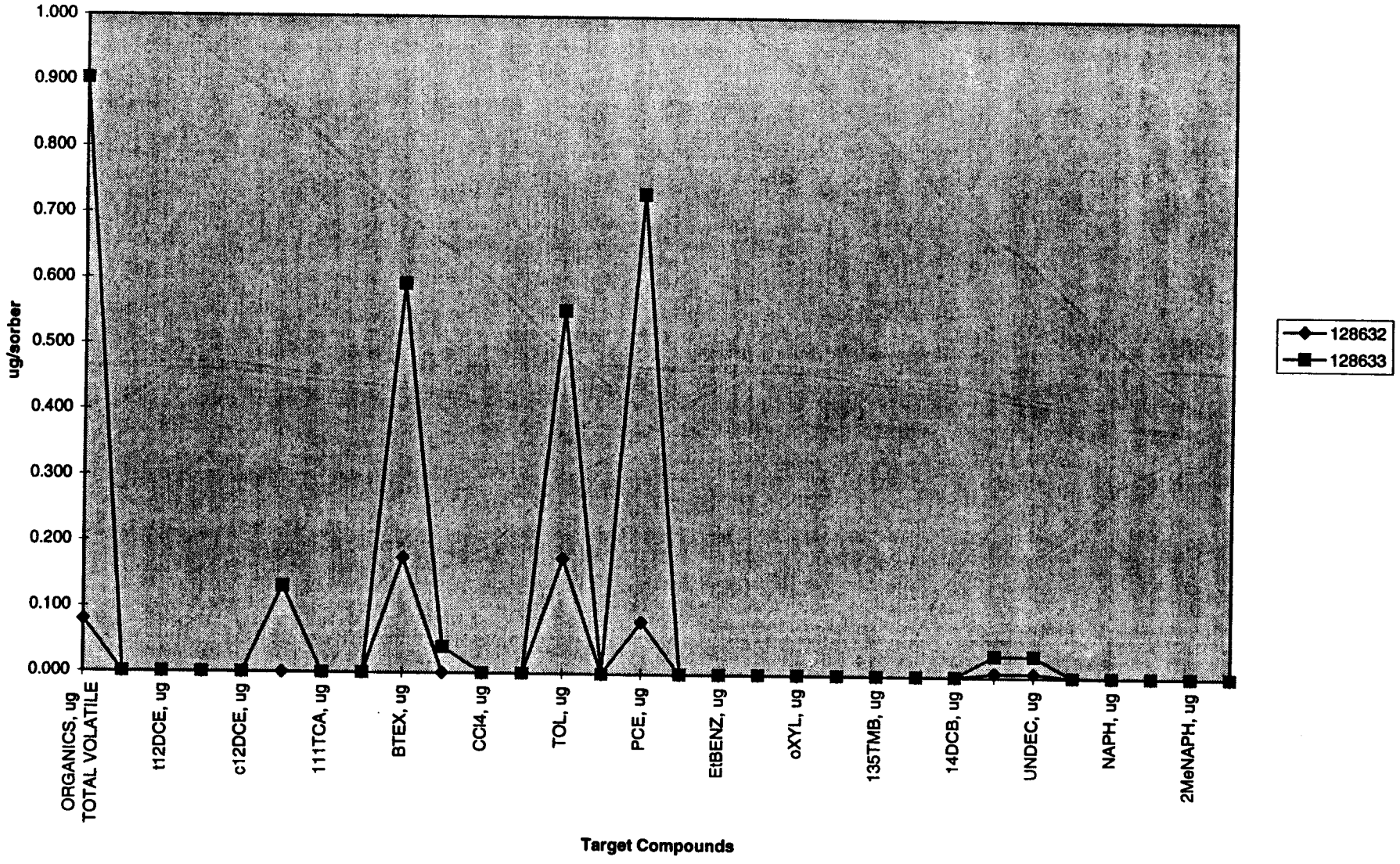
BLANKS

TBn	unexposed trip blanks, which traveled with the exposed modules
method blankn	method blank, retained at Gore

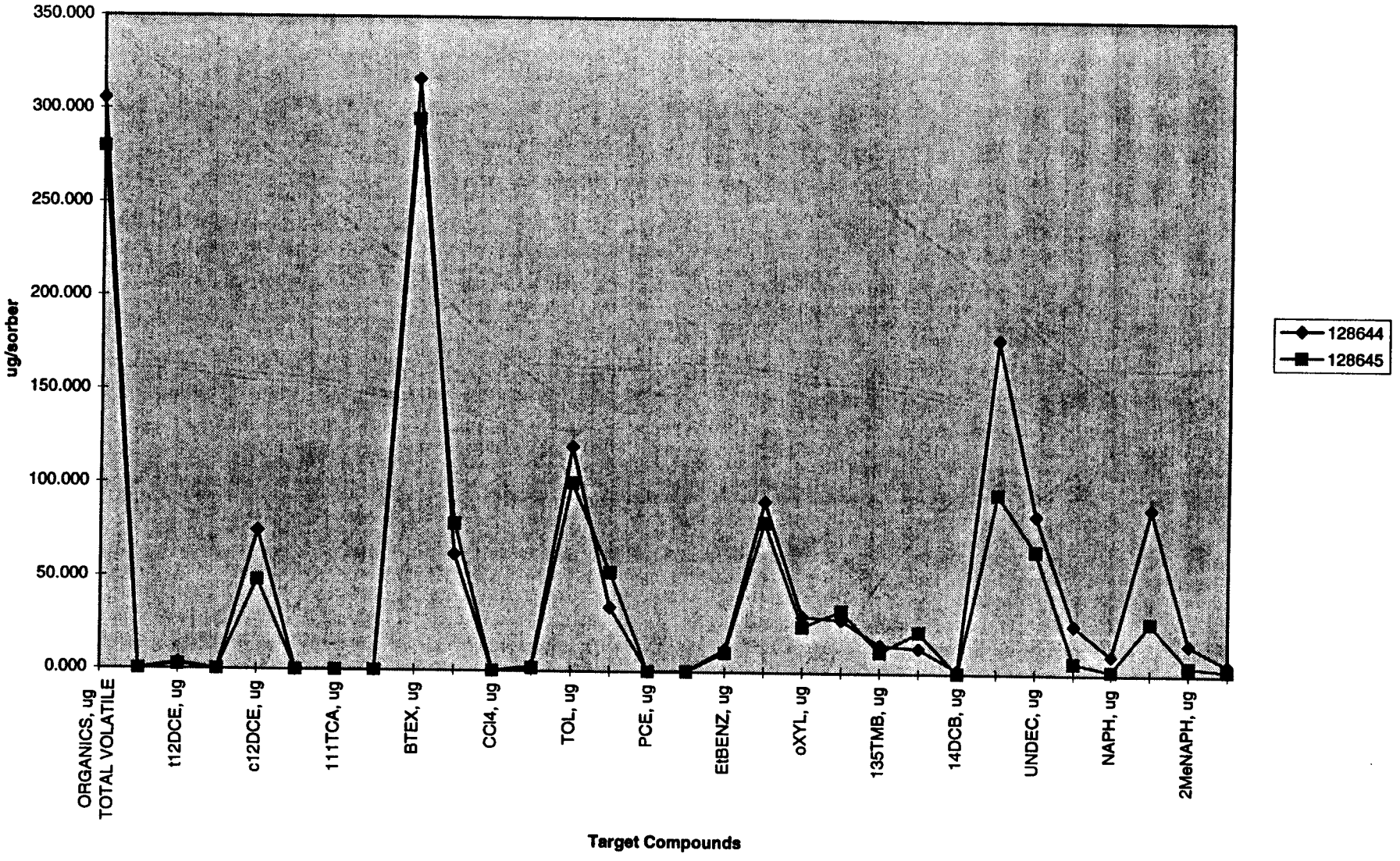
SG30 - Co-located Module Comparison



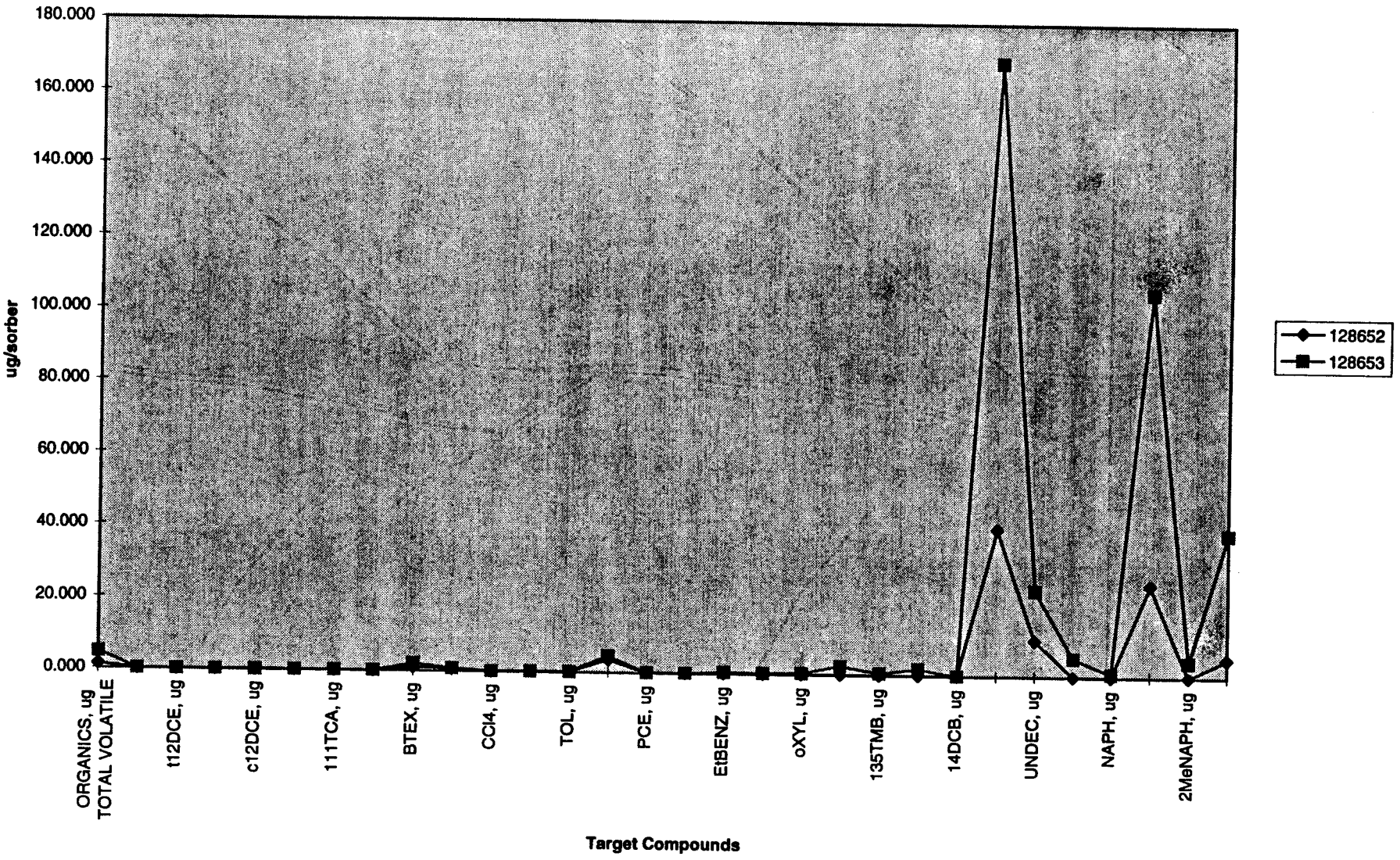
SG04 - Co-located Module Comparison



SG15 - Co-located Module Comparison



SG22 - Co-located Module Comparison



APPENDIX A:

1. CHAIN OF CUSTODY
2. DATA TABLE
3. COLOR CONTOUR MAPS

GORE-SORBER® Screening Survey Chain of Custody

For W.L. Gore & Associates use only
Production Order # 070329

W. L. Gore & Associates, Inc., Environmental Products Group
101 Lewisville Road • Elkton, Maryland 21921 • Tel: (410) 392-3300 • Fax (410) 996-3325

Instructions: Customer must complete ALL shaded cells

Customer Name: Harza Eng. Company	Site Name: 27 CE/CEVR
Address: 233 S. Wacker Drive, Chicago, IL 60606-6392	Site Address: 201 North Perimeter Rd, Canyon AFB, NM
Phone: 312-831-3828	Project Manager: Sanford Hatch
FAX: 312-831-3999	Customer Project No.:
	Customer P.O. #: 96163 Quote #: BK 3975

Serial # of Modules Shipped			# of Modules for Installation 44	# of Trip Blanks 2	
# 128627	through	# 128671	Total Modules Shipped: 46		Pieces
#	through	#	Total Modules Received: 46		Pieces
#	through	#	Total Modules Installed: 44		Pieces
#	through	#	Serial # of Trip Blanks (*Client Decides*)		#
#	through	#	# 128673	# 128674	#
#	through	#	#	#	#
#	through	#	#	#	#

Installation Performed By:	Installation Method(s) (*circle those that apply*):
Name (*please print*): R. Suda / K. Kraske	Slide Hammer (Hammer Drill) Auger
Company/Affiliation: Harza Eng Company	Other:
Installation Start Date and Time: 10 / 16 / 96 3:00 AM (PM)	
Installation Complete Date and Time: 10 / 17 / 96 11:45 (AM) PM	
Retrieval Performed By:	Total Modules Retrieved: 43 Pieces
Name (*please print*): R. Suda / K. Kraske	Total Modules Lost in Field: 1 Pieces
Company/Affiliation: Harza Eng Company	Total Unused Modules Returned: 0 Pieces
Retrieval Start Date and Time: 10 / 30 / 96 8:05 (AM) PM	
Retrieval Complete Date and Time: 10 / 30 / 96 9:46 (AM) PM	

Target Analytes to be Mapped (*Check Options or List as appropriate*):	To Be Determined Pending Completion of Lab Analysis [X] or write "None", if applicable.	
Analyte #1:	Analyte #2:	Analyte #3:
Other Instructions, if any:		

Relinquished By Terry Shelpet	Date	Time	Received By: Robert Suda	Date	Time
Affiliation: W.L. Gore & Associates, Inc.	10/11/96	15:00	Affiliation: Harza Eng Co	10/30/96	8:00
Relinquished By Robert Suda	Date	Time	Received By: 2742454245	Date	Time
Affiliation: Harza Eng. Co.	10/30/96	1100	Affiliation: federal express	10/30/96	
Relinquished By	Date	Time	Received By:	Date	Time
Affiliation			Affiliation: W.L. Gore & Associates, Inc.		
			Temperature of Samples When Received By Gore		°C

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GORE-SORBER® Screening Survey
Installation and Retrieval Log

Page 1 of 2

SITE NAME & LOCATION
Cannon Air Force Base
Fire Training Area #4
Clovis, New Mexico

LINE #	MODULE #	INSTALLATION DATE/TIME	RETRIEVAL DATE/TIME	EVIDENCE OF LIQUID HYDROCARBONS (LPH) or HYDROCARBON ODOR (Check as appropriate)			MODULE IN WATER (check one)		COMMENTS
				LPH	ODOR	NONE	YES	NO	
1.	128629	10-16-96 / 1500	10-30-96 / 0805			X		X	
2.	128630	10-16-96 / 1510	0809			X		X	
3.	128631	10-16-96 / 1530	0811			X		X	
4.	128632	10-16-96 / 1540	0818			X	X		
5.	128633	10-16-96 / 1550	0814			X		X	
6.	128634	10-16-96 / 1555	0824			X		X	
7.	128635	10-16-96 / 1610	0828			X		X	
8.	128636	" / 1625	0830			X		X	
9.	128637	" / 1640	0832			X		X	
10.	128638	" / 1650	0833			X		X	
11.	128639	" / 1700	0834			X		X	
12.	128640	" / 1710	0835			X		X	
13.	128641	" / 1720	0837			X		X	
14.	128642	" / 1730	0839			X		X	
15.	128643	" / 1740	0841	X	X		X		Corroded tag
16.	128644	" / 1750	0846		X			X	
17.	128645	" / 1750	0844			X	X		
18.	128646	" / 1800	0848			X		X	
19.	128647	" / 1810	0851			X	X		
20.	128648	" / 1820	0853			X		X	
21.	128649	" / 1830	0855			X		X	
22.	128650	" / 1840	0857			X		X	
23.	128651	" / 1850	0859			X	X		
24.	128652	" / 1900	0900			X	X		
25.	128653	" / 1900	0902			X		X	
26.	128654	10-17-96 / 0745	0905			X		X	
27.	128655	10-17-96 / 0755	0909			X		X	
28.	128656	" / 0805	0912			X		X	
29.	128657	" / 0815	0914			X		X	
30.	128658	" / 0830	0916			X		X	
31.	128659	" / 0845	0918			X		X	
32.	128660	" / 0900	0920			X		X	
33.	128661	" / 0915	0921			X		X	
34.	128662	" / 0915	0921			X		X	
35.	128663	" / 0930	0922			X		X	
36.	128664	" / 0945	0924			X		X	
37.	128665	" / 1000	0926			X		X	
38.	128666	" / 1015	0927						Lost
39.	128667	" / 1030	0933			X		X	
40.	128668	" / 1045	0938			X		X	
41.	128669	" / 1100	0940			X		X	
42.	128670	" / 1115	0942			X	X		

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GORE-SORBER® Screening Survey Installation and Retrieval Log

Page 2 of 2

SITE NAME & LOCATION

Cannon Air Force Base
Fire Training Area #4
Clovis, New Mexico

LINE #	MODULE #	INSTALLATION DATE/TIME	RETRIEVAL DATE/TIME	EVIDENCE OF LIQUID HYDROCARBONS (LPH) or HYDROCARBON ODOR (Check as appropriate)			MODULE IN WATER (check one)		COMMENT
				LPH	ODOR	NONE	YES	NO	
43.	128671	10-17-96 / 1130	10-30-96 / 0944			X		X	
44.	128672	10-17-96 / 1145	10-30-96 / 0946			X		X	
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GORE-SORBER ® Screening Survey is a registered service mark of W.L. Gore & Associates, Inc.

FOR

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
HARZA ENG. CO., CHICAGO, IL
GORE STANDARD TARGET VOCS/SVOCS (A1)
FIRE TRAINING AREA #4, CANNON AFB, CLOVIS, NM
SITE UI - PRODUCTION ORDER #070329

DATE ANALYZED	HARZA GRID ID	SAMPLE NAME	TOTAL VOLATILE ORGANICS, ug	MTBE, ug	t12DCE, ug	11DCA, ug	c12DCE, ug	CHCl3, ug	111TCA, ug	12DCA, ug
		MDL =	0.01	0.26	0.16	0.05	0.03	0.04	0.08	0.02
11/12/96	SG1	128629	3.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG2	128630	7.29	0.00	0.00	0.00	0.00	0.00	0.14	0.00
11/12/96	SG3	128631	3.96	0.00	0.00	0.00	0.00	0.00	0.10	0.00
11/12/96	SG4	128632	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG4	128633	0.90	0.00	0.00	0.00	0.00	0.13	0.00	0.00
11/12/96	SG5	128634	8.58	0.00	0.00	0.00	0.00	0.00	0.34	0.00
11/12/96	SG6	128635	0.26	0.00	0.00	0.00	0.00	0.20	0.00	0.00
11/12/96	SG7	128636	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG8	128637	3.46	0.00	0.00	0.00	0.00	0.00	0.09	0.00
11/12/96	SG9	128638	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG10	128639	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG11	128640	4.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG12	128641	5.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG13	128642	4.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG14	128643	517.10	0.00	1.75	0.00	12.93	0.00	0.00	0.00
11/12/96	SG15	128644	305.47	0.08	3.19	0.00	74.61	0.00	0.00	0.00
11/12/96	SG15	128645	279.83	0.00	2.29	0.00	48.23	0.00	0.00	0.00
11/12/96	SG16	128646	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG17	128647	0.59	0.00	0.00	0.00	0.00	0.13	0.00	0.00
11/12/96	SG18	128648	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG19	128649	0.31	0.00	0.00	0.00	0.00	0.00	0.16	0.00
11/12/96	SG20	128650	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96	SG21	128651	1.22	0.00	0.00	0.00	0.00	0.00	0.11	0.00
11/13/96	SG22	128652	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/96	SG22	128653	4.67	0.00	0.00	0.00	0.06	0.00	0.00	0.00
11/13/96	SG23	128654	0.58	0.00	0.00	0.00	0.00	0.00	0.06	0.00
11/13/96	SG24	128655	0.77	0.00	0.00	0.00	0.00	0.13	0.00	0.00
11/13/96	SG25	128656	0.34	0.00	0.00	0.00	0.00	0.12	0.00	0.00
11/13/96	SG26	128657	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/96	SG27	128658	0.09	0.00	0.00	0.00	0.00	0.00	0.09	0.00

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
HARZA ENG. CO., CHICAGO, IL
GORE STANDARD TARGET VOCS/SVOCS (A1)
FIRE TRAINING AREA #4, CANNON AFB, CLOVIS, NM
SITE UI - PRODUCTION ORDER #070329

DATE ANALYZED	HARZA GRID ID	SAMPLE NAME	TOTAL VOLATILE ORGANICS, ug	MTBE, ug	t12DCE, ug	11DCA, ug	c12DCE, ug	CHCl3, ug	111TCA, ug	12DCA, ug
		MDL =	0.01	0.26	0.16	0.05	0.03	0.04	0.08	0.02
11/13/96	SG28	128659	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/96	SG29	128660	0.34	0.00	0.00	0.00	0.00	0.11	0.00	0.00
11/13/96	SG30	128661	0.72	0.00	0.00	0.00	0.00	0.09	0.00	0.00
11/13/96	SG30	128662	0.43	0.00	0.00	0.00	0.00	0.13	0.00	0.00
11/13/96	SG31	128663	0.34	0.00	0.00	0.00	0.00	0.10	0.00	0.00
11/13/96	SG32	128664	1.54	0.00	0.00	0.00	0.00	0.09	0.00	0.00
11/13/96	SG33	128665	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/96	SG35	128667	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/96	SG36	128668	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/96	SG37	128669	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/96	SG38	128670	0.18	0.00	0.00	0.00	0.00	0.10	0.00	0.00
11/13/96	SG39	128671	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/96	SG40	128672	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96		TB 1, 128673	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96		TB 2, 128674	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/96		method blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/96		method blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Max Observed	517.10	0.08	3.19	0.00	74.61	0.20	0.34	0.00

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
HARZA ENG. CO., CHICAGO, IL
GORE STANDARD TARGET VOCS/SVOCS (A1)
FIRE TRAINING AREA #4, CANNON AFB, CLOVIS, NM
SITE UI - PRODUCTION ORDER #070329

SAMPLE NAME	BTEX, ug	BENZ, ug	CCl4, ug	TCE, ug	TOL, ug	OCT, ug	PCE, ug	ClBENZ, ug	EtBENZ, ug	mpXYL, ug	oXYL, ug	TMBs, ug
MDL =	0.02	0.02	0.04	0.01	0.14	0.03	0.03	0.03	0.02	0.03	0.02	0.02
128629	0.12	0.00	0.00	0.00	0.12	0.00	3.72	0.00	0.00	0.00	0.00	0.00
128630	0.13	0.00	0.00	0.00	0.13	0.00	7.15	0.00	0.00	0.00	0.00	0.00
128631	0.54	0.06	0.00	0.00	0.33	0.56	3.34	0.00	0.04	0.05	0.05	0.32
128632	0.18	0.00	0.00	0.00	0.18	0.00	0.08	0.00	0.00	0.00	0.00	0.00
128633	0.59	0.04	0.00	0.00	0.55	0.00	0.73	0.00	0.00	0.00	0.00	0.00
128634	0.15	0.00	0.00	0.09	0.15	0.00	8.16	0.00	0.00	0.00	0.00	0.00
128635	0.17	0.00	0.00	0.00	0.17	0.00	0.06	0.00	0.00	0.00	0.00	0.00
128636	0.14	0.00	0.00	0.00	0.14	0.00	0.61	0.00	0.00	0.00	0.00	0.01
128637	0.13	0.00	0.00	0.12	0.13	0.00	3.25	0.00	0.00	0.00	0.00	0.00
128638	0.15	0.00	0.00	0.00	0.15	0.00	1.28	0.00	0.00	0.00	0.00	0.00
128639	0.30	0.00	0.00	0.00	0.30	0.00	3.43	0.00	0.00	0.00	0.00	0.00
128640	0.00	0.00	0.00	0.00	0.00	0.00	4.23	0.00	0.00	0.00	0.00	0.00
128641	0.11	0.00	0.00	0.00	0.11	0.00	5.21	0.00	0.00	0.00	0.00	0.00
128642	0.46	0.14	0.00	0.00	0.23	0.14	2.17	0.00	0.00	0.03	0.06	1.65
128643	379.29	57.99	0.00	0.25	5.83	167.32	0.00	0.00	45.21	257.54	12.72	128.71
128644	316.54	62.40	0.00	2.59	120.31	34.32	0.00	0.23	12.05	91.57	30.21	28.55
128645	295.26	78.86	0.00	1.60	101.04	53.28	0.00	0.07	10.28	80.33	24.76	33.41
128646	0.30	0.08	0.00	0.00	0.20	0.09	0.00	0.00	0.00	0.02	0.00	0.00
128647	0.27	0.00	0.00	0.00	0.27	0.00	0.47	0.00	0.00	0.00	0.00	0.00
128648	0.18	0.00	0.00	0.08	0.18	0.00	0.60	0.00	0.00	0.00	0.00	0.00
128649	0.34	0.00	0.00	0.00	0.32	0.00	0.13	0.00	0.00	0.02	0.00	0.00
128650	0.20	0.00	0.00	0.00	0.20	0.00	2.08	0.00	0.00	0.00	0.00	0.00
128651	0.28	0.07	0.00	0.00	0.19	0.27	0.99	0.00	0.00	0.02	0.00	0.02
128652	0.99	0.68	0.00	0.19	0.11	3.47	0.06	0.00	0.06	0.06	0.07	0.11
128653	2.03	0.79	0.00	0.24	0.16	4.56	0.00	0.00	0.41	0.25	0.42	2.50
128654	0.60	0.03	0.00	0.10	0.54	0.00	0.36	0.00	0.00	0.02	0.00	0.00
128655	0.42	0.25	0.00	0.00	0.11	0.18	0.34	0.00	0.00	0.03	0.03	0.00
128656	0.28	0.00	0.00	0.00	0.28	0.00	0.22	0.00	0.00	0.00	0.00	0.00
128657	0.14	0.00	0.00	0.00	0.14	0.00	0.25	0.00	0.00	0.00	0.00	0.00
128658	0.08	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
HARZA ENG. CO., CHICAGO, IL
GORE STANDARD TARGET VOCS/SVOCS (A1)
FIRE TRAINING AREA #4, CANNON AFB, CLOVIS, NM
SITE UI - PRODUCTION ORDER #070329

SAMPLE NAME	BTEX, ug	BENZ, ug	CCl4, ug	TCE, ug	TOL, ug	OCT, ug	PCE, ug	ClBENZ, ug	EtBENZ, ug	mpXYL, ug	oXYL, ug	TMBs, ug
MDL =	0.02	0.02	0.04	0.01	0.14	0.03	0.03	0.03	0.02	0.03	0.02	0.02
128659	0.79	0.13	0.00	0.00	0.67	0.00	0.13	0.00	0.00	0.00	0.00	0.00
128660	0.71	0.03	0.00	0.00	0.65	0.00	0.17	0.00	0.00	0.03	0.00	0.00
128661	0.19	0.00	0.00	0.00	0.17	0.00	0.61	0.00	0.00	0.02	0.00	0.00
128662	0.25	0.00	0.00	0.00	0.25	0.00	0.30	0.00	0.00	0.00	0.00	0.00
128663	0.50	0.12	0.00	0.00	0.32	0.38	0.00	0.00	0.00	0.06	0.00	0.06
128664	0.52	0.00	0.00	0.00	0.17	1.34	0.09	0.00	0.07	0.10	0.18	1.01
128665	0.16	0.00	0.00	0.00	0.14	0.00	0.15	0.00	0.00	0.02	0.00	0.00
128667	1.33	0.19	0.00	0.00	0.60	0.28	0.11	0.00	0.19	0.23	0.13	0.09
128668	0.10	0.00	0.00	0.00	0.10	0.00	0.18	0.00	0.00	0.00	0.00	0.00
128669	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
128670	0.47	0.05	0.00	0.00	0.40	0.43	0.00	0.00	0.00	0.02	0.00	0.00
128671	0.34	0.00	0.00	0.00	0.34	0.00	0.14	0.00	0.00	0.00	0.00	0.00
128672	1.17	0.03	0.00	0.00	1.09	0.00	0.11	0.00	0.00	0.05	0.00	0.03
TB 1, 128673	0.73	0.00	0.00	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TB 2, 128674	0.40	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
method blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
method blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Observed	379.29	78.86	0.00	2.59	120.31	167.32	8.16	0.23	45.21	257.54	30.21	128.71

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
HARZA ENG. CO., CHICAGO, IL
GORE STANDARD TARGET VOCS/SVOCS (A1)
FIRE TRAINING AREA #4, CANNON AFB, CLOVIS, NM
SITE UI - PRODUCTION ORDER #070329

SAMPLE NAME	135TMB, ug	124TMB, ug	14DCB, ug	C11,C13, & C15, ug	UNDEC, ug	N&2MN, ug	NAPH, ug	TRIDEC, ug	2MeNAPH, ug	PENTADEC, ug
MDL =	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.03	0.05	0.04
128629	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
128630	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00
128631	0.15	0.17	0.01	3.77	2.46	0.05	0.03	1.14	0.03	0.17
128632	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
128633	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00
128634	0.00	0.00	0.00	0.49	0.23	0.01	0.00	0.19	0.01	0.07
128635	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
128636	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
128637	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
128638	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00
128639	0.00	0.00	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.03
128640	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
128641	0.00	0.00	0.00	0.25	0.11	0.00	0.00	0.06	0.00	0.08
128642	1.10	0.55	0.02	10.71	6.03	0.45	0.22	4.03	0.23	0.66
128643	33.10	95.61	0.00	264.29	209.87	46.62	17.96	47.60	28.65	6.82
128644	15.12	13.42	1.93	178.77	84.83	26.25	10.08	88.61	16.17	5.33
128645	11.30	22.11	0.21	96.14	66.11	6.21	1.88	27.63	4.33	2.40
128646	0.00	0.00	0.00	0.06	0.03	0.00	0.00	0.03	0.00	0.00
128647	0.00	0.00	0.00	0.06	0.06	0.00	0.00	0.00	0.00	0.00
128648	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00
128649	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00
128650	0.00	0.00	0.00	2.34	1.27	0.00	0.00	0.91	0.00	0.16
128651	0.00	0.02	0.00	0.24	0.12	0.00	0.00	0.08	0.00	0.03
128652	0.07	0.04	0.01	40.56	10.05	0.03	0.01	25.47	0.02	5.04
128653	0.62	1.88	0.02	169.36	23.83	5.10	0.88	105.94	4.22	39.58
128654	0.00	0.00	0.00	0.33	0.13	0.01	0.00	0.13	0.01	0.07
128655	0.00	0.00	0.00	0.09	0.04	0.00	0.00	0.02	0.00	0.04
128656	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
128657	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
128658	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
HARZA ENG. CO., CHICAGO, IL
GORE STANDARD TARGET VOCS/SVOCS (A1)
FIRE TRAINING AREA #4, CANNON AFB, CLOVIS, NM
SITE UI - PRODUCTION ORDER #070329

SAMPLE NAME	135TMB, ug	124TMB, ug	14DCB, ug	C11,C13, & C15, ug	UNDEC, ug	N&2MN, ug	NAPH, ug	TRIDEC, ug	2MeNAPH, ug	PENTADEC, ug
MDL =	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.03	0.05	0.04
128659	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00
128660	0.00	0.00	0.00	0.12	0.03	0.00	0.00	0.01	0.00	0.08
128661	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00
128662	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00
128663	0.01	0.05	0.00	10.39	0.68	0.01	0.00	0.86	0.01	8.86
128664	0.43	0.58	0.00	35.33	4.53	0.60	0.23	8.14	0.37	22.66
128665	0.00	0.00	0.00	0.10	0.02	0.00	0.00	0.00	0.00	0.08
128667	0.03	0.06	0.00	3.24	0.69	3.28	0.91	2.34	2.37	0.21
128668	0.00	0.00	0.00	0.17	0.07	0.00	0.00	0.05	0.00	0.05
128669	0.00	0.00	0.00	0.22	0.14	0.00	0.00	0.04	0.00	0.04
128670	0.00	0.00	0.00	0.15	0.04	0.00	0.00	0.00	0.00	0.11
128671	0.00	0.00	0.00	0.05	0.03	0.00	0.00	0.00	0.00	0.02
128672	0.00	0.03	0.00	0.30	0.11	0.00	0.00	0.18	0.00	0.01
TB 1, 128673	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00
TB 2, 128674	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00
method blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
method blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Observed	33.10	95.61	1.93	264.29	209.87	46.62	17.96	105.94	28.65	39.58

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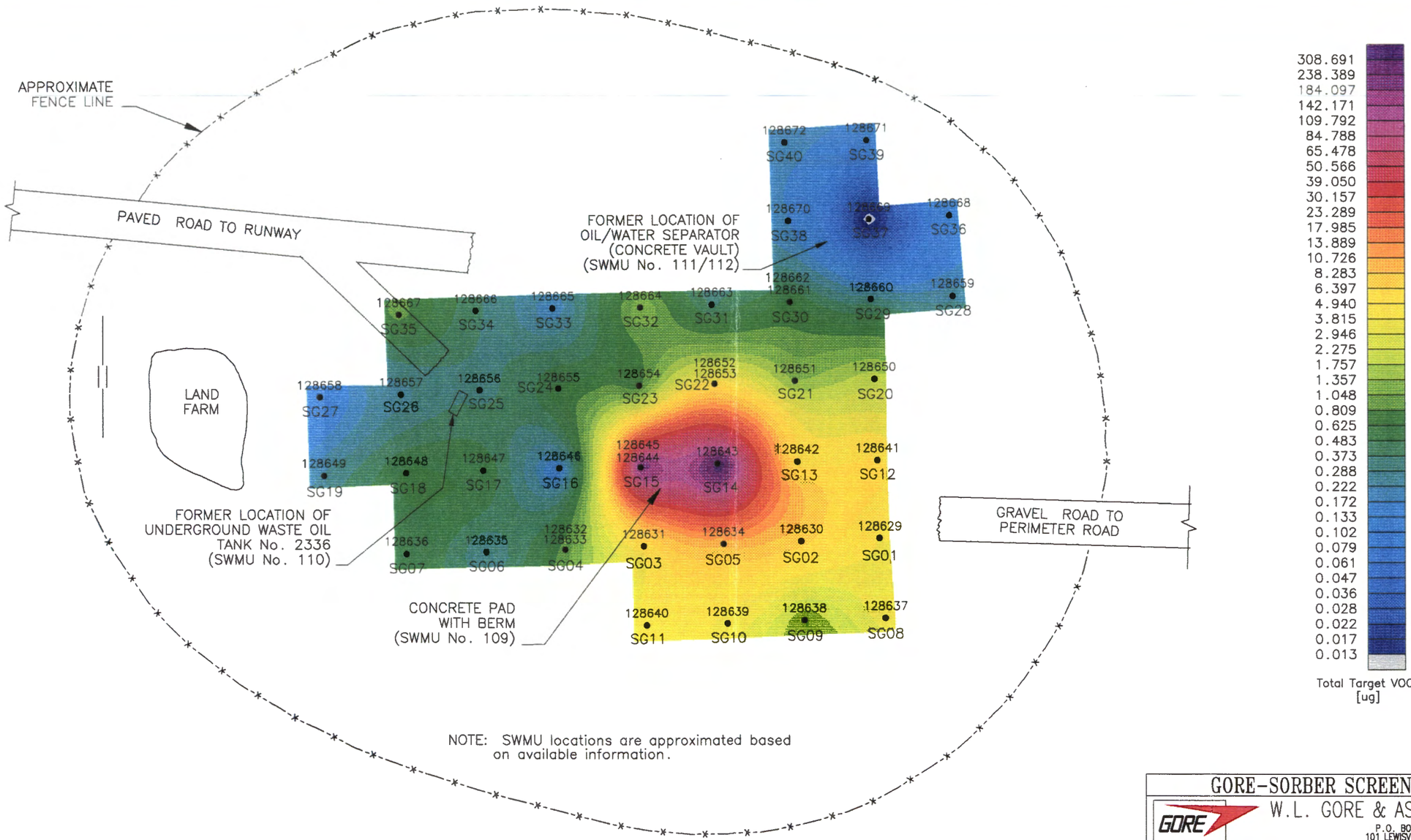

NOTE: SWMU locations are approximated based on available information.

Scale 1:840

50 0 50

(feet)

LEGEND:

SG01 GORE-SORBER Screening Module Location

-x---x---x- Fence

NOTE: CONTOUR PLOT REPRESENTS MASS OF COMPOUND DESORBED FROM GORE-SORBER SCREENING MODULES, IDENTIFIED AND QUANTIFIED BY GAS CHROMATOGRAPH MASS SELECTIVE DETECTION.

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GORE-SORBER SCREENING SURVEY

W.L. GORE & ASSOCIATES, INC.
P.O. BOX 1100
101 LEWISVILLE ROAD
ELKTON, MD 21922-1100
(410) 392-3300

FIRE TRAINING AREA #4, CANNON AIR FORCE BASE, CLOVIS, NM

TOTAL TARGET VOLATILE ORGANICS

HARZA ENGINEERING COMPANY, CHICAGO, IL

DATE DRAWN:	26 NOV 1996	GRID FILE:	B101.GRD
DRAWN BY:	JH	PLOT FILE:	B1C.PLT
DATE GRIDDED:	26 NOV 1996	PROJECT NUMBER:	070329
GRIDDED BY:	JH	SITE CODE:	UI

REV. #: 0

REV. DATE:

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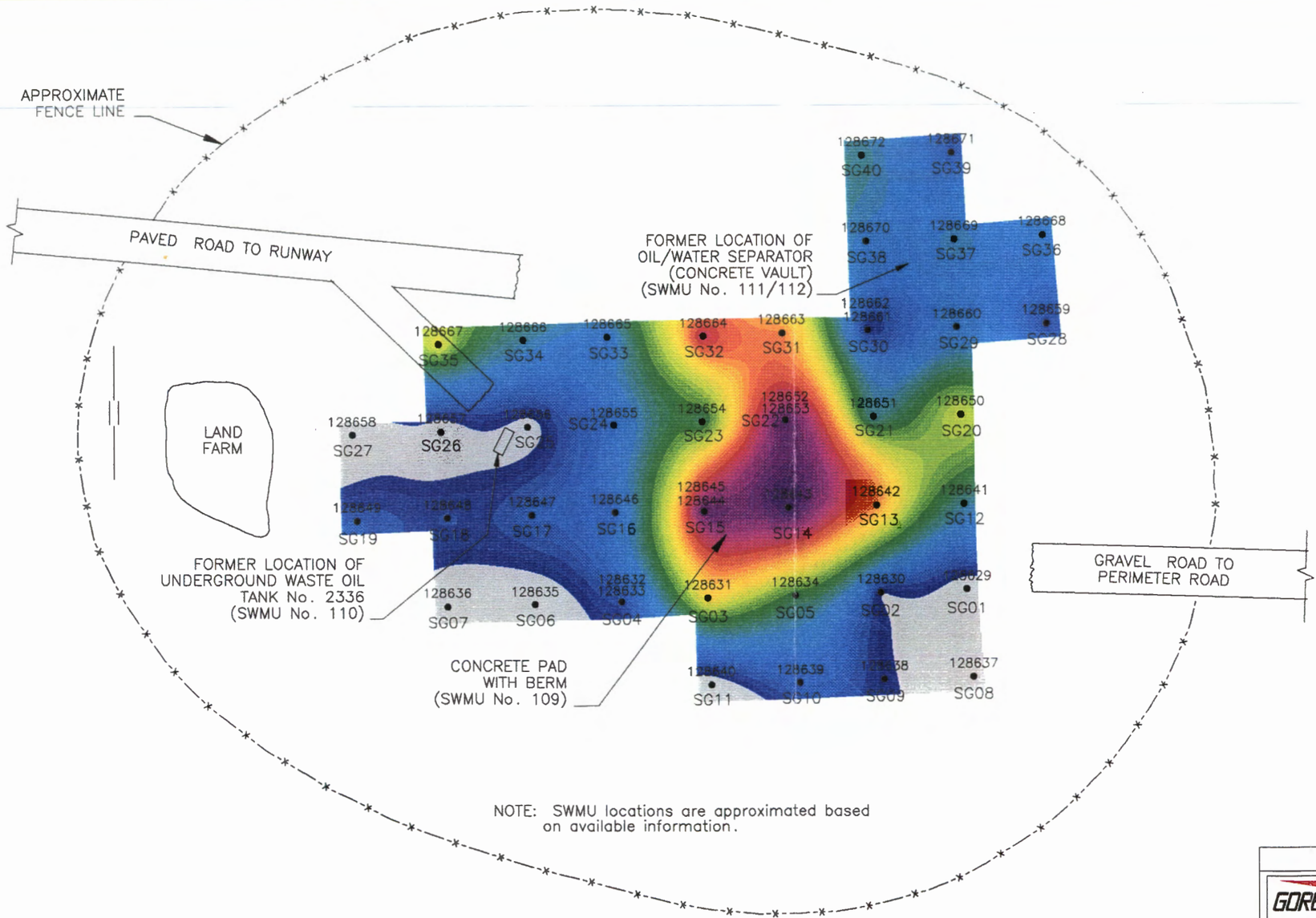

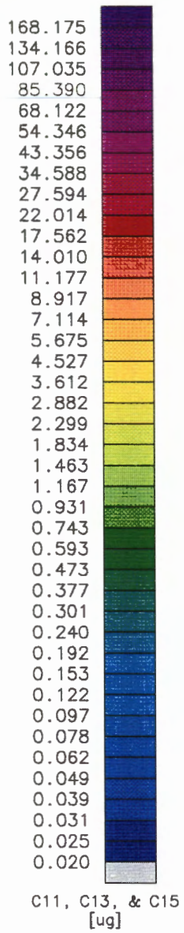

NOTE: SWMU locations are approximated based on available information.

Scale 1:840

50 0 50

(feet)

LEGEND:

SG01 GORE-SORBER Screening Module Location

Fence

NOTE: CONTOUR PLOT REPRESENTS MASS OF COMPOUND DESORBED FROM GORE-SORBER SCREENING MODULES, IDENTIFIED AND QUANTIFIED BY GAS CHROMATOGRAPH MASS SELECTIVE DETECTION.

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ELKTON, MD 21922-1100
(410) 392-3300

FIRE TRAINING AREA #4, CANNON AIR FORCE BASE, CLOVIS, NM

REV. #: 0

UNDECANE, TRIDECANE, & PENTADECANE

REV. DATE:

HARZA ENGINEERING COMPANY, CHICAGO, IL

DATE DRAWN:	26 NOV 1996	GRID FILE:	UP01.GRD
DRAWN BY:	JH	PLOT FILE:	UPC.PLT
DATE GRIDDED:	26 NOV 1996	PROJECT NUMBER:	070329
GRIDDED BY:	JH	SITE CODE:	UI

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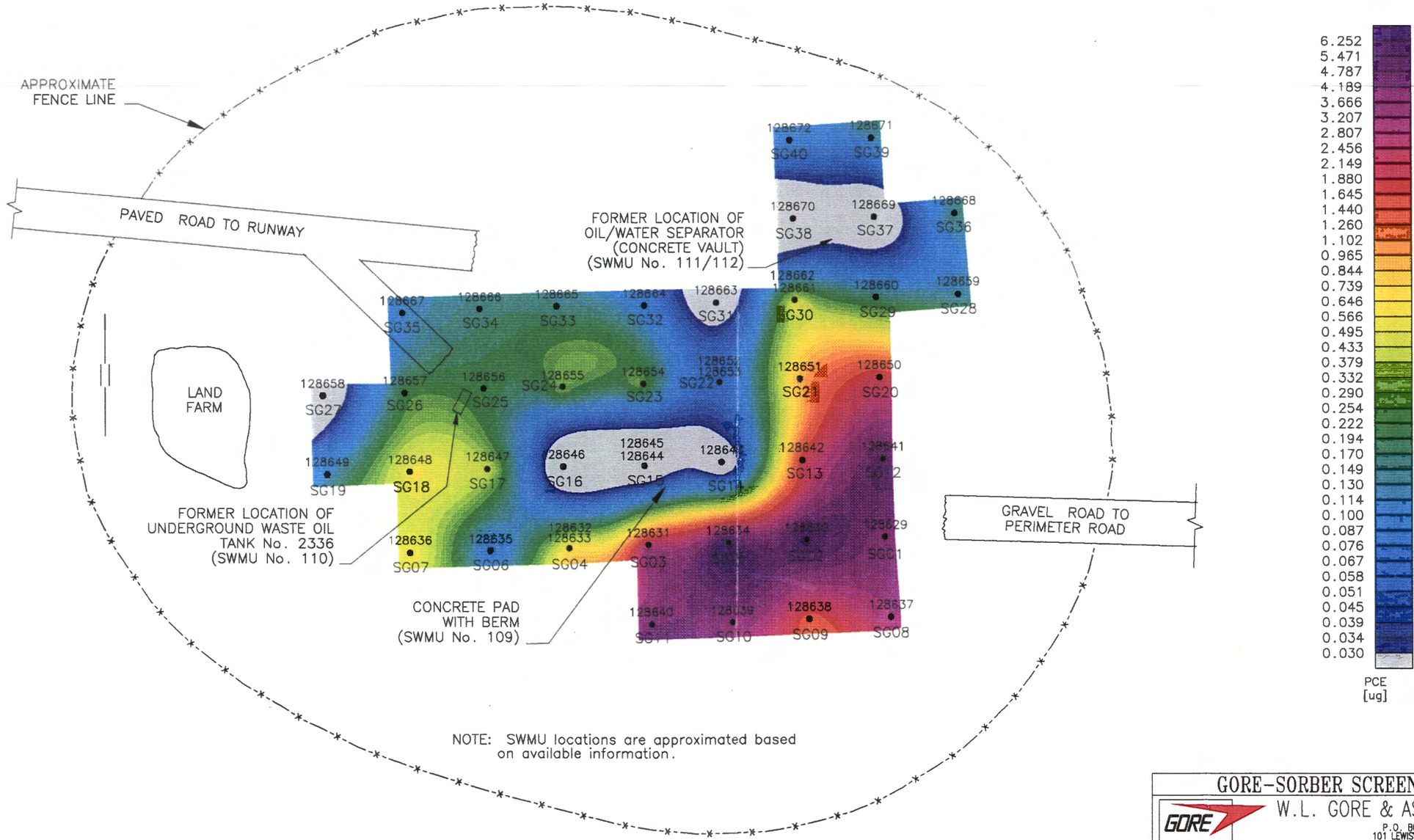

NOTE: SWMU locations are approximated based on available information.

Scale 1:840

50 0 50

(feet)

LEGEND:

SG01 GORE-SORBER Screening Module Location

-x---x---x- Fence

NOTE: CONTOUR PLOT REPRESENTS MASS OF COMPOUND DESORBED FROM GORE-SORBER SCREENING MODULES, IDENTIFIED AND QUANTIFIED BY GAS CHROMATOGRAPH MASS SELECTIVE DETECTION.

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GORE-SORBER SCREENING SURVEY

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P.O. BOX 1100
101 LEWISVILLE ROAD
ELKTON, MD 21922-1100
(410) 392-3300

FIRE TRAINING AREA #4, CANNON AIR FORCE BASE, CLOVIS, NM

TETRACHLOROETHENE

HARZA ENGINEERING COMPANY, CHICAGO, IL

REV. #: 0

REV. DATE:

DATE DRAWN:	26 NOV 1996	GRID FILE:	PC01.GRD
DRAWN BY:	JH	PLOT FILE:	PCC.PLT
DATE GRIDDED:	26 NOV 1996	PROJECT NUMBER:	070329
GRIDDED BY:	JH	SITE CODE:	UI