Revised Site Investigation Report
Sanitary Landfill
Former Laredo Air Force Base, Texas

Prepared for

U.S. Army Corps of Engineers
Tulsa District

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Contents

Executive Summary ii
Contents vi
Acronyms ix
1. Introduction 1
2. Background 2
2.1 Site Location and Description 2
2.2 Site History 6
2.3 Previous Investigations 7
2.4 Site Characteristics 7
2.4.1 Physiography 7
2.4.2 Soils 7
2.4.3 Geology 8
2.4.4 Meteorology 8
2.4.5 Surface Water 8
2.4.6 Hydrogeology 8
3. Investigation Activities 10
3.1 Aerial Photography Review 10
3.2 Electromagnetic Survey 13
3.3 Soil Gas Survey 18
3.3.1 Chain of Custody and Analysis Information 22
3.4 Soil, Groundwater, and Sediment Investigation 24
3.4.1 Drilling Methods 25
3.4.2 Soil Sampling Activities 27
3.4.3 Groundwater Sampling Activities 28
3.4.4 Groundwater Level Measurement 36
3.4.5 Sediment Sampling Activities 36
3.5 Surveying 39
3.6 Management of Investigation Derived Waste 39
4. Investigation Results 41
4.1 ARARs 41
4.2 Historical Aerial Photograph Review 41
4.3 Electromagnetic Survey 43
4.4 Soil Gas Survey 43
4.5 SCAPS Soil Classification Results 45
4.6 Soil Analytical Results 48
4.6.1 VOCs 48
4.6.2 SVOCs 55
4.6.3 Pesticides/PCBs 63
4.6.4 Herbicides 64
4.6.5 Total Metals 77
4.7 Groundwater Analytical Results 86
4.7.1 Field VOC Analytical Results 86

02925

4.7.2 Laboratory VOC Analytical Results 87
4.7.3 SVOCs 99
4.7.4 Pesticides/PCBs 99
4.7.5 Herbicides 104
4.7.6 Total Metals 107
4.8 Groundwater Flow Direction 116
4.9 Sediment Analytical Results 116
4.9.1 Pesticides 116
4.9.2 Total Metals 125
4.10 Nature and Extent of Contamination 126
4.10.1 VOCs 126
4.10.2 SVOCs 126
4.10.3 Pesticides/PCBs 127
4.10.4 Herbicides 127
4.10.5 Total Metals 128
5. Contaminant Fate and Transport 130
5.1 Contaminant Properties 130
5.1.1 Volatile Organic Compounds 130
5.1.2 Semivolatile Organic Compounds 131
5.1.3 Pesticides 131
5.1.4 PCBs 132
5.1.5 Herbicides 132
5.1.6 Metals 132
5.2 Potential Routes of Migration and Exposure 132
5.3 Potential Receptors 134
6. Conclusions and Recommendations 135
6.1 Conclusions 135
6.2 Recommendation 138
7. References 139

Appendix A. Plat Maps
Appendix B. EM Investigation
Appendix C. Soil Gas Survey
Appendix D. Soil Classification Logs
Appendix E. GPS Survey Data
Appendix F. Data Validation Report and Analytical Data (provided under separate cover)

Tables

3-1 Soil Gas Location Cross Reference 23
3-2 Soil Sample Analytical Parameters 29
3-3 Groundwater Sample Analytical Parameters 34
3-4 Sediment Sample Analytical Parameters 38
4-1 Soil Descriptions for Recovered Soil Samples 46
4-2 VOCs in Soils Analytical Results 49
4-3 SVOCs in Soils Analytical Results 56
4-4 Pesticides/PCSs in Soils Analytical Results 65
4-5 Herbicides in Soils Analytical Results 71

4-6 Metals in Soils Analytical Results 78
4-7 Field VOC Analytical Results 88
4-8 VOCs in Groundwater Analytical Results 90
4-9 SVOCs in Groundwater Analytical Results 100
4-10 Pesticides/PCBs in Groundwater Analytical Results 102
4-11 Herbicides in Groundwater Analytical Results 104
4-12 Metals in Groundwater Results 108
4-13 Groundwater Elevations in Temporary Monitor Wells 118
4-14 VOCs in Sediments Analytical Results 120
4-15 SVOCs in Sediments Analytical Results 121
4-16 Pesticides/PCBs in Sediments Analytical Results 122
4-17 Herbicides in Sediments Analytical Results 123
4-18 Metals in Sediments Analytical Results 124

Figures

2-1 Site Location Map 3
2-2 Site Map 4
2-3 City of Laredo Zoning Map 5
3-1 Historical Aerial Photograph – January 29, 1955 11
3-2 Historical Aerial Photograph – December 3, 1959 12
3-3 Historical Aerial Photograph – December 12, 1964 14
3-4 Historical Aerial Photograph – August 19, 1970 15
3-5 Historical Aerial Photograph – June 26, 1975 16
3-6 Historical Aerial Photograph – March 17, 2000 17
3-7 EM Survey Lines 19
3-8 Soil Gas Survey Locations 21
3-9 Groundwater and Soil Sampling Locations Map 26
3-10 Typical Temporary Monitoring Well Installation 32
3-11 Sediment Sampling Location Map 37
4-1 Landfill Trench Locations 42
4-2 EM Survey Detected Anomalies 44
4-3 Groundwater Potentiometric Surface Map 117

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Executive Summary

This Revised Site Investigation (SI) Report describes the investigation activities and presents the results and conclusions from the Site Investigation of the Sanitary Landfill (SLF) area at the former Laredo Air Force Base (LAFB), Laredo, Texas. The voluntary investigation was performed by the US Army Corps of Engineers, Tulsa District, under the Formerly Used Defense Sites (FUDS) program. The investigation was conducted during June and July 1997 and included the performance of a historical aerial photograph review, the performance of an electromagnetic (EM) survey of the SLF area, and the collection and laboratory analysis of soil gas, soil, groundwater, and sediment samples from the SLF area. The purpose of the investigation was to assess the presence or absence of impacted environmental media at the SLF due to activities conducted during the time that the Department of Defense (DoD) controlled LAFB, and to assess potential further actions (if any) for the SLF. An additional objective of the Revised SI Report is to provide additional information regarding the investigation, as requested by the Texas Natural Resources Conservation Commission (TNRCC) upon review of the original SI Report. No previous investigations regarding the assessment of potential subsurface contamination due to landfill activities in the SLF area are known.

The SLF area is located approximately 1/2-mile west of the northern end of the Laredo International Airport. The SLF area is currently developed primarily as a residential area, including an elementary school, with some vacant areas and commercial development along the western side of the SLF area. Zoning for the SLF is residential, except along the western side, which is commercially zoned.

Based on historical aerial photography, the SLF area was utilized as a landfill beginning in the mid 1950s and continuing until closure of LAFB in the mid 1970s. The historical aerial photography review identified 16 former landfill trenches within the SLF area. The EM survey successfully confirmed the former trenches that had been identified in the historical aerial photography review, and also identified two additional former trenches. A number of homes and part of the elementary school are constructed over the former trenches.

In the 1955 photograph, rectangular patterns of vegetation are visible in the western portion of the SLF area, as well as to the south and southwest of the SLF. These rectangular patterns are similar to those on the agricultural property visible to the west of the SLF in the 1955 photograph. This suggests that prior to the establishment of LAFB, the SLF area was probably utilized for agriculture.

The soil gas survey analyzed soil gas collected from two different depths in 150 sampling locations across the SLF area. The soil gas samples were analyzed for methane and volatile organic compounds (VOCs). Only two samples were found to contain detectable concentrations of methane, and only one sample was found to contain a detectable concentration of a VOC, chlorobenzene. The three soil gas samples were all collected from the vacant commercial area on the western end of the SLF area. There are no existing regulatory limits for chlorobenzene or methane in soil gas. However, one of the two soil gas samples for which methane was reported contains methane at a concentration approximately equal to the lower explosive limit for methane in air. The soils in this portion of the site were found to consist of organic rich clays, which could account for the methane in the soil gas.

Soil and groundwater sampling was conducted utilizing the USACE Site Characterization and Analysis Penetrometer System (SCAPS). Based upon SCAPS information and observation of the recovered soil samples, the soils at the SLF area range from clays to silty sand, with organic-rich clays present in the northwestern portion of the SLF area. Groundwater was encountered at depths of about 3.4 feet to approximately 15.2 feet. The groundwater flow gradient at the SLF area was found to slope generally toward the west, at about 0.018 ft/ft.

The soil, groundwater, and sediment samples were analyzed for VOCs, semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), herbicides, and total metals. Results of the analyses were compared to the TNRCC Risk Reduction Standard No. 2 (RRS2) Media-Specific Concentrations (MSCs) for residential soil and groundwater (GWP-Res, SAI-Res, and GW-Res).

Excluding metals constituents, only two soil samples, three groundwater samples, and one sediment sample contain a concentration of a parameter that exceeds the applicable TNRCC

RRS2 standard for residential area soils or groundwater. The soil samples contained chlordane (a herbicide) and bis (2-ethylhexyl)phthalate (a plasticizer, which is also a common laboratory contaminant). The groundwater samples contained alpha-benzene hexachloride (alpha-BHC) and 2-methyl-4-chlorophenoxyacetic acid (MCPA). The sediment sample contained chlordane. All of the soil and groundwater samples that exceed RRS2 residential criteria were collected from the commercially-zoned vacant area on the western side of the SLF area. The detections appear to be isolated and show no particular pattern of occurrence across the SLF area.

Except for aluminum, lead, and beryllium, the detected metals concentrations that exceed the GWP-Res standards in SLF site soils occur sporadically across the site, indicating no particular pattern of occurrence. Although most of the aluminum, lead, and beryllium samples exceed the respective GWP-Res standards, the concentrations are generally consistent across the site and of the same order of magnitude as the GWP-Res standard. The detected metals concentrations may therefore reflect natural conditions (although it is noted that no background study for metals in soils has been performed for the SLF area).

The detected metals concentrations in SLF site groundwater that exceed the GW-Res standards include most of the detections for aluminum, arsenic, beryllium, chromium, manganese, lead, and vanadium. Barium, cadmium, and mercury also are detected in several groundwater samples at concentrations exceeding the GW-Res standards. As with the soil samples, although many of the groundwater samples exceed the respective GW-Res standards for many of the metals constituents, the detected metals concentrations are generally consistent across the site and generally do not significantly exceed the GW-Res standards. Further, many of the detections that exceed GW-Res standards correspond to locations where the soil samples did not exceed the GWP-Res standards. It is therefore likely that the detected metals concentrations reflect natural groundwater conditions.

It is noted that turbidity was a problem for many of the groundwater samples. The degree of turbidity of the groundwater samples could have affected the metals analytical results. The groundwater samples were not filtered prior to placement into the sample containers.

For metals in sediment samples, only aluminum and lead exceed the GWP-Res standard. However, the detected concentrations only slightly exceed the standards, and the

concentrations are fairly consistent. It is therefore likely that the detected metals concentrations reflect natural conditions.

The physical properties of the organic constituents (except for MCPA) identified in the SLF soil, groundwater, and sediment samples indicate that the contaminants are likely to be relatively immobile in soils. Those compounds present in soil are therefore not likely to migrate into groundwater, particularly when considering the limited precipitation received in the Laredo area. Those compounds present in groundwater are likely to adsorb to soil particles, reducing the potential for transport with the flow of groundwater. MCPA is readily leachable from soils and is relatively soluble in water. Therefore it has a greater potential to migrate with flowing groundwater. However, it is noted that MCPA was detected in only two groundwater samples. Additionally, groundwater in the vicinity of the SLF site is not utilized as a water supply. The water supply for the residents of the SLF site area is provided by the City of Laredo, taken from the Rio Grande River. It is noted that the pesticide and herbicide concentrations detected in the SLF site soils and groundwater could be the result of past use on the SLF site and adjacent properties when the area was utilized for agricultural purposes.

Based upon: 1) the very limited occurrence, limited extent, and relative immobility of most of the organic contaminants identified at the SLF area that exceed TNRCC RRS2 GWP-Res and GW-Res standards; 2) the lack of use of groundwater underlying the SLF site; 3) the lack of detected VOCs or methane in the area of the SLF site where trenches formerly existed; and 4) the consistency of the detected metals concentrations in site soils, groundwater, and sediments that indicate the detected concentrations may be due to natural conditions (recognizing that no formal background study for metals concentrations in SLF site soils has been performed), no further investigation of the former LAFB SLF area is recommended.

Acronyms

amsl	above mean sea level
bgs	below ground surface
BTOC	below top of casing
DoD	Department of Defense
EM	Electromagnetic
FUDS	Formerly Used Defense Site
GC/MS	Gas Chromatograph/Mass Spectrometer
GC/TCD	Gas Chromatograph/Thermal Conductivity Detector
GPS	Global Positioning System
GW-Res	Groundwater MSC for Residential Use
GWP-Res	Soil MSC for Residential Use Based on Groundwater Protection
in/hr	inches per hour
LAFB	Laredo Air Force Base
LIA	Laredo International Airport
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MSC	Media-Specific Concentration
PCB	Polychlorinated Biphenyls
ppb	parts per billion
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
RRS2	Risk Reduction Standard No. 2
SAI-Res	Soil MSC for Residential Use Based on Inhalation, Ingestion, and Dermal Contact
SCAPS	Site Characterization Analysis Penetrometer System
SI	Site Investigation
SLF	Sanitary Landfill
SVOC	Semivolatile Organic Compounds
TNRCC	Texas Natural Resource Conservation Commission
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
USACE	U.S. Army Corps of Engineers
VOC	Volatile Organic Compound
WES	Waterways Experiment Station

1. Introduction

This Revised Site Investigation (SI) Report describes the investigation activities and presents the results and conclusions from the Site Investigation of the Sanitary Landfill (SLF) area at the former Laredo Air Force Base (LAFB), Laredo, Texas. The investigation was performed during June and July 1997 to assess the presence or absence of impacted media at the SLF due to activities conducted during the time that the Department of Defense (DoD) controlled LAFB, and to assess potential further actions (if any) for the SLF. The investigation was performed voluntarily by the US Army Corps of Engineers (USACE) under the Formerly Used Defense Sites (FUDS) program. The investigation was performed in accordance with "Workplan for the Investigation of the Sanitary Landfill (Neighborhood Area) At Former Laredo Air Force Base," prepared by the USACE in April 1997. As a courtesy, a copy of the workplan was provided to the TNRCC, although TNRCC approval was not required for the voluntary project.

The investigation included the performance of a historical aerial photograph review, the performance of an electromagnetic (EM) survey of the SLF area, and the collection and laboratory analysis of soil gas, soil, groundwater, and sediment samples from the SLF area.

The primary purpose of this Revised SI Report is to present and discuss the results of the field investigation of the SLF area. An additional objective of the Revised SI Report is to provide additional information regarding the investigation, as requested by the Texas Natural Resources Conservation Commission (TNRCC) upon review of the original SI Report.

Section 2
Background

2. Background

2.1 Site Location and Description

The former LAFB is located in Laredo, Texas, near the Texas/Mexico border and about 150 miles south-southwest of the City of San Antonio. The former LAFB airfield facilities are presently operated as the Laredo International Airport (LIA).

The SLF site is located about 1/2-mile west of the northern end of the LIA (Figure 2-1). The SLF site is generally bordered by McPherson Road on the west, Hibiscus Avenue on the south, Daugherty Road on the east, and Los Ebanos Drive on the north (Figure 2-2). The SLF area is currently developed primarily as a residential area (Alta Vista, School View Acres, and Valle Alto subdivisions) and a school (Newman Elementary School), with some commercial development along McPherson Road.

Land use in the vicinity of the SLF area is a combination of residential, commercial, and industrial. South of the SLF area is residential development. West of the SLF area is primarily residential development, with commercial development along McPherson Road. North and east of the SLF area is primarily industrial development. Plat maps showing the development of the SLF site and the immediate vicinity are provided in Appendix A.

Zoning for the SLF area is "R-1" single family residential, "R-2" multi-family residential, and "B-3" general business (Figure 2-3). The purpose of the R-1 district is to provide an area for residential uses and those public and semi-public uses (such as schools and parks) normally considered an integral part of the residential neighborhood they serve. The purpose of the R-2 district is similar to that for the R-1, but for higher density residential use. The purpose of the B-3 district is to provide for those businesses and services serving a trade area larger than a neighborhood, but smaller than the entire city and located primarily along minor or principal arterial streets. The majority of the SLF area is zoned R-2. The southern portion of the SLF area is zoned R-1. The vacant and commercially developed areas of the SLF located along McPherson Road are zoned B-3.

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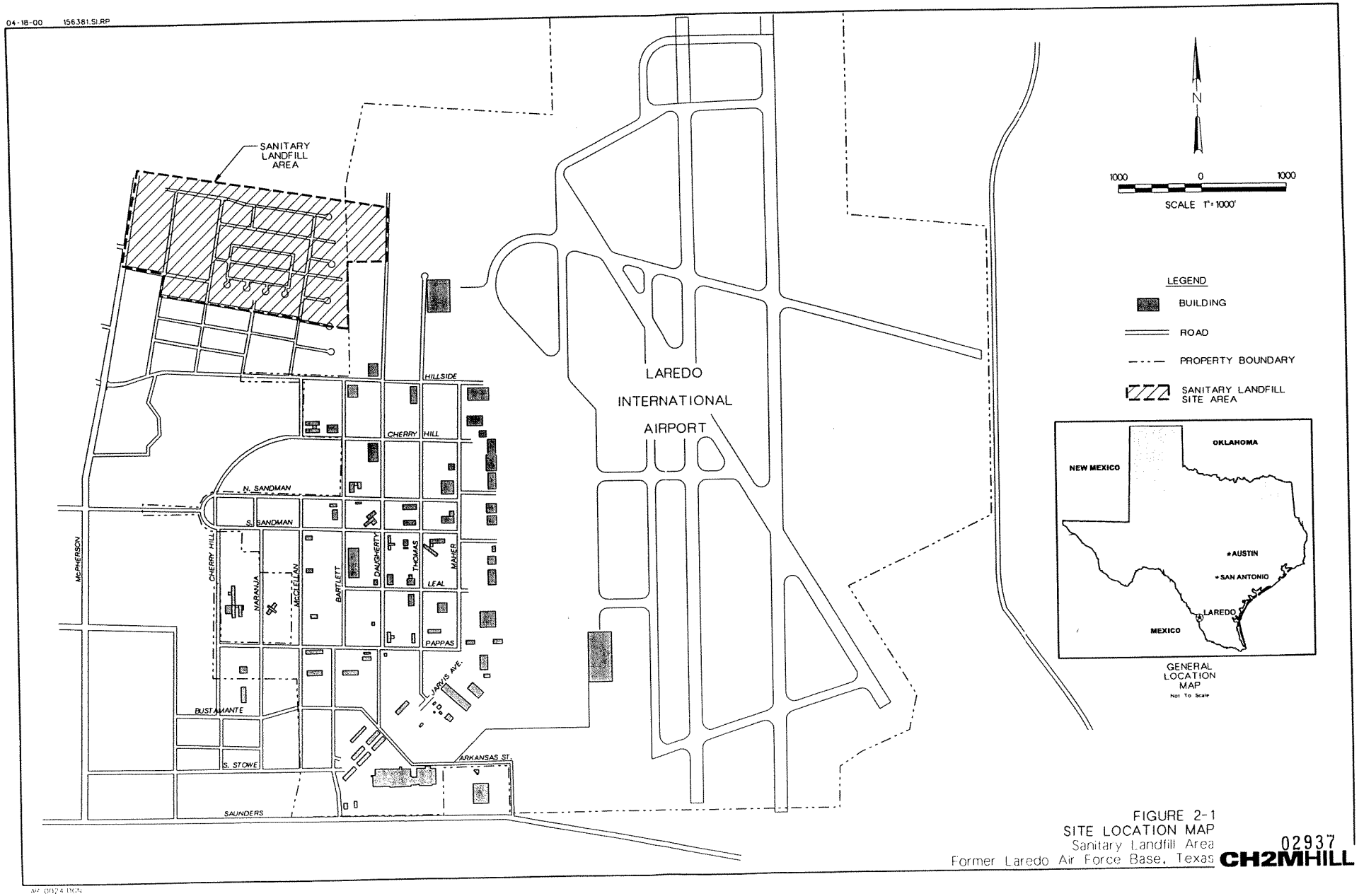

FIGURE 2-1
SITE LOCATION MAP
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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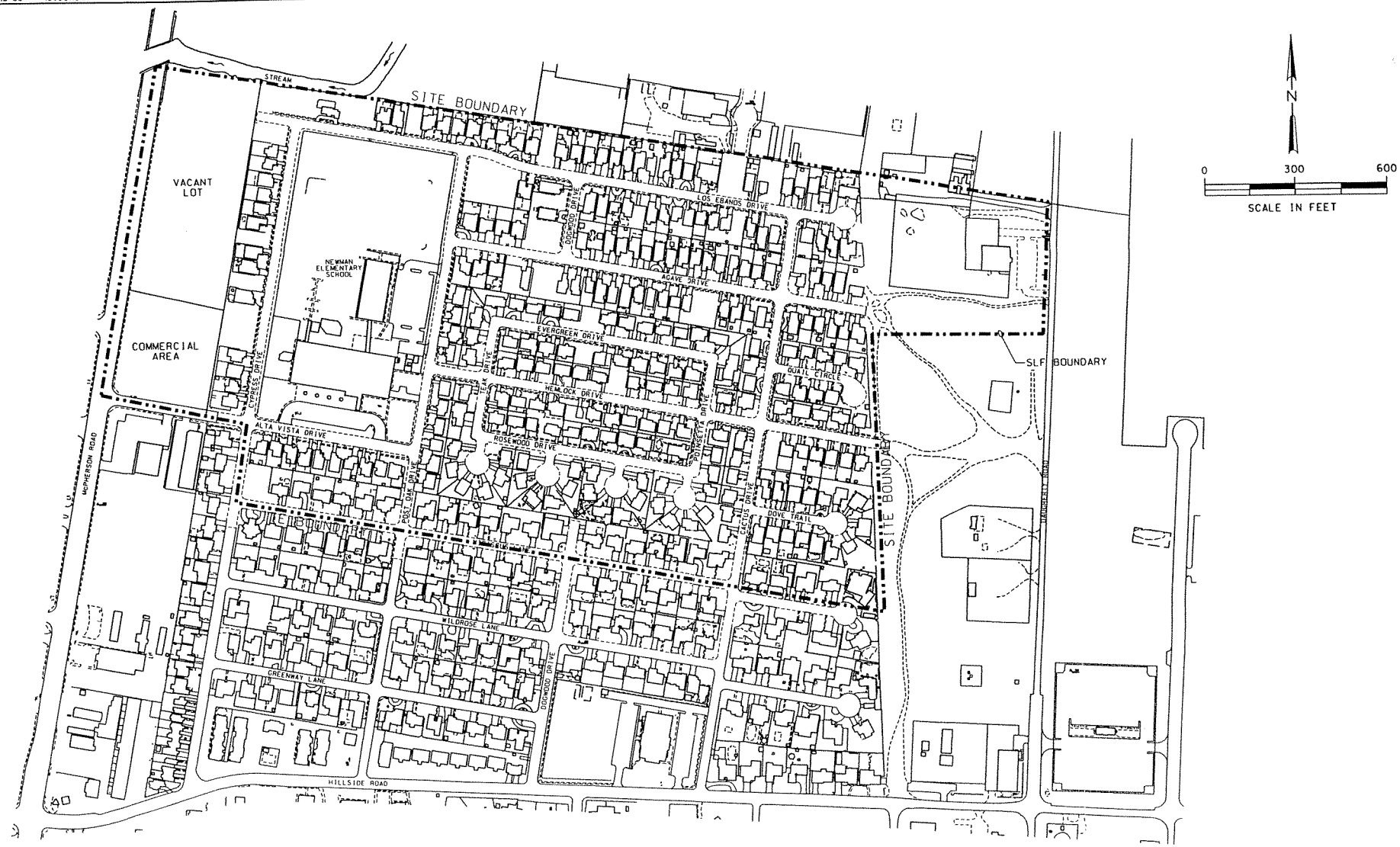

FIGURE 2-2
SITE MAP
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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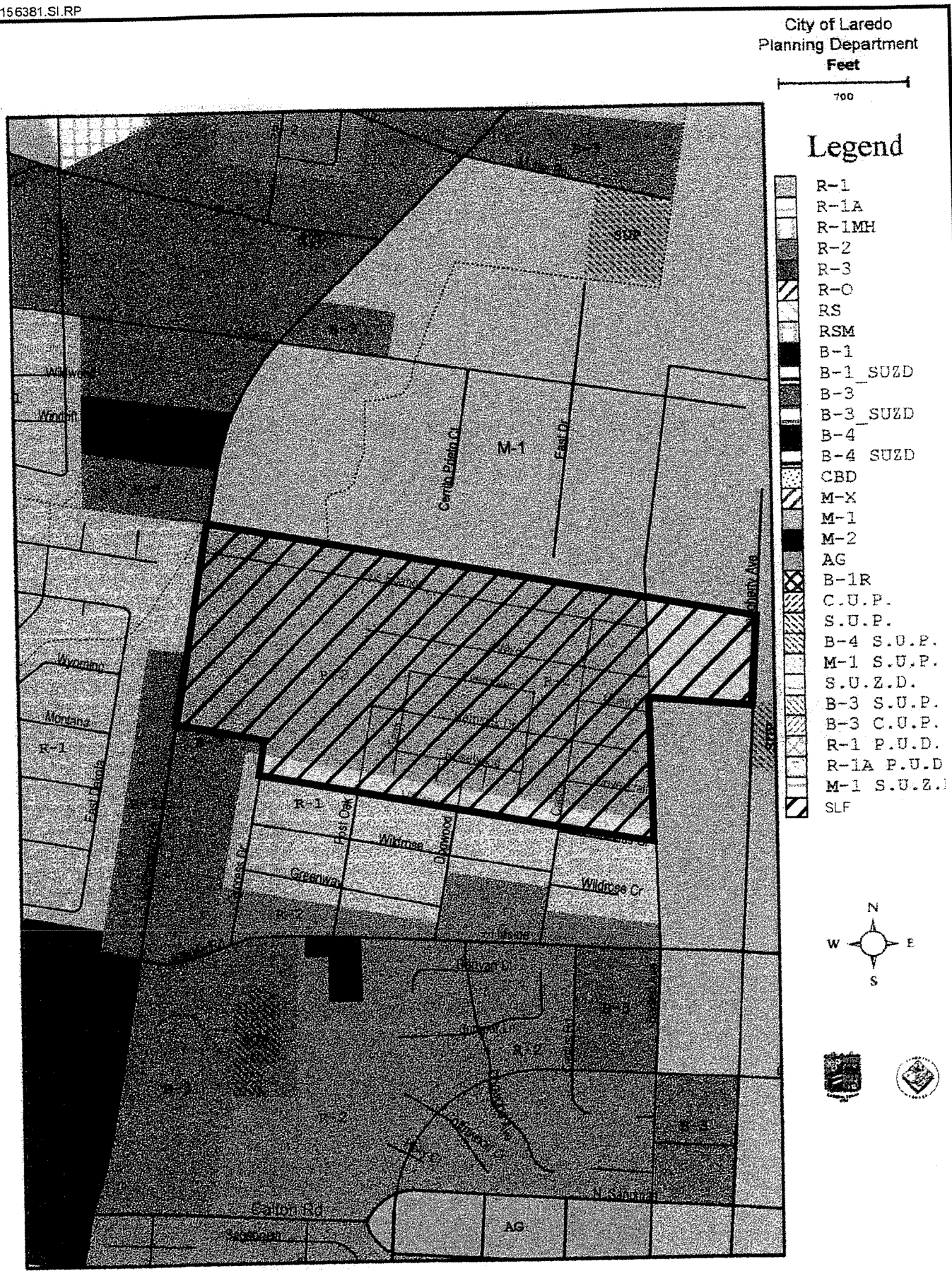

FIGURE 2-3
CITY OF LAREDO ZONING MAP
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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2.2 Site History

On May 7, 1942, the U.S. Government acquired 2,085 acres for the construction of the Laredo Army Air Corps Base (now known as the former Laredo Air Force Base). The Government constructed runways and numerous facilities from 1942 to 1974. The Base was initially deactivated in June of 1947; however, it was reactivated during the Korean conflict. The former Base was finally deactivated in March of 1974. About 309 acres were either deeded or sold to other federal, state and county agencies, or private firms. The remainder of the Base was deeded to the City of Laredo. The City of Laredo operates the former LAFB airfield as the LIA.

Historical aerial photography of the former LAFB indicates that an area west-northwest of the base was used for landfill activities beginning in the mid 1950s and apparently continuing until the early 1970s. The landfill was reportedly used as a sanitary landfill for the former LAFB. After the base was deactivated in 1974, the SLF area apparently remained undeveloped until the early 1980s.

Beginning in the early 1980s, residential development of the SLF area began. Housing developments and an elementary school (Newman Elementary School) were constructed within the SLF area. A number of homes and a portion of the elementary school were apparently constructed over the locations of the former landfill trenches. In 1988, the engineering firm of Raba-Kistner Consultants, Inc. discovered sanitary refuse in a foundation boring drilled during an investigation for construction of an addition to the elementary school. Recent excavations in the neighborhood for swimming pools and utility connections for new homes indicate that the refuse consisted of old bottles, cans, clothing, and other similar types of sanitary refuse.

Based on observations of historical aerial photography, land use prior to the current development on the properties surrounding the SLF area were primarily agricultural and military. Land west and north of the SLF site appears to have been utilized for agricultural purposes until the late 1970s. McPherson Road, along with residential development west of McPherson Road, is visible for the first time in a 1979 aerial photograph. Land use south and east of the SLF was military. Residential development of the area immediately south of the

SLF area appears to have begun in the late 1970s. Land north of the SLF area appears to have been developed for industrial use beginning in the early 1980s. Land east of the SLF area has appeared generally unchanged or industrial since the closing of the former LAFB.

2.3 Previous Investigations

No previous investigations regarding the assessment of potential subsurface contamination due to landfill activities in the SLF area are known.

2.4 Site Characteristics

2.4.1 Physiography

The SLF area is located within Webb County, Texas. Webb County is situated within the Arid Plains physiographic province. The countryside around Laredo is characterized by small hills, covered with low-growing brushy vegetation and numerous arroyos and dry creek beds gently sloping toward the Rio Grande River, which lies about 2.5 miles west of the former LAFB (Parker, 1996; Raba-Kistner, 1996). The surface elevation of Webb County ranges from 372 feet above mean seal level (amsl) at the Rio Grande River up to 945 feet amsl. The elevation in the vicinity of the former LAFB is about 460 to 490 feet amsl.

2.4.2 Soils

The soils within the former LAFB area are characterized as Catarina-Montell-Jimenez soil association as cracking, crumbly clay soils overlying a stiff caliche soil (Parker, 1996). The soils at SLF area have been further classified as Copita fine sandy loam, 0-3 percent slopes (USDA, date unknown).

The Copita fine sandy loam is a moderately deep, nearly level to gently sloping soil, found on summits and side slopes of low hills and on broad, convex plains. The soil typically consists of a surface layer of brown fine sandy loam about 9-inches thick, below which is a subsoil of yellowish brown sandy clay loam and light yellowish brown sandy clay loam that extends to a depth of about 37 inches. Underlying the soil is weakly to strongly cemented, pale yellow sandstone. The soil is calcareous and moderately alkaline throughout. The soil is well drained, with a medium surface runoff. Permeability of the Copita series fine sandy loam is considered moderate with a range of 0.6 inches per hour (in./hr) to 2.0 in./hr.

2.4.3 Geology

Webb County falls within the Rio Grande Embayment. The surface geology of Webb County is mostly Tertiary in age, with a narrow band of Quaternary-age alluvium along the Rio Grande flood plain. The sedimentary rocks throughout Laredo are part of the Tertiary (Eocene)-age Claiborne formation, which is composed of sandstone, sand mudstone, and shale.

2.4.4 Meteorology

Webb County receives a limited amount of rainfall per year, with an average annual precipitation of 20 to 22 inches (TNRCC, 1993). The average minimum temperature in January is 47°F, and the average maximum temperature in July is 99°F.

2.4.5 Surface Water

In the Laredo area, surface water runoff is directed toward the Rio Grande River, which lies about 2.5 miles west of the former LAFB area. The Rio Grande River is impounded in the International Amistad Reservoir (about 160 miles upstream of Laredo), and its flow is controlled by dam releases. The majority of the region's drinking water and irrigation water is obtained from the river.

An unnamed intermittent stream lies north and adjacent to the SLF area. The only other major surface water resource in the area is Casa Blanca Lake located approximately one mile east of the LIA. Casa Blanca Lake was created by the impoundment of San Ygnacio Creek. Other creeks in the region are intermittent, draining into the Rio Grande.

2.4.6 Hydrogeology

During the present investigation, shallow groundwater was encountered within site soils at a depth of approximately 6 to 10 feet below ground surface (bgs). The depth to groundwater and the groundwater flow gradient at the SLF area are discussed more fully in Section 5.8.

Groundwater quality parameters were analyzed for samples collected at a site approximately 1 mile south of the SLF area site at a depth of 8 to 9 feet bgs. The groundwater pH ranges from 7.5 to 8, and has an average total dissolved solid concentration of 3,000 milligrams per liter (mg/L). Potable water for the SLF area is

obtained through the City of Laredo public water supply system and is collected entirely from the Rio Grande River (Raba-Kistner, 1996).

Section 3
Investigation Activities

3. Investigation Activities

This section of the SI Report describes the various activities performed during the site investigation. The investigation consisted of four phases:

- Review of historical aerial photography,
- An EM survey,
- A soil gas survey, and
- Collection and chemical analysis of soil, groundwater, and sediment samples.

The investigation of the SLF area was performed by the US Army Corps of Engineers (USACE) and its subcontractors.

3.1 Aerial Photography Review

Historical aerial photographs of the SLF area were reviewed to determine the locations of former landfill trenches. A photograph taken in March 1952 shows no indications of landfill activities. The earliest photograph with observable indications of landfill activities was taken in January 1955 (Figure 3-1). Five landfill trenches are visible, generally in the central and northeastern areas of the SLF area. All are oriented generally southwest-northeast (generally across the topographic slope, based upon field observations of the area) and appear to be approximately 170 feet to 500 feet in length. Width appears to be approximately 25 feet.

It is noted that in the western portion of the SLF area, as well as to the south and southwest of the SLF, rectangular patterns of vegetation are visible. These rectangular patterns are similar to those on the agricultural property visible to the west of the SLF in the 1955 photograph. This suggests that prior to the establishment of LAFB, the SLF area was probably utilized for agriculture.

In the December 1959 photograph (Figure 3-2), the five trenches visible in the 1955 photograph appear to have been filled in. Two apparently active trenches are visible along

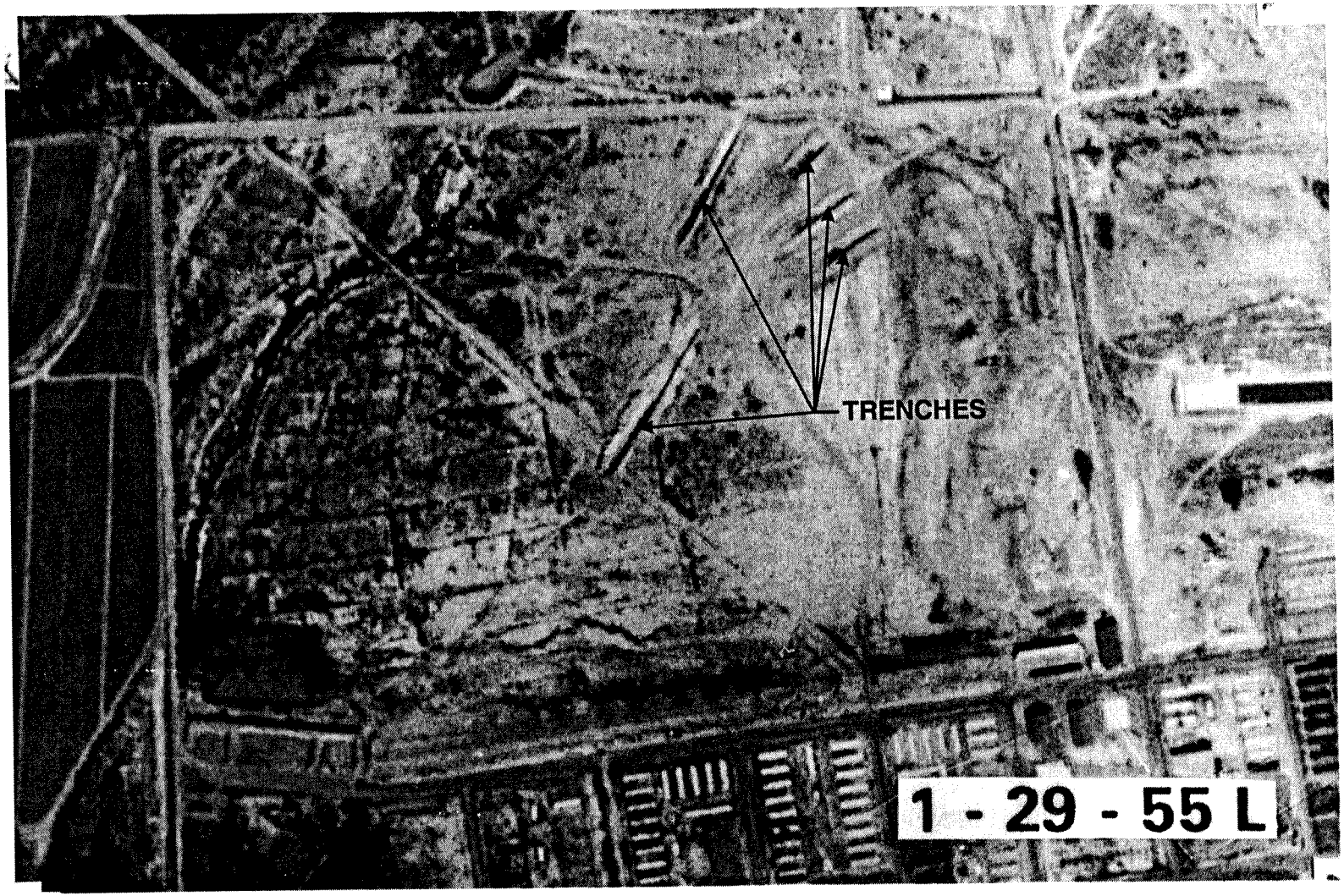

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FIGURE 3-1
HISTORICAL AERIAL PHOTOGRAPH-JANUARY 29, 1955
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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FIGURE 3-2
HISTORICAL AERIAL PHOTOGRAPH-DECEMBER 3, 1959
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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the northern side of the SLF area. As before, they are oriented generally southwest-northeast. They appear to be about 200 feet and 500 feet long.

In the December 1964 photograph (Figure 3-3), the trenches visible in the 1959 photograph appear to have been filled in. Three new trenches, each approximately 200 feet to 300 feet long are visible adjacent to the west of the 1959 trenches, and are oriented more or less in a line extending southwest-northeast. The furthest southwest trench is located approximately in the present day location of the Newman Elementary School. What appear to be differential types of vegetation growing over the locations of the former landfill trenches observed in earlier photographs make the former trench locations readily visible. Additional areas that are apparently former trenches are visible in the northeastern corner of the SLF area, oriented northwest-southeast (the apparent former trenches are not observed as active trenches in other photographs).

In the August 1970 photograph (Figure 3-4), all of the previously visible landfill trenches have been filled in and the entire area (except for the extreme northwestern part) appears to have been graded. A golf course is visible on the south-central portion of the SLF area, as well as on the area south of the SLF.

In the June 1975 photograph (Figure 3-5), no apparent landfill activities are visible. It is noted that this photograph was taken after the former LAFB had been closed.

The most recent photograph available, taken on March 17, 2000, (Figure 3-6) was reviewed to observe current land use in the SLF area. Land use is generally residential (single family dwellings and a school), with apparently commercial development and vacant properties along the western border of the SLF area. In comparison with the earlier photographs, it can be observed that many homes and the school are located over the former landfill trenches. What appear to be residential areas are located south and west of the SLF area. What appear to be industrial areas are visible north and east of the SLF area.

3.2 Electromagnetic Survey

The USACE Waterways Experimental Station (WES) conducted the EM survey of the SLF area. The objectives of the EM survey were to verify the locations of landfill trenches identified on historical aerial photographs and to identify other potential landfill trenches

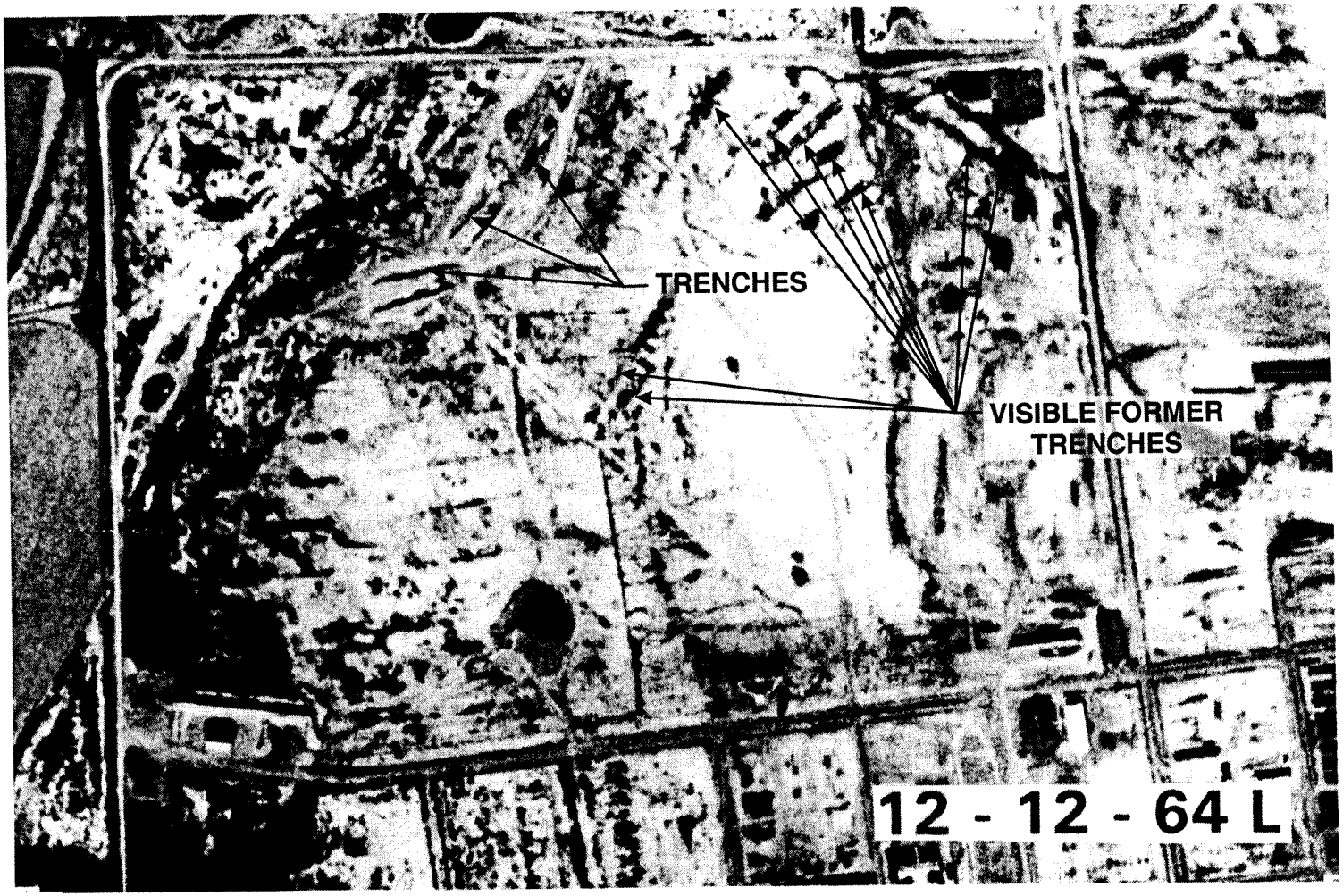

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FIGURE 3-3
HISTORICAL AERIAL PHOTOGRAPH-DECEMBER 12, 1964
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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FIGURE 3-4
HISTORICAL AERIAL PHOTOGRAPH-AUGUST 19, 1970
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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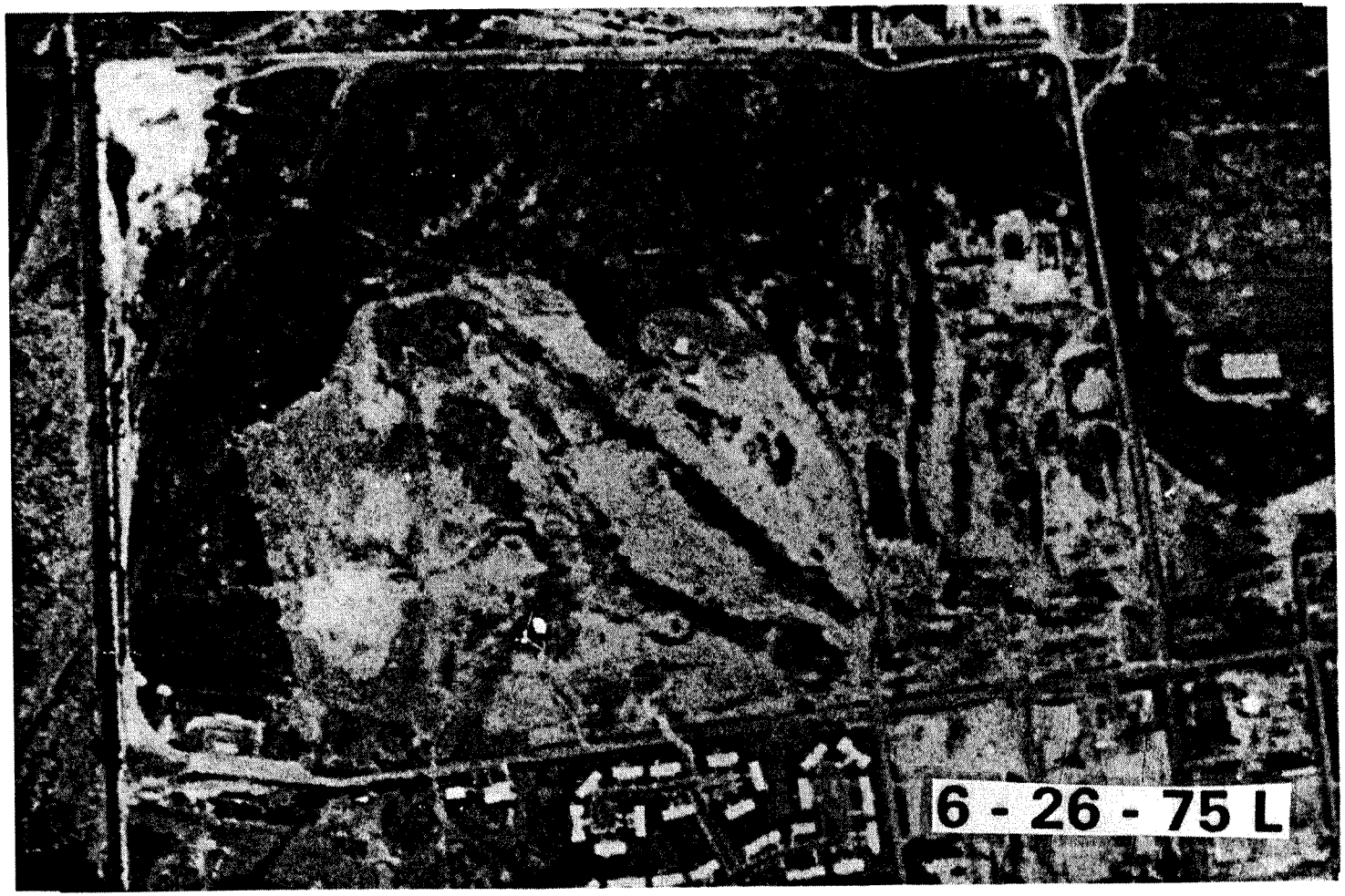

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FIGURE 3-5
HISTORICAL AERIAL PHOTOGRAPH-JUNE 26, 1975
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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SCALE: 1:6000

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FIGURE 3-6
HISTORICAL AERIAL PHOTOGRAPH-MARCH 17, 2000
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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LAR-0023.CDR

that were not observed on the aerial photographs. The EM survey was performed May 19 through May 22, 1997.

EM survey equipment measures the subsurface material's electrical conductivity. Subsurface materials such as soil, rock, and fill can be characterized by their electrical properties. Generally, materials placed in a landfill have conductivity values significantly different than the surrounding soil, therefore enabling the landfill trenches to be delineated and mapped. EM survey equipment can also locate subsurface metallic conductors, such as piping, electrical conduits, and buried drums.

To perform the EM survey, two types of EM survey equipment were used: a traditional Geonics EM 31 conductivity meter and an experimental Geonics EM 61 conductivity meter. The EM 31 instrument typically obtains responses from a depth of 6-12 feet in the subsurface, an interval of substantial interest for buried landfills. The experimental EM 61 equipment was configured to obtain a good response from electrical conductors from a depth of 5 to 15 feet, bgs and minimize responses from shallower buried objects such as city utility lines. Because the EM survey equipment is sensitive to metallic objects, both the EM 31 and the EM 61 were towed on a plastic trailer, 30 feet behind a small all terrain vehicle. The EM survey lines were run along the neighborhood streets, within the city street right-of-ways.

The EM survey was run along Alta Vista Drive, Hibiscus Lane, Hemlock Drive, Evergreen Drive, Agave Drive, Los Ebanos Drive, Cypress Drive, Post Oak Drive, Teak Drive, Dogwood Drive, and Cactus Drive (Figure 3-7). In addition, a small area northeast of Cactus Drive was surveyed to determine whether any former trenches are present in that area. The EM survey equipment was linked to a Global Positioning System (GPS) in order to be able to identify the exact locations of all data obtained with the EM equipment.

Details regarding the theory and procedures for the performance of the EM survey are within the EM survey report, presented as Appendix B. The results of the EM Survey are included within the EM survey report and are discussed in Section 5.2 of this report.

3.3 Soil Gas Survey

A soil gas survey was performed in the SLF area to enhance the information gained through

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FIGURE 3-7
EM SURVEY LINES
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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the EM survey and the soil/groundwater/sediment sampling by assessing whether any constituents of potential concern may present in the soil vadose zone, having emanated from the former landfill trenches. Target Environmental Services, Inc., of Columbia, Maryland, conducted the soil gas survey under subcontract to the USACE. The soil gas survey was performed on July 9 through July 17, 1997.

Two soil gas samples were collected from each of 150 sampling locations. The sample locations were set on a 100- to 200-foot spacing across the SLF area (Figure 3-8). At each location, soil gas samples were collected from depths of approximately 3 feet and 7 feet bgs.

Of the 300 soil gas samples collected (excluding QC samples), four sample containers were damaged during transport to the analytical laboratory. Three of the damaged samples were re-sampled and analyzed as planned. The fourth damaged sample, sample number N96E171A, from location SG74 at a depth of 3 feet bgs, was not re-sampled because the sampling crew had already de-mobilized from the site.

The soil gas samples were collected utilizing direct-push methods to advance narrow-diameter, hollow steel rods equipped with a retractable sampling tip to the intended sampling depth. Polyethylene tubing, fitted with a threaded stainless steel tip and "O" ring was inserted into the casing to the bottom of the hollow rods, then threaded through a plug which isolates the bottom-hole sampling chamber from the inside of the hollow steel rod. For each sample, approximately 4 liters of soil gas were purged through the sample tubing to remove atmospheric air prior to sample collection. A gas-tight syringe was then utilized to withdraw an aliquot of the soil gas from within the polyethylene tubing. The soil gas sample was then injected into a pre-evacuated glass vial equipped with a self sealing cap.

Following the collection of the soil gas samples, each soil gas sampling hole was backfilled with bentonite. Surface materials (asphalt, etc.) penetrated by the sampling equipment were repaired with like material.

For quality control, field blanks of ambient air were collected through the sampling system at the beginning and end of each day's field activities and after every twentieth sample. New tubing and syringes were utilized for each sample, as well. Prior to each day's field activities, all sampling equipment and probes were decontaminated using a potable



FIGURE 3-8
SOIL GAS SURVEY MAP
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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water/Liquinox wash followed by a potable water rinse.

All of the samples collected during the soil gas survey were shipped to Target's analytical laboratory in Columbia, Maryland for analysis. The soil gas samples were analyzed for volatile organic compounds (VOCs) by US EPA Method 8260 (gas chromatograph with mass spectrometer[GC/MS]). The shallow (3 foot depth) soil gas samples were also analyzed for methane using a gas chromatograph equipped with a thermal conductivity detector (GC/TCD).

It is noted that Target utilized a map coordinate system to identify the samples they collected. Their sample grid beginning point (N00E100) centered on the intersection of Cypress Drive and Hibiscus Lane. Their sample identification numbers consist of the coordinates of the sampling location followed by either "A" or "B" for the samples collected at 3 feet or 7 feet bgs, respectively. For example, N200E100A would refer to a sample collected at point N200E100, at a depth of 3 feet bgs.

After completion of the soil gas sample collection process for the entire area, the USACE surveyed all soil gas sample locations using GPS equipment. The USACE used a different, consecutive numbering system to identify the soil gas survey locations (for example, SG01 through SG150). The discussions in this report concerning the soil gas survey locations will refer to the USACE survey identification numbers rather than Target's location identification numbers. A table relating the Target and USACE location identification numbers is presented as Table 3-1.

Further details regarding the procedures for the performance of the soil gas survey are within the Soil Gas Survey Report, presented as Appendix C. The results of the soil gas survey are discussed in Section 5.3 of this report.

3.3.1 Chain of Custody and Analysis Information

The soil gas samples were shipped to Target's laboratory under chain-of-custody documentation (see Appendix C). It is noted that of the eight chains of custody prepared for the soil gas samples, only two were signed upon receipt of the samples at the laboratory. However, since the soil gas survey is primarily a screening tool, the lack of signatures on the chains of custody does not affect the usefulness of the data generated by the soil gas survey.

TABLE 3-1
Target/USACE Soil Gas Location Cross Reference
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Target ID	USACE ID	Target ID	USACE ID	Target ID	USACE ID
N40E80	SG1	N-01E260	SG52	N55E280	SG104
N60E80	SG2	N28E140	SG54	N55E260	SG105
N80E80	SG3	N28E130	SG55	N02E271	SG106
N100E80	SG4	N28E120	SG56	N10E269	SG107
N120E80	SG5	N28E110	SG57	N20E269	SG108
N120E60	SG6	N11E101	SG58	N25E279	SG109
N100E60	SG7	N20E101	SG59	N25E291	SG110
N80E60	SG8	N127E160	SG60	N26E270	SG111
N60E60	SG9	N125E170	SG61	N40E269	SG112
N40E60	SG10	N124E180	SG62	N50E269	SG113
N33E101	SG11	N125E190	SG63	N55E250	SG114
N39E101	SG12	N126E201	SG64	N55E240	SG115
N49E101	SG13	N126E281	SG65	N55E230	SG116
N60E101	SG14	N126E271	SG66	N55E220	SG117
N70E101	SG15	N124E260	SG67	N55E180	SG118
N79E101	SG16	N124E250	SG68	N55E170	SG119
N90E101	SG17	N126E241	SG69	N53E189	SG120
N99E101	SG18	N126E229	SG70	N53E209	SG121
N109E101	SG19	N126E222	SG71	N55E200	SG122
N127E101	SG20	N126E209	SG72	N74E210	SG123
N126E110	SG21	N96E171	SG74	N36E230	SG124
N126E120	SG22	N96E220	SG75	N25E223	SG125
N126E130	SG23	N96E241	SG76	N25E200	SG126
N126E140	SG24	N96E250	SG77	N36E200	SG127
N126E150	SG25	N97E291	SG78	N36E189	SG128
N110E154	SG26	N97E280	SG79	N25E177	SG129
N100E154	SG27	N97E271	SG80	N43E174	SG130
N90E154	SG28	N97E260	SG81	N35E180	SG131
N80E154	SG29	N97E230	SG82	N35E210	SG132
N70E154	SG30	N97E211	SG83	N36E220	SG133
N59E154	SG31	N97E200	SG84	N35E240	SG134
N50E154	SG32	N110E195	SG85	N25E246	SG135
N40E154	SG33	N97E190	SG86	N43E250	SG136
N30E156	SG34	N97E180	SG87	N66E250	SG137
N20E155	SG36	N90E269	SG88	N75E240	SG138
N10E156	SG37	N110E267	SG89	N75E230	SG139
N-01E121	SG38	N80E269	SG90	N75E220	SG140
N-01E130	SG39	N70E269	SG91	N75E200	SG141
N-01E140	SG40	N100E300	SG92	N75E191	SG142
N-01E150	SG41	N110E300	SG93	N75E180	SG143
N-01E161	SG42	N120E300	SG94	N68E174	SG144
N-01E170	SG43	N125E291	SG95	N90E140	SG145
N-01E180	SG44	N109E320	SG96	N110E140	SG146
N-01E190	SG45	N109E341	SG97	N110E120	SG147
N-01E199	SG46	N100E340	SG98	N90E120	SG148
N-01E208	SG47	N100E320	SG99	N70E120	SG149
N-01E220	SG48	N87E290	SG100	N80E140	SG150
N-01E230	SG49	N85E280	SG101	N70E140	SG151
N-01E240	SG50	N53E271	SG102	N61E140	SG152
N-01E250	SG51	N55E290	SG103	N130E300	not assigned

Based upon the chain of custody dated July 14, 1997, and signed by the laboratory on July 15, 1997, upon receipt of the samples, it can be inferred that the samples were shipped to the laboratory by overnight courier. The other chain of custody that was dated by the laboratory upon receipt, although not signed until 3 days after shipment, is consistent with shipment by overnight courier that does not perform Saturday deliveries. Further, the samples collected on July 9, 1997, are reported by the laboratory to have been analyzed on July 10, 1997, again indicating shipment of the samples by overnight courier. Therefore, the shipment of the soil gas samples to the laboratory appears to have been timely, without any apparent delays in shipment that could have affected sample quality.

Based upon information included in the Soil Gas Survey Report, it also appears that sample analysis was timely. A review of the sample collection dates on the chains of custody and the sample analysis dates on the laboratory data sheets indicate that the soil gas samples were analyzed within approximately one week after sample collection. In the Soil Gas Survey Report, Target refers to internal shelf-life studies to estimate appropriate holding times. They state:

> "Petroleum analytes and methane exhibit little or no change in concentration after two weeks or more in storage. Most halogenated analytes are stable for one week after sampling. All samples were analyzed within an appropriate holding time."

Therefore, delays in analysis which could have affected the quality of the data generated from the soil gas samples are not evident.

3.4 Soil, Groundwater, and Sediment Investigation

This section provides a discussion of the subsurface soil, groundwater, and sediment sampling activities. The objective of the soil, groundwater, and sediment sampling was to determine whether any constituents of potential concern exist within the subsurface soil and groundwater at the SLF site or within sediments of the stream adjacent to the SLF area. Presentation and discussion of the results of the soil, groundwater, and sediment investigation are presented in Section 4.0 of this report.

The soil, groundwater, and sediment sampling activities were performed by USACE personnel from June 24 through July 11, 1997. The soil and groundwater sample locations were concentrated around the areas where trenches were identified on historical aerial photos. The sediment samples were collected from the stream bed located adjacent to the northwestern corner of the SLF area.

3.4.1 Drilling Methods

The subsurface soil and groundwater samples were collected utilizing the USACE Site Characterization and Analysis Penetrometer System (SCAPS). The SCAPS utilizes direct-push sampling techniques. The SCAPS is mounted in a 20-ton truck equipped with two hydraulic rams capable of exerting 38,000 pounds of force. The system is capable of pushing 1.7-inch (44-mm) diameter rods into the subsurface to a depth of up to approximately 75 feet bgs in geologically suitable materials. The SCAPS was utilized for this project because the SCAPS produces much less investigation-derived waste to store and dispose compared to traditional drilling and sampling methods. Additionally, the SCAPS is a less invasive investigation technique that minimizes disturbance to the private properties and public rights of way where the sampling was performed.

For soil sampling, the SCAPS was equipped with an 18-inch-long sampling tool (Mostap sampling device) that can be opened upon reaching the desired sampling depth in order to collect a soil sample over a discrete interval. For groundwater sampling, the SCAPS pushed a polyvinyl chloride (PVC) slotted screen and riser into the subsurface to serve as a temporary monitor well. Five feet of screen were used in each temporary well, with enough riser to bring the top of the temporary well up to the ground surface. Water was retrieved using a small bailer and a peristaltic pump. The SCAPS was also be equipped with a cone penetrometer that was used to classify the types of soils at the SLF area. A total of eleven cone penetrometer pushes were performed across the SLF site area to characterize SLF site soils. The cone penetrometer pushes were performed at locations W5, W14, W28, W30, W31, W35, W47, W48, W49, W50, and W58. The cone penetrometer soil classification logs are presented in Appendix D.

The soil/groundwater sampling locations are presented in Figure 3-9.

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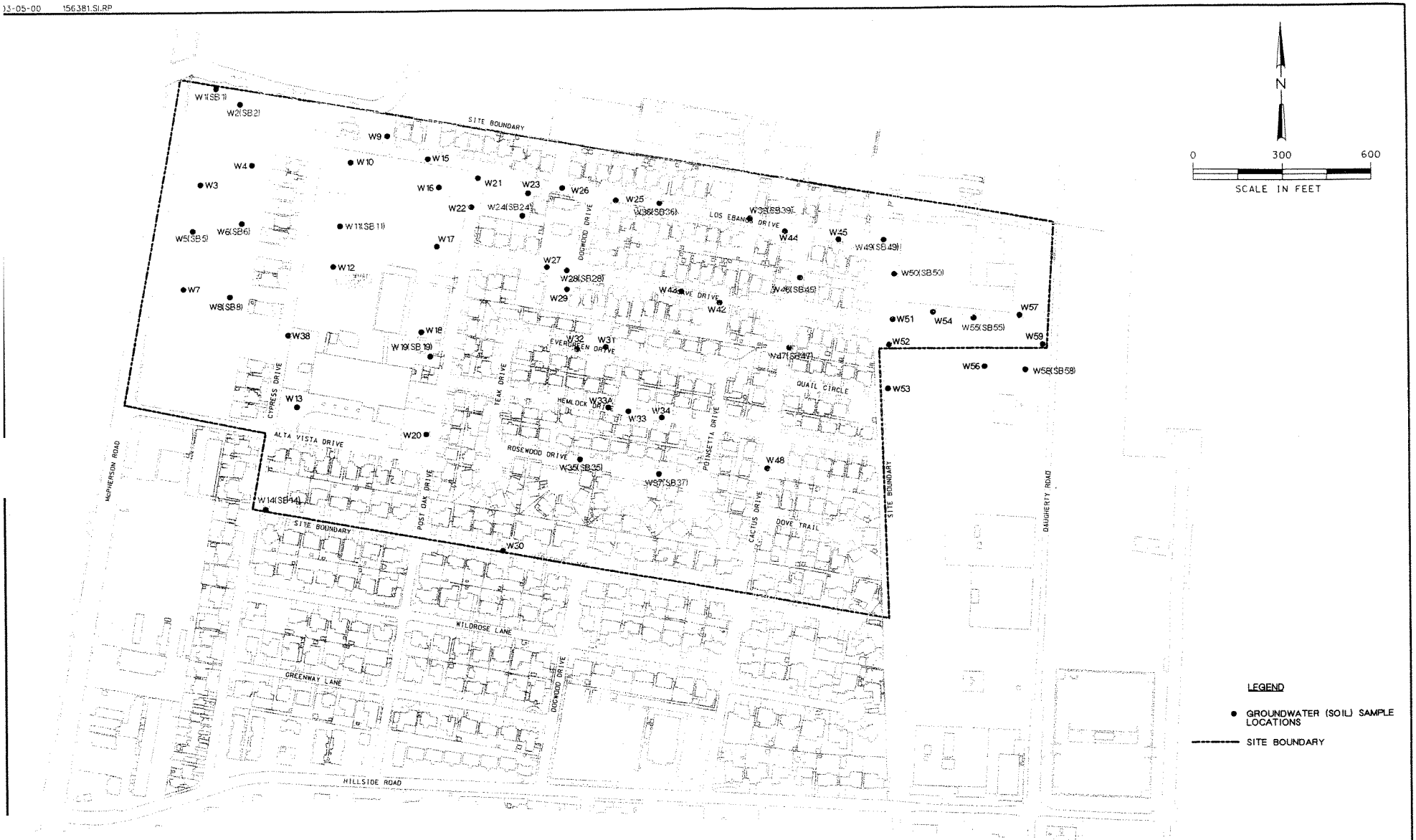

FIGURE 3-9
GROUNDWATER AND SOIL SAMPLING LOCATIONS MAP
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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3.4.2 Soil Sampling Activities

A total of 48 subsurface soil samples (excluding QA/QC samples) were collected from 20 sampling locations, utilizing the SCAPS soil sampling system. The locations were chosen to be adjacent to landfill cells as observed on the historical aerial photographs. Soil samples at each location were generally collected over 18-inch intervals beginning at depths of 2 feet bgs, 5 feet bgs, and approximately 2 feet above either the top of groundwater or push refusal. The depth to groundwater or push refusal was determined by performing a cone penetrometer push (to classify the soils) or a groundwater sampling point installation at the same location prior to the collection of the soil samples. Typically, the lowest soil sample from each boring was collected from an interval of 8.5 to 10 feet bgs. Soil samples were not collected from the interval of 0 to 2 feet bgs because most of the locations were pushed through asphalt and road subgrade material. Therefore, a sample from this interval would not be representative of normal site soils.

The procedures used for the collection of the subsurface soil samples are described briefly below:

1. The base of the sampling tool was driven to the top of the uppermost subsurface sampling interval using the SCAPS unit.
2. The sampler release tool was inserted and engaged with the sampling tool to open the sampling tool for sample collection.
3. The sampling tool was advanced 18 inches, then withdrawn from the ground.
4. When the sampling tool was recovered from the borehole, it was unscrewed from the push pipe and disassembled. The collected soil sample was removed from the sampler's inner sleeve and placed in a clean, properly labeled sample container, then placed into an ice-cooled chest pending shipment to the analytical laboratory.
5. A clean decontaminated sampling tool equipped with a new or decontaminated sample sleeve was screwed onto the push rods, then driven into the subsurface to the top of the next planned sampling interval. The procedures were then repeated.

The collected soil samples were submitted to Intertek Testing Services (ITS) in Richardson, Texas for analysis. The samples were analyzed for VOCs by EPA Method 8260B, semivolatile organic compounds (SVOCs) by EPA Method 8270B, total RCRA metals

(arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver) by EPA Methods 6010A, 7471A, 7060, and 7740, as appropriate, total metals (aluminum, beryllium, calcium, cobalt, copper, iron, potassium, magnesium, manganese, sodium, nickel, antimony, tin, thallium, vanadium, and zinc) by EPA Method 6010A, pesticides and polychlorinated biphenyls (PCBs) by EPA Method 8080, and for herbicides by EPA Method 8150. Analyte lists for each analysis were chosen to identify the constituents listed in Appendix IX to 40 CFR Part 264, "Groundwater Monitoring List".

For some sampled intervals, insufficient sample volume was recovered by the soil sampling tool. For these samples, not all analytical parameters were analyzed. The analyses performed on each soil sample are summarized in Table 3-2.

For QA/QC purposes, five of the soil samples [SB2 (2.0), SB35 (5.0), SB50 (8.0), SB47 (5.0), and SB39 (5.0)] were collected in duplicate. One portion of the triplicate sample was submitted to the analytical laboratory as the normal field sample. The second portion of the duplicate sample was submitted to a separate analytical laboratory (USACE Southwestern Division Laboratory, Dallas, TX) for analysis as a QA duplicate sample. The QA duplicate samples were analyzed for the same parameters as the normal field samples (recovered sample volume permitting). It is noted that the QA laboratory performed the herbicide analyses by EPA Method 8151 instead of by EPA Method 8150. The methods are comparable; Method 8151 includes a larger analyte list. Two equipment blank samples were also collected and analyzed. Four travel blanks, analyzed for VOCs, were included with the groundwater sample shipments.

3.4.3 Groundwater Sampling Activities

A total of 60 groundwater samples were collected from temporary groundwater monitor wells installed at 55 groundwater sampling locations. The groundwater samples were collected utilizing the SCAPS, equipped with the PowerPunch™ auxiliary groundwater sampling equipment.

The PowerPunch™ system is a direct push well point system utilizing a stainless steel sacrificial point attached to 3/4-inch PVC slotted screen and riser sections and a sacrificial annular seal. The PVC screen and riser pipe is encased in the SCAPS push rods while being

TABLE 3-2
Soil Sample Analytical Parameters
Site Investigation, Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Sample ID	VOC 8260A	SVOC 8270B	Metals 6010A ,7471, 7060A,7740	Pesticides/ PCBs 8080	Herbicides 8150
SB1 (2.0)	X	X	X	X	X
SB1 (5.0)	X	X	X	X	X
SB1 (8.0)	X	X	X	X	X
SB2 (2.0)	X	X	X	X	X
SB2 (5.0)	X	X	X	X	
SB2 (6.0)	X	X	X	X	
SB5 (2.0)	X	X	X	X	
SB5 (5.0)	X	X	X	X	X
SB5 (10.0)	X	X	X	X	X
SB6 (2.0)	X	X	X	X	
SB6 (6.0)	X	X	X	X	
SB8 (2.0)	X	X	X	X	
SB11 (2.0)	X	X	X	X	
SB11 (5.0)	X	X	X	X	
SB11 (8.0)	X	X	X	X	
SB14 (2.0)	X	X	X	X	X
SB14 (5.0)	X	X	X	X	X
SB14 (6.5)	X	X	X	X	X
SB19 (2.0)	X	X	X	X	X
SB24 (2.0)	X	X	X	X	X
SB24 (5.0)	X	X	X	X	X
SB24 (6.0)	X	X	X	X	X
SB28 (2.0)	X	X	X	X	X
SB28 (5.0)	X	X	X	X	X
SB28 (8.0)	X	X	X	X	X
SB35 (2.0)	X	X	X	X	X
SB35 (5.0)	X	X	X	X	X
SB35 (8.0)	X	X	X	X	X
SB36 (2.0)	X	X	X	X	X

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TABLE 3-2
Soil Sample Analytical Parameters
Site Investigation, Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Sample ID	VOC 8260A	SVOC 8270B	Metals 6010A ,7471, 7060A,7740	Pesticides/ PCBs 8080	Herbicides 8150
SB37 (2.0)	X	X	X	X	X
SB39 (2.0)	X	X	X	X	X
SB39 (5.0)	X	X	X	X	X
SB46 (2.0)	X	X	X	X	X
SB46 (5.0)	X	X	X	X	X
SB47 (2.0)	X	X	X	X	X
SB47 (5.0)	X	X	X	X	X
SB47 (7.0)	X	X	X	X	X
SB49 (2.0)	X	X	X	X	X
SB49 (5.0)	X	X	X	X	X
SB50 (2.0)	X	X	X	X	X
SB50 (5.0)	X	X	X	X	X
SB50 (8.0)	X	X	X	X	X
SB55 (2.0)	X	X	X	X	X
SB55 (5.0)	X	X	X	X	X
SB55 (7.0)	X	X	X	X	X
SB58 (2.0)	X	X	X	X	X
SB58 (5.0)	X	X	X	X	X
SB58 (8.0)	X	X	X	X	X
Total Number of Samples Analyzed	48	48	48	48	39

pushed into the subsurface. Upon reaching the desired sampling depth, the SCAPS push rods are extracted and the PVC screen and riser pipe are left down-hole to act as a temporary sampling well. Five feet of screen were utilized for each temporary well. On this project, the annular seal was typically retracted to approximately 6-inches bgs to serve a temporary surface seal (Figure 3-10).

The PowerPunch™ borings were pushed in asphalt-covered areas, as well as soil-covered areas. To prevent damage to the PowerPunch™ equipment when pushing in asphalt-covered roadways or parking lots or where shallow debris was possible, a dummy tip was used to penetrate the upper 2 feet of ground surface prior to utilizing the PowerPunch™ equipment. In soil covered areas, pushes were initiated with the PowerPunch™ equipment.

The PowerPunch™ borings ranged in depth from approximately 5 feet bgs to approximately 20 feet bgs. Generally, it was intended to advance the PowerPunch™ tools to a depth approximately 10 feet below the top of groundwater in order to ensure sufficient groundwater volume for groundwater sample collection. At three locations (W33, W40, and W44), subsurface conditions prevented penetration of the PowerPunch™ tool to a depth sufficient to obtain groundwater samples. The total depths of the borings were only 5.0 feet, 5.0 feet, and 6.0 feet bgs, respectively. Screen and riser pipe was not installed at those locations. Location W41, located in the southern half of the vacant lot at 1447 Los Ebanos Drive, was inaccessible because of construction activities on a neighboring lot. Therefore, groundwater samples were collected at only 55 of the planned 59 sampling locations.

The groundwater samples collected from the temporary groundwater monitor wells were collected using Tygon™ tubing in conjunction with a peristaltic pump, as well as a small-diameter bailer. The bailer was utilized to collect samples intended for VOC analysis. The Tygon™ tubing and peristaltic pump was utilized to collect groundwater for the remaining analyses. Upon collection, the groundwater samples were placed into appropriate, properly labeled sample containers and placed immediately into an ice-cooled chest.

Two sets of samples intended for VOC analysis were collected from each location. One set was sent to the fixed laboratory for analysis, while the second set was analyzed for VOCs in

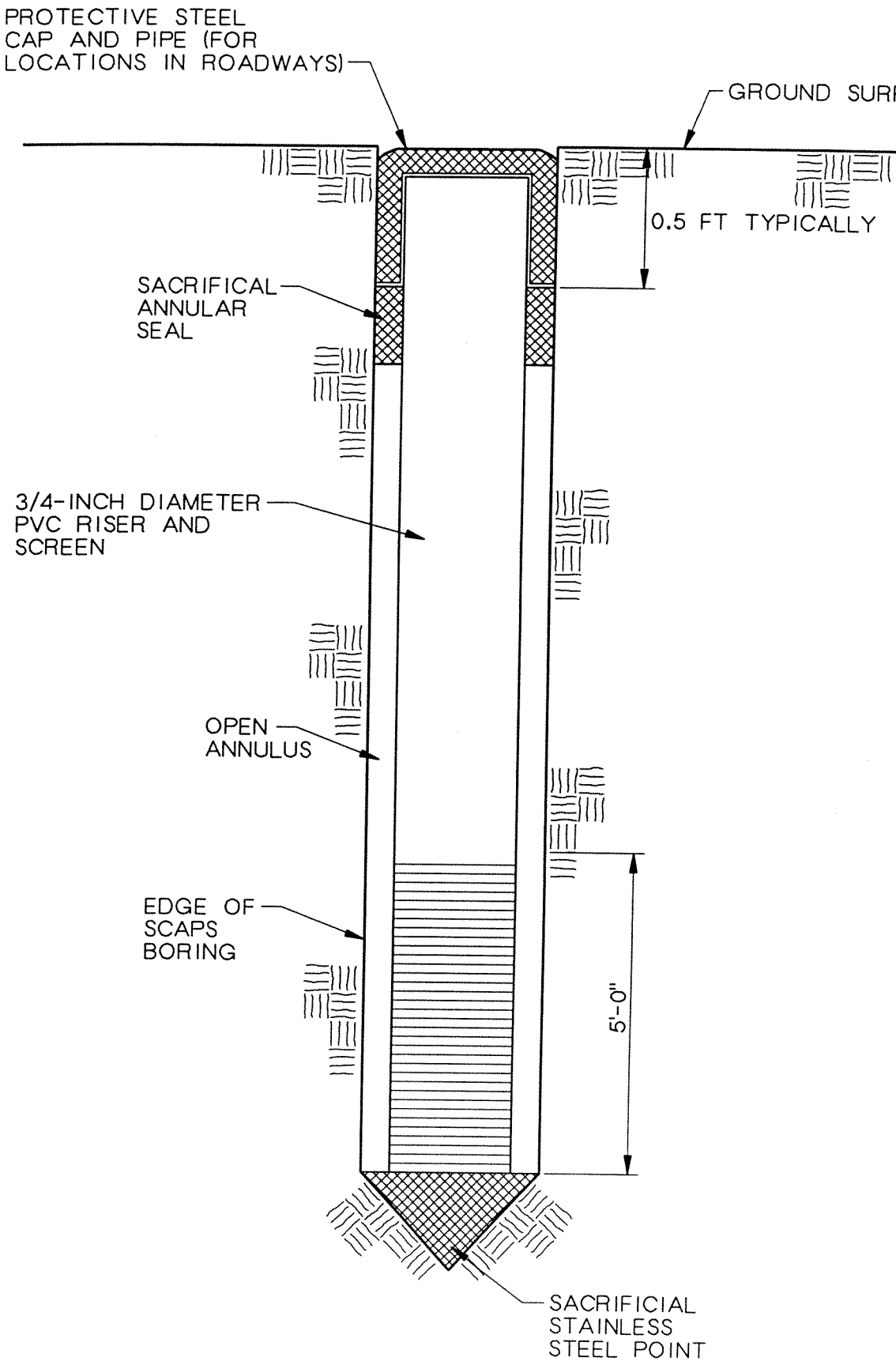

FIGURE 3-10
TYPICAL TEMPORARY MONITORING WELL INSTALLATION
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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the field. At some locations (W50, W51, W54, W55, and W57), another additional sample intended for VOC analysis (at the fixed laboratory) was collected, utilizing the peristaltic pump. These additional sample was collected to see whether the use of the peristaltic pump affected the sample analytical results. These samples were given the suffix "U" in their sample identification numbers.

The field groundwater sample analysis was performed utilizing EPA Method 8260 (GC/MS). The detection limit of the GC/MS was set at 60 parts per billion (ppb), using calibration standards of benzene, toluene, ethyl benzene, m-xylene, trichloroethene and trans-1, 2-dichloroethene.

The groundwater samples that were shipped to the fixed lab were submitted to ITS for analysis of VOCs by EPA Method 8260B, SVOCs by EPA Method 8270B, total RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA Methods 6010A, 7060, 7470, 7421, and 7740, as appropriate, total metals (aluminum, beryllium, calcium, cobalt, copper, iron, potassium, magnesium, manganese, sodium, nickel, antimony, tin, thallium, vanadium, and zinc) by EPA Method 6010A, pesticides and PCBs by EPA Method 8080, and herbicides by EPA Method 8150. Due to the slow recharge rate of some of the temporary monitor wells, insufficient water was recovered at some locations to perform all planned analyses. The analyses performed on each of the groundwater samples are summarized in Table 3-3.

It is noted that because the temporary monitor wells were not installed with sand filter packs and developed as permanent wells would have been, turbidity was a problem for many of the groundwater samples. The groundwater samples were not filtered prior to placement into the sample containers.

For QA/QC purposes, four of the groundwater samples (W9, W13, W24, and W39) were collected in duplicate. One portion of the duplicate sample was submitted to the analytical laboratory as the normal field sample. The second portion of the duplicate sample was submitted to the analytical laboratory as a QA duplicate sample. The QA duplicate samples were analyzed for the same parameters as the normal field samples (recovered sample volume permitting).

TABLE 3-3
Groundwater Sample Analytical Parameters
Site Investigation, Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Sample ID	VOC 8260A	SVOC 8270B	Metals 6010A, 7060A, 7421, 7470, 7740	Pesticides/PCBs 8080	Herbicides 8150
W1	X	X	X	X	X
W2	X	X	X	X	X
W3	X	X	X	X	X
W4	X	X	X	X	X
W5	X	X	X	X	X
W6	X	X	X	X	X
W7	X				
W8	X				
W9	X				
W10	X	X	X		X
W11	X				
W12	X		X		
W13	X				
W14	X	X	X	X	X
W15	X	X	X	X	X
W16	X		X		
W17	X		X		
W18	X		X		
W19	X		X		
W20	X		X		
W21	X	X	X	X	X
W22	X		X		
W23	X	X	X	X	X
W24	X	X	X		
W25	X		X		
W26	X	X	X		
W27	X		X		
W28	X		X		
W29	X				
W30	X	X	X	X	X
W31	X		X		
W32	X		X		
W33	Insufficient depth to obtain sample				
W34	X				
W35	X	X	X	X	

TABLE 3-3
Groundwater Sample Analytical Parameters
Site Investigation, Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Sample ID	VOC 8260A	SVOC 8270B	Metals 6010A, 7060A, 7421, 7470, 7740	Pesticides/PCBs 8080	Herbicides 8150
W36	X				
W37	X				
W38	X				
W39	X				
W40	Insufficient depth to obtain sample				
W41	Location not accessible				
W42	X				
W43	X				
W44	Insufficient depth to obtain sample				
W45	X		X		
W46	X				
W47	X				
W48	X				
W49	X		X		
W50	X		X		
W50U	X				
W51	X		X		
W51U	X				
W52	X				
W53	X				
W54	X				
W54U	X				
W55	X				
W55U	X				
W56	X				
W57	X				
W57U	X				
W58	X				
W59	X				
Total Number of Samples Analyzed	60	15	31	12	12

02970

All of the PowerPunch™ boring locations were abandoned according to TNRCC plugging requirements. The boreholes were abandoned by removing all retrievable casing and screen from the hole, then filling the hole with a cement/bentonite mixture. For boreholes that were located in asphalt-covered areas, the top six inches of the boreholes were filled and packed with an asphalt-patching compound.

3.4.4 Groundwater Level Measurement

Static water level measurements were collected from each of the 55 temporary groundwater monitoring wells. The water level measurements were taken prior to groundwater sampling. The water level measurements were combined with the surveyed top of casing for each of the temporary wells to determine the groundwater elevation at each temporary well.

3.4.5 Sediment Sampling Activities

Four sediment samples were collected from the bed of the stream located adjacent to the northeast corner of the SLF area (Figure 3-11). The samples were collected utilizing stainless steel hand implements (scoops, bowls, etc.). Each of the sediment samples were analyzed for the same parameters as the soil samples discussed in Section 3.4.2. Table 3-4 lists the analyses performed for each of the sediment samples.

For QA/QC purposes, the sediment sample collected at location SD1 was collected in triplicate. One portion of the triplicate sample was shipped to the analytical laboratory as the normal field sample. The second portion of the triplicate sample was shipped to the analytical laboratory as a QC duplicate sample. The third portion of the triplicate sample was shipped to a separate analytical laboratory for analysis as a QA duplicate sample. The QC and QA duplicate samples were analyzed for the same parameters as the normal samples (recovered sample volume permitting). As with the subsurface soil samples, the QA laboratory performed the herbicide analyses by EPA Method 8151 instead of by EPA Method 8150. One equipment blank sample was also collected and analyzed.

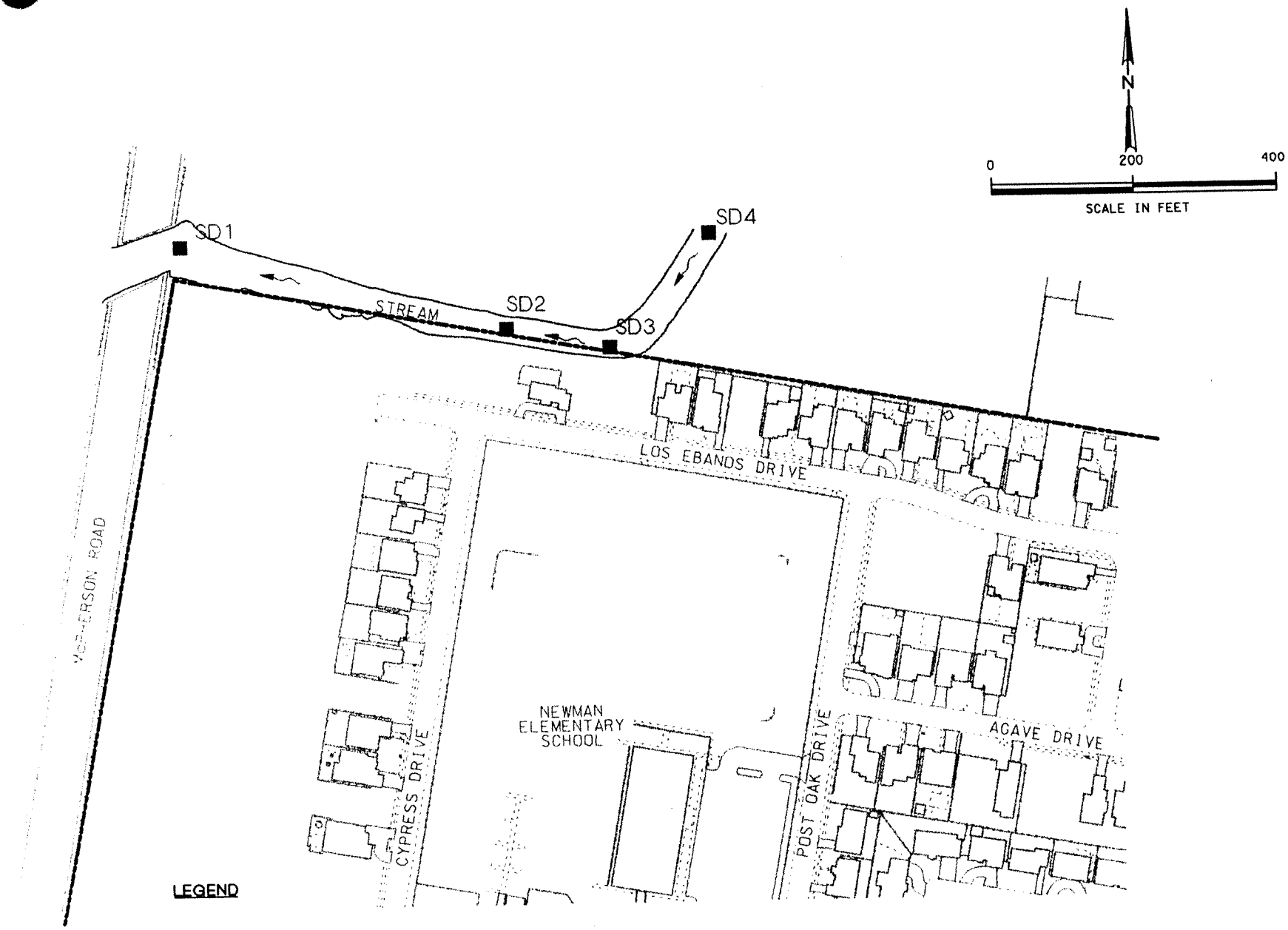

FIGURE 3-11
SEDIMENT SAMPLING LOCATION MAP
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

CH2MHILL

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TABLE 3-4
Sediment Sample Analytical Parameters
Site Investigation, Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Sample ID	VOC 8260A	SVOC 8270B	Metals 6010A ,7471, 7060A,7740	Pesticides/PCBs 8080	Herbicides 8150
SD1	X	X	X	X	X
SD2	X	X	X	X	X
SD3	X	X	X	X	X
SD4	X	X	X	X	X
Total Number of Samples Analyzed	4	4	4	4	4

02973

3.5 Surveying

All soil gas and soil boring (soil and groundwater) sampling locations were surveyed horizontally and vertically by the USACE using GPS equipment. The survey meets or exceeds a third order class I survey, with an accuracy of 1 in 10,000. This accuracy equates to approximately 0.1 foot horizontally and vertically. The top of ground elevation and the horizontal location was surveyed for each sample location. The four sediment samples collected in the creek area in the far northwest corner of the site were not surveyed; however, the locations were sited on maps based on discussions with the chemist who collected the samples. The survey data for the sampling locations is presented in Appendix E.

3.6 Management of Investigation Derived Waste

The investigation-derived waste (IDW) generated during this investigation included decontamination fluids, field lab wastes, and waste purged groundwater. All IDW was drummed on-site, labeled, and stored at a secure area at the City of Laredo Wastewater Utility facility. A total of 2-1/2 drums (165 gallons) of waste was generated.

One composite sample of the IDW was collected from the drums for waste characterization analysis. The waste characterization sample was analyzed for VOCs, SVOCs, metals, pesticides, PCBs, and herbicides. The waste characterization sample was identified as "Decon," and the analytical results are so identified in the laboratory reports.

The analytical results of the waste characterization sample indicated that the sample was hazardous, due to the presence of benzene (0.792 mg/L) and trichloroethylene (0.875 mg/L). The presence of these constituents was due to the deposition of field lab GC/MS standards in the IDW drums. The hazardous characteristic was not associated with purged groundwater or decontamination water. On October 22, 1997, Radian International, LLC under contract to the U.S. Army Corps of Engineers, Tulsa District, disposed of the three drums. The USACE signed as generator on behalf of the Department of Defense. Laidlaw Environmental Services transported the hazardous waste to their disposal facility

in San Antonio, Texas. The hazardous waste was accepted by the disposal facility on October 22, 1997.

Section 4
Investigation Results

4. Investigation Results

4.1 ARARs

Potential applicable or relevant and appropriate requirements (ARARs) for this project include State and Federal primary and secondary drinking water standards, State Action Levels for lead and copper in drinking water, and the State Risk Reduction Standards (RRS). As the Risk Reduction Standard No. 2 (RRS2) media-specific criteria (presented in Chapter 30, Texas Administrative Code, Section 335, updated July 14, 1999) are generally at least as stringent as the maximum contaminant levels allowed under the other regulations, the analytical results from this investigation were compared primarily to the TNRCC RRS2 media-specific concentrations (MSCs). Specifically, the analytical results for soil samples were compared to the RRS2 GWP-Res and SAI-Res standards. As the GWP-Res standards were more restrictive than the SAI-Res standards for all of the contaminants identified at the SLF area, only the comparisons to the GWP-Res standards are discussed below. Groundwater samples will be compared to the RRS2 GW-Res standards. For those constituents for which MSCs are not published, MSCs were calculated in accordance with the procedures outlined in 30 TAC 335.

The GWP-Res standard is the maximum concentration allowed that is protective of groundwater (through soil-groundwater transfer of contaminants) for soils under residential land use. The SAI-Res standard is the maximum concentration allowed that is protective for soil/air ingestion, and for dermal contact in some cases, for residential soils. The GW-Res standards are the maximum concentrations allowed for groundwater in areas of residential land use. Analytical data and the associated Data Validation Report are included under separate cover as Appendix F.

4.2 Historical Aerial Photograph Review

Figure 4-1 summarizes the locations of the landfill trenches as observed in the historical aerial photographs and as identified by the EM survey. A total of 16 trenches, of varying

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FIGURE 4-1
LANDFILL TRENCH LOCATIONS
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

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LAR-006.DGN

length were identified from the aerial photography. Two additional potential trenches were identified by the EM survey.

4.3 Electromagnetic Survey

Two types of EM survey equipment, a Geonics EM31 and an experimentally-configured Geonics EM61, were utilized in the performance of the EM survey of the SLF area. The EM 31 equipment did not provide any information greater than 2 to 4 feet in depth. Pavement additives such as fly ash may have prevented the equipment from obtaining data from deeper depths. The instrument was detecting shallowly buried city utilities, but not those that were greater than three feet bgs.

The experimental EM 61 equipment provided useful data. The experimental EM 61 identified anomalies corresponding to known landfill trench locations, unknown trench locations, and existing city utility lines. The locations of the anomalies are presented on Figure 4-2. Some of the EM61 anomalies appear to represent landfill trenches that were not known from the historical aerial photography review (Figure 4-1).

A more detailed discussion of the results of the EM survey is included in the EM Survey Report, presented in Appendix B. A tabular listing of the EM anomalies along each survey line is also included in the EM Survey Report.

4.4 Soil Gas Survey

A total of 299 soil gas samples were analyzed during the investigation. Only three of the 299 soil gas samples were reported to contain detectable concentrations of VOCs or methane. The three samples were collected from two borings (SG5 and SG6) located in the northwestern corner of the SLF area. The area is presently undeveloped vacant property. Neither VOCs nor methane were detected in the residential neighborhood areas or the areas where the EM survey identified apparently new trench locations.

One soil gas sample, collected at location SG6 from a depth of seven feet bgs, was reported to contain a detectable concentration of chlorobenzene, at a concentration of 8.95 micrograms per liter (µg/L). Only two soil gas samples, both from a depth of three feet bgs at locations SG5 and SG6, were reported to contain detectable concentrations of methane.

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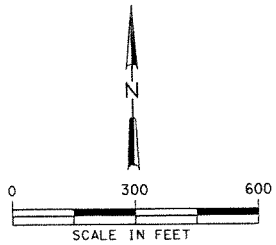

LEGEND

- SURVEY LINE
- SITE BOUNDARY
- UTIL ▲ UTILITY
- ? ▲ UNKNOWN ANOMALY
- LF LANDFILL
- ? UNKNOWN ANOMALY

FIGURE 4-2
EM SURVEY DETECTED ANOMALIES
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

0298

CH2MHILL

LAR-0017.DGN



FIGURE 4-2
EM SURVEY DETECTED ANOMALIES
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

02980

CH2MHILL

LAR-0017.DGN

Methane was reported at concentrations of 5.20 percent and 1.19 percent, respectively for the samples from SG5 and SG6. Methane was not detected in the deeper soil gas samples collected from both locations.

There are no existing TNRCC Risk Reduction Standards or other regulatory limits for chlorobenzene or methane in soil gas. However, the lower explosive limit (LEL) for methane in air is 5 percent. The soil gas sample from SG5 at three feet depth slightly exceeds the LEL for methane in air.

It is noted that sample from SG5 at three feet depth was collected on a vacant property. It is also noted that the soils encountered in that area of the site included organic rich clays (Section 4.5) that could account for the presence of methane in the soil gas in that area.

4.5 SCAPS Soil Classification Results

The cone penetrometer sensor on the SCAPS used to collect field samples was also used to collect soil classification information. The sensor measures resistance to soil penetration by the sensor and also frictional resistance to movement through the soil. The information is recorded graphically. The penetration and frictional resistance are then mapped together to identify the type of soil being encountered. Twelve soil classification pushes were conducted from the ground surface down to the top of groundwater (approximately 8-12 feet). Copies of the SCAPS logs are presented in Appendix D.

Generally over the area of investigation, soils encountered ranged from clays to silty sands. In the northwest area of investigation where creek sediment samples were collected, soils are classified as moist organic-rich clays. Soils to the east and southeast of the creek area were composed of clays, silts, and sands with clay to silt size particles dominating with low moisture content. In the east half of the area of investigation, streaks of gypsum crystals were encountered in a number of samples.

The soil classifications identified by the SCAPS correspond well to descriptions of the soil samples recovered for chemical analysis. The recovered soil samples were identified primarily as clays (CL), silts (ML), and silty sands (SM). Some organic clays and some debris (wood, paper, and asphalt) were also identified. Descriptions of the soils encountered during soil sampling are presented in Table 4-1.

TABLE 4-1
Soil Descriptions for Recovered Soil Samples
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Push Location	Date Sampled	Sampling Interval(s)	Soil Description
1	6/28/97	2.0-3.5	CL, black staining w/plastic & paper debris
1	6/28/97	5.0-6.6	CL, light gray
1	6/28/97	8.0-9.2	CL, light brown
2	6/28/97	2.0-3.5	SM/SC
2	6/28/97	5.0-6.5	Clay, black staining
2	6/28/97	6.5-8.3	CL, staining, debris
5	6/28/97	2.0-3.7	CL, debris(paper) (2.4-2.6)
5	6/28/97	5.0-6.1	CL, debris(wood) (6.0-6.1), dry
5	6/28/97	10.0-11.7	CL, light gray, moist
6	6/28/97	2.0-3.5	SM/SC, light brown
6	6/28/97	5.0-6.5	5.0'-6.0' dark black, organic clay 6.0-6.5' light brown
11	6/28/97	2.0-3.5	CL, dark brown, moist
11	6/28/97	5.0-6.5	SM, dark brown, moist, lighter than 2.0-3.5 interval
11	6/28/97	8.0-9.5	SM, light brown
14	7/1/97	2.0-3.5	CL, dark brown
14	7/1/97	5.0-6.5	ML, light brown, moist in bottom half
14	7/1/97	6.5-8.0	SM, light brown
18	6/28/97	2.0-3.5	CL, dark brown, moist
19	6/28/97	2.5-4.0	ML, light brown, moist
24	7/1/97	2.0-3.5	SM/SC, brown/reddish brown, dry
24	7/1/97	5.0-6.5	SC, brown, trace black gravel (asphalt) at 5.5
24	7/1/97	6.5-8.0	ML, light brown
28	7/1/97	2.0-3.5	CL/ML, brown/red brown, moist at base
28	7/1/97	5.0-6.5	ML, light brown/mottle gray & ocre, trace gypsum (?) crystals
28	7/1/97	8.0-9.5	SM, banded gray/ocre, more gray on top
35	7/1/97	2.0-3.5	SM, brown
35	7/1/97	5.0-6.5	5-5.6 SM, brown 5.6-6.0 CL, brown, hard, dry, some cementation 6.0-6.1 ML, white 6.1-6.5 ML, brown

02982

TABLE 4-1
Soil Descriptions for Recovered Soil Samples
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Push Location	Date Sampled	Sampling Interval(s)	Soil Description
35	7/1/97	8.5-10.0	ML, brown
36	7/11/97	2-3.5	ML/SM, brown
37	7/1/97	2.0-3.5	SMIML, brown w/white lenses w/gypsum crystals
39	7/11/97	2-3.5	SC, light brown, scattered with white speckles
39	7/11/97	5-6.5	SC, light brown, scattered with white speckles
46	7/11/97	2-3.5	CL, light brown/reddish brown, speckled with gray
46	7/11/97	5-6.5	Debris (glass, etc), brown with gray and rust staining
47	7/11/97	2-3-5	ML/SM, brown
47	7/11/97	5-6.5	SM, brown, with streaks of white gypsum every 0.2'
47	7/11/97	7.8-9.3	CL, light brown, streaks of gray w/gypsum crystals
49	7/1/97	2.0-3.5	CL, reddish brown, moist
49	7/1/97	5.0-6.5	CL, reddish brown
50	7/1/97	2.0-3.5	CL, brown/reddish brown
50	7/1/97	5.0-6.5	CL, brown, lower interval grading to SM/SC
50	7/1/97	7.5-9.0	CL, brown, gray scattered throughout with more at base
55	7/11/97	2 3-5	ML/SM, brown
55	7/11/97	5 6-5	SM/CL, brown/red brown
55	7/11/97	7 8-5	SM/CL, brown
58	7/11/97	2 3-5	ML/SM, brown
58	7/11/97	5 6-5	SM/ML, brown w/white lenses w/gypsum crystals
58	7/11/97	6.5-8	SM/ML, brown w/white lenses w/gypsum crystals

02983

4.6 Soil Analytical Results

The SCAPS was used to collect soil samples at 20 locations. The soil sample locations were selected based on their proximity to the suspected landfill trenches. Analytical parameters included VOCs, SVOCs, pesticides, PCBs, herbicides, and metals. Analytical data and the associated Data Validation Report are included under separate cover as Appendix F.

4.6.1 VOCs

Forty-eight soil samples collected at 20 locations across the SLF area were analyzed for VOCs using EPA Method 8260. The analytical results of the soil VOC analyses are presented in Table 4-2.

Low concentrations of VOCs were detected in only 5 of the 48 soil samples, collected from four borings (SB1, SB2, SB8, and SB28). Except for one sample collected from location SB28, the occurrences of the VOCs were primarily limited to the western (currently vacant) portion of the site. The VOCs reported for the soil samples include acetone, carbon disulfide, 1,2-dichloropropane, ethylbenzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylebenzene, m- & p-xylenes, and o-xylene.

Acetone was detected in two soil samples obtained from SB2 (5.0-6.5 feet and 6.5-8.3 feet) at concentrations of 153 micrograms per kilogram (µg/kg) and 170 µg/kg, respectively. The detected concentrations of acetone are well within the TNRCC RRS2 GWP-Res standard of 370,000 µg/kg.

Carbon disulfide was detected in only one soil sample, collected from SB1 (5.0-6.6 feet), at a concentration of 6.10 µg/kg. This concentration is significantly below the TNRCC RRS2 GWP-Res standard of 370,000 µg/kg.

1,2 dichloropropane was detected in only one soil sample, collected from SB8 (2.0 feet), at a concentration of 21.9 µg/kg. This is well below the TNRCC RRS2 GWP-Res standard of 500 µg/kg.

Ethylbenzene was detected in only one soil sample, collected from SB2 (5.0-6.5 feet) at a concentration of 19.8 µg/kg. Ethylbenzene was not detected from the other soil samples

TABLE 4-2
VOCs in Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB1			SB2			SB5	
			2.0 ft	5.0 ft	8.0 ft	2.0 ft	5.0 ft	6.0 ft	2.0 ft	5.0 ft
Acetone	370000	1600000	< 20 U	< 20 U	< 20 U	< 20 U	153	170	< 20 U	< 20 U
Acrylonitrile	16	79	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Benzene	500	920	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromobenzene	60800	65400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromochloromethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromodichloromethane	10000	10000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromoform	10000	34000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon disulfide	370000	1000000	< 5 U	**6.1**	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	500	950	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	10000	310000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15000	11000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	10000	310	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chlorotoluene	7300	3030000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Chlorotoluene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chloroethylvinyl ether	NC	NC	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Dibromochloromethane	10000	76000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromo-3-chloropropane	20	350	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
1,2-Dibromoethane	5	7.22	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichlorobenzene	60000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichlorobenzene	957	46500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,4-Dichlorobenzene	7500	270000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,4-Dichloro-2-butene	NC	NC	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
1,1-Dichloroethane	370000	890000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloroethane	500	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloroethene	700	600	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	7000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,2-Dichloroethene	10000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	500	9400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,2-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloropropene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethylbenzene	70000	4300000	< 5 U	< 5 U	< 5 U	< 5 U	**19.8**	< 5 U	< 5 U	< 5 U
2-Hexanone	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Bromomethane	5100	3500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloromethane	8600	2300	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dibromomethane	NC	200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	2200000	6000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Iodomethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Methylene chloride	500	8700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	290000	2000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Styrene	10000	13000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1,2-Tetrachloroethane	3300	52000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2,2-Tetrachloroethane	430	5100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Tetrachloroethene	500	6000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Toluene	100000	1700000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichlorobenzene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trichlorobenzene	7000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	20000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2-Trichloroethane	500	9700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichloroethene	500	3700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichlorofluoromethane	1100000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	1.2	91	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3,5-Trimethylbenzene	152000	118000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	152000	48700	< 5 U	< 5 U	< 5 U	< 5 U	**18.5**	< 5 U	< 5 U	< 5 U
Vinyl acetate	3700000	570000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Vinyl chloride	200	4.1	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
m,p-Xylene	1000000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	**84.3**	< 5 U	< 5 U	< 5 U
o-Xylene	1000000	33000000	< 5 U	< 5 U	< 5 U	< 5 U	**39**	< 5 U	< 5 U	< 5 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02985

TABLE 4-2
VOCs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)		SB6			SB8		SB11				
			10 ft	2.0 ft		5.0 ft	2.0 ft		2.0 ft	5.0 ft		8.0 ft	2.0 ft
Acetone	370000	1600000	< 20 U	< 20 U		< 20 U	< 20 U		< 20 U	< 20 U		< 20 U	< 20 U
Acrylonitrile	16	79	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Benzene	500	820	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Bromobenzene	60800	65400	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Bromochloromethane	NC	NC	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Bromodichloromethane	10000	10000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Bromoform	10000	34000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Carbon disulfide	370000	1000000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Carbon tetrachloride	500	350	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Chlorobenzene	10000	310000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Chloroethane	15000	11000000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Chloroform	10000	310	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
2-Chlorotoluene	7300	3030000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
4-Chlorotoluene	NC	NC	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
2-Chloroethylvinyl ether	NC	NC	< 10 U	< 10 U		< 10 U	< 10 U		< 10 U	< 10 U		< 10 U	< 10 U
Dibromochloromethane	10000	76000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,2-Dibromo-3-chloropropane	20	350	< 25 U	< 25 U		< 25 U	< 25 U		< 25 U	< 25 U		< 25 U	< 25 U
1,2-Dibromoethane	5	7.22	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,2-Dichlorobenzene	60000	2600000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,3-Dichlorobenzene	957	46500	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,4-Dichlorobenzene	7500	270000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
trans-1,4-Dichloro-2-butene	NC	NC	< 100 U	< 100 U		< 100 U	< 100 U		< 100 U	< 100 U		< 100 U	< 100 U
1,1-Dichloroethane	370000	990000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,2-Dichloroethane	500	270	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,1-Dichloroethene	700	600	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
cis-1,2-Dichloroethene	7000	1200000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
trans-1,2-Dichloroethene	10000	1400000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,2-Dichloropropane	500	9400	< 5 U	< 5 U		< 5 U	**21.9**		< 5 U	< 5 U		< 5 U	< 5 U
2,2-Dichloropropane	NC	NC	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,1-Dichloropropene	NC	NC	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,3-Dichloropropane	NC	NC	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
cis-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
trans-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Ethylbenzene	70000	4300000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
2-Hexanone	NC	NC	< 50 U	< 50 U		< 50 U	< 50 U		< 50 U	< 50 U		< 50 U	< 50 U
Bromomethane	5100	3500	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Chloromethane	8600	2300	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Dibromomethane	NC	200000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
2-Butanone	2200000	6000000	< 100 U	< 100 U		< 100 U	< 100 U		< 100 U	< 100 U		< 100 U	< 100 U
Iodomethane	NC	NC	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Methylene chloride	500	8700	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
4-Methyl-2-pentanone	290000	2000000	< 100 U	< 100 U		< 100 U	< 100 U		< 100 U	< 100 U		< 100 U	< 100 U
Styrene	10000	13000000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,1,1,2-Tetrachloroethane	3300	52000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,1,2,2-Tetrachloroethane	430	5100	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Tetrachloroethene	500	6000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Toluene	100000	1700000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,2,3-Trichlorobenzene	NC	NC	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,2,4-Trichlorobenzene	7000	1400000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,1,1-Trichloroethane	20000	2300000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,1,2-Trichloroethane	500	9700	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Trichloroethene	500	3700	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Trichlorofluoromethane	1100000	2600000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,2,3-Trichloropropane	1.2	91	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,3,5-Trimethylbenzene	152000	118000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
1,2,4-Trimethylbenzene	152000	48700	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
Vinyl acetate	3700000	570000	< 50 U	< 50 U		< 50 U	< 50 U		< 50 U	< 50 U		< 50 U	< 50 U
Vinyl chloride	200	4.1	< 2 U	< 2 U		< 2 U	< 2 U		< 2 U	< 2 U		< 2 U	< 2 U
m,p-Xylene	1000000	2300000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U
o-Xylene	1000000	33000000	< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U		< 5 U	< 5 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02986

TABLE 4-2
VOCs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB14 5.0 ft	SB14 6.5 ft	SB19 2.0 ft	SB24 2.0 ft	SB24 5.0 ft	SB24 6.0 ft	SB28 2.0 ft	SB28 5.0 ft
Acetone	370000	1800000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Acrylonitrile	16	79	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Benzene	500	820	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromobenzene	60800	65400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromochloromethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromodichloromethane	10000	10000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromoform	10000	34000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon disulfide	370000	1000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	500	3350	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	10000	310000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15000	11000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	10000	310	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chlorotoluene	7900	3030000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Chlorotoluene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chloroethylvinyl ether	NC	NC	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Dibromochloromethane	10000	76000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromo-3-chloropropane	20	350	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
1,2-Dibromoethane	5	7.22	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichlorobenzene	60000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichlorobenzene	957	46500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,4-Dichlorobenzene	7500	270000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,4-Dichloro-2-butene	NC	NC	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
1,1-Dichloroethane	370000	890000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloroethane	500	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloroethene	700	600	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	7000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,2-Dichloroethene	10000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	500	9400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,2-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloropropene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethylbenzene	70000	4300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Hexanone	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Bromomethane	5100	3500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloromethane	6600	2300	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dibromomethane	NC	200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	2200000	8000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Iodomethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Methylene chloride	500	8700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	290000	2000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Styrene	10000	13000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1,2-Tetrachloroethane	3300	52000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2,2-Tetrachloroethane	430	5100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Tetrachloroethene	500	6000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Toluene	100000	1700000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichlorobenzene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trichlorobenzene	7000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	20000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2-Trichloroethane	500	9700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichloroethene	500	3700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichlorofluoromethane	1100000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	1.2	91	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3,5-Trimethylbenzene	152000	118000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	152000	48700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Vinyl acetate	3700000	570000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Vinyl chloride	200	4.1	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
m,p-Xylene	1000000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
o-Xylene	1000000	33000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02987

TABLE 4-2
VOCs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB35			SB36	SB37	SB39	
			8.0 ft	2.0 ft	5.0 ft	8.0 ft	2.0 ft	2.0 ft	5.0 ft
Acetone	370000	1600000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Acrylonitrile	16	79	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Benzene	500	920	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromobenzene	60800	65400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromochloromethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromodichloromethane	10000	10000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromoform	10000	94000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon disulfide	370000	1000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	1500	350	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	10000	310000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15000	11000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	10000	310	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chlorotoluene	7300	3030000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Chlorotoluene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chloroethylvinyl ether	NC	NC	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Dibromochloromethane	10000	76000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromo-3-chloropropane	20	350	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
1,2-Dibromoethane	5	7.22	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichlorobenzene	60000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichlorobenzene	957	46500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,4-Dichlorobenzene	7500	270000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,4-Dichloro-2-butene	NC	NC	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
1,1-Dichloroethane	370000	890000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloroethane	500	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloroethene	700	600	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	7000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,2-Dichloroethene	10000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	500	9400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,2-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloropropene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethylbenzene	70000	4300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Hexanone	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Bromomethane	5100	3500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloromethane	6600	2300	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dibromomethane	NC	200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	2200000	6000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Iodomethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Methylene chloride	500	8700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	290000	2000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Styrene	10000	13000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1,2-Tetrachloroethane	3300	52000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2,2-Tetrachloroethane	430	5100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Tetrachloroethene	500	6000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Toluene	100000	1700000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichlorobenzene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trichlorobenzene	7000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	20000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2-Trichloroethane	500	9700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichloroethene	500	3700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichlorofluoromethane	1100000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	1.2	91	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3,5-Trimethylbenzene	152000	118000	10.4	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	152000	48700	24.4	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Vinyl acetate	3700000	570000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Vinyl chloride	200	4.1	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
m,p-Xylene	1000000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
o-Xylene	1000000	33000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02988

TABLE 4-2
VOCs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB46		SB47			SB49		
			2.0 ft	5.0 ft	2.0 ft	5.0 ft	7.0 ft	2.0 ft	5.0 ft	2.0 ft
Acetone	370000	1600000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Acrylonitrile	16	79	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Benzene	500	920	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromobenzene	60800	65400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromochloromethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromodichloromethane	10000	10000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromoform	10000	94000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon disulfide	370000	1000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	500	950	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	10000	310000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15000	11000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	10000	310	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chlorotoluene	7300	3030000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Chlorotoluene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chloroethylvinyl ether	NC	NC	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Dibromochloromethane	10000	76000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromo-3-chloropropane	20	350	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
1,2-Dibromoethane	5	7.22	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichlorobenzene	60000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichlorobenzene	957	46500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,4-Dichlorobenzene	7500	270000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,4-Dichloro-2-butene	NC	NC	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
1,1-Dichloroethane	370000	890000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloroethane	500	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloroethene	700	600	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	7000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,2-Dichloroethene	10000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	500	9400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,2-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloropropene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethylbenzene	70000	4300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Hexanone	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Bromomethane	5100	3500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloromethane	6600	2300	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dibromomethane	NC	200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	2200000	8000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Iodomethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Methylene chloride	500	8700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	290000	2000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Styrene	10000	13000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1,2-Tetrachloroethane	3300	52000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2,2-Tetrachloroethane	430	5100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Tetrachloroethene	500	6000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Toluene	100000	1700000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichlorobenzene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trichlorobenzene	7000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	20000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2-Trichloroethane	500	9700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichloroethene	500	3700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichlorofluoromethane	1100000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	1.2	91	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3,5-Trimethylbenzene	152000	118000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	152000	48700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Vinyl acetate	3700000	570000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Vinyl chloride	200	4.1	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
m,p-Xylene	1000000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
o-Xylene	1000000	33000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02989

TABLE 4-2
VOCs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB50		SB55			SB58		
			5.0 ft	8.0 ft	2.0 ft	5.0 ft	7.0 ft	2.0 ft	5.0 ft	8.0 ft
Acetone	370000	1600000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Acrylonitrile	16	79	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Benzene	500	820	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromobenzene	60800	65400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromochloromethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromodichloromethane	10000	10000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromoform	10000	94000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon disulfide	370000	1000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	500	4950	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	10000	310000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15000	11000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	10000	310	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chlorotoluene	7300	3030000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Chlorotoluene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chloroethylvinyl ether	NC	NC	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Dibromochloromethane	10000	76000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromo-3-chloropropane	20	350	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
1,2-Dibromoethane	5	7.22	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichlorobenzene	60000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichlorobenzene	957	46500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,4-Dichlorobenzene	7500	270000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,4-Dichloro-2-butene	NC	NC	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
1,1-Dichloroethane	370000	7890000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloroethane	500	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloroethene	700	600	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	7000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,2-Dichloroethene	10000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	500	9400	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,2-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloropropene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,3-Dichloropropene	0.0473	270	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethylbenzene	70000	4300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Hexanone	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Bromomethane	5100	3500	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloromethane	6600	2300	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dibromomethane	NC	200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	2200000	6000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Iodomethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Methylene chloride	500	8700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	290000	2000000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Styrene	10000	13000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1,2-Tetrachloroethane	3300	52000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2,2-Tetrachloroethane	430	5100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Tetrachloroethene	500	6000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Toluene	100000	1700000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichlorobenzene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trichlorobenzene	7000	1400000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	20000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2-Trichloroethane	500	9700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichloroethene	500	3700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichlorofluoromethane	1100000	2600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	1.2	91	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3,5-Trimethylbenzene	152000	118000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	152000	48700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Vinyl acetate	3700000	570000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Vinyl chloride	200	4.1	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
m,p-Xylene	1000000	2300000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
o-Xylene	1000000	33000000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02990

collected from SB2. This concentration is significantly less than the TNRCC RRS2 GWP-Res standard of 70,000 µg/kg.

1,3,5-trimethylbenzene was detected from one sample, collected from SB28 (8.0-9.5 feet) at a concentration of 10.4 µg/kg, which is significantly less than the TNRCC RRS2 GWP-Res standard of 152,000 µg/kg. 1,3,5-trimethylbenzene was not detected from the other soil samples collected from location SB28.

1,2,4-trimethylbenzene was detected from two soil samples, collected from SB2 (5.0-6.5 feet) and from SB28 (8.0-9.5 feet) at concentrations of 18.5 µg/kg and 24.4 µg/kg, respectively. The detected concentrations are significantly less than the TNRCC RRS2 GWP-Res standard of 152000 µg/kg. 1,2,4-trimethylbenzene was not detected from the other soil samples collected from locations SB2 and SB28.

Xylene was detected in one sample, collected at SB2 (5.0-6.5 feet). The m-, and p-xylene isomers were reported at a total concentration of 84.3 µg/kg and the o-xylene isomer was present at a concentration of 39.0 µg/kg. The concentrations of m-, p-, and o-xylene were significantly less than the TNRCC RRS2 GWP-Res standards of 1,000,000 µg/kg for each isomer.

The soil data indicates that there is not a significant distribution of VOCs at the site; all of the detections of VOCs in the soils, except one sample collected from SB28, were localized in the vacant lot area in the western portion of the site. The majority of the detected VOCs were identified in sample SB2 at the 5.0-6.5 depth interval. None of the detected VOC concentrations exceed the applicable TNRCC RRS2 GWP-Res standards.

4.6.2 SVOCs

Forty-eight soil samples collected from 20 locations were analyzed for SVOCs using EPA Method 8270B. The analytical results of the soil SVOC analyses are presented in Table 4-3.

Detectable concentrations of SVOCs were detected at three locations: SB2 (three samples), SB39 (one sample), and SB49 (one sample). The SVOC analytes detected include bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, diethyl phthalate, 4-methyphenol, and 1,4-dichlorobenzene. It is noted that bis (2-ethylhexyl)phthalate, butyl benzyl phthalate, and diethyl phthalate are common plasticizers and can frequently occur as laboratory

TABLE 4-3
SVOCs In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB1 2.0 ft	SB1 5.0 ft	SB1 8.0 ft	SB2 2.0 ft	SB2 5.0 ft	SB2 6.0 ft	2.0 ft
Acenaphthene	220	8200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Acenaphthylene	220	8200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Anthracene	1100	41000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Benzo(a)anthracene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Benzo(b)fluoranthene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Benzo(k)fluoranthene	0.12	6.3	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Benzo(g,h,i)perylene	110	4100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Benzo(a)pyrene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Benzyl alcohol	1100	46000	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 1.3 U	< 0.65 U
Bis(2-chloroethoxy)methane	NC	NC	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Bis(2-chloroethyl)ether	0.0077	0.15	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Bis(2-chloroisopropyl)ether	150	6200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Bis(2-ethylhexyl)phthalate	0.6	17	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	7.27	< 0.66 U	< 0.33 U
4-Bromophenyl phenyl ether	176	322	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Butyl benzyl phthalate	730	31000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	1.31	< 0.66 U	< 0.33 U
Carbazole	0.43	24	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
4-Chloroaniline	15	620	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
2-Chloronaphthalene	290	11	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
4-Chlorophenyl phenyl ether	NC	NC	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Chrysene	1.2	63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Dibenz(a,h)anthracene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Dibenzofuran	12.2	432	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Di-n-butylphthalate	370	15000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
1,2-Dichlorobenzene	60	2600	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
1,3-Dichlorobenzene	0.957	46.5	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
1,4-Dichlorobenzene	7.5	270	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	0.349	< 0.66 U	< 0.33 U
3,3'-Dichlorobenzidine	0.019	1.1	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Diethyl phthalate	2900	120000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Dimethyl phthalate	30400	1060000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
2,4-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
2,6-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Di-n-octylphthalate	73	3100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Fluoranthene	150	5500	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Fluorene	150	5500	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Hexachlorobenzene	0.1	0.25	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Hexachlorobutadiene	0.73	16	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Hexachlorocyclopentadiene	5	3.6	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Hexachloroethane	3.7	150	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Indeno(1,2,3-cd)pyrene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Isophorone	90	5200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
2-Methylnaphthalene	150	5500	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Naphthalene	73	180	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
2-Nitroaniline	1.1	46	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 3.3 U	< 1.65 U
3-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 3.3 U	< 1.65 U
4-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 3.3 U	< 1.65 U
Nitrobenzene	1.8	65	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
N-Nitrosodiphenylamine	1.7	59	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
N-Nitrosodi-n-propylamine	0.0012	0.041	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Phenanthrene	110	4100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Pyrene	110	4100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
1,2,4-Trichlorobenzene	700	1400	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
Benzoic acid	1500	620000	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 1.6 U	< 0.8 U
4-Chloro-3-methylphenol	NC	NC	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 1.3 U	< 0.65 U
2-Chlorophenol	18	1100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
2,4-Dichlorophenol	11	460	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
2,4-Dimethylphenol	73	3100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
4,6-Dinitro-2-methylphenol	NC	NC	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 3.3 U	< 1.65 U
2,4-Dinitrophenol	7.3	310	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 3.3 U	< 1.65 U
2-Methylphenol	180	7700	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
4-Methylphenol	18	770	< 0.33 U	< 0.33 U	< 0.33 U	1.28	1.75	< 0.66 U	< 0.33 U
2-Nitrophenol	NC	NC	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
4-Nitrophenol	NC	NC	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 1.6 U	< 0.8 U
Pentachlorophenol	0.1	3	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 3.3 U	< 1.65 U
Phenol	2200	93000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U
2,4,5-Trichlorophenol	370	15000	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 3.3 U	< 1.65 U
2,4,6-Trichlorophenol	0.77	44	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.66 U	< 0.33 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02992

TABLE 4-3
SVOCs In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB5 5.0 ft	SB5 10 ft	SB6 2.0 ft	SB6 5.0 ft	SB8 2.0 ft	SB11 2.0 ft	SB11 5.0 ft
Acenaphthene	220	8200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Acenaphthylene	220	8200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Anthracene	1100	41000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(a)anthracene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(b)fluoranthene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(k)fluoranthene	0.12	6.3	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(g,h,i)perylene	110	4100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(a)pyrene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzyl alcohol	1100	46000	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U
Bis(2-chloroethoxy)methane	NC	NC	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Bis(2-chloroethyl)ether	0.0077	0.15	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Bis(2-chloroisopropyl)ether	150	6200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Bis(2-ethylhexyl)phthalate	0.6	17	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Bromophenyl phenyl ether	176	322	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Butyl benzyl phthalate	790	31000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Carbazole	0.43	24	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Chloroaniline	15	620	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Chloronaphthalene	290	11	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Chlorophenyl phenyl ether	NC	NC	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Chrysene	1.2	63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Dibenz(a,h)anthracene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Dibenzofuran	12.2	432	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Di-n-butylphthalate	370	15000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
1,2-Dichlorobenzene	60	2600	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
1,3-Dichlorobenzene	0.957	46.5	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
1,4-Dichlorobenzene	7.5	270	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
3,3'-Dichlorobenzidine	0.019	1.1	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Diethyl phthalate	2900	120000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Dimethyl phthalate	30400	1080000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
2,6-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Di-n-octylphthalate	73	3100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Fluoranthene	150	5500	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Fluorene	150	5500	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachlorobenzene	0.1	0.25	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachlorobutadiene	0.73	16	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachlorocyclopentadiene	5	3.6	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachloroethane	3.7	150	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Indeno(1,2,3-cd)pyrene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Isophorone	90	5200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Methylnaphthalene	150	5500	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Naphthalene	73	180	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Nitroaniline	1.1	46	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U
3-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U
4-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U
Nitrobenzene	1.8	65	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
N-Nitrosodiphenylamine	1.7	59	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
N-Nitrosodi-n-propylamine	0.0012	0.041	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Phenanthrene	110	4100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Pyrene	110	4100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
1,2,4-Trichlorobenzene	700	1400	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzoic acid	1500	620000	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U
4-Chloro-3-methylphenol	NC	NC	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U
2-Chlorophenol	18	1100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4-Dichlorophenol	11	460	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4-Dimethylphenol	73	3100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
4,6-Dinitro-2-methylphenol	NC	NC	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U
2,4-Dinitrophenol	7.3	310	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U
2-Methylphenol	180	7700	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Methylphenol	18	770	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Nitrophenol	NC	NC	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Nitrophenol	NC	NC	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U
Pentachlorophenol	0.1	3	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U
Phenol	2200	93000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4,5-Trichlorophenol	370	15000	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U
2,4,6-Trichlorophenol	0.77	44	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02993

TABLE 4-3
SVOCs In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB14 8.0 ft	SB14 2.0 ft	SB14 5.0 ft	SB14 6.5 ft	SB19 2.0 ft	SB24 2.0 ft	SB24 5.0 ft
Acenaphthene	220	8200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Acenaphthylene	220	8200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Anthracene	1100	41000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(a)anthracene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(b)fluoranthene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(k)fluoranthene	0.12	6.3	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(g,h,i)perylene	110	4100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(a)pyrene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzyl alcohol	1100	46000	< 0.65 U	< 0.65 U	< 0.65 U	< 0.644 U	< 0.65 U	< 0.65 U	< 0.65 U
Bis(2-chloroethoxy)methane	NC	NC	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Bis(2-chloroethyl)ether	0.0077	0.15	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Bis(2-chloroisopropyl)ether	150	6200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Bis(2-ethylhexyl)phthalate	0.6	17	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Bromophenyl phenyl ether	176	322	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Butyl benzyl phthalate	730	31000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Carbazole	0.43	24	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Chloroaniline	15	620	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Chloronaphthalene	290	11	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Chlorophenyl phenyl ether	NC	NC	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Chrysene	1.2	63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Dibenz(a,h)anthracene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Dibenzofuran	12.2	432	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Di-n-butylphalate	370	15000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
1,2-Dichlorobenzene	60	2600	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
1,3-Dichlorobenzene	0.957	46.5	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
1,4-Dichlorobenzene	7.5	270	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
3,3'-Dichlorobenzidine	0.019	1.1	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Diethyl phthalate	2900	120000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Dimethyl phthalate	30400	1080000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
2,6-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Di-n-octylphthalate	73	3100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Fluoranthene	150	5500	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Fluorene	150	5500	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachlorobenzene	0.1	0.25	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachlorobutadiene	0.73	16	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachlorocyclopentadiene	5	3.6	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachloroethane	3.7	150	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Indeno(1,2,3-cd)pyrene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Isophorone	90	5200	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Methylnaphthalene	150	5500	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Naphthalene	73	180	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Nitroaniline	1.1	46	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U
3-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U
4-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U
Nitrobenzene	1.8	65	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
N-Nitrosodiphenylamine	1.7	59	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
N-Nitrosodi-n-propylamine	0.0012	0.041	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Phenanthrene	110	4100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Pyrene	110	4100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
1,2,4-Trichlorobenzene	700	1400	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzoic acid	1500	620000	< 0.8 U	< 0.8 U	< 0.8 U	< 0.792 U	< 0.8 U	< 0.8 U	< 0.8 U
4-Chloro-3-methylphenol	NC	NC	< 0.65 U	< 0.65 U	< 0.65 U	< 0.644 U	< 0.65 U	< 0.65 U	< 0.65 U
2-Chlorophenol	18	1100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4-Dichlorophenol	11	460	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4-Dimethylphenol	73	3100	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
4,6-Dinitro-2-methylphenol	NC	NC	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U
2,4-Dinitrophenol	7.3	310	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U
2-Methylphenol	180	7700	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Methylphenol	18	770	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Nitrophenol	NC	NC	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Nitrophenol	NC	NC	< 0.8 U	< 0.8 U	< 0.8 U	< 0.792 U	< 0.8 U	< 0.8 U	< 0.8 U
Pentachlorophenol	0.1	3	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U
Phenol	2200	93000	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4,5-Trichlorophenol	370	15000	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U
2,4,6-Trichlorophenol	0.77	44	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.33 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02994

TABLE 4-3
SVOCs in Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)		SB28			SB35		
			6.0 ft	2.0 ft	5.0 ft	8.0 ft	2.0 ft	5.0 ft	8.0 ft
Acenaphthene	220	8200	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Acenaphthylene	220	8200	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Anthracene	1100	41000	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(a)anthracene	0.02	0.63	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(b)fluoranthene	0.02	0.63	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(k)fluoranthene	0.12	6.3	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(g,h,i)perylene	110	4100	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzo(a)pyrene	0.02	0.063	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzyl alcohol	1100	46000	< 0.66 U	< 0.663 U	< 0.657 U	< 0.663 U	< 0.66 U	< 0.65 U	< 0.65 U
Bis(2-chloroethoxy)methane	NC	NC	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Bis(2-chloroethyl)ether	0.0077	0.15	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Bis(2-chloroisopropyl)ether	150	6200	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Bis(2-ethylhexyl)phthalate	0.6	17	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Bromophenyl phenyl ether	176	322	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Butyl benzyl phthalate	730	31000	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Carbazole	0.43	24	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Chloroaniline	15	620	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Chloronaphthalene	290	11	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Chlorophenyl phenyl ether	NC	NC	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Chrysene	1.2	63	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Dibenz(a,h)anthracene	0.02	0.063	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Dibenzofuran	12.2	432	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Di-n-butylphthalate	370	15000	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
1,2-Dichlorobenzene	60	2600	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
1,3-Dichlorobenzene	0.957	46.5	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
1,4-Dichlorobenzene	7.5	270	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
3,3'-Dichlorobenzidine	0.019	1.1	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Diethyl phthalate	2900	120000	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Dimethyl phthalate	30400	1080000	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
2,6-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Di-n-octylphthalate	73	3100	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Fluoranthene	150	5500	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Fluorene	150	5500	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachlorobenzene	0.1	0.25	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachlorobutadiene	0.73	16	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachlorocyclopentadiene	5	3.6	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Hexachloroethane	3.7	150	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Indeno(1,2,3-cd)pyrene	0.02	0.63	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Isophorone	90	5200	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Methylnaphthalene	150	5500	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Naphthalene	73	180	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Nitroaniline	1.1	46	< 1.65 U	< 1.68 U	< 1.67 U	< 1.68 U	< 1.65 U	< 1.65 U	< 1.65 U
3-Nitroaniline	NC	NC	< 1.65 U	< 1.68 U	< 1.67 U	< 1.68 U	< 1.65 U	< 1.65 U	< 1.65 U
4-Nitroaniline	NC	NC	< 1.65 U	< 1.68 U	< 1.67 U	< 1.68 U	< 1.65 U	< 1.65 U	< 1.65 U
Nitrobenzene	1.8	65	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
N-Nitrosodiphenylamine	1.7	59	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
N-Nitrosodi-n-propylamine	0.0012	0.041	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Phenanthrene	110	4100	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Pyrene	110	4100	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
1,2,4-Trichlorobenzene	700	1400	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
Benzoic acid	1500	620000	< 0.8 U	< 0.816 U	< 0.808 U	< 0.816 U	< 0.8 U	< 0.8 U	< 0.8 U
4-Chloro-3-methylphenol	NC	NC	< 0.66 U	< 0.663 U	< 0.657 U	< 0.663 U	< 0.65 U	< 0.65 U	< 0.65 U
2-Chlorophenol	18	1100	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4-Dichlorophenol	11	460	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4-Dimethylphenol	73	3100	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
4,6-Dinitro-2-methylphenol	NC	NC	< 1.65 U	< 1.68 U	< 1.67 U	< 1.68 U	< 1.65 U	< 1.65 U	< 1.65 U
2,4-Dinitrophenol	7.3	310	< 1.65 U	< 1.68 U	< 1.67 U	< 1.68 U	< 1.65 U	< 1.65 U	< 1.65 U
2-Methylphenol	180	7700	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Methylphenol	18	770	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
2-Nitrophenol	NC	NC	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
4-Nitrophenol	NC	NC	< 0.8 U	< 0.816 U	< 0.808 U	< 0.816 U	< 0.8 U	< 0.8 U	< 0.8 U
Pentachlorophenol	0.1	3	< 1.65 U	< 1.68 U	< 1.67 U	< 1.68 U	< 1.65 U	< 1.65 U	< 1.65 U
Phenol	2200	93000	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U
2,4,5-Trichlorophenol	370	15000	< 1.65 U	< 1.68 U	< 1.67 U	< 1.68 U	< 1.65 U	< 1.65 U	< 1.65 U
2,4,6-Trichlorophenol	0.77	44	< 0.33 U	< 0.337 U	< 0.333 U	< 0.337 U	< 0.33 U	< 0.33 U	< 0.33 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02995

TABLE 4-3
SVOCs In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB36 2.0 ft	SB37 2.0 ft	SB39 2.0 ft	SB39 5.0 ft	SB46 2.0 ft	SB46 5.0 ft	2.0 ft
Acenaphthene	220	8200	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Acenaphthylene	220	8200	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Anthracene	1100	41000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Benzo(a)anthracene	0.02	0.63	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Benzo(b)fluoranthene	0.02	0.63	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Benzo(k)fluoranthene	0.12	6.3	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Benzo(g,h,i)perylene	110	4100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Benzo(a)pyrene	0.02	0.063	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Benzyl alcohol	1100	46000	< 0.641 U	< 0.65 U	< 0.65 U	< 0.631 U	< 0.646 U	< 0.648 U	< 0.641 U
Bis(2-chloroethoxy)methane	NC	NC	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Bis(2-chloroethyl)ether	0.0077	0.15	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Bis(2-chloroisopropyl)ether	150	6200	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Bis(2-ethylhexyl)phthalate	0.6	17	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
4-Bromophenyl phenyl ether	176	322	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Butyl benzyl phthalate	730	31000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Carbazole	0.43	24	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
4-Chloroaniline	15	620	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
2-Chloronaphthalene	290	11	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
4-Chlorophenyl phenyl ether	NC	NC	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Chrysene	1.2	63	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Dibenz(a,h)anthracene	0.02	0.063	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Dibenzofuran	12.2	432	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Di-n-butylphthalate	370	15000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
1,2-Dichlorobenzene	60	2600	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
1,3-Dichlorobenzene	0.857	46.5	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
1,4-Dichlorobenzene	7.5	270	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
3,3'-Dichlorobenzidine	0.019	1.1	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Diethyl phthalate	2900	120000	< 0.326 U	< 0.33 U	< 0.33 U	**0.877**	< 0.328 U	< 0.329 U	< 0.326 U
Dimethyl phthalate	30400	1060000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
2,4-Dinitrotoluene	0.013	0.72	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
2,6-Dinitrotoluene	0.013	0.72	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Di-n-octylphthalate	73	3100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Fluoranthene	150	5500	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Fluorene	150	5500	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Hexachlorobenzene	0.1	0.25	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Hexachlorobutadiene	0.73	16	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Hexachlorocyclopentadiene	5	3.6	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Hexachloroethane	3.7	150	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Indeno(1,2,3-cd)pyrene	0.02	0.63	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Isophorone	90	5200	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
2-Methylnaphthalene	150	5500	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Naphthalene	73	180	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
2-Nitroaniline	1.1	46	< 1.63 U	< 1.65 U	< 1.65 U	< 1.6 U	< 1.64 U	< 1.64 U	< 1.63 U
3-Nitroaniline	NC	NC	< 1.63 U	< 1.65 U	< 1.65 U	< 1.6 U	< 1.64 U	< 1.64 U	< 1.63 U
4-Nitroaniline	NC	NC	< 1.63 U	< 1.65 U	< 1.65 U	< 1.6 U	< 1.64 U	< 1.64 U	< 1.63 U
Nitrobenzene	1.8	65	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
N-Nitrosodiphenylamine	1.7	59	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
N-Nitrosodi-n-propylamine	0.0012	0.041	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Phenanthrene	110	4100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Pyrene	110	4100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
1,2,4-Trichlorobenzene	700	1400	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
Benzoic acid	1500	620000	< 0.789 U	< 0.8 U	< 0.8 U	< 0.777 U	< 0.795 U	< 0.795 U	< 0.789 U
4-Chloro-3-methylphenol	NC	NC	< 0.641 U	< 0.65 U	< 0.65 U	< 0.631 U	< 0.646 U	< 0.648 U	< 0.641 U
2-Chlorophenol	18	1100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
2,4-Dichlorophenol	11	460	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
2,4-Dimethylphenol	73	3100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
4,6-Dinitro-2-methylphenol	NC	NC	< 1.63 U	< 1.65 U	< 1.65 U	< 1.6 U	< 1.64 U	< 1.64 U	< 1.63 U
2,4-Dinitrophenol	7.3	310	< 1.63 U	< 1.65 U	< 1.65 U	< 1.6 U	< 1.64 U	< 1.64 U	< 1.63 U
2-Methylphenol	180	7700	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
4-Methylphenol	18	770	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
2-Nitrophenol	NC	NC	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
4-Nitrophenol	NC	NC	< 0.789 U	< 0.8 U	< 0.8 U	< 0.777 U	< 0.795 U	< 0.795 U	< 0.789 U
Pentachlorophenol	0.1	3	< 1.63 U	< 1.65 U	< 1.65 U	< 1.6 U	< 1.64 U	< 1.64 U	< 1.63 U
Phenol	2200	93000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U
2,4,5-Trichlorophenol	370	15000	< 1.63 U	< 1.65 U	< 1.65 U	< 1.6 U	< 1.64 U	< 1.64 U	< 1.63 U
2,4,6-Trichlorophenol	0.77	44	< 0.326 U	< 0.33 U	< 0.33 U	< 0.32 U	< 0.328 U	< 0.329 U	< 0.326 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02996

TABLE 4-3
SVOCs In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB47 5.0 ft	SB47 7.0 ft	SB49 2.0 ft	SB49 5.0 ft	SB50 2.0 ft	SB50 5.0 ft	SB50 8.0 ft
Acenaphthene	220	8200	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Acenaphthylene	220	8200	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Anthracene	1100	41000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Benzo(a)anthracene	0.02	0.63	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Benzo(b)fluoranthene	0.02	0.63	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Benzo(k)fluoranthene	0.12	6.3	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Benzo(g,h,i)perylene	110	4100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Benzo(a)pyrene	0.02	0.063	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Benzyl alcohol	1100	46000	< 0.642 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.644 U
Bis(2-chloroethoxy)methane	NC	NC	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Bis(2-chloroethyl)ether	0.0077	0.15	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Bis(2-chloroisopropyl)ether	150	6200	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Bis(2-ethylhexyl)phthalate	0.8	17	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
4-Bromophenyl phenyl ether	176	322	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Butyl benzyl phthalate	730	31000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Carbazole	0.43	24	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
4-Chloroaniline	15	620	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
2-Chloronaphthalene	290	11	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
4-Chlorophenyl phenyl ether	NC	NC	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Chrysene	1.2	63	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Dibenz(a,h)anthracene	0.02	0.063	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Dibenzofuran	12.2	432	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Di-n-butylphthalate	370	15000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
1,2-Dichlorobenzene	60	2600	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
1,3-Dichlorobenzene	0.957	46.5	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
1,4-Dichlorobenzene	7.5	270	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
3,3'-Dichlorobenzidine	0.019	1.1	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Diethyl phthalate	2900	120000	< 0.326 U	< 0.33 U	< 0.33 U	0.869	< 0.33 U	< 0.33 U	< 0.327 U
Dimethyl phthalate	30400	1080000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
2,4-Dinitrotoluene	0.013	0.72	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
2,6-Dinitrotoluene	0.013	0.72	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Di-n-octylphthalate	73	3100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Fluoranthene	150	5500	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Fluorene	150	5500	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Hexachlorobenzene	0.1	0.25	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Hexachlorobutadiene	0.73	16	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Hexachlorocyclopentadiene	5	3.6	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Hexachloroethane	3.7	150	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Indeno(1,2,3-cd)pyrene	0.02	0.63	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Isophorone	90	5200	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
2-Methylnaphthalene	150	5500	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Naphthalene	73	180	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
2-Nitroaniline	1.1	46	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U
3-Nitroaniline	NC	NC	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U
4-Nitroaniline	NC	NC	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U
Nitrobenzene	1.8	65	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
N-Nitrosodiphenylamine	1.7	59	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
N-Nitrosodi-n-propylamine	0.0012	0.041	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Phenanthrene	110	4100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Pyrene	110	4100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
1,2,4-Trichlorobenzene	700	1400	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
Benzoic acid	1500	620000	< 0.79 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.792 U
4-Chloro-3-methylphenol	NC	NC	< 0.642 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.644 U
2-Chlorophenol	18	1100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
2,4-Dichlorophenol	11	460	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
2,4-Dimethylphenol	73	3100	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
4,6-Dinitro-2-methylphenol	NC	NC	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U
2,4-Dinitrophenol	7.3	310	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U
2-Methylphenol	180	7700	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
4-Methylphenol	18	770	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
2-Nitrophenol	NC	NC	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
4-Nitrophenol	NC	NC	< 0.79 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.8 U	< 0.792 U
Pentachlorophenol	0.1	3	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U
Phenol	2200	93000	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U
2,4,5-Trichlorophenol	370	15000	< 1.63 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.65 U	< 1.63 U
2,4,6-Trichlorophenol	0.77	44	< 0.326 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.33 U	< 0.327 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

02997

TABLE 4-3
SVOCs In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB55 2.0 ft	SB55 5.0 ft	SB55 7.0 ft	SB58 2.0 ft	SB58 5.0 ft	SB58 8.0 ft
Acenaphthene	220	8200	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Acenaphthylene	220	8200	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Anthracene	1100	41000	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Benzo(a)anthracene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Benzo(b)fluoranthene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Benzo(k)fluoranthene	0.12	6.3	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Benzo(g,h,i)perylene	110	4100	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Benzo(a)pyrene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Benzyl alcohol	1100	46000	< 0.65 U	< 0.65 U	< 0.644 U	< 0.65 U	< 0.65 U	< 0.648 U
Bis(2-chloroethoxy)methane	NC	NC	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Bis(2-chloroethyl)ether	0.0077	0.15	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Bis(2-chloroisopropyl)ether	150	6200	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Bis(2-ethylhexyl)phthalate	0.6	17	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
4-Bromophenyl phenyl ether	176	322	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Butyl benzyl phthalate	730	31000	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Carbazole	0.43	24	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
4-Chloroaniline	15	620	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
2-Chloronaphthalene	290	11	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
4-Chlorophenyl phenyl ether	NC	NC	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Chrysene	1.2	63	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Dibenz(a,h)anthracene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Dibenzofuran	12.2	432	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Di-n-butylphthalate	370	15000	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
1,2-Dichlorobenzene	60	2600	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
1,3-Dichlorobenzene	0.957	46.6	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
1,4-Dichlorobenzene	7.5	270	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
3,3'-Dichlorobenzidine	0.019	1.1	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Diethyl phthalate	2900	120000	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Dimethyl phthalate	30400	1060000	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
2,4-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
2,6-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Di-n-octylphthalate	73	3100	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Fluoranthene	150	5500	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Fluorene	150	5500	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Hexachlorobenzene	0.1	0.25	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Hexachlorobutadiene	0.73	16	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Hexachlorocyclopentadiene	5	3.6	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Hexachloroethane	3.7	150	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Indeno(1,2,3-cd)pyrene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Isophorone	90	5200	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
2-Methylnaphthalene	150	5500	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Naphthalene	73	180	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
2-Nitroaniline	1.1	46	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.64 U
3-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.64 U
4-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.64 U
Nitrobenzene	1.8	65	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
N-Nitrosodiphenylamine	1.7	59	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
N-Nitrosodi-n-propylamine	0.0012	0.041	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Phenanthrene	110	4100	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Pyrene	110	4100	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
1,2,4-Trichlorobenzene	700	1400	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
Benzoic acid	1500	620000	< 0.8 U	< 0.8 U	< 0.792 U	< 0.8 U	< 0.8 U	< 0.797 U
4-Chloro-3-methylphenol	NC	NC	< 0.65 U	< 0.65 U	< 0.644 U	< 0.65 U	< 0.65 U	< 0.648 U
2-Chlorophenol	18	1100	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
2,4-Dichlorophenol	11	460	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
2,4-Dimethylphenol	73	3100	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
4,6-Dinitro-2-methylphenol	NC	NC	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.64 U
2,4-Dinitrophenol	7.3	310	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.64 U
2-Methylphenol	180	7700	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
4-Methylphenol	18	770	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
2-Nitrophenol	NC	NC	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
4-Nitrophenol	NC	NC	< 0.8 U	< 0.8 U	< 0.792 U	< 0.8 U	< 0.8 U	< 0.797 U
Pentachlorophenol	0.1	3	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.64 U
Phenol	2200	93000	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U
2,4,5-Trichlorophenol	370	15000	< 1.65 U	< 1.65 U	< 1.63 U	< 1.65 U	< 1.65 U	< 1.64 U
2,4,6-Trichlorophenol	0.77	44	< 0.33 U	< 0.33 U	< 0.327 U	< 0.33 U	< 0.33 U	< 0.329 U

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Exceedance

02998

contaminants. Such plasticizers are used in items such as instrumentation tubing and disposable gloves used by sampling and laboratory personnel.

Bis(2-ethylhexyl)phthalate was detected in SB2 (5.0-6.5 feet) at a concentration of 7.27 milligrams per kilogram (mg/kg). The detected concentration exceeds the TNRCC RRS2 GWP-Res standard of 0.6 mg/kg.

Butyl benzyl phthalate was detected in SB2 (5.0-6.5 feet) at a concentration of 1.31 mg/kg. The detected concentration is well below the TNRCC RRS2 GWP-Res standard of 730 mg/kg.

Diethyl phthalate was detected in SB39 (5.0 feet) and SB49 (5.0 feet) at concentrations of 0.877 mg/kg and 0.869 mg/kg, respectively. These concentrations of diethyl phthalate are significantly below the corresponding TNRCC RRS2 GWP-Res standard of 2900 mg/kg.

4-Methylphenol was detected in two samples collected from SB2 (2.0-3.5 feet and 5.0-6.5 feet). The compound was reported at concentrations of 1.28 mg/kg and 1.75 mg/kg, respectively. The detected concentrations are well below the TNRCC RRS2 GWP-Res standard of 18 mg/kg.

1,4-Dichlorobenzene was detected in one sample collected from SB2 (5.0-6.5 feet) at a concentration of 0.349 mg/kg. This concentration is well below the TNRCC RRS2 GWP-Res standard of 7.5 mg/kg.

As with the VOCs, the soil analytical data indicates that there is not a significant distribution of SVOCs at the site; all of the detections of SVOCs in the soils came from only three locations. Most of the detections came from only one location in the vacant lot area in the western portion of the site, with the majority of the detected SVOCs identified in sample SB2 at the 5.0-6.5 depth interval. Only one of the detected SVOC concentrations (for bis(2-ethylhexyl)phthalate) exceeds the applicable TNRCC RRS2 GWP-Res standard. Bis(2-ethylhexyl)phthalate is a common laboratory contaminant.

4.6.3 Pesticides/PCBs

Forty-eight soil samples collected from 20 locations were analyzed for pesticides and PCBs using EPA Method 8080. Pesticides were detected at two soil locations, SB5 and SB24. The detected pesticide compounds include chlordane and 4'.4'-DDE. No PCB compounds were

detected in any of the soil samples. The analytical results of the soil pesticide and PCB analyses are presented in Table 4-4.

Chlordane was detected in two soil samples collected from SB5 (2.0-3.7 feet and 5.0-6.1 feet) at concentrations of 13.5 µg/kg and 690 µg/kg, respectively. Chlordane was also detected at a concentration of 14.5 µg/kg in SB24 (2.0-3.5 feet). Only the concentration of chlordane reported for the soil sample collected from SB5 at a depth of 5.0-6.1 feet exceeds the TNRCC RRS2 GWP-Res standard of 200 µg/kg. Chlordane is a common pesticide that has probably been used for insect control in the area.

4',4'-DDE was detected in one soil sample collected from SB24 (2.0-3.5ft) at a concentration of 6.95 µg/kg. This concentration of 4',4'-DDE is below the TNRCC RRS2 GWP-Res standard of 25 µg/kg.

As with the VOCs and SVOCs, the soil sample analytical results do not indicate that there is a significant distribution of pesticides at the site. The detections came from only two locations. Only one of the detected pesticides concentrations exceeds the applicable TNRCC RRS2 GWP-Res standard. It is noted that historical aerial photography indicates that the SLF area was utilized as an agricultural property prior to the establishment of LAFB, and an adjacent property was utilized for agriculture until the 1970s. The presence of Chlordane and 4',4'-DDE in site soils could have resulted from the use of these compounds for agricultural purposes.

4.6.4 Herbicides

Thirty-nine soil samples collected from 17 locations were analyzed for herbicides using EPA Method 8150. The only herbicide compound detected was Dalapon. Dalapon was detected in two soil samples at 255 µg/kg and 290 µg/kg from SB5 (5.0-6.1 feet) and SB19(2.5-4.0 feet), respectively. These concentrations were below the TNRCC RRS2 GWP-Res standard of 91300 µg/L. Dalapon is a common herbicide that has probably been used for weed control in the area. As with the pesticides, the presence of Dalapon in the SLF site soils could have resulted from the use of Dalapon for agricultural purposes. The analytical results of the soil herbicide analyses are presented in Table 4-5.

TABLE 4-4
Pesticides/PCSs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB1			SB2			SB5		
			2.0 ft	5.0 ft	8.0 ft	2.0 ft	5.0 ft	6.0 ft	2.0 ft	5.0 ft	10 ft
Aldrin	0.5	27	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 5.36 U	< 5.26 DU	< 2.67 U	< 53 DU	< 2.68 U
Alpha-BHC	1.4	90	< 2.01 U	< 2.01 U	< 2.01 U	< 2.01 U	< 4.02 U	< 3.94 DU	< 2 U	< 39.7 DU	< 2.01 U
Beta-BHC	47	3200	< 4.02 U	< 4.02 U	< 4.02 U	< 4.02 U	< 8.04 U	< 7.88 DU	< 4.01 U	< 79.4 DU	< 4.02 U
Delta-BHC	NC	NC	< 6.03 U	< 6.03 U	< 6.03 U	< 6.03 U	< 12.1 U	< 11.8 DU	< 6.01 U	< 119 DU	< 6.03 U
Gamma-BHC(Lindane)	20	440	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 5.36 U	< 5.26 DU	< 2.67 U	< 53 DU	< 2.68 U
Chlordane	200	1600	< 9.38 U	< 9.38 U	< 9.38 U	< 9.38 U	< 18.8 U	< 18.4 DU	13.5	690 D	< 9.38 U
4,4'-DDD	35	2400	< 7.37 U	< 7.37 U	< 7.37 U	< 7.37 U	< 14.7 U	< 14.5 DU	< 7.36 U	< 146 DU	< 7.37 U
4,4'-DDE	25	1700	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 5.36 U	< 5.26 DU	< 2.67 U	< 53 DU	< 2.68 U
4,4'-DDT	25	1700	< 8.04 U	< 8.04 U	< 8.04 U	< 8.04 U	< 16.1 U	< 15.8 DU	< 8.02 U	< 159 DU	< 8.04 U
Dieldrin	0.53	31	< 1.34 U	< 1.34 U	< 1.34 U	< 1.34 U	< 2.68 U	< 2.63 DU	< 1.34 U	< 26.5 DU	< 1.34 U
Endosulfan I	22000	62000	< 9.38 U	< 9.38 U	< 9.38 U	< 9.38 U	< 18.8 U	< 18.4 DU	< 9.35 U	< 185 DU	< 9.38 U
Endosulfan II	22000	62000	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 5.36 U	< 5.26 DU	< 2.67 U	< 53 DU	< 2.68 U
Endosulfan Sulfate	NC	NC	< 44.2 U	< 44.2 U	< 44.2 U	< 44.2 U	< 88.4 U	< 86.7 DU	< 44.1 U	< 874 DU	< 44.2 U
Endrin	200	46000	< 4.02 U	< 4.02 U	< 4.02 U	< 4.02 U	< 8.04 U	< 7.88 DU	< 4.01 U	< 79.4 DU	< 4.02 U
Endrin Aldehyde	NC	NC	< 15.4 U	< 15.4 U	< 15.4 U	< 15.4 U	< 30.6 U	< 30.2 DU	< 15.4 U	< 305 DU	< 15.4 U
Heptachlor	40	93	< 2.01 U	< 2.01 U	< 2.01 U	< 2.01 U	< 4.02 U	< 3.94 DU	< 2 U	< 39.7 DU	< 2.01 U
Heptachlor Epoxide	20	54	< 55.6 U	< 55.6 U	< 55.6 U	< 55.6 U	< 111 U	< 109 DU	< 55.4 U	< 1100 DU	< 55.6 U
Methoxychlor	4000	750000	< 118 U	< 118 U	< 118 U	< 118 U	< 236 U	< 231 DU	< 118 U	< 2330 DU	< 118 U
Toxaphene	300	440	< 161 U	< 161 U	< 161 U	< 161 U	< 322 U	< 315 DU	< 160 U	< 3160 DU	< 161 U
Aroclor-1016	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 87.1 U	< 85.4 DU	< 43.4 U	< 861 DU	< 43.6 U
Aroclor-1221	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 87.1 U	< 85.4 DU	< 43.4 U	< 861 DU	< 43.6 U
Aroclor-1232	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 87.1 U	< 85.4 DU	< 43.4 U	< 861 DU	< 43.6 U
Aroclor-1242	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 87.1 U	< 85.4 DU	< 43.4 U	< 861 DU	< 43.6 U
Aroclor-1248	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 87.1 U	< 85.4 DU	< 43.4 U	< 861 DU	< 43.6 U
Aroclor-1254	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 87.1 U	< 85.4 DU	< 43.4 U	< 861 DU	< 43.6 U
Aroclor-1260	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 87.1 U	< 85.4 DU	< 43.4 U	< 861 DU	< 43.6 U

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Exceedance

TABLE 4-4
Pesticides/PCSs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

030002

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB6		SB8	SB11			SB14		
			2.0 ft	5.0 ft	2.0 ft	2.0 ft	5.0 ft	8.0 ft	2.0 ft	5.0 ft	6.5 ft
Aldrin	0.5	27	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.65 U	< 2.64 U	< 2.68 U
Alpha-BHC	1.4	90	< 2.01 U	< 2.01 U	< 2.01 U	< 2.01 U	< 2.01 U	< 2.01 U	< 1.99 U	< 1.98 U	< 2.01 U
Beta-BHC	47	3200	< 4.02 U	< 4.02 U	< 4.02 U	< 4.02 U	< 4.02 U	< 4.02 U	< 3.98 U	< 3.95 U	< 4.02 U
Delta-BHC	NC	NC	< 6.03 U	< 6.03 U	< 6.03 U	< 6.03 U	< 6.03 U	< 6.03 U	< 5.97 U	< 5.93 U	< 6.03 U
Gamma-BHC(Lindane)	20	440	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.65 U	< 2.64 U	< 2.68 U
Chlordane	200	1600	9.38 U	< 9.38 U	< 9.38 U	< 9.38 U	< 9.38 U	< 9.38 U	< 9.28 U	< 9.23 U	< 9.38 U
4,4'-DDD	35	2400	< 7.37 U	< 7.37 U	< 7.37 U	< 7.37 U	< 7.37 U	< 7.37 U	< 7.29 U	< 7.25 U	< 7.37 U
4,4'-DDE	25	1700	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.65 U	< 2.64 U	< 2.68 U
4,4'-DDT	25	1700	< 8.04 U	< 8.04 U	< 8.04 U	< 8.04 U	< 8.04 U	< 8.04 U	< 7.96 U	< 7.91 U	< 8.04 U
Dieldrin	0.53	31	< 1.34 U	< 1.34 U	< 1.34 U	< 1.34 U	< 1.34 U	< 1.34 U	< 1.33 U	< 1.32 U	< 1.34 U
Endosulfan I	22000	62000	< 9.38 U	< 9.38 U	< 9.38 U	< 9.38 U	< 9.38 U	< 9.38 U	< 9.28 U	< 9.23 U	< 9.38 U
Endosulfan II	22000	62000	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.68 U	< 2.65 U	< 2.64 U	< 2.68 U
Endosulfan Sulfate	NC	NC	< 44.2 U	< 44.2 U	< 44.2 U	< 44.2 U	< 44.2 U	< 44.2 U	< 43.8 U	< 43.6 U	< 44.2 U
Endrin	200	46000	< 4.02 U	< 4.02 U	< 4.02 U	< 4.02 U	< 4.02 U	< 4.02 U	< 3.98 U	< 3.95 U	< 4.02 U
Endrin Aldehyde	NC	NC	< 15.4 U	< 15.4 U	< 15.4 U	< 15.4 U	< 15.4 U	< 15.4 U	< 15.2 U	< 15.2 U	< 15.4 U
Heptachlor	40	93	< 2.01 U	< 2.01 U	< 2.01 U	< 2.01 U	< 2.01 U	< 2.01 U	< 1.99 U	< 1.98 U	< 2.01 U
Heptachlor Epoxide	20	54	< 55.6 U	< 55.6 U	< 55.6 U	< 55.6 U	< 55.6 U	< 55.6 U	< 55 U	< 54.7 U	< 55.6 U
Methoxychlor	4000	750000	< 118 U	< 118 U	< 118 U	< 118 U	< 118 U	< 118 U	< 117 U	< 116 U	< 118 U
Toxaphene	300	440	< 161 U	< 161 U	< 161 U	< 161 U	< 161 U	< 161 U	< 159 U	< 158 U	< 161 U
Aroclor-1016	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.1 U	< 42.8 U	< 43.6 U
Aroclor-1221	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.1 U	< 42.8 U	< 43.6 U
Aroclor-1232	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.1 U	< 42.8 U	< 43.6 U
Aroclor-1242	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.1 U	< 42.8 U	< 43.6 U
Aroclor-1248	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.1 U	< 42.8 U	< 43.6 U
Aroclor-1254	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.1 U	< 42.8 U	< 43.6 U
Aroclor-1260	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.6 U	< 43.1 U	< 42.8 U	< 43.6 U

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Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB19 2.0 ft		SB24 2.0 ft		SB24 5.0 ft		SB24 6.0 ft		SB28 2.0 ft		SB28 5.0 ft		SB28 8.0 ft	
Aldrin	0.5	27	< 2.68	U	< 2.65	U	< 2.66	U	< 2.62	U	< 2.67	U	< 2.67	U	< 2.7	U
Alpha-BHC	1.4	90	< 2.01	U	< 1.99	U	< 2	U	< 1.97	U	< 2	U	< 2	U	< 2.02	U
Beta-BHC	47	3200	< 4.02	U	< 3.98	U	< 3.99	U	< 3.93	U	< 4.01	U	< 4.01	U	< 4.04	U
Delta-BHC	NC	NC	< 6.03	U	< 5.97	U	< 5.99	U	< 5.9	U	< 6.01	U	< 6.01	U	< 6.07	U
Gamma-BHC(Lindane)	20	440	< 2.68	U	< 2.65	U	< 2.66	U	< 2.62	U	< 2.67	U	< 2.67	U	< 2.7	U
Chlordane	200	1600	< 9.38	U	14.5		< 9.31	U	< 9.17	U	< 9.35	U	< 9.35	U	< 9.44	U
4,4'-DDD	35	2400	< 7.37	U	< 7.29	U	< 7.32	U	< 7.21	U	< 7.35	U	< 7.35	U	< 7.41	U
4,4'-DDE	25	1700	< 2.68	U	6.95		< 2.66	U	< 2.62	U	< 2.67	U	< 2.67	U	< 2.7	U
4,4'-DDT	25	1700	< 8.04	U	< 7.96	U	< 7.98	U	< 7.86	U	< 8.02	U	< 8.02	U	< 8.09	U
Dieldrin	0.53	31	< 1.34	U	< 1.33	U	< 1.33	U	< 1.31	U	< 1.34	U	< 1.34	U	< 1.35	U
Endosulfan I	22000	62000	< 9.38	U	< 9.28	U	< 9.31	U	< 9.17	U	< 9.35	U	< 9.35	U	< 9.44	U
Endosulfan II	22000	62000	< 2.68	U	< 2.65	U	< 2.66	U	< 2.62	U	< 2.67	U	< 2.67	U	< 2.7	U
Endosulfan Sulfate	NC	NC	< 44.2	U	< 43.8	U	< 43.9	U	< 43.2	U	< 44.1	U	< 44.1	U	< 44.5	U
Endrin	200	46000	< 4.02	U	< 3.98	U	< 3.99	U	< 3.93	U	< 4.01	U	< 4.01	U	< 4.04	U
Endrin Aldehyde	NC	NC	< 15.4	U	< 15.2	U	< 15.3	U	< 15.1	U	< 15.4	U	< 15.4	U	< 15.5	U
Heptachlor	40	93	< 2.01	U	< 1.99	U	< 2	U	< 1.97	U	< 2	U	< 2	U	< 2.02	U
Heptachlor Epoxide	20	54	< 55.6	U	< 55	U	< 55.2	U	< 54.4	U	< 55.4	U	< 55.4	U	< 55.9	U
Methoxychlor	4000	750000	< 118	U	< 117	U	< 117	U	< 115	U	< 118	U	< 118	U	< 119	U
Toxaphene	300	440	< 161	U	< 159	U	< 160	U	< 157	U	< 160	U	< 160	U	< 162	U
Aroclor-1016	50	10000	< 43.6	U	< 43.1	U	< 43.2	U	< 42.6	U	< 43.4	U	< 43.4	U	< 43.8	U
Aroclor-1221	50	10000	< 43.6	U	< 43.1	U	< 43.2	U	< 42.6	U	< 43.4	U	< 43.4	U	< 43.8	U
Aroclor-1232	50	10000	< 43.6	U	< 43.1	U	< 43.2	U	< 42.6	U	< 43.4	U	< 43.4	U	< 43.8	U
Aroclor-1242	50	10000	< 43.6	U	< 43.1	U	< 43.2	U	< 42.6	U	< 43.4	U	< 43.4	U	< 43.8	U
Aroclor-1248	50	10000	< 43.6	U	< 43.1	U	< 43.2	U	< 42.6	U	< 43.4	U	< 43.4	U	< 43.8	U
Aroclor-1254	50	10000	< 43.6	U	< 43.1	U	< 43.2	U	< 42.6	U	< 43.4	U	< 43.4	U	< 43.8	U
Aroclor-1260	50	10000	< 43.6	U	< 43.1	U	< 43.2	U	< 42.6	U	< 43.4	U	< 43.4	U	< 43.8	U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

0300

TABLE 4-4
Pesticides/PCSs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB35						SB36		SB37		SB39				SB46			
			2.0 ft		5.0 ft		8.0 ft		2.0 ft		2.0 ft		2.0 ft		5.0 ft		2.0 ft		5.0 ft	
Aldrin	0.5	27	< 2.72	U	< 2.72	U	< 2.63	U	< 2.68	U	< 2.72	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U
Alpha-BHC	1.4	90	< 2.04	U	< 2.04	U	< 1.97	U	< 2.01	U	< 2.04	U	< 2.01	U	< 2.01	U	< 2.01	U	< 2.01	U
Beta-BHC	47	3200	< 4.07	U	< 4.07	U	< 3.94	U	< 4.02	U	< 4.07	U	< 4.02	U	< 4.02	U	< 4.02	U	< 4.02	U
Delta-BHC	NC	NC	< 6.11	U	< 6.11	U	< 5.91	U	< 6.03	U	< 6.11	U	< 6.03	U	< 6.03	U	< 6.03	U	< 6.03	U
Gamma-BHC(Lindane)	20	440	< 2.72	U	< 2.72	U	< 2.63	U	< 2.68	U	< 2.72	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U
Chlordane	200	1600	< 9.51	U	< 9.51	U	< 9.2	U	< 9.38	U	< 9.51	U	< 9.38	U	< 9.38	U	< 9.38	U	< 9.38	U
4,4'-DDD	35	2400	< 7.47	U	< 7.47	U	< 7.23	U	< 7.37	U	< 7.47	U	< 7.37	U	< 7.37	U	< 7.37	U	< 7.37	U
4,4'-DDE	25	1700	< 2.72	U	< 2.72	U	< 2.63	U	< 2.68	U	< 2.72	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U
4,4'-DDT	25	1700	< 8.15	U	< 8.15	U	< 7.88	U	< 8.04	U	< 8.15	U	< 8.04	U	< 8.04	U	< 8.04	U	< 8.04	U
Dieldrin	0.53	31	< 1.36	U	< 1.36	U	< 1.31	U	< 1.34	U	< 1.36	U	< 1.34	U	< 1.34	U	< 1.34	U	< 1.34	U
Endosulfan I	22000	62000	< 9.51	U	< 9.51	U	< 9.2	U	< 9.38	U	< 9.51	U	< 9.38	U	< 9.38	U	< 9.38	U	< 9.38	U
Endosulfan II	22000	62000	< 2.72	U	< 2.72	U	< 2.63	U	< 2.68	U	< 2.72	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U
Endosulfan Sulfate	NC	NC	< 44.8	U	< 44.8	U	< 43.4	U	< 44.2	U	< 44.8	U	< 44.2	U	< 44.2	U	< 44.2	U	< 44.2	U
Endrin	200	46000	< 4.07	U	< 4.07	U	< 3.94	U	< 4.02	U	< 4.07	U	< 4.02	U	< 4.02	U	< 4.02	U	< 4.02	U
Endrin Aldehyde	NC	NC	< 15.6	U	< 15.6	U	< 15.1	U	< 15.4	U	< 15.6	U	< 15.4	U	< 15.4	U	< 15.4	U	< 15.4	U
Heptachlor	40	93	< 2.04	U	< 2.04	U	< 1.97	U	< 2.01	U	< 2.04	U	< 2.01	U	< 2.01	U	< 2.01	U	< 2.01	U
Heptachlor Epoxide	20	54	< 56.4	U	< 56.4	U	< 54.5	U	< 55.6	U	< 56.4	U	< 55.6	U	< 55.6	U	< 55.6	U	< 55.6	U
Methoxychlor	4000	750000	< 120	U	< 120	U	< 116	U	< 118	U	< 120	U	< 118	U	< 118	U	< 118	U	< 118	U
Toxaphene	300	440	< 163	U	< 163	U	< 158	U	< 161	U	< 163	U	< 161	U	< 161	U	< 161	U	< 161	U
Aroclor-1016	50	10000	< 44.1	U	< 44.1	U	< 42.7	U	< 43.6	U	< 44.1	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1221	50	10000	< 44.1	U	< 44.1	U	< 42.7	U	< 43.6	U	< 44.1	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1232	50	10000	< 44.1	U	< 44.1	U	< 42.7	U	< 43.6	U	< 44.1	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1242	50	10000	< 44.1	U	< 44.1	U	< 42.7	U	< 43.6	U	< 44.1	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1248	50	10000	< 44.1	U	< 44.1	U	< 42.7	U	< 43.6	U	< 44.1	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1254	50	10000	< 44.1	U	< 44.1	U	< 42.7	U	< 43.6	U	< 44.1	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1260	50	10000	< 44.1	U	< 44.1	U	< 42.7	U	< 43.6	U	< 44.1	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

TABLE 4-4
Pesticides/PCSs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB47 2.0 ft	SB47 5.0 ft	SB47 7.0 ft	SB47 2.0 ft	SB47 5.0 ft	SB50 2.0 ft	SB50 5.0 ft	SB50 8.0 ft
Aldrin	0.5	27	< 2.68 U	< 2.68 U	< 2.68 U	< 2.69 U	< 2.67 U	< 2.65 U	< 2.72 U	< 2.64 U
Alpha-BHC	1.4	90	< 2.01 U	< 2.01 U	< 2.01 U	< 2.02 U	< 2 U	< 1.99 U	< 2.04 U	< 1.98 U
Beta-BHC	47	3200	< 4.02 U	< 4.02 U	< 4.02 U	< 4.03 U	< 4.01 U	< 3.98 U	< 4.09 U	< 3.97 U
Delta-BHC	NC	NC	< 6.03 U	< 6.03 U	< 6.03 U	< 6.05 U	< 6.01 U	< 5.97 U	< 6.13 U	< 5.95 U
Gamma-BHC(Lindane)	20	440	< 2.68 U	< 2.68 U	< 2.68 U	< 2.69 U	< 2.67 U	< 2.65 U	< 2.72 U	< 2.64 U
Chlordane	200	1600	< 9.38 U	< 9.38 U	< 9.38 U	< 9.41 U	< 9.35 U	< 9.28 U	< 9.53 U	< 9.25 U
4,4'-DDD	35	2400	< 7.37 U	< 7.37 U	< 7.37 U	< 7.39 U	< 7.35 U	< 7.29 U	< 7.49 U	< 7.27 U
4,4'-DDE	25	1700	< 2.68 U	< 2.68 U	< 2.68 U	< 2.69 U	< 2.67 U	< 2.65 U	< 2.72 U	< 2.64 U
4,4'-DDT	25	1700	< 8.04 U	< 8.04 U	< 8.04 U	< 8.06 U	< 8.02 U	< 7.96 U	< 8.17 U	< 7.93 U
Dieldrin	0.53	31	< 1.34 U	< 1.34 U	< 1.34 U	< 1.34 U	< 1.34 U	< 1.33 U	< 1.36 U	< 1.32 U
Endosulfan I	22000	62000	< 9.38 U	< 9.38 U	< 9.38 U	< 9.41 U	< 9.35 U	< 9.28 U	< 9.53 U	< 9.25 U
Endosulfan II	22000	62000	< 2.68 U	< 2.68 U	< 2.68 U	< 2.69 U	< 2.67 U	< 2.65 U	< 2.72 U	< 2.64 U
Endosulfan Sulfate	NC	NC	< 44.2 U	< 44.2 U	< 44.2 U	< 44.4 U	< 44.1 U	< 43.8 U	< 44.9 U	< 43.6 U
Endrin	200	46000	< 4.02 U	< 4.02 U	< 4.02 U	< 4.03 U	< 4.01 U	< 3.98 U	< 4.09 U	< 3.97 U
Endrin Aldehyde	NC	NC	< 15.4 U	< 15.4 U	< 15.4 U	< 15.5 U	< 15.4 U	< 15.2 U	< 15.7 U	< 15.2 U
Heptachlor	40	93	< 2.01 U	< 2.01 U	< 2.01 U	< 2.02 U	< 2 U	< 1.99 U	< 2.04 U	< 1.98 U
Heptachlor Epoxide	20	54	< 55.6 U	< 55.6 U	< 55.6 U	< 55.8 U	< 55.4 U	< 55 U	< 56.5 U	< 54.9 U
Methoxychlor	4000	750000	< 118 U	< 118 U	< 118 U	< 118 U	< 118 U	< 117 U	< 120 U	< 116 U
Toxaphene	300	440	< 161 U	< 161 U	< 161 U	< 161 U	< 160 U	< 159 U	< 163 U	< 159 U
Aroclor-1016	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.7 U	< 43.4 U	< 43.1 U	< 44.3 U	< 43 U
Aroclor-1221	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.7 U	< 43.4 U	< 43.1 U	< 44.3 U	< 43 U
Aroclor-1232	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.7 U	< 43.4 U	< 43.1 U	< 44.3 U	< 43 U
Aroclor-1242	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.7 U	< 43.4 U	< 43.1 U	< 44.3 U	< 43 U
Aroclor-1248	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.7 U	< 43.4 U	< 43.1 U	< 44.3 U	< 43 U
Aroclor-1254	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.7 U	< 43.4 U	< 43.1 U	< 44.3 U	< 43 U
Aroclor-1260	50	10000	< 43.6 U	< 43.6 U	< 43.6 U	< 43.7 U	< 43.4 U	< 43.1 U	< 44.3 U	< 43 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

03005

TABLE 4-4
Pesticides/PCSs In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

03006

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB55 2.0 ft		SB55 5.0 ft		SB55 7.0 ft		SB58 2.0 ft		SB58 5.0 ft		SB58 6.5 ft	
Aldrin	0.5	27	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U
Alpha-BHC	1.4	90	< 2.01	U	< 2.01	U	< 2.01	U	< 2.01	U	< 2.01	U	< 2.01	U
Beta-BHC	47	3200	< 4.02	U	< 4.02	U	< 4.02	U	< 4.02	U	< 4.02	U	< 4.02	U
Delta-BHC	NC	NC	< 6.03	U	< 6.03	U	< 6.03	U	< 6.03	U	< 6.03	U	< 6.03	U
Gamma-BHC(Lindane)	20	440	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U
Chlordane	200	1600	< 9.38	U	< 9.38	U	< 9.38	U	< 9.38	U	< 9.38	U	< 9.38	U
4,4'-DDD	35	2400	< 7.37	U	< 7.37	U	< 7.37	U	< 7.37	U	< 7.37	U	< 7.37	U
4,4'-DDE	25	1700	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U
4,4'-DDT	25	1700	< 8.04	U	< 8.04	U	< 8.04	U	< 8.04	U	< 8.04	U	< 8.04	U
Dieldrin	0.53	31	< 1.34	U	< 1.34	U	< 1.34	U	< 1.34	U	< 1.34	U	< 1.34	U
Endosulfan I	22000	62000	< 9.38	U	< 9.38	U	< 9.38	U	< 9.38	U	< 9.38	U	< 9.38	U
Endosulfan II	22000	62000	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U	< 2.68	U
Endosulfan Sulfate	NC	NC	< 44.2	U	< 44.2	U	< 44.2	U	< 44.2	U	< 44.2	U	< 44.2	U
Endrin	200	46000	< 4.02	U	< 4.02	U	< 4.02	U	< 4.02	U	< 4.02	U	< 4.02	U
Endrin Aldehyde	NC	NC	< 15.4	U	< 15.4	U	< 15.4	U	< 15.4	U	< 15.4	U	< 15.4	U
Heptachlor	40	93	< 2.01	U	< 2.01	U	< 2.01	U	< 2.01	U	< 2.01	U	< 2.01	U
Heptachlor Epoxide	20	54	< 55.6	U	< 55.6	U	< 55.6	U	< 55.6	U	< 55.6	U	< 55.6	U
Methoxychlor	4000	750000	< 118	U	< 118	U	< 118	U	< 118	U	< 118	U	< 118	U
Toxaphene	300	440	< 161	U	< 161	U	< 161	U	< 161	U	< 161	U	< 161	U
Aroclor-1016	50	10000	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1221	50	10000	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1232	50	10000	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1242	50	10000	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1248	50	10000	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1254	50	10000	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U
Aroclor-1260	50	10000	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U	< 43.6	U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

TABLE 4-5
Herbicides In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB1 2.0 ft	SB1 5.0 ft	SB1 8.0 ft	SB2 2.0 ft	SB5 5.0 ft	SB5 10 ft
2,4-D	7000	2000000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4-DB	24300	863000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4,5-T	18000	170000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,4,5-TP(Silvex)	5000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dalapon	91300	3240000	< 200 U	< 200 U	< 200 U	< 200 U	215	< 200 U
Dicamba	11000	4600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichlorprop	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Dinoseb	700	150000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
MCPA	1520	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U
MCPP	3040	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria were available

U = Not Detected

D = Diluted Sample

Exceedance

TABLE 4-5
Herbicides In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB14 2.0 ft	SB14 5.0 ft	SB14 6.5 ft	SB19 2.0 ft	SB24 2.0 ft	SB24 5.0 ft	SB24 6.0 ft
2,4-D	7000	2000000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4-DB	24300	863000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4,5-T	18000	170000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,4,5-TP(Silvex)	5000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dalapon	91300	3240000	< 200 U	< 200 U	< 200 U	247	< 200 U	< 200 U	< 200 U
Dicamba	11000	4600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichlorprop	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Dinoseb	700	150000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
MCPA	1520	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U
MCPP	3040	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria were available

U = Not Detected

D = Diluted Sample

Exceedance

TABLE 4-5
Herbicides In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB28			SB35		
			2.0 ft	5.0 ft	8.0 ft	2.0 ft	5.0 ft	8.0 ft
2,4-D	7000	2000000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4-DB	24300	863000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4,5-T	18000	170000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,4,5-TP(Silvex)	5000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dalapon	91300	3240000	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U
Dicamba	11000	4600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichlorprop	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Dinoseb	700	150000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
MCPA	1520	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U
MCPP	3040	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria were available

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D = Diluted Sample

Exceedance

TABLE 4-5
Herbicides In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Laredo Air Force Base, Laredo, TX

03010

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB36 2.0 ft	SB37 2.0 ft	SB39 2.0 ft	SB39 5.0 ft	SB46 2.0 ft	SB46 5.0 ft
2,4-D	7000	2000000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4-DB	24300	863000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4,5-T	18000	170000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,4,5-TP(Silvex)	5000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dalapon	91300	3240000	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U
Dicamba	11000	4600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichlorprop	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Dinoseb	700	150000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
MCPA	1520	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U
MCPP	3040	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria were available

U = Not Detected

D = Diluted Sample

Exceedance

TABLE 4-5
Herbicides In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB47			SB49		SB50	
			2.0 ft	5.0 ft	7.0 ft	2.0 ft	5.0 ft	2.0 ft	5.0 ft
2,4-D	7000	2000000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4-DB	24300	863000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4,5-T	18000	170000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,4,5-TP(Silvex)	5000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dalapon	91300	3240000	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U
Dicamba	11000	4600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichlorprop	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Dinoseb	700	150000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
MCPA	1520	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U
MCPP	3040	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria were available

U = Not Detected

D = Diluted Sample

Exceedance

TABLE 4-5
Herbicides In Soils Analytical Results (ug/Kg)
Sanitary Landfill Area, Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SB55				SB58		
			8.0 ft	2.0 ft	5.0 ft	7.0 ft	2.0 ft	5.0 ft	6.5 ft
2,4-D	7000	2000000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4-DB	24300	863000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4,5-T	18000	170000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,4,5-TP(Silvex)	5000	1200000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dalapon	91300	3240000	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U	< 200 U
Dicamba	11000	4600000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichlorprop	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Dinoseb	700	150000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
MCPA	1520	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U
MCPP	3040	10000	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U	< 20000 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria were available

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Exceedance

4.6.5 Total Metals

RCRA Metals

Forty-eight soil samples from 20 locations were analyzed for the eight RCRA metals that include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. The analytical results for the metals analyses are presented in Table 4-6.

Arsenic was detected in all 48 of the soil samples at concentrations ranging from 0.568 mg/kg for the sample collected from SB35 at 2.0 feet depth to 6.44 mg/kg for the sample collected from SB6 at 2.0 feet depth. Only two soil samples, SB5 (5.0 feet) and SB6 (2.0 feet) exceed the TNRCC RRS2 GWP-Res standard of 5.0 mg/kg for arsenic.

Barium was detected in all 48 of the soil samples at concentrations ranging from 4.0 mg/kg for the sample collected from SB28 at 8.0 feet depth to 1000 mg/kg for the sample collected from SB14 at 5.0 feet depth. Only two soil samples, SB39 (2.0 feet) and SB14 (5.0 feet) exceed the TNRCC RRS2 GWP-Res standard of 200 mg/kg for barium.

Cadmium was detected in only one soil sample, collected from SB46 at a depth of 5.0 feet. Cadmium was detected at a concentration of 1.1 mg/kg, which exceeds the TNRCC RRS2 GWP-Res standard of 0.5 mg/kg.

Chromium was detected in all 48 of the soil samples at concentrations ranging from 3.65 mg/kg for the sample collected from SB5 at 10.0 feet depth to 11.5 mg/kg for the sample collected from SB50 at 8.0 feet depth. Only one soil sample, from SB5 (10.0 feet), exceeds the TNRCC RRS2 GWP-Res standard of 10 mg/kg for chromium.

Lead was detected in all 48 of the soil samples at concentrations ranging from 3.87 mg/kg for the sample collected from SB5 at 10.0 feet depth to 1340 mg/kg for the sample collected from SB1 at 2.0 feet depth. The second-highest concentration was 45.2 mg/kg, detected in the sample from SB46 at a depth of 5.0 feet. All of the lead concentrations detected in the soil samples exceed the TNRCC RRS2 GWP-Res standard of 1.50 mg/kg for lead.

Mercury was detected in only two soil samples, collected from SB2 (5.0 feet) and SB49 (5.0 feet). The detected concentrations of mercury were 0.741 mg/kg and 0.687 mg/kg, respectively. Both detected concentrations exceed the TNRCC RRS2 GWP-Res standard of 0.2 mg/kg for mercury.

TABLE 4-6
Metals In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

03014

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB1 2.0 ft	SB1 5.0 ft	SB1 8.0 ft	SB2 2.0 ft	SB2 5.0 ft	SB2 6.0 ft	SB5 2.0 ft	SB5 5.0 ft	SB5 10 ft
Silver	18	460	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Aluminum	3700	150000	6440	6630	4580	7140	4180	4310	7200	5470	5270
Arsenic	5	20	3.63 D	2.27 D	2.19 D	2.44 D	2.71 D	3.96 D	2.77 D	5.18 D	2.97 D
Barium	200	9100	98.8	67.8	18.3	60.2	88.7	133	55.5	61.9	31.3
Beryllium	0.4	46	0.32	0.34	< 0.3 U	0.35	< 0.3 U	< 0.3 U	0.41	0.31	0.3
Calcium	*	*	17200	18700	35100	9430	14400	24000	9800	12400	29600
Cadmium	0.5	120	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Cobalt	220	13000	5.82	2.09	1.77	2.47	1.86	2.17	2.96	2.66	1.75
Chromium	10	53000	8.82	5.16	5.4	5.39	3.84	4.46	5.61	5.93	3.65
Copper	130	10000	6.95	3.95	2.6	4.21	5.65	3.41	4.46	5.58	2.91
Iron	*	*	11800	6790	4790	6800	5780	4680	6700	7180	4780
Mercury	0.2	6.1	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	0.741	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U
Potassium	*	*	1300	1730 D	1130	1780 D	968	1060	2040 D	< 2000 DU	1070
Magnesium	*	*	1590	1590	1650	1990	1250	1340	1620	1480	1650
Manganese	170	16000	214	170	82.4	177	77.3	57.2	102	77.2	45.7
Sodium	*	*	855	451	329	< 2000 DU	721	865	764	476	822
Nickel	73	1900	9.07	3.92	3.67	4.64	3.43	4.06	4.89	4.74	3.4
Lead	1.5	500	1340	6.48	9.4	5.66	6.28	5	6.26	18	3.87
Antimony	0.6	72	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Selenium	5	1300	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tin	2200	93000	2.19	1.16	1.07	1.54	1.55	1.16	1.52	1.69	1.07
Thallium	0.2	20	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vanadium	26	480	16.2	10.1	10.4	10.8	10.6	11.9	12.4	10.7	12.8
Zinc	1100	59000	124	18.5	12.6	18.1	24.5	14.7	18.9	52.2	12
Total Solids			89.3 %	82.5 %	85.5 %	88.3 %	86.6 %	83.4 %	91.3 %	84.2 %	85.4 %

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

* = RRS values not calculated for essential nutrient metals

U = Not Detected

D = Diluted Sample

Exceedance

NR = Not Reported

TABLE 4-6
Metals In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB6		SB8	SB11			SB14		
			2.0 ft	5.0 ft	2.0 ft	2.0 ft	5.0 ft	8.0 ft	2.0 ft	5.0 ft	6.5 ft
Silver	18	460	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Aluminum	3700	150000	4760	6410	7470	8520	8990	7450	8070	4510	6470
Arsenic	5	20	8.44 D	2.62 D	2.59 D	2.16 D	3.67 D	3.24 D	2.36	1.42	1.37
Barium	200	9100	109	57.3	55.8	34.2	96.7	12.1	43	1000	50.3
Beryllium	0.4	46	< 0.3 U	0.36	0.46	0.45	0.37	0.37	0.43	< 0.3 U	0.32
Calcium	•	•	35400	18200	10800	3910	6940	19300	11300	59600 D	61100 D
Cadmium	0.5	120	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Cobalt	220	13000	1.98	2.81	4.3	3.22	2.83	2.42	3.3	2.9	2.9
Chromium	10	53000	3.7	5.29	7.23	6.19	5.42	5.61	7	4	5.5
Copper	130	10000	2.43	3.96	4.8	5.67	3.56	3.17	4.19	2.42	2.51
Iron	•	•	5440	6700	8770	7660	7300	6870	9000	6370	8200
Mercury	0.2	6.1	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U
Potassium	•	•	1300	1630 D	1720 D	2390 D	1690 D	1660 D	1790	915	1290
Magnesium	•	•	1770	1580	2350	2170	1910	2280	2040	1920	2090
Manganese	170	16000	96.3	84	133	148	124	86	114	95.9	88.7
Sodium	•	•	954	159	787	2570 D	2780 D	2320 D	198	278	224
Nickel	73	1900	3.64	4.88	7.61	5.48	4.82	4.2	6.8	4.6	18.6
Lead	1.5	500	4.32	5.98	8.13	8.47	5.63	5	6.76	4.99	5.36
Antimony	0.6	72	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Selenium	5	1300	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 0.5 U
Tin	2200	93000	1.03	1.32	1.52	1.51	1.52	1.24	1.5	< 1 U	1
Thallium	0.2	20	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vanadium	26	480	12.2	12.3	14.6	10.2	15.7	12.7	14	15.2	14.7
Zinc	1100	59000	12.9	20.2	30.9	25.7	18.6	17.3	26.7	16.1	20.6
Total Solids			92.8 %	83.3 %	82 %	85.1 %	85 %	84.8 %	68.2 %	86.6 %	85.2 %

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

• = RRS values not calculated for essential nutrient metals

U = Not Detected

D = Diluted Sample

Exceedance

NR = Not Reported

03015

TOL/Table 4-6 Soil Metals results.xlsSheet1

TABLE 4-6
Metals In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

0 3016

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB19 2.0 ft		SB24 2.0 ft		SB24 5.0 ft		SB24 6.0 ft		SB28 2.0 ft		SB28 5.0 ft		SB28 8.0 ft	
Silver	18	460	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Aluminum	3700	150000	8340		7420		8490		5920		6400		4020		2940	
Arsenic	5	20	2.65	D	2.85		2.7		2.83		2.27		1.25		1	
Barium	200	9100	65.8		79.6		96.4		61.4		98.3		4.6		4	
Beryllium	0.4	46	0.5		0.42		0.37		< 0.3	U	0.47		0.33		< 0.3	U
Calcium	*	*	8370		15600		20000		34300	D	22700		60600	D	73300	D
Cadmium	0.5	120	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Cobalt	220	13000	4.27		4		3.4		3.2		7.5		4.4		1.9	
Chromium	10	53000	8.01		7.6		7.8		5.3		6.3		3.9		4.4	
Copper	130	10000	4.37		6.93		4.92		3.67		2.37		1.59		1.34	
Iron	*	*	9640		9920		8670		7060		13700	D	8420		14600	D
Mercury	0.2	6.1	< 0.12	U	< 0.12	U	< 0.12	U	< 0.12	U	< 0.12	U	< 0.12	U	< 0.12	U
Potassium	*	*	1810	D	1760		1560		1250		1080		695		427	
Magnesium	*	*	2200		2140		3620		2350		2330		1470		832	
Manganese	170	16000	120		167		117		102		113		45.2		10.3	
Sodium	*	*	957		437		3610	D	4340	D	< 2500	DU	< 2500	DU	< 2500	DU
Nickel	73	1900	7.47		7.4		7.1		6.4		8.6		5.1		3.4	
Lead	1.5	500	6.93		25.2		6		5.15		6.87		5.93		4.6	
Antimony	0.6	72	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Selenium	5	1300	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Tin	2200	93000	1.63		2.2		1.4		1.3		1.3		1.2		1.1	
Thallium	0.2	20	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
Vanadium	26	480	16.5		13.1		16.1		10.7		11.4		6.7		7.5	
Zinc	1100	59000	29.7		88.8		29.6		22.9		35.6		21.1		25.9	
Total Solids			85.2	%	89.1	%	80	%	81.8	%	84.2	%	82	%	82.6	%

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

* = RRS values not calculated for essential nutrient metals

U = Not Detected

D = Diluted Sample

Exceedance

NR = Not Reported

TABLE 4-6
Metals In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB35 2.0 ft	SB35 5.0 ft	SB35 8.0 ft	SB36 2.0 ft	SB37 2.0 ft	SB39 2.0 ft	SB39 5.0 ft	SB46 2.0 ft	SB46 5.0 ft
Silver	18	480	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Aluminum	3700	150000	4120	4930	5750	7230	5050	4320	6040	7310	6490
Arsenic	5	20	0.568	1.71	2.26	2.83 D	1.93	2.17 D	2.04 D	3.66 D	3.69 D
Barium	200	9100	55.4	58.5	7.6	97.3	24.1	236	87.6	43	55.4
Beryllium	0.4	46	< 0.3 U	< 0.3 U	0.51	0.42	0.38	0.37	0.58	0.43	0.36
Calcium	*	*	2270	21700	5050	35100	23000	27100	1790	28600	31300
Cadmium	0.5	120	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	1.1
Cobalt	220	13000	4.2	3.8	10.3	4.15	3.3	4.75	3.19	6.59	5.09
Chromium	10	53000	6.8	7.8	6.6	7.74	6.6	6.38	8.61	7.52	9.69
Copper	130	10000	< 1 U	< 1 U	2.14	2.3	1.4	1.06	1.62	3.62	14.6
Iron	*	*	9590	12300 D	14700 D	11700	12700 D	11400	14600	15300	17400
Mercury	0.2	6.1	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U
Potassium	*	*	912	1100	1000	1800	1450	1540	1640	1510	1360
Magnesium	*	*	1390	1630	1920	2030	1760	1250	1830	2040	1640
Manganese	170	16000	30.7	168	100	105	54.3	54	18.4	87.3	126
Sodium	*	*	106	232	917	< 100 U	259	140	806	1500	878
Nickel	73	1900	6	7.7	6.4	6.45	6	5.49	7.49	8.06	15
Lead	1.5	500	4.08	4.24	5.19	4.52	5.05	4.02	5.38	8.89	45.2
Antimony	0.6	72	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Selenium	5	1300	< 0.5 U	< 0.5 U	< 0.5 U	< 1 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U
Tin	2200	93000	1.4	1.2	1.5	1.4	1.3	1.35	1.58	1.74	11.6
Thallium	0.2	20	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vanadium	26	480	10.6	13.6	7.7	10.4	8.7	3.68	4.2	6.85	3.77
Zinc	1100	59000	38.6	34.1	49.2	28.7	26.8	24.8	49.4	40	108
Total Solids			82.8 %	81.5 %	80.5 %	86.1 %	90.3 %	84.2 %	85.3 %	81.4 %	78.7 %

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

* = RRS values not calculated for essential nutrient metals

U = Not Detected

D = Diluted Sample

Exceedance

NR = Not Reported

0301

TABLE 4-6
Metals In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

0301B

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB47 2.0 ft	SB47 5.0 ft	SB47 7.0 ft	SB49 2.0 ft	SB49 5.0 ft	SB50 2.0 ft	SB50 5.0 ft	SB50 8.0 ft
Silver	18	460	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Aluminum	3700	150000	8410	6770	6810	9520	6770	8660	7770	6850
Arsenic	5	20	3.36 D	3.48 D	4.22 D	2.19	2.97	2.4	1.89	1.84
Barium	200	9100	29.8	8.31	6.2	55.3	35.4	89.6	58.5	46.7
Beryllium	0.4	46	0.59	0.51	0.62	0.51	0.38	0.5	0.4	0.4
Calcium	*	*	27200	27000	1530	14500	16000	13300	11300	8820
Cadmium	0.5	120	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Cobalt	220	13000	6	18.8	3.3	3.7	3.5	4.6	4.2	4.2
Chromium	10	53000	8.67	7.74	9.38	7.8	5.9	7.9	7.1	11.5
Copper	130	10000	3.84	2.53	4.15	4.45	4.03	3.92	3.66	3.48
Iron	*	*	14700	21100	22000	13600 D	8080	10300 D	9420	9700
Mercury	0.2	6.1	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	0.687	< 0.12 U	< 0.12 U	< 0.12 U
Potassium	*	*	1690	1350	1490	1680	1200	1680	1450	1340
Magnesium	*	*	2770	2340	2350	2530	1750	2170	1990	1900
Manganese	170	16000	97.1	75.3	14.6	122	133	121	144	138
Sodium	*	*	172	556	1830	372	1070	242	1200	2710 D
Nickel	73	1900	8.66	13	10.4	7.2	6.2	7.3	6.4	6.7
Lead	1.5	500	6.68	6.02	6.84	7.43	6.19	7.62	6.45	7.04
Antimony	0.6	72	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Selenium	5	1300	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tin	2200	93000	1.53	1.56	1.53	1.6	1.7	1.6	1.5	1.5
Thallium	0.2	20	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vanadium	26	480	10.5	4.57	4.47	14.6	12.1	16.6	14.6	13.3
Zinc	1100	59000	36.4	72.9	69.4	32.1	28.5	32.9	25.4	NR
Total Solids			88.1 %	85.9 %	84.8 %	85.2 %	84.6 %	87.2 %	84.7 %	83.9 %

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

* = RRS values not calculated for essential nutrient metals

U = Not Detected

D = Diluted Sample

Exceedance

NR = Not Reported

TABLE 4-6
Metals In Soils Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SB55						SB58					
			2.0 ft		5.0 ft		7.0 ft		2.0 ft		5.0 ft		6.5 ft	
Silver	18	460	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Aluminum	3700	150000	6590		6850		7510		11700		8180		8830	
Arsenic	5	20	2.22	D	3.6	D	2.24	D	3.97	D	2.86	D	3.3	D
Barium	200	9100	37.7		23.1		42.7		50.5		65.4		170	
Beryllium	0.4	46	0.55		0.55		0.55		0.87		0.49		0.64	
Calcium	*	*	9040		15300		18000		24000		31900		22900	
Cadmium	0.5	120	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Cobalt	220	13000	4.28		4.35		4.53		5.72		3.86		4.33	
Chromium	10	53000	8.38		8.83		8.75		9.4		7.22		7.95	
Copper	130	10000	3.1		3.21		2.66		4.84		2.7		3.7	
Iron	*	*	9600		8700		10000		15200		10100		16500	
Mercury	0.2	6.1	< 0.12	U	< 0.12	U	< 0.12	U	< 0.12	U	< 0.12	U	< 0.12	U
Potassium	*	*	1200		1240		1320		2140		1370		1370	
Magnesium	*	*	1540		1740		1660		3070		2570		2650	
Manganese	170	16000	119		139		126		251		117		141	
Sodium	*	*	110		868		2780		1390		2380		2750	
Nickel	73	1900	6.51		6.57		6.73		8.88		5.53		6.91	
Lead	1.5	500	5.34		4.8		4.84		7		4.99		6.64	
Antimony	0.6	72	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Selenium	5	1300	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
Tin	2200	93000	1.5		1.95		1.53		1.69		1.48		1.59	
Thallium	0.2	20	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
Vanadium	26	480	9.03		10.6		10.1		16.5		10.7		13.5	
Zinc	1100	59000	27.2		24		23.4		37.1		21.9		25.7	
Total Solids			86.1	%	84.1	%	83.5	%	86.1	%	85.8	%	85	%

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

* = RRS values not calculated for essential nutrient metals

U = Not Detected

D = Diluted Sample

Exceedance

NR = Not Reported

Neither selenium nor silver were detected in any of the 48 soil samples.

Except for lead, the occurrence of the RCRA metals constituents at concentrations exceeding the applicable TNRCC RRS2 GWP-Res standards is limited. All lead detections exceed the GWP-Res for lead, but the concentrations are generally consistent across the site. Only one sample, SB1 (2.0 feet depth), significantly exceeds the GWP-Res standard for lead.

Other Metals

Metals analyzed in addition to the eight RCRA metals discussed above include aluminum, antimony, beryllium, calcium, cobalt, copper, iron, magnesium, manganese, nickel, potassium, sodium, thallium, tin, vanadium, and zinc. These metals were analyzed using EPA Method 6010. The analytical results for the metals analyses are presented in Table 4-6.

Aluminum was detected in all 48 of the soil samples. The detected concentrations range from 2,940 mg/kg for the sample collected from SB28 at 8.0 feet depth to 11,700 mg/kg for the sample collected from SB58 at 2.0 feet depth. Except for the sample collected from SB28 (8.0 feet), all of the detected aluminum concentrations exceed the TNRCC RRS2 GWP-Res standard of 3,700 for aluminum.

Antimony was not detected in any of the soil samples. The detection limit was 5 mg/kg.

Beryllium was detected in 39 of the 48 soil samples. Detected concentrations of beryllium range from 0.30 mg/kg for the sample collected from SB5 at 10 feet depth to 0.64 mg/kg for the sample collected from SB58 at 6.5 feet depth. Of the 39 soil samples for which beryllium was detected, 21 of the samples contain beryllium at concentrations exceeding the TNRCC RRS2 GWP-Res standard of 0.4 mg/kg.

Cobalt was detected in all 48 soil samples. Detected concentrations of cobalt range from 1.75 mg/kg for the sample collected from SB5 at a depth of 10.0 feet to 18.8 mg/kg for the sample collected from SB47 at 5.0 feet depth. All of the detected cobalt concentrations are below the TNRCC RRS2 GWP-Res standard of 220 mg/kg.

Copper was detected in 46 of the 48 soil samples. Detected concentrations of copper range from 1.06 mg/kg for the sample collected from SB39 at a depth of 2.0 feet to 14.6 mg/kg for the sample collected from SB46 at 5.0 feet depth. All of the detected copper concentrations are below the TNRCC RRS2 GWP-Res standard of 130 mg/kg.

Manganese was detected in all 48 soil samples. Detected concentrations of manganese range from 10.3 mg/kg for the sample collected from SB28 at a depth of 8.0 feet to 251 mg/kg for the sample collected from SB58 at 2.0 feet depth. Only three of the soil samples, SB1 (2.0 feet), SB2 (2.0 feet) and SB58 (2.0 feet) exceed the TNRCC RRS2 GWP-Res standard of 170 mg/kg.

Nickel was detected in all 48 soil samples. Detected concentrations of nickel range from 3.40 mg/kg for the sample collected from SB5 at a depth of 10.0 feet and SB28 at 8.0 feet depth to 18.6 mg/kg for the sample collected from SB14 at 6.5 feet depth. All of the detected nickel concentrations are below the TNRCC RRS2 GWP-Res standard of 73 mg/kg.

Thallium was not detected in any of the 48 soil samples. The detection limit was 1.0 mg/kg.

Tin was detected in 46 of the 48 soil samples. Detected concentrations of tin range from 1.03 mg/kg for the sample collected from SB6 at a depth of 2.0 feet to 11.6 mg/kg for the sample collected from SB46 at 5.0 feet depth. All of the detected tin concentrations are below the TNRCC RRS2 GWP-Res standard of 2200 mg/kg.

Vanadium was detected in all 48 soil samples. Detected concentrations of vanadium range from 3.77 mg/kg for the sample collected from SB46 at a depth of 5.0 feet to 16.8 mg/kg for the sample collected from SB19 at 2.0 feet depth. All of the detected vanadium concentrations are below the TNRCC RRS2 GWP-Res standard of 26 mg/kg.

Forty-seven soil samples were analyzed for zinc. Zinc was detected in all 47 soil samples. Detected concentrations of zinc range from 12.0 mg/kg for the sample collected from SB5 at a depth of 10.0 feet to 124 mg/kg for the sample collected from SB1 at 2.0 feet depth. All of the detected zinc concentrations are below the TNRCC RRS2 GWP-Res standard of 1,100 mg/kg.

No RRS2 values were calculated for calcium, iron, magnesium, potassium, and sodium, since these metals are essential nutrients. Calcium was detected in all 48 of the soil samples. The detected concentrations of calcium range from 1,530 mg/kg for the sample collected form SB47 at a depth of 7.0 feet to 73,300 mg/kg for the sample collected from SB28 at a depth of 8.0 feet. Iron was detected in all 48 soil samples. Detected concentrations of iron range from 4,660 mg/kg for the sample collected from SB2 at a depth of 6.0 feet to

22,000 mg/kg for the sample collected from SB47 at 7.0 feet depth. Magnesium was detected in all 48 soil samples. Detected concentrations of magnesium range from 832 mg/kg for the sample collected from SB28 at a depth of 8.0 feet to 3,620 mg/kg for the sample collected from SB24 at 5.0 feet depth. Potassium was detected in 47 of the 48 soil samples. Detected concentrations of potassium range from 427 mg/kg for the sample collected from SB28 at a depth of 8.0 feet to 2,390 mg/kg for the sample collected from SB11 at 2.0 feet depth. Sodium was detected in 44 of the 48 soil samples. Detected concentrations of sodium range from 106 mg/kg for the sample collected from SB35 at a depth of 2.0 feet to 4,340 mg/kg for the sample collected from SB24 at 6.0 feet depth.

Most of the metals constituents were detected in most of the soil samples. However, only aluminum, beryllium, and manganese had concentrations exceeding the respective TNRCC GWP-Res standards. It is noted that most of these exceedances are generally slight, within the same order of magnitude as the respective GWP-Res standards, and that the concentrations are fairly consistent across the site. Although no background study for metals within site soils has been conducted at the site, the detected concentrations may reflect naturally occurring concentrations.

4.7 Groundwater Analytical Results

Groundwater samples collected during the investigation were analyzed in the field for VOCs in addition to the laboratory analysis for the VOCs, SVOCs, pesticides, PCBs, herbicides, and metals. Due to inadequate yields from the temporary monitor wells, insufficient volumes of groundwater were available to perform all analyses at all sampling locations. The analytical results of the groundwater sampling are compared to the applicable TNRCC RRS2 GW-Res standards. Analytical data and the associated Data Validation Report are included under separate cover as Appendix F.

4.7.1 Field VOC Analytical Results

Fifty-nine groundwater samples were analyzed for VOCs in the field, using a Viking portable GC/MS. The detection limit of the GC/MS was set at 60 ppb, using calibration standards of benzene, toluene, ethyl benzene, m-xylene, trichloroethene and trans-1, 2-dichloroethene. None of the field-analyzed groundwater samples contained concentrations

of volatile organic compounds above 60 ppb. These results are in excellent agreement with the laboratory results. The results are presented in Table 4-7.

4.7.2 Laboratory VOC Analytical Results

Sixty groundwater samples were analyzed at the contract laboratory for VOCs using EPA Method 8260. Six of the 60 groundwater samples contained detectable concentrations of VOCs. The VOCs detected in the groundwater samples include chlorobenzene, 1,4-dichlorobenzene, cis-1,2-dichloroethene (cis-1,2-DCE), ethylbenzene, and m- and p-xylene. The VOC analytical results for the groundwater samples are listed in Table 4-8.

Chlorobenzene was detected in two groundwater samples, W3 and W4, at concentrations of 9.18 micrograms per liter (µg/L) and 18.2 µg/L, respectively. Neither detected concentration exceeds the TNRCC RRS2 GW-Res standard of 100 µg/L.

1,4-Dichlorobenzene was detected in five groundwater samples, W3, W4, W5, W6, and W10. The detected concentrations range from 9.41 µg/L for the sample collected from W6 to 20.6 µg/L for the sample collected from W4. None of the detected concentrations of 1,4-dichlorobenzene exceed the TNRCC RRS2 GW-Res standard of 75 µg/L.

Cis-1,2-DCE was detected in only one groundwater sample, from location W5. Cis-1,2-DCE was detected at a concentration of 21.3 µg/L. The detected concentration is below the TNRCC RRS2 GW-Res standard of 70 µg/L.

Ethylbenzene was detected in only one groundwater sample, from location W6. Ethylbenzene was detected at a concentration of 5.34 µg/L. The detected concentration is below the TNRCC RRS2 GW-Res standard of 700 µg/L.

The m- and p- isomers of xylene were detected in only one groundwater sample, from location W2. The two isomers were detected at a total concentration of 10.7 µg/L. The detected total concentration for m- and p-xylene is below the TNRCC RRS2 GW-Res standards of 10000 µg/L for each isomer.

The analytical results for all five of the groundwater samples, W50U, W51U, W54U, W55U, and W57U, that were collected for VOC analysis using a peristaltic pump were the same as for the samples collected utilizing the bailer. No VOCs were detected for any of the five

TABLE 4-7
VOCs In Groundwater Field Analytical Results, ppb
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Sample ID	Date Analyzed	trans DCE	Benzene	TCE	Toluene	Ethyl Benzene	m-Xylene
W1	6/27/97	<60	<60	<60	<60	<60	<60
W2	6/28/97	<60	<60	<60	<60	<60	<60
W3	6/28/97	<60	<60	<60	<60	<60	<60
W4	6/28/97	<60	<60	<60	<60	<60	<60
W5	6/28/97	<60	<60	<60	<60	<60	<60
W6	6/28/97	<60	<60	<60	<60	<60	<60
W7	6/28/97	<60	<60	<60	<60	<60	<60
W8	6/30/97	<60	<60	<60	<60	<60	<60
W9	7/1/97	<60	<60	<60	<60	<60	<60
W10	7/1/97	<60	<60	<60	<60	<60	<60
W11	7/1/97	<60	<60	<60	<60	<60	<60
W12	7/1/97	<60	<60	<60	<60	<60	<60
W13	7/1/97	<60	<60	<60	<60	<60	<60
W14	6/26/97	<60	<60	<60	<60	<60	<60
W15	6/30/97	<60	<60	<60	<60	<60	<60
W16	7/1/97	<60	<60	<60	<60	<60	<60
W17	7/1/97	<60	<60	<60	<60	<60	<60
W18	6/30/97	<60	<60	<60	<60	<60	<60
W19	6/30/97	<60	<60	<60	<60	<60	<60
W20	7/1/97	<60	<60	<60	<60	<60	<60
W21	6/30/97	<60	<60	<60	<60	<60	<60
W22	6/30/97	<60	<60	<60	<60	<60	<60
W23	7/1/97	<60	<60	<60	<60	<60	<60
W24	7/1/97	<60	<60	<60	<60	<60	<60
W25	6/30/97	<60	<60	<60	<60	<60	<60
W26	6/30/97	<60	<60	<60	<60	<60	<60
W27	6/30/97	<60	<60	<60	<60	<60	<60
W28	7/1/97	<60	<60	<60	<60	<60	<60
W29	7/10/97	<60	<60	<60	<60	<60	<60

TABLE 4-7
VOCs In Groundwater Field Analytical Results, ppb
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Sample ID	Date Analyzed	trans DCE	Benzene	TCE	Toluene	Ethyl Benzene	m-Xylene
W30	6/26/97	<60	<60	<60	<60	<60	<60
W31	6/30/97	<60	<60	<60	<60	<60	<60
W32	6/30/97	<60	<60	<60	<60	<60	<60
W34	6/26/97	<60	<60	<60	<60	<60	<60
W35	6/26/97	<60	<60	<60	<60	<60	<60
W36	7/10/97	<60	<60	<60	<60	<60	<60
W37	6/26/97	<60	<60	<60	<60	<60	<60
W38	7/10/97	<60	<60	<60	<60	<60	<60
W39	7/10/97	<60	<60	<60	<60	<60	<60
W42	7/10/97	<60	<60	<60	<60	<60	<60
W43	7/10/97	<60	<60	<60	<60	<60	<60
W45	7/10/97	<60	<60	<60	<60	<60	<60
W46	7/10/97	<60	<60	<60	<60	<60	<60
W47	7/10/97	<60	<60	<60	<60	<60	<60
W48	6/26/97	<60	<60	<60	<60	<60	<60
W49	7/7/97	<60	<60	<60	<60	<60	<60
W50	7/9/97	<60	<60	<60	<60	<60	<60
W51	7/9/97	<60	<60	<60	<60	<60	<60
W52	7/9/97	<60	<60	<60	<60	<60	<60
W53	7/9/97	<60	<60	<60	<60	<60	<60
W54	7/9/97	<60	<60	<60	<60	<60	<60
W55	7/9/97	<60	<60	<60	<60	<60	<60
W56	7/9/97	<60	<60	<60	<60	<60	<60
W57	7/9/97	<60	<60	<60	<60	<60	<60
W58	7/9/97	<60	<60	<60	<60	<60	<60
W59	7/7/97	<60	<60	<60	<60	<60	<60

ppb = parts per billion (approximately µg/L)

TABLE 4-8
VOCs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW Res (ug/L)	W1		W2		W3		W4		W5		W6		W7	
Acetone	3700	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U
Acrylonitrile	0.16	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Benzene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromobenzene	608	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromochloromethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromodichloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromoform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon disulfide	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon tetrachloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chlorobenzene	100	< 5	U	< 5	U	**9.18**		**18.2**		< 5	U	< 5	U	< 5	U
Chloroethane	15000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chlorotoluene	73	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Chlorotoluene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chloroethylvinyl ether	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U
Dibromochloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dibromo-3-chloropropane	0.2	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U
1,2-Dibromoethane	0.05	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichlorobenzene	600	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichlorobenzene	9.57	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,4-Dichlorobenzene	75	< 5	U	< 5	U	**19.6**		**20.6**		**15.3**		**9.41**		< 5	U
trans-1,4-Dichloro-2-butene	NC	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
1,1-Dichloroethane	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloroethene	7	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,2-Dichloroethene	70	< 5	U	< 5	U	< 5	U	< 5	U	**21.3**		< 5	U	< 5	U
trans-1,2-Dichloroethene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloropropane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2,2-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloropropene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Ethylbenzene	700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	**5.34**		< 5	U
2-Hexanone	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Bromomethane	51	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloromethane	66	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Dibromomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Butanone	22000	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Iodomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Methylene chloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Methyl-2-pentanone	2900	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Styrene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1,2-Tetrachloroethane	33	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2,2-Tetrachloroethane	4.3	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Tetrachloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Toluene	1000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichlorobenzene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trichlorobenzene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1-Trichloroethane	200	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2-Trichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichlorofluoromethane	11000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichloropropane	0.012	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3,5-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Vinyl acetate	37000	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Vinyl chloride	2	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U
m,p-Xylene	10000	< 5	U	**10.7**		< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
o-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

TABLE 4-8
VOCs in Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW Res (ug/L)	W8		W9		W10		W11		W12		W13		W14	
Acetone	3700	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U
Acrylonitrile	0.16	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Benzene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromobenzene	608	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromochloromethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromodichloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromoform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon disulfide	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon tetrachloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chlorobenzene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroethane	15000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chlorotoluene	73	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Chlorotoluene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chloroethylvinyl ether	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U
Dibromochloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dibromo-3-chloropropane	0.2	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U
1,2-Dibromoethane	0.05	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichlorobenzene	600	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichlorobenzene	9.57	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,4-Dichlorobenzene	75	< 5	U	< 5	U	10.0		< 5	U	< 5	U	< 5	U	< 5	U
trans-1,4-Dichloro-2-butene	NC	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
1,1-Dichloroethane	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloroethene	7	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,2-Dichloroethene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,2-Dichloroethene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloropropane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2,2-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloropropene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Ethylbenzene	700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Hexanone	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Bromomethane	51	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloromethane	66	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Dibromomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Butanone	22000	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Iodomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Methylene chloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Methyl-2-pentanone	2900	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Styrene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1,2-Tetrachloroethane	33	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2,2-Tetrachloroethane	4.3	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Tetrachloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Toluene	1000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichlorobenzene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trichlorobenzene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1-Trichloroethane	200	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2-Trichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichlorofluoromethane	11000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichloropropane	0.012	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3,5-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Vinyl acetate	37000	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Vinyl chloride	2	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U
m,p-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
o-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

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U = Not Detected

Exceedance

03027

TABLE 4-8
VOCs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW Res (ug/L)	W15		W16		W17		W18		W19		W20		W21	
Acetone	3700	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U
Acrylonitrile	0.16	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Benzene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromobenzene	608	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromochloromethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromodichloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromoform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon disulfide	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon tetrachloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chlorobenzene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroethane	15000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chlorotoluene	73	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Chlorotoluene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chloroethylvinyl ether	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U
Dibromochloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dibromo-3-chloropropane	0.2	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U
1,2-Dibromoethane	0.05	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichlorobenzene	600	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichlorobenzene	9.57	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,4-Dichlorobenzene	75	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,4-Dichloro-2-butene	NC	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
1,1-Dichloroethane	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloroethene	7	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,2-Dichloroethene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,2-Dichloroethene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloropropane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2,2-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloropropene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Ethylbenzene	700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Hexanone	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Bromomethane	51	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloromethane	66	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Dibromomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Butanone	22000	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Iodomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Methylene chloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Methyl-2-pentanone	2900	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Styrene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1,2-Tetrachloroethane	33	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2,2-Tetrachloroethane	4.3	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Tetrachloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Toluene	1000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichlorobenzene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trichlorobenzene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1-Trichloroethane	200	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2-Trichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichlorofluoromethane	11000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichloropropane	0.012	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3,5-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Vinyl acetate	37000	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Vinyl chloride	2	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U
m,p-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
o-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

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Exceedance

TABLE 4-8
VOCs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW Res (ug/L)	W22		W23		W24		W25		W26		W27		W28	
Acetone	3700	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U
Acrylonitrile	0.16	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Benzene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromobenzene	608	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromochloromethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromodichloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromoform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon disulfide	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon tetrachloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chlorobenzene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroethane	15000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chlorotoluene	73	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Chlorotoluene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chloroethylvinyl ether	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U
Dibromochloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dibromo-3-chloropropane	0.2	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U
1,2-Dibromoethane	0.05	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichlorobenzene	600	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichlorobenzene	9.57	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,4-Dichlorobenzene	75	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,4-Dichloro-2-butene	NC	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
1,1-Dichloroethane	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloroethene	7	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,2-Dichloroethene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,2-Dichloroethene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloropropane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2,2-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloropropene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Ethylbenzene	700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Hexanone	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Bromomethane	51	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloromethane	66	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Dibromomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Butanone	22000	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Iodomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Methylene chloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Methyl-2-pentanone	2900	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Styrene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1,2-Tetrachloroethane	33	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2,2-Tetrachloroethane	4.3	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Tetrachloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Toluene	1000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichlorobenzene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trichlorobenzene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1-Trichloroethane	200	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2-Trichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichlorofluoromethane	11000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichloropropane	0.012	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3,5-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Vinyl acetate	37000	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Vinyl chloride	2	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U
m,p-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
o-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

TABLE 4-8
VOCs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW Res (ug/L)	W29	W30	W31	W32	W34	W35	W36
Acetone	3700	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Acrylonitrile	0.16	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Benzene	5	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromobenzene	608	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromochloromethane	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromodichloromethane	100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Bromoform	100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon disulfide	3700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	5	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chlorotoluene	73	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Chlorotoluene	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Chloroethylvinyl ether	NC	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Dibromochloromethane	100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromo-3-chloropropane	0.2	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
1,2-Dibromoethane	0.05	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichlorobenzene	600	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichlorobenzene	9.57	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,4-Dichlorobenzene	75	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,4-Dichloro-2-butene	NC	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
1,1-Dichloroethane	3700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloroethane	5	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloroethene	7	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	70	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,2-Dichloroethene	100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	5	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,2-Dichloropropane	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloropropene	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichlorppropane	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,3-Dichloropropene	0.473	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,3-Dichloropropene	0.473	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethylbenzene	700	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Hexanone	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Bromomethane	51	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloromethane	66	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dibromomethane	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	22000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Iodomethane	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Methylene chloride	5	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	2900	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Styrene	100	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1,2-Tetrachloroethane	33	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2,2-Tetrachloroethane	4.3	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Tetrachloroethene	5	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Toluene	1000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichlorobenzene	NC	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trichlorobenzene	70	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	200	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2-Trichloroethane	5	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichloroethene	5	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Trichlorofluoromethane	11000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	0.012	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,3,5-Trimethylbenzene	1520	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	1520	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Vinyl acetate	37000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Vinyl chloride	2	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
m,p-Xylene	10000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
o-Xylene	10000	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

TABLE 4-8
VOCs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW Res (ug/L)	W37		W38		W39		W42		W43		W45		W46	
Acetone	3700	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U
Acrylonitrile	0.16	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Benzene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromobenzene	608	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromochloromethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromodichloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromoform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon disulfide	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon tetrachloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chlorobenzene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroethane	15000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chlorotoluene	73	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Chlorotoluene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chloroethylvinyl ether	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U
Dibromochloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dibromo-3-chloropropane	0.2	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U
1,2-Dibromoethane	0.05	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichlorobenzene	600	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichlorobenzene	9.57	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,4-Dichlorobenzene	75	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,4-Dichloro-2-butene	NC	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
1,1-Dichloroethane	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloroethene	7	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,2-Dichloroethene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,2-Dichloroethene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloropropane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2,2-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloropropene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Ethylbenzene	700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Hexanone	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Bromomethane	51	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloromethane	66	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Dibromomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Butanone	22000	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Iodomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Methylene chloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Methyl-2-pentanone	2900	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Styrene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1,2-Tetrachloroethane	33	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2,2-Tetrachloroethane	4.3	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Tetrachloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Toluene	1000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichlorobenzene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trichlorobenzene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1-Trichloroethane	200	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2-Trichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichlorofluoromethane	11000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichloropropane	0.012	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3,5-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Vinyl acetate	37000	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Vinyl chloride	2	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U
m,p-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
o-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No 2 Media-Specific Concentrations for groundwater in a residential land use area

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U = Not Detected

Exceedance

03031

TABLE 4-8
VOCs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW Res (ug/L)	W47		W48		W49		W50		W50U		W51		W51U	
Acetone	3700	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U
Acrylonitrile	0.16	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Benzene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromobenzene	608	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromochloromethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromodichloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromoform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon disulfide	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon tetrachloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chlorobenzene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroethane	15000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chlorotoluene	73	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Chlorotoluene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chloroethylvinyl ether	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U
Dibromochloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dibromo-3-chloropropane	0.2	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U
1,2-Dibromoethane	0.05	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichlorobenzene	600	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichlorobenzene	9.57	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,4-Dichlorobenzene	75	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,4-Dichloro-2-butene	NC	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
1,1-Dichloroethane	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloroethene	7	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,2-Dichloroethene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,2-Dichloroethene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloropropane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2,2-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloropropene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Ethylbenzene	700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Hexanone	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Bromomethane	51	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloromethane	86	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Dibromomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Butanone	22000	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Iodomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Methylene chloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Methyl-2-pentanone	2900	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Styrene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1,2-Tetrachloroethane	33	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2,2-Tetrachloroethane	4.3	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Tetrachloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Toluene	1000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichlorobenzene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trichlorobenzene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1-Trichloroethane	200	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2-Trichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichlorofluoromethane	11000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichloropropane	0.012	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3,5-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Vinyl acetate	37000	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Vinyl chloride	2	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U
m,p-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
o-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

TABLE 4-8
VOCs in Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW Res (ug/L)	W52		W53		W54		W54U		W55		W55U		W56	
Acetone	3700	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U
Acrylonitrile	0.16	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Benzene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromobenzene	608	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromochloromethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromodichloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Bromoform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon disulfide	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Carbon tetrachloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chlorobenzene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroethane	15000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloroform	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chlorotoluene	73	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Chlorotoluene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Chloroethylvinyl ether	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U
Dibromochloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dibromo-3-chloropropane	0.2	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U	< 25	U
1,2-Dibromoethane	0.05	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichlorobenzene	600	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichlorobenzene	9.57	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,4-Dichlorobenzene	75	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,4-Dichloro-2-butene	NC	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
1,1-Dichloroethane	3700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloroethene	7	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,2-Dichloroethene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,2-Dichloroethene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloropropane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2,2-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloropropene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Ethylbenzene	700	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Hexanone	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Bromomethane	51	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Chloromethane	66	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Dibromomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
2-Butanone	22000	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Iodomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Methylene chloride	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
4-Methyl-2-pentanone	2900	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
Styrene	100	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1,2-Tetrachloroethane	33	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2,2-Tetrachloroethane	4.3	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Tetrachloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Toluene	1000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichlorobenzene	NC	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trichlorobenzene	70	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1-Trichloroethane	200	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2-Trichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Trichlorofluoromethane	11000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichloropropane	0.012	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,3,5-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
Vinyl acetate	37000	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U
Vinyl chloride	2	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U	< 2	U
m,p-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U
o-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U	< 5	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

03033

TABLE 4-8
VOCs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW Res (ug/L)	W57		W57U		W58		W59	
Acetone	3700	< 20	U	< 20	U	< 20	U	< 20	U
Acrylonitrile	0.16	< 5	U	< 5	U	< 5	U	< 5	U
Benzene	5	< 5	U	< 5	U	< 5	U	< 5	U
Bromobenzene	608	< 5	U	< 5	U	< 5	U	< 5	U
Bromochloromethane	NC	< 5	U	< 5	U	< 5	U	< 5	U
Bromodichloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U
Bromoform	100	< 5	U	< 5	U	< 5	U	< 5	U
Carbon disulfide	3700	< 5	U	< 5	U	< 5	U	< 5	U
Carbon tetrachloride	5	< 5	U	< 5	U	< 5	U	< 5	U
Chlorobenzene	100	< 5	U	< 5	U	< 5	U	< 5	U
Chloroethane	15000	< 5	U	< 5	U	< 5	U	< 5	U
Chloroform	100	< 5	U	< 5	U	< 5	U	< 5	U
2-Chlorotoluene	73	< 5	U	< 5	U	< 5	U	< 5	U
4-Chlorotoluene	NC	< 5	U	< 5	U	< 5	U	< 5	U
2-Chloroethylvinyl ether	NC	< 10	U	< 10	U	< 10	U	< 10	U
Dibromochloromethane	100	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dibromo-3-chloropropane	0.2	< 25	U	< 25	U	< 25	U	< 25	U
1,2-Dibromoethane	0.05	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichlorobenzene	600	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichlorobenzene	9.57	< 5	U	< 5	U	< 5	U	< 5	U
1,4-Dichlorobenzene	75	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,4-Dichloro-2-butene	NC	< 100	U	< 100	U	< 100	U	< 100	U
1,1-Dichloroethane	3700	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloroethene	7	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,2-Dichloroethene	70	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,2-Dichloroethene	100	< 5	U	< 5	U	< 5	U	< 5	U
1,2-Dichloropropane	5	< 5	U	< 5	U	< 5	U	< 5	U
2,2-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U
1,1-Dichloropropene	NC	< 5	U	< 5	U	< 5	U	< 5	U
1,3-Dichloropropane	NC	< 5	U	< 5	U	< 5	U	< 5	U
cis-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U
trans-1,3-Dichloropropene	0.473	< 5	U	< 5	U	< 5	U	< 5	U
Ethylbenzene	700	< 5	U	< 5	U	< 5	U	< 5	U
2-Hexanone	NC	< 50	U	< 50	U	< 50	U	< 50	U
Bromomethane	51	< 5	U	< 5	U	< 5	U	< 5	U
Chloromethane	66	< 5	U	< 5	U	< 5	U	< 5	U
Dibromomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U
2-Butanone	22000	< 100	U	< 100	U	< 100	U	< 100	U
Iodomethane	NC	< 5	U	< 5	U	< 5	U	< 5	U
Methylene chloride	5	< 5	U	< 5	U	< 5	U	< 5	U
4-Methyl-2-pentanone	2900	< 100	U	< 100	U	< 100	U	< 100	U
Styrene	100	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1,2-Tetrachloroethane	33	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2,2-Tetrachloroethane	4.3	< 5	U	< 5	U	< 5	U	< 5	U
Tetrachloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U
Toluene	1000	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichlorobenzene	NC	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trichlorobenzene	70	< 5	U	< 5	U	< 5	U	< 5	U
1,1,1-Trichloroethane	200	< 5	U	< 5	U	< 5	U	< 5	U
1,1,2-Trichloroethane	5	< 5	U	< 5	U	< 5	U	< 5	U
Trichloroethene	5	< 5	U	< 5	U	< 5	U	< 5	U
Trichlorofluoromethane	11000	< 5	U	< 5	U	< 5	U	< 5	U
1,2,3-Trichloropropane	0.012	< 5	U	< 5	U	< 5	U	< 5	U
1,3,5-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U
1,2,4-Trimethylbenzene	1520	< 5	U	< 5	U	< 5	U	< 5	U
Vinyl acetate	37000	< 50	U	< 50	U	< 50	U	< 50	U
Vinyl chloride	2	< 2	U	< 2	U	< 2	U	< 2	U
m,p-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U
o-Xylene	10000	< 5	U	< 5	U	< 5	U	< 5	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

groundwater samples.

The groundwater analytical results show that there is no distribution of VOCs within site groundwater that exceeds the respective TNRCC RRS2 GWP-Res standards.

4.7.3 SVOCs

Fifteen groundwater samples were analyzed for SVOCs using the EPA Method 8270. The SVOC analytical results for the groundwater samples are listed in Table 4-9.

Detectable concentrations of SVOCs were reported for only four of the groundwater samples, from locations W3, W4, W5, and W10. All four samples were reported to contain 1,4-dichlorobenzene at concentrations ranging from 16.1 µg/L for the sample collected from W3 to 40 µg/L for the sample collected from W10. These four samples were also reported to contain 1,4-dichlorobenzene from the VOC analysis. The results are generally comparable between the two analyses. None of the detected concentrations of 1,4-dichlorobenzene exceed the TNRCC RRS2 GW-Res standard of 75 µg/L.

4.7.4 Pesticides/PCBs

Twelve groundwater samples were analyzed for pesticides using the EPA Method 8080. None of the groundwater samples contained detectable concentrations of PCB compounds. Three groundwater samples, W3, W4, and W5, were found to contain detectable concentrations of pesticide compounds. The pesticide compounds detected include alpha-BHC, beta-BHC, Lindane, and Heptachlor. The pesticide and PCB analytical results for the groundwater samples are listed in Table 4-10.

Alpha-BHC was detected in only one groundwater sample, W4, with a concentration of 0.0326 µg/L. This concentration of alpha-BHC exceeds the TNRCC RRS2 GW-Res standard of 0.014 µg/L.

Beta-BHC was detected in only two groundwater samples, W3 and W4. The detected concentrations are 0.083 µg/L and 0.132 µg/L, respectively. Neither of these detected concentrations of beta-BHC exceed the TNRCC RRS2 GW-Res standard of 0.47 µg/L.

TABLE 4-9
SVOCs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW-Res (ug/L)	W1	W2	W3	W4	W5	W6	W10	W14
Acenaphthene	2200	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Acenaphthylene	2200	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Anthracene	11000	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzo(a)anthracene	0.2	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzo(b)fluoranthene	0.2	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzo(k)fluoranthene	1.3	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzo(g,h,i)perylene	1100	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzo(a)pyrene	0.2	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzyl alcohol	11000	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Bis(2-chloroethoxy)methane	NC	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Bis(2-chloroethyl)ether	0.077	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Bis(2-chloroisopropyl)ether	1500	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Bis(2-ethylhexyl)phthalate	6	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
4-Bromophenyl phenyl ether	1760	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Butyl benzyl phthalate	7300	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Carbazole	4.3	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
4-Chloroaniline	150	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
2-Chloronaphthalene	2900	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
4-Chlorophenyl phenyl ether	NC	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Chrysene	12	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Dibenz(a,h)anthracene	0.2	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Dibenzofuran	122	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Di-n-butylphthalate	3700	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
1,2-Dichlorobenzene	600	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
1,3-Dichlorobenzene	9.57	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
1,4-Dichlorobenzene	75	< 10 U	< 10 U	16.1	31	30.8	< 10 U	40	< 10 U
3,3-Dichlorobenzidine	0.19	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Diethyl phthalate	29000	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Dimethyl phthalate	304000	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2,4-Dinitrotoluene	0.13	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2,6-Dinitrotoluene	0.13	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Di-n-octylphthalate	730	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Fluoranthene	1500	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Fluorene	1500	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Hexachlorobenzene	1	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Hexachlorobutadiene	7.3	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Hexachlorocyclopentadiene	50	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Hexachloroethane	37	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Indeno(1,2,3-cd)pyrene	0.2	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Isophorone	900	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2-Methylnaphthalene	1500	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Naphthalene	730	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2-Nitroaniline	11	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
3-Nitroaniline	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
4-Nitroaniline	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Nitrobenzene	18	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
N-Nitrosodiphenylamine	17	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
N-Nitrosodi-n-propylamine	0.012	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Phenanthrene	1100	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Pyrene	1100	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
1,2,4-Trichlorobenzene	70	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzoic acid	150000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
4-Chloro-3-methylphenol	NC	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
2-Chlorophenol	180	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2,4-Dichlorophenol	110	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2,4-Dimethylphenol	730	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
4,6-Dinitro-2-methylphenol	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2,4-Dinitrophenol	73	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2-Methylphenol	1800	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
4-Methylphenol	1800	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2-Nitrophenol	NC	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
4-Nitrophenol	NC	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Pentachlorophenol	1	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Phenol	22000	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2,4,5-Trichlorophenol	3700	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2,4,6-Trichlorophenol	7.7	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because toxicity criteria not available

U = Not Detected

Exceedance

TABLE 4-9
SVOCs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW-Res (ug/L)	W15		W21		W23		W24		W26		W30		W35	
Acenaphthene	2200	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Acenaphthylene	2200	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Anthracene	11000	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Benzo(a)anthracene	0.2	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Benzo(b)fluoranthene	0.2	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Benzo(k)fluoranthene	1.3	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Benzo(g,h,i)perylene	1100	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Benzo(a)pyrene	0.2	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Benzyl alcohol	11000	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 24	U
Bis(2-chloroethoxy)methane	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Bis(2-chloroethyl)ether	0.077	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Bis(2-chloroisopropyl)ether	1500	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Bis(2-ethylhexyl)phthalate	6	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
4-Bromophenyl phenyl ether	1760	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Butylbenzyl phthalate	7300	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Carbazole	4.3	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
4-Chloroaniline	150	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 24	U
2-Chloronaphthalene	2900	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
4-Chlorophenyl phenyl ether	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Chrysene	12	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Dibenz(a,h)anthracene	0.2	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Dibenzofuran	122	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Di-n-butylphthalate	3700	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
1,2-Dichlorobenzene	600	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
1,3-Dichlorobenzene	9.57	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
1,4-Dichlorobenzene	75	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
3,3'-Dichlorobenzidine	0.19	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 24	U
Diethyl phthalate	29000	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Dimethyl phthalate	304000	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
2,4-Dinitrotoluene	0.13	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
2,6-Dinitrotoluene	0.13	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Di-n-octylphthalate	730	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Fluoranthene	1500	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Fluorene	1500	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Hexachlorobenzene	1	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Hexachlorobutadiene	7.3	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Hexachlorocyclopentadiene	50	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Hexachloroethane	37	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Indeno(1,2,3-cd)pyrene	0.2	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Isophorone	900	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
2-Methylnaphthalene	1500	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Naphthalene	730	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
2-Nitroaniline	11	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 60	U
3-Nitroaniline	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 60	U
4-Nitroaniline	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 60	U
Nitrobenzene	18	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
N-Nitrosodiphenylamine	17	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
N-Nitrosodi-n-propylamine	0.012	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Phenanthrene	1100	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Pyrene	1100	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
1,2,4-Trichlorobenzene	370	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
Benzoic acid	150000	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 60	U
4-Chloro-3-methylphenol	NC	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 20	U	< 24	U
2-Chlorophenol	180	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
2,4-Dichlorophenol	110	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
2,4-Dimethylphenol	730	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
4,6-Dinitro-2-methylphenol	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 60	U
2,4-Dinitrophenol	73	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 60	U
2-Methylphenol	1800	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
4-Methylphenol	1800	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
2-Nitrophenol	NC	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
4-Nitrophenol	NC	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 60	U
Pentachlorophenol	1	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 50	U	< 60	U
Phenol	22000	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
2,4,5-Trichlorophenol	3700	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U
2,4,6-Trichlorophenol	7.7	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 10	U	< 12	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because toxicity criteria not available

U = Not Detected

Exceedance

TABLE 4-10
Pesticides/PCBs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

03038

Parameter	GW-Res (ug/L)	W1	W2	W3	W4	W5	W6
Aldrin	0.005	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
Alpha-BHC	0.014	< 0.03 U	< 0.03 U	< 0.03 U	0.0326	< 0.03 U	< 0.03 U
Beta-BHC	0.47	< 0.06 U	< 0.06 U	0.083	0.132	< 0.06 U	< 0.06 U
Delta-BHC	NC	< 0.09 U	< 0.09 U	< 0.09 U	< 0.09 U	< 0.09 U	< 0.09 U
Gamma-BHC(Lindane)	0.2	< 0.04 U	< 0.04 U	< 0.04 U	0.0635	0.044	< 0.04 U
Chlordane	2	< 0.14 U	< 0.14 U	< 0.14 U	< 0.14 U	< 0.14 U	< 0.14 U
4,4'-DDD	0.35	< 0.11 U	< 0.11 U	< 0.11 U	< 0.11 U	< 0.11 U	< 0.11 U
4,4'-DDE	0.25	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
4,4'-DDT	0.25	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U
Dieldrin	0.0053	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Endosulfan I	220	< 0.14 U	< 0.14 U	< 0.14 U	< 0.14 U	< 0.14 U	< 0.14 U
Endosulfan II	220	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
Endosulfan Sulfate	NC	< 0.66 U	< 0.66 U	< 0.66 U	< 0.66 U	< 0.66 U	< 0.66 U
Endrin	2	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U
Endrin Aldehyde	NC	< 0.23 U	< 0.23 U	< 0.23 U	< 0.23 U	< 0.23 U	< 0.23 U
Heptachlor	0.4	< 0.03 U	< 0.03 U	< 0.03 U	0.0783	< 0.03 U	< 0.03 U
Heptachlor Epoxide	0.2	< 0.83 U	< 0.83 U	< 0.83 U	< 0.83 U	< 0.83 U	< 0.83 U
Methoxychlor	40	< 1.76 U	< 1.76 U	< 1.76 U	< 1.76 U	< 1.76 U	< 1.76 U
Toxaphene	3	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U
Aroclor-1016	0.5	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U
Aroclor-1221	0.5	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U
Aroclor-1232	0.5	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U
Aroclor-1242	0.5	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U
Aroclor-1248	0.5	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U
Aroclor-1254	0.5	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U
Aroclor-1260	0.5	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U	< 0.65 U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because toxicity criteria not available

U = Not Detected

Exceedance

TABLE 4-10
Pesticides/PCBs In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW-Res (ug/L)	W14		W15		W21		W23		W30		W35	
Aldrin	0.005	< 0.04	U	< 0.04	U	< 0.04	U	< 0.04	U	< 0.04	U	< 0.0472	U
Alpha-BHC	0.014	< 0.03	U	< 0.03	U	< 0.03	U	< 0.03	U	< 0.03	U	< 0.0354	U
Beta-BHC	0.47	< 0.06	U	< 0.06	U	< 0.06	U	< 0.06	U	< 0.06	U	< 0.071	U
Delta-BHC	NC	< 0.09	U	< 0.09	U	< 0.09	U	< 0.09	U	< 0.09	U	< 0.106	U
Gamma-BHC(Lindane)	0.2	< 0.04	U	< 0.04	U	< 0.04	U	< 0.04	U	< 0.04	U	< 0.0472	U
Chlordane	2	< 0.14	U	< 0.14	U	< 0.14	U	< 0.14	U	< 0.14	U	< 0.165	U
4,4'-DDD	0.35	< 0.11	U	< 0.11	U	< 0.11	U	< 0.11	U	< 0.11	U	< 0.13	U
4,4'-DDE	0.25	< 0.04	U	< 0.04	U	< 0.04	U	< 0.04	U	< 0.04	U	< 0.0472	U
4,4'-DDT	0.25	< 0.12	U	< 0.12	U	< 0.12	U	< 0.12	U	< 0.12	U	< 0.142	U
Dieldrin	0.0053	< 0.02	U	< 0.02	U	< 0.02	U	< 0.02	U	< 0.02	U	< 0.024	U
Endosulfan I	220	< 0.14	U	< 0.14	U	< 0.14	U	< 0.14	U	< 0.14	U	< 0.165	U
Endosulfan II	220	< 0.04	U	< 0.04	U	< 0.04	U	< 0.04	U	< 0.04	U	< 0.0472	U
Endosulfan Sulfate	NC	< 0.66	U	< 0.66	U	< 0.66	U	< 0.66	U	< 0.66	U	< 0.779	U
Endrin	2	< 0.06	U	< 0.06	U	< 0.06	U	< 0.06	U	< 0.06	U	< 0.071	U
Endrin Aldehyde	NC	< 0.23	U	< 0.23	U	< 0.23	U	< 0.23	U	< 0.23	U	< 0.271	U
Heptachlor	0.4	< 0.03	U	< 0.03	U	< 0.03	U	< 0.03	U	< 0.03	U	< 0.0354	U
Heptachlor Epoxide	0.2	< 0.83	U	< 0.83	U	< 0.83	U	< 0.83	U	< 0.83	U	< 0.979	U
Methoxychlor	40	< 1.76	U	< 1.76	U	< 1.76	U	< 1.76	U	< 1.76	U	< 2.08	U
Toxaphene	3	< 2.4	U	< 2.4	U	< 2.4	U	< 2.4	U	< 2.4	U	< 2.83	U
Aroclor-1016	0.5	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.77	U
Aroclor-1221	0.5	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.77	U
Aroclor-1232	0.5	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.77	U
Aroclor-1242	0.5	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.77	U
Aroclor-1248	0.5	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.77	U
Aroclor-1254	0.5	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.77	U
Aroclor-1260	0.5	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.65	U	< 0.77	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because toxicity criteria not available

U = Not Detected

Exceedance

03039

Lindane was detected in two groundwater samples, W4 and W5, with concentrations of 0.0635 µg/L and 0.044 µg/L, respectively. Neither of these detected concentrations of Lindane exceed the TNRCC RRS2 GW-Res standard of 0.20 µg/L.

Heptachlor was detected in only one groundwater sample, W4, with a concentration of 0.0783 µg/L. This detected concentration of Heptachlor is below the TNRCC RRS2 GW-Res standard of 0.40 µg/L.

The results of the pesticide analysis indicate that there is no significant distribution of pesticide compounds in the groundwater at the SLF site. Only one groundwater sample, W4, contained a pesticide compound at a concentration exceeding the applicable TNRCC RRS2 GW-Res standard, and the exceedance was slight It is noted that the presence of the pesticide compounds in the SLF site groundwater could have resulted from their use for agricultural purposes on the SLF area and adjacent properties.

4.7.5 Herbicides

Twelve water samples were analyzed for herbicides using the EPA Method 8150. Six of the groundwater samples were reported to contain detectable concentrations of herbicide compounds. The herbicide compounds detected include 2,4-DB (2,4-dichlorophenoxy butyric acid), 2,4,5-T (2,4,5-trichlorophenoxyacetic acid), Silvex, Dalapon, Dinoseb, andMCPA (2-methyl-4-chlorophenoxyacetic acid). The analytical results for herbicides in the groundwater samples are presented in Table 4-11.

2,4-DB was detected in two groundwater samples, W4 and W5, at concentrations of 1.88 µg/L and 1.41 µ, respectively. These detected concentrations are below the TNRCC RRS2 GW-Res standard for 2,4-DB of 243 µg/L.

2,4,5-T was detected in only one groundwater sample, W3, with a concentration of 0.305 µg/L. This detected concentration is below the TNRCC RRS2 GW-Res standard for 2,4,5-T of 180 µg/L.

Silvex was detected in only one groundwater sample, W4, at a concentration of 1.65 µg/L. This detected concentration is below the TNRCC RRS2 GW-Res standard for Silvex of 50 µg/L.

TABLE 4-11
Herbicides In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW-Res (ug/L)	W1		W2		W3		W4		W5		W6	
2,4-D	70	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
2,4-DB	243	< 1	U	< 1	U	< 1	U	**1.88**		**1.41**		< 1	U
2,4,5-T	180	< 0.2	U	< 0.2	U	**0.305**		< 0.2	U	< 0.2	U	< 0.2	U
2,4,5-TP(Silvex)	50	< 0.2	U	< 0.2	U	< 0.2	U	**1.65**		< 0.2	U	< 0.2	U
Dalapon	913	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U
Dicamba	1100	< 0.3	U	< 0.3	U	< 0.3	U	< 0.3	U	< 0.3	U	< 0.3	U
Dichlorprop	NC	< 0.7	U	< 0.7	U	< 0.7	U	< 0.7	U	< 0.7	U	< 0.7	U
Dinoseb	7	< 0.1	U	< 0.1	U	**0.232**		**0.141**		< 0.1	U	< 0.1	U
MCPA	15.2	< 100	U	< 100	U	**598**		**402**		< 100	U	< 100	U
MCPP	30.4	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

TABLE 4-11
Herbicides In Groundwater Analytical Results (ug/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW-Res (ug/L)	W10		W14		W15		W21		W23		W30	
2,4-D	70	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
2,4-DB	243	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
2,4,5-T	180	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U
2,4,5-TP(Silvex)	50	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U
Dalapon	913	< 4	U	< 4	U	< 4	U	5.31		7.59		< 4	U
Dicamba	1100	< 0.3	U	< 0.3	U	< 0.3	U	< 0.3	U	< 0.3	U	< 0.3	U
Dichlorprop	NC	< 0.7	U	< 0.7	U	< 0.7	U	< 0.7	U	< 0.7	U	< 0.7	U
Dinoseb	7	**0.536**		< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U
MCPA	15.2	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U
MCPP	30.4	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U	< 100	U

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

Dalapon was detected in two groundwater samples, W21 and W23, at concentrations of 5.31 µg/L and 7.59 µg/L, respectively. These detected concentrations are below the TNRCC RRS2 GW-Res standard for Dalapon of 913 µg/L.

Dinoseb was detected in three groundwater samples, W3, W4, and W10. The detected concentrations range from 0.141 µg/L for W4 to 0.536 µg/L for W10. These detected concentrations are below the TNRCC RRS2 GW-Res standard for Dinoseb of 7.0 µg/L

MCPA was detected in two groundwater samples, W3 and W4, at concentrations of 598 µg/L and 402 µg/L, respectively. Both detected concentrations are above the TNRCC RRS2 GW-Res standard for MCPA of 15.2 µg/L.

The results of the herbicide analysis indicate that there is not a significant distribution of herbicides in the groundwater at the SLF site. Except for two detections of Dinoseb, all of the detected herbicides were found at locations at or near the vacant area in the northwestern portion of the SLF area. Only the two detections of MCPA, at locations W3 and W4, exceed the applicable TNRCC RRS2 GW-Res standards. It is noted that the presence of the herbicide compounds could be the result of the use of the compounds for agricultural purposes on the SLF site and adjacent properties.

4.7.6 Total Metals

RCRA Metals

Thirty-one groundwater samples were analyzed for the eight RCRA metals that include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. The analytical results for the metals analyses are presented in Table 4-12. It is noted that significant turbidity was observed on most groundwater samples. Since the groundwater samples were not filtered prior to placement into the sample containers, the results of the metals analyses may have been affected by metals in suspended soil particles. Turbid samples typically exhibit greater concentrations of metals than non-turbid samples.

Arsenic was detected in 26 groundwater samples with detected concentrations ranging of 0.0689 mg/L for the sample W15 to 0.535 mg/L. The average arsenic concentration was 0.262 mg/L. All 26 detected concentrations of arsenic slightly exceed the TNRCC RRS2 GW-Res standard for arsenic of 0.05 mg/L.

TABLE 4-12
Metals In Groundwater Results (mg/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

030044

Parameter	GW-Res (mg/L)	W1	W2	W3	W4	W5	W6	W10
Silver	0.18	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Aluminum	37	205	162	137	221	128	401	221
Arsenic	0.05	0.459 D	0.105 D	0.402 D	0.441 D	0.131 D	0.314 D	0.31 D
Barium	2	2.3	3.69	5.76	2.4	2.18	4.94	1.9
Beryllium	0.004	0.0157	0.009	0.0109	0.0164	0.0068	0.026	0.0154
Calcium	*	5460 D	2579 D	1188 D	1927 D	2962 D	1320 D	3530 D
Cadmium	0.005	0.0057	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	0.0054
Cobalt	2.2	0.377	0.116	0.13	0.254	0.111	0.456	0.245
Chromium	0.1	0.191	0.0991	0.141	0.193	0.0737	1.26	0.157
Copper	1.3	0.169	0.114	0.166	0.196	0.0832	0.154	0.223
Iron	*	662 D	171	394 D	484 D	132	1230 D	443 D
Mercury	0.002	< 0.0002 U	< 0.0002 U	< 0.0002 U	< 0.0002 U	< 0.0002 U	0.0002	0.0005
Potassium	*	73.9 D	42.2 D	38.5 D	93.4 D	36.6 D	102 D	70.3 D
Magnesium	*	376	264	322	180	691 D	206	787 D
Manganese	1.7	54.5 D	24.9 D	2.99	16.3 D	10.6 D	2.9	16.3 D
Sodium	*	2830 D	2100 D	1670 D	3140 D	3420 D	825 D	3470 D
Nickel	0.73	0.35	0.149	0.215	0.341	0.128	0.468	0.252
Lead	0.015	0.329 D	0.156 D	0.157 D	0.225 D	0.112 D	4.56 D	0.506 D
Antimony	0.006	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U
Selenium	0.05	0.0283	< 0.025 DU	0.0065	< 0.025 DU	< 0.025 DU	< 0.025 DU	< 0.01 U
Tin	0.22	0.025	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	0.021	< 0.01 U
Thallium	0.002	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Vanadium	0.26	0.966	0.472	0.881	0.841	0.318	0.423	0.577
Zinc	11	1.14	0.458	0.698	1.21	0.353	4.83	0.777

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

* = RRS values not calculated for essential nutrient metals

U = Not Detected

Exceedance

TABLE 4-12
Metals In Groundwater Results (mg/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW-Res (mg/L)	W12	W14	W15	W16	W17	W18	W19
Silver	0.18	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Aluminum	37	221	406	147	204	276	119	65.4
Arsenic	0.05	0.329 D	0.535 D	0.0689 D	0.292 D	0.201 D	0.0709 D	< 0.025 DU
Barium	2	1.45	1.68	1.75	0.885	1.36	1.34	1.52
Beryllium	0.004	0.0184	0.0299	0.0098	0.0211	0.0151	0.0053	0.0034
Calcium	*	2000 D	1103 D	837 D	7220 D	812 D	1710 D	1690 D
Cadmium	0.005	< 0.005 U	0.0123	0.0056	0.0081	< 0.005 U	< 0.005 U	< 0.005 U
Cobalt	2.2	0.253	0.421	0.171	0.211	0.163	0.0889	0.0622
Chromium	0.1	0.201	0.482	0.0921	0.169	0.184	0.0787	0.0412
Copper	1.3	0.203	0.303	0.12	0.216	0.143	0.0767	0.0437
Iron	*	670 D	1960 D	317 D	607 D	447 D	129	98.5
Mercury	0.002	0.0004	0.0004	0.0005	0.001	0.0007	0.0004	0.0004
Potassium	*	71.6 D	209 D	61 D	85.2 D	93.4 D	50 D	45.2
Magnesium	*	500	1330 D	1290 D	356	907 D	786 D	409
Manganese	1.7	15.3 D	3.47	8.5 D	35.7 D	3.64	5.9 D	5.21
Sodium	*	4010 D	8940 D	7410 D	4190 D	7930 D	5660 D	4290 D
Nickel	0.73	0.3	0.277	0.204	0.306	0.209	0.133	0.0888
Lead	0.015	0.449 D	0.606 D	0.0666 D	0.551 D	0.191 D	0.122 D	0.0434 D
Antimony	0.006	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U
Selenium	0.05	< 0.01 U	< 0.125 DU	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Tin	0.22	< 0.01 U	0.012	< 0.01 U	0.02	< 0.01 U	< 0.01 U	< 0.01 U
Thallium	0.002	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Vanadium	0.26	0.613	0.927	0.548	0.476	0.447	0.183	0.104
Zinc	11	1.32	2.36	0.712	0.92	1.03	0.538	0.411

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

* = RRS values not calculated for essential nutrient metals

U = Not Detected

Exceedance

03045

TABLE 4-12
Metals In Groundwater Results (mg/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

C3046

Parameter	GW-Res (mg/L)	W20	W21	W22	W23	W24	W25	W26
Silver	0.18	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Aluminum	37	16	81.9	296	289	139	500	130
Arsenic	0.05	< 0.005 U	0.394	0.236 D	0.204 D	0.0989 D	0.342 D	0.429 D
Barium	2	0.0447	2.07	2.11	1.1	0.541	1.09	0.634
Beryllium	0.004	< 0.003 U	0.0076	0.0307	0.024	0.013	0.035	0.0305
Calcium	*	481	790	2260 D	911 D	415	3330 D	312
Cadmium	0.005	0.005	< 0.005 U	< 0.005 U	0.006	0.006	0.0069	< 0.005 U
Cobalt	2.2	0.0129	0.13	0.51	0.312	0.285	0.564	0.606
Chromium	0.1	< 0.005 U	0.0677	0.248	0.232	0.105	0.537	0.0962
Copper	1.3	0.0189	0.0501	0.116	0.191	0.0684	0.227	0.059
Iron	*	15.7	167	814 D	944 D	595 D	1580 D	717 D
Mercury	0.002	< 0.0002 U	0.0003	0.0006	0.0005	0.0006	0.0011	0.0049
Potassium	*	29 D	40.2	106 D	127 D	87 D	157 D	111 D
Magnesium	*	1360 D	282	202	890 D	1840 D	876 D	1040 D
Manganese	1.7	1.89	12.3	17.3 D	5.11	3.85	10.9 D	9.9 D
Sodium	*	10500 D	2920	2480 D	9600 D	14800 D	5420 D	7300 D
Nickel	0.73	0.0444	0.259	0.653	0.293	0.254	0.675	0.493
Lead	0.015	< 0.005 U	0.142	0.336 D	0.453	0.144	0.406 D	0.16 D
Antimony	0.006	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U
Selenium	0.05	< 0.05 DU	< 0.01 U	< 0.01 U	< 0.05 DU	< 0.25 DU	< 0.01 U	< 0.01 U
Tin	0.22	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Thallium	0.002	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Vanadium	0.26	0.0205	0.158	0.432	0.433	0.259	0.808	0.199
Zinc	11	0.097	0.528	2.41	2.53	1.72	4.17	2.6

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

* = RRS values not calculated for essential nutrient metals

U = Not Detected

Exceedance

TABLE 4-12
Metals In Groundwater Results (mg/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW-Res (mg/L)	W27	W28	W30	W31	W32
Silver	0.18	0.157	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Aluminum	37	305	184	191	230	152
Arsenic	0.05	0.392 D	0.16 D	0.184 D	0.145 D	0.157 D
Barium	2	0.923	0.613	2.26	1.4	0.428
Beryllium	0.004	0.0347	0.0264	0.0162	0.0166	0.0151
Calcium	*	1250 D	394	7653.1 D	784 D	3130 D
Cadmium	0.005	0.141	0.0103	< 0.005 U	< 0.005 U	< 0.005 U
Cobalt	2.2	0.658	0.9	0.291	0.255	0.32
Chromium	0.1	0.386	0.1	0.187	0.248	0.188
Copper	1.3	3.09	0.0747	0.127	0.103	0.0723
Iron	*	1410 D	555 D	611 D	651 D	1810 D
Mercury	0.002	0.0044	0.0011	< 0.0002 U	0.0006	0.0021
Potassium	*	163 D	97.4 D	56.6 D	94.7 D	98.9 D
Magnesium	*	1060 D	2170 D	161	612 D	183
Manganese	1.7	16.8 D	24.5 D	23.2 D	8.53 D	282 D
Sodium	*	5560 D	9040 D	245 D	4220 D	4150 D
Nickel	0.73	0.715	0.879	0.307	0.324	0.437
Lead	0.015	13.5 D	0.143 D	0.432 D	0.176 D	0.503 D
Antimony	0.006	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U
Selenium	0.05	< 0.01 U	< 0.01 U	< 0.025 DU	< 0.01 U	< 0.01 U
Tin	0.22	1.21	< 0.01 U	0.028	< 0.01 U	< 0.01 U
Thallium	0.002	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Vanadium	0.26	0.469	0.19	0.477	0.386	0.253
Zinc	11	9.54	3.25	1.02	2.29	2.43

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

* = RRS values not calculated for essential nutrient metals

U = Not Detected

Exceedance

TABLE 4-12
Metals In Groundwater Results (mg/L)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GW-Res (mg/L)	W35	W45	W49	W50	W51
Silver	0.18	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Aluminum	37	554	106	20.6	1.94	6.44
Arsenic	0.05	0.31 D	0.1 D	< 0.025 DU	< 0.025 DU	< 0.025 DU
Barium	2	4.04	0.28	0.172	0.0489	0.0479
Beryllium	0.004	0.053	0.0064	< 0.003 U	< 0.003 U	< 0.003 U
Calcium	*	1608 D	978 D	1340 D	1060 D	562 D
Cadmium	0.005	0.0073	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Cobalt	2.2	1.38	0.185	0.0301	0.0429	0.157
Chromium	0.1	0.668	0.11	0.022	< 0.005 U	0.0082
Copper	1.3	0.256	0.0382	< 0.01 U	< 0.01 U	< 0.01 U
Iron	*	1990 D	231	37.2	4.13	16.6
Mercury	0.002	< 0.0002 U	0.0004	< 0.0002 U	< 0.0002 U	< 0.0002 U
Potassium	*	148 D	41.7	13.6	16.5	29.9
Magnesium	*	323	354	342	442	1430 D
Manganese	1.7	53.7 D	7.75	1.17	2.48	5.56
Sodium	*	1590 D	2710 D	3250 D	2580 D	6090 D
Nickel	0.73	1.11	0.259	0.0269	0.0277	0.102
Lead	0.015	0.555 D	0.0806 D	0.0044	< 0.01 DU	< 0.01 DU
Antimony	0.006	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U
Selenium	0.05	< 0.025 DU	< 0.025 DU	< 0.025 DU	< 0.025 DU	< 0.025 DU
Tin	0.22	< 0.01 U	0.018	< 0.01 U	< 0.01 U	0.01
Thallium	0.002	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Vanadium	0.26	0.937	0.0857	0.0245	< 0.01 U	< 0.01 U
Zinc	11	5.68	0.696	0.0837	0.0241	0.0241

GW-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations for groundwater in a residential land use area

* = RRS values not calculated for essential nutrient metals

U = Not Detected

Exceedance

Barium was detected in all 31 groundwater samples with concentrations ranging from 0.0447 mg/L for sample W20 to 5.76 mg/L for sample W3, with an average concentration of 1.64 mg/L. Ten of the groundwater samples slightly exceed the TNRCC RRS2 GW-Res standard for barium of 2 mg/L.

Cadmium was detected in 12 groundwater samples with detected concentrations ranging from 0.005 mg/L for sample W20 to 0.141 mg/L for sample W27, and an average concentration of 0.019 mg/L. Eleven of the groundwater samples slightly exceed the TNRCC RRS2 GW-Res standard of 0.005 mg/L.

Chromium was detected in 29 groundwater samples, with detected concentrations ranging from 0.0082 mg/L for sample W51 to 1.26 mg/L for sample W6, and an average concentration of 0.226 mg/L. Nineteen groundwater samples slightly exceed the TNRCC RRS2 GW-Res standard for chromium of 0.1 mg/L.

Lead was detected in 28 groundwater samples with detected concentrations ranging from 0.0044 mg/L for sample W49 to 13.5 mg/L for sample W27, and an average concentration of 0.90 mg/L. All except one of the detected lead concentrations exceed the TNRCC RRS2 GW-Res standard for lead of 0.015 mg/L.

Mercury was detected in 20 groundwater samples with detected concentrations ranging from 0.0002 mg/L for sample W6 to 0.0049 mg/L for sample W26, and an average concentration of 0.0012 mg/L. Three of the detected mercury concentrations exceed the TNRCC RRS2 GW-Res standard for mercury of 0.002 mg/L.

Selenium was detected in two groundwater samples with detected concentrations of 0.0065 mg/L for sample W3 and 0.0283 mg/L for sample W1. Neither of the detected selenium concentrations exceed the TNRCC RRS2 GW-Res standard for selenium of 0.05 mg/L. It is noted that groundwater samples W14 and W24 have elevated sample quantitation limits (above the TNRCC RRS2 GW-Res standard concentration). This is because matrix interferences required the samples to be diluted. Selenium was not detected in these samples. It is possible the selenium concentrations could be greater than the GW-Res value, but less than the sample quantitation limit.

Silver was detected in only one groundwater sample, W27, with a concentration of

0.157 mg/L. This concentration is below the TNRCC RRS2 GW-Res standard for silver of 0.18 mg/L.

Other Metals

Other metals (in addition to the eight RCRA metals) analyzed and reported using EPA method 6010 include aluminum, antimony, beryllium, calcium, cobalt, copper, iron, magnesium, manganese, nickel, potassium, sodium, thallium, tin, vanadium, and zinc. The analytical results for the other metals analyses are included in Table 4-12.

Aluminum was detected in all 31 groundwater samples, at concentrations ranging from 1.94 mg/L for sample W50 to 554 mg/L for sample W35. The average aluminum concentration is 197 mg/L. Twenty-seven of the detected aluminum concentrations exceed the TNRCC GW-Res standard for aluminum of 37 mg/L.

Antimony was not detected in any of the groundwater samples. The laboratory method quantitation limit is 0.05 mg/L, slightly above the TNRCC RRS2 GW-Res standard for antimony of 0.006 mg/L. The sample quantitation limit (0.05 mg/L) was higher than the GW-Res standard because of low sample volume.

Beryllium was detected in 27 of the groundwater samples, at concentrations ranging from 0.0034 mg/L for sample W19 to 0.053 mg/L for sample W35. The average beryllium concentration is 0.019 mg/L. Twenty-six of the 27 detected concentrations of beryllium exceed the TNRCC RRS2 GW-Res standard for beryllium of 0.004 mg/L.

Cobalt was detected in all 31 of the groundwater samples, at concentrations ranging from 0.0129 mg/L for sample W20 to 1.38 mg/L for sample W35. The average cobalt concentration is 0.313 mg/L. None of the detected concentrations of cobalt exceed the TNRCC RRS2 GW-Res standard for cobalt of 2.2 mg/L.

Copper was detected in 28 of the groundwater samples, at concentrations ranging from 0.0189 mg/L for sample W20 to 3.09 mg/L for sample W27. The average copper concentration is 0.239 mg/L. Only one of the 27 detected concentrations of copper, sample W20, exceeds the TNRCC RRS2 GW-Res standard for copper of 1.3 mg/L.

Manganese was detected in all 31 groundwater samples, at concentrations ranging from 1.17 mg/L for sample W49 to 282 mg/L for sample W32. The average manganese

concentration is 22.4 mg/L. All except one (W49) of the detected manganese concentrations exceed the TNRCC RRS2 GW-Res standard of 1.7 mg/L.

Nickel was detected in all 31 groundwater samples, at concentrations ranging from 0.0269 mg/L for sample W49 to 1.11 mg/L for sample W35. The average nickel concentration is 0.332 mg/L. Only two of the detected nickel concentrations (W27 and W35) exceed the TNRCC RRS2 GW-Res standard of 0.73 mg/L.

Thallium was not detected in any of the 31 groundwater samples. The laboratory method quantitation limit is 0.01 mg/L.

Tin was detected in eight of the 31 groundwater samples, at concentrations ranging from 0.01 mg/L for sample W51 to 1.21 mg/L for sample W27. The average detected tin concentration is 0.168 mg/L. Only one of the detected tin concentrations (W51) exceeds the TNRCC RRS2 GW-Res standard of 0.22 mg/L.

Vanadium was detected in 29 of the 31 groundwater samples, at concentrations ranging from 0.0205 mg/L for sample W20 to 0.966 mg/L for sample W1. The average vanadium concentration is 0.445 mg/L. Nineteen of the 29 detected vanadium concentrations exceed the TNRCC RRS2 GW-Res standard of 0.26 mg/L.

Zinc was detected in all 31 groundwater samples, at concentrations ranging from 0.0241 mg/L for samples W50 and W51 to 9.54 mg/L for sample W27. The average zinc concentration is 1.80 mg/L. None of the detected zinc concentrations exceed the TNRCC RRS2 GW-Res standard of 11 mg/L.

No RRS2 GW-Res values were calculated for calcium, iron, magnesium, potassium, and sodium, since these metals are essential nutrients. Calcium was detected in all 31 groundwater samples, with concentrations ranging from 312 mg/L for sample W26 to 7,653.1 mg/L for sample W30 and an average concentration of 1,890 mg/L. Iron was detected in all 31 groundwater samples, with concentrations ranging from 4.13 mg/L for sample W50 to 1,990 mg/L for sample W35 and an average iron concentration of 642 mg/L. Magnesium was detected in all 31 groundwater samples, with concentrations ranging from 161 mg/L for sample W30 to 2,170 mg/L for sample W28 and an average iron concentration of 709 mg/L. Potassium was detected in all 31 groundwater samples, with concentrations

ranging from 13.6 mg/L for sample W49 to 209 mg/L for sample W14 and an average potassium concentration of 80.3 mg/L. Sodium was detected in all 31 groundwater samples, with concentrations ranging from 245 mg/L for sample W30 to 14,800 mg/L for sample W24 and an average sodium concentration is 4,910 mg/L.

4.8 Groundwater Flow Direction

Static groundwater level measurements were taken within each of the temporary groundwater monitor wells prior to groundwater sampling. The depth to groundwater ranged from approximately 3.4 feet to approximately 15.2 feet. Generally, the depth to water was between 6 feet and 10 feet for most of the temporary wells. Based upon the water level measurements, the groundwater flow gradient at the SLF area slopes generally toward the west, at approximately 0.018 ft/ft. Figure 4-3 presents a potentiometric surface map of the SLF area. The groundwater level measurements and groundwater elevations are presented in Table 4-13.

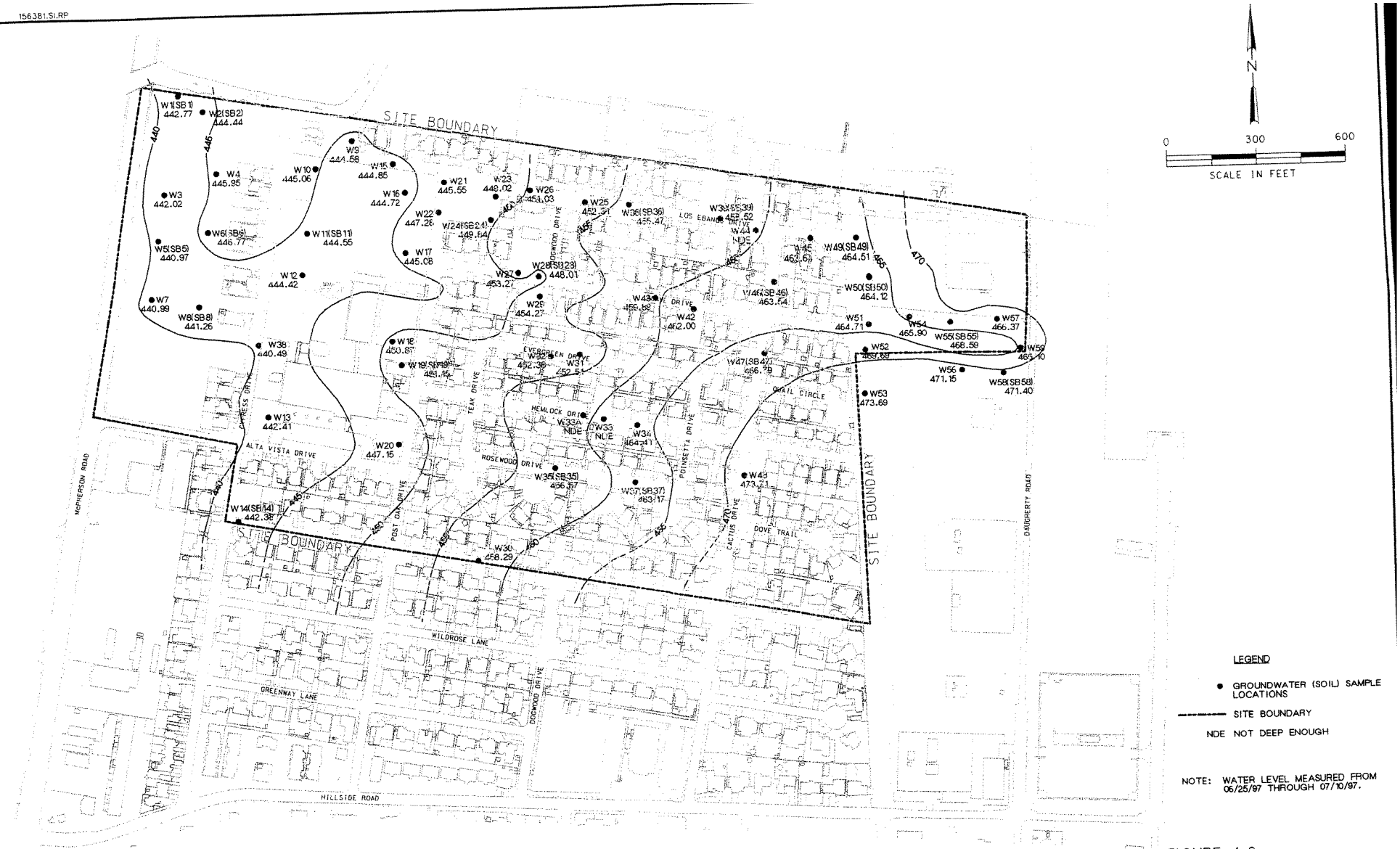
4.9 Sediment Analytical Results

Four sediment samples (excluding QC samples) were obtained from the drainage ditch located on the northwestern portion of the site and analyzed VOCs, SVOCs, pesticides, PCBs, herbicides, and total metals. All VOC, SVOC, PCB, and herbicide results were below the analytical method quantitation limits. Tables 4-14 through 4-18 present the analytical results for the sediment sample analyses. The analytical results for the pesticide and metal analyses are discussed below. Analytical data and the associated Data Validation Report is included under separate cover as Appendix F.

4.9.1 Pesticides

Chlordane was the only pesticide compound detected in any of the sediment samples. Chlordane was detected in samples SD1, SD2, and SD3 at concentrations of 553 µg/kg, 111 µg/kg, and 59 µg/kg, respectively. Only the chlordane concentration at SD1 exceeds the TNRCC RRS2 GWP-Res standard of 200 µg/kg for chlordane in soils.

04-18-00 15638I.SI.RP



LEGEND

- ● GROUNDWATER (SOIL) SAMPLE LOCATIONS
- ——— SITE BOUNDARY
- NDE NOT DEEP ENOUGH

NOTE: WATER LEVEL MEASURED FROM 06/25/97 THROUGH 07/10/97.

FIGURE 4-3
GROUNDWATER POTENTIOMETRIC SURFACE MAP
Sanitary Landfill Area
Former Laredo Air Force Base, Texas

03053
CH2MHILL

LAR-0025.DGN

TABLE 4-13
Groundwater Elevations In Temporary Monitor Wells
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Temporary Well Location	Ground Elevation at Location (ft, amsl)	Height of Casing Above Ground Level (ft)	Depth to Water (ft, BTOC)	Date Water Measured	Groundwater Elevation (ft, amsl)
W1	452.17	0.6	10.0	6/26/97	442.77
W2	452.44	0.6	8.6	6/26/97	444.44
W3	452.62	0.7	11.3	6/26/97	442.02
W4	452.60	0.6	7.3	6/26/97	445.95
W5	452.67	0.5	12.2	6/26/97	440.97
W6	452.57	0.6	6.4	6/26/97	446.77
W7	452.89	0.6	12.5	6/26/97	440.99
W8	451.56	0.55	10.9	6/27/97	441.26
W9	454.53	0.14	10.1	6/30/97	444.58
W10	453.16	0.5	8.6	6/29/97	445.06
W11	451.95	0.6	8.0	6/29/97	444.55
W12	451.42	0.45	7.5	6/29/97	444.42
W13	451.44	0.22	9.3	6/30/97	442.41
W14	450.68	0.1	8.4	6/25/97	442.38
W15	454.35	0.15	9.7	6/27/97	444.85
W16	453.57	0.55	9.4	6/29/97	444.72
W17	452.68	0.4	8.0	6/29/97	445.08
W18	454.12	0.1	3.4	6/27/97	450.87
W19	454.97	0.08	3.9	6/27/97	451.15
W20	457.00	0.5	10.4	6/30/97	447.15
W21	454.85	0.1	9.4	6/27/97	445.55
W22	455.18	0.1	8.0	6/27/97	447.28
W23	457.17	0.2	8.4	6/30/97	449.02
W24	457.54	0.1	7.8	6/30/97	449.84
W25	457.76	0.1	5.6	6/28/97	452.31
W26	455.95	0.08	5.0	6/28/97	451.03
W27	457.17	0.1	4.0	6/28/97	453.27
W28	457.71	0.1	9.8	6/28/97	448.01
W29	459.07	1.1	5.9	7/10/97	454.27
W30	463.43	0.06	5.2	6/25/97	458.29

TABLE 4-13
Groundwater Elevations In Temporary Monitor Wells
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Temporary Well Location	Ground Elevation at Location (ft, amsl)	Height of Casing Above Ground Level (ft)	Depth to Water (ft, BTOC)	Date Water Measured	Groundwater Elevation (ft, amsl)
W31	463.44	0.12	11.1	6/27/97	452.51
W32	461.23	0.15	9.0	6/27/97	452.38
W33	469.67	NA	NA	NA	NA
W33A	467.99	NA	NA	NA	NA
W34	473.02	0.09	8.7	6/26/97	464.41
W35	467.28	0.09	10.7	6/25/97	456.67
W36	459.72	0.05	4.3	7/10/97	455.47
W37	476.27	0.1	13.2	6/25/97	463.17
W38	450.98	0.06	10.6	7/10/97	440.49
W39	464.52	0.05	6.1	7/10/97	458.52
W42	469.40	0.05	7.5	7/10/97	462.00
W43	466.84	0.05	7.0	7/10/97	459.89
W44	466.29	NA	NA	NA	NA
W45	468.46	0.1	5.9	7/9/97	462.64
W46	470.11	0.05	6.6	7/9/97	463.54
W47	476.52	0.07	9.8	7/10/97	466.79
W48	484.21	0.1	10.6	6/26/97	473.71
W49	471.89	0.07	7.5	7/8/97	464.51
W50	473.27	0.1	9.3	7/8/97	464.12
W51	476.01	0.1	11.4	7/8/97	464.71
W52	477.64	0.6	8.6	7/9/97	469.69
W53	479.94	0.55	6.8	7/9/97	473.69
W54	475.85	0.1	10.1	7/8/97	465.90
W55	477.49	0.1	9.0	7/8/97	468.59
W56	479.10	0.5	8.5	7/9/97	471.15
W57	478.17	0.4	12.2	7/8/97	466.37
W58	479.38	0.1	8.1	7/9/97	471.40
W59	479.70	0.6	15.2	7/8/97	465.10

NA = not applicable-no groundwater present
amsl = above mean sea level
BTOC = below top of casing

TABLE 4-14
VOCs In Sediments Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SD1	SD2	SD3	SD4
Acetone	370000	1600000	< 20 U	< 20 U	< 20 U	< 20 U
Acrylonitrile	16	79	< 5 U	< 5 U	< 5 U	< 5 U
Benzene	500	820	< 5 U	< 5 U	< 5 U	< 5 U
Bromobenzene	60800	65400	< 5 U	< 5 U	< 5 U	< 5 U
Bromochloromethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U
Bromodichloromethane	10000	10000	< 5 U	< 5 U	< 5 U	< 5 U
Bromoform	10000	834000	< 5 U	< 5 U	< 5 U	< 5 U
Carbon disulfide	370000	1000000	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	500	350	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	10000	310000	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15000	11000000	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	10000	310	< 5 U	< 5 U	< 5 U	< 5 U
Chloromethane	7500	3030000	< 5 U	< 5 U	< 5 U	< 5 U
4-Chlorotoluene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U
2-Chloroethylvinyl ether	NC	NC	< 10 U	< 10 U	< 10 U	< 10 U
Dibromochloromethane	10000	76000	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromo-3-chloropropane	20	350	< 25 U	< 25 U	< 25 U	< 25 U
1,2-Dibromoethane	5	7.22	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichlorobenzene	60000	2600000	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichlorobenzene	957	46500	< 5 U	< 5 U	< 5 U	< 5 U
1,4-Dichlorobenzene	7500	270000	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,4-Dichloro-2-butene	NC	NC	< 100 U	< 100 U	< 100 U	< 100 U
Dichlorodifluoromethane	370000	1600000	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloroethane	500	270	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloroethene	700	3800	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	7000	1200000	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,2-Dichloroethene	10000	1400000	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	500	9400	< 5 U	< 5 U	< 5 U	< 5 U
2,2-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U
1,1-Dichloropropene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U
1,3-Dichloropropane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,3-Dichloropropene	47.3	270	< 5 U	< 5 U	< 5 U	< 5 U
trans-1,3-Dichloropropene	47.3	270	< 5 U	< 5 U	< 5 U	< 5 U
Ethylbenzene	70000	4300000	< 5 U	< 5 U	< 5 U	< 5 U
2-Hexanone	NC	NC	< 50 U	< 50 U	< 50 U	< 50 U
Bromomethane	5100	3500	< 5 U	< 5 U	< 5 U	< 5 U
Chloromethane	6600	2300	< 5 U	< 5 U	< 5 U	< 5 U
Dibromomethane	NC	200000	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	2200000	6000000	< 100 U	< 100 U	< 100 U	< 100 U
Iodomethane	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U
Methylene chloride	500	6700	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	290000	2000000	< 100 U	< 100 U	< 100 U	< 100 U
Styrene	10000	13000000	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1,2-Tetrachloroethane	3300	52000	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2,2-Tetrachloroethane	430	5100	< 5 U	< 5 U	< 5 U	< 5 U
Tetrachloroethene	500	6000	< 5 U	< 5 U	< 5 U	< 5 U
Toluene	100000	1700000	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichlorobenzene	NC	NC	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trichlorobenzene	7000	1400000	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	20000	2300000	< 5 U	< 5 U	< 5 U	< 5 U
1,1,2-Trichloroethane	500	9700	< 5 U	< 5 U	< 5 U	< 5 U
Trichloroethene	500	3700	< 5 U	< 5 U	< 5 U	< 5 U
Trichlorofluoromethane	1100000	2600000	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	1.2	91	< 5 U	< 5 U	< 5 U	< 5 U
1,3,5-Trimethylbenzene	152000	118000	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	152000	48700	< 5 U	< 5 U	< 5 U	< 5 U
Vinyl acetate	3700000	570000	< 50 U	< 50 U	< 50 U	< 50 U
Vinyl chloride	200	4.1	< 2 U	< 2 U	< 2 U	< 2 U
m,p-Xylene	1000000	2300000	< 5 U	< 5 U	< 5 U	< 5 U
o-Xylene	1000000	33000000	< 5 U	< 5 U	< 5 U	< 5 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

03056

TABLE 4-15
SVOCs In Sediments Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SD1	SD2	SD3	SD4
Acenaphthene	220	8200	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Acenaphthylene	220	8200	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Anthracene	1100	41000	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Benzo(a)anthracene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Benzo(b)fluoranthene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Benzo(k)fluoranthene	0.12	6.3	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Benzo(g,h,i)perylene	110	4100	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Benzo(a)pyrene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Benzyl alcohol	1800	46000	< 0.65 U	< 0.65 U	< 1.3 U	< 0.648 U
Bis(2-chloroethoxy)methane	NC	NC	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Bis(2-chloroethyl)ether	0.0077	0.15	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Bis(2-chloroisopropyl)ether	150	6200	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Bis(2-ethylhexyl)phthalate	0.6	17	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
4-Bromophenyl phenyl ether	176	322	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Butyl benzyl phthalate	730	31000	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Carbazole	0.43	24	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
4-Chloroaniline	15	620	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
2-Chloronaphthalene	290	11	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
4-Chlorophenyl phenyl ether	NC	NC	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Chrysene	1.2	63	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Dibenz(a,h)anthracene	0.02	0.063	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Dibenzofuran	12.2	432	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Di-n-butylphthalate	370	15000	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
1,2-Dichlorobenzene	60	2600	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
1,3-Dichlorobenzene	0.957	46.5	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
1,4-Dichlorobenzene	7.5	270	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
3,3'-Dichlorobenzidine	0.019	1.1	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Diethyl phthalate	2900	120000	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Dimethyl phthalate	30400	1080000	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
2,4-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
2,6-Dinitrotoluene	0.013	0.72	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Di-n-octylphthalate	73	3100	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Fluoranthene	150	5500	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Fluorene	150	5500	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Hexachlorobenzene	0.1	0.25	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Hexachlorobutadiene	0.73	16	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Hexachlorocyclopentadiene	5	3.6	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Hexachloroethane	3.7	150	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Indeno(1,2,3-cd)pyrene	0.02	0.63	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Isophorone	90	5200	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
2-Methylnaphthalene	150	5500	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Naphthalene	73	180	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
2-Nitroaniline	1.1	46	< 1.65 U	< 1.65 U	< 3.3 U	< 1.64 U
3-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 3.3 U	< 1.64 U
4-Nitroaniline	NC	NC	< 1.65 U	< 1.65 U	< 3.3 U	< 1.64 U
Nitrobenzene	1.8	65	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
N-Nitrosodiphenylamine	1.7	59	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
N-Nitrosodi-n-propylamine	0.0012	0.041	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Phenanthrene	110	4100	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Pyrene	110	4100	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
1,2,4-Trichlorobenzene	700	1400	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
Benzoic acid	1500	620000	< 0.8 U	< 0.8 U	< 1.6 U	< 0.797 U
4-Chloro-3-methylphenol	NC	NC	< 0.65 U	< 0.65 U	< 1.3 U	< 0.648 U
2-Chlorophenol	18	1100	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
2,4-Dichlorophenol	11	460	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
2,4-Dimethylphenol	73	3100	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
4,6-Dinitro-2-methylphenol	NC	NC	< 1.65 U	< 1.65 U	< 3.3 U	< 1.64 U
2,4-Dinitrophenol	7.3	310	< 1.65 U	< 1.65 U	< 3.3 U	< 1.64 U
2-Methylphenol	180	7700	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
4-Methylphenol	18	770	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
2-Nitrophenol	NC	NC	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
4-Nitrophenol	NC	NC	< 0.8 U	< 0.8 U	< 1.6 U	< 0.797 U
Pentachlorophenol	0.1	3	< 1.65 U	< 1.65 U	< 3.3 U	< 1.64 U
Phenol	2200	93000	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U
2,4,5-Trichlorophenol	370	15000	< 1.65 U	< 1.65 U	< 3.3 U	< 1.64 U
2,4,6-Trichlorophenol	0.77	44	< 0.33 U	< 0.33 U	< 0.66 U	< 0.329 U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

03057

TABLE 4-16
Pesticides/PCBs In Sediments Analytical Results (ug/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SD1		SD2		SD3		SD4	
Aldrin	0.5	27	< 13.3	DU	< 5.36	U	< 10.7	DU	< 16.1	U
Alpha-BHC	1.4	90	< 9.98	DU	< 4.02	U	< 8.04	DU	< 12.1	U
Beta-BHC	47	3200	< 20	DU	< 8.04	U	< 16.1	DU	< 24.1	U
Delta-BHC	NC	NC	< 29.9	DU	< 12.1	U	< 24.1	DU	< 36.2	U
Gamma-BHC(Lindane)	20	440	< 13.3	DU	< 5.36	U	< 10.7	DU	< 16.1	U
Chlordane	200	1600	553	D	111		59.3	D	< 56.3	U
4,4'-DDD	35	2400	< 36.6	DU	< 14.7	U	< 29.5	DU	< 44.2	U
4,4'-DDE	25	1700	< 13.3	DU	< 5.36	U	< 10.7	DU	< 16.1	U
4,4'-DDT	25	1700	< 39.9	DU	< 16.1	U	< 32.2	DU	< 48.2	U
Dieldrin	0.53	31	< 6.65	DU	< 2.68	U	< 5.36	DU	< 8.04	U
Endosulfan I	2200	62000	< 46.6	DU	< 18.8	U	< 37.5	DU	< 56.3	U
Endosulfan II	2200	62000	< 13.3	DU	< 5.36	U	< 10.7	DU	< 16.1	U
Endosulfan Sulfate	NC	NC	< 219	DU	< 88.4	U	< 177	DU	< 265	U
Endrin	200	46000	< 20	DU	< 8.04	U	< 16.1	DU	< 24.1	U
Endrin Aldehyde	NC	NC	< 76.5	DU	< 30.8	U	< 61.6	DU	< 92.5	U
Heptachlor	40	93	< 9.98	DU	< 4.02	U	< 8.04	DU	< 12.1	U
Heptachlor Epoxide	20	54	< 276	DU	< 111	U	< 222	DU	< 334	U
Methoxychlor	4000	750000	< 585	DU	< 236	U	< 472	DU	< 708	U
Toxaphene	300	440	< 798	DU	< 322	U	< 643	DU	< 965	U
Aroclor-1016	50	1000	< 216	DU	< 87.1	U	< 174	DU	< 261	U
Aroclor-1221	50	1000	< 216	DU	< 87.1	U	< 174	DU	< 261	U
Aroclor-1232	50	1000	< 216	DU	< 87.1	U	< 174	DU	< 261	U
Aroclor-1242	50	1000	< 216	DU	< 87.1	U	< 174	DU	< 261	U
Aroclor-1248	50	1000	< 216	DU	< 87.1	U	< 174	DU	< 261	U
Aroclor-1254	50	1000	< 216	DU	< 87.1	U	< 174	DU	< 261	U
Aroclor-1260	50	1000	< 216	DU	< 87.1	U	< 174	DU	< 261	U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

D = Diluted Sample

Exceedance

03058

TABLE 4-17
Herbicides In Sediments Analytical Results (ug/Kg)
Sanitary Landfill Area, Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (ug/Kg)	SAI Res (ug/Kg)	SD1		SD2		SD3		SD4	
2,4-D	7000	2000000	< 150	U	< 100	U	< 100	U	< 100	U
2,4-DB	24300	863000	< 150	U	< 100	U	< 100	U	< 100	U
2,4,5-T	18000	170000	< 15	U	< 10	U	< 10	U	< 10	U
2,4,5-TP(Silvex)	5000	1200000	< 15	U	< 10	U	< 10	U	< 10	U
Dalapon	91300	3240000	< 600	U	< 400	U	< 400	U	< 400	U
Dicamba	11000	4600000	< 15	U	< 10	U	< 10	U	< 10	U
Dichlorprop	NC	NC	< 150	U	< 100	U	< 100	U	< 100	U
Dinoseb	700	150000	< 60	U	< 40	U	< 40	U	< 40	U
MCPA	1520	53900	< 60000	U	< 40000	U	< 40000	U	< 40000	U
MCPP	3040	108000	< 60000	U	< 40000	U	< 40000	U	< 40000	U

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

NC = Not calculated because no toxicity criteria was available

U = Not Detected

Exceedance

TABLE 4-18
Metals In Sediments Analytical Results (mg/Kg)
Sanitary Landfill Area, Former Laredo Air Force Base, Laredo, TX

Parameter	GWP Res (mg/Kg)	SAI Res (mg/Kg)	SD1	SD2	SD3	SD4
Silver	18	460	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Aluminum	3700	150000	3230	4340	6010	3800
Arsenic	5	20	1.43	1.5	2.23	1.9
Barium	200	9100	36	55.3	62.8	67.9
Beryllium	0.4	46	< 0.3 U	< 0.3 U	0.34	< 0.3 U
Calcium	*	*	9810	9310	14800	21800
Cadmium	0.5	120	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Cobalt	220	13000	2.04	2.11	2.39	1.8
Chromium	10	53000	2.84	3.61	4.61	3.11
Copper	130	10000	2.46	4.03	4.51	2.97
Iron	*	*	4140	4690	5670	4010
Mercury	0.2	6.1	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U
Potassium	*	*	862	1070	1450	889
Magnesium	*	*	1060	1270	1840	1180
Manganese	170	16000	40.7	114	88.3	89.8
Sodium	*	*	313	329	531	300
Nickel	73	1900	3.11	3.33	4.31	2.87
Lead	1.5	500	5.32	4.97	5.65	4.46
Antimony	0.6	72	< 5 U	< 5 U	< 5 U	< 5 U
Selenium	5	1300	< 1 U	< 1 U	< 1 U	< 1 U
Tin	2200	93000	1.37	1.5	1.56	1.17
Thallium	0.2	20	< 1 U	< 1 U	< 1 U	< 1 U
Vanadium	26	480	6.66	8.33	10.6	8.36
Zinc	1100	59000	16.7	22.3	22.4	18.4
Total Solids			70.6 %	65.2 %	73 %	69.3 %

GWP-Res, SAI-Res = Texas Natural Resource Conservation Commission Risk Reduction Standard No. 2 Media-Specific Concentrations that are protective of soil to groundwater transfer of contaminants and soil/air ingestion for residential soils

* = RRS values not calculated for essential nutrient metals

U = Not Detected

Exceedance

4.9.2 Total Metals

RCRA Metals

Four sediment samples were analyzed for the eight RCRA metals that include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. The analytical results for the metals analyses are presented in Table 4-18.

Arsenic was detected in all four of the sediment samples at concentrations ranging from 1.43 mg/kg for sample SD1 to 2.23 mg/kg for sample SD3. None of the arsenic concentrations exceed the TNRCC RRS2 GWP-Res standard of 5.0 mg/kg.

Barium was detected in all four of the soil sediment at concentrations ranging from 36 mg/kg for sample SD1 to 67.9 mg/kg for sample SD4. None of the barium concentrations exceed the TNRCC RRS2 GWP-Res standard of 200 mg/kg.

Chromium was detected in all four of the sediment samples at concentrations ranging from 2.84 mg/kg for sample SD1 to 4.61 mg/kg for sample collected from SD3. None of the sediment samples exceed the TNRCC RRS2 GWP-Res standard 10 mg/kg for chromium.

Lead was detected in all four of the sediment samples at concentrations ranging from 4.46 mg/kg for sample SD4 to 5.65 mg/kg for sample SD3. All four detected lead concentrations exceed the TNRCC RRS2 GWP-Res standard of 1.50 mg/kg for lead.

Cadmium, mercury, selenium, and silver were not detected in any of the sediment samples. The respective method quantitation limits are equivalent or below to the respective TNRCC RRS2 GWP-Res standards.

Other Metals

Metals analyzed in addition to the eight RCRA metals discussed above include aluminum, antimony, beryllium, calcium, cobalt, copper, iron, magnesium, manganese, nickel, potassium, sodium, thallium, tin, vanadium, and zinc. Analytical results indicate the presence of these metals in all sediment samples with the exception of antimony, beryllium, and thallium. Beryllium was detected in only one sample, SD3. Antimony and thallium were not detected in any of the sediment samples.

Metals concentrations detected above the respective analytical method quantitation limits were all below the applicable TNRCC RRS2 GWP-Res standards, with the exception of aluminum. The detected concentrations of aluminum slightly exceeded the TNRCC RRS2 GWP-Res standard in three of the four sediment samples. No RRS2 values were calculated for calcium, iron, magnesium, potassium, and sodium, since these metals are essential nutrients.

4.10 Nature and Extent of Contamination

4.10.1 VOCs

VOCs were detected in site soils and groundwater. No VOCs were detected in the sediment samples. The occurrence of the detected VOCs across the site is limited, being detected in soils at only four boring locations (SB1, SB2, SB8, and SB28), and in groundwater at only six locations (W2, W3, W4, W5, W6, and W10). Except for location SB28, all of the locations where VOCs were detected in soils or groundwater are located on the currently vacant area at the northwestern corner of the site. Location SB28 is located with the residentially-developed area of the site, along Agave Drive. None of the detected concentrations of VOCs exceed the applicable TNRCC RRS2 GWP-Res, SAI-Res, or GW-Res standards.

Chlorobenzene was detected in one of the soil gas samples, SG6 at a depth of 7 feet. Methane was detected two soil gas sample, SG6 at a depth of 3 feet and SG5 at a depth of 3 feet. Both sampling locations are within the vacant area in the northwestern portion of the SLF site. There is no TNRCC RRS2 standard for soil gas concentrations.

4.10.2 SVOCs

SVOCs were detected in site soils and groundwater. No SVOCs were detected in the sediment samples. The occurrence of the detected SVOCs across the site is limited, being detected in soils at only three boring locations (SB2, SB39, and SB49), and in groundwater at only four locations (W3, W4, W5, and W10). Locations SB2, W3, W4, and W5 are all located on the currently vacant area at the northwestern corner of the site. Location W10 is within the schoolyard area of Newman Elementary School. Locations SB39 and SB49 are located along the northern edge of the residentially-developed area of the site.

Only one of the detected SVOC concentrations [bis (2-ethylhexyl) phthalate at 7.27 mg/kg, from the soil sample collected at SB2 at 5.0 feet depth] exceeds the applicable TNRCC RRS2 standard (GWP-Res standard of 0.6 mg/kg). It is noted that bis (2-ethylhexyl) phthalate is a common laboratory contaminant. Therefore, the detected concentration of bis (2-ethylhexyl) phthalate may not represent actual environmental contamination.

4.10.3 Pesticides/PCBs

Pesticide compounds were detected in site soils, groundwater, and sediments. As with the VOCs and SVOCs, the occurrence of the detected pesticides across the site is limited. The pesticides were detected in site soils at only two sampling locations (SB5 and SB24), in groundwater at only three locations (W3, W4, and W5), and at three of the four sediment sampling locations (SD1, SD2, and SD3). Locations W3, W4, W5, and SB5 are all located on the currently vacant area at the northwestern corner of the site. Location SB24 is within the residentially-developed area of the site, northeast of Newman Elementary School. The three sediment sampling locations are located along the stream adjacent to the northwestern corner of the site.

Only two pesticide compounds, chlordane and alpha-BHC, were detected at concentrations exceeding the respective TNRCC RRS2 GWP-Res or GW-Res standards. The soil sample collected from SB5 at a depth of 5.0 feet and sediment sample SD1 contain chlordane at concentrations slightly exceeding the TNRCC RRS2 GWP-Res standard of 200 µg/kg. The detected concentrations are 690 µg/kg and 553 µg/kg, respectively. Groundwater sample W4 contained alpha-BHC at a concentration of 0.0326 µg/L, slightly exceeding the TNRCC RRS2 GW-Res standard of 0.014 µg/L.

No PCB compounds were detected in any of the soil, groundwater, or sediment samples.

4.10.4 Herbicides

Herbicides were detected in site soils and groundwater. No herbicides were detected in the sediment samples. The occurrence of the detected herbicides across the site is limited, being detected in soils at two boring locations (SB5 and SB19), and in groundwater at only six locations (W3, W4, W5, W10, W21, and W23). Locations SB2, W3, W4, and W5 are all located on the currently vacant area at the northwestern corner of the site. Locations W10 and SB19

are within the schoolyard area of Newman Elementary School. Locations W21 and W22 are located outside the northeastern corner of the Newman Elementary School yard area.

Only the concentrations of MCPA for groundwater samples W3 and W4 exceeds the respective TNRCC RRS2 GWP-Res or GW-Res standards.

4.10.5 Total Metals

RCRA Metals

Various RCRA metals were detected in all soil, groundwater, and sediment samples. However, the detected concentrations of the various metals that exceed the respective TNRCC RRS2 GWP-Res or GW-Res standards occur sporadically. An exception is lead, for which almost every soil, groundwater, and sediment sample exceeded the applicable standard.

It is noted that the detected metals concentrations in soil samples that exceed the respective GWP-Res standards do so only slightly, and that the metals concentrations are fairly consistent across the site. Although no background study for metals has been performed at the site, the consistency of the metals concentrations may indicate that the metals concentrations are due to natural soil conditions rather than a release of contaminants from the SLF activities.

Similarly, arsenic, barium, cadmium, and chromium exceed the GW-Res standards in several groundwater samples. However, the exceedances are slight, and the detected concentrations are fairly consistent across the SLF site area. It is noted that while arsenic, barium, and chromium exceed the GW-Res standard in a number of groundwater samples, few of the soil samples collected at the same locations exceed the GWP-Res standard. This also indicates that the detected concentrations are due to natural conditions rather than to SLF site activities. It is also noted that turbidity was a problem on many of the groundwater samples. The detected concentrations of the various metals that exceed the GW-Res standards may be due to the turbidity of the samples.

Selenium was detected in only two of the groundwater samples. Neither of the detected selenium concentrations exceed the GW-Res standard for selenium in groundwater. Silver was not detected in any of the soil, sediment, or groundwater samples.

Other Metals

Each of the other non-RCRA metals (except antimony and thallium) for which the soil, groundwater, and sediment samples were analyzed, were detected in one or more of the soil, groundwater, or sediment samples. As with the RCRA metals, the detected concentrations that exceed the respective TNRCC RRS2 GWP-Res or GW-Res standards are generally sporadic. Exceptions are aluminum and beryllium in site soils and groundwater, and manganese and vanadium in site groundwater. However, these concentrations generally exceed the standards only slightly, and the concentrations are fairly consistent across the site, indicating no particular pattern of occurrence. A background study for metals has not been conducted. However, the consistency of the concentrations across the site suggest that the concentrations may reflect the naturally occurring concentrations.

Section 5
Contaminant Fate and Transport

5. Contaminant Fate and Transport

5.1 Contaminant Properties

The fate of a contaminant within the environment and the ability for that contaminant to migrate within the environment depends upon the chemical and physical nature of the contaminant. Properties that can affect a contaminant's fate and transport are water solubility, vapor pressure, molecular weight, organic carbon partition coefficient, octanol-water partition coefficient, Henry's law constant and specific gravity. These properties are necessary to discuss the transport and fate of the contaminants and to compare applicable remedial technologies.

The potential for movement of a contaminant from one environmental medium, such as soil, to another, such as the air or groundwater, is defined by partition coefficients. Partition coefficients estimate a contaminant's propensity to accumulate in one medium over another. For example, the more water soluble a contaminant, the more likely it is that it will reside in the aqueous phase and move through the soil column to the saturated zone. These contaminants can be termed mobile. A contaminant with a high affinity for organic carbon (high K_{oc} value, or log octanol-water coefficient) will prefer to remain attached to the soil organic matter or non-aqueous phases. These contaminants can be termed immobile. A contaminant that has a high Henry's constant will prefer the gaseous phase over either the soil or water compartment. These contaminants will be mobile within the soil gas phase in any direction, depending on the pneumatic permeability of the soil and vapor phase density of the contaminant.

5.1.1 Volatile Organic Compounds

No VOCs were identified during the investigation of the SLF site that exceed TNRCC RRS2 GWP-Res or GW-Res concentrations. Chlorobenzene and methane were detected soil gas samples collected within the vacant area in the northwestern portion of the SLF site.

VOCs are moderately soluble in water, indicating that these compounds are likely to dissolve into groundwater and migrate with the moving groundwater. VOCs generally have

low K_{oc} and log K_{ow} values, indicating that the VOCs are more likely to migrate through soils, potentially enabling them to reach groundwater. The Henry's law constants and vapor pressures for the VOCs are high, indicating a significant potential for the VOCs to enter the gaseous or vapor phase.

The chlorobenzene and methane detected in the soil gas samples are already in the vapor phase. These compounds are likely to migrate through the soil vadose zone and into the atmosphere.

5.1.2 Semivolatile Organic Compounds

Only one SVOC, bis (2-ethylhexyl) phthalate, was found to exceed TNRCC RRS2 GWP-Res or GW-Res standards. This compound exceeds the GWP-Res standard in one soil sample, (SB2 at 5.0 feet depth). This compound has a low solubility in water, indicating that it would not be likely to dissolve into water and migrate with moving groundwater. The compound has high K_{oc} and K_{ow} values, indicating that the compound is very likely to adsorb to soils and therefore would not be very mobile in soils. The ability for the compound to adsorb to soils would increase with increasing soil organic carbon content. The low Henry's law constant and low vapor pressure indicate that this compound would not be likely to volatilize into the air. Based upon this information, it is unlikely that the bis (2-ethylhexyl) phthalate will migrate significantly on the site.

5.1.3 Pesticides

The pesticide Chlordane was identified in one site soil sample and one sediment sample at concentrations exceeding the TNRCC RRS2 GWP-Res standard. Alpha-BHC was identified in one site groundwater sample at a concentration exceeding the TNRCC RRS2 GW-Res standard. These compounds have low solubility in water, and moderately high to high K_{oc} and log K_{ow} values. Therefore, these compounds would be expected to be relatively immobile in soils, being likely to adsorb to site soils and not migrate into groundwater. It is noted that while chlordane was found in one of the subsurface soil samples and three of the sediment samples, it was not found in any of the groundwater samples. These compounds have moderately low Henry's law constants, indicating that these compounds in liquid form

may have some potential to enter the vapor phase. Since these compounds are not found at the SLF area as free liquids, the potential for the compounds to enter the vapor phase is low.

5.1.4 PCBs

No PCB compounds were detected in any of the soil, groundwater, or sediment samples collected during this investigation of the SLF area.

5.1.5 Herbicides

The herbicide MCPA was identified in two groundwater samples, W3 and W4. MCPA has low K_{oc} and log K_{ow} values, indicating that MCPA is not likely to adsorb to soil particles and is readily leached from soils. It is relatively soluble in water, so when MCPA is leached from soils, it is likely to enter the groundwater. MCPA has a moderately high Henry's law constant, indicating that it will readily enter the vapor phase.

5.1.6 Metals

Several metals were identified in site soils, groundwater, and sediments at the SLF site. Metals are non-volatile. Metals are relatively immobile in soils, particularly in clayey soils, readily adsorbing to soil particles. Metals are essentially insoluble in elemental form, although salt compounds of the metals can be very soluble in water. Therefore, the metals have some potential to migrate downward into groundwater. However, it is noted that the relatively low annual precipitation in the Laredo area would limit the vertical migration of the metals at the SLF site.

5.2 Potential Routes of Migration and Exposure

Typical routes of contaminant migration and exposure include:

- Ingestion of or dermal contact with contaminated media;
- Volatilization to the atmosphere followed by inhalation or ingestion;
- Dissolution into groundwater followed by contaminant migration with the moving groundwater and later ingestion or dermal contact, and;
- Physical transport of contaminants or contaminated media, followed by ingestion or dermal contact.

Ingestion or dermal contact with the contaminated media is the generally the most direct route of exposure to contaminants. It is noted that groundwater is not utilized as a water supply in the vicinity of the SLF site. Therefore, direct exposure to contaminants would be through contact with contaminated soils or sediments. This could occur through gardening activities, construction, utility maintenance, or similar activities.

Volatilization of contaminants into the atmosphere is a potential route of migration of VOCs. However, no VOCs were detected at the SLF site area that exceed the applicable TNRCC RRS2 GWP-Res or GW-Res standards. The most likely occurrence of volatilization to the atmosphere would be through the chlorobenzene and methane detected in the soil gas in the northeastern portion of the site. Generally the concentrations volatilizing directly to the atmosphere would be relatively insignificant. Exposure to the contaminants would be most likely through accumulations of vapors in structures built over the contaminated areas.

Dissolution and migration into groundwater is a potential route of migration for VOCs and metals. However, no VOCs were detected at the SLF site area that exceed the applicable TNRCC RRS2 GWP-Res or GW-Res standards. Also, the limited precipitation received in the Laredo area would limit the potential for the dissolution of VOCs and metals. Exposure to the contaminants would be through direct contact or ingestion with the contaminated groundwater. It is noted that groundwater is not utilized as a water supply in the vicinity of the SLF site.

MCPA was identified in the groundwater at the SLF site. Due to the solubility of MCPA in water and the groundwater's depth below ground surface, vaporization or volatilization of MCPA into the atmosphere is not likely. MCPA is not likely to adsorb to soil particles, therefore the MCPA that was identified in the groundwater would be likely to continue migration along with the groundwater flow until natural processes degrade the compound. It is noted that groundwater is not utilized in the vicinity of the SLF.

Physical transport of contaminants is a potential route of migration for the contaminants identified at the SLF area. Typically, soils are dry and subject to wind erosion. Contaminants adsorbed to the windblown soil particles can be inhaled or ingested. Precipitation, although

infrequent, can occur in brief, heavy storms that can transport contaminated soils or sediments.

5.3 Potential Receptors

Because groundwater is not utilized in the vicinity of the SLF site, the potential receptors for the contaminants at the SLF site area include those who have the potential to come into contact with site soils or stream sediments.

- Residents of the neighborhood constructed over the SLF site
- Construction personnel whose work requires soil excavation
- City and private utility personnel whose work involves maintenance or installation of subsurface utilities
- Small animals within the SLF area
- Aquatic organisms within the drainage ditch or the body of water into which the drainage ditch empties

Section 6
Conclusions and Recommendations

6. Conclusions and Recommendations

6.1 Conclusions

The USACE conducted an investigation of the SLF area associated with the former LAFB. The investigation included the performance of a historical aerial photography review to visually identify past landfill trench locations, the performance of an EM survey to identify potential landfill trenches not observed on the historical aerial photographs, the performance of a soil gas survey to assess whether constituents could be emanating from the landfill trenches into the soil vadose zone, and the collection and analysis of soil, groundwater, and sediment samples from the SLF area. The following conclusions are based upon the results of the investigation:

- The historical aerial photography review identified 16 apparent landfill trenches, utilized between 1952 and 1975. The EM survey identified two other potential trenches.
- The historical aerial photography suggests that the SLF site may have been utilized for agricultural purposes prior to establishment of the former LAFB. Properties adjacent to the SLF site were observed to be utilized for agricultural purposes.
- No VOCs and no methane were found in the soil gas samples collected from the vicinity of the former landfill trenches. Three samples collected from the vacant commercial area in the northwestern corner of the site exhibited chlorobenzene (one sample) and methane (two samples). These apparently isolated detections indicate that there is no significant occurrence of these compounds in the vadose zone soil gas in the SLF site area, and that the extent of the detected compounds has been delineated.
- One of the two soil gas samples for which methane was reported contains methane at a concentration approximately equal to the LEL for methane in air. The soils in this portion of the site were found to consist of organic rich clays. Such soils could account for the methane in the soil gas.
- The soil samples analyzed during the investigation exhibited no detectable concentrations of VOCs, PCBs, or herbicides that exceed the TNRCC RRS2 GWP-Res standards. Only two soil samples exhibited concentrations of pesticides or SVOCs that

exceed the GWP-Res standards. Chlordane was detected in one sample and bis (2-ethylhexyl) phthalate was detected in one sample. It is noted that bis (2-ethylhexyl) phthalate is a common laboratory contaminant. Therefore and the detected concentration may not be due to environmental contamination. These apparently isolated detections indicate that there is no significant occurrence of these compounds in the soils in the SLF site area, and that the extent of the detected compounds (if present due to actual environmental contamination) has been delineated.

- Except for aluminum, lead, and beryllium, the detected metals concentrations that exceed the GWP-Res standards in SLF site soils occur sporadically across the site, indicating no particular pattern of occurrence. Although most of the aluminum, lead, and beryllium samples exceed the respective GWP-Res standards, the concentrations are generally consistent across the site and of the same order of magnitude as the GWP-Res standard. The detected metals concentrations may therefore reflect natural conditions (although it is noted that no background study for metals in soils has been performed for the SLF area).
- The groundwater samples analyzed during the investigation exhibited no detectable concentrations of VOCs, SVOCs, or PCBs that exceed the TNRCC RRS2 GW-Res standards. No detectable concentrations of VOCs were reported from the field analysis of the groundwater samples, as well. Only one groundwater sample exhibited a concentration of one pesticide compound (alpha-BHC) that slightly exceeds the GW-Res standard. Only two groundwater samples exhibited concentrations of one herbicide compound, MCPA, that exceed the GW-Res standard. These apparently isolated detections indicate that there is no significant occurrence of these compounds in the groundwater in the SLF site area, and that the extent of the detected compounds has been delineated.
- The detected metals concentrations in SLF site groundwater that exceed the GW-Res standards include most of the detections for aluminum, arsenic, beryllium, chromium, manganese, lead, and vanadium. Barium, cadmium, and mercury also are detected in several groundwater samples at concentrations exceeding the GW-Res standards. As with the soil samples, although many of the groundwater samples exceed the respective GW-Res standards for many of the metals constituents, the detected metals

concentrations are generally consistent across the site and generally do not significantly exceed the GW-Res standards. Further, many of the detections that exceed GW-Res standards correspond to locations where the soil samples did not exceed the GWP-Res standards. It is therefore likely that the detected metals concentrations reflect natural groundwater conditions. It is noted however, that turbidity was a problem on many of the groundwater samples. High turbidity could cause the detected concentrations of the various metals to exceed the GW-Res standards.

- The sediment samples analyzed during the investigation exhibited no detectable concentrations of VOCs, SVOCs, PCBs, or herbicides that exceed the TNRCC RRS2 GWP-Res standards. Only one sediment sample exhibited a concentration of one pesticide compound (chlordane) that slightly exceeds the GWP-Res standard.
- Only aluminum and lead exceed the GWP-Res standard in the sediment samples. However, the detected concentrations only slightly exceed the standards, and the concentrations are fairly consistent. It is therefore likely that the detected metals concentrations reflect natural conditions.
- The very limited extent of the organic contaminants that exceed TNRCC RRS2 GWP-Res and GW-Res standards, as well as the consistency of the detected metals concentrations in the soils, groundwater, and sediments, indicate that there is no particular pattern of occurrence of the contaminants that would indicate a release due to SLF activities.
- The physical properties of the organic constituents (except for MCPA) identified in the SLF soil, groundwater, and sediment samples indicate that the contaminants are likely to be relatively immobile in soils. Those compounds present in soil are therefore not likely to migrate into groundwater, particularly when considering the limited precipitation received in the Laredo area. Those compounds present in groundwater are likely to adsorb to soil particles, reducing the potential for transport with the flow of groundwater. MCPA is readily leachable from soils and is relatively soluble in water. Therefore it has a greater potential to migrate with flowing groundwater. It is noted that the water supply for the residents of the SLF area is provided by City of Laredo, taken from the Rio Grande River. Groundwater is not utilized at the SLF area.

- The pesticide and herbicide concentrations detected in the SLF site soils, groundwater, and sediments could be the result of past use on the SLF site and adjacent properties when the area was utilized for agricultural purposes.

6.2 Recommendation

Based upon: 1) the very limited occurrence, limited extent, and relative immobility of most of the organic contaminants identified at the SLF area that exceed TNRCC RRS2 GWP-Res and GW-Res standards; 2) the lack of use of groundwater underlying the SLF site; 3) the lack of detected VOCs or methane in the area of the SLF site where trenches formerly existed; and 4) the consistency of the detected metals concentrations in site soils, groundwater, and sediments that indicate the detected concentrations may be due to natural conditions (recognizing that no formal background study for metals concentrations in SLF site soils has been performed), no further investigation of the former LAFB SLF area is recommended.

Section 7
References

7. References

Parker, Robert H. Ph.D., *Physiography, Geology, Groundwater, and Soils for Webb County, and Especially, for Laredo, Texas*, February 1996.

Raba-Kistner Consultants, Inc., *Phase I Environmental Site Assessment of Arkansas Street Extension, Laredo, Webb County, Texas*, Prepared for the City of Laredo, November 1996.

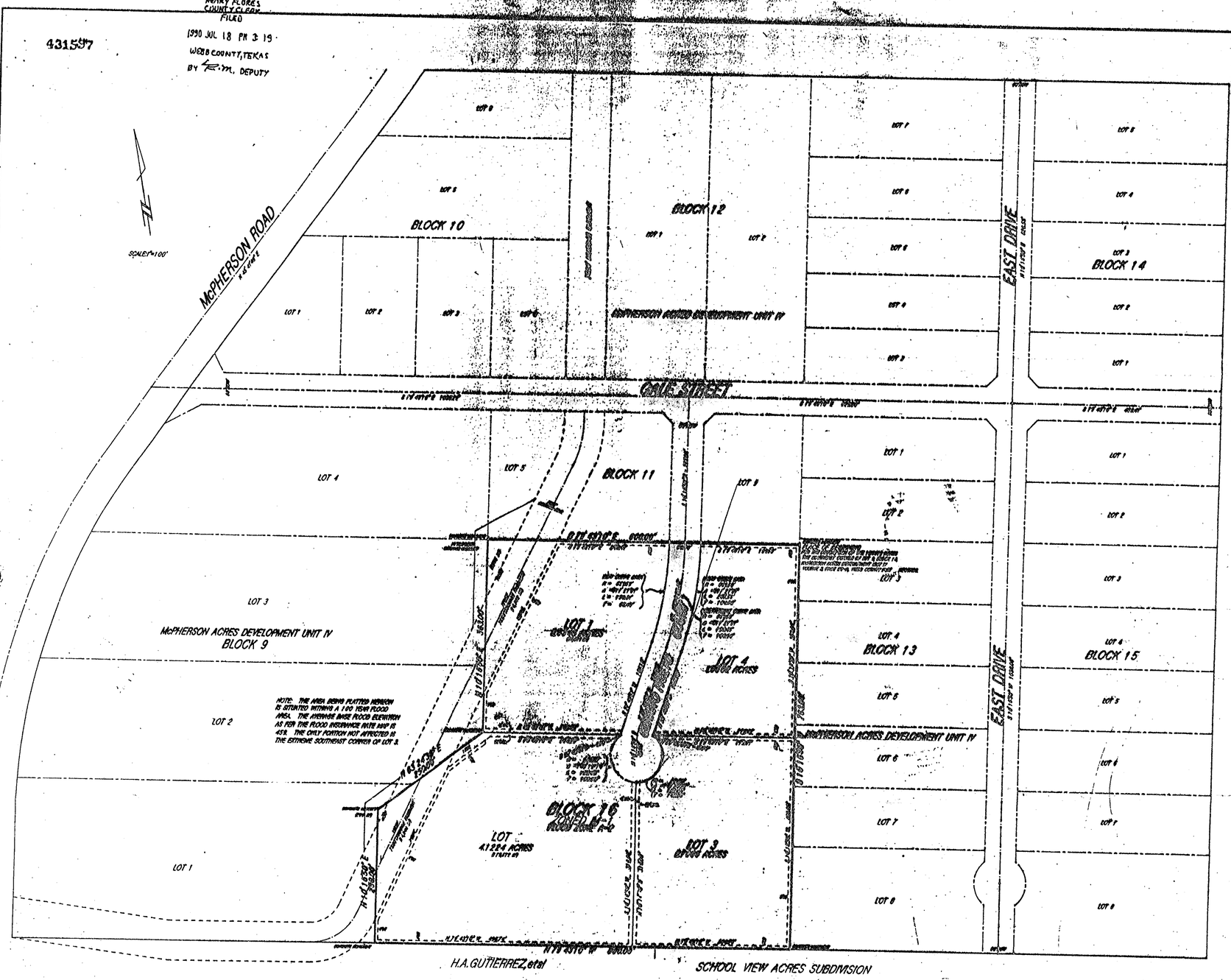
Texas Natural Resource Conservation Commission, *Petroleum Storage Tank Program, Limited Site Assessment Guidance Document, PST 92-06*, February 1993.

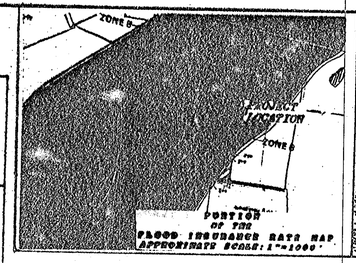
USDA (US Department of Agriculture), Soil Conservation Service, *Soil Survey, Webb County, Texas*, (date unknown).

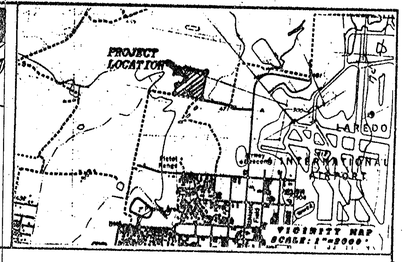
Appendix A
Plat Maps

431597

HENRY FLORES
COUNTY CLERK
FILED
1990 JUL 18 PM 3 19
WEBB COUNTY, TEXAS
BY R.M. DEPUTY







CERTIFICATE OF OWNER
STATE OF TEXAS:
COUNTY OF WEBB:

I, A.B. BARRERA, SENIOR VICE-PRESIDENT OF BEHALF OF THE LAREDO NATIONAL BANK, CO-TRUSTEE, AND DAN M. SANCHEZ, JR. CO-TRUSTEE, OWNERS OF THE PROPERTY DESCRIBED IN THE FOREGOING MAP, DO HEREBY MAKE SUBDIVISION OF SAID PROPERTY ACCORDING TO THE MAP LAYED, DEDICATE STREET-OF-WAY AND EASEMENTS SHOWN THEREON AND DESIGNATE SAID SUBDIVISION TO BE KNOWN AS THE

SANCHEZ RANCHITO ACREAGE TRUSTS SUBDIVISION

AND AS CO-TRUSTEES WE HEREBY DEDICATE TO THE USE OF THE PUBLIC THE PERPETUAL USE OF ALL STREETS AND EASEMENTS SHOWN HEREON AND TO BIND OUR SUCCESSORS, AND ASSIGNEES AND HEIRS TO FOREVER WARRANT THE TITLE TO THE LAND SO DEDICATED.

IN WITNESS WHEREOF A.B. BARRERA, SENIOR VICE-PRESIDENT OF THE LAREDO NATIONAL BANK, CO-TRUSTEE AND DAN M. SANCHEZ, JR., CO-TRUSTEE HAVE CAUSED THESE PRESENTS TO BE SIGNED ON THIS THE 25 DAY OF March, 1990.

THE LAREDO NATIONAL BANK CO-TRUSTEE
A.B. BARRERA, SENIOR VICE-PRESIDENT

DAN M. SANCHEZ, JR., CO-TRUSTEE

CERTIFICATE OF NOTARY PUBLIC
STATE OF TEXAS:
COUNTY OF WEBB:

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY APPEARED A.B. BARRERA, SENIOR VICE-PRESIDENT OF THE LAREDO NATIONAL BANK, AS CO-TRUSTEE AND DAN SANCHEZ, JR. AS CO-TRUSTEE, KNOWN TO ME TO BE THE PERSONS WHOSE NAMES ARE SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND EACH OF THEM ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED, AND IN THE CAPACITY THEREIN STATED, AND AS THE ACT AND DEED OF SAID LAREDO NATIONAL BANK AS CO-TRUSTEE AND DAN M. SANCHEZ, JR. AS CO-TRUSTEE.

WITNESS MY HAND AND SEAL OF OFFICE ON THIS 25 DAY OF March, 1990.

Blanca E. Soto
NOTARY PUBLIC, WEBB COUNTY, TEXAS

9-9-92
DATE COMMISSION EXPIRES

Metes & Bounds Description
of a
12.0018 ACRE TRACT
KNOWN AS
SANCHEZ RANCHITO ACREAGE TRUST

A tract of land containing 12.0018 acres, more or less, out of Survey 380, Abstract 360, J. Trevino Original Grantee, situated in the northern division of the City of Laredo, Webb County, Texas, said 12.0018 acre tract being more particularly described by metes and bounds as follows, to-wit:

BEGINNING at a 1/2 inch diameter iron rod found on the westerly line of Lot 3, Block 13 of the McPherson Acres Subdivision, Unit IV, a subdivision filed of record in Volume 3, Page 26-A of the Webb County Plat Records, said 1/2 inch diameter iron rod being the southeasterly corner of Lot 8, Block 13 of the aforementioned subdivision and in the northeasterly corner hereof;

THENCE South 10°10'00"West - 765.00 Feet with a westerly line of Block 13 of the McPherson Acres Subdivision, Unit IV, the easterly line hereof, to a point on the northerly line of the School Tree Acres Subdivision, the southeasterly corner of Lot 6, Block 13, McPherson Acres Subdivision, Unit IV, and the southeasterly corner hereof;

THENCE North 79°43'20"West - 660.00 Feet partly with the northerly line of the School Tree Acres Subdivision and partly with the northerly line of an unplatted tract to a 1/2 inch diameter iron rod set for the southeasterly corner of Lot 1, Block 9 of the McPherson Acres Subdivision, Unit IV and the southwesterly corner hereof;

THENCE North 10°10'00"East - 570.00 Feet with the easterly line of the aforementioned Lot 1, the westerly line hereof, to a point of deflection to the right;

THENCE North 63°34'28"East - 200.00 Feet with the easterly line of Lot 1 and Lot 2, Block 9, McPherson Acres Subdivision, Unit IV, the westerly line hereof, to a point of deflection to the left;

THENCE North 10°10'00"East - 203.00 Feet with the easterly line of Lot 2 and Lot 3 of Block 9 of the McPherson Acres Subdivision, Unit IV, the westerly line hereof, to a 1/2 inch diameter iron rod found for the northeasterly corner of Lot 3, the southeasterly corner of Lot 4, and the southwesterly corner of Lot 5 of Block 9, McPherson Acres Subdivision, Unit IV, the northwesterly corner hereof;

THENCE South 79°43'20"East - 660.00 Feet with the southerly line of Lot 5 and of Block 9, the westerly line of Block 11, and southerly line of Lot 8, Block 10, the northerly line hereof, to the PLACE OF BEGINNING.

PLAT
SHOWING THE
SANCHEZ RANCHITO ACREAGE TRUSTS
SUBDIVISION
SURROUNDED ON THREE SIDES BY THE
McPHERSON ACRES UNIT IV SUBDIVISION

RECORDED IN VOLUME 3, PAGE 26-A
OF THE WEBB COUNTY PLAT RECORDS
SITUATED IN
SURVEY 1023 - ABSTRACT 360
J. TREVINO ORIGINAL GRANTEE
NORTHERN DIVISION
CITY OF LAREDO
WEBB COUNTY, TEXAS

PREPARED BY
HOWLAND & MEDINA
ENGINEERS & SURVEYORS
1908 CLARK BOULEVARD
LAREDO, TEXAS
FEBRUARY 12, 1990

SHEET 1 OF 2 SHEETS

PROPERTY OWNERS
THE LAREDO NATIONAL BANK
A.B.BARRERA-SENIOR VICE-PRESIDENT
P.O.DRAWER 59
LAREDO, TEXAS 78042-0059
723-1751 EXTENSION 251
DAN M. SANCHEZ, JR., CO-TRUSTEE

AREA OF BLOCK 16 IS 12.0018 ACRES

CERTIFICATE OF ENGINEER
STATE OF TEXAS:
COUNTY OF WEBB:

I, A.J. SMITH, REGISTERED PROFESSIONAL ENGINEER, HEREBY CERTIFY THAT ALL DISTANCES AND COORDINATES SHOWN HEREON ARE TRUE AND CORRECT AND THAT THE PLAT CONFORMS TO THE SUBDIVISION ORDINANCE OF THE CITY OF LAREDO, TEXAS.

A. J. SMITH, P.E. No. 7307

CERTIFICATE OF SURVEYOR
STATE OF TEXAS:
COUNTY OF WEBB:

I, HEREBY CERTIFY THAT I PREPARED THE ATTACHED METES AND BOUNDS DESCRIPTION OF THE 12.0018 ACRE TRACT OF LAND SITUATED IN THE CITY OF LAREDO, WEBB COUNTY, TEXAS, AND THAT THE PLAT HEREON WAS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY MADE UNDER MY SUPERVISION ON THE GROUND.

CERTIFICATE OF COUNTY CLERK
STATE OF TEXAS
COUNTY OF WEBB

I, HENRY FLORES, CLERK OF THE COUNTY COURT OF WEBB COUNTY, TEXAS, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT DATED THE ___ DAY OF _____, 1990, WITH ITS CERTIFICATES OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE ___ DAY OF _____, 1990, AT ___ O'CLOCK ___ M. IN VOLUME ___, PAGE ___ OF THE PLAT RECORDS OF SAID COUNTY.

WITNESS MY HAND & OFFICIAL SEAL OF OFFICE THIS ___ DAY OF _____, 1990.

HENRY FLORES
COUNTY CLERK
WEBB COUNTY, TEXAS

BY: _____
DEPUTY

COUNTY COURT OF VICTORIA COUNTY

1 mylar

FILED

Jul 14 3 52 PM '81

HENRY FLORES CO. CLERK

280560

McPherson Acres Development UNIT IV

LAND USE: INDUSTRIAL & COMMERCIAL ONLY

STOR-MORE STORAGE RENTALS

GALE STREET

McPHERSON ROAD

EAST DRIVE

SUR. 1023

Dario Sanchez Estate

Diversified Investors

Hugo A. Gutierrez, Jr. et al

Hillside Terrace Park

TEMPORARY DRAINAGE EASEMENT, LOTS 182, BLOCK 9. SCALE: 1" = 60'

PLAN Scale: 1" = 60'

Future 75 foot wide drainage easement to be dedicated when adjacent land is subdivided

Line of future drainage easement to be dedicated when adjacent land is subdivided

STATE OF TEXAS:
COUNTY OF WEBB:

I, Ralph W. Neil, owner of one 0.9430 acre tract (Block 10, Lot 6) out of Survey 1023, Abstract 380, Northern Division, City of Laredo, do hereby make subdivision of said property according to the lines, lots, streets and all other subdivision lines as shown hereon and dedicate to the public use as such, all easements shown thereon forever and do hereby bind myself, my assigns to warrant and forever defend the title to the land so dedicated. All of the property subdivided shall be restricted in its use, which restrictions shall run with the title to the property same of which will be filed as a separate document to this plat. In testimony whereof I sign these presents this 1 day of June, 1981.

Ralph W. Neil

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared Ralph W. Neil, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and considerations therein expressed. Given under my hand and seal of office, this 8 day of June, 1981.

Leticia Maldonado
Notary Public, Webb County, Texas

STATE OF TEXAS:
COUNTY OF WEBB:

This is to certify that I, A.J. Medina, Registered Professional Engineer No. 7307 Texas, have platted McPherson Acres, Unit IV from an actual survey on the ground, and that all lot corners are properly marked with ⅝" diameter iron rods 18" long and that the plat correctly represents that survey, same complying with the land subdivision ordinances of the City of Laredo.

This the 27th day of May, 1981.

Revised June 23, 1981

A.J. Medina, P.E.
Reg. No. 7307

APPROVED: Carlos V. Mejia, P.E. Date
City Engineer

This is to certify that this plat has been approved by the City Planning & Zonning Commission, City of Laredo, Texas, on this 25 day of June, 1981.

Larry Vetter
Chairman

STATE OF TEXAS:
COUNTY OF WEBB:

I, Henry Flores, Clerk of the County Court of Webb County, Texas do hereby certify that the within instrument with its certificate of authentication was filed for registration in my office on July 14, 1981, at 3:52 o'clock P.M. and duly recorded on July 15, 1981, at 3:57 o'clock P.M. in Volume 3 Page 26-A of record in Webb County Plat Records for said County.

Witness my hand and seal of office of Laredo, the time and date as above written.

HENRY FLORES
Clerk County Court

Deputy

STATE OF TEXAS:
COUNTY OF WEBB:

I, Fernando Garcia H., owner of a 4.2317 acre tract (Block 10-Lots 1,2,3,4) out of Survey 1023, Abstract 380, Northern Division, City of Laredo, do hereby make subdivision of said property according to the lines, lots, streets and all other subdivision lines as shown hereon and I dedicate to the public use as such the North half of Gale Street right-of-way (0.5108 acre tract forever and do hereby bind myself, my successors and assigns to warrant and forever defend the title to the land so dedicated. All of the property subdivided therein shall be restricted in its use, which restrictions shall run with the title to the property same of which will be filed as a separate document to this plat. In testimony whereof I sign these presents this 1 day of June, 1981.

Fernando Garcia H.

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared Fernando Garcia H. known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and considerations therein expressed. Given under my hand and seal of office, this 8 day of June, 1981.

Leticia Maldonado
Notary Public, Webb County, Texas

STATE OF TEXAS:
COUNTY OF WEBB:

I, Raul Perales, Jr. President & Publisher of Laredo News, Inc., owner of one 2.000 acre tract (Block 10, Lot 5) out of Survey 1023, Abstract 380, Northern Division, City of Laredo, do hereby make subdivision of said property according to the lines, lots, streets and all other subdivision lines as shown hereon. All of the property subdivided therein shall be restricted in its use, which restrictions shall run with the title to the property same of which will be filed as a separate document to this plat. In testimony whereof I sign these presents this 1 day of June, 1981.

Former Amando G. Rash

Laredo News, Inc.
Raul Perales, Jr.
President & Publisher

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared Raul Perales, Jr. President & Publisher of Laredo News, Inc., known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and considerations therein expressed. Given under may hand and seal of office, this 1 day of June, 1981.

Former L.A.F.B.

Leticia Maldonado
Notary Public, Webb County, Texas

STATE OF TEXAS:
COUNTY OF WEBB:

We, Ramon Barrios and Enrique B. Moreno, owners of one 9.2582 acre tract (Block 9-Lots 1 and 2) out of Survey 1023, Abstract 380, Northern Division, City of Laredo, do hereby make subdivision of said property according to the lines, lots, streets, and all other subdivision lines as shown hereon and dedicate to the public use as such all easements shown thereon forever and do hereby bind ourselves, our successors and assigns to warrant and forever defend the title to the land so dedicated. All of the property subdivided therein shall be restricted in its use, which restrictions shall run with the title to the property same of which will be filed as a separate document to this plat. In testimony whereof we sign these presents this 1 day of June, 1981.

Ramon Barrios

Enrique B. Moreno

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared Ramon Barrios and Enrique B. Moreno, known to me to be the persons whose names are subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and considerations therein expressed.

Given under my hand and seal of office, this 8 day of June, 1981.

Leticia Maldonado
Notary Public, Webb County, Texas

STATE OF TEXAS:
COUNTY OF WEBB:

We, Roberto Martinez and Guillermo Benavides, Jr. owners of one 4.2847 acre tract (Block 9-Lot 4) out of Survey 1023, Abstract 380, Northern Division, City of Laredo, do hereby make subdivision of said property according to the lines, lots, streets, and all other subdivision lines as shown hereon and dedicate to the public use as such, the south half of Gale Street right-of-way (0.4280 acre tract) and all easements shown thereon, forever and do hereby bind ourselves, our successors and assigns to warrant and forever defend the title to the land so dedicated. All of the property subdivided therein shall be restricted in its use, which restrictions shall run with the title to the property same of which will be filed as a separate document to this plat. In testimony whereof we sign these presents this 2nd day of June, 1981.

Roberto Martinez

Guillermo Benavides, Jr.

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared Roberto Martinez and Guillermo Benavides, Jr., known to me to be the persons whose names are subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and considerations therein expressed.

Given under my hand and seal of office, this 2nd day of June, 1981.

Former L.A.F.B.

Notary Public, Webb County, Texas

STATE OF TEXAS:
COUNTY OF WEBB:

I, Jorge Vasquez Elizondo, owner of one 4.4639 acre tract (Block 9-Lot 3) out of Survey 1023, Abstract 380, Northern Division, City of Laredo, do hereby make subdivision of said property according to the lines, lots, streets, and all other subdivision lines as shown hereon and dedicate to the public use as such, all easements shown thereon forever and do hereby bind myself, my assigns to warrant and forever defend the title to the land so dedicated. All of the property subdivided shall be restricted in its use, which restrictions shall run with the title to the property same of which will be filed as a separate document to this plat. In testimony whereof I sign these presents this 1 day of June, 1981.

Jorge Vasquez Elizondo

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared Jorge Vasquez Elizondo known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and considerations therein expressed. Given under my hand and seal of office, this 1 day of June, 1981.

Leticia Maldonado
Notary Public, Webb County, Texas

Solinos Realty

STATE OF TEXAS:
COUNTY OF WEBB:

I, Hugo A. Gutierrez, Jr., a general partner of Golden Triangle Interests, owner of a 41.0265 acre tract (Block 9, Lot 5; all of Block 11; Block 12, Lots 1 thru 7; Block 13, Lots 1 thru 9; Block 14, Lots 1 thru 5, and Block 15, Lots 1 thru 8) out of Survey 1023, Abstract 380, Northern Division, City of Laredo, do hereby make subdivision of said property according to the lines, lots, streets and all other subdivision lines as shown hereon and dedicate to the public use as such, streets adjacent to said property and all easements shown thereon forever and do hereby bind myself, my successors and assigns to warrant and forever defend the title to the land so dedicated. All of the property subdivided therein shall be restricted in its use, which restrictions shall run with the title to the property same of which will be filed as a separate document to this plat. In testimony whereof I sign these presents this 9 day of June, 1981.

Golden Triangle Interests

Hugo A. Gutierrez, Jr.
General Partner

STATE OF TEXAS:
COUNTY OF WEBB:

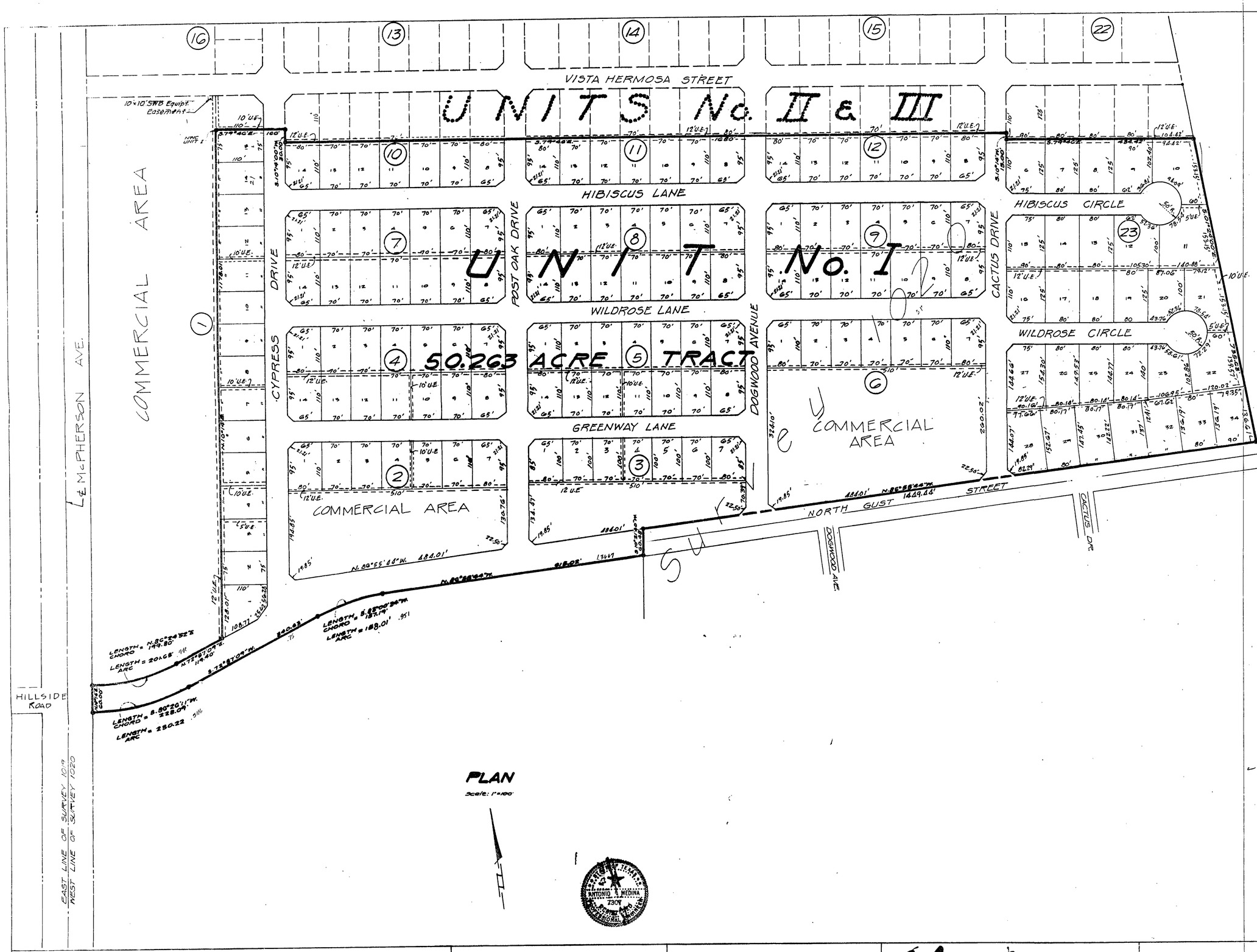
Before me, the undersigned authority, on this day personally appeared Hugo A. Gutierrez, Jr. a general partner of Golden Triangle Interests, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and considerations therein expressed. Given under my hand and seal of office, this 9 day of June, 1981.

Leticia Maldonado
Notary Public, Webb County, Texas

Rowland & Medina
ENGINEERS & SURVEYORS
Laredo, Texas

PLAT of McPHERSON ACRES UNIT IV
A SUBDIVISION IN SURVEY 1023 IN THE NORTHERN DIVISION, CITY OF LAREDO CONTAINING 66.2080 ACS.

SHEET 2 OF 4



PLAN
Scale: 1"=100'

STATE OF TEXAS:
COUNTY OF WEBB:

B.P. Newman Inv. Co., general partner of VIMOSA, Ltd., a limited partnership, the owner of the property subdivided in the foregoing map, do hereby make subdivision of said property for and on behalf of said VIMOSA Ltd. according to lines, lots, buildings lines, streets, alleys, parks and easements thereon shown and designate said subdivision as Vista Hermosa, Unit I in Survey 1020, Webb County, Texas and on behalf of said VIMOSA Ltd. dedicate to the public use as such, all of the streets, alleys, and easements as shown thereon forever and do hereby bind ourselves, our successors and assigns to warrant and forever defend the title to the land so dedicated. There is also dedicated for utilities an obstructed aerial easements (5') wide on each side (70') above the ground upward, located adjacent to all easements shown hereon.

All of the property subdivided in the foregoing map shall be restricted in its use, which restrictions shall run with the title to the property, same of which are filed as a separate document to this plat.

In testimony whereof VIMOSA Ltd. has caused these presents to be signed by B.P. Newman, President of B.P. Newman Investment Co. and attested by Peggy J. Newman, Secretary of B.P. Newman Inv. Co.

ATTEST:

PEGGY J. NEWMAN, Secretary
B.P. Newman Investment Co.

B.P. NEWMAN, President
B.P. Newman Invest. Co.

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared B.P. Newman, President of B.P. Newman Invest. Co. known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed, and in the capacity therein and herein set out, and as the act and deed of said Corporation.

Given under my hand seal of office, this _____ day of _____ 1977.

Notary Public, Webb County

This is to certify that this plat has been approved by the City Planning & Zoning Commission, City of Laredo, Texas, on this _____ day of _____ 1977.

FERNANDO F. ZUÑIGA Jr., P.E.
Chairman

STATE OF TEXAS:
COUNTY OF WEBB:

This is to certify that I, A.J. Medina, Registered Professional Engineer No. 7307 Texas, have platted Unit I of the above Subdivision from an actual survey on the ground made under my supervision, & that all block corners and angle point of curve are properly marked with ½" diameter iron rods 18" long and that this plat correctly represents that survey, same complying with the land subdivision ordinance of the City of Laredo.

A.J. Medina
A.J. MEDINA, P.E.
Reg. No. 7307

STATE OF TEXAS:
COUNTY OF WEBB:

I, Mike Volpe, Clerk of the County Court of Webb, Texas do hereby certify that the within instrument with its certificate of authentication was filed for registration in my office on _____ 1977, at _____ o'clock _____ M. and duly recorded on _____ 1977, at _____ o'clock _____ M. in Volume _____ Page _____ of Plat records in and for said County.

Witness my hand and seal of office of Laredo, the date last above written.

Clerk County Court, Webb County

Deputy

238925

2

Prepared By:

October 1, 1977
DATE

A.J. Medina
A.J. MEDINA, P.E.
Reg. No. 7307

Howland & Medina
ENGINEERS & SURVEYORS
Laredo, Texas

Vista Hermosa
SUBDIVISION UNIT I

PLAT
OF
VISTA HERMOSA SUBDIVISION UNIT I
A 50.263 ACRE TRACT OUT OF
RAFAEL VIDAURRI SURVEY 1020
ABSTRACT 780, LAREDO, WEBB COUNTY, TEXAS

SHEET 2 OF 17

266793 FILED
JUN 12 4 29 PM '80
HENRY FLORES CO. CLERK
WEBB COUNTY, TEXAS

263037
FEB 19 10 15 AM '80
HENRY FLORES CO. CLERK
WEBB COUNTY, TEXAS

Hillside Terrace

INSET
Showing
PARK TRACT
UNIT 7
Scale: 1" = 100'

Scale: 1" = 100'

WYOMING BASE LINE CURVES

① Δ=12°33'45" Rt. R=52.75 T=11.00 L=12.08
② Δ=14°26'07" Rt. R=265.00 T=33.16 L=77.97
③ Δ=15°58'W Lt. R=300.00 T=42.22 L=83.42
④ Δ=8°17'44" Rt. R=300 T=21.76 L=43.44
⑤ Δ=17°24'07" Rt. R=300 T=45.91 L=91.12
⑦ Δ=9°05'06" Lt. R=300 T=23.80 L=47.59
⑧ Δ=08°57'02" Lt. R=300 T=23.49 L=46.90
⑨ Δ=13°00'08" Lt. R=300 T=34.50 L=63.35
⑪ Δ=52°46'28" Rt. R=190.00 T=94.29 L=174.98

WYOMING BASE LINE P.I.'s

Ⓐ Δ=00°50'41" Lt. NO CURVE
Ⓑ Δ=60°40'03" Lt. NO CURVE

CURVE DATA
R=190.00
T=94.29
L=174.98
Δ=52°46'28"

IDAHO
NEVADA CIRCLE
IDAHO CIRCLE
COLORADO
ILLINOIS
KENTUCKY
MAYBERRY
MONTANA
NEBRASKA
OKLAHOMA
SOUTH DAKOTA
EAST DAKOTA
McPHERSON AVENUE

PARK
3.3711Ac.
-0.2399Ac.
0.2399 Ac.
4.1497Ac.
4.9422 Ac.
10.6530 Ac.
6.1870Ac.

UNITS
UNIT 7

DRAINAGE DITCH
75' DRAINAGE EASEMENT
12' U.E.
5' U.E.
15' UTILITY EASEMENT UNOBSTRUCTED
C. Property Line
FUTURE HILLSIDE ROAD
FUTURE STREET

COMMERCIAL AREA
COMMERCIAL

N. H. CLARK
N. H. CLARK

S.E.F. INSECT PARK

DOWNHOUSE'S

S 77°52'00"E 860'
S 77°52'00"E 865.20'
S 77°52'00"E 1151.06'
S 77°52'00"E 1258.69'
N 79°52' W 232.85'
N 79°52'00"W 544.00'
N 79°52'00"W 288.60'
N 79°29'25"W 200'
N 79°29'25"W 185'
N 79°29'25"W 185'
S 79°52'00"E 340.60'
S 79°52'00"E 342.86'
S 79°52'00"E 188.60'
S 79°52'00"E 224.12'
S 79°52'00"E 2358.61'
S 79°41'04"E 80'
S 79°52'00"E 60'
S 79°52'00"E 50'
S 79°52'00"E 50'
S 79°52'00"E 50

STATE OF TEXAS:
COUNTY OF WEBB:

I, Hugo A. Gutierrez, Jr., President of Hagco Building Systems Inc., Carlos V. Mejia, President, Board of Trustees United Independent School District, and Antonio Coello Valadez, Owners of the property subdivided in the foregoing map, do hereby make subdivision of said property for and on behalf of said HAGCO BUILDING SYSTEMS INC., United Independent School District and Antonio Coello Valadez, et.al, according to the lines, lots, building lines, streets, alleys, parks, and easements thereon shown and designate said subdivision as Alta Vista Subdivision, located in Laredo, Texas, and on behalf of said HAGCO BUILDING SYSTEMS INC. United Independent School District and Antonio Coello Valadez, et al, dedicate to the public use the surface only of all alleys, streets parks, and easements as shown thereon forever, and do hereby bind ourselves, and our successors and assigns to Warrent and forever defend the title to the land so dedicated.

There is also dedicated for utilities an obstructed aerial easement six (6) feet wide on each side, seventy (70) feet above the ground upward, located further adjacent to all easements shown hereon.

In testimony whereof HAGCO BUILDING SYSTEMS INC., United Independent School District, and Antonio Coello Valadez, et al, have caused these presents to be signed by Hugo A. Gutierrez, Jr., attested by Ramiro R. Rendon, and also signed by Antonio Coello Valadez this *20th* day of *June* 1983.
HAGCO BUILDING SYSTEMS INC.

Hugo A. Gutierrez
ATTEST
Ramiro R. Rendon

ANTONIO COELLO VALADEZ, ET AL
By:
Antonio Coello Valadez

United Independent School District
Carlos V. Mejia President
Attest
Alfonso Cuellar Secretary

STATE OF TEXAS:
COUNTY OF WEBB:
Before me, the undersigned authority, on this day personally appeared Hugo A. Gutierrez, Jr. President of HAGCO BUILDING SYSTEMS INC. known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed, and in the capacity therein and herein set out and as the act and deed of said corporation.

Given under my hand and seal of office, this *20th* day of *June* 1983.

Leticia Navarro
Notary Public, Webb County
Commission Expires:

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared Antonio Coello Valadez known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed, and in the capacity therein and herein set out and as the act and deed of said corporation.

Given under my hand and seal of office, this *25th* day of *July* 1983.

Mary F. Watts
Notary Public, Webb County
Commission Expires:

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared Carlos V. Mejia, President, Board of Trustees United Independent School District known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration thereinexpressed, and in the capacity therein and herein set out and as the act and deed of said corporation.

Given under my hand and seal of office, this ____ day of ____ 1983.

Notary Public, Webb County
Commission Expires:

STATE OF TEXAS:
COUNTY OF WEBB:
This is to certify that I, Edmundo R. Gonzalez, Jr., Registered Public Surveyor No. 3732, Texas, have platted Alta Vista Subdivision from an actual survey on the ground made under my supervision and that all block corners and angle points of curves are properly marked with one-half inch diameter iron rods, eighteen inches long and that this plat correctly represents that survey, same complying with the subdivision ordinance of the City of Laredo, Texas. All block corners will be marked with concrete monuments.

Edmundo R. Gonzalez Jr.
Edmundo R. Gonzalez, Jr.
Registered Public Surveyor

This is to certify that I, Leslie W. Pittman, Registered Professional Engineer No. 44944 Texas, have completed engineering design of *Alta Vista* Subdivision Phase I, to comply with the subdivision ordinance of the City of Laredo, Texas.

STATE OF TEXAS LESLIE W. PITTMAN 44944 REGISTERED PROFESSIONAL ENGINEER
9/22/82

Leslie W. Pittman
Leslie W. Pittman
Registered Professional Engineer

OCT 31 10 02 AM '83
HENRY FLORES COUNTY CLERK
WEBB COUNTY, TEXAS
DEPUTY

STATE OF TEXAS:
COUNTY OF WEBB:

I HAVE REVIEWED THIS PLAT AND SUPPORTING CONSTRUCTION DRAWINGS IDENTIFIED AS ALTA VISTA SUBDIVISION, PREPARED BY LESLIE W. PITTMAN, REGISTERED PROFESSIONAL ENGINEER No. 44944, AND DATED THE *22nd* DAY OF *September* 19*82* WITH THE LAST REVISED DATE ON ____ AND HAVE FOUND THEM IN COMPLIANCE WITH THE SUBDIVISION ORDINANCE OF THE CITY OF LAREDO.

Amador Escudero 10/20/83
AMADOR ESCUDERO DATE
CITY ENGINEER

STATE OF TEXAS:
COUNTY OF WEBB:

I, HENRY FLORES, CLERK OF THE COUNTY COURT OF WEBB COUNTY, TEXAS, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT DATED THE *31* DAY OF *Oct.*, WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE ____ DAY OF ____ AT ____ O'CLOCK ____ IN VOLUME ____, PAGE *58*

DEPUTY
COUNTY CLERK
WEBB COUNTY, TEXAS

STATE OF TEXAS:
COUNTY OF WEBB:

THIS PLAT: ALTA VISTA SUBDIVISION HAS BEEN SUBMITTED AND CONSIDERED BY THE PLANNING COMMISSION OF THE CITY OF LAREDO, TEXAS, AND IS HEREBY APPROVED BY SUCH COMMISSION ON THE ____ 1983

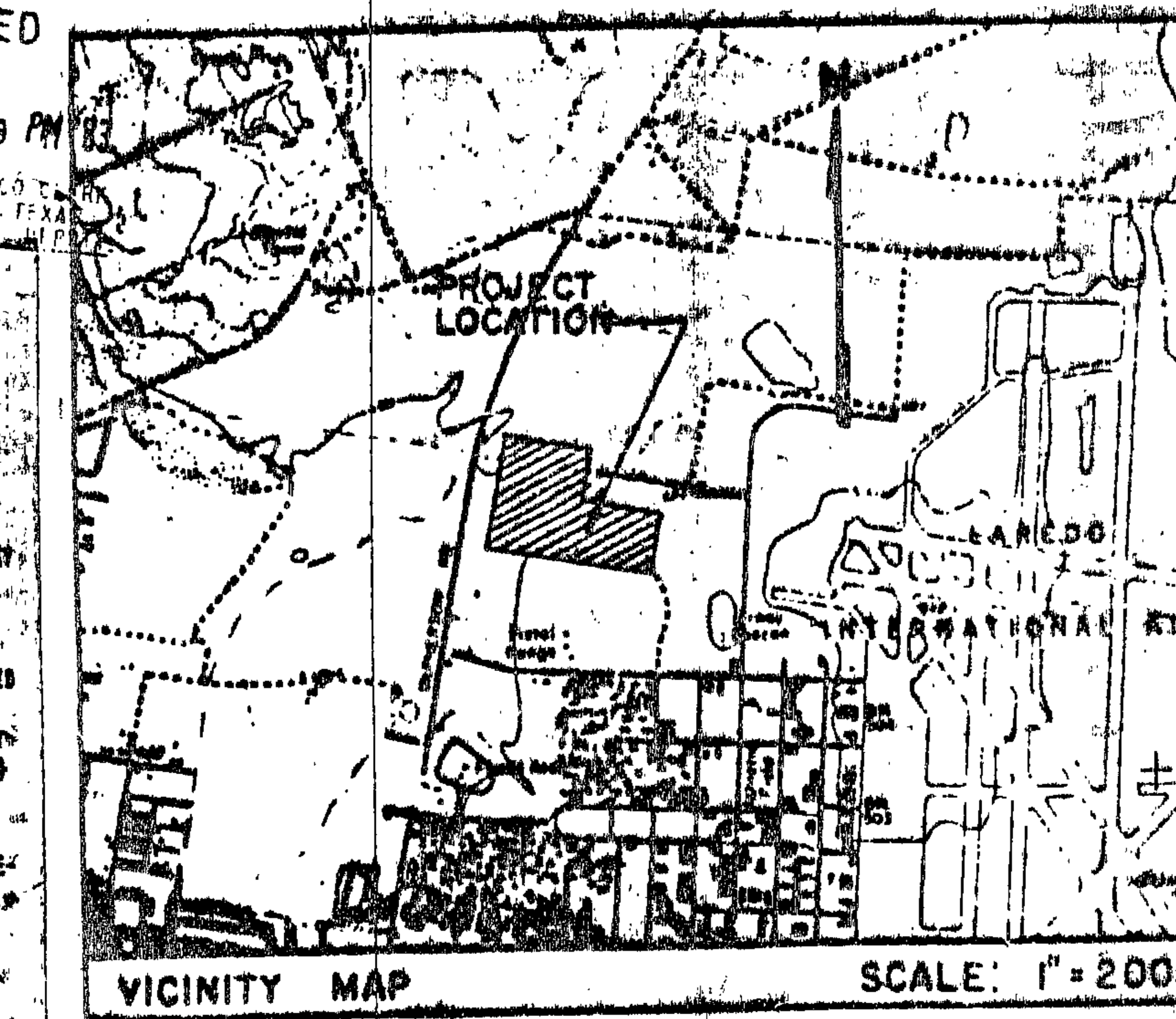
LAS MARTINEZ DATE ____ VETTER
CHAIRMAN ____ SECRETARY

313177

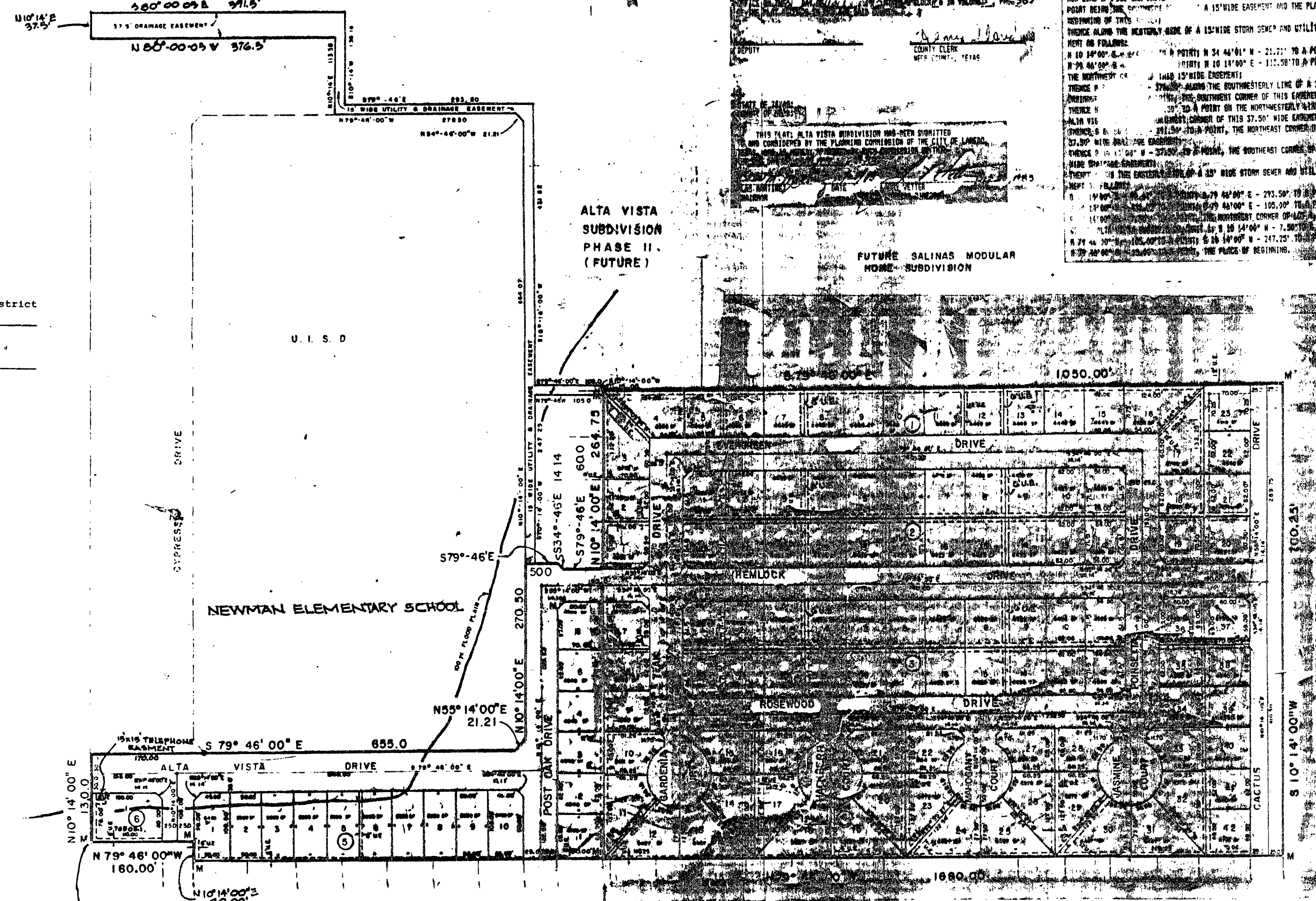
FILED
DEC 6 4 39 PM '83
HENRY FLORES CO. CLERK
WEBB COUNTY, TEXAS

METES AND BOUNDS DESCRIPTION
OFF-SITE UTILITY EASEMENTS
A 0.7498 ACRE TRACT
INCLUDING A
15' WIDE STORM SEWER AND UTILITY
AND A
37.50' WIDE DRAINAGE

A TRACT OF LAND CONTAINING 0.7___ ACRE ____ RAFAEL VIDAURRI SURVEY NO. 1020, ABSTRACT 700, NORTHERN DIVISION ____, WEBB COUNTY, TEXAS. SAID TRACT BEING MORE PARTICULARLY ____ AS FOLLOWS:
COMMENCING FOR A POINT OF REFERENCE ____ IRON ROD AT THE NORTHWEST CORNER OF VISTA HERMOSA SUBDIVISION ____ ACCORDING TO A PLAT OF SAID SUBDIVISION RECORDED IN VOL. ____ OF THE WEBB COUNTY PLAT RECORDS;
THENCE N 69°23'42"E - 788.3__ ____ AT THE INTERSECTION OF THE WEST ROW LINE OF POST OAK DRIVE AND ____ ROW LINE OF HEMLOCK DRIVE, THIS POINT BEING THE SOUTHWEST ____ A 15' WIDE EASEMENT AND THE PLACE OF BEGINNING OF THIS ____;
THENCE ALONG THE WESTERLY SIDE OF A 15' WIDE STORM SEWER AND UTILITY EASEMENT AS FOLLOWS:
N 10 14'00" E ____ TO A POINT; N 34 46'01" W - 21.21' TO A POINT;
N 79 46'00" W ____ POINT; N 10 14'00" E - 112.58' TO A POINT,
THE NORTHWEST CORNER OF SAID 15' WIDE EASEMENT;
THENCE ____ - 376.50' ALONG THE SOUTHWESTERLY LINE OF A 37.50' DRAINAGE ____ POINT, THE SOUTHWEST CORNER OF THIS EASEMENT;
THENCE ____ .30' TO A POINT ON THE NORTHWESTERLY LINE OF THE ALTA VISTA ____ NORTHWEST CORNER OF THIS 37.50' WIDE EASEMENT;
THENCE S ____ - 391.50' TO A POINT, THE NORTHEAST CORNER OF THE 37.50' WIDE DRAINAGE EASEMENT;
THENCE S ____ W - 37.50' TO A POINT, THE SOUTHEAST CORNER OF THE 37.50' WIDE DRAINAGE EASEMENT;
THENCE ____ THE EASTERLY SIDE OF A 15' WIDE STORM SEWER AND UTILITY EASEMENT AS FOLLOWS:
____ TO A POINT; S 79 46'00" E - 293.50' TO A POINT;
____ TO A POINT; S 79 46'00" E - 105.00' TO A POINT;
____ THE NORTHWEST CORNER OF LOT ____ ALTA VISTA SUBDIVISION ____; S 10 14'00" W - 7.50' TO A POINT;
N 79 46 30" W ____ 105.00' TO A POINT; S 10 14'00" W - 247.25' TO A POINT;
N 79 46'00" W ____ 15.00' TO A POINT, THE PLACE OF BEGINNING.



PLAT: ALTA VISTA SUBDIVISION
RAFAEL VIDAURRI SURVEY DIVISION
CITY OF LAREDO, WEBB COUNTY, TEXAS
OWNERS: HAGCO CONSTRUCTION, INC.
ANTONIO COELLO VALADEZ, et al
ENGINEERS: LOCKWOOD, ANDREWS & NEWNAM, INC.
SCALE: 1" = 100'



June 10, 1983 Job #377-43-003-000

METES AND BOUNDS DESCRIPTION

BEING a tract of land containing 20.445 acres of land out of the Rafael Vidaurri Survey No. 1020, Abstract 700, Northern Division, City of Laredo, Webb County, Texas; said 20.445 Acre Tract of land being more particularly described as follows:

BEGINNING at a 1/2" iron rod at the Northwest corner of Vista Hermosa Subdivision Unit No. 1, according to a map or plat of said subdivision of record in Vol. 3, Page 10, Map Records of Webb County, Texas same being a point in the East line of a Newman Investments tract of land, same being the Southwest corner of the herein described tract of land;

THENCE, with said East line of the Newman Investments tract of land same being the West line of the herein described tract of land, North 10°-14'-00" East a distance of 130.00 feet to the most Westerly Northwest corner of the herein described tract of land;

THENCE, leaving said East line of the Newman Investments tract of land, South 79°-46'-00" East at 170.00 feet passing the Southwest corner of a certain 11.2827 acre U.I.S.D. of record in Volume 581, Pages 552-554 and Volume 581, pages 555-557, Deed Records of Webb County, Texas in all a distance of 655.00 feet to the Southeast corner of said U.I.S.D. tract of land for a corner;

THENCE, with a Southeast and East line of said U.I.S.D. tract of land the following:

1. North 55°-14'-00" East a distance of 21.21 feet to a point for a corner;
2. North 10°-14'-00" East a distance of 270.50 feet to a point for a corner;

THENCE, leaving said East line of the U.I.S.D. tract of land, South 79°-46'-00" East a distance of 50.00 feet to a point for a corner;

THENCE, South 34°-46'-00" East a distance of 14.14 feet to a point for a corner;

THENCE, South 79°-46'-00" East a distance of 60.00 feet to a point for a corner;

THENCE North 10°-14'-00" East a distance of 264.75 feet to the most Northerly Northwest corner of the herein described tract of land;

THENCE, South 79°-46'-00" East a distance of 1050.00 feet to the Northeast corner of the herein described tract of land;

THENCE, South 10°-14'-00" West a distance of 700.25 feet to the Southeast corner of the herein described tract of land, same being a point in the North line of the aforementioned Vista Hermosa Subdivision, Unit No. 1;

THENCE, with said North line of Vista Hermosa Subdivision, Unit No. 1, the following:

1. North 79°-46'-00" West, a distance of 1680.00 feet to a point for a corner.
2. North 10°-14'-00" East, a distance of 30.00 feet to a point for a corner;
3. North 79°-46'-00" West, a distance of 160.00 feet to the POINT OF BEGINNING and containing 20.445 acres of land, more or less.

Edmundo R. Gonzalez
Edmundo R. Gonzalez, Jr.
Registered Public Surveyor

1. ALL LOTS ARE SUBJECT TO A SIX FOOT (6') WIDE DRAINAGE EASEMENT ~~ALONG THE TWO SIDE PROPERTY~~ LINES.
2. ALL CORNERS INDICATED THUS o[M] ARE MARKED WITH A CONCRETE MONUMENT.
3. THIS SUBDIVISION IS RESTRICTED TO SINGLE FAMILY DWELLINGS

THE STATE OF TEXAS
County of Webb
I, HENRY FLORES County Clerk of aforesaid County, hereby certify that the foregoing *Amended Plat* was filed in my office on the *6th* day of *December* 1983, and recorded the *6th* day of *December* 1983 in the *Plat* Records of Webb County, Texas, in Vol. *3*, Page ____
Henry Flores
County Clerk, Webb County, Texas
Rosalind M. Gonzalez

AMENDING PLAT OF ALTA VISTA SUBDIVISION PHASE I

6 BLOCKS 120 LOTS

NOTE #1: AMENDMENT TO PLAT DECEMBER 1983
BUILDING SETBACK LINES
TWO CAR CARPORT IS REQUIRED DIRECTLY IN FRONT OF ALL UNITS. CARPORT MAY EXTEND TO FRONT PROPERTY LINES. CARPORTS SHALL BE OPEN AND NON-COMBUSTIBLE AND CONSTRUCTION ENCLOSURES MUST BE SETBACK 20' FROM THE FRONT PROPERTY LINE.

STATE OF TEXAS
COUNTY OF WEBB
WE, HUGO A. GUTIERREZ, JR., PRESIDENT OF HAGCO BUILDING SYSTEMS INC., CARLOS V. MEJIA, PRESIDENT OF THE BOARD OF TRUSTEES, UNITED INDEPENDENT SCHOOL DISTRICT, AND ANTONIO COELLO VALADEZ, OWNERS OF THE PROPERTY SUBDIVIDED IN THE FOREGOING MAP, ATTEST THAT THE ABOVE DESCRIBED NOTE #1 IS THE ONLY AMENDMENT MADE ON THIS PLAT, AND THAT SAID NOTE #1 MEETS WITH OUR APPROVAL.

HUGO A. GUTIERREZ, JR. PRESIDENT, HAGCO
ANTONIO COELLO VALADEZ OWNER
CARLOS V. MEJIA PRESIDENT, UISD

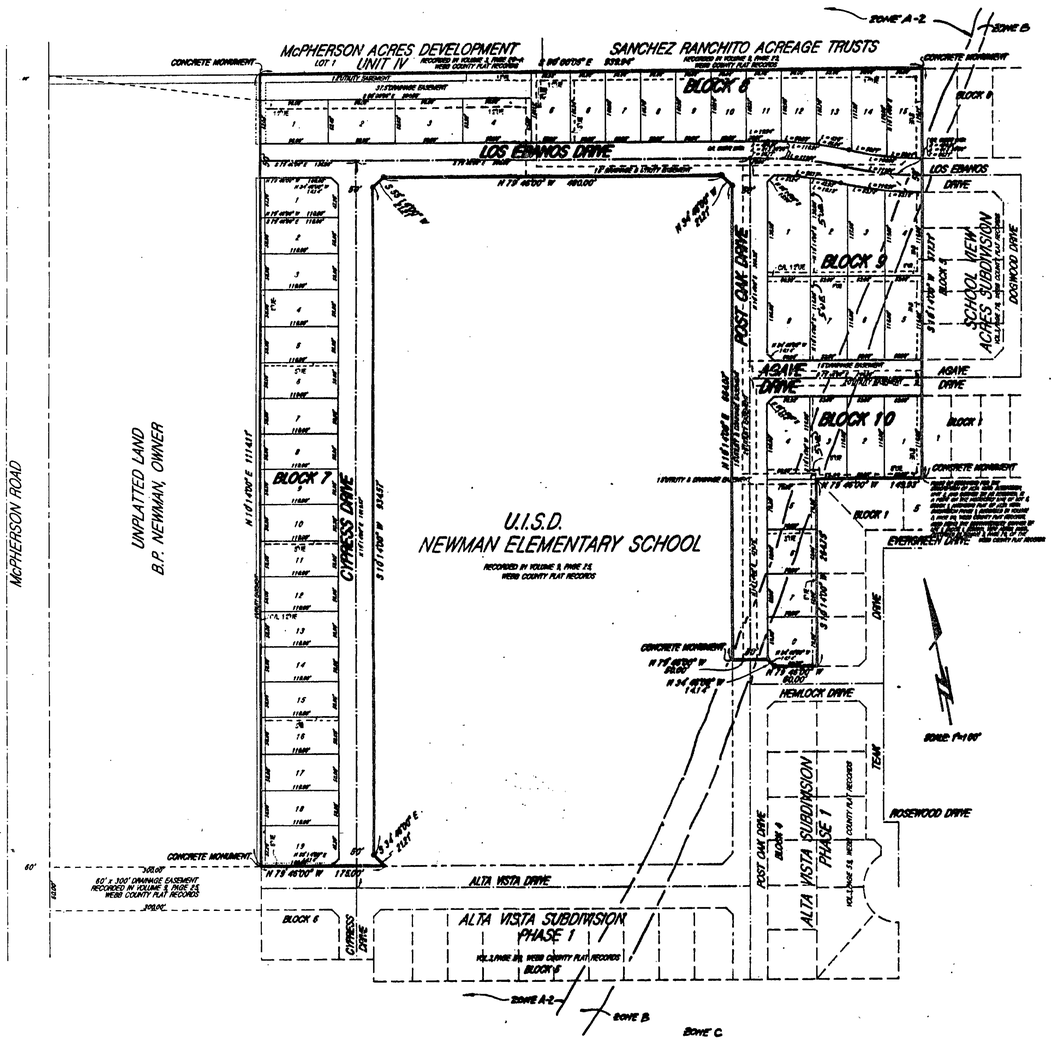
STATE OF TEXAS
COUNTY OF WEBB
THIS AMENDMENT TO THE PLAT OF THE ALTA VISTA SUBDIVISION AS DESCRIBED IN NOTE #1 HAS BEEN SUBMITTED TO AND CONSIDERED BY THE PLANNING COMMISSION OF THE CITY OF LAREDO, TEXAS, AND IS HEREBY APPROVED BY SUCH COMMISSION ON THIS ____ 19 83.

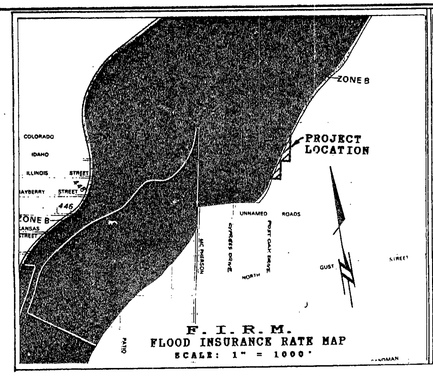
PLANNING DIRECTOR DATE
AMADOR ESCUDERO DATE
CITY ENGINEER

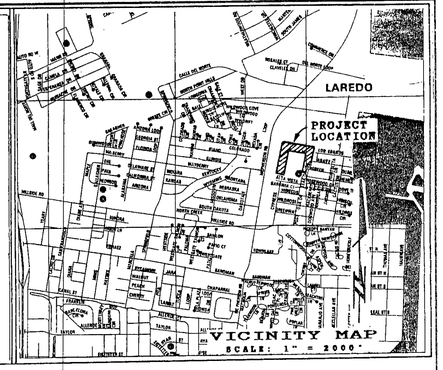
54

453888

HENRY FLORES
COUNTY CLERK
FILED
1991 AUG 29 AM 11:01
WEBB COUNTY, TEXAS
BY _____ DEPUTY







Metes & Bounds Description
of a
10.1651 ACRE TRACT
ALTA VISTA SUBDIVISION
UNIT 2

A tract of land containing 10.1651 acres, more or less, out of Survey 1020, Abstract 780, Rafael Vidaurri Original Grantee, in the Northern Division of the City of Laredo, Webb County, Texas, said 10.1651 acre tract being more particularly described by metes and bounds as follows, to-wit:

BEGINNING at a point on the northerly line of Lot 5 out of Block 1 as shown on the Amending Plat of the Alta Vista Subdivision Phase 1, recorded in Volume 3, Page 59 of the Webb County Plat Records, this point also being the southwesterly corner of Lot 1, Block 1, of the School View Acres Subdivision as shown on that plat recorded in Volume 3, Page 70, of the Webb County Plat Records, said point is the most easterly southeast corner hereof;

THENCE North 79°46'00"West - 149.93 Feet with the northerly line of Block 1 of the Alta Vista Subdivision Phase 1, a southerly line hereof, to a point for the northeast corner of Lot 4, Block 1 and most northerly corner of Lot 3, Block 1 of Phase 1 and an interior corner hereof;

THENCE South 10°14'00"West - 284.75 Feet with the westerly line of Block 1 of Phase 1, an easterly line hereof, to a point on the northerly right-of-way line of Hemlock Drive, the southwesterly corner of lot 1 out of Block 1 of Phase 1 and most southerly southeast corner hereof;

THENCE North 79°46'00"West - 60.00 Feet with the northerly right-of-way line of Hemlock Drive, a southerly line hereof, to a point of deflection to the right;

THENCE North 34°46'00"West - 14.14 Feet along a clip corner at the intersection of Hemlock Drive and Post Oak Drive, a southwesterly line hereof, to a point of deflection to the left;

THENCE North 79°46'00"West - 50.00 Feet across the right-of-way of Post Oak Drive, a southerly line hereof, to a point on the easterly line of the Newman Elementary School tract as shown on plat recorded in Volume 9, Page 25 of the Webb County Plat Records for an exterior corner hereof;

THENCE North 10°14'00"East - 864.07 Feet with the easterly line of the aforementioned Newman Elementary School tract and a westerly line hereof to a point of deflection to the left;

THENCE North 34°46'00"West - 21.21 Feet continuing with the boundary line of the Newman Elementary School to a point of deflection to the left;

THENCE North 79°46'00"West - 480.00 Feet with the most northerly line of the Newman Elementary School tract and a southerly line hereof, to a point of deflection to the left;

THENCE South 55°14'00"West - 21.21 Feet continuing with the boundary line of the Newman Elementary School tract to a point of deflection to the left;

THENCE South 10°14'00"West - 934.57 Feet with the most westerly line of the Newman Elementary School tract to a point of deflection to the left;

THENCE South 34°46'00"East - 21.21 Feet continuing with the boundary line of the Newman Elementary School tract to a point on the northerly right-of-way line of Alta Vista Drive, the most southerly southwest corner of the Newman Elementary School tract and an exterior corner hereof;

THENCE North 79°46'00"West - 175.00 Feet with the northerly right-of-way line of Alta Vista Drive, the most southerly line hereof, to a point for the northwest corner of the Alta Vista Drive right-of-way as shown on the aforementioned plat of the Alta Vista Subdivision Phase 1 and the northeast corner of a 60' x 300' Drainage Easement shown on the aforementioned plat of the Newman Elementary school, this point being the most southwesterly corner hereof;

THENCE North 10°14'00"East - 1114.11 Feet along the most westerly line hereof to a point on the southerly line of Lot 1 out of Block 9 of the McPherson Acres Development, Unit IV, as shown on a plat recorded in Volume 3, Page 25-A, Webb County Plat Records, for the northwest corner hereof;

THENCE South 80°00'05"East - 939.94 Feet with the southerly line of the McPherson Acres Development Unit IV and southerly line of the Sanchez Ranchito Acreage Trusts Subdivision as shown on a plat recorded in Volume 9, Page 23 of the Webb County Plat Records, the most northerly line hereof, to a point for the northeasterly corner of Lot 1, Block 6 of the School View Acres Subdivision and the northeasterly corner hereof;

THENCE South 10°14'00"West - 577.71 Feet with the westerly line of the School View Acres Subdivision and most easterly line hereof, to the PLACE OF BEGINNING.

CERTIFICATE OF OWNER
STATE OF TEXAS:
COUNTY OF WEBB:
I, LEO FLORES, THE UNDERSIGNED OWNER OF THE LAND SHOWN ON THIS PLAT, WHICH IS DESIGNATED HEREIN AS THE ALTA VISTA SUBDIVISION - UNIT 2 IN THE CITY OF LAREDO, COUNTY OF WEBB, TEXAS, HEREBY DEDICATE TO THE USE OF THE PUBLIC FOREVER ALL STREETS, DRAINS, EASEMENTS AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESSED.
THIS THE 27 DAY OF SEPTEMBER, 1990

LEO FLORES

CERTIFICATE OF NOTARY PUBLIC
STATE OF TEXAS:
COUNTY OF WEBB:
BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED LEO FLORES, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.
WITNESS MY HAND AND SEAL OF OFFICE ON THIS 16 DAY OF August 1991

ROSA M. MATA
NOTARY PUBLIC, WEBB COUNTY, TEXAS
1-20-93
DATE COMMISSION EXPIRES

CERTIFICATE OF ENGINEER
STATE OF TEXAS:
COUNTY OF WEBB:
THIS IS TO CERTIFY THAT I, A.J. MEDINA, REGISTERED PROFESSIONAL ENGINEER IN TEXAS, HAVE GIVEN PROPER ENGINEERING CONSIDERATION TO THE MATTERS OF STREETS, LOTS, WATER, SEWER AND DRAINAGE ON THE ALTA VISTA SUBDIVISION - UNIT 2 AND SOME OTHER NECESSARY APPURTENANCES AND TO THE BEST OF MY KNOWLEDGE THIS PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION ORDINANCE, EXCEPT FOR THOSE VARIANCES THAT MAY HAVE BEEN GRANTED BY THE PLANNING AND ZONING COMMISSION OF THE CITY OF LAREDO, TEXAS. THIS THE 7TH DAY OF SEPTEMBER 1990

A. J. MEDINA, P.E.&S. No. 7307

CERTIFICATE OF SURVEYOR
STATE OF TEXAS:
COUNTY OF WEBB:
THIS IS TO CERTIFY THAT I, ANTONIO J. MEDINA, REGISTERED PROFESSIONAL SURVEYOR OF TEXAS No. 3818, HAVE PLATTED A TRACT DESIGNATED AS THE ALTA VISTA SUBDIVISION - UNIT 2 FROM AN ACTUAL SURVEY ON THE GROUND MADE UNDER MY SUPERVISION AND THAT ALL LOT CORNERS AND POINTS OF CURVE ARE PROPERLY MARKED WITH 1/2 INCH IRON RODS, 18 INCHES LONG AND THAT THIS PLAT CORRECTLY REPRESENTS THAT SURVEY, MADE CONFORMING WITH THE SUBDIVISION ORDINANCE OF THE CITY OF LAREDO, TEXAS. CONCRETE MONUMENTS WILL BE PLACED AT LOCATIONS INDICATED ON THE FOREGOING PLAT. THIS THE 7TH DAY OF SEPTEMBER 1990

A. J. MEDINA, REGISTERED PROFESSIONAL SURVEYOR OF TEXAS No. 3818

ATTESTMENT OF PLANNING COMMISSION APPROVAL
THE CITY OF LAREDO PLANNING COMMISSION APPROVED THE FILING FOR RECORD OF THIS PLAT, DESIGNATED HEREIN AS THE ALTA VISTA SUBDIVISION - UNIT 2 AT A PUBLIC HEARING HELD ON THE ___ DAY OF _____, 19__ AND THE MINUTES OF SAID MEETING REFLECT SAID APPROVAL.

ERNESTO VILLARREAL
ACTING DIRECTOR OF PLANNING
CITY OF LAREDO, TEXAS

ARTHUR ZUNIGA
CHAIRMAN-PLANNING & ZONING COMMISSION
8/28/91

CERTIFICATE OF CITY ENGINEER
I HAVE REVIEWED THIS PLAT AND ACCOMPANYING DRAWINGS FOR THE ALTA VISTA SUBDIVISION - UNIT 2 AS PREPARED BY ANTONIO J. MEDINA, REGISTERED PROFESSIONAL ENGINEER No. 7307, AND DATED THE ___ DAY OF _____, 19__ WITH THE LAST REVISED DATE BEING THE ___ DAY OF _____, 19__ AND HAVE FOUND THEM TO BE IN CONFORMANCE WITH THE SUBDIVISION ORDINANCE OF THE CITY OF LAREDO, TEXAS.

ARMOR ESCOBEDO, CITY ENGINEER
Nov 7
DATE

CERTIFICATE OF COUNTY CLERK
STATE OF TEXAS:
COUNTY OF WEBB:
I, HENRY FLORES, CLERK OF THE COUNTY COURT OF WEBB COUNTY, TEXAS, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT DATED THE 7TH DAY OF SEPT., 1990, WITH ITS CERTIFICATE OF AUTHENTICATION, KNOWN AS ALTA VISTA SUBDIVISION - UNIT 2 WAS FILED FOR RECORD IN MY OFFICE ON THE 29 DAY OF AUG., 1991 AT 11:01 O'CLOCK A.M. IN VOLUME 10, PAGE 46 OF THE PLAT RECORDS IN AND FOR SAID COUNTY.

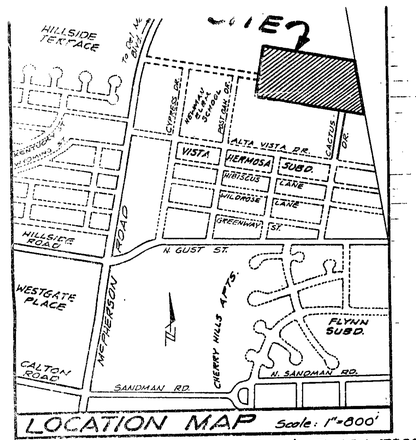
HENRY FLORES
COUNTY CLERK
WEBB COUNTY, TEXAS

BY: Rosamba M. Mandiola
DEPUTY

PLAT
OF THE
ALTA VISTA SUBDIVISION UNIT 2
BEING A
10.1651 ACRE TRACT
OUT OF
SURVEY 1020 - ABSTRACT 780
RAFAEL VIDAURRI ORIGINAL GRANTEE
SITUATED IN THE
NORTHERN DIVISION
CITY OF LAREDO
WEBB COUNTY, TEXAS

PREPARED BY
HOWLAND & MEDINA
ENGINEERS & SURVEYORS
1908 CLARK BOULEVARD
LAREDO, TEXAS
(512) 722-4411

OWNER / DEVELOPER
LEO FLORES
C/O FALCON NATIONAL BANK
401 EAST HILLSIDE ROAD
LAREDO, TEXAS
(512) 723-2265



LOCATION MAP Scale: 1"=800'

LEGAL DESCRIPTION

A tract of land containing 15.000 acres, more or less, out of Rafael Vidaurri Survey 1020, Abstract 180, Northern Division, City of Laredo, Webb County, Texas, also being out of a 180.246 acre tract of land within the boundary of the former Laredo Air Force Base conveyed by deed from Flynn Investment Company to Ricardo V. Gomez and Wife Olimpia H. Gomez, filed April 5, 1977 and recorded in Volume 263, Pages 30-33 of the Webb County Deed Records. This 15.000 acre tract being more particularly described as follows, to-wit:

BEGINNING at a fence corner post on the north line of Survey 1020, the southeast corner of Survey 1023, the northeast corner of said 180.246 acre tract, the northeast corner of this 15.000 acre tract and the place of beginning of this survey;

THENCE S 01°24'23"E 593.56 feet along the easterly line of the 180.246 acre tract to a point, the southeast corner hereof;

THENCE N 79°46'00"W 1,187.15 feet along the souththerly line of this 15.000 acre tract to a point, the southwest corner hereof;

THENCE N 10°14'00"E 577.71 feet along the westerly line of this 15.000 acre tract to a point, the northwest corner hereof;

THENCE S 79°57'45"E 1,067.40 feet along a fence on the occupied northerly line of Survey 1020 to a fence corner post the place of beginning.

LEGAL DESCRIPTION FOR 15' UTILITY AND DRAINAGE EASEMENT

A TRACT OF LAND CONTAINING 0.6244 ACRES, MORE OR LESS, LYING DIRECTLY WEST OF THE ABOVE MENTIONED 15.000 ACRE TRACT AND MORE PARTICULARLY DESCRIBED AS FOLLOWS, TO-WIT:

BEGINNING AT A FENCE CORNER POST ON THE NORTH LINE OF SURVEY 1020, THE SOUTHEAST CORNER OF SURVEY 1023, THE NORTHEAST CORNER OF ABOVE MENTIONED 180.246 ACRE TRACT AND THE NORTHEAST CORNER OF THIS ABOVE MENTIONED 15.000 TRACT;

THENCE S 01°24'23" E A DISTANCE OF 593.56 FEET ALONG THE EASTERLY LINE OF THE 180.246 ACRE TRACT TO A POINT;

THENCE N 79°46'00" W A DISTANCE OF 1187.15 FEET ALONG THE SOUTHERLY LINE OF THE 15.000 ACRE TRACT TO A POINT;

THENCE N 10°14'00" E A DISTANCE OF 181.0 FEET ALONG THE WESTERLY LINE OF THE 15.000 ACRE TRACT TO THE PLACE OF BEGINNING OF THIS 0.6244 ACRE TRACT, AN EXTERIOR CORNER HEREOF;

THENCE ALONG THE FOLLOWING:

N 79°46'00" W	255 FEET	N 35°46'00" W	21.21 FEET	N 55°14'00" E	14.14 FEET
S 10°14'00" W	148.5 FEET	N 79°46'00" W	278.50 FEET	S 79°46'00" E	20.0 FEET
S 79°46'00" E	105.0 FEET	N 10°14'00" E	118.58 FEET	S 10°14'00" E	50.0 FEET
S 10°14'00" W	15.0 FEET	S 80°00'05" E	7.5 FEET	N 79°46'00" W	20.0 FEET
N 79°46'00" W	105.0 FEET	N 10°14'00" E	37.50 FEET	N 34°46'00" W	35.35 FEET
S 10°14'00" W	247.25 FEET	S 80°00'05" E	7.5 FEET	N 79°46'00" W	210.0 FEET
N 79°46'00" W	15.0 FEET	S 10°14'00" W	136.14 FEET	S 10°14'00" W	258.32 FEET
N 10°14'00" E	664.07 FEET	S 79°46'00" E	318.50 FEET	S 79°46'00" E	265.0 FEET
(CONTINUOUS ABOVE)		(CONTINUOUS ABOVE)			

THENCE S 10°14'00" W ALONG THE WEST LINE OF THE 15.000 ACRE TRACT A DISTANCE OF 15.0 FEET TO THE PLACE OF BEGINNING.

LEGAL DESCRIPTION FOR 20' UTILITY EASEMENT

A TRACT OF LAND CONTAINING 0.2942 ACRES, MORE OR LESS, LYING DIRECTLY WEST OF THE ABOVE MENTIONED 15.000 ACRE TRACT AND MORE PARTICULARLY DESCRIBED AS FOLLOWS, TO-WIT:

BEGINNING AT A FENCE CORNER POST ON THE NORTH LINE OF SURVEY 1020, THE SOUTHEAST CORNER OF SURVEY 1023, THE NORTHEAST CORNER OF ABOVE MENTIONED 180.246 ACRE TRACT AND THE NORTHEAST CORNER OF THE ABOVE MENTIONED 15.000 TRACT;

THENCE S 01°24'23" E A DISTANCE OF 593.56 FEET ALONG THE EASTERLY LINE OF THE 180.246 ACRE TRACT TO A POINT;

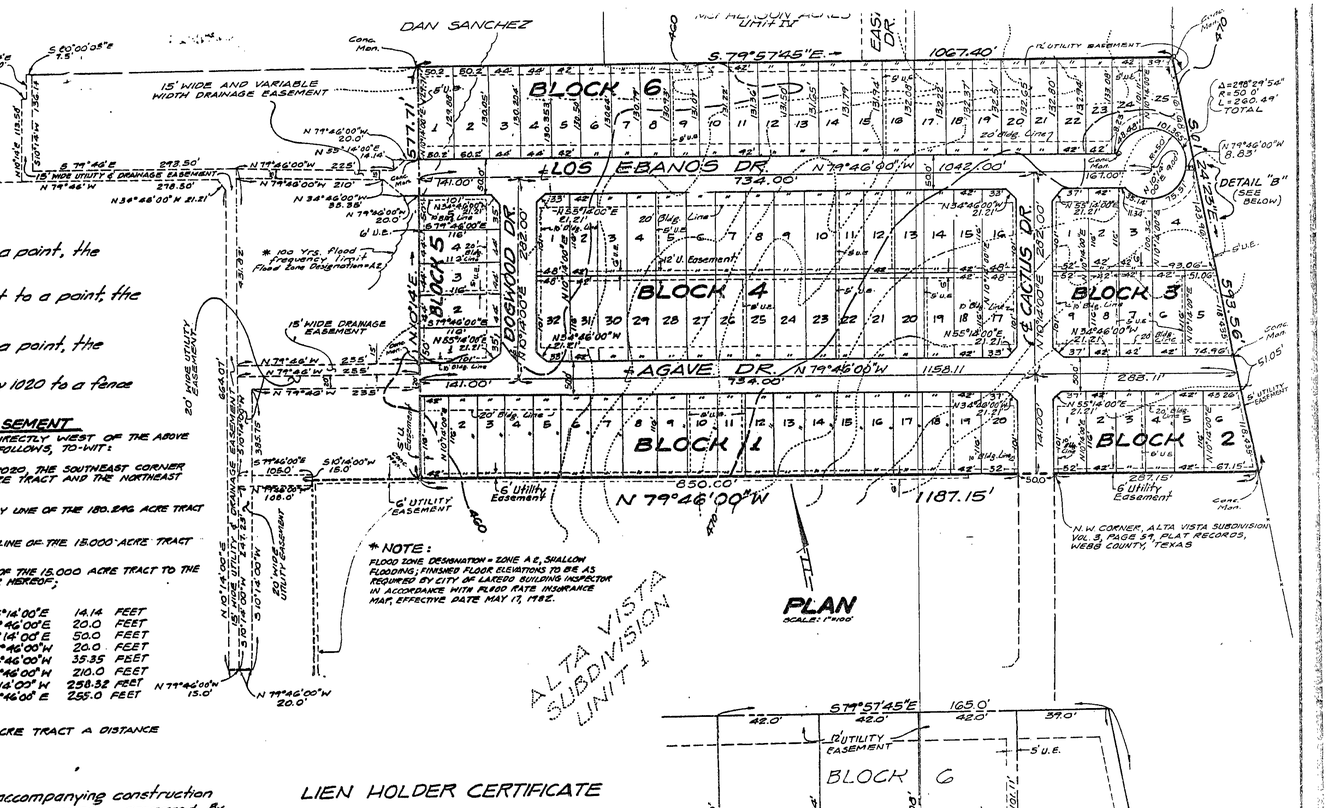
THENCE N 79°46'00" W A DISTANCE OF 1187.15 FEET ALONG THE SOUTHERLY LINE OF THE 15.000 ACRE TRACT TO A POINT;

THENCE N 10°14'00" E A DISTANCE OF 151.0 FEET ALONG THE WESTERLY LINE OF THE 15.000 ACRE TRACT TO THE PLACE OF BEGINNING OF THIS 0.2942 ACRE TRACT, AN EXTERIOR CORNER HEREOF;

THENCE ALONG THE FOLLOWING:

N 79°46'00" W	235.0 FEET
S 10°14'00" W	385.75 FEET
N 79°46'00" W	20.0 FEET
N 10°14'00" E	405.75 FEET
S 79°46'00" E	255.0 FEET

THENCE S 10°14'00" E ALONG THE WEST LINE OF THE 15.000 ACRE TRACT A DISTANCE OF 20.0 FEET TO THE PLACE OF BEGINNING.



* NOTE:
FLOOD ZONE DESIGNATION = ZONE AE, SHALLOW FLOODING; FINISHED FLOOR ELEVATIONS TO BE AS REQUIRED BY CITY OF LAREDO BUILDING INSPECTOR IN ACCORDANCE WITH FLOOD RATE INSURANCE MAP, EFFECTIVE DATE MAY 17, 1982.

PLAN
SCALE: 1"=100'

LIEN HOLDER CERTIFICATE

This subdivision map is hereby approved and adopted by the undersigned lien holder this 23rd day of April 1984.

By: John V. Puig

Title: , as an act and deed

of LAREDO SAVINGS AND LOAN ASSOCIATION

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority personally appeared John V. Puig

Known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed and in the capacity therein stated.

Witness my hand and seal of office this 23 rd. day of April 1984.

NOTARY PUBLIC

MY COMMISSION EXPIRES 8/85

STATE OF TEXAS:
COUNTY OF WEBB:

I, the undersigned, a Registered Public Surveyor in the State of Texas, hereby certify that this plat is true and correct and was prepared from an actual survey of the property made under my supervision on the ground and that the corner monuments shown thereon were properly placed under my personal supervision.

REVISED: 4/20/84

John E. Foster, R.P.E. #15351, R.P.S. #1136

STATE OF TEXAS:
COUNTY OF WEBB:

I, the undersigned, owner of the land shown on this plat, and designated herein as the SCHOOL VIEW ACRES subdivision to the County of Webb, Texas, and whose name is subscribed hereto, hereby dedicate to the use of the public forever all streets, alleys, parks, water courses, drains, easements and public places thereon shown for the purpose and consideration therein expressed.

ABELARDO A. SALINAS, PRESIDENT

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared ABELARDO A. SALINAS, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein stated.

Given my hand and seal of office this 11th day of April 1984.

Notary Public in and for Webb County

STATE OF TEXAS:
COUNTY OF WEBB:

I, the undersigned, owner of the land shown as offsite easements (i.e. 20' utility easement and 15' utility and drainage easement) on this plat, and designated herein as the SCHOOL VIEW ACRES subdivision to the County of Webb, Texas, and whose name is subscribed hereto, hereby dedicate to the use of the public forever all streets, alleys, parks, water courses, drains, easements and public places thereon shown for the purpose and consideration therein expressed.

In testimony whereby HAGCO BUILDING SYSTEMS has caused these present to be signed by HUGO A. GUTIERREZ this 7TH day of JULY 1982.

HUGO A. GUTIERREZ, PRESIDENT

STATE OF TEXAS:
COUNTY OF WEBB:

Before me, the undersigned authority, on this day personally appeared Hugo A. Gutierrez, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein stated.

Given my hand and seal of office this 7th day of July 1983.

Notary Public in and for Webb County

I have reviewed this plat and accompanying construction drawings identified as SCHOOL VIEW ACRES, prepared By CARLOS V. MEJIA, Registered Professional Engineer No. 47506, and dated the 3rd day of June 1983, with the last revised date on , and have found them in compliance with the subdivision ordinance of the City of Laredo.

AMADOR ESCUDERO
CITY ENGINEER 4/26/84

This plat: SCHOOL VIEW ACRES has been submitted to and considered by the Planning Commission on 7th day July, 1983.

FLORENCIO PEÑA
ACTING PLANNING DIRECTOR

By: ELIAS MARTINEZ, CHAIRMAN
DATE: Apr. 26, 1984

STATE OF TEXAS:
COUNTY OF WEBB:

I, HENRY FLORES, Clerk of the County Court in and for Webb County, do hereby certify that the foregoing instrument dated the 26th day of April 1984, with its certificate of authentication was filed for record in my office on the 26th day of April 1984, at 3:23 o'clock P m. in volume 3 page 70 of the map records of said county

DEPUTY

WEBB COUNTY, CLERK, TEXAS

STATE OF TEXAS:
COUNTY OF WEBB:

I, hereby certify that proper engineering consideration has been given this plat to the matters of streets, lots, water, sewer and appurtenances and drainage layout; and to the best of my knowledge this plat conforms to all requirements of the subdivision ordinance, except for those variances that my have been granted by the planning commission of the city.

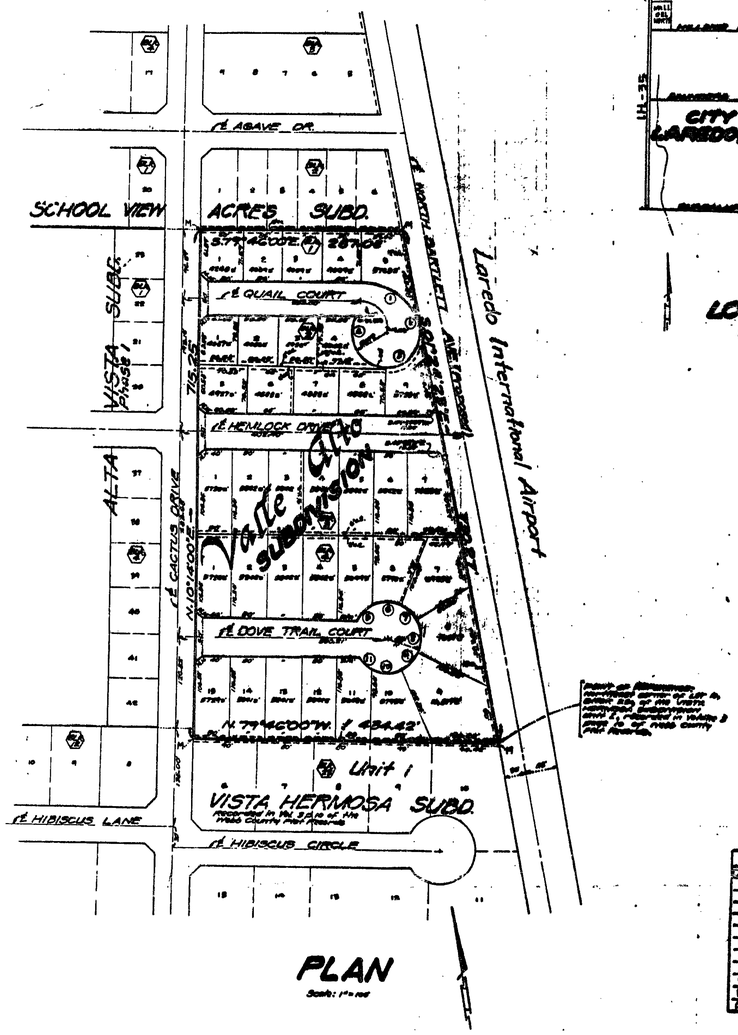
CARLOS V. MEJIA
R.P.E. # 47506

FOSTER ENGINEERING CO.
LAREDO, TEXAS

SCHOOL VIEW ACRES

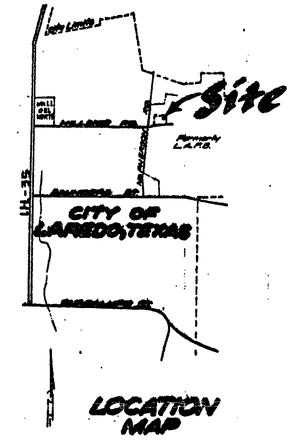
BEING 15.000 ACRES OUT OF RAFAEL VIDAURRI SURVEY 1020, ABSTRACT 180, NORTHERN DIVISION, CITY OF LAREDO, TEXAS, ALSO BEING OUT OF 180.246 ACRE TRACT OF LAND IN THE FORMER LAREDO AIR FORCE BASE, LAREDO, WEBB COUNTY, TEXAS.

DRAWING BY: R.N.		DATE: 6/3/83
CHECKED BY: C.V.M.		SHEET 1 OF 1
APPROVED BY: C.V.M.		SCALE: 1"=100'



PLAN

Scale: 1"=100'



BUILDING SETBACK LINES

ZONED R-6

Multi-family Apartment

CURVE TABLE						
CURVE	DELTA	RADIUS	ARC	TANGENT	CHORD BEARING	LENGTH
C1	89° 48' 16"	93.417	97.597	53.722	S 49° 51' 52" E	93.140
C2	11° 33' 21"	50.000	10.455	9.188	S 10° 41' 03" E	16.122
C3	100° 38' 23"	50.000	87.847	61.349	S 89° 24' 49" W	77.516
C4	113° 34' 09"	50.000	100.885	79.351	N 21° 39' 55" W	84.605
C5	29° 43' 37"	50.000	25.942	13.270	N 25° 05' 49" E	25.652
C6	51° 23' 42"	50.000	44.851	24.081	S 84° 20' 32" E	43.362
C7	36° 21' 03"	50.000	31.722	16.415	S 40° 28' 09" E	31.193
C8	56° 26' 55"	50.000	49.261	26.837	S 5° 55' 50" W	47.292
C9	44° 57' 14"	50.000	39.220	20.867	S 56° 37' 54" W	38.231
C10	51° 23' 52"	50.000	44.855	24.082	N 75° 11' 35" W	43.364
C11	29° 43' 37"	50.000	25.942	13.270	N 24° 37' 48" W	25.652

LEGAL DESCRIPTION
OF A
5.9235 ACRE TRACT
VALLE ALTO SUBDIVISION

BEGINNING FOR A POINT OF REFERENCE AT A 1/2" IRON ROD, THE NORTHEAST CORNER OF LOT 10, BLOCK 23, OF THE VISTA HERMOSA SUBDIVISION UNIT 1, RECORDED IN VOLUME 3, PAGE 10 OF THE WEBB COUNTY PLAT RECORDS, OUT OF THE RAFAEL VIDAURRI SURVEY 1020, ABSTRACT 780, NORTHERN DIVISION OF THE CITY OF LAREDO, WEBB COUNTY, TEXAS, AND FURTHER STATING THAT SAID POINT OF REFERENCE BEING THE NORTHEAST CORNER OF THE VISTA HERMOSA SUBDIVISION UNIT 1, THE SOUTHEAST CORNER OF THIS TRACT, AND THE POINT OF BEGINNING OF THIS SURVEY;

THENCE N 79 46'00" W - 434.42' ALONG THE SOUTHERLY LINE OF THIS TRACT, SAME BEING THE NORTHERLY LINE OF THE VISTA HERMOSA SUBDIVISION UNIT 1, TO A 1/2"IRON ROD, THE NORTHWEST CORNER OF LOT 4, BLOCK 22, VISTA HERMOSA SUBDIVISION UNIT 1, A POINT ON THE EAST ROW LINE OF CACTUS DRIVE, AND THE SOUTHWEST CORNER OF THIS TRACT;

THENCE N 10 14'00" E - 715.25' ALONG THE WESTERLY LINE OF THIS TRACT, SAME BEING THE EASTERLY ROW LINE OF CACTUS DRIVE AND THE EASTERLY LINE OF THE ALTA VISTA SUBDIVISION, PHASE 1 TO THE NORTHEAST CORNER OF THE ALTA VISTA SUBDIVISION, ALSO BEING ON THE SOUTHERLY LINE OF THE SCHOOLVIEW ACRES SUBDIVISION, AND THE NORTHWEST CORNER OF THIS TRACT;

THENCE S 79 46'00" E - 287.08' ALONG THE NORTHERLY LINE OF THIS TRACT, SAME BEING THE SOUTHERLY LINE OF THE SCHOOLVIEW ACRES SUBDIVISION TO A 1/2"IRON ROD, THE SOUTHEAST CORNER OF THE SCHOOLVIEW ACRES SUBDIVISION AND THE NORTHEAST CORNER OF THIS TRACT;

THENCE S 01 24'23" E - 730.27' ALONG THE EASTERLY LINE OF THIS TRACT, SAME BEING THE WESTERLY LINE OF THE LAREDO INTERNATIONAL AIRPORT TRACT, TO A 1/2"IRON ROD, THE NORTHEAST CORNER OF THE VISTA HERMOSA SUBDIVISION UNIT 1, THE SOUTHEAST CORNER OF THIS TRACT, AND THE POINT OF BEGINNING OF THIS SURVEY.

FILED

Aug 7 [illegible]

322551

STATE OF TEXAS:
COUNTY OF WEBB:

WE, THE UNDERSIGNED, OWNERS OF THE LAND SHOWN ON THIS PLAT, AND DESIGNATED HEREIN AS THE VALLE ALTO SUBDIVISION TO THE COUNTY OF WEBB, TEXAS, AND WHOSE NAME IS SUBSCRIBED HERETO, HEREBY DEDICATE TO THE USE OF THE PUBLIC FOREVER ALL STREETS AND EASEMENTS THEREON SHOWN FOR PURPOSE AND CONSIDERATION THEREIN EXPRESSED.

ANA OBBELIA C. de NAJERA, OWNER — DATE

STATE OF TEXAS:
COUNTY OF WEBB:

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED ANA OBBELIA C. de NAJERA KNOWN TO ME TO BE THE PERSONS WHOSE NAMES ARE SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN STATED.

WITNESS MY HAND AND SEAL OF OFFICE THIS _____ DAY OF _____, 19__.

NOTARY PUBLIC: WEBB COUNTY, TEXAS — COMMISSION EXPIRES

STATE OF TEXAS:
COUNTY OF WEBB:

I HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN THIS PLAT TO THE MATTERS OF STREETS, LOTS, WATER, SEWER AND APPURTENANCES AND DRAINAGE LAYOUT; AND TO THE BEST OF MY KNOWLEDGE THIS PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION ORDINANCE, EXCEPT FOR THOSE VARIANCES THAT MAY HAVE BEEN GRANTED BY THE PLANNING COMMISSION OF THE CITY.

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE 30th DAY OF May, 1984.

ANTONIO J. MEDINA, R.P.E. No.7307

STATE OF TEXAS:
COUNTY OF WEBB:

THIS IS TO CERTIFY THAT I, ANTONIO J. MEDINA, REGISTERED PUBLIC SURVEYOR No.3418, TEXAS, HAVE PLATTED THE VALLE ALTO SUBDIVISION FROM AN ACTUAL SURVEY ON THE GROUND MADE UNDER MY SUPERVISION AND THAT ALL LOT CORNERS AND POINTS OF CURVE ARE PROPERLY MARKED WITH 1/2in IRON RODS, 18in LONG AND THIS PLAT CORRECTLY REPRESENTS THAT SURVEY, SAME COMPLYING WITH THE SUBDIVISION ORDINANCE OF THE CITY OF LAREDO, TEXAS. ALL BLOCK CORNERS WILL BE MARKED WITH CONCRETE MONUMENTS.

ANTONIO J. MEDINA, R.P.S. No.3418 — 05-30-84 DATE

THIS PLAT: VALLE ALTO SUBDIVISION HAS BEEN SUBMITTED TO AND CONSIDERED BY THE PLANNING COMMISSION OF THE CITY OF LAREDO, TEXAS, AND IS HEREBY APPROVED BY SUCH COMMISSION ON THIS THE _____ DAY OF _____, 19__.

BLAS MARTINEZ, CHAIRMAN — DATE

RON WHITEHANK, PLANNING DIRECTOR — August 2, 1984 DATE

I HAVE REVIEWED THIS PLAT AND ACCOMPANYING CONSTRUCTION DRAWINGS IDENTIFIED AS VALLE ALTO SUBDIVISION, PREPARED BY ANTONIO J. MEDINA, REGISTERED PROFESSIONAL ENGINEER No. 7307, AND DATED THE 7th DAY OF November 19 83, WITH THE LAST REVISED DATE ON November 14, 1983 AND HAVE FOUND THEM IN COMPLIANCE WITH THE SUBDIVISION ORDINANCE OF THE CITY OF LAREDO.

RAMON ESCODERO, CITY ENGINEER — July 23, 1984 DATE

STATE OF TEXAS:
COUNTY OF WEBB:

I, HENRY FLORES, CLERK OF THE COUNTY COURT OF WEBB COUNTY, TEXAS, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT DATED THE 27 DAY OF August, 19 84 WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE 2nd DAY OF August, 19 84 AT 2:00 O'CLOCK p.m IN VOLUME 33, PAGE 85 OF THE PLAT RECORDS IN AND FOR SAID COUNTY.

By Diana S. Gonzalez, Deputy

Henry Flores
Clerk, County Court, Webb County, Texas

Plotted by: [illegible] 11-14-83 DATE

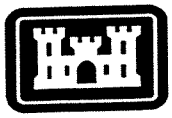
Howland & Medina
ENGINEERS & SURVEYORS
Laredo, Texas

Valle Alto SUBDIVISION

PLAT
OF
VALLE ALTO SUBDIVISION
BEING A 5.9235 ACRE TRACT
out of

SHEET 1 OF 4

Appendix B
EM Investigation



Letter Report
January 1998

US Army Corps of Engineers
Waterways Experiment Station

Electromagnetic Investigations of the Landfill Trenches of the Former Laredo Air Force Base, Laredo, Texas

by Richard D. Lewis and Rodney L. Leist
Waterways Experiment Station

WES

Prepared for U.S. Army Engineer District, Tulsa

03089

Letter Report
January 1998

Electromagnetic Investigations of the Landfill Trenches of the Former Laredo Air Force Base, Laredo, Texas

by Richard D. Lewis and Rodney L. Leist
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Prepared for U.S. Army Engineer District, Tulsa

Under MIPR #W44XGQ62486194

03090

Contents

Preface iv

Conversion Factors, Non-SI to SI Units of Measurement v

1—Introduction 1

Background 1
Purpose 1
Summary 2

2—Electromagnetic Induction Equipment 3

Electromagnetic Induction Techniques 3
Continuous Wave Electromagnetics 3
Transient Electromagnetics 4

3—Field Investigation 7

Site Description 7
Subsurface Soils 7
Field Data Collection 7

4—Data Evaluation 9

Introduction 9
Modified EM-61 Induction Investigation 9

5—Conclusions 12

References 13

Figures 1-15

Appendix A: Tabulated Anomalies List A1

03091

Preface

This report summarizes a research study conducted by the U.S. Army Engineer Waterways Experiment Station (WES) for the U.S. Army Engineer District (USAED), Tulsa, by Military Interdepartmental Purchase Request Number W44XGQ62486194. The Tulsa District Technical Manager was Ms. Angela Burckhalter, under the supervision of Mr. John Forslund, Environmental Design Section. The field data for this study was collected from 19 to 22 May 1997.

The Principal Investigators were Dr. Richard D. Lewis and Mr. Rodney Leist, Earthquake Engineering and Geophysics Branch (EEGB), Earthquake Engineering and Geosciences Division (EEGD), Geotechnical Laboratory (GL), WES. Dr. Mary Ellen Hynes was the Chief, EEGB, during this study.

Overall direction at WES was provided by Dr. A. G. Franklin, Chief, EEGD, and Dr. William F. Marcuson III, Director, GL.

At the time of preparation of this report, Director of WES was Dr. Robert W. Whalin. The Commander and Deputy Director of WES was COL Robin R. Cababa, EN.

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

03082

Conversion Factors, Non-SI to SI Units of Measurement

Non-SI units of measurement used in this report can be converted to SI units as follows:

Multiply	By	To Obtain
acres	0.4047	hectares
Fahrenheit degrees	5/9 F - 32	Celsius degrees
feet	0.3048	meters
inches	2.540	centimeters
miles (U.S. Statute)	1.609347	kilometers
millimohs per foot	175.1	milliSiemens per meter
pounds	4.448222	Newtons

03093

1 Introduction

Background

The U.S. Government acquired 2,085.43 acres on 7 May 1942 in Webb County, TX, close to the city of Laredo. The Webb Army Air Forces Airfield (later called the Laredo Air Force Base) was situated upon this land. The Government constructed runways, hangers, administrative and support buildings, housing, recreational facilities, etc., from 1942 until 1974. The installation was used to train aircraft pilots and operators of flexible weapons (50 caliber and other machine guns) on aircraft bombers. The base was initially deactivated on 17 June 1947 after the close of WWII, but it was reactivated to support the Korean War effort. It continued in operation as a training facility until it was again deactivated on 29 March 1974. Approximately 309 acres were either deeded or sold to other federal, state, and county agencies or private firms. The remainder of the base was transferred to the city of Laredo. Included in this action was a parcel of land approximately 2,000 by 3,000 ft which had been used as a horse pasture, pistol range, trap shooting range, fire fighting training area, landfill, and a golf course, Figure 1. The Newman Elementary School and the Vista Hermosa, School View Acres, and Alta Vista housing developments are now situated on this land, Figure 2.

Purpose

The U.S. Army Engineer District, Tulsa, tasked the WES to conduct a geophysical investigation in these subdivisions. The purpose of this study was to verify and establish the location of buried former landfill trenches. Both a traditional and a new experimental electromagnetic (EM) induction technique were selected to detect and delineate the landfill trenches. This task proved to be challenging as most of the area is now an urban development. The principal areas where geophysical EM induction measurements could be conducted were along street right-of-ways. To achieve the desired results, a new experimental EM induction system was devised. This system significantly modified existing equipment but utilized off-the-shelf components as much as possible. This instrument was configured to obtain good response from electrically conducting objects buried in landfill trenches and, at the same time, minimize the unwanted response from shallower, buried city utilities. These utilities are also

03094

conductive and can interfere with detection of deeper conducting objects when using more conventional EM induction methods.

Summary

This report describes the EM induction techniques used in the landfill trenches detection study, documents the field investigation activities, and presents the interpreted results from the data collected. In general, the traditional EM equipment was unable to detect the landfill trenches due to the interference of shallow underground utilities and the higher conductivity of bitumen used to pave the streets. In addition, instrumentation problems were determined to exist as a result of a recent manufacturer's repair and system upgrade. However, the newly modified EM device was successful in acquiring deeper data signatures indicative of landfill trenches. These signatures generally correspond with suspected trench locations as interpreted from air photos of the site prior to urban construction and development. The interpreted trench locations are shown in Figures 5 through 15. Appendix A provides tabulated coordinates for each trench location suggested by the EM data.

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2 Electromagnetic Induction Equipment

Electromagnetic Induction Techniques

The geophysical EM induction technique is used to determine the electrical conductivity (the inverse of resistivity) of subsurface materials and also to detect and locate subsurface metallic conductors. Subsurface materials (soil, rock, fill, any metal, etc.) can be typed or characterized by the differing electrical properties. Generally the possible range of electrical conductivity for soils extends over several orders of magnitude. Typical examples of extreme values are dry clean sands (nonconductive) to water-saturated fat clays (extremely conductive). Variation in soil moisture, types of ions in solution, the mineralogy of the soil, etc., will affect the resulting electrical response of the soil (Bevan 1983). Depending on local site conditions, the mapping of lateral variations of shallow (1 to 20 ft) subsurface conditions is possible with EM induction methods. Other depths of investigation (shallower and deeper) are also possible. The identification of various buried metallic conductors such as city utilities (water, gas, electrical, metal sewer pipe, telephone, electrical lines), drums, cans, etc., is also feasible. For these reasons, EM induction techniques have been applied to environmental investigations. This is especially true in the search for former landfill trenches where the fill and cover materials differ substantially from the surrounding media. The conductivity of the landfill trench material can also significantly change in relation to the surrounding trench material due to the refuse and fill material's highly electrically conductive fluids. These solutions are formed by a leaching process from materials deposited in the landfill trenches. Generally, the substances in landfill trenches have displayed significantly increased electrical conductivities and much higher responses of metallic conductors than the surrounding media (Benson et al. 1983).

Continuous Wave Electromagnetics

One type of induction survey commonly applied to the investigation of landfill sites is the continuous wave electromagnetic (CWEM) method. This system consists of a transmitter and a receiver coil separated by a known distance (typically a few to 10's of feet). An alternating current (AC) is passed

03096

though the transmitting coil at a chosen frequency. This in turn establishes a continuous wave (constantly broadcasting) alternating EM field, termed the primary field. This field interacts with any conductor encountered and establishes secondary electrical currents within that media. The induced secondary electrical currents produce a secondary EM field which is in turn radiated into the surrounding media or space. These primary and secondary fields generate currents in the receiver coil. Since the primary EM field has a known field magnitude and phase, the expected current voltage and phase in the receiving coil is predictable (McNeil 1980). Any shifts in amplitude or phase in this expected AC in the receiver can then be attributed to the effects of any conducting media within the influence of the primary EM field. For analysis, the received AC is divided into two components: (a) the quadrature (or imaginary) component which is $\pi/4$ radians (90 deg) out of phase with the primary field; and (b) the inphase (or real) component which has the same phase as the primary field (Telford et al. 1988). Under a wide variety of natural situations, the real component is directly associated with the subsurface electrical conductivity whose usual SI units are expressed in milliSiemens per meter (Geonics 1984). Significant inphase responses in most cases are the results of the presence of buried metallic conductors (iron, steel, copper, aluminum, etc.) in the subsurface near or between the transmitter or receiving coil.

A Geonics EM-31 terrain conductivity meter was applied first in this investigation. The EM-31 has a transmitter-receiver coil separation of 12 ft and an effective depth of investigation down to 12 to 14 ft for typical soil resistivities. For this site, the instrument was operated in the horizontal co-planar mode (HCPM) which gives the maximum depth of penetration for CWEM induction investigations. The HCPM coil configuration is employed most frequently. This arrangement produces approximately half of the induced response from a depth greater than 7 to 9 ft in the subsurface. This type of employment of the EM-31 typically gives a good effective zone of investigation between 6 to 12 ft in the subsurface, an interval of substantial interest for investigation of the locations of formerly active landfill trenches.

The major drawback with this CWEM induction sensor is that the secondary field at the receiver is very small in relation to the primary field. In areas where pavements exist which contain reinforcing steel (concrete) or certain sources of fly ash (asphalt), a near surface sheet conductor can exist which effectively shields the EM field from penetrating into the subsurface. This can severely attenuate the secondary field and greatly reduce the effective depth of investigation.

Transient Electromagnetics

A Geonics EM-61 terrain conductivity meter was used with the time domain or transient electromagnetic (TDEM) method. This method approaches the induction problem in a different manner than the previously discussed CWEM.

In TDEM methods, the technique is to transmit a generally increasing-in-strength non-oscillating EM field. This is accomplished by increasing (nearly) linearly in time the direct current (DC) voltage in a looped coil. As the magnitude of the generated dipole field increases due to stronger currents in the transmitter loop, secondary currents are generated in conductors situated within the influence of the EM field. When the primary field is abruptly terminated, the secondary currents decay (Nabighian 1988, Geonics 1993). This effect then generates a secondary EM field which excites a measurable secondary current in a receiver coil during the "off-time" of the transmitter. The measured data output of the EM-61 consists of an amplitude measurement on the decay curve from both the upper and lower receivers. The measurement is in milliVolts/Volt (mV/V), a ratio of the current level in the receiver coil in relation to the transmitter coil at a standard reference time. The chief difference between the TDEM and CWEM methods is the TDEM uses an increasing DC in the transmitter which is abruptly switched off, while the CWEM uses a steady AC in the induction loop.

The great advantage of the TDEM method is that strong EM fields can be used and the secondary fields can be sensed through hindering media such as asphalt. In areas which are covered or surrounded by conductive media, this induction method is superior in the search for subsurface concentrations of metals. In addition, this method locates and defines subsurface metallic conductors in a more distinguishable manner than CWEM methods. However, in the manner that TDEM is applied by the EM-61, very little subsurface soil or rock conductivity information is retrieved. The units of investigation are typically reported in mV/V which is the ratio of the primary field to the secondary field.

The transient EM induction instrument used for the survey was a specially modified Geonics EM-61, Figure 3. A specially constructed 16-turn horizontal transmitting coil, 8.3 ft by 8.3 ft (square) replaced the standard one which was 3.28 ft by 3.28 ft (square). This significantly increased, by almost an order of magnitude, the dipole strength of the transmitted signal (personal communication, Geonics 1997). By enlarging the transmitter coil loop size to 8.3 by 8.3 ft, the volume under the influence of the EM field increased. The two vertical co-axial receiving coils remained the standard 3.28 ft by 3.28 ft (square), but the coil separation was increased to 2.5 ft from 1.33 ft. This arrangement increased the induction capability of the EM-61 transmitter by an order of magnitude at a depth of 12 ft and a half order of magnitude at a depth of 6 ft. In addition, a new experimental operating electrical circuit was installed in the EM-61 which could regulate these increased transmitter coil voltages and at the same time increase the cycle rate that data acquisition was possible. Thus data could be collected at these higher field outputs and at a significantly faster cycle time between measurements. This allowed an approximate doubling of the number of measurements which could be collected in a given time interval.

The EM-61 was originally designed to locate 55 gal barrels buried 5 to 10 ft in the subsurface. By these researched modifications to the EM-61, the equipment was specifically reconfigured to locate landfill-trench-sized objects which are 25 to 35 ft in width, 100 to 500 ft in length and now 5 to 15 ft deep in the subsurface. Also, the employed TDEM system was configured to operate in an

environment of highly conducting and interfering near surface material. This configuration had the tendency to minimize the response of shallow city utilities (1 to 3 ft) in the subsurface.

3 Field Investigation

Site Description

The area investigated consisted of a flat-lying housing development immediately west of the Laredo International Airport (Figure 1). The area was developed in the early 1980's as single unit housing with asphalt streets and underground city utilities. Vehicles are allowed to be parked on the streets. Efforts were made before and during the geophysical survey to move the vehicles to reduce interference with the EM survey equipment, however, compliance was not achieved. The surrounding area is dry and semi-desert with 15 to 20 in of rain per year. During the time of the field data collection, the weather was warm (upper 90's F°) and fair with no significant precipitation.

Subsurface Soils

The area inclusive of Laredo has near surface soils which are characterized as the Catarina-Montell-Jimenez soil association "cracking clayey soils; crumbly clayey soils; and loamy soils. In some areas shallow to moderately deep soils are present over indurated caliche" (Parker 1996). Preliminary subsurface soil investigation was conducted near the landfill trench site by the USAED, Tulsa. It was reported (personal communication, USAED, Tulsa) that the soils range from clays to silty sands. The majority of the material is classified as clays to finer silts dominated by generally low moisture contents. In the east side of the investigated area, streaks of gypsum crystals were encountered in a number of samples. Results of subsurface soil investigations, penetrating to approximately 10 to 15 ft at 12 locations, indicate that the silt and sandy material are present in the clay as thin lenses.

Field Data Collection

Field data collection occurred from 19 to 22 May 1997, under the direction of Mr. Rodney Leist, WES. Assisting during the data collection effort was Ms. Angela Burckhalter, project sponsor from the USAED, Tulsa. Positioning

information and instrumentation mobility (towing) was provided by Mr. Ron Huffman and Mr. Kent Stewart, of Huffman & Associates, Tulsa, OK.

The survey area was bounded to the west by Cypress, to the north by Los Ebanos, to the south by Hibiscus and to the east by Cactus Streets. In addition to the bounding streets, the interior streets of Agave, Hemlock, Hibiscus, Dogwood, Evergreen, and Teak were surveyed. EM-31 data was also collected surrounding the former fire training area to the east of the subdivision.

Positioning information was obtained using a Trimble Pathfinder Differential Global Positioning System (DGPS). Positioning information was integrated with EM-31 and EM-61 data using custom logging software that recorded precise geographic locations for each data value collected. Differential corrections were obtained through redundant systems allowing utilization of either U.S. Coast Guard (USCG) navigation beacon or OmniStar. With the OmniStar, a reference signal is transmitted from a known survey benchmark in the local area in order to provide updated correction factors to the collected GPS locations. All coordinates are referenced to the Texas State Plane Coordinate System, South, North American Datum (NAD) 83.

EM-61 data, using the modified Geonics EM-61 system, was collected in a single pass survey on 20 May 1997. EM-31 data was collected using a recently factory-updated Geonics EM-31 on 21 May 1997. Data from both the EM-31 and EM-61 were post-processed by custom software developed by Geonics and plotted for analysis. A dual pass survey was performed providing correlation data for better determination of the effects from numerous vehicles, trash receptacles, fences, and other metallic sources of interference near the survey transects.

The EM-61 and EM-31 equipment were mounted at the end of a 25-ft long, all-plastic trailer manufactured by Ferrington Chariots, Napa, CA, specifically for EM induction surveying. The trailer was towed by a small Honda 4-wheel All Terrain Vehicle (ATV) shown in Figure 4, at a maximum forward speed of 1.5 to 2.5 mph. This provided data samples every few feet or less. The Trimble DGPS and data logging system were mounted on the forward and rear utility racks of the ATV. In addition, a seat was attached to the rear of the ATV to allow an observer to monitor the equipment and data during operation.

The data were acquired by traversing the streets of the housing developments with the ATV, plastic trailer, navigation equipment, data recording devices, and sensor instruments. The data stream from the EM induction equipment was meshed with the positioning information and time stamped. This data stream of measurement, position, and time (along with any short operator notes) was then collected in the data logger. The stored data was regularly downloaded into a field notebook computer and stored on floppy disks. Known underground city utilities were avoided wherever possible. However, man-hole covers which were at known locations from previous land surveys were intentionally passed over to acquire a strong EM response. This was done to ensure that the instrumentation was functioning properly and to provide a "back up" table of known locations, in case some difficulty occurred with the real time DGPS navigation equipment.

4 Data Evaluation

Introduction

The EM-31 responses proved to be of little use in the search for deep targets under the asphalt-covered streets in the housing developments. The pavement asphalt apparently contained a conductive substance such as fly ash. This and/or instrument problems associated with a recent factory upgrade limited the depth of investigation from the usual 12 to 16 ft in the subsurface to 2 to 3 ft beneath the pavement. This lesser depth of investigation is estimated as the instrument was detecting very shallowly buried city utilities, but not those which were placed greater than 3 ft deep in the subsurface. Although the EM-31 detected local utilities and the data were extremely repeatable, no indications of the subsurface landfill trenches were displayed. Apparent landfill trenches are visible on the historical air photos of the area and most were clearly located by the modified EM-61 induction survey. Further analysis of the EM-31 equipment and data were conducted. These data were compared to a short segment which was collected on a site reconnaissance on 21 August 1996. This resulted in tracing the suspect data quality problems to a mostly operational, but system-incompatible, electronic part which had been installed by the manufacturer.

The EM-61 data are presented in Figures 5 through 15 in a response versus position format with the measured or computed data plotted in profile against one of the components of the surveyed positions. The Easting coordinate is used for reference for east-west aligned streets and the Northing coordinate is used for north-south trending streets. It should be noted that the streets of the subdivision are not laid out precisely north-south and east-west but are generally within 10 degrees azimuth from the reference north-south and east-west State Plane Coordinate system.

Modified EM-61 Induction Investigation

The data from the modified EM-61 were custom processed to remove a constant value bias in the data. These features are relics of induction responses to GPS receiver data communication cables and are always nearly the same value. These cabling effects change the measured response value of the subsurface target very slightly. For an extremely good first approximation, the effect can

be removed by a simple subtraction operation. A third response is plotted which is the difference in the measurements from the two receiver coils. This processing is conducted to suppress the signal of lateral objects along the traverse (parked cars, trucks, metal fences, etc.) while increasing the relative response of any metal target from the subsurface.

The response of the modified EM-61 produced characteristic signatures for both utilities (line sources) and landfills (trenches). The landfill trench response signature was typical of a large prismatic subsurface volume where the width of the inducted body is significantly larger than the loop size of the transmitter. The acquired induction responses on a traverse across the landfill trench has demonstrated "edge effects," which are a result of the geometries of the conducting body, EM transmitter, and EM receivers. In this case, the response from the target increases to some significantly higher value as trench outer edge is approached by the coils of the EM-61. The response then decreases somewhat as the transmitter/receivers loops pass over the center of the landfill trench, and then the values reach another peak value when the opposite side of the landfill trench is reached (personal communication, Mr. Miro Bosnar, Geonics Ltd 1997). The physics controlling this effect is involved and the reader can consult Barrow et al. (1996) for additional information and examples. Most of the known landfill trenches which were surveyed with the modified EM-61 displayed this distinctive response. Two suspected landfill trenches (indicated by the historical air photos) under the most northern block of Cactus Drive did not have the expected EM induction response at their indicated locations. The suspected trench under Post Oak Drive near Newman School displayed a very strong and broad EM induction effect, but did not display robust edge effects. Both differences may be due to the heterogeneity of the material within the landfill trenches (metal concentration and placement of materials).

A metallic line target (e.g., city utility pipe or line) which is generally deeper than the diameter of the transmitter coil will usually generate a relatively narrow and uncomplicated induction response. This is simply an increase and then a decrease in the modified EM-61's response as the coils pass over the object. Also, variously sized and shaped objects can be discerned, e.g., larger (landfill-sized) and smaller (less than 5 to 10 ft diameter (barrels, refrigerators, etc.)). Most of the landfill trenches appear to be 30 to 40 ft wide as interpreted from the distance between the induction trench edge effects in the EM-61 data.

The intensity and slope of the induction response can also be used to distinguish between a "deeper" versus "shallower" metallic conductor. The response of a similar sized and shaped object will have lesser slopes and peak amplitudes as the target is situated farther away in depth from the inducing EM field. The slope of the response (how sharply it rises and falls) is also indicative of the depth to the inducing target. Generally, a shallower target will produce much greater slopes in the rise and fall of the induction response while a deeper target will generate a lesser slope and intensity in its EM response. This feature also aids in the interpretation as a shallower utility line will often display a higher amplitude and steeper sloped response, while a deeper landfill trench response will have a signature with gentler slopes, edge effects, and

lower amplitude responses to the inducting EM field. Thus, generally, the response of near surface versus deeper metal conductors can be somewhat discerned and the edges of larger-sized objects can be reasonably distinguished.

The results of the modified EM-61 induction traverses are seen in Figures 5 through 15 and the interpreted anomalies and their Northing and Easting coordinates are tabulated in Appendix A. Each suspected landfill trench site (as provided by the sponsor (with the two noted exceptions)) produced a distinguishable response either at the indicated location or very close to the denoted site. In Figures 5 through 15, the upper coil response, lower coil response, and the difference are plotted in relationship to Northing or Easting trend. The processed difference value feature is very useful to cancel the effect of metallic conductors which are situated laterally from the receiving coils versus beneath the coils. Responses from targets off to the sides tend to have nearly identical induction responses, while those under the modified EM-61 will have a greater relative response on the lower coil versus the upper coil. An example of the successful cancellation of an interfering source is displayed on the east end of Hibiscus Lane, Figure 12. At this locale the responses of a dump truck and road grader parked near the side of the street have been successfully canceled. Each significant modified EM-61 response is classified as a landfill trench response, suspected landfill trench response, city utility response, or from an unknown source. The possible lateral edges of large bodies are indicated in Northing and Easting, and the location of the center of the inducting mass is indicated for smaller-sized targets.

Each of the streets listed below exhibited unknown induction anomalies which were not correlatable to any former landfill trench, known city utility, or other identifiable source. The subsurface features producing these anomalies are indicated in the tables (Appendix A) as being from an unknown source or a suspected or possible landfill trench. Each street has the indicated number of anomalies from unknown sources or features which strongly typify the response(s) from known landfill trenches. Each street has the location and possible type of these anomalies listed on the corresponding table in Appendix A. The street names and the number of EM-61 anomalies which could not be identified on any engineering drawing or air photo are: Cactus (2), Alta Vista (1), Hemlock (3), Hibiscus (3), Los Ebanos (5), Post Oak (1), and Teak (1). The coordinates for these locations are tabulated in Appendix A.

5 Conclusions

WES performed traditional and experimental EM induction surveys in an urban area in Laredo. Traditional CWEM induction methods proved to have limited subsurface range in this area. For the experimental TDEM survey, a commercial transient EM system was modified for deeper detection (5 to 15 ft in the subsurface) and better resolution of larger volumes of metal conductors in the subsurface. Suspected landfill trenches used by the former Laredo Air Force Base underlie the surveyed housing developments in Laredo. With two exceptions, each suspected subsurface landfill trench produced a detectable and interpretable response in the TDEM survey. Several other suspect landfill trench responses at other locations were discerned. Additional locations of other unknown subterranean metallic source targets were also identified based upon their induction response(s). The information interpreted from the EM survey may be of assistance if additional field investigation of this site is planned.

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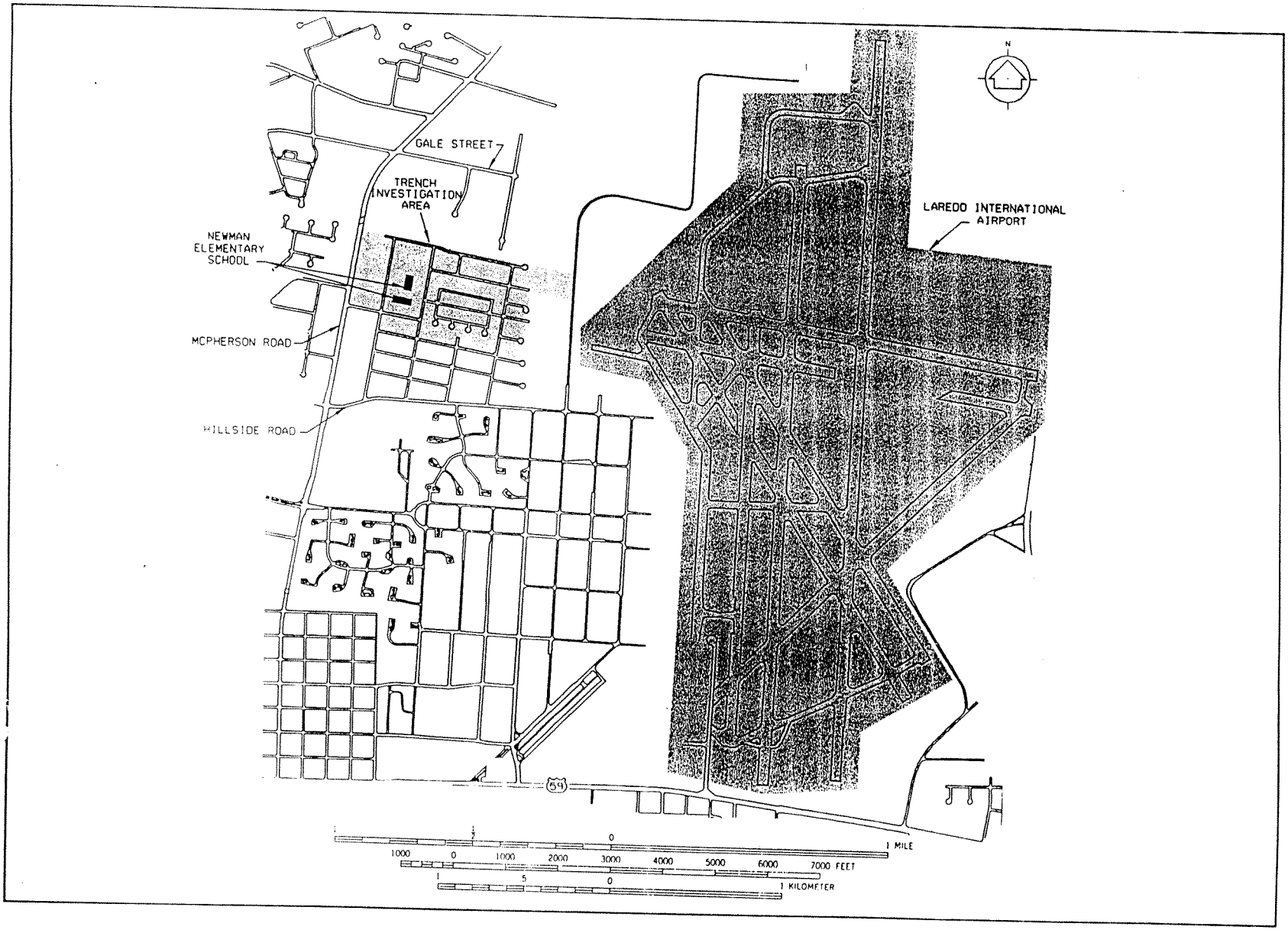

Figure 1. Location map, survey site and Laredo International Airport

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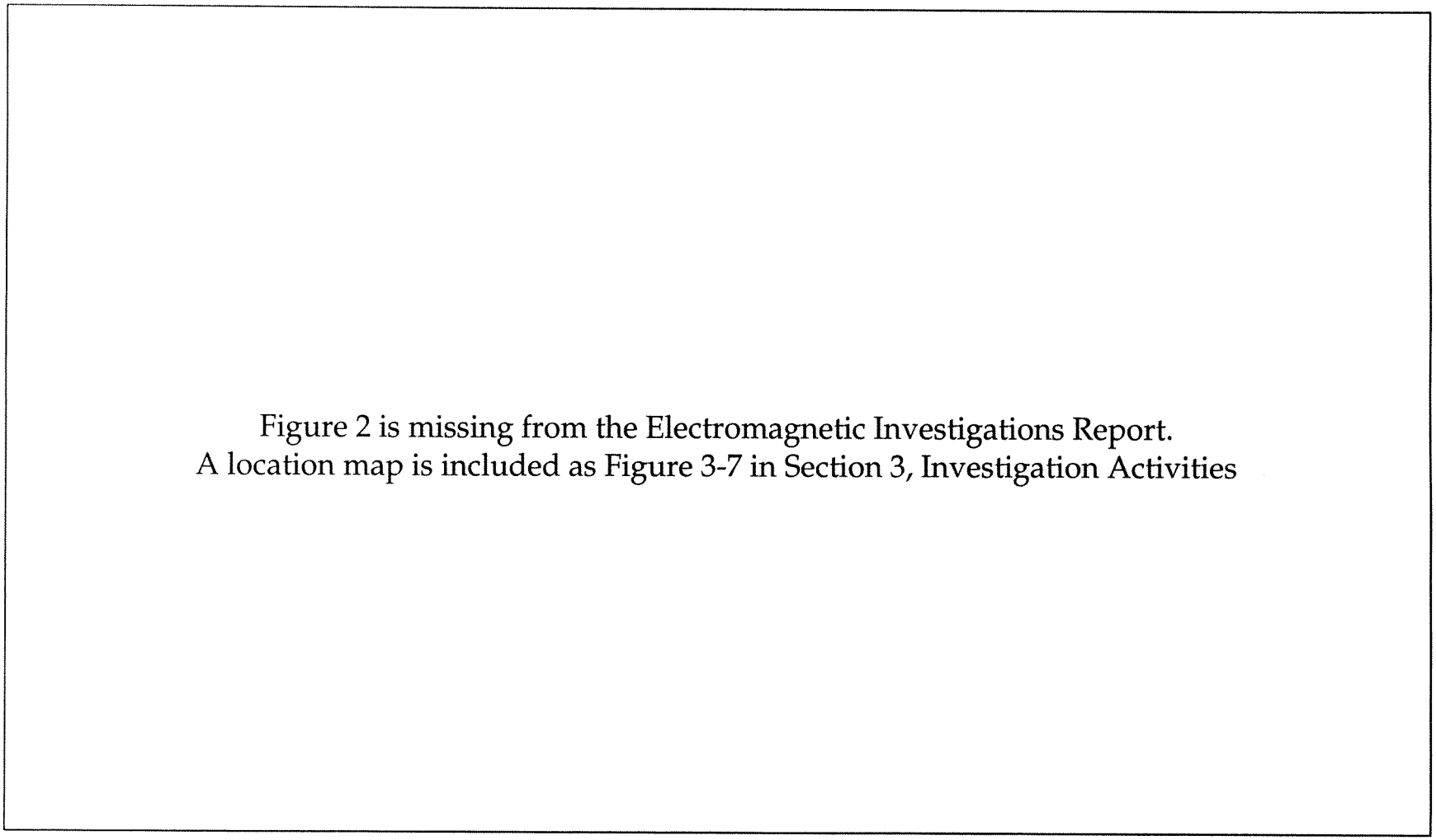

Figure 2. Location map, subdivision drives

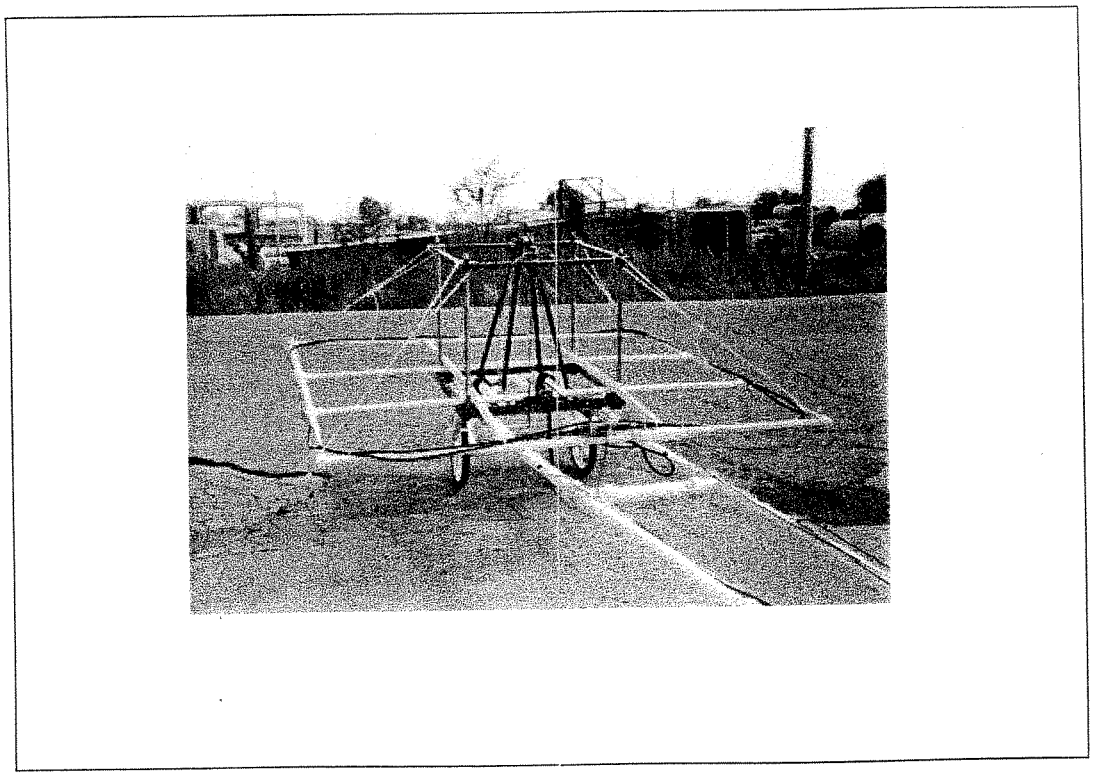

Figure 3. Modified EM-61 as fielded on trailer



Figure 4. Modified EM-61 on trailer with all terrain vehicle

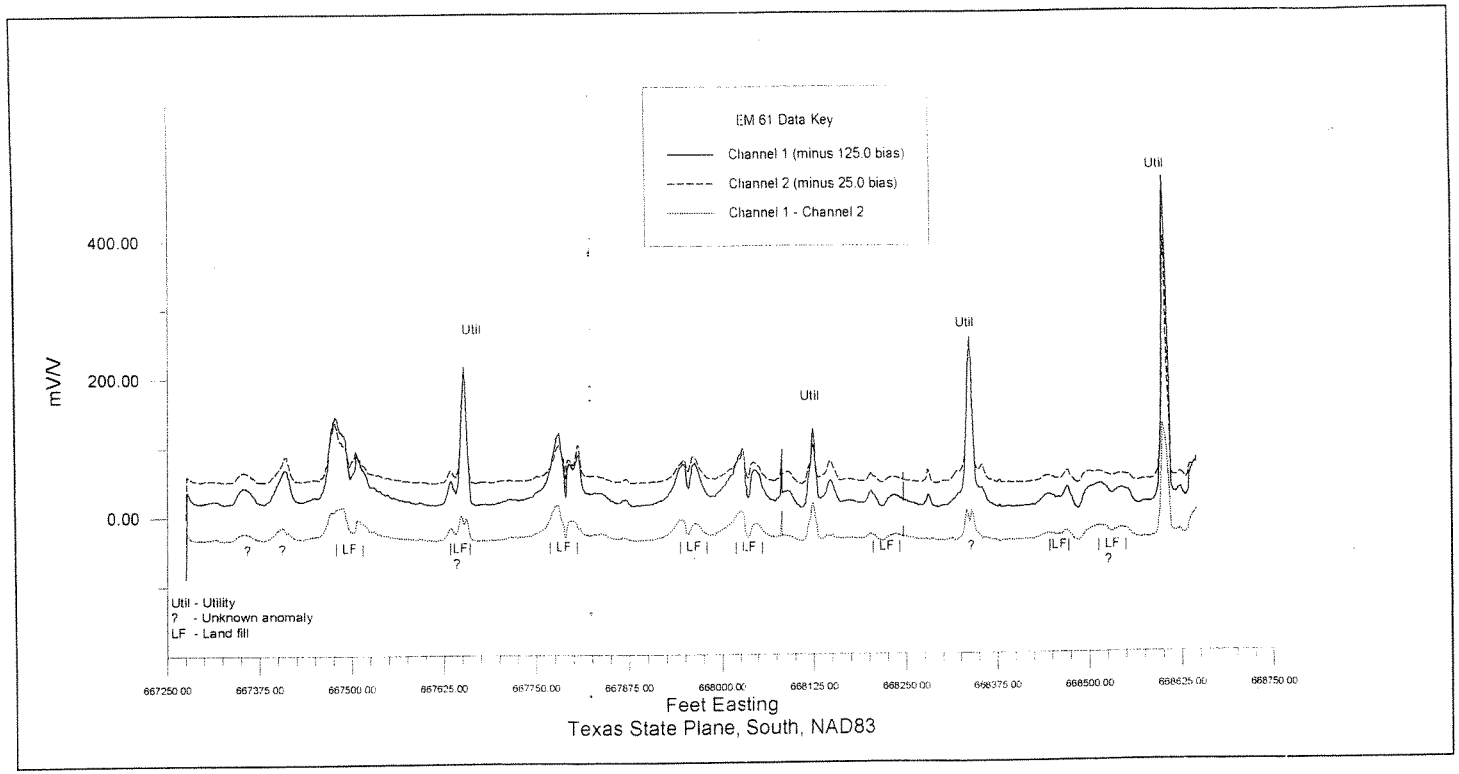

Figure 5. Agave Drive modified EM-61 response

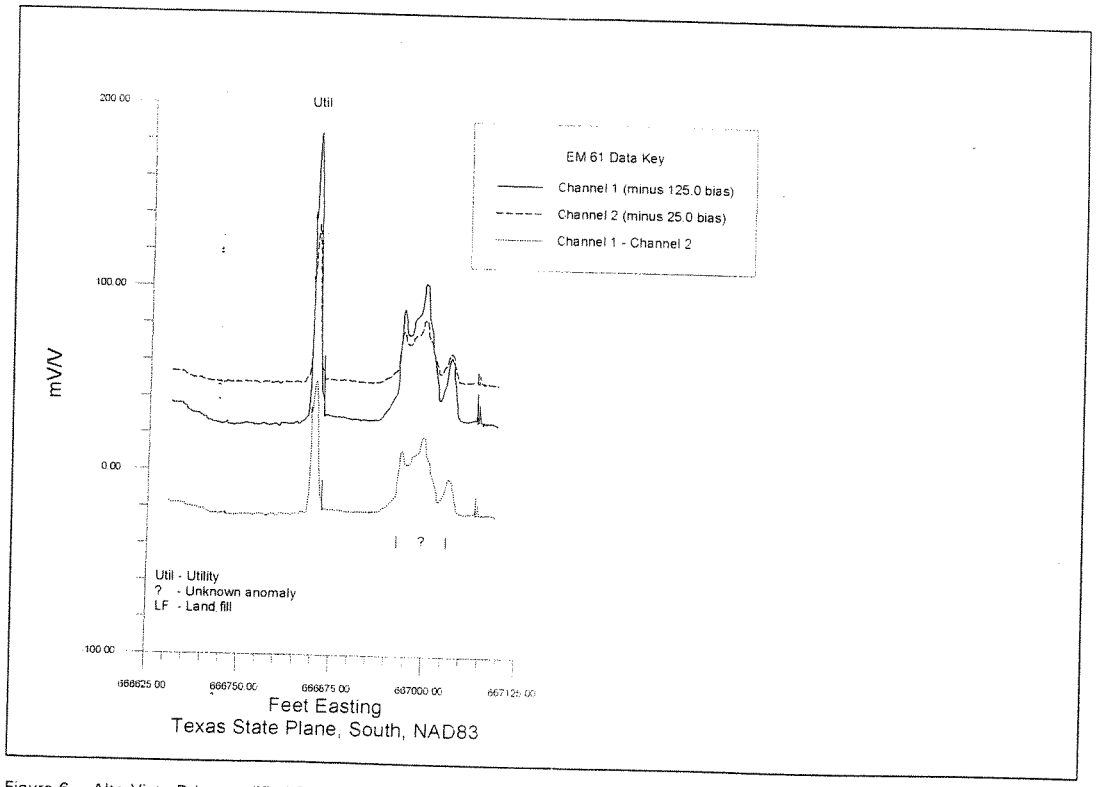

Figure 6. Alta Vista Drive modified EM-61 response

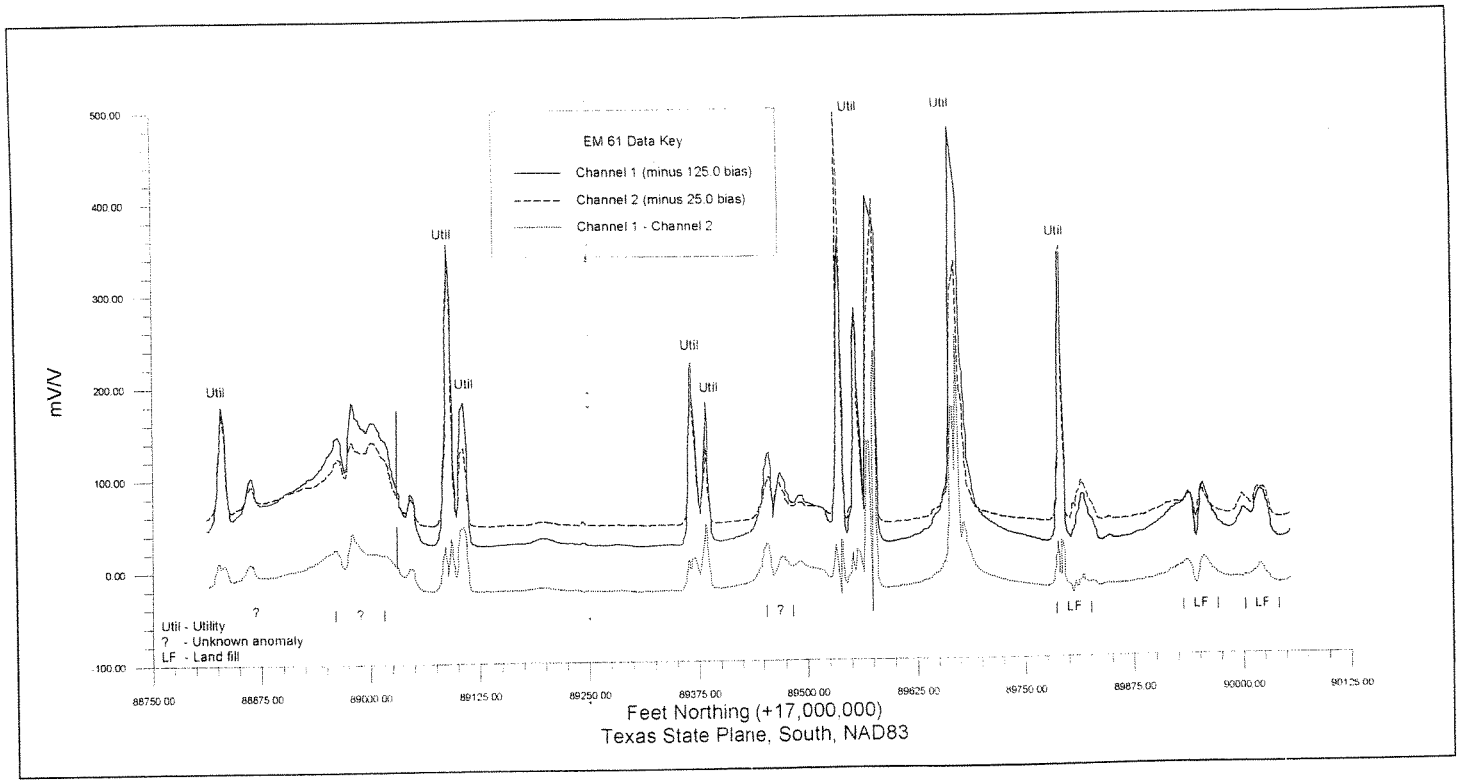

Figure 7. Cactus Drive modified EM-61 response

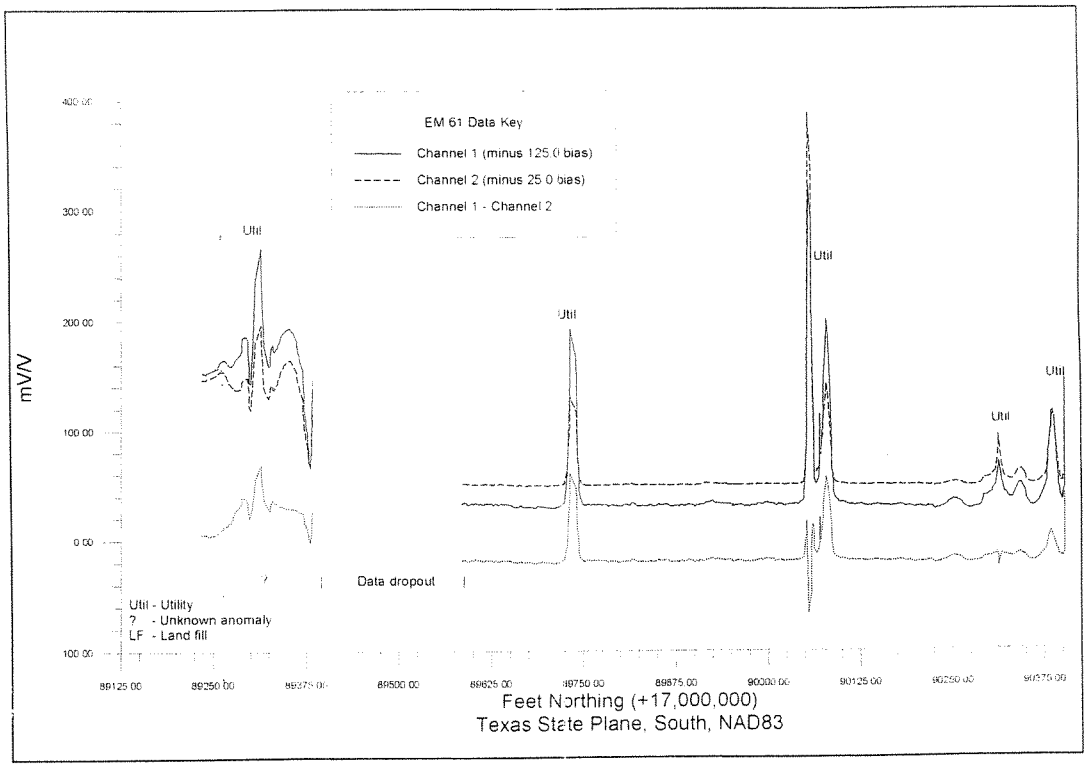

Figure 8. Cypress Drive modified EM-61 response

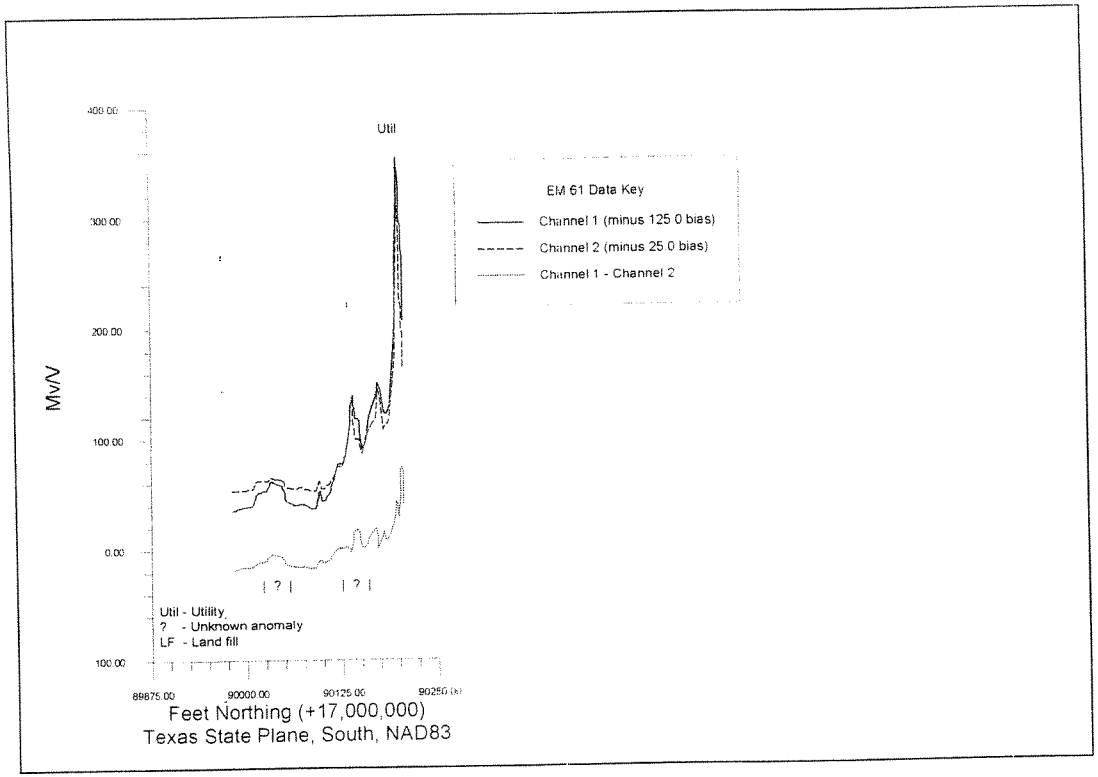

Figure 9. Dogwood Drive modified EM-61 response

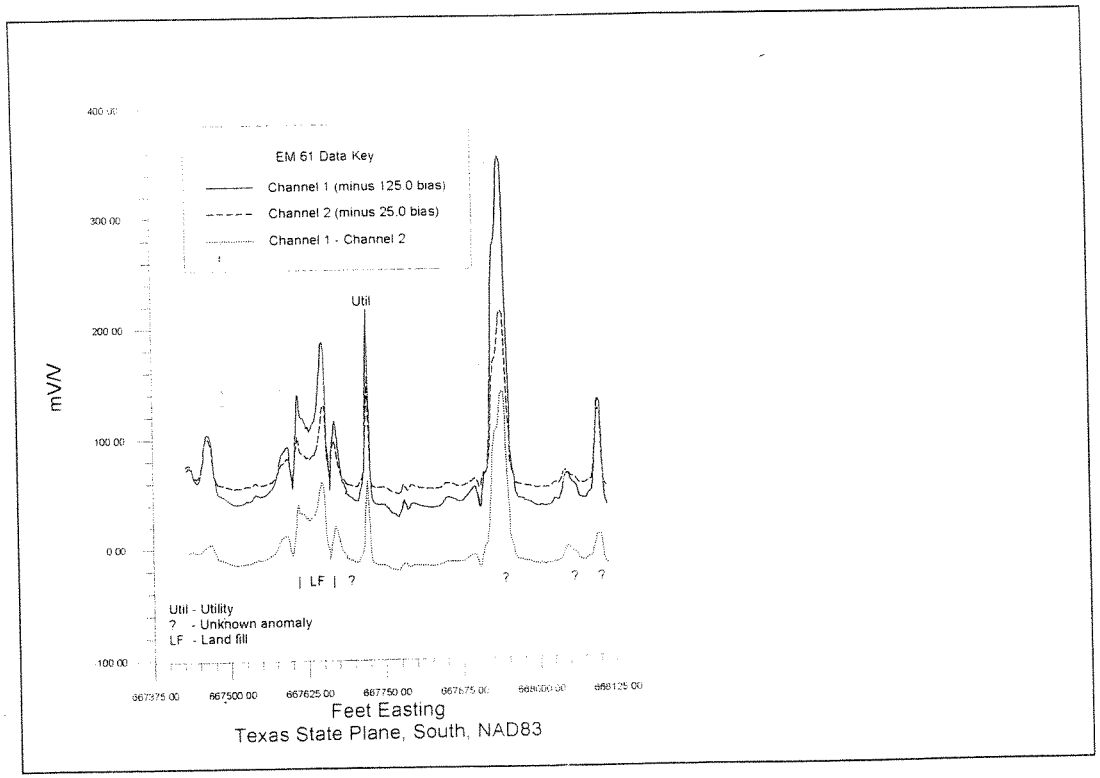

Figure 10. Evergreen Drive modified EM-61 response

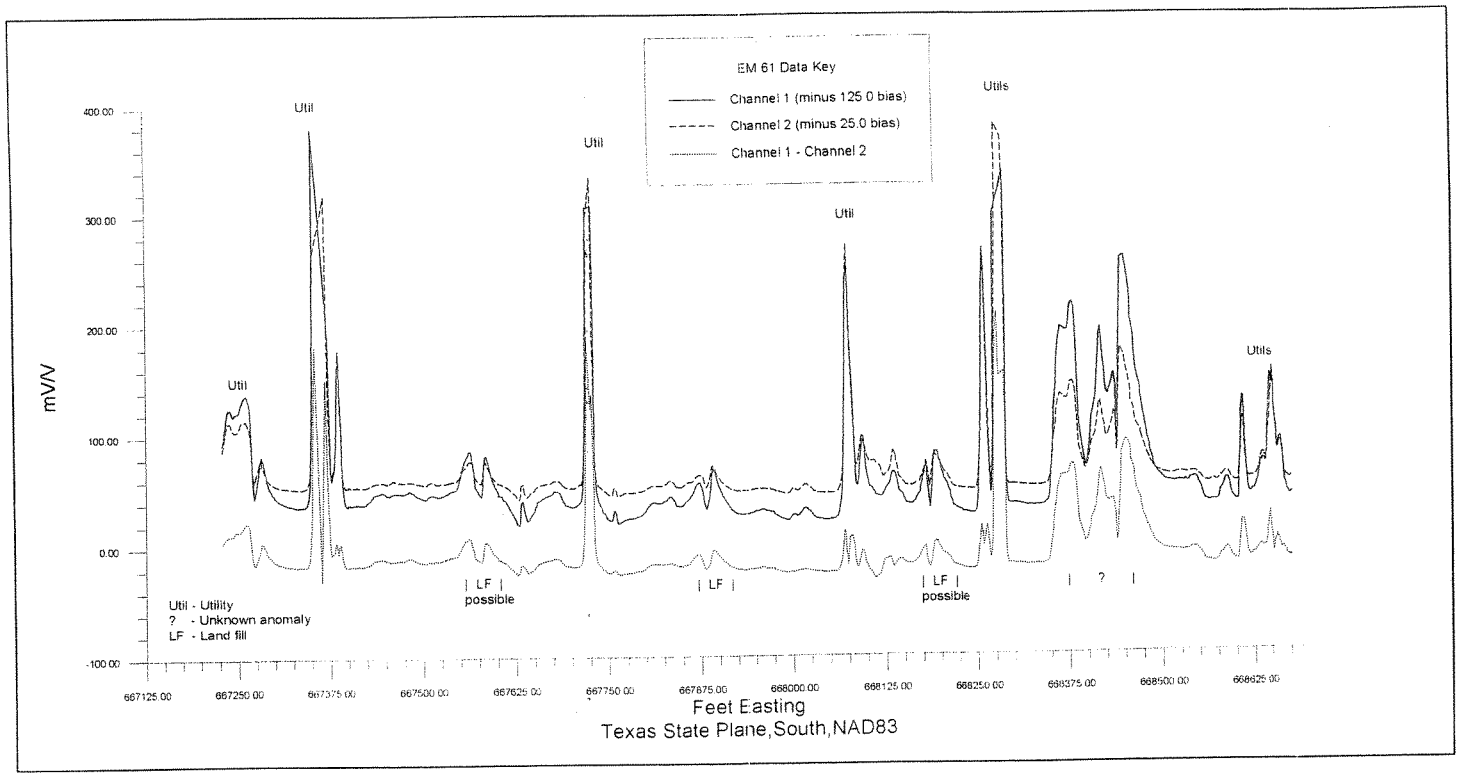

Figure 11. Hemlock Drive modified EM-61 response

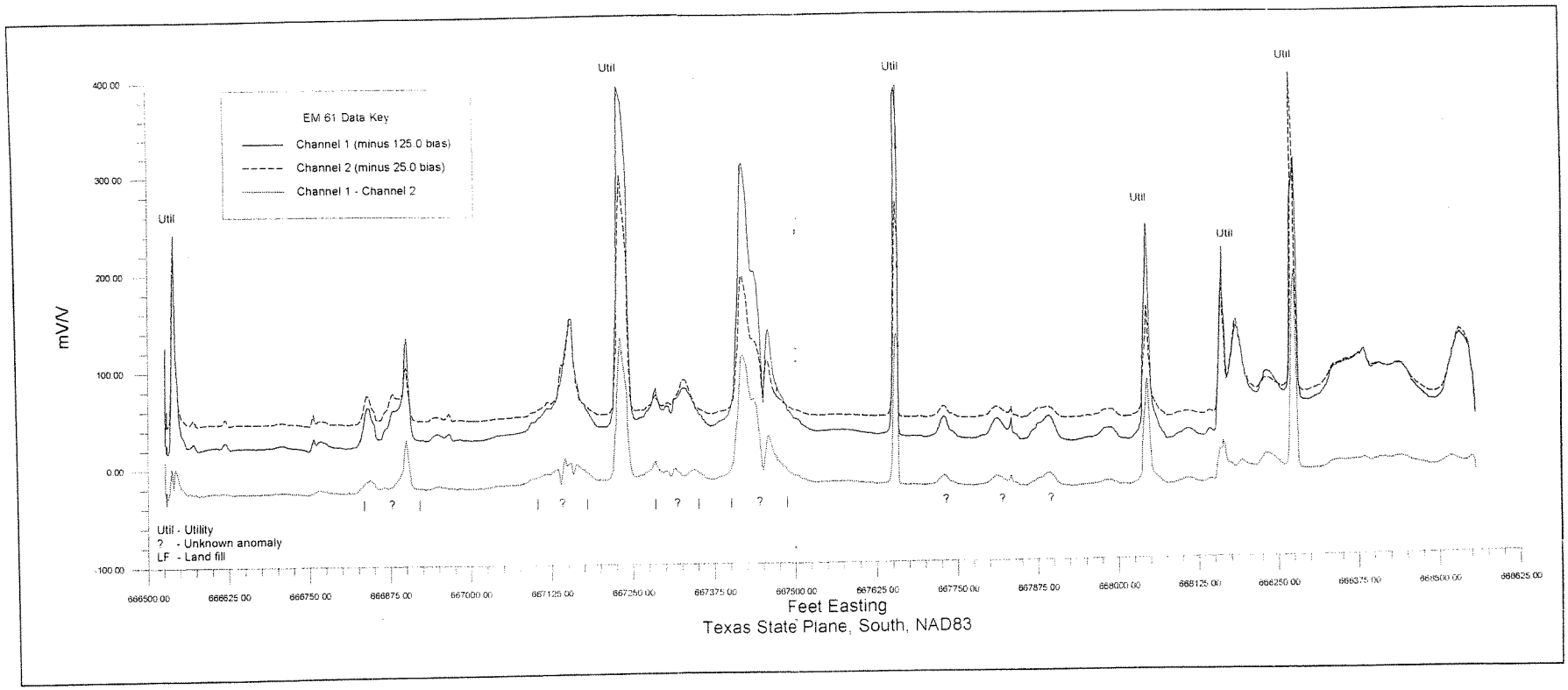

Figure 12. Hibiscus Lane modified EM-61 response

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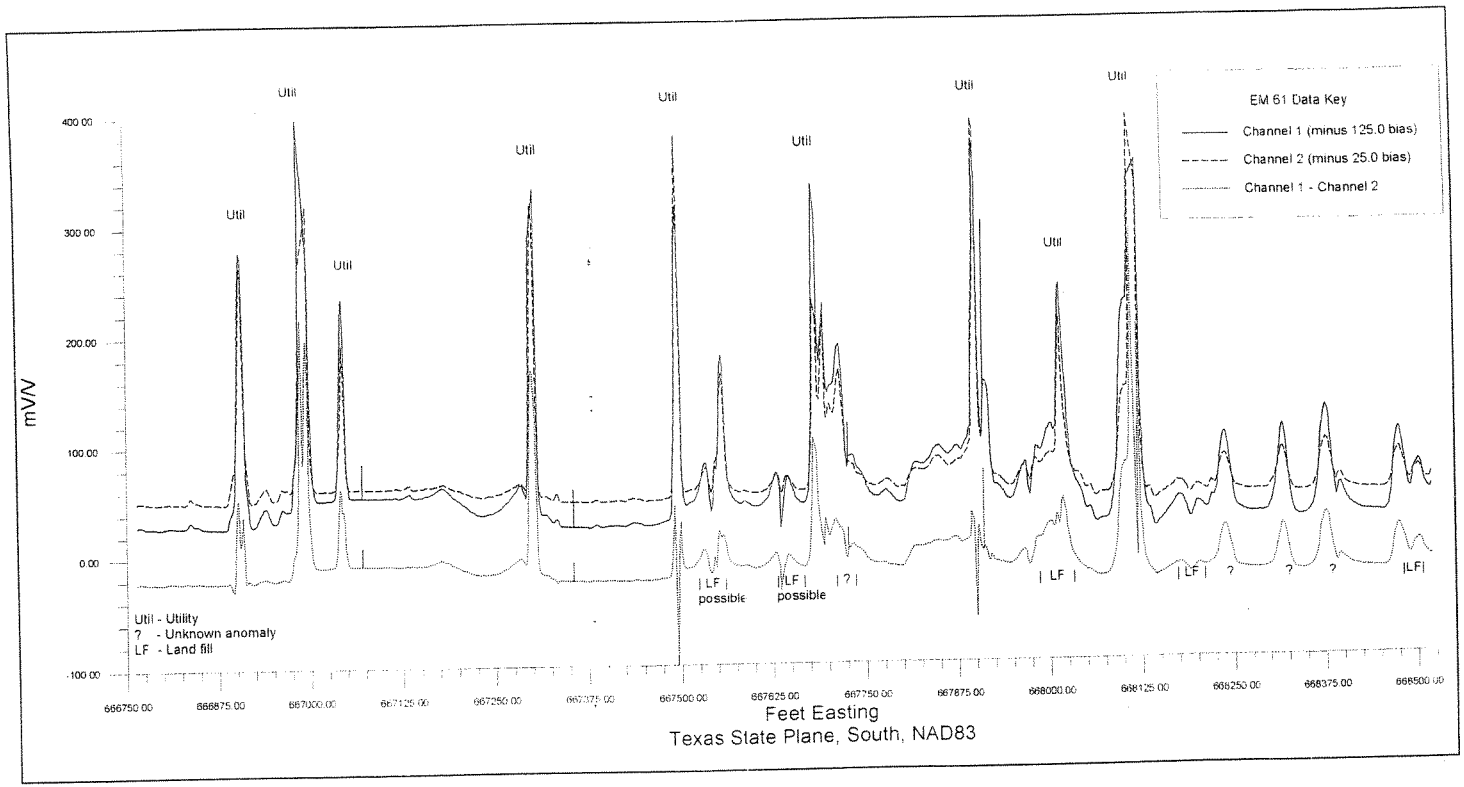

Figure 13. Los Ebanos Drive modified EM-61 response

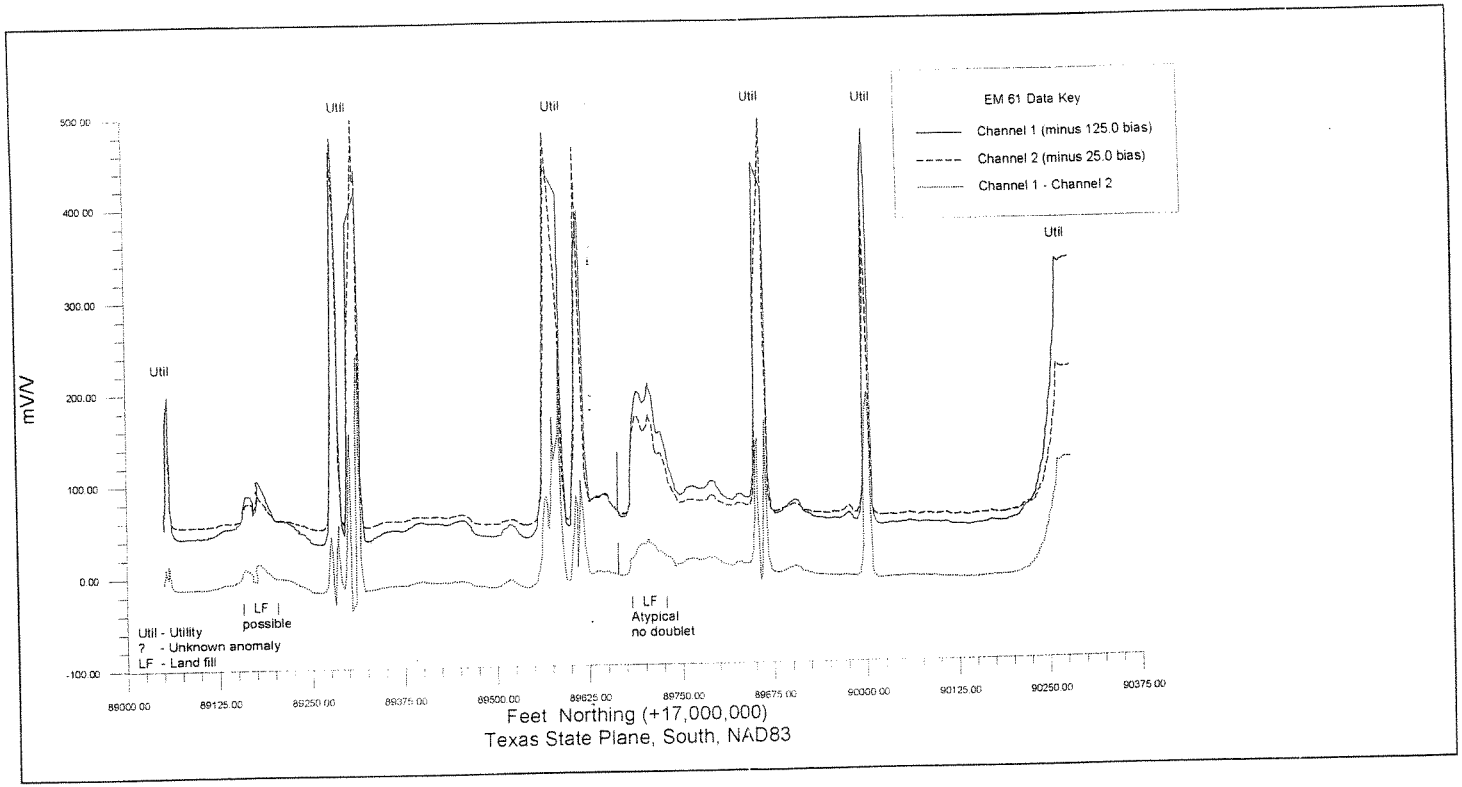

Figure 14. Post Oak Drive modified EM-61 response

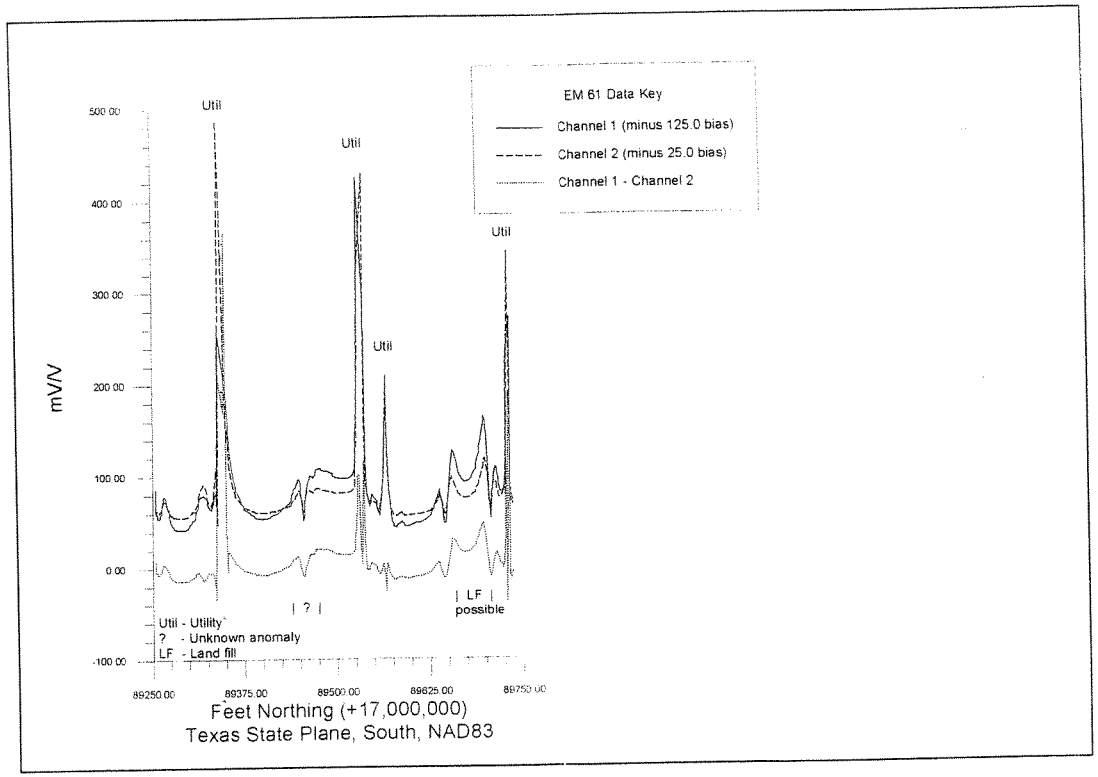

Figure 15. Teak Drive modified EM-61 response

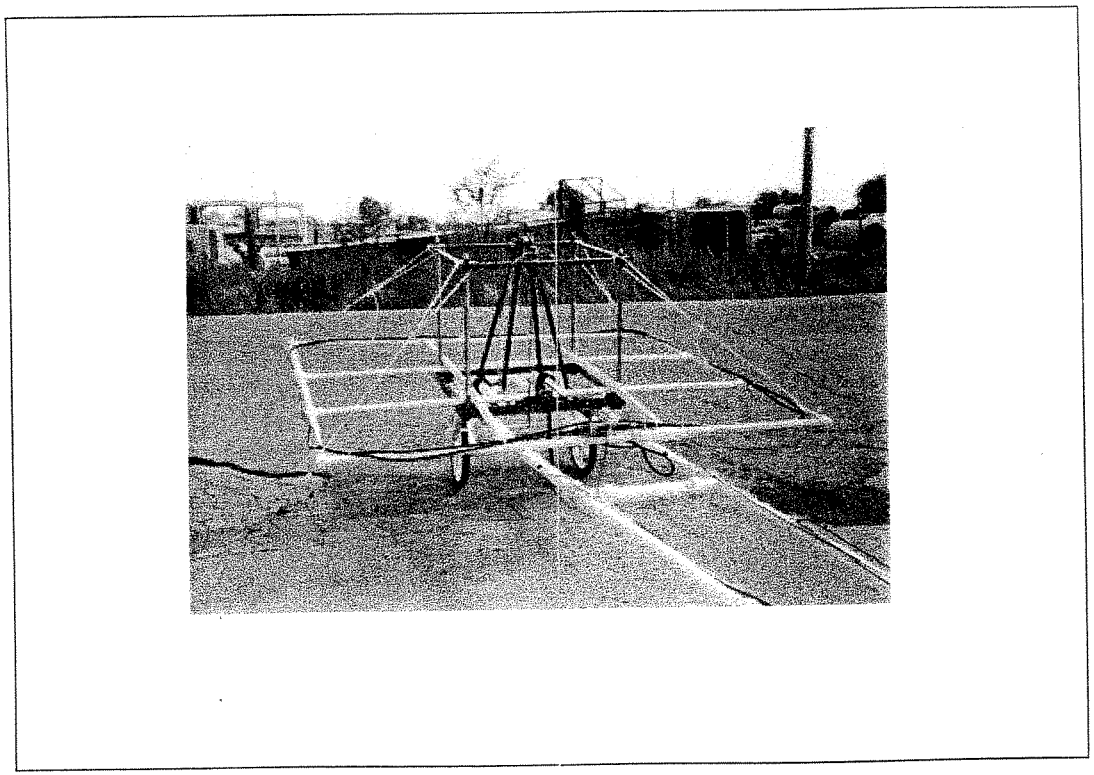

Figure 3. Modified EM-61 as fielded on trailer



Figure 4. Modified EM-61 on trailer with all terrain vehicle

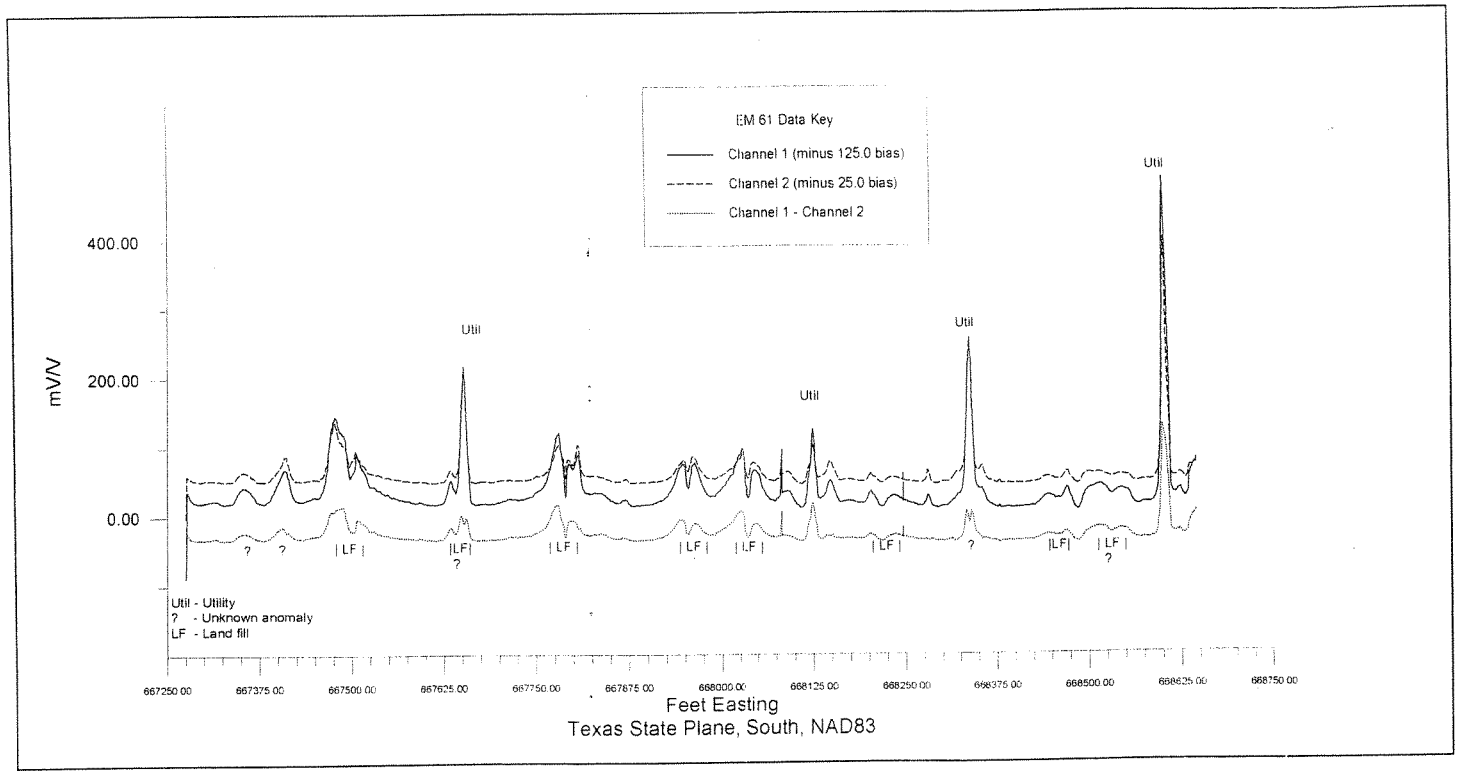

Figure 5. Agave Drive modified EM-61 response

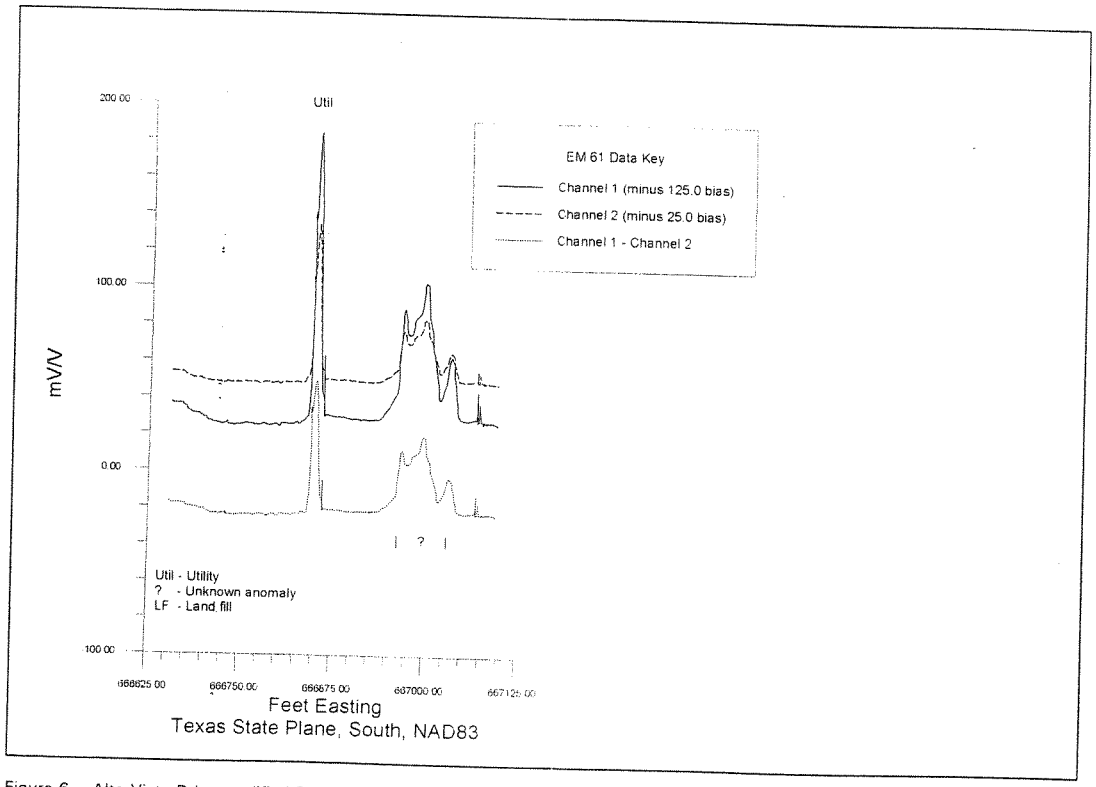

Figure 6. Alta Vista Drive modified EM-61 response

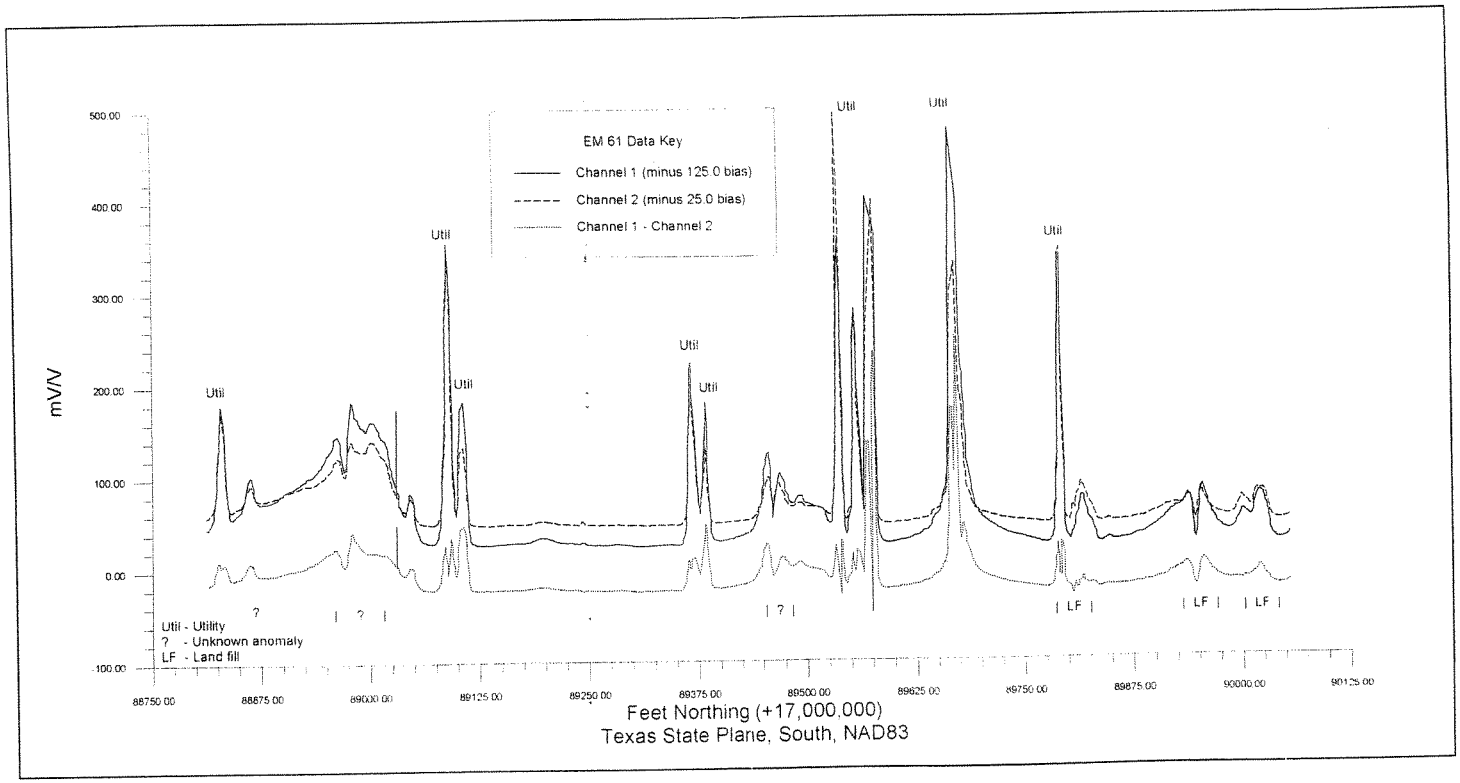

Figure 7. Cactus Drive modified EM-61 response

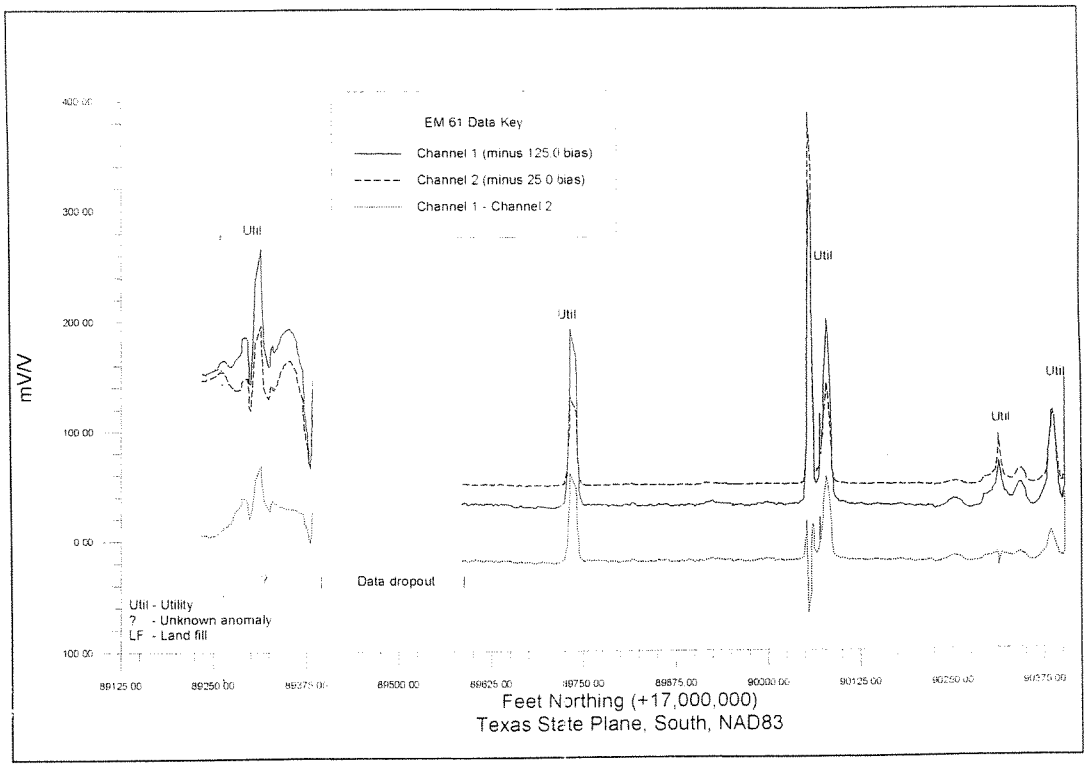

Figure 8. Cypress Drive modified EM-61 response

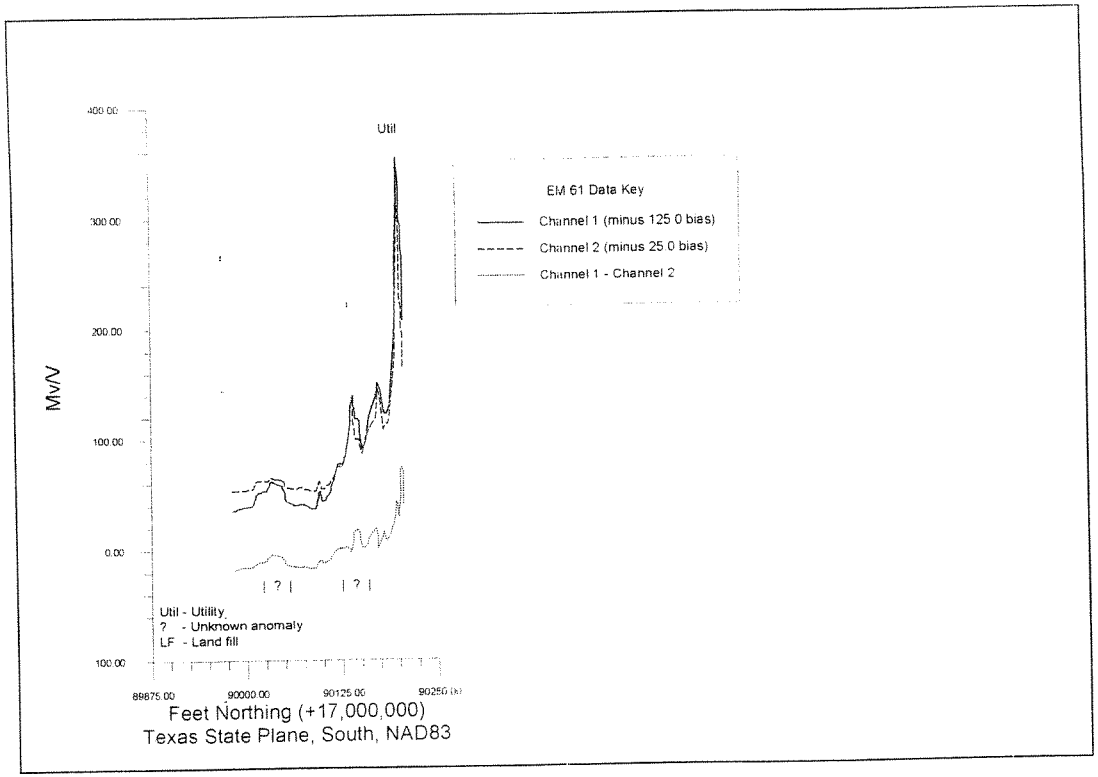

Figure 9. Dogwood Drive modified EM-61 response

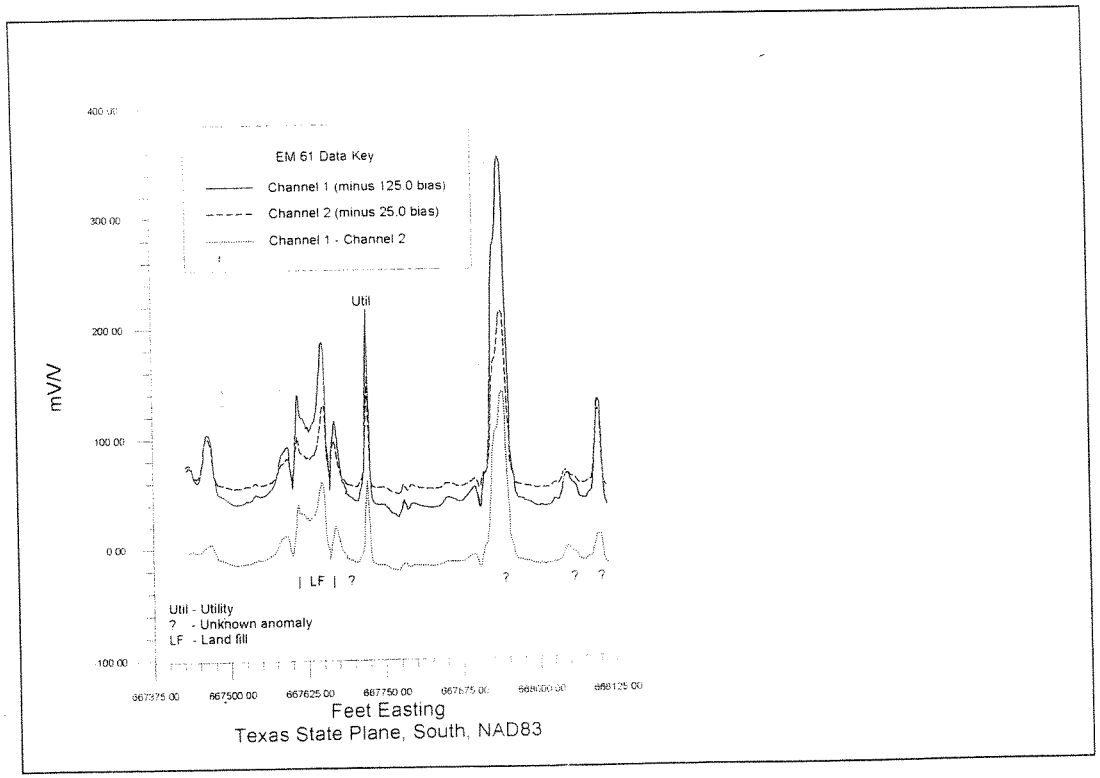

Figure 10. Evergreen Drive modified EM-61 response

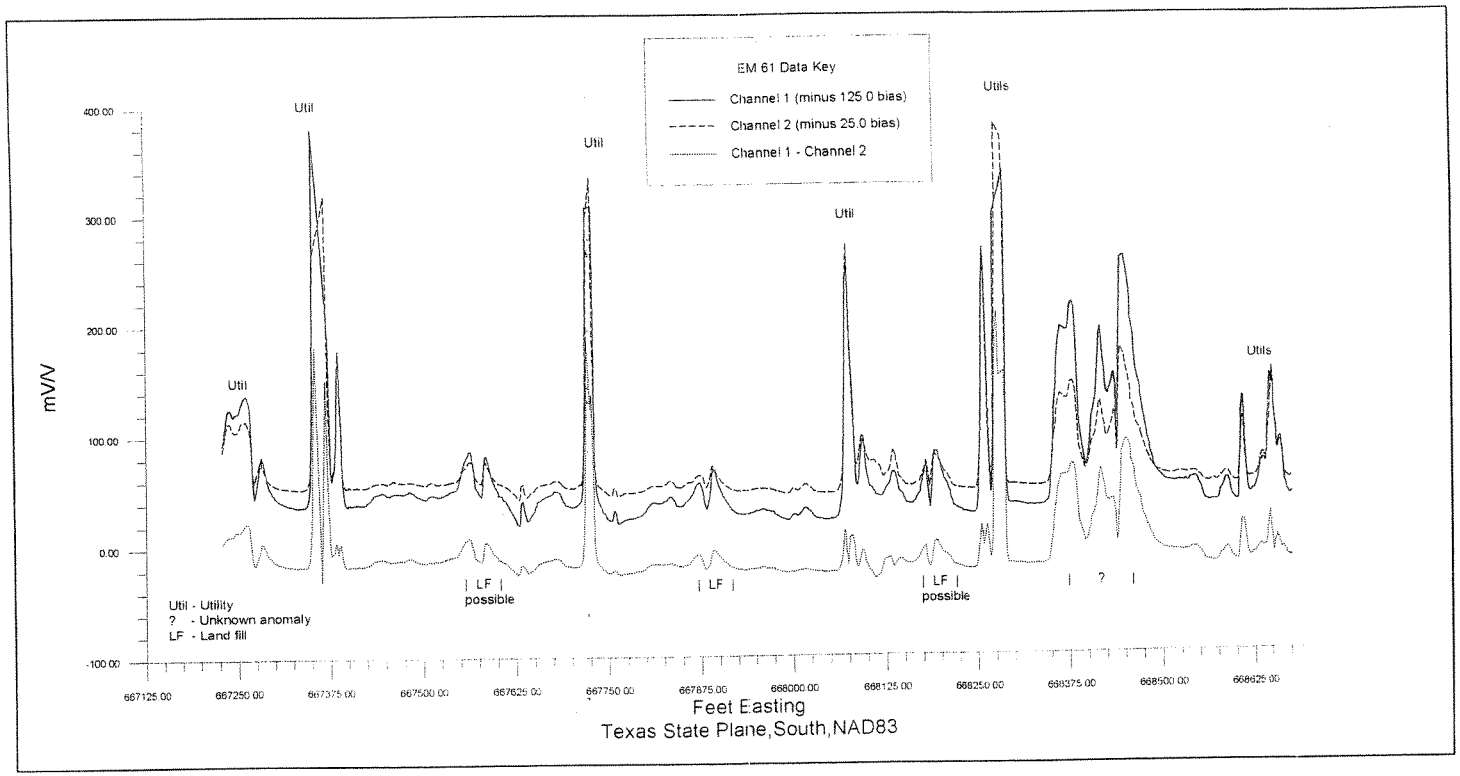

Figure 11. Hemlock Drive modified EM-61 response

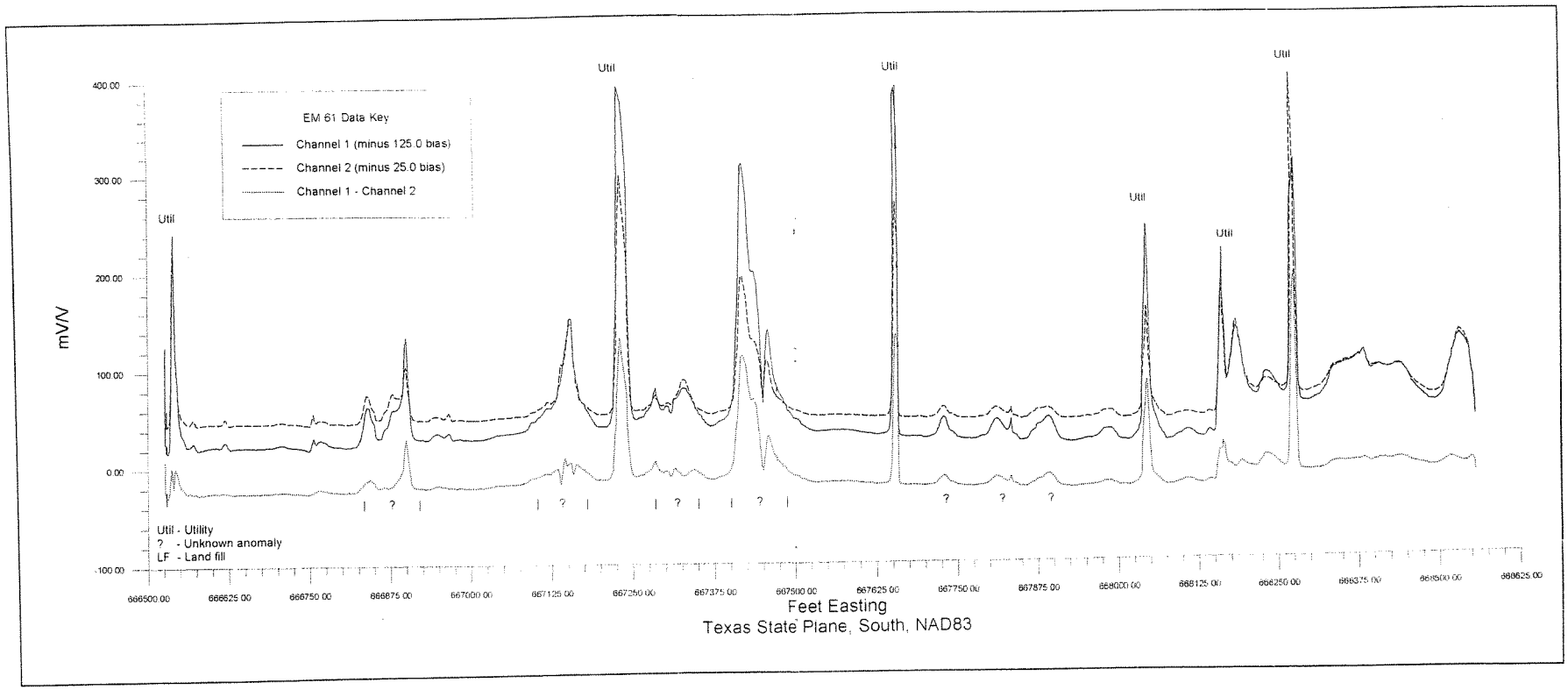

Figure 12. Hibiscus Lane modified EM-61 response

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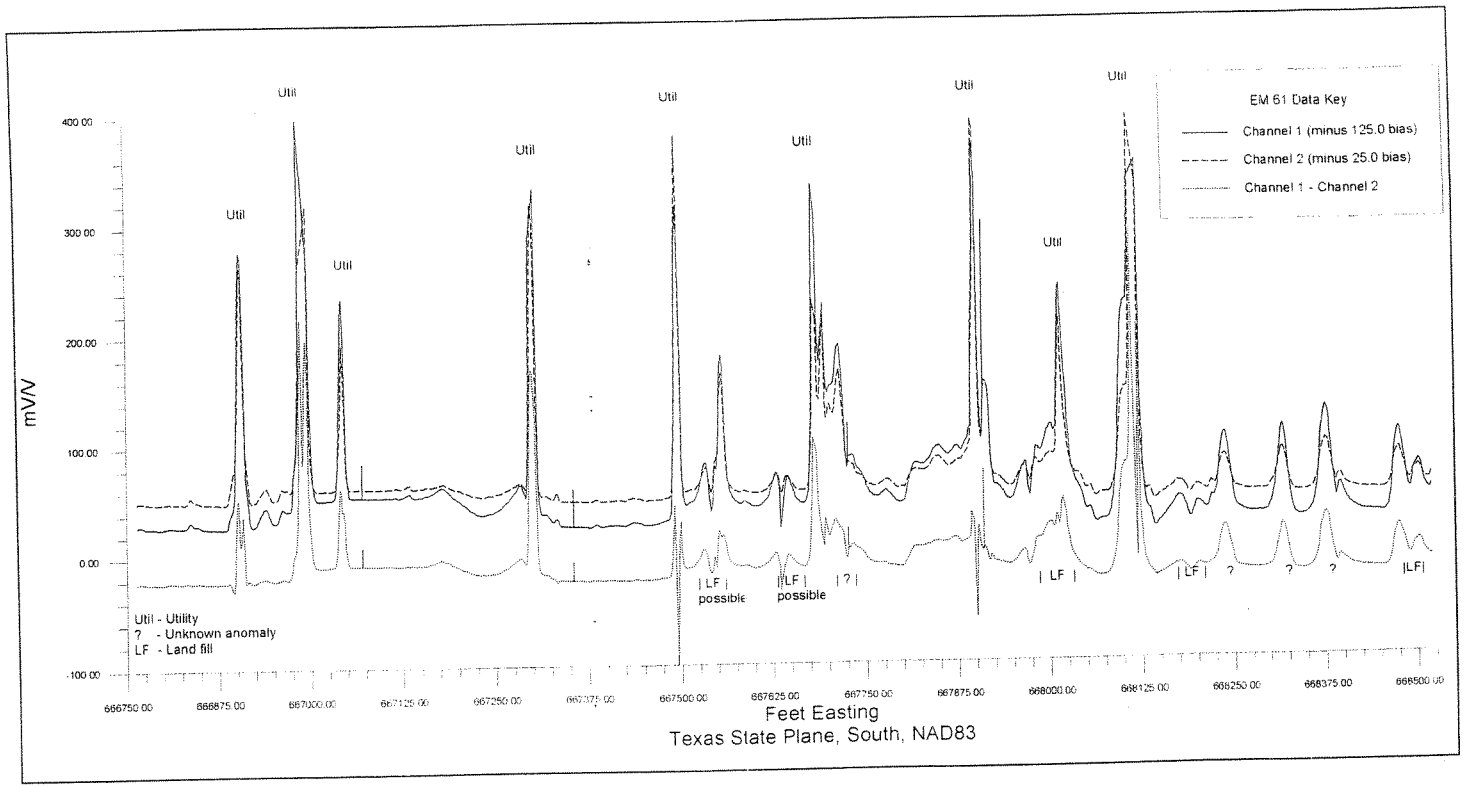

Figure 13. Los Ebanos Drive modified EM-61 response

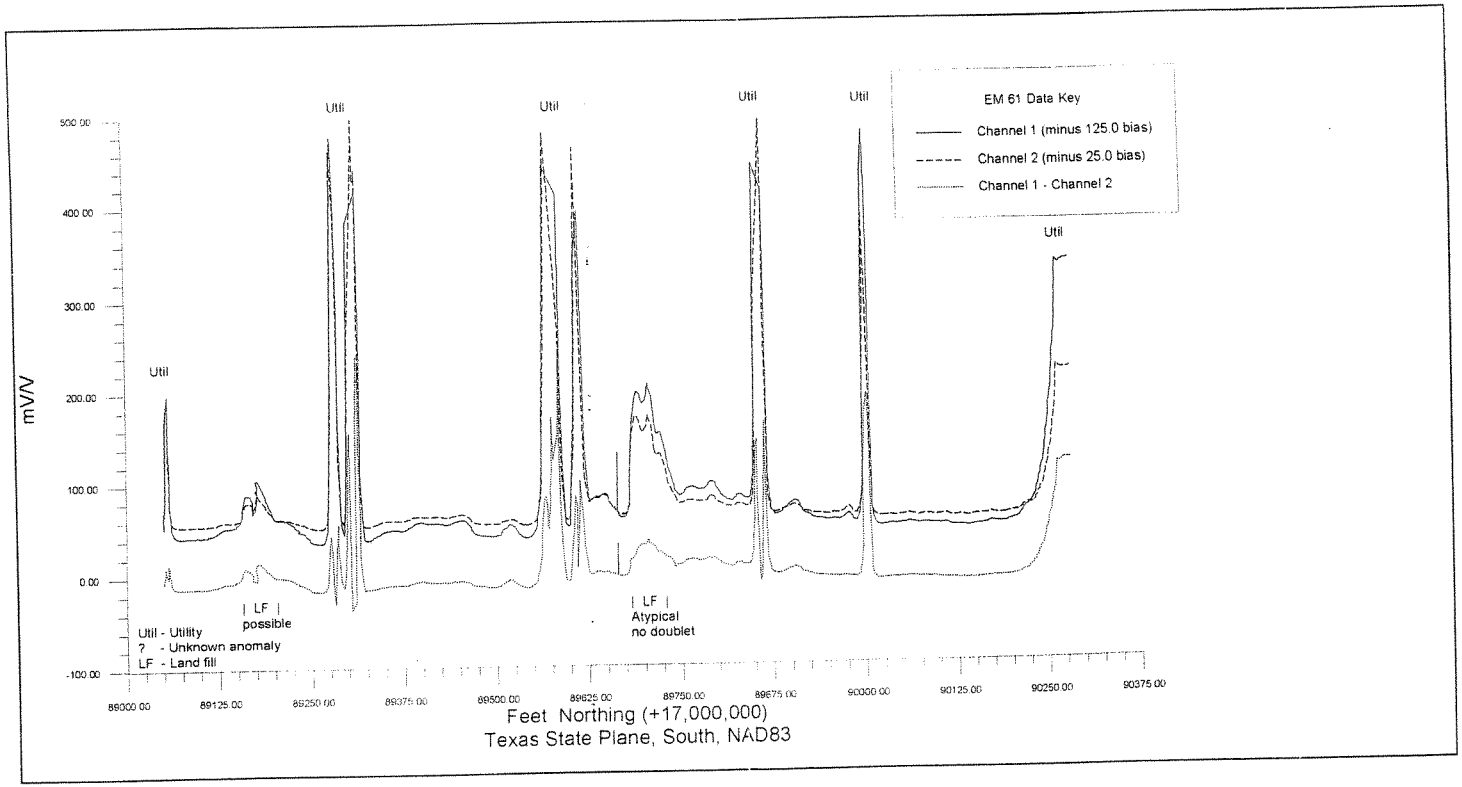

Figure 14. Post Oak Drive modified EM-61 response

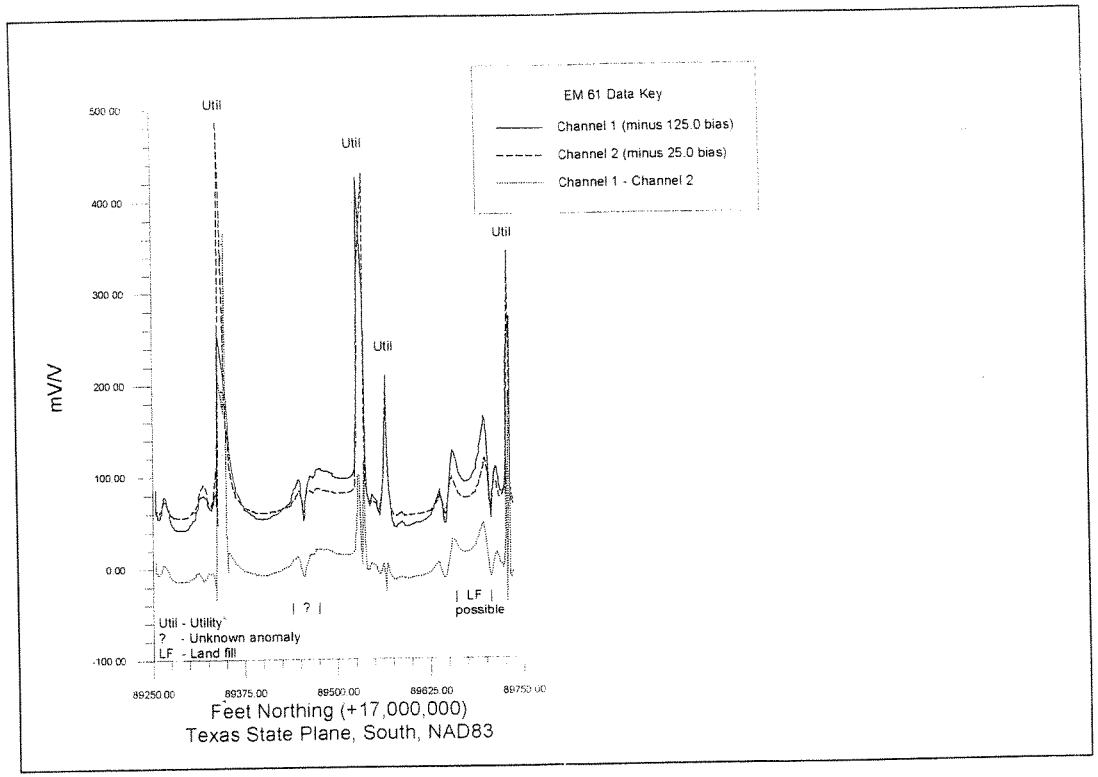

Figure 15. Teak Drive modified EM-61 response

Appendix A
Tabulated Anomalies List

Table 1
Agave Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key: ? Unknown anomaly
Util(s) Verified underground service utility or utilities
LF Landfill trench

Easting	Northing	Description	Note:
667355	17089996	?	
667405	17089987	?	
667470	17089976 to		
667521	17089970	LF	
667620	17089952	Util	
667625	17089950 to		
667650	17089944	LF	
667770	17089908 to		
667810	17089900	LF	
667930	17089888 to		
667970	17089884	LF	
668010	17089878 to		
668050	17089872	LF	
668120	17089860	Util	
668180	17089846 to		
668235	17089834	LF	
668330	17089820	Util	
668430	17089802 to		
668475	17089792	LF	
668500	17089786 to		
668550	17089781	LF	
668605	17089770	Util	

Table 2
Alta Vista Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:		
	?	Unknown anomaly
	Util(s)	Verified underground service utility or utilities
	LF	Landfill trench

Easting	Northing	Description	Note:
666850	17089368	Util	
666960 to 667040	17089340 to 17089324	?	Large anomaly

Table 3
Cactus Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:		
	?	Unknown anomaly
	Util(s)	Verified underground service utility or utilities
	LF	Landfill trench

Easting	Northing	Description	Note:
668168	17088830	Util	
668173	17088865	?	
668180	17088940 to		Large anomaly
668202	17089020	?	
668214	17089090	Util	
668218	17089105	Util	
668266	17089365	Util	
668267	17089380	Util	
668278	17089440 to		Significant anomaly
668288	17089475	?	
668300	17089530	Util	
668304	17089555	Util	
668306	17089570	Util	
668323	17089670	Util	
668343	17089780	Util	
668343	17089780 to		
668350	17089820	LF	
668368	17089925 to		
668373	17089950	LF	
668379	17089990 to		
668387	17090025	LF	

Table 4
Cypress Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:	?	Unknown anomaly
	Util(s)	Verified underground service utility or utilities
	LF	Landfill trench

Easting	Northing	Description	Note:
666544	17089305	Util	
666638	17089730	Util	
666698	17090060	Util	
666700	17090075	Util	
666738	17090300	Util	
666737	17090380	Util	

Table 5
Dogwood Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:

?	Unknown anomaly
Util(s)	Verified underground service utility or utilities
LF	Landfill trench

Easting	Northing	Description	Note:
667652	17090040 to		
667665	17090110	?	
667669	17090140 to		
667673	17090170	?	
667689	17090205	Util	

Table 6
Evergreen Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:		
	?	Unknown anomaly
	Util(s)	Verified underground service utility or utilities
	LF	Landfill trench

Easting	Northing	Description	Note:
667465	17089738	?	
667605	17089698 to		
667655	17089690	LF	
667675	17089686	?	
667725	17089677	Util	
667925	17089648 to		
667955	17089642	?	
668050	17089620	?	
668100	17089606	?	

Table 7
Hemlock Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:
- ? Unknown anomaly
- Util(s) Verified underground service utility or utilities
- LF Landfill trench

Easting	Northing	Description	Note:
667230	17089580 to		
667285	17089568	Util	
66 7089551		Util	
667380	17089546	Util	
667545	17089510 to		
667600	17089502	LF (possible)	
667720	17089482	Util	
667855	17089468 to		
667910	17089458	LF	
668070	17089430	Util	
668165	17089414 to		
668205	17089405	LF (possible)	
668255	17089386	Util	
668275	17089380	Util	
668355	17089374 to		Multiple targets
668475	17089342	?	
668580	17089332 to		
668645	17089306	Util	Multiple targets

Table 8
Hibiscus Lane
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:	?	Unknown anomaly
	Util(s)	Verified underground service utility or utilities
	LF	Landfill trench

Easting	Northing	Description	Note:
666545	17089150	Util	
666830	17089084 to		Significant anomaly
666905	17089070	?	
667100	17089034 to		Significant anomaly
667180	17089020		
667230	17089018	Util	
667280	17089002 to		
667355	17088988	?	
667405	17088986 to		Large anomaly
667480	17088972	?	
667650	17088938	Util	
667725	17088926	?	
667805	17088910	?	
667890	17088896	?	
668045	17088866	Util	
668130	17088848	Util	
668225	17088814	?	
668275	17088806	Util	

Table 9
Los Ebanos Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:	?	Unknown anomaly
	Util(s)	Verified underground service utility or utilities
	LF	Landfill trench

Easting	Northing	Description	Note:
666905	17090356	Util	
666985	17090343	Util	
667040	17090332	Util	
667325	17090299	Util	
667490	17090248	Util	
667525	17090239 to		
667565	17090232	LF (possible)	
667620	17090222 to		
667650	17090216	LF (possible)	
667680	17090211	Util	
667715	17090204	?	
667905	17090170		
667980	17090158 to		
668030	17090152	LF	
668020	17090154	Util	
668120	17090136	Util	
668165	17090128 to		
668230	17090114	LF	
668235	17090114	?	Possible utility
668335	17090098	?	Possible utility
668375	17090090	?	Possible utility
668465	17090074 to		
668515	17090073	LF	

Table 10
Post Oak Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:

?	Unknown anomaly
Util(s)	Verified underground service utility or utilities
LF	Landfill trench

Easting	Northing	Description	Note:
667048	17089050	Util	
667088	17089155 to		
667096	17089190	LF (possible)	
667112	17089280	Util	
667117	17089310	Util	
667125	17089570	Util	
667172	17089615	Util	
667182	17089680 to		
667190	17089730	LF	Very intense response
667214	17089860	Util	
667241	17090000	Util	
667245	17090255	Util	

Table 11
Teak Drive
Laredo, Texas

Coordinate System: Texas State Plane, South Zone, NAD83
Positions should be used as general locations and not absolute coordinates.

Table Key:	?	Unknown anomaly
	Util(s)	Verified underground service utility or utilities
	LF	Landfill trench

Easting	Northing	Description	Note:
667336	17089340	Util	
667342	17089435 to		
667352	17089490	?	
667363	17089530	Util	
667367	17089560	Util	
667378	17089650 to		
667387	17089700	LF (possible)	Strong anomaly
667390	17089710	Util	

Appendix C
Soil Gas Survey

TARGET ENVIRONMENTAL SERVICES, INC.
9180 Rumsey Road
Columbia, Maryland 21045
Tel 410-992-6622
Fax 410-992-0347
www.targetco.com

SOIL GAS SURVEY

FORMER LAREDO AFB
SANITARY LANDFILL AREA
Laredo, TX

PREPARED FOR

TULSA DISTRICT CORPS OF ENGINEERS
P.O. Box 61
Tulsa, OK 74121-0061

PREPARED BY

TARGET ENVIRONMENTAL SERVICES, INC.
9180 RUMSEY ROAD
COLUMBIA, MARYLAND 21045
(410) 992-6622

July 1997

03135

SOIL GAS SURVEY

FORMER LAREDO AFB
SANITARY LANDFILL AREA
Laredo, TX

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July 1997

03136

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY ii

Introduction 1

Sample Collection and Analysis 1

Quality Assurance/Quality Control (QA/QC) Evaluation 3

Results 4

Conclusions 5

FIGURES

Figure 1. Sample Locations and Results

TABLES

Table 1. Analyte Concentrations via GC/MS and GC/TCD

APPENDICES

APPENDIX A - Chain of Custody Records

APPENDIX B - Laboratory Procedures

PLATES

Plate 1. Sample Locations and Results

03137

EXECUTIVE SUMMARY

From July 8 through July 17, 1997, **TARGET Environmental Services, Inc. (TARGET)** conducted a soil gas survey at the Former Laredo Air Force Base, Laredo, Texas. This site is located near the Laredo International Airport in neighborhoods known as Alta Vista, and Vista Hermosa. Some areas within these neighborhoods are suspected of being on top of old sanitary landfills. Soil gas samples were collected at 150 locations from a depth of 3 feet and 7 feet. The samples were analyzed off-site on a gas chromatograph equipped with a mass spectrometer (GC/MS) for volatiles. The samples collected at a 3 foot depth were also analyzed for methane by gas chromatograph equipped with a thermal conductivity detector (GC/TCD). The objective of the survey was to help determine if any hazardous volatile constituents are present in the subsurface.

One sample collected in the northwest corner of the survey (N120E60B) was found to contain chlorobenzene at 8.95µg/l. The shallow sample at the same location (N120E60A) contained methane at 1.19%. Another sample collected 200 feet east (N120E80A) was also found to contain methane at a concentration of 5.20%. No analytes were detected in any of the remaining samples.

Chlorobenzene is a common solvent used in the manufacture of adhesives, paints, polishes, waxes, insecticides, pharmaceuticals, and in degreasing and dry cleaning operations. It is not soluble in water. Although no regulations were found that require remedial action for chlorobenzene in a vapor state, OSHA (the Occupational Safety and Health Administration) reports a permissible exposure limit (PEL) of 350µg/l for workers, and NIOSH (the National Institute for Occupational Safety and Health) reports that chlorobenzene presents an immediate threat to life or

03138

health at 11,200µg/l.

Methane is typically generated in the subsurface through anaerobic degradation of organic material. Methane is flammable at concentrations of 5% to 15%.

Introduction

The **TULSA DISTRICT CORPS OF ENGINEERS** (The **COE**) contracted **TARGET Environmental Services, Inc. (TARGET)** to perform a soil gas survey at Former Laredo Air Force Base, Laredo, Texas. This site is located near the Laredo International Airport in neighborhoods known as Alta Vista, and Vista Hermosa. The COE's review of historical air photos suggest that parts of the neighborhood are in an area where old landfill trenches are located. The objective of the survey was to help determine if any hazardous volatile constituents are present in the subsurface. The planned scope of work included the collection of soil gas samples from depths of 4 feet and 10 feet below the surface at approximately 150 locations. The sample locations were selected to be representative of the entire site, and to offer accessibility with minimal disruption to the residences in the neighborhoods. Samples were planned in the streets, school yard, and in open fields at 100 to 200 foot spacing.

The samples were to be analyzed at an off site laboratory by GC/MS using EPA 8260 procedures including a library search for non-standard analytes detected. The samples collected at the more shallow depth were selected for analysis by GC/TCD for methane.

Sample Collection and Analysis

Soil gas samples were collected at a total of 150 locations at the site, as shown in Figure 1. The sampling locations were adjusted to avoid contact with underground services in the area. The sample depth was adjusted to depths of 3 feet and 7 feet, since water was found at approximately 10 feet below the surface across the site. The soil gas samples were collected and submitted to

TARGET's laboratory in Columbia, MD for analysis. Four samples were damaged in shipment or in the laboratory. All of the damaged samples were recollected except Sample N96E171A which was damaged in the laboratory and rendered unsuitable for analysis, after the sampling team had demobilized from the site.

A map coordinate system was established on site with the beginning point (N00 E100) centered on the intersection of Cypress Drive and Hibiscus Lane. The north map axis was tilted to parallel the neighborhood layout to ease accurate determination of locations in the field. The sample names refer to their location within the map coordinate system with samples designated "A" collected from a depth of 3 feet and "B" collected from 7 feet.

To collect the soil gas samples, a Geoprobe was used to advance connected 3-4 foot sections of narrow diameter threaded steel casing down to the sampling depth. Once at depth, the casing was hydraulically raised several inches in order to open a retractable drive. Polyethylene tubing with a threaded stainless steel tip and "O" ring was inserted into the casing to the bottom of the hole, and threaded through a plug which isolates the bottom-hole sampling chamber from the up-hole annulus. A sample of in-situ soil gas was then withdrawn (4 liters) through the probe with a vacuum chamber and used to purge atmospheric air from the sampling system. A gas-tight syringe equipped with a needle was used to penetrate a soft portion of the sampling tubing and withdraw an aliquot of soil gas. The sample was then injected into a pre-evacuated glass vial. The self-sealing vial was detached from the syringe, packaged, labeled, and stored for laboratory analysis. All sampling holes were backfilled with bentonite and the surface repaired with like material upon

completion of the sampling.

New tubing and syringes were used for each sample. Prior to the day's field activities all sampling equipment and probes were decontaminated by washing with a Liquinox/water solution and rinsing thoroughly. Internal surfaces were flushed dry using ambient air, and external surfaces were wiped clean using clean paper towels or allowed to air dry.

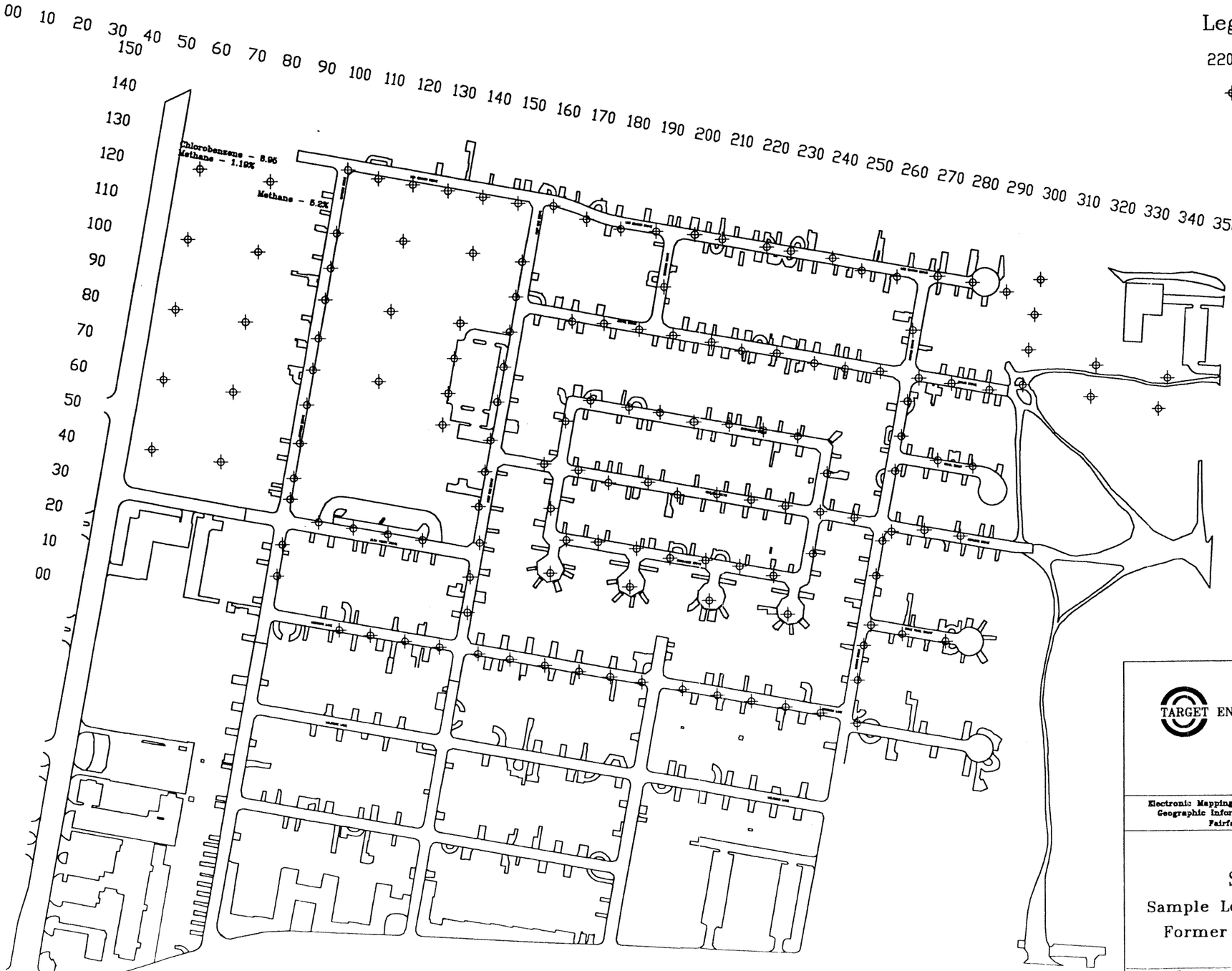
All of the samples (299) collected during the field phase of the survey were subjected to analysis by GC/MS following EPA 8260 procedures with direct injection. Samples collected from a depth of 3' (149) were also analyzed by GC/TCD for methane concentrations.

Quality Assurance/Quality Control (QA/QC) Evaluation

Field QA/QC Samples

Field control samples (blanks) were collected at the beginning and end of each day's field activities and after every twentieth soil gas sample. These QA/QC blanks were obtained by drawing ambient air through the sampling system, and encapsulating by the same procedures as the field samples. The laboratory results are reported in Table 1. Concentrations of all analytes were below the reporting limit in all field control blanks, indicating that the QA/QC measures employed were sufficient to prevent cross-contamination of the samples during collection.

Target has performed informal shelf life studies and found that the holding time for soil gas samples in glass vials is dependent on the analyte. Petroleum analytes and methane exhibit little or



Legend

220 Sampling Grid Number

Sampling Point

N

TARGET ENVIRONMENTAL SERVICES, INC.

100 0 100 200 300

Scale in feet

Electronic Mapping Systems (E-MAPS)
Geographic Information Managers
Fairfax, VA

FIGURE 1

SOIL GAS SURVEY

Sample Locations and Analytical Results

Former Laredo AFB Sanitary Landfill

E-MAPS File No.

Date

September 8, 1997

03143

no change in concentration after 2 weeks or more of storage. Most halogenated analytes are stable for 1 week after sampling. All samples were analyzed within an appropriate holding time.

Laboratory QA/QC Samples

To document analytical repeatability, a duplicate analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas were also analyzed after every tenth field sample. The results of these analyses are reported in Table 1. The duplicate analyses were within acceptable limits. Concentrations of all analytes were below the reporting limit in all laboratory blanks.

Results

One sample collected in the northwest corner of the survey (N120E60B) was found to contain chlorobenzene at 8.95 µg/l. The shallow sample at the same location (N120E60A) contained methane at 1.19%. Another sample collected 200 feet east (N120E80A) was also found to contain methane at a concentration of 5.20% (see figure 1). No analytes were detected in any of the remaining samples. Review of the chromatograms found no significant peaks indicative of additional compounds to research and identify.

Chlorobenzene is a common solvent used in the manufacture of adhesives, paints, polishes, waxes, insecticides, pharmaceuticals, and in degreasing and dry cleaning operations. It is not soluble in water. Although no regulations were found that require remedial action for chlorobenzene in a vapor state, OSHA (the Occupational Safety and Health Administration) reports a permissible exposure limit (PEL) of 350µg/l for workers, and NIOSH (the National Institute of

Occupational Safety and Health) reports that chlorobenzene presents an immediate threat to life or health at 11,200µg/l.

Methane is typically generated in the subsurface through anaerobic degradation of organic material. The northwest corner of the survey was observed to be the wettest area and topographically lowest area of the survey. Wet conditions can inhibit the free movement of air in the subsurface, thus allowing anaerobic conditions to develop. Neither OSHA nor NIOSH regulate exposure levels or list hazards other than explosion (or oxygen displacement at very high concentrations). Methane is flammable at concentrations of 5% to 15%.

Conclusions

- Low levels of methane were detected in 2 samples from the northwest portion of the survey area.
- A low level of chlorobenzene was detected in one sample from the northwest portion of the survey area.
- Wet conditions in the northwest portion of the survey area may be the cause of anaerobic degradation of any organic materials present, and the generation of detected methane.
- No other contaminants were detected.

03145

Table 1

Analytical Data

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/10/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N11 E101 A (ug/L)	N80 E80 A (ug/L)	N60 E80 A (ug/L)	N40 E60 A (ug/L)	N40 E80 B (ug/L)	N33 E101 B (ug/L)	N60 E60 B (ug/L)	N80 E80 B (ug/L)	N120 E80 B (ug/L)	N60 E80 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst: _____

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03147

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/10/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N120 E80 A (ug/L)	N120 E60 B (ug/L)	N80 E60 B (ug/L)	N39 E101 A (ug/L)	N39 E101 B (ug/L)	FIELD BLANK 2 (ug/L)	N40 E60 B (ug/L)	N49 E101 A (ug/L)	N80 E60 A (ug/L)	N100 E60 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	8.95	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	5.20	N/A	N/A	ND	N/A	ND	N/A	ND	ND	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst: _____

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03148

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/10/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N20 E101 B (ug/L)	N40 E80 A (ug/L)	N20 E101 A (ug/L)	N60 E101 B (ug/L)	N11 E101 B (ug/L)	N100 E80 B (ug/L)	N120 E60 A (ug/L)	N60 E101 A (ug/L)	N49 E101 B (ug/L)	N100 E60 B (ug/L)	N100 E80 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	N/A	ND	ND	N/A	N/A	N/A	1.19	ND	N/A	N/A	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03149

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/13/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N-01 E170 A (ug/L)	N-01 E161 A (ug/L)	N-01 E208 B (ug/L)	N-01 E150 A (ug/L)	N-01 E208 A (ug/L)	N-01 E150 B (ug/L)	N-01 E199 A (ug/L)	N-01 E199 B (ug/L)	N-01 E190 B (ug/L)	N-01 E140 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	ND	N/A	ND	ND	N/A	ND	N/A	N/A	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/13/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N-01 E140 A (ug/L)	N-01 E180 A (ug/L)	N-01 E161 B (ug/L)	N-01 E170 B (ug/L)	N-01 E180 B (ug/L)	N-01 E121 A (ug/L)	N-01 E121 B (ug/L)	FIELD BLANK 3 (ug/L)	FIELD BLANK 4 (ug/L)	FIELD BLANK 5 (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	ND	N/A	N/A	N/A	ND	N/A	ND	ND	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03151

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/13/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N-01 E130 A (ug/L)	N-01 E130 B (ug/L)	N-01 E190 A (ug/L)	N109 E101 A (ug/L)	N109 E101 B (ug/L)	N-01 E260 A (ug/L)	N-01 E250 B (ug/L)	N99 E101 B (ug/L)	N-01 E250 A (ug/L)	N-01 E240 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	ND	N/A	ND	N/A	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst: _____

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Phone: (410)992-6622 *9180 Rumsey Rd. Columbia, MD 21045* *Fax: (410)992-0347*

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/13/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N-01 E230 A (ug/L)	N-01 E230 B (ug/L)	N-01 E220 B (ug/L)	N99 E101 A (ug/L)	N90 E101 B (ug/L)	N-01 E240 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	N/A	ND	N/A	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03153

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/15/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	FIELD BLANK 1 (ug/L)	N60 E60 A (ug/L)	LABDUP N-01 E260 A (ug/L)	LABDUP N-01 E208 A (ug/L)	N90 E101 A (ug/L)	N70 E101 B (ug/L)	N79 E101 A (ug/L)	N-01 E220 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	ND	ND	ND	ND	N/A	ND	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%). "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03154

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/15/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N-01 E260 B (ug/L)	FIELD BLANK 6 (ug/L)	N127 E101 A (ug/L)	N127 E101 B (ug/L)	N126 E110 A (ug/L)	N126 E110 B (ug/L)	N126 E120 A (ug/L)	N126 E120 B (ug/L)	N126 E130 A (ug/L)	N126 E130 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	N/A	ND	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst: _____

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03155

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/15/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N126 E140 A (ug/L)	N126 E140 B (ug/L)	N126 E150 A (ug/L)	N126 E150 B (ug/L)	N127 E160 A (ug/L)	N127 E160 B (ug/L)	N125 E170 A (ug/L)	N125 E170 B (ug/L)	N124 E180 A (ug/L)	N124 E180 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%). "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03156

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/15/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N125 E190 A (ug/L)	N125 E190 B (ug/L)	N126 E201 A (ug/L)	N126 E201 B (ug/L)	FIELD BLANK 7 (ug/L)	N126 E209 A (ug/L)	N126 E209 B (ug/L)	N126 E222 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	ND	N/A	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst: _____

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Phone: (410)992-6622 *9180 Rumsey Rd. Columbia, MD 21045* *Fax: (410)992-0347*

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/16/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	LABDUP N126 E110 A (ug/L)	LABDUP FIELD BLANK 7 (ug/L)	N70 E101 A (ug/L)	LABDUP N40 E60 B (ug/L)	N120 E60 B (ug/L)	N126 E222 B (ug/L)	N126 E229 A (ug/L)	N126 E229 B (ug/L)	N126 E241 A (ug/L)	N126 E241 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	ND	ND	N/A	N/A	N/A	ND	N/A	ND	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst: _____

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Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/16/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N124 E250 A (ug/L)	N124 E250 B (ug/L)	N124 E260 A (ug/L)	N124 E260 B (ug/L)	N126 E271 A (ug/L)	N126 E271 B (ug/L)	N126 E281 A (ug/L)	N126 E281 B (ug/L)	N125 E291 A (ug/L)	N125 E291 B (ug/L)	FIELD BLANK 8 (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03159

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/17/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N59 E154 A (ug/L)	N59 E154 B (ug/L)	N50 E154 A (ug/L)	N50 E154 B (ug/L)	N40 E154 A (ug/L)	N40 E154 B (ug/L)	N30 E156 A (ug/L)	N30 E156 B (ug/L)	N20 E155 A (ug/L)	N20 E155 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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Phone: (410)992-6622 *9180 Rumsey Rd. Columbia, MD 21045* *Fax: (410)992-0347*

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/17/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N10 E156 A (ug/L)	N10 E156 B (ug/L)	N28 E140 A (ug/L)	N28 E140 B (ug/L)	N28 E130 A (ug/L)	N28 E130 B (ug/L)	N28 E120 A (ug/L)	N28 E120 B (ug/L)	N28 E110 A (ug/L)	N28 E110 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03161

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/17/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N96 E171 B (ug/L)	N97 E180 A (ug/L)	N97 E180 B (ug/L)	N97 E190 A (ug/L)	N97 E190 B (ug/L)	N110 E195 A (ug/L)	N110 E195 B (ug/L)	N97 E200 A (ug/L)	N97 E200 B (ug/L)	N97 E211 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03162

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/17/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N97 E211 B (ug/L)	N96 E220 A (ug/L)	N96 E220 B (ug/L)	N97 E230 A (ug/L)	N97 E230 B (ug/L)	N96 E241 A (ug/L)	N96 E241 B (ug/L)	N96 E250 A (ug/L)	N96 E250 B (ug/L)	N97 E260 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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Phone: (410)992-6622 *9180 Rumsey Rd. Columbia, MD 21045* *Fax: (410)992-0347*

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/17/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N97 E260 B (ug/L)	N110 E267 A (ug/L)	N110 E267 B (ug/L)	FIELD BLANK 12 (ug/L)	FIELD BLANK 13 (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	N/A	ND	N/A	ND	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03164

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/18/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	FIELD BLANK 9 (ug/L)	N130 E300 A (ug/L)	N130 E300 B (ug/L)	N120 E300 A (ug/L)	N120 E300 B (ug/L)	LABDUP N28 E110 B (ug/L)	LABDUP N97 E260 A (ug/L)	N110 E300 A (ug/L)	N110 E300 B (ug/L)	N100 E300 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	ND	N/A	ND	N/A	N/A	ND	ND	N/A	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst: _____

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03165

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/18/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N100 E300 B (ug/L)	N109 E320 A (ug/L)	N109 E320 B (ug/L)	N109 E341 A (ug/L)	N109 E341 B (ug/L)	N100 E340 A (ug/L)	N100 E340 B (ug/L)	LABDUP FIELD BLANK 12 (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	N/A	ND	N/A	ND	N/A	ND	N/A	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03166

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/19/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N100 E320 A (ug/L)	N100 E320 B (ug/L)	N97 E291 A (ug/L)	N97 E291 B (ug/L)	N97 E280 A (ug/L)	N97 E280 B (ug/L)	N97 E271 A (ug/L)	N97 E271 B (ug/L)	FIELD BLANK 10 (ug/L)	N87 E290 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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Phone: (410)992-6622 *9180 Rumsey Rd. Columbia, MD 21045* *Fax: (410)992-0347*

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/19/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N87 E290 B (ug/L)	N85 E280 A (ug/L)	N85 E280 B (ug/L)	N80 E269 A (ug/L)	N80 E269 B (ug/L)	N110 E154 A (ug/L)	N110 E154 B (ug/L)	N100 E154 A (ug/L)	N100 E154 B (ug/L)	N90 E154 A (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03168

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/19/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N90 E154 B (ug/L)	N80 E154 A (ug/L)	N80 E154 B (ug/L)	N70 E154 A (ug/L)	N70 E154 B (ug/L)	N79 E101 B (ug/L)	FIELD BLANK 11 (ug/L)	FIELD BLANK 14 (ug/L)	N90 E269 A (ug/L)	N90 E269 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	N/A	ND	N/A	ND	N/A	N/A	ND	ND	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03169

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/19/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N70 E269 A (ug/L)	N70 E269 B (ug/L)	N55 E290 A (ug/L)	N55 E290 B (ug/L)	N55 E280 A (ug/L)	N55 E280 B (ug/L)	N53 E271 A (ug/L)	N53 E271 B (ug/L)	N55 E260 A (ug/L)	N55 E260 B (ug/L)	LABDUP N100 E340 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03170

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/20/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N55 E250 A (ug/L)	N55 E250 B (ug/L)	N55 E240 A (ug/L)	N55 E240 B (ug/L)	N110 E120 A (ug/L)	N110 E120 B (ug/L)	N90 E120 A (ug/L)	N90 E120 B (ug/L)	N70 E120 A (ug/L)	N70 E120 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03171

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/20/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N110 E140 A (ug/L)	N110 E140 B (ug/L)	N90 E140 A (ug/L)	N90 E140 B (ug/L)	N80 E140 A (ug/L)	N80 E140 B (ug/L)	N70 E140 A (ug/L)	N70 E140 B (ug/L)	N61 E140 A (ug/L)	N61 E140 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

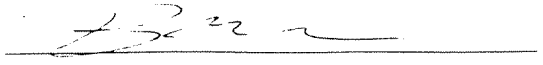
[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst: 

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Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/20/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N55 E170 A (ug/L)	N55 E170 B (ug/L)	N55 E180 A (ug/L)	N55 E180 B (ug/L)	N53 E189 A (ug/L)	N53 E189 B (ug/L)	N55 E200 A (ug/L)	N55 E200 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst: _____

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03173

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/21/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N36 E230 A (ug/L)	N36 E230 B (ug/L)	N25 E223 A (ug/L)	N25 E223 B (ug/L)	N35 E210 A (ug/L)	N35 E210 B (ug/L)	N36 E220 A (ug/L)	N36 E220 B (ug/L)	N36 E200 A (ug/L)	N36 E200 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03174

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/21/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N25 E200 A (ug/L)	N25 E200 B (ug/L)	N36 E189 A (ug/L)	N36 E189 B (ug/L)	N35 E180 A (ug/L)	N35 E180 B (ug/L)	N25 E177 A (ug/L)	N25 E177 B (ug/L)	N43 E174 A (ug/L)	N43 E174 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03175

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/21/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N68 E174 A (ug/L)	N68 E174 B (ug/L)	N75 E180 A (ug/L)	N75 E180 B (ug/L)	N75 E191 A (ug/L)	N75 E191 B (ug/L)	N75 E200 A (ug/L)	N75 E200 B (ug/L)	N74 E210 A (ug/L)	N74 E210 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03176

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/21/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N75 E220 A (ug/L)	N75 E220 B (ug/L)	N75 E230 A (ug/L)	N75 E230 B (ug/L)	N75 E240 A (ug/L)	N75 E240 B (ug/L)	N66 E250 A (ug/L)	N66 E250 B (ug/L)	N50 E269 A (ug/L)	N50 E269 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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Phone: (410)992-6622 *9180 Rumsey Rd. Columbia, MD 21045* *Fax: (410)992-0347*

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/21/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N53 E209 A (ug/L)	N53 E209 B (ug/L)	N55 E220 A (ug/L)	N55 E220 B (ug/L)	FIELD BLANK 15 (ug/L)	FIELD BLANK 16 (ug/L)	N43 E250 A (ug/L)	N43 E250 B (ug/L)	N25 E246 A (ug/L)	N25 E246 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	ND	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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Phone: (410)992-6622 *9180 Rumsey Rd. Columbia, MD 21045* *Fax: (410)992-0347*

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/21/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N35 E240 A (ug/L)	N35 E240 B (ug/L)	LABDUP N90 E154 A (ug/L)	LABDUP N55 E260 B (ug/L)	LABDUP N61 E140 B (ug/L)	LABDUP N35 E240 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	N/A	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation
Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03179

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/22/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	LABDUP N43 E174 B (ug/L)	LABDUP N50 E269 B (ug/L)	N40 E269 A (ug/L)	N40 E269 B (ug/L)	N20 E269 A (ug/L)	N20 E269 B (ug/L)	N33 E101 A (ug/L)	FIELD BLANK 17 (ug/L)	FIELD BLANK 18 (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	N/A	N/A	ND	N/A	ND	N/A	ND	ND	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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03180

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/23/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
arget Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N25 E291 A (ug/L)	N25 E291 B (ug/L)	N25 E279 A (ug/L)	N25 E279 B (ug/L)	N26 E270 A (ug/L)	N26 E270 B (ug/L)	N10 E269 A (ug/L)	N10 E269 B (ug/L)	N02 E271 A (ug/L)	N02 E271 B (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
etrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation
Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst

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03181

Samples Collected:	7/9/97 - 7/17/97	Collected by:	Vironex	Client:	Tulsa ACOE
Samples Received:	7/10/97 - 7/18/97	Received by:	MM, GA, JP	Client Address:	P.O. Box 61
Samples Analyzed:	7/23/97	Analyzed by:	MM, GA, SN, JP		Tulsa, OK 74121-0061
Samples Reported:	7/24/97	Reported by:	Guy Auld		
Project Identification:	LAREDO, TX	Report Revision:	0.0	Client Contact:	Andy Obrochta
Target Job Code:	UST019V	Method Deviations:	none	Client Phone:	918-669-7155
Purchase Order:		Sampling Method:	Geoprobe	Client Fax:	918-669-7532

USEPA Method 8260 (in ug/L) and GC/TCD (Methane, in %) Vapor Sample Analysis Results

Compound	MW[1] (g/mole)	MDL[2] (ug/L)	PQL[3] (ug/L)	N55 E230 A (ug/L)	N55 E230 B (ug/L)	FIELD BLANK 19 (ug/L)	FIELD BLANK 20 (ug/L)	N70 E101 A (ug/L)	LABDUP FIELD BLANK 19 (ug/L)
Dichlorodifluoromethane	120.91	0.688	10.0	ND	ND	ND	ND	ND	ND
Chloromethane	50.49	0.559	10.0	ND	ND	ND	ND	ND	ND
Vinyl Chloride	62.50	1.011	10.0	ND	ND	ND	ND	ND	ND
Bromomethane	94.94	0.444	10.0	ND	ND	ND	ND	ND	ND
Chloroethane	64.51	0.341	10.0	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	138.38	0.334	10.0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	96.94	0.298	5.00	ND	ND	ND	ND	ND	ND
Methylene Chloride	84.93	0.448	5.00	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	96.94	0.419	5.00	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	98.96	0.488	5.00	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	96.94	0.455	5.00	ND	ND	ND	ND	ND	ND
Chloroform	119.38	0.472	5.00	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	133.40	0.465	5.00	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	153.82	0.421	5.00	ND	ND	ND	ND	ND	ND
Benzene	78.11	0.496	5.00	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	98.96	0.639	5.00	ND	ND	ND	ND	ND	ND
Trichloroethylene	131.39	0.135	5.00	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	112.99	0.121	5.00	ND	ND	ND	ND	ND	ND
Bromodichloromethane	163.83	0.161	5.00	ND	ND	ND	ND	ND	ND
Dibromomethane	173.83	0.525	5.00	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	110.97	0.306	5.00	ND	ND	ND	ND	ND	ND
Toluene	92.14	0.156	5.00	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	110.97	0.412	5.00	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	133.40	0.551	5.00	ND	ND	ND	ND	ND	ND
Tetrachloroethylene or PCE	165.83	0.231	5.00	ND	ND	ND	ND	ND	ND
Dibromochloromethane	208.28	0.264	5.00	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	187.86	0.562	5.00	ND	ND	ND	ND	ND	ND
Chlorobenzene	112.56	0.171	5.00	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	167.85	0.117	5.00	ND	ND	ND	ND	ND	ND
Ethylbenzene	106.17	0.308	5.00	ND	ND	ND	ND	ND	ND
m&p-Xylene	106.17	0.473	10.0	ND	ND	ND	ND	ND	ND
o-Xylene	106.17	0.227	5.00	ND	ND	ND	ND	ND	ND
Styrene	104.15	0.181	5.00	ND	ND	ND	ND	ND	ND
Isopropylbenzene	120.19	0.339	5.00	ND	ND	ND	ND	ND	ND
Bromoform	252.73	0.338	5.00	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	167.85	0.649	5.00	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	147.43	0.451	5.00	ND	ND	ND	ND	ND	ND
Bromobenzene	157.01	0.127	5.00	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	134.22	0.296	5.00	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	134.22	0.301	5.00	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	147.00	0.084	5.00	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	147.00	0.047	5.00	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	147.00	0.164	5.00	ND	ND	ND	ND	ND	ND
n-Butylbenzene	134.22	0.276	5.00	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	181.45	0.406	5.00	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	260.76	0.461	5.00	ND	ND	ND	ND	ND	ND
Naphthalene	128.17	0.715	5.00	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	181.45	0.573	5.00	ND	ND	ND	ND	ND	ND
Methane[4] (%)	16.00	0.50	0.50	ND	N/A	ND	ND	ND	ND
Sample Condition (S,U)/Dilution (PQL)			1	S	S	S	S	S	S

S: Satisfactory, U: Unsatisfactory - see sample narrative for specific explanation

Dilution: numerical dilution factor used to quantitate analyte concentrations within the range of the initial calibration curve

[1] MW: Molecular Weight

[2] MDL: Method detection limit according to EPA 40CFR Part 136 Appendix B

[3] PQL: Practical quantitation limit using the initial calibration curve low point and dilution factors where applicable

[4] Methane results by GC/TCD are reported as percent (%), "N/A" indicates that the sample was not analyzed for Methane.

SAMPLE NARRATIVE:

Quality Control Analyst:

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Chain of Custody Records

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST 019

CLIENT: Tulsa ACOE
ADDRESS:
PHONE: 918-669-7155 FAX:
CLIENT PROJECT #: PROJECT MANAGER: Obrochta

DATE: PAGE 1 OF 2
P.O.#:
LOCATION: Zerado TX
COLLECTOR: DATE OF COLLECTION: 7/9

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (oil)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity		Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N40E60A	5'	0718					X																			
N40E60B	7'	0729																								
N60E60A	3	0740																								
N60E60B	7'	0801																								
N80E60A	3'	0811																								
N80E60B	7'	0828																								
N100E60A	3'	0835																								
N100E60B	7'	0848																								
N120E60A	3'	0859																								
N120E60B	7'	0911																								
N120E80A	3'	0921																								
N120E80B	7'	0953																								
N100E80A	3'	1001																								
N100E80B	7'	1051																								
N80E80A	3'	1058																								
N80E80B	7'	1110																								
N60E80A	3'	1117																								
N60E80B	7'	1127																								

TCD - "A" sample only
8260 - All samples

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:30PM 7/9/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

03185

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: US7019

CLIENT: Tulsa ACOE
ADDRESS:
PHONE: 918 669 7155 FAX:
CLIENT PROJECT #: PROJECT MANAGER: Obrochta

DATE: PAGE 2 OF 2
P.O.#:
LOCATION: Laredo TX
COLLECTOR: DATE OF COLLECTION: 7/9

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	Metals	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N40E80A	3'	11:51AM					X																		
N40E80B	7'	11:58AM																							
N11E101A	3'	12:21																							
N11E101B	7'	12:33																							
N20E101A	3'	12:52																							
N20E101B	7'	12:59																							
N33E101A	3'	1:30	*																						
N33E101B	7'	1:37																							
N39E101A	3'	1:56																							
N39E101B	7'	2:03																							
N49E101A	3'	2:21																							
N49E101B	7'	2:30																							
N60E101A	3'	2:47																							
N60E101B	7'	3:00PM																							
FIELD BLANK	—	0718																					FIELD BLANK #1		
FIELD BLANK	—	3:15PM																					FIELD BLANK #2		

8260 - All
TCD - "A" Samples only

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:30PM 7/9/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:
*NEED TO RESAMPLE #N33E101A (3') DUE TO DETERIORATED SEPTUM ON SAMPLE 7/14 VIAL

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: 1ST019

CLIENT: ACOE - Tulsa District
ADDRESS:
PHONE: 918-669-7455 FAX:
CLIENT PROJECT #: PROJECT MANAGER: Obuchita

DATE: PAGE 1 OF 3
P.O.#:
LOCATION: Laveda, TX
COLLECTOR: DATE OF COLLECTION: 7/10/97

Sample Number	Depth	Time	Sample Type	Container Type	FIELD NOTES	Total Number of Containers	Laboratory Note Number
#3 FIELD BLANK 3	3'	8:30					
#4 FIELD BLANK 4	3'	1:51 PM					
#5 FIELD BLANK 5	3'	6:54 PM					
N-01 E121A	3'	8:43 AM					
N-01 E121B	7'	8:50					
N-01 E130A	3'	9:05					
N-01 E130B	7'	9:13					
N-01 E150A	3'	9:27					
N-01 E150B	7'	9:36					
N-01 E161A	3'	9:53					
N-01 E161B	7'	10:12					
N-01 E170A	3'	10:27					
N-01 E170B	7'	[redacted]	10:35				
N-01 E180A	3'	[redacted]	10:57				
N-01 E180B	7'	[redacted]	11:05				
N-01 E190A	3'	[redacted]	11:23				
N-01 E190B	7'	[redacted]	11:28				
N-01 E198A	3'	[redacted]	11:34				

All 5 samples to be 8260 plus TCLP VOA's 1 sample to be 1164 plus TCLP VOA's only by Swedlow

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:00 PM 07/10/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	43
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:
- 1 Bottle -

03186

07/08/97 WED 11:25 FAX 4109820347 TARGET ENVIRO 001

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST 019

CLIENT: Tulsa ACOE
ADDRESS:
PHONE: 918-669-7155 FAX:
CLIENT PROJECT #: PROJECT MANAGER: Obrachta

DATE: PAGE 2 OF 3
P.O.#:
LOCATION: Laredo, TX
COLLECTOR: DATE OF COLLECTION: 7/10/97

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas oil)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	Methane	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N-01 E190B	7'	11:52																				\		All sample "A" 8260. Samples only G/C - TCD methane		
N-01 E199A	3'	12:12																								
N-01 E199B	7'	12:18																				\				
N-01 E208A	3'	12:35																								
N-01 E208B	7'	12:45																				\			•	•
N-01 E220A	3'	2:23																								
N-01 E220B	7'	2:35																				\				
N-01 E230A	3'	2:58																								
N-01 E230B	7'	3:09																				\				
N-01 E240A	3'	3:23																								
N-01 E240B	7'	3:28	3"																			\				
N-01 E250A	3'	3:36																								
N-01 E250B	7'	3:49																				\				
N-01 E260A	3'	4:09																								•
N-01 E260B	7'	4:21																				\				•
N70 E101A*	3'	4:37																								•
N70 E101B	7'	4:49																				\				•
N79 E101A	3'	4:55																								

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:11 PM 07/10/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	49 - 1 Broken
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

* N70 E101A: - NEED TO RESAMPLE DUE TO DETERIORATED VIAL SEPTUM

03187

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST 019

CLIENT: US ACOE - Tulsa District

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: PROJECT MANAGER: Obrochta

DATE: PAGE 3 OF 3

P.O.#:

LOCATION: Laredo, TX

COLLECTOR: DATE OF COLLECTION: 7/10/97

Sample Number	Depth	Time	Sample Type	Container Type	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N79 E101B	7'	5:00 pm			Broken thermometer		0
N90 E101A	3'	5:10 pm					
N90 E101B	7'	5:15 pm					
N99 E101A	3'	5:25 pm					
N 99 E101B	7'	5:31 pm					
N109 E101A	3'	5:40 pm					
N109 E101B	7'	5:46					

ANALYSES: VOA 8011/8010 | VOA 8021/8020 | VOA 624/8260 | Semi Vol 625/8270 | TPH 418.1 | TPH 8015 (Gasoline) | TPH 8015 (Gas/Diesel) | PNA 610/8100 | PESTICIDES 8080 | TCLP | 8QD | 1:5 AD 239.2 | pH | Ignitability | Metals 6000/7000 | Reactivity | MS/MSD | Preservative (Y/N)

All samples 8260 1 sample 1 grab TCLP by 8270 MS/MSD

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
	6:22 pm 07/10/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT

Total Number of Containers	1
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

N79 E101B
* Requested recollection

03188

07/08/97 WED 11:25 FAX 4109820347 TARGET ENVIRO 002

03189

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST 019

CLIENT: ACOE
ADDRESS:
PHONE: 918-699-7155 FAX:
CLIENT PROJECT #: PROJECT MANAGER: Obrochta

DATE: PAGE 1 OF 3
P.O.#:
LOCATION:
COLLECTOR: DATE OF COLLECTION: 7/11/97

Sample Number	Depth	Time	VIAL POS. Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gal.d)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number	
FIELD BLANK 6	—	8:44	14																		✓		FLD BLK #6		14	77
N127E101 A	3'	8:56	15																		✓				15	78
N127E101 B	7'	9:18	16																						16	79
N126E110A	3'	9:31	17																		✓				17	80
N126E110B	7'	9:36	20																						20	
N126E120A	3'	9:48	21																		✓				21	
N126E120B	7'	9:53	22																						22	
N126E130A	3'	10:06	23																		✓				23	
N126E130B	7'	10:11	24																						24	
N126E140A	3'	10:23	25																		✓				25	
N126E140B	7'	10:28	26																						26	
N126E150A	3'	10:40	27																		✓				27	
N126E150B	7'	10:45	28																						28	
N127E160A	3'	11:04	29																		✓				29	
N127E160B	7'	11:09	30																						30	
N125E170A	3'	11:25	31																		✓				31	
N125E170B	7'	11:31	32																						32	
N124E180A	3'	11:45	33																		✓				33	94

All sample 8260 - TCD Methane by "A" sample on only.

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:13 PM 07/11/97	[signature]	7/14/97
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST 019

CLIENT: ACOE
ADDRESS:
PHONE: 918-669-7155 FAX:
CLIENT PROJECT #: PROJECT MANAGER: Obrochta

DATE: PAGE 2 OF 3
P.O.#:
LOCATION:
COLLECTOR: DATE OF COLLECTION: 7/11

Sample Number	Depth	Time	VIAL POS. / ~~Sample Type~~	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	TCLP Extraction	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N124 E180B	7'	11:50	34																	✓					34
N125 E190A	3'	12:11 PM	35																	✓					35
N125 E190B	7'	12:19	36																	✓					36
N126 E201A	3'	2:09	37																	✓					37
N126 E201B	7'	2:17	38																	✓			FLD BLK #7 7.6		38
FIELD BLANK #8		1:20PM	39																	✓					39
N126 E209A	3'	2:34	42																	✓					42
N126 E209B	7'	2:41	43																	✓					43
N126 E222A	3'	2:59	44																	✓					44
N126 E222B	7'	3:05	1	ANALYSE 7/16																✓					1
N126 E229A	3'	3:18	2																	✓					2
N126 E229B	7'	3:24	3																	✓					3
N126 E241A	3'	3:43	4																	✓					4
N126 E241B	7'	3:51	5																	✓					5
N124 E250A	3'	4:02	6																	✓					6
N124 E250B	7'	4:09	7																	✓					1
N124 E260A	3'	4:22	8																	✓					2
N124 E260B	7'	4:31	9																	✓					3

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:13 07/11/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

07/08/97 WED 11:25 FAX 4108820347 TARGET ENVIRO 005

03190

03191

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: US7019

CLIENT: _____

ADDRESS: _____

PHONE: 918-669-7155 FAX: _____

CLIENT PROJECT #: _____ PROJECT MANAGER: Obrochta

DATE: _____ PAGE 3 OF 3

P.O.# : _____

LOCATION: _____

COLLECTOR: _____ DATE OF COLLECTION: 7/11

Sample Number	Depth	Time	VIAL POS Sample Type	Container Type	ANALYSES: VOA 601/8010; VOA 602/8020; VOA 624/8260; Semi Vol 625/8270; TPH 418.1; TPH 8015 (Gasoline); TPH 8015 (Diesel); PNA 610/8100; Pesticides 8080; TOC; BOD; TSS/TDS 160.2; pH; Ignitability; Metals 6000/7000; Reactivity; TCLP Metals; Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N126E271A	3'	5:03	4					4
N126 E271B	7'	5:08	5					5
N126 E281A	3'	5:23	6					6
N126 E 281B	7'	5:31	7					7
N125 E 291A	3'	5:46	8					8
N125 E291B	7'	5:52	9					9
FIELD BLANK 8		5:54	10			FIELD BLANK #8 1A		10

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:14 PM 07/4/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: 05T019V

CLIENT: _____ DATE: _____ PAGE 1 OF 3

ADDRESS: _____ P.O.# : _____

PHONE: _____ FAX: _____ LOCATION: LAREDO, TX

CLIENT PROJECT #: _____ PROJECT MANAGER: _____ COLLECTOR: _____ DATE OF COLLECTION: 7/12

Sample Number	Depth	Time	VIAL ID. Sample Type	Container Type	ANALYSES: VOA 601/8010; VOA 602/8020; VOA 624/8260; Semi Vol 625/8270; TPH 418.1; TPH 8015 (gasoline); TPH 8015 (diesel); PNA 610/8100; Pest/PCB's 8080; TOX; BOD; LEAD 239.2; pH; Ignitability; Metals 6000/7000; Reactivity; Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
FIELD BLANK	9 -	8:[illegible]	40			FLD BLK #9		
N130 E300A	3'	8:23	41					
N130 E300B	7'	8:28	42					
N120 E300A	3'	8:39	43	ANALYZED 7/17				
N120 E300B	7'	8:44	44					
N110 E300A	3'	8:54	3					
N110 E300B	7'	9:00	1					
N100 E300A	3'	9:11	2					
N100 E300B	7'	9:18	3					
N109 E320A	3'	9:35	4					
N109 E320B	7'	9:40	5					
N109 E341A	3'	9:54	6					
N109 E341B	7'	9:58	7					
N100 E340A	3'	10:10	8					DUP 7/15 02
N100 E340B	7'	10:15	9					
N100 E320A	3'	10:29	12					
N100 E320B	7'	10:34	13					
N97E291A	3'	10:51	14					

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	07/12/97 4:28PM		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

07/08/97 WED 11:25 FAX 4108820347 TARGET ENVIRO

03192

03193

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: VST019 V

CLIENT:
ADDRESS:
PHONE: FAX:
CLIENT PROJECT #: PROJECT MANAGER:

DATE: PAGE 2 OF 3
P.O.# :
LOCATION: LAREDO, TX
COLLECTOR: DATE OF COLLECTION: 7/12

Sample Number	Depth	Time	VIAL POS. ~~Sample Type~~	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (oil, g)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity		Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N97E291B	7'	10:57	~~15~~ 5																							
N97E280A	3'	11:09	~~16~~ 6																							
N97E280B	7'	11:15	~~17~~ 7																							
N97E271A	3'	11:32	~~18~~ 8																							
N97E271B	7'	11:38	~~19~~ 9																							
FIELD BLANK 10	—	12:30PM	~~20~~ 10																					FIELD BLANK #10		
N87E290A	3'	12:46	~~21~~ 11																							
N87E290B	7'	12:55	~~22~~ 12																							
N85E280A	3'	1:09	~~23~~ 13																							
N85E280B	7'	1:17	~~24~~ 14																							
N80E269A	3'	1:33	~~25~~ 15																							
N80E269B	7'	1:42	~~26~~ 16																							
N110E154A	3'	2:09	~~27~~ 17																							
N110E154B	7'	2:17	~~28~~ 18																							
N100E154A	3'	2:31	~~29~~ 19																							
N100E154B	7'	2:37	~~30~~ 20																							
N90E154A	3'	2:53	~~31~~ 21																							DUP THIS O
N90E154B	7'	3:01	~~34~~ 24																							

Mis map
N75
N75

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	07/12/97 4:29PM		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST 019V

CLIENT:
ADDRESS:
PHONE: FAX:
CLIENT PROJECT #: PROJECT MANAGER:

DATE: PAGE 3 OF 3
P.O.#:
LOCATION: LAREDO, TX
COLLECTOR: DATE OF COLLECTION: 7/12

	Sample Number	Depth	Time	VIAC POS. Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g+d)	PNA 670/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity		Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
202	N80 E154 A	3'	3:15	~~3525~~																							
203	N80 E154 B	7'	3:23	~~3626~~																							
204	N70 E154 A	3'	3:34	~~3727~~																							
205	N70 E154 B	7'	3:41	~~3823~~																							
206	N79 E101 B	7'	4:06	~~3929~~																					REDONE DUE TO BROKEN SHIPMENT		
207	FIELD BLANK II	—	4:10 PM	~~4030~~																					FIELD BLANK II 11		

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	07/12/97 4:29 PM		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

03194

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST019 ✓

CLIENT: TULSA ACOE

ADDRESS:

PHONE: 918-669-7155 FAX:

CLIENT PROJECT #: PROJECT MANAGER: Obrochta

DATE: 7/14/97 PAGE 1 OF 3

P.O.# :

LOCATION: Laredo, Tx

COLLECTOR: DATE OF COLLECTION: 7/14/97

Sample Number	Depth	Time	Vial pos. / Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	Methane	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
FIELD BLANK 12	—	8:42am	14	—ANALYZED 7/17																✓			FIELD BLANK #12		
N59 E154 A	3'	8:52am	14	↓																✓					
N59 E154 B	7'	9:00	15																	✓					
N50 E154 A	3'	9:12	16																	✓					
N50 E154 B	7'	9:18	17																	✓					
N40 E154 A	3'	9:28	18																	✓					
N40 E154 B	7'	9:33	19																	✓					
N20 E156 A	3'	9:45	20																	✓					
N30 E156 B	7'	9:51	21																	✓					
N 20 E155 A	3'	10:05	22																	✓					
N 20 E155 B	7'	10:10	23																	✓					
N 10 E156 A	3'	10:21	24																	✓					
N 10 E156 B	7'	10:26	25																	✓					
N 28 E140 A	3'	10:49	26																	✓					
N 28 E140 B	7'	10:52	27																	✓					
N 28 E130 A	3'	11:06	28	(7/17-PM)																✓					
N 28 E130 B	7'	11:13	29																	✓					
N 28 E120 A	3'	11:24	30																	✓					

Pg 1 of 3

All samples on blank on Ice. 4° C

Methane on 1 of 4" samples on Ice.

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	5:55 pm 07/19/97	[signature]	16:00 7/15/97
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	

otes:

LABORATORY NOTES:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST019V

CLIENT: Tulsa ACOE
ADDRESS:
PHONE: FAX:
CLIENT PROJECT #: PROJECT MANAGER: Obrochta

DATE: 7/14/97 PAGE 2 OF 3
P.O.# :
LOCATION: Laredo, TX
COLLECTOR: DATE OF COLLECTION: 7/14/97

Sample Number	Depth	Time	VIAL Pos. ~~Sample Type~~	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g & d)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	METHANE	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N28 E120 B	7'	11:30 AM	~~4~~ 31	Analyzed 7/17																	X					
N28 E160 A	3'	11:42 AM	~~5~~ 32																		X					DUP THIS
N28 E160 B	7'	11:47	6 ~~35~~																							DUP THIS
N96 E171 A*	3'	12:20 PM	~~7~~ 37																		X					
N96 E171 B	7'	12:28	10 ~~39~~																							
N97 E180 A	3'	12:39	11 ~~38~~																		X					
N97 E180 B	7'	12:45	12 ~~39~~																							
N97 E190 A	3'	12:50	13 ~~40~~																		X					
N97 E190 B	7'	1:47	14 ~~41~~																		X					
N110 E195 A	3'	2:10	15 ~~42~~																		X					
N110 E195 B	7'	2:18	16 ~~43~~																							
N97 E200 A	3'	2:31	17 ~~44~~	Analyzed 7/17 PM																	X					
N97 E200 B	7'	2:37	18																							
N97 E211 A	3'	2:55	19																		X					
N97 E211 B	7'	3:08	20																							
N96 E220 A	3'	3:27	21																		X					
N96 E220 B	7'	3:33	22																							
N97 E230 A	3'	3:49	23																		X					

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:51 PM 07/14/97	[signature]	1610 7/15/97
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

* N96 E171 A - WAS DAMAGED DURING ANALYSIS (septa melted). Need to Resample.

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST019V

CLIENT: TULSA ACOE

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: PROJECT MANAGER: Obrochta

DATE: 7/14/97 PAGE 3 OF 3

P.O.# :

LOCATION: Laredo, Tx

COLLECTOR: DATE OF COLLECTION: 7/14/97

Sample Number	Depth	Time	VIAL POS. Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g & d)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	Methane	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N97 E230B	7'	3:56	24																		X					
N96 E241A	3'	4:12	25																		X					
N96 E241B	7'	4:22	26																		X					
N96 E250A	3'	4:39	27																		X					
N96 E250B	7'	4:47	28																		X					DUP this COC
N97 E260A	3'	5:01	29																		X					
N97 E260B	7'	5:08	32																		X					
N110 E267A	3'	5:21	33																		X					
N110 E267B	7'	5:28	34																		X					
FIELD BLANK #3		5:32 PM	35																		X			FIELD BLANK #17		

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
	6:05 PM 07/14/97		16:00 7/15/97
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	

Notes:

LABORATORY NOTES:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: USTO19V

CLIENT: TULSA ACOE

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: PROJECT MANAGER: O'brochta

DATE: 7/15/97 PAGE 1 OF 3

P.O.# :

LOCATION: LAREDO, TX

COLLECTOR: DATE OF COLLECTION: 7/15

Sample Number	Depth	Time	Vial pos. Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g & d)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	METHANE	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
FIELD BLANK #14	—	8:43AM	4131		X																X			FIELD BLANK #14		
N90E209A	3'	8:50AM	32																		X					
N90E209B	7'	8:58	33																							
N70E209A	3'	9:07	34																		X					
N70E209B	7'	9:17	35																							
N55E290A	3'	9:49	36																		X					
N55E290B	7'	9:57	37																							
N55E280A	3'	10:09	38																		X					
N55E280B	7'	10:19	39																							
N53E271A	3'	10:33	40																		X					
N53E271B	7'	10:39	41																							
N55E260A	3'	10:52	42																		X					
N55E260B	7'	10:59	43																						DUP	
N55E250A	3'	11:13	3																		X					
N55E250B	7'	11:21AM	4																							
N55E240A	3'	11:34AM	5																		X					
N55E240B	7'	11:45AM	6																							
N10E120A	3'	1:45PM	7																		X					

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
	6:01PM 07/15/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

cc: JT
CO
CO

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST019V

03189

CLIENT: TULSA ACOE

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: PROJECT MANAGER: O'brochta

DATE: 7/15/97 PAGE 2 OF 3

P.O.# :

LOCATION: LAREDO, TX

COLLECTOR: DATE OF COLLECTION: 7/15

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	METHANE	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N110 E120B	7'	1:50	8		X																				
N90 E120A	3'	1:58	9																		X				
N90 E120B	7'	2:03	10																		X				
N70 E120A	3'	2:11	11																		X				
N70 E120B	7'	2:16	12																		X				
N110 E140A	3'	2:27	13																		X				
N110 E140B	7'	2:33	14																		X				
N90 E140A	3'	2:46	15																		X				
N90 E140B	7'	2:51	16																		X				
N80 E140A	3'	3:03	17																		X				
N80 E140B	7'	3:08	18																		X				
N70 E140A	3'	3:18	19																		X				
N70 E140B	7'	3:24	20																		X				
N61 E140A	3'	3:38	21																		X				
N61 E140B	7'	3:43	22																		X				
N55 E170A	3'	4:02	25																		X				
N55 E170B	7'	4:07	26																		X				
N55 E180A	3'	4:22	27																		X				

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
	6:06PM 07/15/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST019V

CLIENT: TULSA ACOE

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: PROJECT MANAGER: O'brochta

DATE: 7/15/97 PAGE 3 OF 3

P.O.# :

LOCATION: Laredo, TX

COLLECTOR: DATE OF COLLECTION: 7/15

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	METHANE	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N55E180 B	7'	4:30PM	28		X															X					
N53E189A	3'	4:48PM	29																	X					
N53E189B	7'	4:55	30																	X					
N55E200A	3'	5:05	31																	X					
N55E200B	7'	5:09	32																	X					
N53E209A	3'	5:19	33																	X					
N53E209B	7'	5:25	34																	X					
N55E220A	3'	5:34	35																	X					
N55E220B	7'	5:40PM	36																	X					
FIELDBLANK15		5:50PM	37																	X			FIELD BLANK #15		

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
	6:09 PM 07/15/97		

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: VST019√

CLIENT: TULSA DISTRICT ACOE

ADDRESS: P.O. Box 61, Tulsa, OK 74121-0061

PHONE: 918-669-7155 FAX: 918-669-7532

CLIENT PROJECT #: _____ PROJECT MANAGER: Andy Obrochta

DATE: 7/16/97 PAGE 1 OF 3

P.O.#: _____

LOCATION: LAREDO, TX

COLLECTOR: _____ DATE OF COLLECTION: 7/16

Sample Number	Depth	Time	VIAL POS ~~Sample Type~~	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g & d)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
FIELD BLANK #6	—	8:30	38																				FIELD BLANK #16		
N43 E250A	3'	8:53	39																						
N43 E250B	7'	8:59	46																						
N25 E246A	3'	9:13	41																						
N25 E246B	7'	9:18	42																						
N35 E240A	3'	9:35	43																						
N35 E240B	7'	9:43	44																						ALPT
N36 E230A	3'	9:56	1	Std Pm RUN																					
N36 E230B	7'	10:02	2																						
N25 E223A	3'	10:16	3																						
N25 E223B	7'	10:21	4																						
N35 E210A	3'	10:36	5																						
N35 E210B	7'	10:41	6																						
N36 E220A	3'	11:00	7																						
N36 E220B	7'	11:06	8																						
N36 E200A	3'	11:17	9																						
N36 E200B	7'	11:25	10																						
N25 E200A	3'	11:47	11																						

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:28 PM 07/16/97		

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST019V

CLIENT: _____

ADDRESS: _____

PHONE: _____ FAX: _____

CLIENT PROJECT #: _____ PROJECT MANAGER: _____

DATE: 7/16/97 PAGE 2 OF 3

P.O.# : _____

LOCATION: LAREDO, TX

COLLECTOR: _____ DATE OF COLLECTION: 7/16

Sample Number	Depth	Time	VIAL 205. Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N25E200B	7'	11:54	12																					
N36E189A	3'	12:06	13																					
N36E189B	7'	12:14	14																					
N35E180A	3'	12:27	15																					
N35E180B	7'	12:34	16																					
N25E177A	3'	12:47	17																					
N25 E177B	7'	12:54	18																					
N43E174A	3'	1:11	19																					DUP THIS ONE
N43E174B	7'	1:16	20																					
N68E174A	3'	1:31	23																					
N68E174B	7'	1:36	24																					
N75E180A	3'	1:53	25																					
N75E180B	7'	2:02	26																					
N75E191A	3'	2:16	27																					
N75E191B	7'	2:22	28																					
N75E200A	3'	2:26	29																					
N75E200B	7'	2:44	30																					
N74E210A	3'	3:02	31																					

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:35pm 07/16/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

0320

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST019V

CLIENT:
ADDRESS:
PHONE: FAX:
CLIENT PROJECT #: PROJECT MANAGER:

DATE: 7/16/97 PAGE 3 OF 3
P.O.# :
LOCATION: LAREDO, TX
COLLECTOR: DATE OF COLLECTION: 7/16

Sample Number	Depth	Time	VOA Pos. Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity	Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
N74E210B	7'	3:09	32																					
N75E220A	3'	3:23	33																					
N75E220B	7'	3:30	34																					
N75E230A	3'	3:43	35																					
N75E230B	7'	3:49	36																					
N75E240A	3'	4:21	37																					
N75E240B	7'	4:26	38																					
N66E250A	3'	4:37	39	N66E250A																				
N66E250B	7'	4:43	40	N66E250B																				
N50E269A	3'	4:59	41	1 7/21/97 PM 2UN																			DJP	THIS ONE
N50E269B	7'	5:06	42																					
N40E269A	3'	5:20	[redacted]																					
N40E269B	7'	5:28	86																					
N20E269A	3'	5:41	87																					
N20E269B	7'	5:48	88																					
N33E101A	3'	6:02	89																			(resampled Location)		
FIELD BLANK 17	—	6:05	818																			FIELD BLANK #17		

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	6:41pm 07/16/97		

SAMPLE RECEIPT	
Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	

LABORATORY NOTES:

Notes:

TARGET LABORATORIES

9180 Rumsey Road, Columbia, Md 21045
Office: 410-992-6622 Fax: 410-992-0347

CHAIN-OF-CUSTODY RECORD

JOB CODE: UST019V

CLIENT: TULSA DISTRICT ACOE
ADDRESS: P. O BOX 61 TULSA, OK 74121-0061
PHONE: 918-669-7155 FAX: 918-669-7532
CLIENT PROJECT #: PROJECT MANAGER: Andy Obrechta

DATE: 7/17/97 PAGE 1 OF 1
P.O.#:
LOCATION: Laredo, TX
COLLECTOR: DATE OF COLLECTION: 7/17/97

Sample Number	Depth	Time	VIAL POS. ~~Sample Type~~	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8260	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g & d)	PNA 610/8100	PEST/PCBs 8080	TOC	BOD	LEAD 239.2	pH	Ignitability	Metals 6000/7000	Reactivity		Preservative (Y/N)	FIELD NOTES	Total Number of Containers	Laboratory Note Number
FIELD BLANK 18		8:09AM	7 11																					FIELD BLANK 18		
N25E291A	3'	8:19	8 12																							
N25E291B	7'	8:28	9 13																							
N25E279A	3'	8:40	10 14																							
N25E279B	7'	8:45	11 15																							
N26E270A	3'	8:55	12 16																							
N26E270B	7'	9:02	17 13																							
N10E269A	3'	9:13	18 14																							
N10E269B	7'	9:19	19 15																							
N-02E271A	3'	9:29	20 16																							
N-02E271B	7'	9:35	21 17																							
N55E230A	3'	9:47	22 18																							
N55E230B	7'	9:54	23 19																							
FIELD BLANK 19		10:00	24 20	15 CHKSTD BLANK																				FIELD BLANK 19		DUP THIS ONE
N70E101A	3'	10:31	27 ~~29~~	26																						
FIELD BLANK 20		10:33	28 ~~29~~																					FIELD BLANK 20		
(20)																										

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	10:45AM 07/17/97		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE RECEIPT

Total Number of Containers	
Chain of Custody Seals Y/N NA	
Seals Intact? Y/N NA	
Received Good Cond./Cold	
Notes:	

LABORATORY NOTES:

03204

LABORATORY PROCEDURES

The soil gas survey data presented in this report are the result of precise sampling and measurement of contaminant concentrations in the vadose zone. Analyte detection at a particular location is representative of vapor, dissolved, and/or liquid phase contamination at that location. The presence of detectable levels of target analytes in the vadose zone is dependent upon several factors, including the presence of vapor-phase hydrocarbons or dissolved or liquid concentrations adequate to facilitate volatilization into the unsaturated zone.

The tabulated results of the laboratory analyses of the soil gas samples are reported in micrograms per liter (µg/l) of vapor in Table 1. Although "micrograms per liter" is equivalent to "parts per billion (volume/volume)" in water analyses, they are not equivalent in gas analyses, due to the difference in the mass of equal volumes of water and gas matrices.

All of the vapor samples collected at a 3 foot depth ("A" samples), during the field phase of the survey were analyzed using direct injection into a research grade gas chromatograph (Shimadzu Model 14A) equipped with a thermal conductivity detector (TCD), capillary columns, thermal ovens, Shimadzu CR4A data processors and associated hardware.

The analytical equipment was calibrated using a 3-point instrument-response curve and injection of known concentrations of the target analyte (methane). Retention times of the standards (stock standards purchased from Scott Specialty Gases) were used to identify the peaks in the chromatograms of the field samples, and their response factors were used to calculate the analyte

concentrations. The correlation coefficients were calculated for each standardized analyte to ensure that they equalled or exceeded 0.99. The retention time windows were determined by examining the retention times of three standards. Windows for retention times are set using the narrowest time band possible (usually ± 0.05 - 0.1 minutes) without including non-standardized peaks.

Following the initial three-point calibration, check standards are analyzed at the beginning and end of each day to ensure retention time and instrument response stability. A check standard is acceptable if the area response measured for a check standard is ± 20% of the area response measured for the initial 2nd level calibration standard. If a check standard does not meet the 20% criteria, then another 3-point calibration is performed.

All of the soil gas samples were analyzed in **TARGET's** laboratory in Columbia, MD in accordance with the attached SOP.

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TARGET STANDARD OPERATING PROCEDURES (SOP)

SOP	REVISION	DATE
3810/8260A	2.0	2/1/97

Reviewed By:	Title	Signature	Date
Brian Abraham, Ph.D.	Lab Director		2/1/97
Michael Marrale, Jr.	Lab Supervisor		2/1/97

Volatile Organic Compounds By Gas Chromatography Mass/Spectrometry (GC/MS)

1.0 SCOPE AND APPLICATION

1.1 Method 8260 is used to determine volatile organic compounds in a variety of matrices. This method is applicable to nearly all types of samples, regardless of water content, including water, soil/sediment and gaseous matrices. The compounds listed in Table 1 are determined by Target using this method. Additional compounds can be analyzed upon request.

1.2 Method 8260 can be used to quantify most volatile organic compounds that have boiling points below 200°C and that are insoluble or slightly soluble in water. Volatile water-soluble compounds can be included in this analytical technique, however, quantification limits are approximately ten times higher due to poor purging efficiency. Such compounds include low-molecular-weight halogenated hydrocarbons, aromatics, ketones, nitriles, acetates, acrylates, ethers, and sulfides. See Table 1 for a list of analytes and retention times that have been evaluated on a headspace GC/MS system.

1.3 The practical quantitation limit (PQL) of Method 8260 for an individual compound is somewhat instrument dependent. Using standard quadrupole instrumentation, limits should be approximately 10 ng/g (wet weight) for soil/sediment samples, 500 ng/g (wet weight) for wastes, 5 ng/mL for ground water, and 1-5 ug/L for gas samples (see Table 1). Somewhat lower limits may be achieved using selected ion monitoring or altering the methodology. No matter which technique is used, PQLs will be proportionately higher for samples that require dilution or reduced sample size to avoid saturation of the detector.

1.4 Method 3810-8260A is based upon a heated headspace gas chromatographic/mass spectrometric (GC/MS) procedure. This method is restricted to use by, or under the supervision of, analysts experienced in the use of heated headspace systems and gas chromatograph/mass spectrometers, and skilled in the interpretation of mass spectra and their use as a quantitative tool.

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2.0 SUMMARY OF METHOD

2.1 Volatile compounds are introduced into the gas chromatograph by heated headspace direct inlet transfer. A known amount of soil, water, or gas is heated for a pre-established period of time to volatilize the analytes of interest. Using a valve system, the volatilized analytes are swept through a large bore transfer line and into a narrow bore capillary analytical column for analysis. The column is temperature programmed to separate the analytes which are then detected using a mass spectrometer detector interfaced to the gas chromatograph.

2.2 If the above sample introduction techniques are not appropriate (i.e., high levels of detection expected in a given soil sample), a portion of the sample is dispersed in methanol to dissolve the volatile organic constituents. A portion of the solution is combined with organic-free reagent water in a headspace vial. It is then analyzed by headspace GC/MS following the normal water method. Similarly smaller volumes of water, soil or gas samples can be used to avoid saturation of the detector. In this manner, dilutions of the extract can be performed prior to introduction into the GC/MS system for those samples expected to be highly contaminated.

2.3 Analytes eluted from the capillary column are introduced into the mass spectrometer via direct inlet connection into the ionization chamber. Identification of target analytes is accomplished by comparing their mass spectra with the electron impact spectra of authentic standards. Quantification is accomplished by comparing the response of a major ion relative to an internal standard with a three or five point calibration curve. Secondary ions are used to confirm compound identification and proper integration windows.

3.0 INTERFERENCES

3.1 Major contaminant sources are volatile materials in the laboratory and impurities in the system gases. The use of non-polytetrafluoroethylene (PTFE) thread sealants, plastic tubing, or flow controllers with rubber components should be avoided since such materials out-gas organic compounds which will transferred to the analytical column. Crimp vial septa have been known to cause interference and/or contain target analytes such as carbon disulfide. It is critical to analyze blanks to assess the vials prior to use. Analyses of calibration and reagent blanks provide information about the presence of contaminants. When potential interfering peaks are noted in blanks, the analyst should change the gas source and regenerate or replace any molecular sieve filters being used. Subtracting blank values from sample results is not permitted. If reporting values not corrected for blanks result in what the laboratory feels is a false positive for a sample, this should be fully explained in sample narrative text accompanying the uncorrected data.

3.2 Interfering contamination may occur when a sample containing low concentrations of volatile organic compounds is analyzed immediately after a sample containing high concentrations of volatile organic compounds. The preventive technique is to analyze one or more blanks after analysis of a highly contaminated sample.

3.3 Special precautions must be taken to analyze for methylene chloride or any other commonly used lab contaminant/interferant. The analytical and sample storage area should be isolated from all atmospheric sources of methylene chloride. Otherwise random background levels will result. Since methylene chloride will permeate through PTFE tubing, all gas chromatography carrier gas lines and purge gas plumbing should be constructed from stainless steel or copper tubing. Laboratory clothing worn by the analyst should be clean since clothing previously exposed to methylene chloride fumes during liquid/liquid extraction procedures can contribute to sample contamination.

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3.4 Samples can be contaminated by diffusion of volatile organics (particularly methylene chloride and fluorocarbons) through the septum seal into the sample during shipment and storage. A trip blank prepared from organic-free reagent water and carried through the sampling and handling protocol can serve as a check on such contamination.

4.0 APPARATUS AND MATERIALS

4.1 Heated Headspace Autosampler (HP 7694 or equivalent).

4.2 Injection port liners (HP catalog #18740-80200, or equivalent split/splitless)

4.3 Gas chromatography/mass spectrometer data system.

4.4.1 Gas chromatograph (Hewlett Packard 5890II, or equivalent) - An analytical system complete with a temperature-programmable gas chromatograph suitable for split/splitless injection and interfaced to a heated headspace system. The system includes all required accessories, including syringes, analytical columns, and gases. The GC should be equipped with variable constant differential flow controllers so that the column flow rate will remain constant throughout the analytical sequence. For some column configurations, the oven must be cooled to < 30°C, therefore, a subambient oven controller may be required. The capillary column should be directly coupled to the source.

4.4.2 Gas chromatographic column: 40 m x 0.18 mm ID capillary column coated with Rtx 502.2 (Restek), 1.8 um film thickness, or equivalent.

4.4.3 Mass spectrometer (Hewlett Packard 5872B MSD, or equivalent) - Capable of scanning from 35 to 300 am every 2 sec or less, using 70 volts (nominal) electron energy in the electron impact ionization mode. The mass spectrometer must be capable of producing a mass spectrum for *p*-Bromofluorobenzene (BFB) which meets all of the criteria in Table 2 when 50 ng is introduced into the GC. To ensure sufficient precision of mass spectral data, the desirable MS scan rate should allow acquisition of at least five spectra while a sample component elutes from the GC.

4.4.4 GC/MS interface - Direct coupling by inserting the column into the mass spectrometer is generally used for 0.25-0.53 mm i.d. columns.

4.4.4.3 Any enrichment device or transfer line can be used provided the QC criteria for BFB (Table 2) can be achieved. GC-to-MS interfaces constructed entirely of glass or of glass-lined materials are recommended. Glass can be deactivated by silanizing with dichlorodimethylsilane.

4.4.5 Data system - A computer system that allows the continuous acquisition and storage on machine-readable media of all mass spectra obtained throughout the duration of the chromatographic program must be interfaced to the mass spectrometer. The computer must have software that allows searching any GC/MS data file for ions of a specified mass and plotting such ion abundances versus time or scan number. This type of plot is defined as an Extracted Ion Current Profile (EICP). Software must also be available that allows integrating the abundances in any EICP between specified time or scan-number limits. The most recent version of the EPA/NIST Mass Spectral Library should also be available.

4.5 Microsyringes - 10, 25, 100, 250, 500, and 1,000 uL for preparing and injecting calibration standards.

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4.6 Syringes - 25 mL, gas-tight with shutoff valve for injection of aqueous and gaseous samples.

4.7 Balance - Analytical, 0.01 g, for weighing soil samples.

4.8 Glass crimp vials with seals - 20 mL vials with high temperature Teflon lined septa and crimp top.

4.9 Disposable pipets - Pasteur pipets used to transfer stock standards purchased to crimp vials.

4.10 Spatula - Stainless steel for weighing soil samples.

5.0 REAGENTS

5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

5.2 Organic-free reagent water - All references to water in this method refer to organic-free reagent water shall be deionized, carbon filtered water known to be free of contamination in the form of target or interfering analytes.

5.3 Methanol, CH_3OH - Pesticide quality or equivalent, demonstrated to be free of target or interfering analytes. Store apart from other solvents.

5.4 Stock solutions - Stock solutions may be prepared from pure standard materials or purchased as certified solutions. Prepare stock standard solutions in methanol, using assayed liquids or gases, as appropriate. Stock solutions purchased and used by Target, along with representative lot numbers, are shown in Table 3.

5.5 Secondary dilution standards - Using stock standard solutions, prepare secondary dilution standards in methanol containing the compounds of interest. Secondary dilution standards must be stored with minimal headspace and should be checked frequently for signs of degradation or evaporation.

5.9 Surrogate standards - The surrogates recommended are toluene-d_8, 4-bromofluorobenzene, and dibromofluoromethane. Other compounds may be used as surrogates, depending upon the analysis requirements. A stock surrogate solution in methanol should be prepared as described above, and a surrogate standard spiking solution should be prepared from the stock at a concentration of 20 ng/µL in methanol. Each sample undergoing GC/MS analysis must be spiked with 10 uL of the surrogate spiking solution prior to analysis. Surrogate standard stock solutions and recommended dilutions are shown in Table 3.

5.10 Internal standards - The recommended internal standards are 1,4-difluorobenzene, chlorobenzene-d_5, and 1,4-dichlorobenzene-d_4. Other compounds may be used as internal standards as long as they have retention times similar to the compounds being detected by GC/MS. Prepare internal standard stock and secondary dilution standards in methanol as previously described for standards. It is recommended that the secondary dilution standard should be prepared at a concentration of 20 ng/µL of each internal standard compound. Addition of 10 µL of this standard to 5 mL of water sample/calibration point or 5 g of soil sample would be the equivalent of 40 ng/g. Internal standard stock solutions and recommended dilutions are shown in Table 3. Addition of 10 uL of this solution to a gaseous sample results in a 10 ng/mL internal standard concentration.

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5.11 4-Bromofluorobenzene (BFB) standard - A standard solution containing 5 ng/µL of BFB in methanol should be prepared. BFB stock solution and recommended dilutions are shown in Table 3.

5.12 Calibration standards - Calibration standards at a minimum of five concentrations should be prepared from the secondary dilution of stock standards as previously discussed. Prepare these solutions in organic-free reagent water. One of the concentrations should be near, but above, the method detection limit. The remaining concentrations should correspond to the expected range of concentrations found in real samples but should not exceed the linear working range of the GC/MS system. Each standard should contain each analyte for detection by this method. Calibration standard stock solutions and recommended dilutions are shown in Table 3.

5.13 Matrix spiking standards - Matrix spiking standards should be prepared from volatile organic compounds which will be representative of the compounds being investigated. At a minimum, the matrix spike should include 1,1-dichloroethene, trichloroethene, chlorobenzene, toluene, and benzene. It is desirable to perform a matrix spike using compounds found in samples or expected to be found in samples when possible. The standard should be prepared in methanol, with each compound present at a concentration of 10 ng/µL. Consequently, a 10 µL injection of this solution into 5 mL of water sample or 5 g of soil sample will result in 20 ng/g (ng/mL) matrix spike compound concentration. When an MS/MSD is used for gas samples, spike the gas sample with 10 µL of the standard to yield a 5 ng/mL concentration. Matrix spike and matrix spike duplicate standard stock solutions and recommended dilutions are shown in Table 3.

5.14 Great care must be taken to maintain the integrity of all standard solutions. It is recommended all standards in methanol be stored at 10°C to -20°C in amber bottles with crimp top seals.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 See Organic Analytes, Sec. 4.1 of USEPA SW846.

7.0 PROCEDURE

7.1 Sample introduction will be performed according to USEPA Method 3810:

7.1.1 Water samples/calibration:

7.1.1.1 Fill individually dedicated 25 µL gastight syringes with 10 µL internal standard/surrogate working solution (20 ng/µL each analyte).

7.1.1.2 Add 5 mL of sample to a 20 mL crimp top vial using a 25 mL pipette and crimp seal.

7.1.1.3 Add the pre-drawn internal standard/surrogate mixture to the 5 mL water sample and place in the autosampler rack.

7.1.1.4 Calibrations are performed using 25 µL gastight syringes to draw 10 µL calibration standard containing target analytes, surrogates, and internal standard. This is injected into 5 mL organic free reagent water in a crimp sealed vial and analyzing.

7.1.2 Soil samples:

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7.1.2.1 Fill individually dedicated 25 µL gastight syringes with 10 µL internal standard/surrogate working solution.

7.1.2.2 After carefully homogenizing the sample, add 5 g to 5 mL of organic free reagent water in a 20 mL crimp seal vial.

7.1.2.3 Add the pre-drawn internal standard/surrogate mixture to the soil mixture and place in the autosampler rack.

7.1.2.4 Use the water calibration based upon "ng" for quantification.

7.1.3 Gas samples:

7.1.3.1 Fill individually dedicated 25 µL gastight syringes with 10 µL internal standard/surrogate working solution.

7.1.3.2 Add the pre-drawn internal standard/surrogate mixture to the soil gas vial. Soil gas vials are shipped as 20 mL crimp top vials with sample already in them as sampled by the client.

7.1.3.3 Calibrate for soil gas analysis by adding known amounts of standards to empty 20 mL crimp top vials.

7.1.4 Headspace Autosampler (Hewlett Packard 7694 or equivalent) using the following analytical conditions:

Oven:	180°C
Loop:	190°C
Transfer Line:	200°C transfer line to GC
Vial Equilibration:	5 minutes
Pressurize:	0.4 minutes
Loop Fill:	0.15 minutes
Loop Equilibration:	0.05 minutes
Injection:	2 minutes
Pressure:	22 psi
Loop Size:	3 mL

7.2 Recommended gas chromatograph and mass spectrometer conditions:

GC Conditions

Injector temperature:	210°C
Carrier gas (He) flow rate:	0.5 mL/min
Split Flow:	10:1
Inlet Pressure Program:	60 psi for 1 minute
Initial temperature:	50°C
Temperature program 1:	50 °C - 150 °C at 10 °C/minute
Temperature program 2:	150 °C - 260 °C at 70 °C/minute
Final temperature:	260 °C, hold for 3.43 minutes

MS Conditions

Mass range 1:	49 - 120 amu from 0 - 8 minutes
Mass range 2:	74 - 175 amu 8 - 12 minutes
Mass range 3:	90 - 230 amu 12 - 15 minutes

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Solvent delay: 0 minutes
Source temperature: 280 °C set by induction from the transfer line

7.3 Initial calibration.

7.3.1 Each GC/MS system must be hardware-tuned to meet the criteria in Table 2 for a 50 ng injection of 4-bromofluorobenzene. Analyses must not begin until these criteria are met.

7.3.2 A set of three to least five calibration standards containing the method analytes is needed. One calibration standard should contain each analyte at a concentration near but above the method detection limit for that compound; the other calibration standards should contain analytes at concentrations that define the linear range of the GC/MS system. Calibration should be performed using the same sample introduction technique used for sample analysis.

7.3.2.1 Using the headspace technique previously discussed, prepare and analyze the three to five calibration standards. Possible calibration standards for the GC/MS system at Target's facility are as follows:

Standard Conc. (ng/µL)	Injection Volume (µL)	Injection Amount (ng)	Water (mL = ng/mL)	Soil (g = ng/g)	Gas (mL = ng/mL)
5	10	50	5 = 10	5 = 10	20 = 2.5
10	10	100	5 = 20	5 = 20	20 = 5
20	10	200	5 = 40	5 = 40	20 = 10
30	10	300	5 = 60	5 = 60	20 = 15
40	10	400	5 = 80	5 = 80	20 = 20

7.3.3 Tabulate the area response of the characteristic ions (see Table 1) against concentration for each compound and each internal standard. Calculate response factors (RF) for each compound relative to one of the internal standards. The internal standard selected for the calculation of the RF for a compound should be the internal standard that has a retention time closest to the compound being measured. The RF is calculated as follows:

$RF = (A_xC_{is})/(A_{is}C_x)$ where:

A_x = Area of the characteristic ion for the compound being measured.
A_{is} = Area of the characteristic ion for the specific internal standard.
C_{is} = Concentration of the specific internal standard.
C_x = Concentration of the compound being measured.

7.3.4.1 The average RF must be calculated and recorded for each compound using the three to five RF values calculated for each compound from the initial (3 or 5-point) calibration curve.
Response Factor Calibration Criteria: The %RSD of the average response factors should be less than or equal to 30% to ensure a linear calibration curve4 is established.

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A system performance check should be performed before this calibration curve is used. The system performance check is defined in this SOP as the mid-point of the calibration curve. The compounds are checked for adequate recovery.
SPCC Criteria: Acceptable recovery values are 70 - 130%.

7.3.6 If the %RSD of any compound is greater than 30%, the source of the error must be identified, eliminated, and the system re-calibrated.

7.3.6.1 Typical problems associated with non-linear calibrations are: 1) the low calibration point is non-linear, need to increase this concentration; 2) the high calibration point is non-linear, need to decrease the concentration; 3) a middle point is skewing the data, need to prepare new standards; 4) there is a systematic or intermittent problem within the instrument, need to check temperatures and flows, re-tune the MS and re-calibrate.

7.3.7 These curves are verified at the beginning and end of each day's analyses by analyzing calibration verification performance standard. Re-calibration is required only if calibration and on-going performance criteria cannot be met. A standard calibration curve generated by Target's GC/MS system is shown in Table 4.

7.4 GC/MS calibration verification:

7.4.1 Prior to the analysis of samples, analyze 50 ng of the 4-bromofluorobenzene standard following Method 3810. The resultant mass spectra for the BFB must meet all of the criteria given in Table 2 before sample analysis begins. These criteria must be demonstrated each shift as previously defined.

7.4.2 The initial calibration curve for each compound of interest must be checked and verified at the beginning and end of each day's analyses. This is accomplished by analyzing a calibration standard that is at a concentration near the midpoint concentration of the working range of the GC/MS.
Calibration Check Criteria: The midpoint check should result in target analyte concentrations with less than 30% difference from the known values. If the criterion is not met (> 30% drift), for any one analyte, corrective action must be taken unless instructed otherwise by the client.

7.4.1 The internal standard responses and retention times in the check calibration standard must be evaluated immediately after or during data acquisition.
Retention Time Criteria: If the retention time for any internal standard changes by more than 30 seconds from the last calibration check, the chromatographic system must be inspected for malfunctions and corrections must be made, as required.
Area Count Criteria: If the EICP area for any of the internal standards changes by a factor of two (-50% to +100%) from the last daily calibration check standard, the mass spectrometer must be inspected for malfunctions and corrections must be made, as appropriate. When corrections are made, re-analysis of samples analyzed while the system was malfunctioning is necessary.

7.5 GC/MS analysis

7.5.1 It is highly recommended that the extract be screened prior to GC/MS analysis. This will minimize contamination of the GC/MS system from unexpectedly high concentrations of organic compounds. Use of screening is particularly important when this method is used to achieve low detection levels.

7.5.2 All samples and standard solutions must be allowed to warm to ambient temperature before analysis.

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7.5.3 BFB tuning criteria and GC/MS calibration verification criteria must be met before analyzing samples. This can be incorporated into the mid-point beginning of the day check standard.

7.5.4 The process of taking an aliquot destroys the validity of aqueous and soil samples for future analysis; therefore, if there is only one VOA vial, the analyst should prepare a second aliquot for analysis at this time to protect against possible loss of sample integrity. This second sample is maintained only until such time when the analyst has determined that the first sample has been analyzed properly.

7.5.4.2 As previously discussed, prepare the internal standard/surrogate syringe by drawing 10 µL of the 20 ng/µL mixture into a uniquely dedicated 25 µL gastight syringe.

7.5.4.3 Inject this mixture into the sample matrix as previously discussed and load onto the headspace autosampler.

7.5.1 If the initial sample analysis or a dilution of the sample has a concentration of analytes that exceeds the initial calibration range, the sample must be reanalyzed at a higher dilution. Secondary ion quantification is allowed only when there are sample interferences with the primary ion. When a sample is analyzed that has saturated ions from a compound, this analysis must be followed by a blank organic-free reagent water analysis. If the blank analysis is not free of interferences, the system must be decontaminated. Sample analysis may not resume until the blank analysis is demonstrated to be free of interferences.

7.5.6.1 All dilutions should be made to keep the response of the major constituents within the linear range of the curve.

7.6 Qualitative analysis

7.6.1 The qualitative identification of compounds determined by this method is based on retention time, and on comparison of the sample mass spectrum, after background correction, with characteristic ions in a reference mass spectrum. The reference mass spectrum must be generated by the laboratory using the conditions of this method. The characteristic ions from the reference mass spectrum are defined to be the three ions of greatest relative intensity, or any ions over 30% relative intensity if less than three such ions occur in the reference spectrum. Compounds should be identified as present when the criteria below are met:

7.6.1.1 The intensities of the characteristic ions of a compound maximize in the same scan or within one scan of each other. Selection of a peak by a data system target compound search routine where the search is based on the presence of a target chromatographic peak containing ions specific for the target compound at a compound-specific retention time will be accepted as meeting this criterion.

7.6.1.2 The relative retention time (RRT) of the sample component is within +/- 0.06 minutes of the RRT of the standard component.

7.6.1.3 The relative intensities of the characteristic ions agree within 30% of the relative intensities of these ions in the reference spectrum. (Example: For an ion with an abundance of 50% in the reference spectrum, the corresponding abundance in a sample spectrum can range between 20% and 80%.)

7.6.1.4 Structural isomers that produce very similar mass spectra should be identified as individual isomers if they have sufficiently different GC retention times. Sufficient GC resolution is

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achieved if the height of the valley between two isomer peaks is less than 25% of the sum of the two peak heights. Otherwise, structural isomers are identified as isomeric pair.

7.6.1.5 Identification is hampered when sample components are not resolved chromatographically and produce mass spectra containing ions contributed by more than one analyte. When gas chromatographic peaks obviously represent more than one sample component (i.e., a broadened peak with shoulder(s) or a valley between two or more maxima), appropriate selection of analyte spectra and background spectra is important. Examination of extracted ion current profiles of appropriate ions can aid in the selection of spectra, and in qualitative identification of compounds. When analytes co-elute (i.e., only one chromatographic peak is apparent), the identification criteria can be met, but each analyte spectrum will contain extraneous ions contributed by the co-eluting compound.

7.6.1.6 When appropriate, for samples containing components not associated with the calibration standards, a library search may be made for the purpose of tentative identification. The necessity to perform this type of identification will be determined by the type of analysis being conducted. Guidelines for making tentative identification are: Relative intensities of major ions in the reference spectrum (ions > 10% of the most abundant ion) should be present in the sample spectrum. The relative intensities of the major ions should agree within +/- 20%. (Example: For an ion with an abundance of 50% in the standard spectrum, the corresponding sample ion abundance must be between 30 and 70%). Molecular ions present in the reference spectrum should be present in the sample spectrum. Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of co-eluting compounds. Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or co-eluting peaks. Data system library reduction programs can sometimes create these discrepancies. Computer generated library search routines should not use normalization routines that would misrepresent the library or unknown spectra when compared to each other. Only after visual comparison of sample with the nearest library searches will the mass spectral interpretation specialist assign a tentative identification.

7.6.2 Quantitative analysis

7.6.2.1 When a compound has been identified, the quantification of that compound will be based on the integrated abundance from the EICP of the primary characteristic ion. Quantification will take place using the internal standard technique. The internal standard used shall be the one nearest the retention time of that of a given analyte. When MS response is linear and passes through the origin, calculate the concentration of each identified analyte in the sample as follows:

Water Samples

$$C_x \text{ (ng/mL)} = A_x C_{is} / A_{is} V_w RF \text{ where,}$$

A_x = Area of the characteristic ion for the compound being measured.
A_{is} = Area of the characteristic ion for the specific internal standard.
C_{is} = Concentration of the specific internal standard in ng.
RF = Analyte response factor from the initial calibration curve.
Vw = Volume of water analyzed in mL.

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Soil Samples

C_x (ng/g) = $A_xC_{is}/A_{is}W_sRF$ where,

A_x = Area of the characteristic ion for the compound being measured.
A_{is} = Area of the characteristic ion for the specific internal standard.
C_{is} = Concentration of the specific internal standard in ng.
RF = Analyte response factor from the initial calibration curve.
W_s = Weight of the soil in g.

Gas Samples

C_x (ng/mL) = $A_xC_{is}/A_{is}V_sRF$ where,

A_x = Area of the characteristic ion for the compound being measured.
A_{is} = Area of the characteristic ion for the specific internal standard.
C_{is} = Concentration of the specific internal standard in ng.
RF = Analyte response factor from the initial calibration curve.
V_s = Volume of gas in mL.

8.0 QUALITY CONTROL

8.1 Each laboratory that uses this method is required to operate a formal quality control program. The minimum requirements of this program consist of an initial demonstration of laboratory capability and an ongoing analysis of spiked samples to evaluate and document data quality. The laboratory must maintain records to document the quality of data that is generated. On-going data quality checks are compared with established performance criteria to determine if the results of analyses meet the performance characteristics of the method. When results of sample spikes indicate a typical method performance. A quality control check standard must be analyzed to confirm that the measurements were performed in an in-control mode of operation.

8.1.1 The analyst must make an initial, one-time, demonstration of the ability to generate acceptable accuracy and precision with this method. This ability is established by analyzing a blind PE sample while being overseen by the laboratory director. Results of the blind PE sample must agree within specified EPA limits.

8.1.2 In recognition of advances that are occurring in chromatography, the analyst is permitted certain options to improve the separations or lower the cost of measurements. Each time such a modification is made to the method, the analyst is required to repeat the demonstration of ability PE sample analysis.

8.2 *MS Check*: Prior to any sample analyses, the GC/MS system must be tuned to meet the BFB specifications as shown in Table 2 with a 50 ng injection of bromofluorobenzene (BFB) to show that the RF and DC voltages, lens settings and multiplier voltages are optimized for Method 8260 analysis.
Frequency: Every 12 hours or working shift.
Criteria: As listed in Table 2.
Corrective Action: If the bromofluorobenzene check fails QC, the standard must be checked for degradation and re-prepared and analyzed if necessary. It may also be necessary to re-tune the mass spectrometer using the BFI

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Tune function of the system. Analyses cannot proceed until the BFB check has passed the pre-established criteria set forth in Table 2.

8.3 *Calibration Curve*: A calibration curve must be generated and response factors calculated as previously discussed.
Frequency: When a continuing calibration check fails QC or when power is lost to the instrument or prior to a major (> 1 week) work scope or at the client's request.
Criteria: The average response factors calculated must have a percent relative standard deviation ≤ 30%.
Corrective Action: If the response factor %RSD fails QC, the calibration levels must be carefully scrutinized for an outlier. If any one point appears to be an outlier, that concentration should be re-analyzed. If there are no outliers, the standards should be checked for degradation and be re-prepared as needed. The GC and MS components should also be checked for leaks or blocked transfer lines. Heating zones and flow rates should be verified and it may be necessary to re-tune the mass spectrometer using the BFB Tune function of the system.

8.4 *Calibration Verification*: The working calibration curve or must be verified each working day (at the beginning and end of each day) by measurement of the analyte response factor at the mid-point of the initial calibration curve if the sample analysis concentrations are unknown. If the expected sample concentrations are known to be low or high, the CF should be checked at the second or fourth concentrations, respectively.
Frequency: Beginning and end of each day's analyses or every 20 samples.
Criteria: Each analyte response factor must be within 30% difference from the average RF from the initial calibration curve.
Corrective Action: Response factor values differing by more than 30% difference for the low and/or high calibration points from the initial calibration curve indicates the integrity of the standard solution has been compromised or the operating parameters of the instrument have changed over time or preventative maintenance must be performed on the GC and/or detector. The system should be checked and any preventative maintenance required must be performed. After the performance of preventative maintenance, a new calibration curve must be generated. If no preventative maintenance is deemed necessary and if the response factor for any compound varies from the initial calibration curve calibration factor by more than 30%, the test must be repeated using a fresh calibration standard at a second concentration. If any of the analyte RFs calculated from this second point fall outside of the 30% window, a third concentration is used and the three points analyzed are used as a new calibration curve provided the %RSD meets the criteria set forth for initial calibration generation.

8.5 *Method Blank*: Prior to any sample analyses, a method blank analysis must be performed where the system is checked for background contamination. Using analyte free materials (water, soil, or inert gas) analyze a blank sample using the method GC temperature program for the presence/absence of background contaminants in either a soil, water, or gaseous matrix.
Frequency: At the beginning of each day after establishing or verifying the initial calibration curve **and** at a rate of 5%.
Criteria: The method blank must be free of target analyte concentrations below the detection limit of the methodology.
Corrective Action: If background contamination is found, a process of elimination approach must be taken to isolate the source of the contamination. This process of elimination should include the GC column, GC inlet, injection syringe, injection syringe plunger, sample container cap, sample container, and analyte free matrix in that order. Prior to any analyses (calibration or site samples) the system must be found to be free of any outside sources of contamination.

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8.6 *Duplicate Analysis*: Duplicate analyses must be performed at a rate of 5% or once/day (whichever comes first). Duplicate analysis is a second analysis of the same sample matrix using a different aliquot of matrix. It should be understood that soil gas duplicate analyses may actually be replicate analyses if a second sample is not collected at the source that will serve as a separate aliquot of the same sample.
Frequency: Duplicate analyses must be performed at a rate of 5% or once/day (whichever comes first) for each sample matrix.
Criteria: The duplicate analysis should not result in a concentration value that exceeds 30% of the initial measurement.
Corrective Action: If the duplicate analysis results in significantly different analyte concentration values compared to the initial analysis, the instrument must be checked for proper flow rates, syringe penetration, heating of the headspace vials, and detector condition and the experiment must be repeated unless the analyte results are sufficiently close (3x) to the method detection limit for that analyte.

8.7 *Surrogates*: The analyst should monitor both the performance of the analytical system and the effectiveness of the method in dealing with each sample matrix by spiking each sample, standard, and blank with surrogate compounds recommended to encompass the range of the temperature program used in this method. Prepare the surrogate spike at a concentration at the midpoint of the linear range of the instrument for the analyte selected.
Frequency: Surrogates should be spiked into each sample, standard, and blank analyzed.
Criteria: Generic recovery limits for the surrogate have been established at 70 - 130%. Laboratory specific values should be generated after analyzing 20 samples of the given matrix with the surrogate compound injected. Warning and control levels are calculated as follows:

Upper Warning Level: $\rho + 2\sigma$
Lower Warning Level: $\rho - 2\sigma$

Upper Control Level: $\rho + 3\sigma$
Lower Control Level: $\rho - 3\sigma$, where

ρ = the average quantified concentration of the 20 analyses
σ = the standard deviation of the 20 analyses

Corrective Action: If the surrogate fails, the instrument must be checked for proper flow rates, syringe penetration, heating of the headspace vials, and detector condition and the experiment must be repeated. Samples with surrogate recoveries outside of the established limits must be re-analyzed or flagged as estimated on the final data reporting sheet using an H (high) or L (low) flag.

9.0 METHOD PERFORMANCE

9.1 The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero. The MDL actually achieved in a given analysis will vary depending on instrument sensitivity and matrix effects. MDL's determined for this method using Target's GC/MS system are shown in Table 1.

9.2 The practical quantification limit (PQL) is defined as the minimum concentration of a substance that can be measured and reported within the linear range of the calibration curve taking into account all sample dilution

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parameters and sample mass/volume. The PQL's determined for this method using 5 g of soil sample, 10 mL of water sample, or 10 mL of gas sample using Target's GC/MS system are shown in Table 1.

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Table 1. Target Laboratory's Method 8260A Method Detection Limits, Practical Quantitation Limits, Retention Times, and Quantification Ions.

TARGET'S USEPA METHOD 8260A PERFORMANCE CRITERIA								
	Water	Water	Soil	Soil	Gas	Gas		Quantification
Compound	MDL[1]	PQL[2]	MDL	PQL	MDL	PQL	RT[3]	Ion
	(ng/mL)	(ng/mL)	(ng/g)	(ng/g)	(ng/mL)	(ng/mL)	(min.)	(m/z)
Dichlorodifluoromethane	TBD	TBD	TBD	TBD	TBD	2.50	3.43	85
Chloromethane	TBD	TBD	TBD	TBD	TBD	2.50	3.56	50
Vinyl Chloride	TBD	TBD	TBD	TBD	TBD	2.50	3.61	62
Bromomethane	TBD	TBD	TBD	TBD	TBD	2.50	4.08	94
Chloroethane	TBD	TBD	TBD	TBD	TBD	2.50	4.11	64
Trichlorofluoromethane	TBD	TBD	TBD	TBD	TBD	2.50	4.22	101
1,1-Dichloroethene	TBD	TBD	TBD	TBD	TBD	2.50	4.66	96
Methylene Chloride	TBD	TBD	TBD	TBD	TBD	2.50	4.97	84
trans-1,2-Dichloroethene	TBD	TBD	TBD	TBD	TBD	2.50	5.21	96
1,1-Dichloroethane	TBD	TBD	TBD	TBD	TBD	2.50	5.51	63
cis-1,2-Dichloroethene	TBD	TBD	TBD	TBD	TBD	2.50	5.99	96
Chloroform	TBD	TBD	TBD	TBD	TBD	2.50	6.12	83
1,1,1-Trichloroethane	TBD	TBD	TBD	TBD	TBD	2.50	6.47	97
Carbon Tetrachloride	TBD	TBD	TBD	TBD	TBD	2.50	6.74	117
Benzene	TBD	TBD	TBD	TBD	TBD	2.50	6.87	78
1,2-Dichloroethane	TBD	TBD	TBD	TBD	TBD	2.50	6.82	62
Trichloroethylene	TBD	TBD	TBD	TBD	TBD	2.50	7.43	95
1,2-Dichloropropane	TBD	TBD	TBD	TBD	TBD	2.50	7.60	63
Bromodichloromethane	TBD	TBD	TBD	TBD	TBD	2.50	7.85	83
Dibromomethane	TBD	TBD	TBD	TBD	TBD	2.50	7.93	93
cis-1,3-Dichloropropene	TBD	TBD	TBD	TBD	TBD	2.50	8.36	75
Toluene	TBD	TBD	TBD	TBD	TBD	2.50	8.78	92
trans-1,3-Dichloropropene	TBD	TBD	TBD	TBD	TBD	2.50	8.90	75
1,1,2-Trichloroethane	TBD	TBD	TBD	TBD	TBD	2.50	9.12	83
Tetrachloroethylene or PCE	TBD	TBD	TBD	TBD	TBD	2.50	9.59	164
Dibromochloromethane	TBD	TBD	TBD	TBD	TBD	2.50	9.83	129
1,2-Dibromoethane	TBD	TBD	TBD	TBD	TBD	2.50	10.10	107
Chlorobenzene	TBD	TBD	TBD	TBD	TBD	2.50	10.55	112
1,1,1,2-Tetrachloroethane	TBD	TBD	TBD	TBD	TBD	2.50	10.57	131
Ethylbenzene	TBD	TBD	TBD	TBD	TBD	2.50	10.57	91
m&p-Xylene	TBD	TBD	TBD	TBD	TBD	2.50	10.64	106
o-Xylene	TBD	TBD	TBD	TBD	TBD	2.50	11.11	106
Styrene	TBD	TBD	TBD	TBD	TBD	2.50	11.13	104
Isopropylbenzene	TBD	TBD	TBD	TBD	TBD	2.50	11.43	105
Bromoform	TBD	TBD	TBD	TBD	TBD	2.50	11.51	173
1,1,2,2-Tetrachloroethane	TBD	TBD	TBD	TBD	TBD	2.50	11.58	83
1,2,3-Trichloropropane	TBD	TBD	TBD	TBD	TBD	2.50	11.72	95
Bromobenzene	TBD	TBD	TBD	TBD	TBD	2.50	11.89	156
tert-Butylbenzene	TBD	TBD	TBD	TBD	TBD	2.50	12.24	119
sec-Butylbenzene	TBD	TBD	TBD	TBD	TBD	2.50	12.52	119
1,3-Dichlorobenzene	TBD	TBD	TBD	TBD	TBD	2.50	12.65	146
1,4-Dichlorobenzene	TBD	TBD	TBD	TBD	TBD	2.50	12.72	146
1,2-Dichlorobenzene	TBD	TBD	TBD	TBD	TBD	2.50	13.02	146
n-Butylbenzene	TBD	TBD	TBD	TBD	TBD	2.50	12.84	91
1,2,4-Trichlorobenzene	TBD	TBD	TBD	TBD	TBD	2.50	14.25	180
Hexachlorobutadiene	TBD	TBD	TBD	TBD	TBD	2.50	14.33	225
Naphthalene	TBD	TBD	TBD	TBD	TBD	2.50	14.48	128
1,2,3-Trichlorobenzene	TBD	TBD	TBD	TBD	TBD	2.50	14.66	180

[1] MDL: Method detection limit, [2] PQL: Practical quantitation limit, [3] RT: Analyte retention time in minutes

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Table 2. Method 8260A GC/MS BFB Tune Criteria for 50 ng Injection of Bromofluorobenzene.

Bromofluorobenzene GC/MS Tuning Criteria			
Target Mass	Relative to Mass	Lower Limit %	Upper Limit %
50	95	15	40
75	95	30	60
95	95	100	100
96	95	5	9
173	174	0	2
174	95	50	200
175	174	5	9
176	174	95	101
177	176	5	9

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Table 3. Calibration Standards Preparation.

GC/MS Calibration Standards

Stock	Conc. (ng/uL)	Vendor
8260	2000	Ultra Scientific (North Kingstown, RI) Catalog No. DWM-588 Lot No. K0357
	200	1:10 dilution
IS	2000	Ultra Scientific (North Kingstown, RI) Catalog No. STM-341 Lot No. J-0137 A2LA Certification US0182
	200	1:10 dilution
Surrogate	2000	Ultra Scientific (North Kingstown, RI) Catalog No. STM-330 Lot No. J-0195 A2LA Certification US0193
	200	1:10 dilution
SPCC	2000	Ultra Scientific (North Kingstown, RI) Catalog No. CLP-120 Lot No. J-2005
	200	1:10 dilution
CCC	2000	Ultra Scientific (North Kingstown, RI) Catalog No. CLP-110 Lot No. H-0988
	200	1:10 dilution
BFB	2000	Ultra Scientific (North Kingstown, RI) Catalog No. STS-110 Lot No. H-0924 A2LA Certification US0160
	200	10:1 dilution (900 uL MeOH:100uL BFB)
MS/MSD	1000	Ultra Scientific (North Kingstown, RI) Catalog No. CLP-100N Lot No. J-0610 A2LA Certification US0119
	100	10:1 dilution
Methanol	Neat	Fisher Scientific Catalog No. A454-4 Lot No. 963236 opened 11/26/96

Point One	Stock	Injection (uL)	Conc. (ng)	Conc. (ng/uL)	Injection (uL)	Conc. (ng)	Water (mL)
8260	200	25	5000	5	10	50	10
IS	2000	10	20000	20	10	200	10
Surrogate	200	25	5000	5	10	50	10
MeOH		940					
Total Volume		1000					

Point Two	Stock	Injection (uL)	Conc. (ng)	Conc. (ng/uL)	Injection (uL)	Conc. (ng)	Water (mL)
8260	200	50	10000	10	10	100	10
IS	2000	10	20000	20	10	200	10
Surrogate	200	50	10000	10	10	100	10
MeOH		890					
Total Volume		1000					

Table 3. Continued.

Point Three	Stock	Injection (uL)	Conc. (ng)	Conc. (ng/uL)	Injection (uL)	Conc. (ng)	Water (mL)
8260	2000	10	20000	20	10	200	10

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	2000	10	20000	20	10	200	10
Surrogate	2000	10	20000	20	10	200	10
MeOH		970					
Total Volume		1000					

	Stock	Injection (uL)	Conc. (ng)	Conc. (ng/uL)	Injection (uL)	Conc. (ng)	Water (mL)
Point Four							
8260	2000	15	30000	30	10	300	10
IS	2000	10	20000	20	10	200	10
Surrogate	2000	15	30000	30	10	300	10
MeOH		960					
Total Volume		1000					

	Stock	Injection (uL)	Conc. (ng)	Conc. (ng/uL)	Injection (uL)	Conc. (ng)	Water (mL)
Point Five							
8260	2000	20	40000	40	10	400	10
IS	2000	10	20000	20	10	200	10
Surrogate	2000	20	40000	40	10	400	10
MeOH		950					
Total Volume		1000					

	Stock	Injection (uL)	Conc. (ng)	Conc. (ng/uL)	Injection (uL)	Conc. (ng)	Water (mL)
Upper Level							
8260	2000	50	100000	100	10	1000	10
IS	2000	10	20000	20	10	200	10
rrogate	2000	50	100000	100	10	1000	10
MeOH		890					
Total Volume		1000					

	Stock	Injection (uL)	Conc. (ng)	Conc. (ng/uL)	Injection (uL)	Conc. (ng)	Water (mL)
Surrogate							
Surrogate	2000	10	20000	20	10	200	10
IS	2000	10	20000	20	10	200	10
MeOH		980					
Total Volume		1000					

	Stock	Injection (uL)	Conc. (ng)	Conc. (ng/uL)	Injection (uL)	Conc. (ng)	Water (mL)
SPCC							
SPCC	2000	10	20000	20	10	200	10
IS	2000	10	20000	20	10	200	10
BFB	200	25	5000	5	10	50	10
CCC	2000	10	20000	20	10	200	10
MeOH		945					
Total Volume		1000					

	Stock	Injection (uL)	Conc. (ng)	Conc. (ng/uL)	Injection (uL)	Conc. (ng)	Water (mL)
MS/MSD							
MS/MSD	1000	10	10000	10	10	100	10
Surrogate	2000	10	20000	20	10	200	10
IS	2000	10	20000	20	10	200	10
MeOH		970					
tal Volume		1000					

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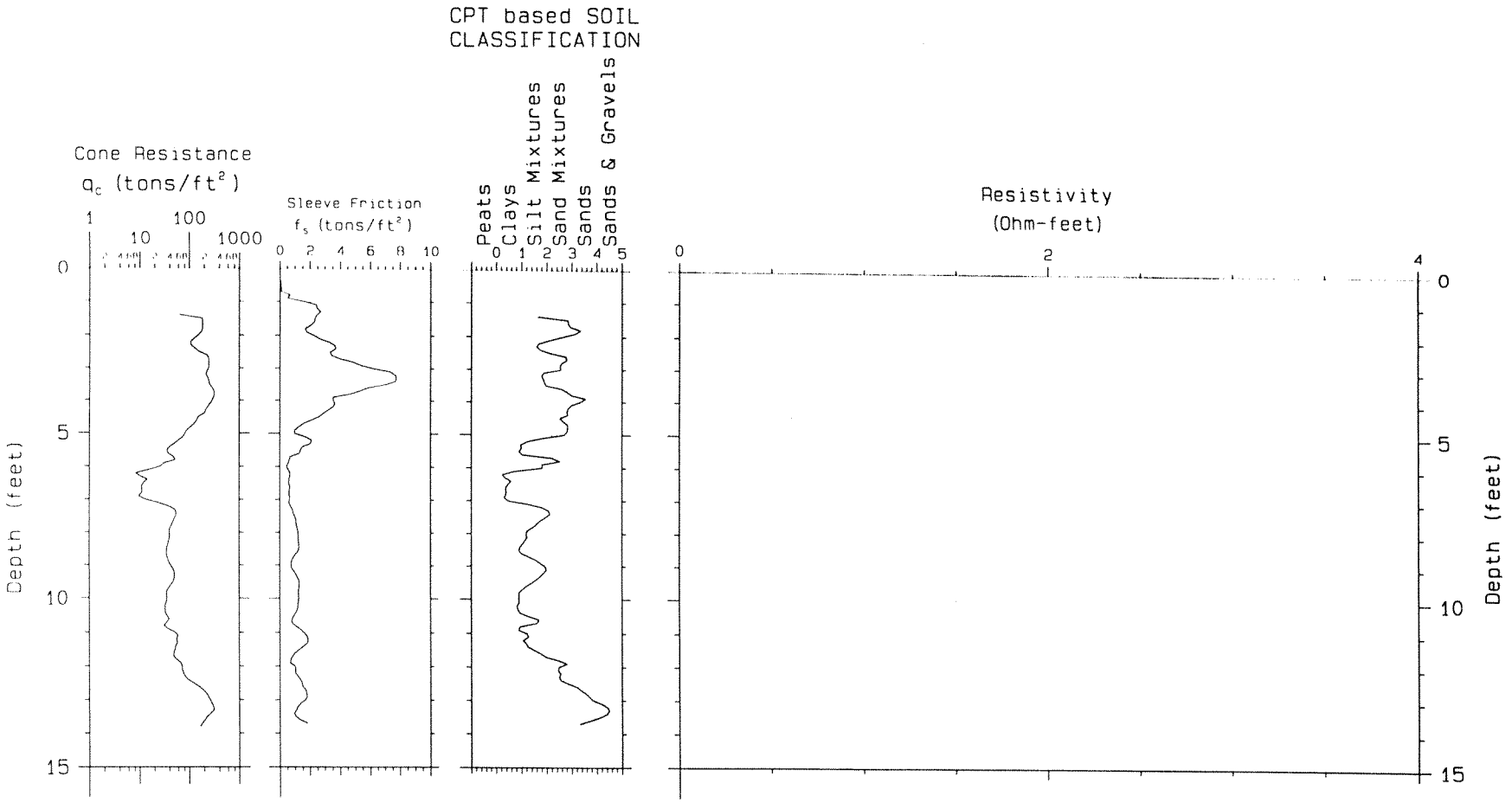
Table 4. Method 8260A Initial Calibration Curve using Target's GC/MS System.

USEPA Method 8260 Initial Calibration

Compound	1	2	3	4	5	Avg	%RSD
1,4-Difluorobenzene				**Internal Standard**			
Dichlorodifluoromethane	0.304	0.302	0.382	0.358	0.375	0.344	11.22
Chloromethane	0.401	0.418	0.478	0.449	0.462	0.442	7.14
Vinyl Chloride	0.344	0.333	0.396	0.363	0.376	0.362	6.91
Bromomethane	0.250	0.243	0.283	0.264	0.268	0.262	5.98
Chloroethane	0.217	0.208	0.247	0.233	0.237	0.228	6.92
Trichlorofluoromethane	0.398	0.361	0.436	0.412	0.426	0.407	7.19
1,1-Dichloroethene	0.290	0.280	0.331	0.314	0.323	0.308	7.12
Methylene Chloride	0.288	0.282	0.325	0.304	0.309	0.301	5.71
trans-1,2-Dichloroethene	0.323	0.312	0.365	0.343	0.351	0.339	6.23
1,1-Dichloroethane	0.562	0.548	0.635	0.597	0.610	0.590	6.01
cis-1,2-Dichloroethene	0.322	0.320	0.370	0.347	0.353	0.342	6.27
Chloroform	0.826	0.697	0.695	0.614	0.609	0.688	12.73
1,1,1-Trichloroethane	0.299	0.293	0.348	0.326	0.333	0.320	7.24
Carbon Tetrachloride	0.472	0.447	0.517	0.485	0.496	0.483	5.41
1,1-Dichloroethane-d_4	0.421	0.398	0.470	0.441	0.453	0.437	6.46
Benzene	1.254	1.209	1.399	1.302	1.324	1.298	5.56
1,2-Dichloroethane	0.278	0.274	0.313	0.283	0.284	0.286	5.30
Chlorobenzene-d_5				**Internal Standard**			
Trichloroethylene	0.430	0.403	0.393	0.391	0.392	0.402	4.12
1,2-Dichloropropane	0.384	0.368	0.354	0.350	0.347	0.361	4.22
Bromodichloromethane	0.476	0.437	0.413	0.406	0.406	0.427	6.99
Dibromomethane	0.161	0.154	0.148	0.144	0.141	0.149	5.44
cis-1,3-Dichloropropene	0.507	0.483	0.462	0.453	0.449	0.471	5.17
Toluene-d_8	1.434	1.308	1.305	1.298	1.311	1.331	4.35
Toluene	1.037	0.962	0.929	0.924	0.922	0.955	5.10
trans-1,3-Dichloropropene	0.375	0.354	0.339	0.326	0.321	0.343	6.35
1,1,2-Trichloroethane	0.181	0.173	0.162	0.155	0.155	0.165	6.94
Tetrachloroethylene or PCE	0.591	0.549	0.537	0.538	0.545	0.552	4.08
Dibromochloromethane	0.287	0.281	0.272	0.265	0.263	0.274	3.80
1,2-Dibromoethane	0.218	0.204	0.195	0.187	0.185	0.198	6.74
1,4-Dichlorobenzene-d_4				**Internal Standard**			
Chlorobenzene	1.723	1.634	1.579	1.611	1.597	1.629	3.46
1,1,1,2-Tetrachloroethane	0.556	0.540	0.513	0.532	0.521	0.533	3.13
Ethylbenzene	0.914	0.870	0.847	0.866	0.846	0.869	3.21
m&p-Xylene	1.175	1.081	1.037	1.060	1.031	1.077	5.44
o-Xylene	1.062	1.028	0.989	1.026	1.004	1.022	2.72
Styrene	1.750	1.740	1.685	1.735	1.697	1.722	1.66
Isopropylbenzene	2.675	2.529	2.469	2.561	2.521	2.551	3.01
Bromoform	0.357	0.356	0.347	0.350	0.347	0.351	1.42
1,1,2,2-Tetrachloroethane	0.322	0.305	0.280	0.279	0.275	0.292	6.96
Bromofluorobenzene	0.771	0.725	0.715	0.739	0.724	0.735	2.98
1,2,3-Trichloropropane	0.225	0.223	0.205	0.201	0.196	0.210	6.40
Bromobenzene	0.901	0.882	0.855	0.881	0.867	0.877	1.94
tert-Butylbenzene	2.187	2.053	1.956	2.080	2.034	2.062	4.06
sec-Butylbenzene	2.749	2.570	2.459	2.575	2.551	2.581	4.08
1,3-Dichlorobenzene	1.603	1.550	1.496	1.547	1.538	1.547	2.47
1,4-Dichlorobenzene	1.590	1.548	1.465	1.517	1.504	1.525	3.08
1,2-Dichlorobenzene	1.296	1.283	1.210	1.243	1.247	1.256	2.74
n-Butylbenzene	2.620	2.444	2.342	2.443	2.408	2.452	4.20
1,2,4-Trichlorobenzene	1.230	1.151	1.004	1.022	1.051	1.092	8.79
Hexachlorobutadiene	0.756	0.678	0.613	0.659	0.687	0.679	7.65
Naphthalene	1.067	0.971	0.857	0.840	0.861	0.919	10.62
1,2,3-Trichlorobenzene	0.949	0.874	0.787	0.783	0.808	0.840	8.42

Appendix D
Soil Classification Logs



CPT: SLF05

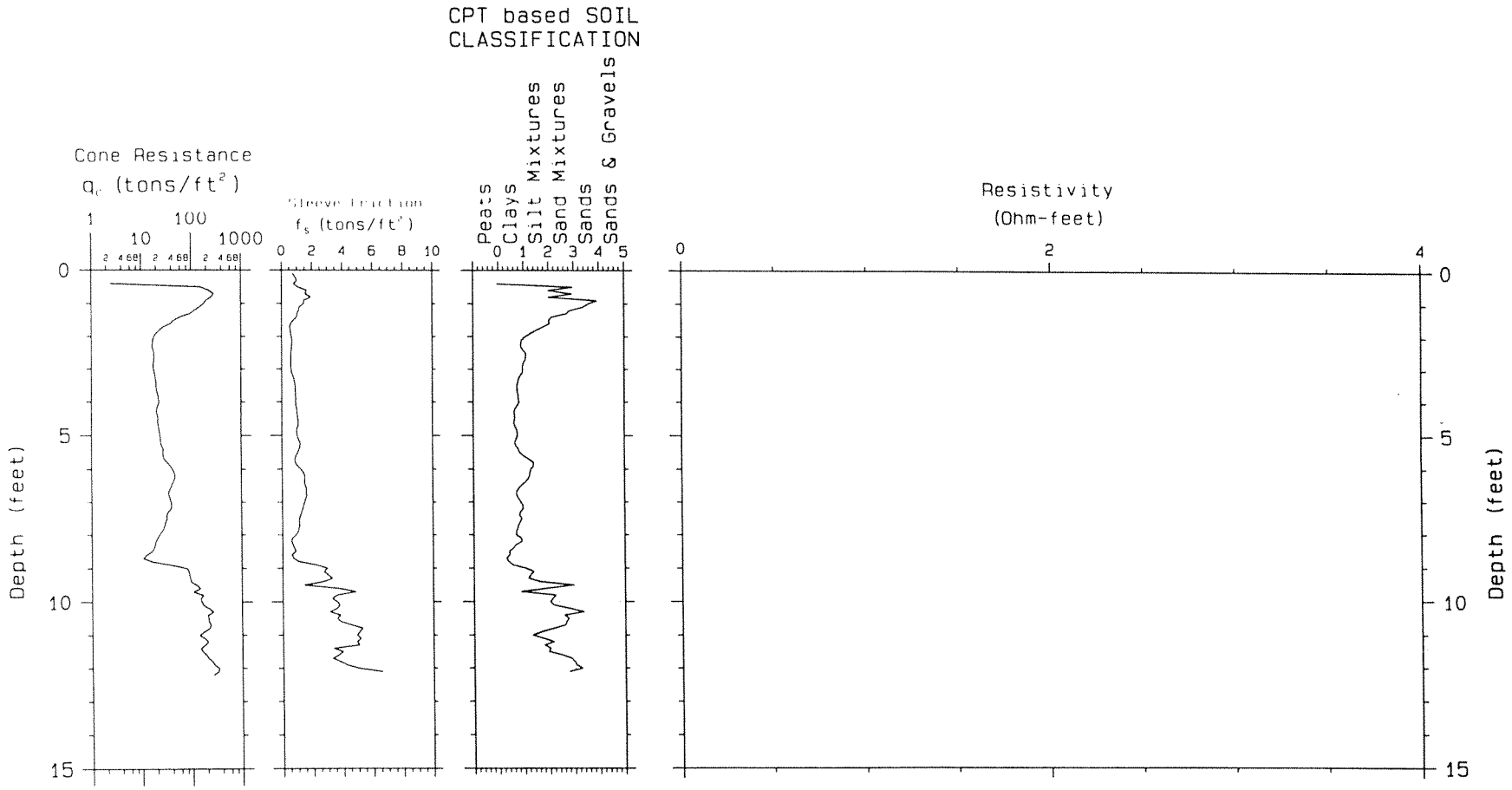
Project: LAREDO FUDS-SANITARY LANDFILL

STATE COORDINATES:

EASTING (ft.)	NORTHING (ft.)	ELEVATION (ft.)
0	0	0

03227

03228

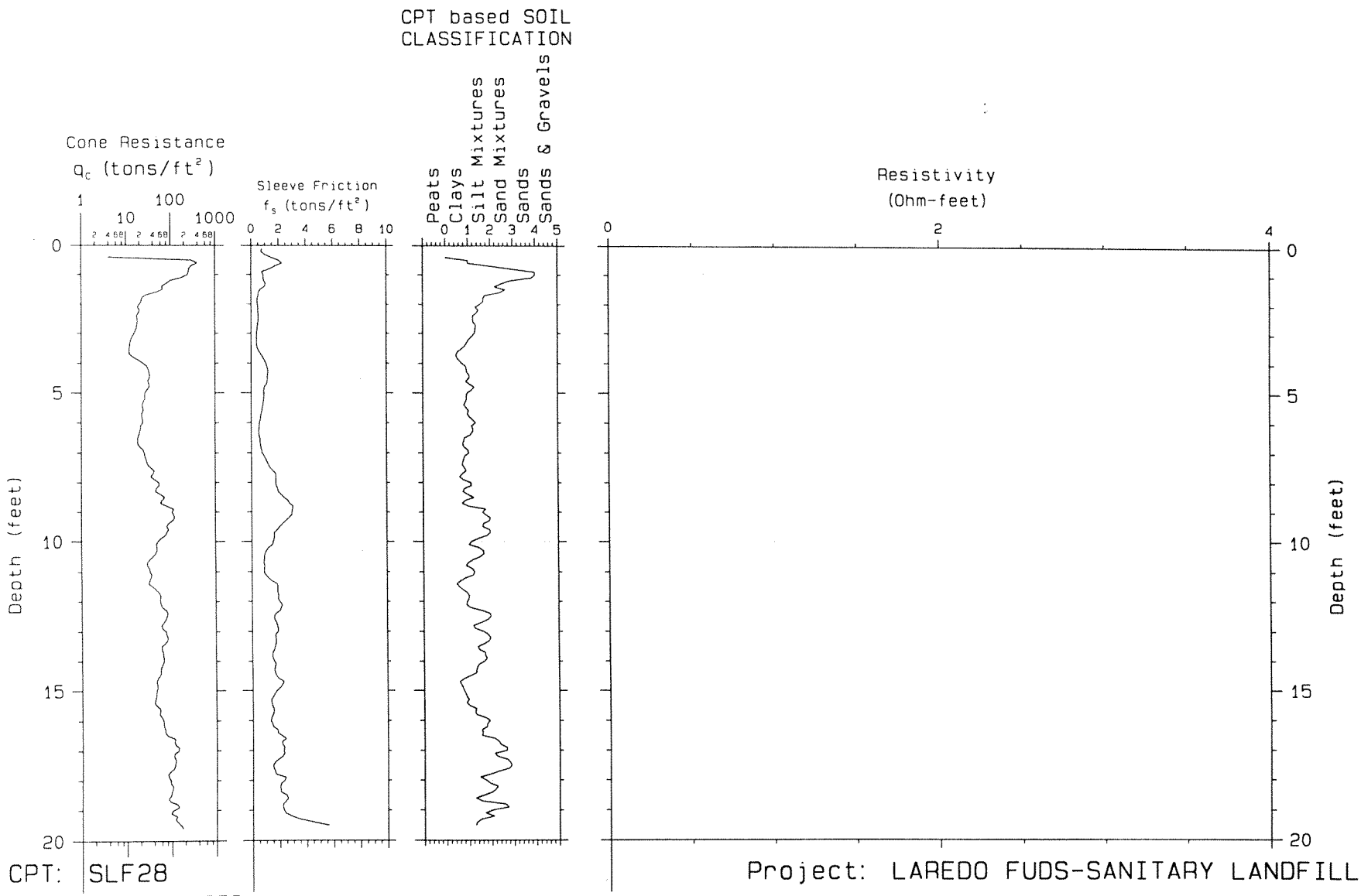


CPT: SLF14

Project: LAREDO FUDS-SANITARY LANDFILL

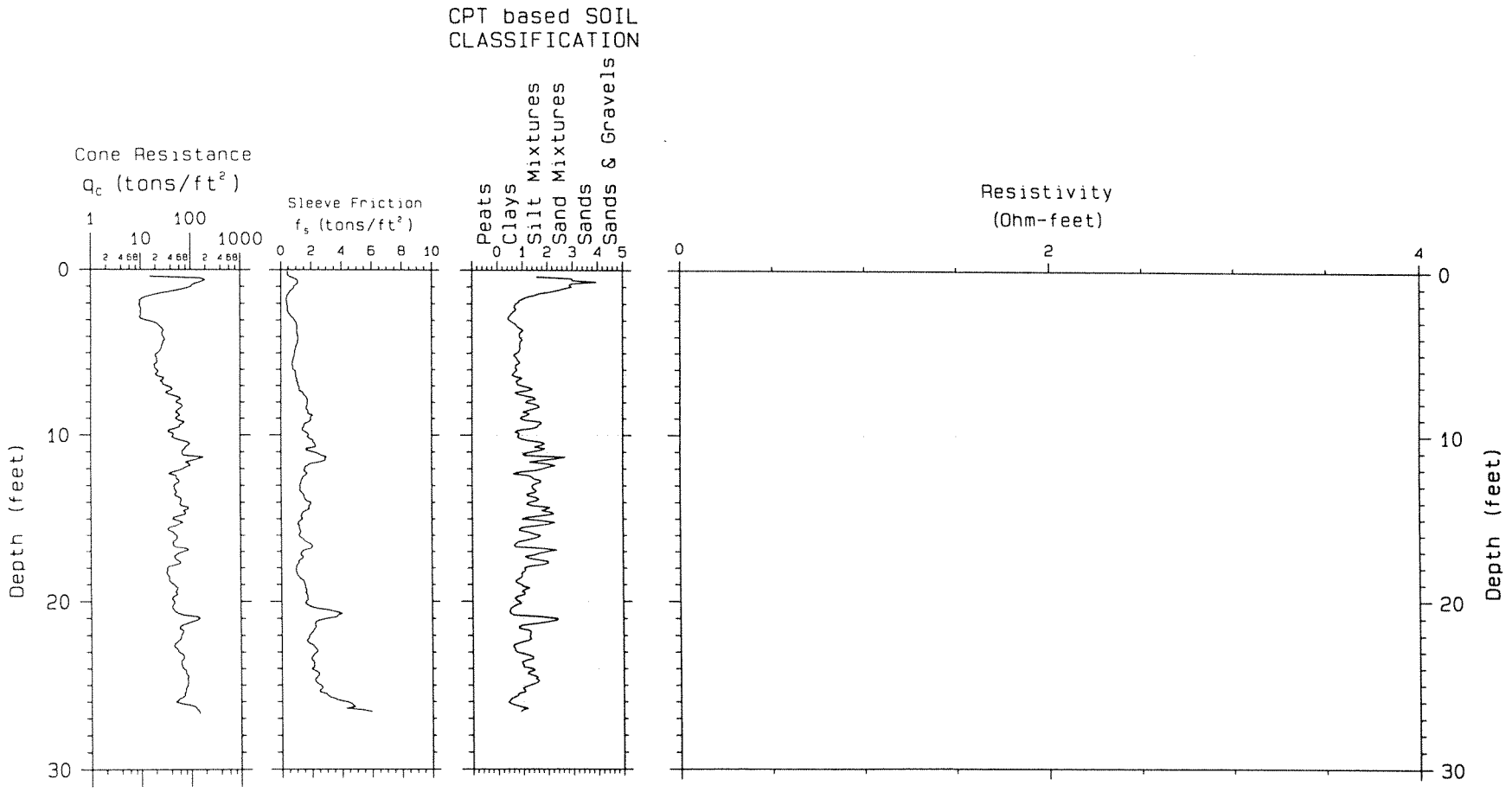
STATE COORDINATES:

EASTING (ft.)	NORTHING (ft.)	ELEVATION (ft.)
0	0	0


CPT based SOIL CLASSIFICATION
Cone Resistance
q_c (tons/ft^2)
1
10
100
1000
Sleeve Friction
f_s (tons/ft^2)
0 2 4 6 8 10
Peats
Clays
Silt Mixtures
Sand Mixtures
Sands
Sands & Gravels
0 1 2 3 4 5
Resistivity
(Ohm-feet)
0 2 4
Depth (feet)
0 5 10 15 20
CPT: SLF28
STATE COORDINATES:
EASTING (ft.)
0
NORTHING (ft.)
0
ELEVATION (ft.)
0
Project: LAREDO FUDS-SANITARY LANDFILL

03229

03230

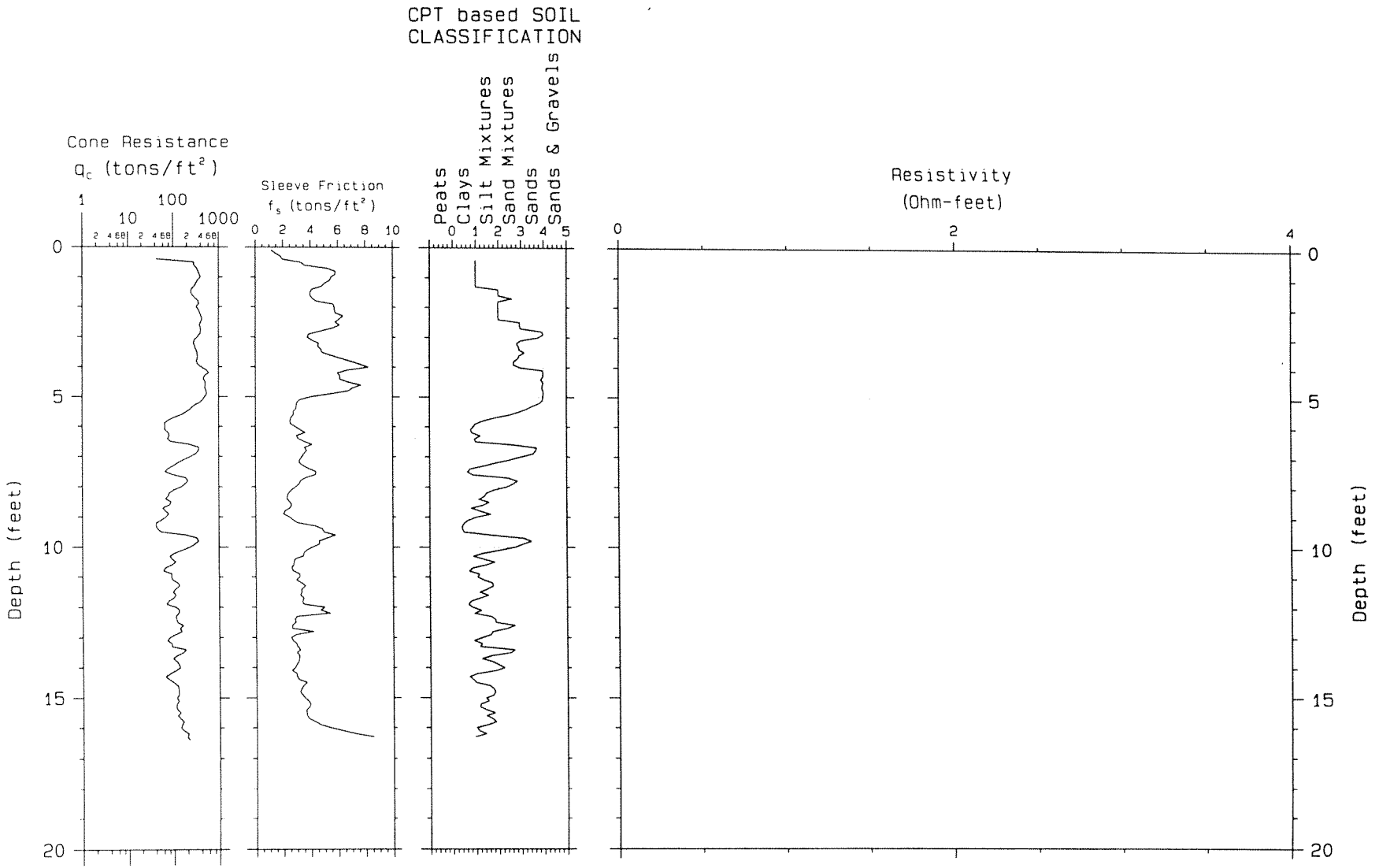


CPT: SLF30

Project: LAREDO FUDS-SANITARY LANDFILL

STATE COORDINATES:

EASTING (ft.)	NORTHING (ft.)	ELEVATION (ft.)
0	0	0



CPT: SLF31

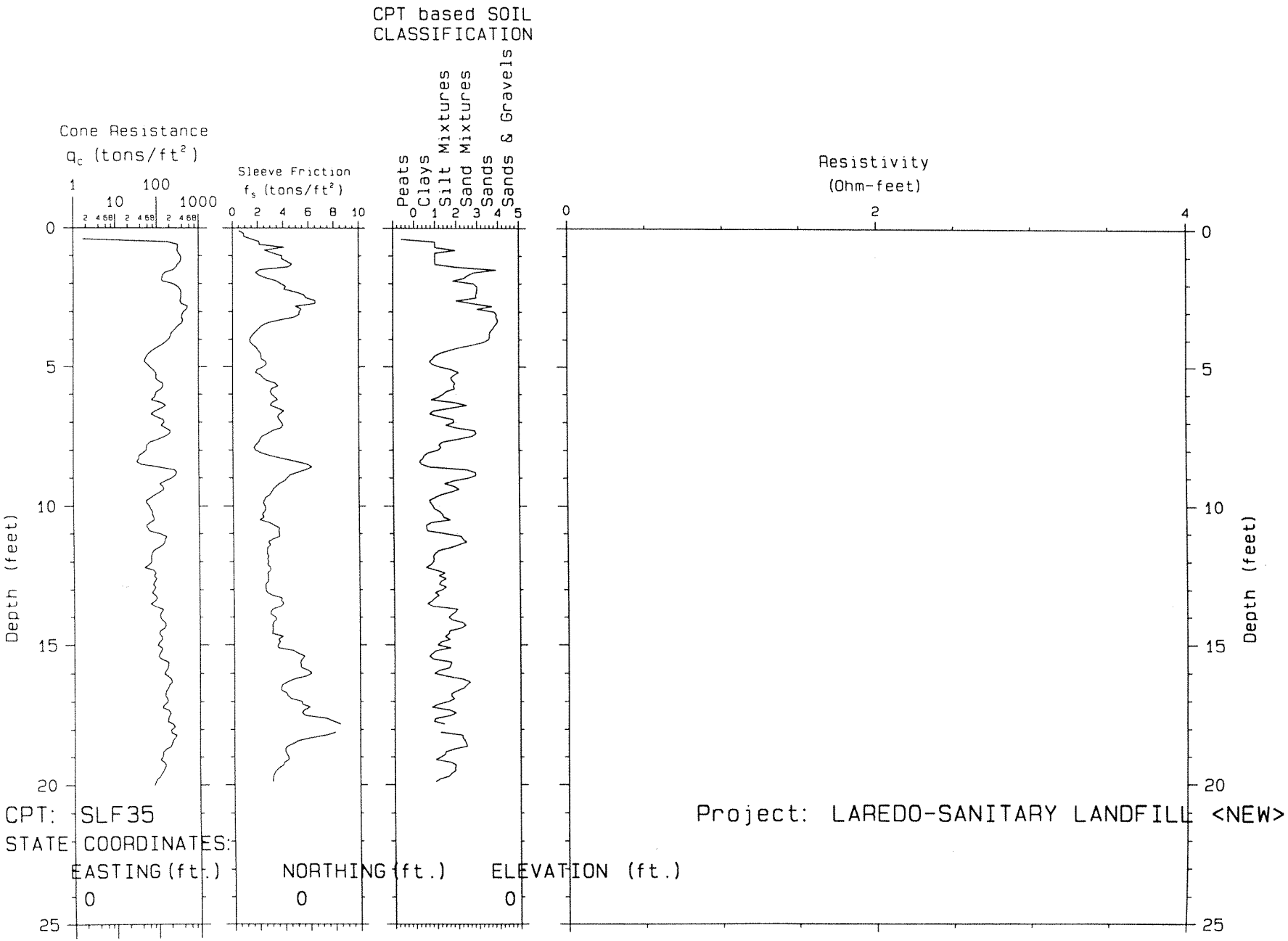
Project: LAREDO FUDS-SANITARY LANDFILL

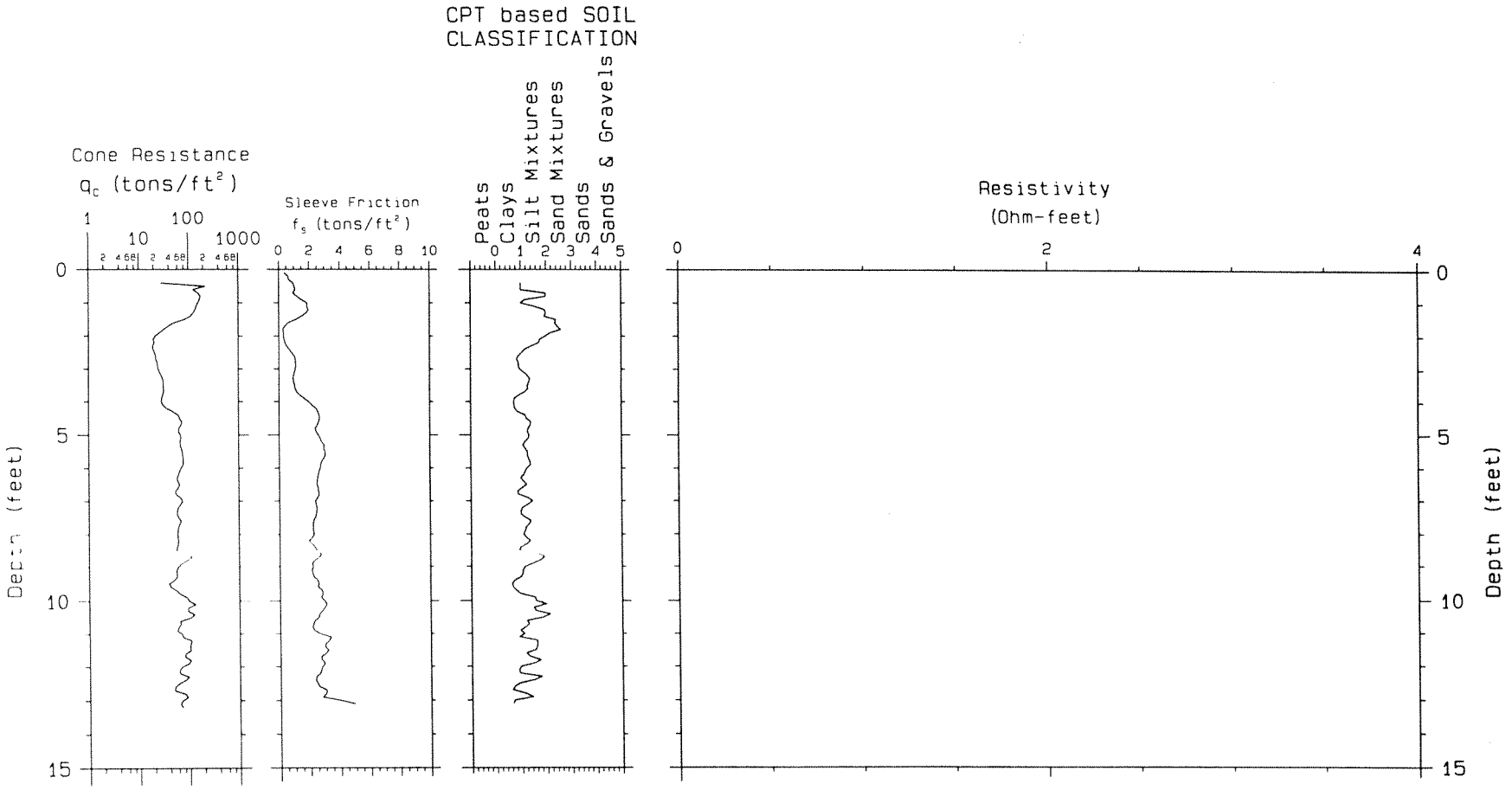
STATE COORDINATES:

EASTING (ft.)	NORTHING (ft.)	ELEVATION (ft.)
0	0	0

03231

03232


CPT based SOIL CLASSIFICATION
Peats
Clays
Silt Mixtures
Sand Mixtures
Sands
Sands & Gravels
Cone Resistance
q_c (tons/ft^2)
1
10
100
1000
Sleeve Friction
f_s (tons/ft^2)
Resistivity
(Ohm-feet)
Depth (feet)
CPT: SLF35
STATE COORDINATES:
EASTING (ft.)
0
NORTHING (ft.)
0
ELEVATION (ft.)
0
Project: LAREDO-SANITARY LANDFILL <NEW>



CPT: SLF47

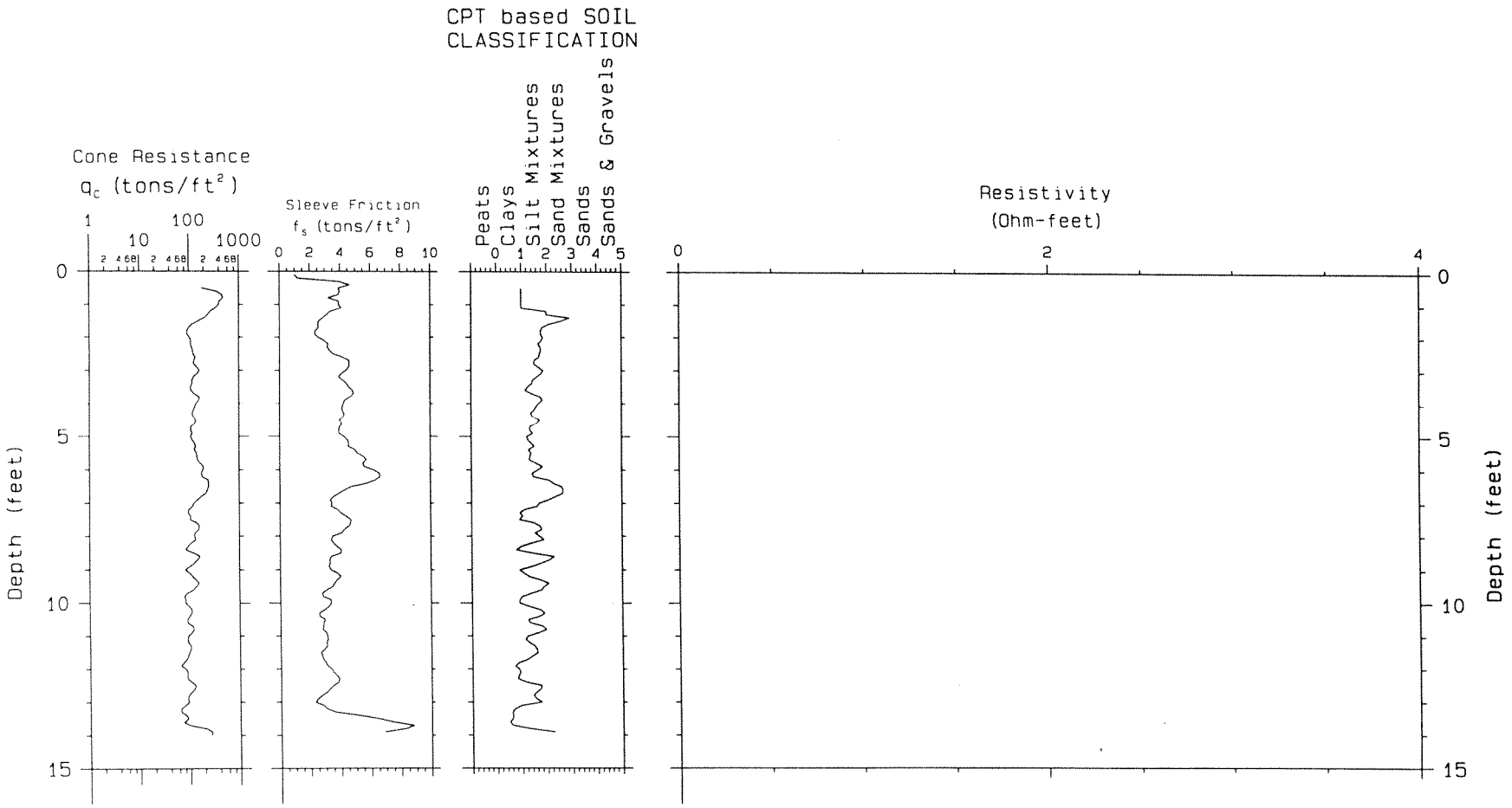
Project: LAREDO FUDS-SANITARY LANDFILL

STATE COORDINATES:

EASTING (ft.)	NORTHING (ft.)	ELEVATION (ft.)
0	0	0

032333

03234

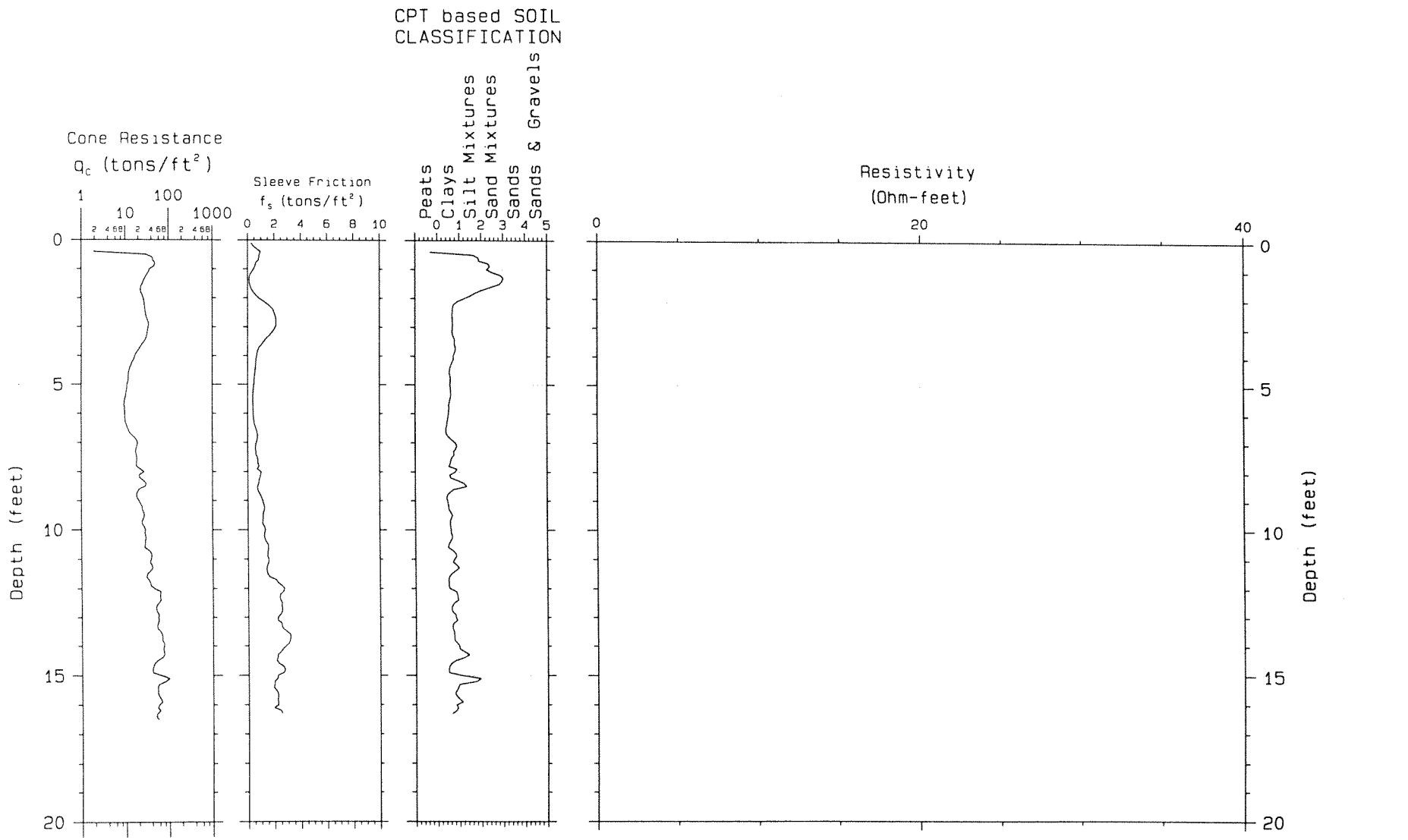


CPT: SLF48

Project: LAREDO FUDS-SANITARY LANDFILL

STATE COORDINATES:

EASTING (ft.)	NORTHING (ft.)	ELEVATION (ft.)
0	0	0



CPT: SLF49

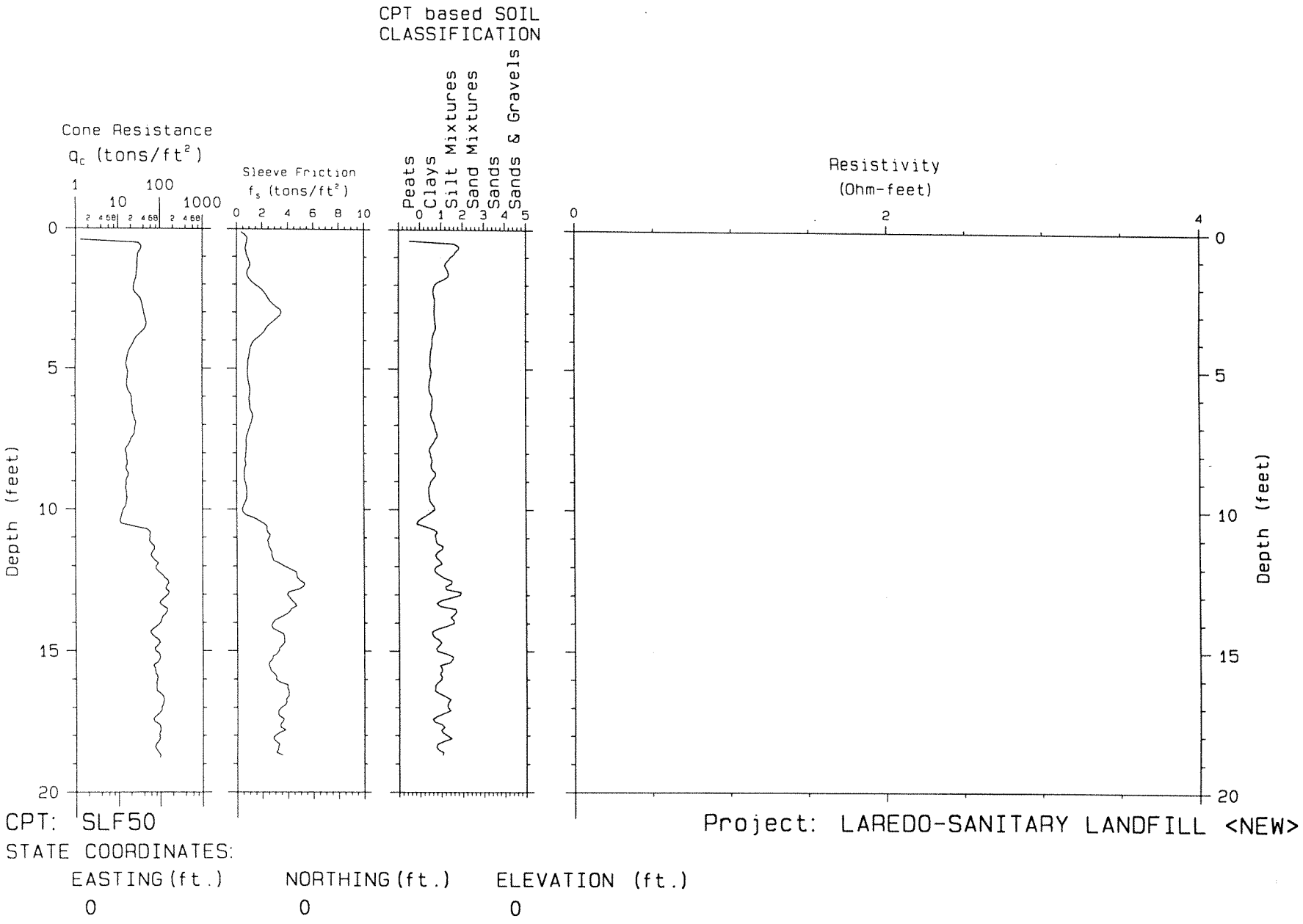
Project: Laredo FUDS-Sanitary Landfill <NEW

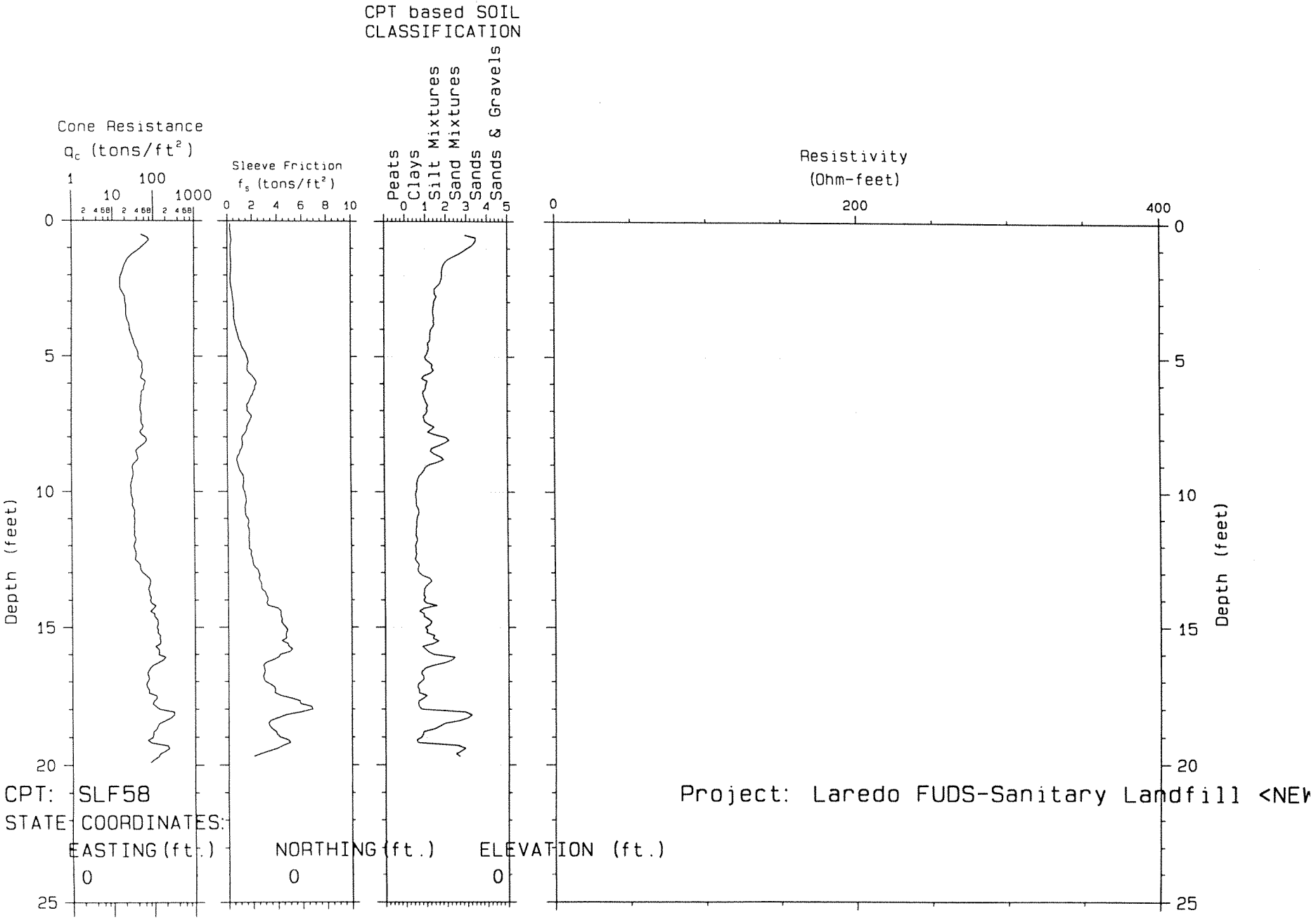
STATE COORDINATES:

EASTING (ft.)	NORTHING (ft.)	ELEVATION (ft.)
0	0	0

03235

03236


CPT based SOIL CLASSIFICATION
Cone Resistance
q_c (tons/ft^2)
1
10
100
1000
Sleeve Friction
f_s (tons/ft^2)
0 2 4 6 8 10
Peats
Clays
Silt Mixtures
Sand Mixtures
Sands
Sands & Gravels
0 1 2 3 4 5
Resistivity
(Ohm-feet)
0 2 4
Depth (feet)
0 5 10 15 20
CPT: SLF50
STATE COORDINATES:
EASTING (ft.)
NORTHING (ft.)
ELEVATION (ft.)
0
0
0
Project: LAREDO-SANITARY LANDFILL <NEW>


CPT based SOIL CLASSIFICATION
Cone Resistance
q_c (tons/ft^2)
1
10
100
1000
Sleeve Friction
f_s (tons/ft^2)
0 2 4 6 8 10
Peats
Clays
Silt Mixtures
Sand Mixtures
Sands
Sands & Gravels
0 1 2 3 4 5
Resistivity
(Ohm-feet)
0
200
400
Depth (feet)
0
5
10
15
20
25
CPT: SLF58
STATE COORDINATES:
EASTING (ft.)
0
NORTHING (ft.)
0
ELEVATION (ft.)
0
Project: Laredo FUDS-Sanitary Landfill <NEW

03237

Appendix E
GPS Survey Data

GPS Survey Data
Sanitary Landfill Area
Former Laredo Air Force Base, Laredo, Texas

Location	Northing	Easting	Elevation	Type
2001	17089580.09	666406.69	449.773	sg
2002	17089777.4	666440.207	451.44	sg
1008	17089868.22	666452.379	451.557	sb
2003	17089974.42	666473.421	452.17	sg
1006	17090120.21	666503.066	452.572	sb
2004	17090174.19	666501.572	452.707	sg
1004	17090316.37	666533.347	452.604	sb
2005	17090372.25	666541.067	452.637	sg
1002	17090511.21	666496.238	452.443	sb
1001	17090556.52	666407.166	452.173	sb
2006	17090400.45	666340.94	452.836	sg
1003	17090266.24	666362.318	452.623	sb
2007	17090200.78	666310.088	452.483	sg
1005	17090104.51	666337.223	452.672	sb
2008	17089999.21	666286.094	452.831	sg
1007	17089880.86	666285.229	452.893	sb
2009	17089807.43	666241.5	452.716	sg
2010	17089611.29	666199.976	450.351	sg
2011	17089468.98	666592.366	450.113	sg
2012	17089526.41	666602.393	450.287	sg
2013	17089623.88	666620.305	450.488	sg
1038	17089729.65	666638.069	450.984	sb
2014	17089732.81	666639.837	450.84	sg
2015	17089831.22	666657.179	451.087	sg
2016	17089917.41	666673.895	451.231	sg
2017	17090025.27	666692.45	451.545	sg
2018	17090112.23	666708.752	451.812	sg
2019	17090211.87	666726.626	452.028	sg
2020	17090397.88	666759.374	452.686	sg
2021	17090373.89	666844.568	453.491	sg
2022	17090353.74	666942.681	454.006	sg
2023	17090335.49	667041.897	454.674	sg
1015	17090333.98	667118.812	454.35	sb
2024	17090318.02	667138.694	454.615	sg
2025	17090299.42	667238.408	454.873	sg
1009	17090416.59	666980.026	454.527	sb
1021	17090274.4	667287.089	454.852	sb
1022	17090170.18	667266.482	455.182	sb
2026	17090134.57	667246.778	454.126	sg
2027	17090034.99	667228.941	454.099	sg
2028	17089935.43	667210.897	455.256	sg
2029	17089841.9	667194.393	455.651	sg
2030	17089739.5	667175.348	456.238	sg
2031	17089630.07	667157.155	457.074	sg
2032	17089542.16	667139.991	456.992	sg
2033	17089448.76	667120.962	456.923	sg
1020	17089392.5	667104.92	457.002	sb

GPS Survey Data
Sanitary Landfill Area
Former Laredo Air Force Base, Laredo, Texas

Location	Northing	Easting	Elevation	Type
1018	17089748.31	667096.274	454.121	sb
1019	17089670.07	667123.673	454.966	sb
2035	17089754.9	667078.492	453.786	sg
1017	17090048.3	667143.569	452.679	sb
1016	17090249.04	667151.488	453.566	sb
1010	17090317.09	666861.922	453.158	sb
1011	17090096.54	666818.695	451.954	sb
1012	17089951.72	666804.357	451.418	sb
2036	17089244.08	667098.466	457.153	sg
2037	17089142.31	667103.503	458.27	sg
1014	17089145.5	666562.026	450.676	sb
2038	17089100.93	666720.299	452.312	sg
2039	17089084.46	666810.158	453.702	sg
2040	17089066.71	666909.118	455.243	sg
2041	17089050.15	667005.71	456.932	sg
2042	17089030.4	667115.564	458.601	sg
2043	17089013.84	667204.473	460.263	sg
2044	17088996.55	667302.792	461.986	sg
1030	17089000.74	667370.007	463.431	sb
2045	17088978.23	667401.435	464.052	sg
2046	17088961.93	667491.666	465.952	sg
2047	17088946.18	667580.214	468.199	sg
2048	17088924.28	667699.151	471.223	sg
2049	17088907.39	667797.836	474.236	sg
2050	17088890.11	667894.18	476.956	sg
2051	17088870.99	667993.998	479.805	sg
2052	17088855.18	668093.697	482.904	sg
2053	17089047.97	668214.565	485.482	sg
2054	17089349.26	666961.259	454.614	sg
2055	17089368.87	666863.302	453.142	sg
2056	17089385.98	666765.947	451.901	sg
2057	17089403.04	666669.395	450.79	sg
1013	17089502.48	666661.066	451.438	sb
2058	17089250.54	666554.482	450.597	sg
2059	17089340.17	666570.623	450.449	sg
2060	17090291.61	667336.565	454.788	sg
2061	17090260.83	667431.02	455.035	sg
1023	17090218.18	667452.351	457.172	sb
1024	17090153.53	667439.279	457.541	sb
2062	17090231.49	667525.337	455.32	sg
2063	17090234.42	667635.3	456.553	sg
2064	17090216.8	667741.37	457.468	sg
1026	17090241.96	667578.521	455.95	sb
1025	17090194.19	667755.222	457.762	sb
1045	17090060.1	668510.344	468.462	sb
2065	17090074.57	668530.281	468.797	sg
2066	17090091.63	668428.556	467.364	sg

GPS Survey Data
Sanitary Landfill Area
Former Laredo Air Force Base, Laredo, Texas

Location	Northing	Easting	Elevation	Type
2067	17090090.77	668317.232	466.059	sg
1044	17090089.14	668331.798	466.292	sb
2068	17090108.06	668219.134	464.701	sg
1039	17090131.1	668208.853	464.515	sb
2069	17090143.31	668135.839	463.515	sg
2070	17090166.89	668015.487	461.563	sg
2071	17090179.81	667943.38	460.459	sg
1036	17090185.65	667905.384	459.724	sb
2072	17090200.51	667823.43	458.717	sg
2074	17089969.9	667391.759	456.38	sg
2075	17089883.36	667877.486	464.718	sg
2076	17089846.67	668083.655	469.023	sg
1042	17089846.55	668094.816	469.401	sb
2077	17089831.01	668171.345	470.739	sg
2078	17089778.24	668582.703	475.46	sg
2079	17089796.35	668475.655	474.325	sg
2080	17089813.73	668387.596	473.338	sg
2081	17089834.44	668273.565	472.162	sg
2082	17089885.31	667980.383	467.052	sg
1043	17089885.65	667972.028	466.844	sb
2083	17089920.36	667788.735	461.339	sg
2084	17089939.9	667684.914	458.836	sg
2085	17090091.18	667663.638	457.727	sg
2086	17089957.71	667584.563	457.771	sg
1028	17089956.01	667586.146	457.708	sb
1027	17089968.81	667514.601	457.165	sb
2087	17089974.99	667485.668	456.827	sg
98	17090611.89	670129.965	489.681	cp
1047	17089686.22	668335.999	476.519	sb
2088	17089735.82	668346.807	474.482	sg
1046	17089937.07	668382.901	470.111	sb
2089	17089937.45	668362.223	470.061	sg
2090	17089636.97	668329.772	478.015	sg
2091	17089536.5	668311.55	480.242	sg
1034	17089458.25	667904.689	473.018	sb
1033	17089480.81	667786.186	469.668	sb
1033A	17089493.9	667726.051	467.985	sb
1031	17089692.43	667704.672	463.44	sb
1032	17089687.97	667619.69	461.227	sb
1037	17089265.22	667895.454	476.274	sb
1035	17089313.99	667630.528	467.278	sb
1048	17089273.03	668262.39	484.212	sb
1053	17089548.04	668671.673	479.938	sb
1052	17089693.13	668677.742	477.636	sb
2092	17089756.24	668689.375	476.734	sg
2093	17089869.54	668700.4	474.262	sg
1050	17089927.93	668700.36	473.274	sb

GPS Survey Data
Sanitary Landfill Area
Former Laredo Air Force Base, Laredo, Texas

Location	Northing	Easting	Elevation	Type
2094	17089982.45	668708.274	472.686	sg
1049	17090044.47	668661.954	471.889	sb
2095	17090039.85	668627.641	472.413	sg
1051	17089784.67	668693.515	476.007	sb
1054	17089802.99	668833.15	475.851	sb
2096	17089817.49	668872.29	476.233	sg
1055	17089776.08	668969.359	477.488	sb
1057	17089791.19	669120.978	478.166	sb
2097	17089793.23	669086.156	477.731	sg
1059	17089700.98	669206.564	479.7	sb
1058	17089627.3	669134.033	479.381	sb
2098	17089689.36	669055.97	478.909	sg
1056	17089635.51	668989.251	479.104	sb
2099	17089713.85	668863.941	479.167	sg
1029	17089896.58	667587.973	459.068	sb
2100	17089523.71	668528.905	481.338	sg
2101	17089562.01	668435.13	480.902	sg
2102	17089367.58	668309.36	483.759	sg
2103	17089354.53	668498.289	484.816	sg
2104	17089372.07	668401.438	484.582	sg
2105	17089409.66	668202.005	481.359	sg
2106	17088802.88	668196.81	485.981	sg
2107	17088943.72	668203.552	485.638	sg
2108	17089043.53	668221.4	485.529	sg
2109	17089075.82	668334.325	487.426	sg
2110	17089054.41	668461.314	488.317	sg
2111	17089111.57	668248.457	485.429	sg
2112	17089241.75	668257.244	484.288	sg
2113	17089339.24	668275.209	483.812	sg
2114	17089427.37	668102.793	478.379	sg
2115	17089444.17	668005.133	475.766	sg
2116	17089461.1	667907.087	473.008	sg
2117	17089478.83	667806.777	470.164	sg
2118	17089551	667410.612	459.598	sg
2119	17089566.9	667311.254	457.912	sg
2120	17089515.97	667495.037	461.928	sg
2121	17089479.27	667693.688	467.11	sg
2122	17089513.85	667607.618	465.008	sg
2123	17089665.93	667746.624	464.625	sg
2124	17089270.74	667872.016	475.676	sg
2125	17089173.5	667782	474.383	sg
2126	17089209.63	667552.648	466.332	sg
2127	17089324.78	667572.475	465.388	sg
2128	17089344.7	667461.356	462.361	sg
2129	17089253.24	667326.125	459.75	sg
2130	17089435.06	667328.106	458.675	sg
2131	17089339.58	667378.982	460.025	sg

GPS Survey Data
Sanitary Landfill Area
Former Laredo Air Force Base, Laredo, Texas

Location	Northing	Easting	Elevation	Type
2132	17089287.89	667669.037	468.596	sg
2133	17089286.21	667769.571	472.689	sg
2134	17089234.33	667963.509	478.069	sg
2135	17089124.95	668010.542	480.253	sg
2136	17089303.74	668074.64	479.868	sg
2137	17089521.62	668112.945	477.337	sg
2138	17089629.08	668059.256	474.725	sg
2139	17089647.43	667958.12	471.463	sg
2140	17089664.24	667860.758	468.395	sg
2141	17089704.19	667637.613	461.587	sg
2142	17089717.89	667564.189	460.148	sg
2143	17089741.31	667443.893	457.66	sg
2144	17089682.71	667372.244	457.045	sg
2145	17089953.18	667086.03	452.884	sg
2146	17090152.35	667118.692	452.907	sg
2147	17090188.82	666916.004	452.759	sg
2148	17089992.13	666883.745	451.676	sg
2149	17089794.53	666851.766	451.912	sg
2150	17089865.48	667065.61	452.656	sg
2151	17089763.25	667047.086	453.254	sg
2152	17089680.52	667032.634	453.669	sg

types: sg = soil gas location
sb = soil boring/groundwater sampling location
cp = cone penetrometer boring location
note: 2000 series numbers are soil gas locations
1000 series numbers are soil boring locations
0000 series numbers are cone penetrometer locations

Appendix F
Data Validation Report and Analytical Data

Appendix F
Data Validation Report
and Analytical Data
Provided Under Separate Cover