UPDATED REPORT OF WASTE DISCHARGE AND ENGINEERING FEASIBILITY STUDY
POWAY LANDFILL
POWAY, CALIFORNIA

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1. INTRODUCTION

1.1 Terms of Reference

This Updated Report of Waste Discharge (ROWD) and Engineering Feasibility Study (EFS) was prepared to establish a Corrective Action Program (CAP) for the Poway Landfill, located in Poway, California (the site). In January 2004, the County of San Diego, Department of Public Works, Landfill Management (the County) implemented a Phase II Evaluation Monitoring Program (EMP) in response to waste constituents detected in groundwater samples collected from site monitor wells. This report was prepared by GeoSyntec Consultants (GeoSyntec) for the County in accordance with California Code of Regulations (CCR) Title 27 § 20425 established by the California Regional Water Quality Control Board (RWQCB). This report was prepared by Mr. Sean McClain and was reviewed by Mr. Veryl Wittig, P.G., C.Hg., and Mr. Sam Williams, P.G., C.Hg., in accordance with GeoSyntec's internal review policy. This report was also reviewed by Mr. Barry Pulver, P.G., C.E.G., C.Hg., of the County.

1.2 Objectives and Scope of Work

The objectives of the ROWD were to: assess the nature and extent of impacts to groundwater from the site; present the results of the EFS performed to evaluate potential corrective action alternatives; and establish a CAP to address offsite groundwater and soil vapor impacts from the site. This ROWD and EFS presents a plan for the implementation of corrective action in accordance with the provisions of Title 27 § 20425. The work described herein was performed in general accordance with GeoSyntec's recommendations presented in the Phase II EMP report (GeoSyntec, 2004b). To achieve the objectives, GeoSyntec completed the following scope of work:

- Performed a seismic refraction survey in May 2005 along three transects of the landfill to evaluate subsurface characteristics and the depth of waste;
- Performed a landfill gas (LFG) system evaluation in June 2005 to assess system performance and recommended upgrades to the LFG extraction system;
- Installed two nested monitor well pairs in June 2005 downgradient of the site within the public right-of-way of Los Olivos Avenue and Dehia Street to further evaluate vertical gradients between alluvium and the underlying weathered granitic bedrock and to evaluate the potential presence of waste constituents in groundwater;

- Performed a soil vapor survey within the public right-of-way for the residential community south of the site to obtain the necessary soil vapor and physical parameter data to update the vapor risk assessment performed in August 2004;
- Performed an updated vapor risk assessment for the single-family residential neighborhood adjacent to the southern property boundary of the landfill;
- Performed an Engineering Feasibility Study of viable remedial technologies that could be used in the corrective action program; and
- Developed a Corrective Action Program and Monitoring and Reporting Program.

1.3 Previous Investigations

1.3.1 Routine Semi-Annual Groundwater Sampling

Routine groundwater monitoring has been performed at the site since 1991. Groundwater samples analyzed for general chemistry parameters and volatile organic compounds (VOCs) indicate that groundwater quality beneath the landfill is relatively stable with the exception of slightly increasing concentrations of trichloroethene (TCE) and cis-1,2,-dichloroethene (cis-1.2-DCE) in groundwater samples collected from monitor well POGW-14. The highest concentrations of VOCs have historically been observed in groundwater samples collected from former compliance monitor well POGW-7, and compliance monitor wells POGW-14 and POGW-16.

1.3.2 Source Characterization

To further evaluate the source of VOCs, primarily TCE, in the northwest portion of the site, GeoSyntec performed a source characterization in the vicinity of monitor well POGW-14 in April 2003. Groundwater samples were collected from five source characterization piezometers POPW-1, POPW-2A, POPW-2B, POPW-3, and POPW-4 (POPW-series) installed in April 2003 (GeoSyntec, 2004a). The results of the source characterization indicated an apparent source of TCE in the northwest portion of the landfill. The presence of the TCE degradation product cis-1,2-DCE detected in groundwater samples collected from the POPW-series piezometers suggested that natural attenuation of TCE is occurring in site groundwater. Based on results of the source characterization and evaluation of historical groundwater sampling data, the source area appeared to be localized in the northwest portion of the landfill.

1.3.3 Phase II Evaluation Monitoring Program

To further evaluate the nature and extent of potential landfill impacts and assess potential risks to the residential community located south of the site near the toe of the landfill a Phase II EMP was performed. Monitor well POGW-16 was installed near the southwest corner of the landfill property to provide additional downgradient groundwater monitoring data west of monitor well POGW-15 and downgradient of the localized "source area" in the northwest portion of the landfill. TCE, 1,1-dichloroethane (1,1-DCA), cis-1,2-DCE, and vinyl chloride were detected in groundwater samples collected from monitor well POGW-16 at concentrations exceeding established maximum contaminant levels (MCLs) for drinking water.

An active soil vapor survey was also performed near the southern property boundary to obtain the necessary vapor data to perform a vapor phase human health risk assessment for the adjoining residential area south of the landfill. VOCs were detected in all fifteen soil gas samples collected from nine soil gas sampling locations near the southern property boundary. The most prevalent constituents detected in the soil gas samples were dichlorodifluoromethane, acetone, 2-butanone, benzene, toluene, ethylbenzene, total xylenes, and tetrachloroethene (PCE).

Because VOCs detected in soil vapor and groundwater have the potential to migrate through the subsurface into indoor air, a vapor phase human health risk assessment was conducted to evaluate potential risk to the adjoining single-family residential neighborhood south of the landfill using the Department of Environmental Health (DEH) Vapor Risk model and the Johnson and Ettinger (J&E) vapor intrusion model. Estimated cancer risks and noncancer hazards using the DEH model were less than the DEH and California Department of Toxic Substances Control (DTSC) target health goals of 1×10^{-6} and 1.0, respectively. The cancer risk estimated using the J&E model slightly exceeded the DEH target risk goal of 1×10^{-6}, however, the inputs used in the model were conservative and likely resulted in an overestimation of risk.

1.4 Report Organization

The remainder of this report is organized into the following sections:

- Section 2, "Site Background" presents the site description and location, site history, site geology and hydrogeology; lineament analysis; fractured rock analysis; aquifer testing; and groundwater geochemistry;
- Section 3, "Summary of Field Activities" describes the field activities performed to support this ROWD and EFS;

- Section 4, "Updated Site Conceptual Model" presents the summary of the updated site conceptual model (SCM) as developed from site investigations;
- Section 5, "Delineation of Release" presents a summary of the horizontal and vertical extent of groundwater impacts and site-specific Constituents of Concern;
- Section 6, "Engineering Feasibility Study" presents an evaluation of viable remedial technologies which could be implemented at the site;
- Section 7, "Corrective Action Program" presents the remedial alternatives which include source control and monitored natural attenuation;
- Section 8, "Corrective Action Monitoring and Reporting Program" outlines the scope of the MRP to be conducted to demonstrate the effectiveness of the selected corrective action alternatives; and
- Section 9, "References," presents a list of documents referenced in this report.

2. SITE BACKGROUND

2.1 Site Location

The site is located on the south side of Poway Road at 14900 Poway Road in Poway, California (Figure 1). The San Diego County Tax Assessor's parcel number for the site is 321-200-38. This site is located in Township 14 South, Range 1 West, Section 7 of the San Bernardino Baseline and Meridian (USGS, 1975).

2.2 Site Background

The site was operated as a burn dump from 1949 to 1966. From 1967 to 1975, the site was operated as a Class II (Class III under current regulations) solid waste disposal facility, and contains an estimated 165,000 tons of refuse with an average waste fill thickness of 30 feet (IT, 1993). The landfill was permitted to receive residential, commercial, and agricultural wastes. No known septic, industrial, chemical or liquid wastes were received at the site.

The landfill was constructed without a liner, and does not have a leachate collection or removal system. The landfill cover consists of a 2-foot thick layer of clean soil. Other than thirteen groundwater monitor wells, five groundwater piezometers, and five LFG migration probes, no leak detection system has been installed at the landfill. A LFG extraction system consisting of an extraction well field and a flare have been in operation at the site since July 1996. A map showing the current site configuration is included as Figure 2.

The site is monitored semi-annually in compliance with Order No. 94-165, which requires the County to submit semi-annual detection monitoring reports to the Regional Water Quality Control Board (RWQCB) on 30 April and 30 October of each year. The groundwater monitoring network consists of three background monitor wells (POGW-6, -9 and -10) and six compliance monitor wells (POGW-11, -12, -13, -14, -15, and -16). In June 2005, two nested monitor well pairs (POGW-17A/17B and POGW-18A/18B) were installed within the public right-of-way of Los Olivos and Dehia Street downgradient of the site to enhance the monitor network (Section 3.1).

2.3 Site Setting

2.3.1 Topography and Geomorphology

The site is located in a generally mountainous region on the western slope of the Peninsular Range province in San Diego County. Steep slopes bound the site to the east and west. Elevations at the landfill range from a high of approximately 735 feet above mean sea level (msl) at the northeastern property boundary to a low of about 610 feet above msl along the southern property boundary.

2.3.2 Geology

The site is predominantly underlain by Cretaceous-age granitic rock of the Southern California Batholith (Figure 3). The crystalline rock is gray to reddish brown and ranges from intensely weathered to hard and fresh. Slightly-to highly-weathered granitic rock is generally present at the surface as scattered outcrops, primarily at higher elevations around the landfill. Discontinuous outcrops of the Lusardi Formation, a poorly sorted conglomerate, rest unconformably on granitic bedrock in the northeast portion of the site (Kennedy and Peterson, 1975). The waste fill is underlain by Quaternary-age alluvium composed of weathered granite fragments along its eastern perimeter. No major faulting has been identified within one mile of the site; however, jointing is present in the granitic rock. Surface joint attitudes and geologic contacts at the site and in the site vicinity strike approximately N35°W, N32°E and N70°E (IT, 1999).

2.3.3 Hydrogeology

The site is located in the Poway Hydrologic Area (6.20) of the Los Penasquitos Hydrologic Unit (RWQCB, 1998). Groundwater within the Poway Hydrologic Area has been designated as having existing beneficial use for municipal and agricultural uses and potential beneficial use for industrial supply uses (RWQCB, 1998). Groundwater beneath the site is considered unconfined and flows within the fractured granitic bedrock. Historically, groundwater elevations have ranged from a high of 696 feet msl to a low of 576 feet msl (Table 1). Between August 1998 and late 2004, groundwater elevations at the site exhibited a general declining trend (Figure 4).

Due to significant rainfall that occurred between January and March 2005 (National Weather Service, 2005), groundwater elevations increased in all monitor wells and piezometers between the first and third quarter 2005 monitoring events (except for monitor well POGW-12). The most significant increase in groundwater elevations were observed in background monitor wells, ranging from 6.99 feet in POGW-6 to 23.98 feet

in POGW-9. Groundwater elevations in offsite shallow monitor wells remained within historical ranges. Consistent with previous data, the direction of groundwater flow is generally south to southwest at an average hydraulic gradient ranging from 0.04 to 0.25 feet per foot (ft/ft) (Figure 5).

2.3.4 Hydrology

The site is located at the head of a small canyon that widens to the south and drains toward Poway Creek, a west-trending drainage approximately ½-mile south of the site (Figure 6). Drainage in Poway Creek flows west toward Rattlesnake Creek. Surface water for the Los Penasquitos Creek Watershed has been designated as having existing beneficial use for agricultural purposes, contact and non-contact water recreation, warm freshwater habitat and wildlife habitat and potential industrial uses (RWQCB, 1998). With the exception of Rattlesnake Creek located approximately 5,000 feet upgradient of the site, no perennial surface water occurs within 1-mile of the site. Surface water runoff in the site vicinity occurs during and shortly after periods of precipitation and is directed away from the site by storm drains, drain pipes and a concrete lined channel.

2.3.5 Lineament Analysis

Fracture traces and lineaments are mappable linear or curvilinear geomorphic features on the crust of the earth. Some lineaments may represent surface expressions of zones of weakness or structural displacement. Lineament analysis is commonly used in groundwater investigations to identify potential water-bearing zones in fractured bedrock.

Based on site reconnaissance, review of topographic maps and stereoscopic aerial photographs, three primary lineament features were identified trending approximately N35°W, N32°E and N70°E (County of San Diego, 2005). None of the features are traceable for more than a mile. Subparallel ridges and valleys in the landfill vicinity are aligned along two major trends: N40°W and N70°E (Figure 3). The principal geomorphic lineament identified in the immediate vicinity of the site is the N70°E trending lineament that approximately parallels the valley south of the site and is considered the primary geologic structure that influences surface water drainage and groundwater flow in the site vicinity.

2.3.6 Fracture Pattern Analysis

To evaluate the effects and relationship of constituent transport through fractured rock and further characterize the groundwater flow system at the site, acoustic televiewer logs (ATV) were conducted in the open boreholes of POPW-1, -2, -3, -4 and POGW-9, -

10, -13 -14, -15 to gather data on subsurface features such as joints, fractures and intrusions that could serve as conduits for groundwater migration. The fractures identified in these boreholes were plotted on rose diagrams using Rockware™ software. The petal length (number of fractures observed) on rose diagrams were grouped on a 10° class interval to determine trends in fracture populations. Fractures observed in boreholes located within 50 feet of each other were grouped and plotted on one rose diagram.

Six fractures were identified in the borehole of POPW-1, twelve fractures each in boreholes POPW-2 and POPW-3 and twenty-one fractures in the borehole of POGW-14 (GeoSyntec, 2004a). When plotted collectively on a rose diagram, the fracture orientation data collected from these four exploratory borings indicate a primary fracture orientation ranging from approximately N70°W to S75°W, with a mean lineation vector of S85°W, and average dip ranging from 5 to 40 degrees to the south (Figure 7). This primary fracture trend appears to be the primary geologic structure that influences groundwater flow in this location.

Three fractures were identified from the downhole ATV log from POPW-4 (GeoSyntec, 2004a). The fracture orientation data collected from the exploratory boring indicate a primary fracture orientation trending approximately N65°W and average dip ranging of 60 degrees to the northeast (Figure 7).

Seventeen fractures were identified from the downhole ATV log from the downgradient borehole of POGW-15 (GeoSyntec, 2000a). The fracture orientation data collected from the exploratory boring indicate a primary fracture orientation trending approximately S65°W and average dip of 35 degrees to the northwest (Figure 7).

Several significant fractures were identified from the downhole ATV logs from POGW-9, POGW-10 and POGW-13 (IT, 1999). Nine fractures were identified in POGW-9 with three distinct trends: one with an average trend of approximately N58°E dipping to the southeast, the second with an average trend of N15°W dipping to the northeast and the other with an average trend of N45°W dipping to the northeast (Figure 7). Fourteen fractures were identified in POGW-10 which can be grouped into two distinct populations with an average trend of N15°E dipping northwest and N50°W dipping southwest. The trends of the three fracture sets were different from the dominant fracture trends observed in the other exploratory borings at the site. Four fractures were identified in the borehole of POGW-13. One population is observed trending N80°W dipping to the south and the other population trends N15°E dipping to the southeast.

Based on the fracture orientations observed from ATV logs collected from five general locations at the site, the most prevalent fracture trends observed at the site are fracture populations trending approximately S85°W and approximately N75°E, and

dipping to the south-southeast . Although the overall direction of groundwater flow is generally south to southwest at the site, localized groundwater flow variations in the fractured rock are likely in each fractured rock monitor well based on the fracture orientations observed in each borehole.

2.3.7 Aquifer Testing

Aquifer tests were previously performed during the source characterization to assess the hydraulic characteristics of the fractured rock aquifer (GeoSyntec 2004a). Aquifer tests conducted on monitor wells within the property boundary (POGW-14, POPW-1, -2B, and -4) resulted in distributions of measured hydraulic conductivities ranging from approximately 0.04 to 0.58 feet/day. In the area south of the landfill (POGW-13) the hydraulic conductivity ranged from approximately 0.126 to 4.01 feet/day. Aquifer test data indicate that the fractured granitic bedrock generally has a lower hydraulic conductivity value than the weathered granitic bedrock and alluvium. In addition, the lack of significant aquifer response in observation wells during pumping suggests a low degree of hydraulic connection between the fractures and between the upper, intermediate and lower fractured zones screened by the monitor wells.

2.3.8 Groundwater Geochemistry

The composition of groundwater at the site was also evaluated on the basis of dominant ions and is illustrated graphically on Stiff diagrams using July 2005 groundwater analytical data (Figure 8). Stiff diagrams show the spatial distribution of the major anions and cations in groundwater. Laboratory analyses of the major ions, reported in milligrams per liter (mg/L), were converted to milliequivalents per liter (meq/L) and plotted on horizontal axes on either side of a vertical zero axis. The major cations (sodium [Na] + potassium [K], calcium[Ca], and magnesium [Mg]) are plotted left of the zero axis, and the major anions (chloride [Cl], bicarbonate [HCO_3], + carbonate [CO_3], and sulfate [SO_4]) are plotted on the right.

Stiff diagrams for background wells screened in the bedrock (POGW-9 and POGW-10) show similar patterns suggesting comparable water quality likely derived from the same source. The Stiff diagram for background well POGW-6 (screened in the alluvium) differs from the Stiff diagrams for monitor wells POGW-9 and POGW-10 (screened in the fractured rock), primarily in the relative concentrations of both cations and anions, suggesting a variation in cations and anions between the different geologic units. The Stiff diagram for downgradient monitor well POGW-15 shows similar patterns to Stiff diagrams for background monitor wells POGW-9 and POGW-10. Monitor well POGW-15 is screened within the pre-landfill drainage channel

downgradient of monitor wells POGW-9 and POGW-10 suggesting comparable water quality likely derived from the same upgradient source.

In the suspected "source area," Stiff diagrams for piezometers POPW-1, POPW-2A/2B, and POPW-4 show a similar pattern, with POPW-1 and POPW-2B having higher concentrations of chloride and sulfate. Monitor well POGW-14 is screened in the lower fractured zone approximately 10 feet east of well POPW-1. The Stiff diagram for monitor well POGW-14 suggests water quality in the lower fracture zone is distinctly different than the other wells in the source area with significantly lower concentrations of anions and cations. With the exception of higher chloride, the Stiff diagram for POGW-14 shows similar patterns to Stiff diagrams for background monitor wells POGW-9 and POGW-10, suggesting comparable water quality in the fractured granitic bedrock. In general, source area monitor wells POPW-1, -2A, and -2B, and to a lesser degree POPW-4, show higher concentrations of all anions and cations compared to background and downgradient compliance monitor wells. These data indicate groundwater quality in the upper and intermediate fracture zones in the "source area" portion of the landfill is degraded relative to upgradient background and downgradient compliance monitor wells.

Stiff diagrams for downgradient monitor wells show relatively similar patterns, but monitor wells POGW-11 and -17A have significantly higher concentrations of chloride, and monitor wells POGW-15 and -18A have lower concentrations of sulfate. In downgradient cluster POGW-12/-13 and nested monitor wells POGW-18A/-18B the relative concentrations of ions were lower in wells POGW-12 and -18A screened in the alluvium than in wells POGW-13 and -18B screened in the upper fractured zone. Lower ion concentrations in wells screened in the alluvium may be attributed to infiltration from irrigation with potable water in the surrounding residential area.

3. SUMMARY OF FIELD ACTIVITIES

This section presents a description of field activities performed during the period from February through June 2005 at the Poway Landfill. These investigations were conducted in accordance with the recommendations presented in the Phase II EMP report (GeoSyntec, 2004b).

3.1 Nested Monitor Well Installation Activities

Two nested downgradient groundwater monitor well pairs, POGW-17A/17B and POGW-18A/18B were installed in the city right-of-way of Los Olivos Avenue and Dehia Street downgradient of the site to further evaluate the extent of potential offsite groundwater impacts. Copies of the DEH Well Permit and the Subsurface Surveys Report summarizing utility clearance activities are included in Appendix A. Locations for the nested monitor well pairs were selected based primarily on historical groundwater monitoring data and detections of VOCs in groundwater samples collected from downgradient monitor wells POGW-16 and POGW-15. Nested groundwater monitor wells POGW-17A/17B were installed in the area southwest of POGW-15 and south of POGW-16 to provide additional downgradient offsite monitoring data (Figure 5). The location for this nested monitor well pair was selected based on the suspected "source area" in the northwestern portion of the site and historical groundwater contours which suggest the potential for offsite migration in the area south of monitor well POGW-16. Nested groundwater monitor wells POGW-18A/18B were installed approximately 220 feet southeast of destroyed monitor well POGW-8 and southeast of monitor well POGW-15 to provide additional downgradient monitoring data (Figure 5). The location for this nested monitor well pair was selected based on the historical VOC concentrations detected in groundwater samples collected from former monitor well POGW-8. Drilling procedures are included in Appendix B. The boring logs and well construction diagrams for POGW-17A/17B and POGW-18A/18B are included in Appendix C.

At the conclusion of drilling, each boring was converted to two nested monitor wells on 7 and 8 June 2005 by installing two 2-inch schedule 40 PVC well casings with 10 feet of 0.020-inch factory slotted screen in both of the monitor wells and a threaded well cap at the bottom of the monitor wells (Appendix C). Monitor wells POGW-17A and POGW-18A were constructed to target first groundwater encountered in the interval from 6 to 18 feet bgs within the upper alluvium. Monitor wells POGW-17B and POGW-18B were constructed to target groundwater within the upper weathered granitic rock in the interval from 33 to 45 feet bgs.

During the initial sampling event conducted on 27 June 2005 for monitor wells POGW-17A/17B and POGW-18A/18B (Table 2), toluene was detected in each

groundwater sample at concentrations ranging from 1.0 to 1.9 μg/l. Chloroform was detected in groundwater samples collected from monitor wells POGW-17B and POGW-18B at concentrations of 0.42 μg/l and 1.2 μg/l, respectively. The groundwater sample collected from monitor well POGW-17B also contained 0.67 μg/l dichlorodifluoromethane (DCDFM). The groundwater sample collected from monitor well POGW-18A also contained 6.7 μg/l acetone. No other VOCs were detected in the groundwater samples collected from the two new nested monitor well pairs sampled on 27 June 2005 (Appendix D).

During the routine semi-annual groundwater sampling event conducted in July 2005, the groundwater sample collected from monitor well POGW-17A did not contain detectable concentrations of VOCs. Groundwater samples collected from monitor wells POGW-17B, POGW-18A and POGW-18B contained acetone at "estimated" concentrations ranging from 6.1 μg/l (the method detection limit) to 6.7 μg/l. Chloroform was detected in groundwater samples collected from monitor wells POGW-17B and POGW-18B at concentrations of 0.31 μg/l and 1.5 μg/l, respectively. Similar to the initial monitoring event, the groundwater sample collected from monitor well POGW-17B contained 0.48 μg/l DCDFM. The groundwater sample collected from monitor well POGW-18B also contained 0.37 μg/l toluene. No other VOCs were detected in the groundwater samples collected from the two new nested monitor well pairs sampled during the July 2005 semi-annual groundwater sampling event.

Based on the July 2005 semi-annual groundwater sampling data, acetone was detected in 13 groundwater samples (including upgradient samples), and in the equipment blank, trip blank, and field blanks. Therefore, acetone detections in groundwater may be attributable to laboratory contamination. Chloroform was only detected in groundwater samples collected from downgradient offsite wells and therefore, does not appear to be attributable to the landfill. DCDFM was detected in groundwater samples collected from the downgradient property boundary (POGW-15), and from downgradient offsite monitor well POGW-17B. Toluene was detected in groundwater samples collected from the suspected "source area" (POGW-14), and from downgradient offsite monitor well POGW-18B. However, the absence of consistent DCDFM and toluene detections in groundwater samples collected from onsite monitor wells suggests DCDFM and toluene detected in groundwater during the July 2005 sampling event may not be attributable to the landfill.

3.1.1 Vertical Gradients

To further evaluate vertical gradients at the site and site vicinity, groundwater elevations in nested piezometers and monitor wells were evaluated (Table 1). With the

exception of recent water level measurements, historical results indicate a general downward vertical gradient.

3.2 Soil Vapor Survey

An active soil vapor survey was performed to obtain the necessary vapor data to update the vapor phase human health risk assessment conducted during the Phase II EMP for the adjoining residential neighborhood south of the site. In addition, soil samples were collected from four borings (SG-11, -12, -13, -15) to characterize the physical properties (bulk density, total porosity, air filled porosity, total organic carbon, hydraulic conductivity, permeability to air, and moisture content) of soil to be used in the risk assessment. One soil sample (SG-13) was collected at an estimated depth of 1.5 ft bgs and three soil samples (SG-11, -12, -15) were collected at an estimated depth of 5 ft bgs.

On 15 June 2005, nine soil vapor probes were advanced within the public right-of- way of Dehia Street and El Mar Avenue south of the southern site property boundary (Figure 2). Two soil vapor samples were collected from each boring at depths of 1.5 and 5 feet bgs. All soil vapor samples were analyzed for VOCs by Environmental Protection Agency (EPA) Method TO-15 and fixed gases by Method ASTM-D-1946. A description of the active soil vapor sampling procedures is included in Appendix B. Copies of the soil vapor sample collection logs are provided in Appendix E, and soil vapor sample data are provided in Appendix F.

3.2.1 Soil Vapor Survey Results

Soil vapor sample analytical results are summarized in Table 3. Physical soil parameter results are summarized in Table 4. The results of soil vapor sampling conducted in 2004 and 2005 indicated relatively low concentrations of VOCs are present in soil vapor near the southern property boundary and beneath Dehia Street and El Mar Avenue in the adjoining area south of the site. The primary COC detected in soil vapor samples collected during the two independent soil vapor surveys was benzene. The highest concentration of benzene identified in soil vapor sampling conducted in 2004 was 68 parts per billion by volume (ppbv) in a sample collected at an approximate depth of 18 feet bgs from boring SG-9. The highest concentration of benzene identified in soil vapor sampling conducted in 2005 was 49 ppbv in a sample collected at an approximate depth of 5 feet bgs from boring SG-10. With the exception of SG-10, benzene concentrations in soil vapor generally increase between the southern site boundary and Dehia Street.

Due to the asphaltic-concrete pavement present at the surface of each soil vapor sampling location, horizontal migration of VOCs is expected, and interpretation of vertical concentration gradients can be difficult because of enhanced lateral VOC migration. Vertical concentration gradients for soil-gas samples beneath the Dehia Street

vary between increasing and decreasing concentrations with depth. Benzene concentrations increased with depth at four of the sample locations and decreased at six.

Soil vapor samples collected beneath Dehia Street and El Mar Avenue in 2005 did not contain detectable concentrations of methane or carbon monoxide. Combined oxygen and argon concentrations in soil vapor samples collected beneath Dehia Street and El Mar Avenue ranged from 11.7 to 21.2 percent. Nitrogen concentrations in soil vapor samples collected beneath Dehia Street and El Mar Avenue ranged from 78.5 to 83.8 percent. Carbon dioxide concentrations in soil vapor samples collected beneath Dehia Street and El Mar Avenue ranged from 0.28 to 7.9 percent.

3.2.2 Potential Sources of Constituents Detected in Soil Vapor

Potential sources of soil vapor impacts identified during the 2004 and 2005 soil vapor surveys include landfill gas migration (pressure-driven advection and diffusion), volatilization from groundwater, and other unknown sources.

Landfill gas is typically composed predominantly of methane (50 to 60 percent) and carbon dioxide (40 to 50 percent), with trace concentrations (part per billion to part per million) of other constituents such as VOCs. As landfill gas migrates from the source by advection, it is diluted by native soil vapor consisting primarily of approximately 79 percent nitrogen and 15 to 20 percent oxygen. Therefore, if nitrogen concentrations in soil vapor are approximately 79 percent (within measurement error), then the presence of VOCs in soil vapor samples is generally not consistent with advective transport with landfill gas. Nitrogen concentrations in soil vapor samples collected beneath Dehia Street and El Mar Avenue ranged from 78.5 to 83.8 percent, suggesting that the VOCs may not have been transported in landfill gas by advection. Furthermore, the relatively large exposed surface area of the landfill cover, the topography of the site and adjoining area to the south (area south of the site at a lower elevation than the waste buried at the site), suggests that significant downgradient migration of landfill gas is not likely.

Landfill gas sampling performed at the site in 2002 indicated that two constituents, DCDFM and vinyl chloride, were detected in every sample. Both DCDFM and vinyl chloride are highly volatile and are readily transported in the gas phase. DCDFM was detected in all but one soil vapor sample collected along the southern site boundary in 2004 at concentrations ranging from 0.76 to 780 ppbv. DCDFM was only detected in 4 of 20 soil vapor samples collected beneath Dehia Street and El Mar Avenue at concentrations ranging from 1.1 to 2.3 ppbv. Vinyl chloride was not detected in any of the soil vapor samples collected along the southern property boundary in 2004 or beneath Dehia Street and El Mar Avenue in 2005.

DCDFM/benzene ratios may also be used to evaluate whether landfill gas is a source of benzene (the most commonly detected constituent in soil vapor samples collected at the site in 2004 and south of the site in 2005) in soil vapor. In general, DCDFM/benzene ratios less than 10 suggest benzene concentrations in soil vapor may be attributable to a source other than landfill gas. DCDFM/benzene ratios were evaluated for landfill gas samples collected in 2002, and soil vapor samples collected in 2004 and 2005. When either DCDFM or benzene was not detected in a sample, the laboratory method detection limit was used for the calculation of the ratio. DCDFM/benzene ratios for landfill gas samples collected in 2002 ranged from approximately 8 to 14. DCDFM/benzene ratios for soil vapor samples collected in 2004 along the southern site boundary ranged from 0.13 to 100 (the ratio was greater than 10 for only 2 of the 15 samples). DCDFM/benzene ratios for soil vapor samples collected in 2005 beneath Dehia Street and El Mar Avenue ranged from approximately 0.02 to 0.3. Therefore, the presence of increasing benzene concentrations in soil vapor samples collected beneath Dehia Street and El Mar Avenue without a corresponding increase in DCDFM concentrations suggests that benzene concentrations in soil vapor may be attributable a source other than landfill gas.

Because VOCs have different aqueous solubilities, they can be present in different proportions in groundwater affected by landfill gas than in the landfill gas. The tendency for VOCs to partition from groundwater to soil vapor is described by the constituent-specific Henry's Law constants [H] to express the gas-phase concentration [C_g] which would be at equilibrium with the concentration in groundwater [C_w] using the following equation $C_g = H\ C_w$. Using VOC concentrations for groundwater samples collected from downgradient monitor well POGW-16 and downgradient offsite monitor well POGW-15, and the Henry's Law constants for each constituent, a "relative" concentration in soil vapor may be calculated. The most recent groundwater data collected in July 2005 from downgradient monitor wells POGW-15 and POGW-16 were used in this evaluation summarized in the following table:

Constituent	H (pppb-L/µg)	POGW-15 Groundwater Concentration (µg/L)	Equivalent "Relative" Gas Concentration (ppbv)	POGW-16 Groundwater Concentration (µg/L)	Equivalent "Relative" Gas Concentration (ppbv)
Acetone	0.36	< 6.1	< 2.2	26	9.4
Benzene	72	< 0.26	< 18.7	0.31	22.3
PCE	141	1.2	169.2	0.76	107.2
TCE	69	< 0.3	< 20.7	4.0	276
Cis-1,2-DCE	59	0.40	23.6	27	1,593
Vinyl chloride	11,407	< 0.33	<3,764	0.34	3,878
1,1-DCA	45	< 0.53	< 23.9	< 0.53	< 23.9
1,2-DCA	10	< 0.22	< 2.2	< 0.22	< 2.2
DCDFM	8423	0.82	6,907	< 0.27	< 2,274
Chlorobenzene	54	< 0.36	< 19.4	0.87	47

Constituent	H (pppb-L/µg)	POGW-15 Groundwater Concentration (µg/L)	Equivalent "Relative" Gas Concentration (ppbv)	POGW-16 Groundwater Concentration (µg/L)	Equivalent "Relative" Gas Concentration (ppbv)
1,4-DCB	20	<0.3	< 6	5.4	108

Note: The symbol "<" (less than) indicates the constituent was not detected in groundwater. Therefore, the method detection limit was used in the calculation for constituents which were not detected.

The equivalent gas concentrations of benzene and other VOCs can be compared to soil vapor data to evaluate whether the VOCs are potentially attributable to groundwater or another source. Soil vapor samples collected from vapor boring SG-13 (near POGW-15) contained significantly higher concentrations of acetone than predicted using the concentrations of these constituents detected in groundwater samples collected from POGW-15 and the equation previously referenced. In addition, the primary constituents of concern in groundwater (PCE and its degradation products), were either not detected in soil vapor samples collected south of the site, or the concentrations detected were significantly lower than predicted using the concentrations of these constituents detected in groundwater samples collected from POGW-15. Likewise, 1,1-DCA, DCDFM, and chlorobenzene were either not detected in soil vapor samples collected south of the site, or the concentrations detected were significantly lower than predicted using the concentrations of these constituents detected in groundwater samples collected from POGW-15. A similar trend was observed in soil vapor samples collected from boring SG-9, the nearest boring to monitor well POGW-16. During the July 2005 groundwater monitoring event, benzene was not detected in groundwater samples collected from downgradient offsite monitor wells installed within Dehia Street and El Mar Avenue. However, benzene concentrations detected in soil vapor samples collected in June 2005 beneath Dehia Street and El Mar Avenue ranged from 4.1 to 49 ppbv. Because the benzene concentration in 7 of the 20 soil vapor samples collected in 2005 exceeded the "predicted" equivalent benzene concentration (18.7 ppbv using the method detection limit since benzene was not detected), it appears that a source other than groundwater in the area south of the site is contributing to the detected benzene concentrations in soil vapor samples collected during this assessment.

The 2004 and 2005 soil vapor sample data were evaluated to assess the potential for the landfill to be the source of VOCs detected in soil vapor samples collected beneath the street south of the landfill. Based on this evaluation:

- The relatively large exposed surface area of the landfill cover, the topography of the site and adjoining area to the south (area south of the site at a lower elevation than the waste buried at the site), suggests that significant downgradient migration of landfill gas is not likely.
- Nitrogen concentrations in soil vapor samples collected beneath Dehia Street and El Mar Avenue do not support offsite advective landfill gas migration to the south.

- Soil vapor samples collected along the southern site boundary in 2004 and soil vapor samples collected from beneath Dehia Street and El Mar Avenue in 2005 did not contain detectable methane, a primary indicator of landfill gas.
- Landfill gas samples collected from the Site in 2002 indicated DCDFM and vinyl chloride were the most prevalent VOCs detected in landfill gas generated at the site. Both DCDFM and vinyl chloride are highly volatile and mobile in the gas phase. Soil vapor samples collected beneath Dehia Street and El Mar Avenue in 2005 contained relatively low DCDFM concentrations, and vinyl chloride was not detected.
- VOC concentrations in soil vapor samples from beneath Dehia Street and El Mar Avenue in 2005 are not consistent with volatilization from groundwater because the primary COCs in groundwater (PCE, TCE and other degradation products) were either not detected in soil vapor samples, or the concentrations detected were significantly lower than predicted using the concentrations of these constituents detected in groundwater samples collected from POGW-15. Furthermore, benzene was not detected in the groundwater sample collected from POGW-15, but benzene was detected in all 20 soil vapor samples collected beneath Dehia Street and El Mar Avenue.
- Our evaluation of laboratory analytical results for samples collected during this assessment indicates VOCs detected in soil vapor samples collected along the southern site boundary in 2004, and beneath Dehia Street and El Mar Avenue in 2005 may be attributable to sources other than landfill gas or affected groundwater. The multiple lines of evidence discussed herein suggest other potential sources of VOCs detected in soil vapor in the area south of the site may include: constituents present in soil or road base material at the time the streets were paved; degradation of organic material (plant matter or materials spilled during construction activities); the use and storage of common chemicals and fuels in the residential area south of the site; municipal sanitary sewer and storm drain system; the surface water detention basin; atmospheric sources; and other, unknown sources.

3.3 Landfill Gas System Evaluation

Landfill gas (LFG) indicator compounds (i.e. PCE, TCE and cis-1,2-dichloroethane) have been detected above MCL concentrations in groundwater samples collected from piezometers POPW-1, -2A, -2B, -3 and -4 and monitor wells POGW-14 and POGW-16. These data indicate that groundwater in the vicinity of these monitor wells may have been impacted by landfill gas.

In June 2005, GeoSyntec conducted an evaluation of the LFG system to provide additional information on the system performance to control the migration of LFG. Historical LFG records were reviewed to evaluate LFG trends. Field reconnaissance and downhole video inspection of the LFG extraction wells were conducted to confirm well

depths, screen intervals and gauge the wells for the potential presence of groundwater. The well casing video inspection data indicate that the top of the perforations for 11 of the 21 extraction wells are generally shallow (17 feet or less) (Table 5). Standing water ranging from 0.04 to 2.06 feet was observed in several of the deep extraction wells. The small amount of water observed in most of the extraction wells is most likely condensate pulled in by the vacuum of the LFG system that has accumulated in the bottom well cap. However, the 2.06 feet of water column observed in extraction well EW-2 may be an indication that refuse is in contact with groundwater in this location. All of the extraction wells that contained water are located within or near the pre-landfill ephemeral drainage channel where the moisture content may be higher, or in the case of extraction well EW-2 where refuse may be in contact with water.

In May 2005, a seismic refraction survey was conducted along three profiles crossing the landfill to evaluate subsurface characteristics and to assess the thickness of the waste fill in comparison to the landfill gas extraction wells (Appendix B). Cross-sections were prepared based on the seismic refraction survey data to evaluate the vertical coverage of the gas collection system for the waste mass at the site (Figure 9). Based on the seismic refraction survey profiles and pre-landfill topography, it appears that the waste fill overlying the granitic bedrock ranges in thickness from less than 50 feet to approximately 85 feet. It has been assumed that unconsolidated materials were cleared and removed prior to placement of the waste at the site. Therefore, if all of the unconsolidated materials identified using seismic refraction consist of landfill waste, then as much as 50 feet of the waste prism may not subjected to gas extraction (Figure 9). In areas with insufficient gas extraction coverage, excess LFG may accumulate creating increased potential for LFG impacts to groundwater. Based on the radius of influence (approximately 200 feet) for each LFG extraction well, and the monitoring records collected from July through December 2004, there is no surface or subsurface lateral migration of the LFG when the LFG system is operating. The available data suggest that the LFG system is performing in compliance with regulatory requirements, but the potential for LFG to impact groundwater quality may exist in areas with insufficient gas extraction coverage.

Historical LFG records collected monthly (July through December 2004) by SCS Engineers indicate that the gas generation rate is very low which is typical for old landfills (Appendix G). The low gas collection rate may not be due to poor well performance but rather due to a low gas generation rate (Figure 10). Therefore, the presence of groundwater in some LFG wells suggests that VOCs in groundwater may also be attributable to saturated waste (Table 5).

Aerobic conditions in landfill refuse are generally attributable to air intrusion through cracks in the cover or well seals that allow air into the refuse prism. The gas composition monitoring shows that with the exception of one well (EW-7) the extraction

wells have decreasing methane concentrations and show higher than normal carbon dioxide to methane ratios. Typical anaerobic landfill gas has a 55 / 45 concentration ratio of methane to carbon dioxide. The monitoring data indicates an average 26 / 29 methane to carbon dioxide ratio suggesting an aerobic condition. In addition, nitrogen concentrations ranging from 40 percent to 50 percent in the landfill gas suggests air intrusion. The methane to carbon dioxide ratio and elevated nitrogen in landfill gas at the site is consistent with overdraw, or leaking well seals causing induced aerobic conditions within the refuse prism. Overall the landfill appears to be stressed and even though the flare is operating on a timer set for 6.5 hours a day, the LFG extraction system appears to be overdrawing and causing air intrusion into the landfill. There is subsurface fire potential with the current operations flow rate and system operating schedule.

Based on the findings of this investigation, it is recommended that the LFG extraction well seals be repaired to mitigate air intrusion. It is also recommended that the County evaluate the need for "make-up" fuel in the operation of the flare to sustain longer operating times to control LFG migration during periods of LFG system shut down. In addition, three LFG extraction wells are recommended to improve vertical coverage and effectiveness of the LFG system and to extract gas that may be "pooled" at the bottom of the refuse prism and resulting in adverse impacts to groundwater.

3.4 Pre-landfill Drainage Channel Evaluation

A primary pre-landfill drainage channel is evident traversing through the central portion of the site from the northeast to southwest. In the late 1980s, a concrete channel was installed on the east side of the landfill to divert surface water flow away from the landfill (IT, 1993). However, the historical drainage channel may serve as a pathway for groundwater flow and potential constituent migration.

A historical aerial photograph from 1928 and pre-landfill topography map were reviewed and overlain on a current site map to outline the location of the historical drainage channel (Figure 11). Three monitor wells (POGW 12, POGW-13, and POGW-15) are installed and screened within the alluvium and weathered rock/grus of the historical drainage channel downgradient of the site. Concentrations of PCE, ranging from "estimated" to 6.5 µg/l, have historically been detected in groundwater samples collected from monitor well POGW-15 at the downgradient site boundary (GeoSyntec, 2004b). However, with the exception of chloroform detected in groundwater samples collected from monitor wells POGW-12 and POGW-13, VOCs historically have not been detected in groundwater samples collected from downgradient offsite monitor wells screened in the pre-landfill drainage channel. Chloroform is commonly associated with chlorinated municipal water, and these two wells are located in a residential area with landscaping irrigated with municipal water. Based on historical groundwater monitoring

and laboratory analytical data, the historical drainage channel does not appear to be a primary pathway for constituent migration from the site.

4. UPDATED SITE CONCEPTUAL MODEL

The results from previous and ongoing investigations performed at the Poway Landfill are summarized in the following site conceptual model (SCM). This SCM has been prepared in general accordance with ASTM Standard D 1689. The SCM addresses groundwater flow, source and transport of VOCs, metals and general chemistry parameters. A SCM provides the framework for understanding the factors that affect the fate and transport of constituents of concern (COCs) at the landfill. Theoretical knowledge of physical processes is combined with experience from similar sites to assist in interpreting the site-specific data. The SCM is also the foundation for mathematical modeling used to simulate site conditions in the past, future, or beyond the spatial limits of the available data.

The SCM is typically divided into three parts: source, pathway and receptor. The source conceptualization includes an estimate of the mass and flux of each constituent, the volume over which the source is applied, and the persistence of the source concentration. The pathway conceptualization includes the groundwater flow direction and velocity, as well as an analysis of dispersive mixing, dilution, degradation, sorption, and volatilization, all of which may affect constituent concentration distribution. The receptor conceptualization includes the route, frequency, and duration of exposure, the rate of uptake, the dose-response relationship, and factors such as sensitive receptors or synergistic effects from multiple constituents with a similar mode of toxic action.

4.1 Hydrogeological Model

The hydrogeologic model is based on review of previous work at the landfill [IT, 1999] and site investigations performed by GeoSyntec [GeoSyntec, 2004a and GeoSyntec, 2004b]. A graphical representation of the hydrogeologic conditions is presented in Figure 12. This 2-D representation of the site is based on the pre-landfill and current landfill contours and current site investigations, and is summarized as follows:

- The refuse at the Poway Landfill rests directly on granitic bedrock. Alluvium and residual soil from extremely weathered granitic rock is likely present in paleochannels underlying the landfill and in the eastern portion of the site.

- Two primary hydrologic units are present at the site: the alluvium/extremely weathered granitic bedrock/grus and fractured granitic bedrock (moderately to slightly weathered). The alluvium/extremely weathered bedrock, generally downgradient of the site and in paleochannels underlying the landfill and in the eastern portion of the site, has a high porosity and transmits more water than

the underlying fractured bedrock (GeoSyntec, 2004b). The direction of groundwater flow is generally south to southwest at an average hydraulic gradient ranging from 0.04 to 0.25 feet per foot (ft/ft) (Figure 5). Current groundwater elevations beneath the landfill suggest portions of the waste may be in contact with groundwater as a result of above-average precipitation in 2004 and 2005 (Figure 9).

- Groundwater at the site is unconfined and is encountered in the fractured bedrock at depths ranging from approximately 70 to 90 feet bgs in the vicinity of piezometer POPW-1. Offsite groundwater is unconfined and is encountered in the alluvium/weathered bedrock at depths ranging from approximately 7 to 10 feet bgs in monitor wells POGW-17A and POGW-18A (Table 1). Groundwater elevations indicate a downward gradient exists from shallow groundwater in the alluvium and weathered bedrock/grus to the intermediate and deep fractured bedrock at the site.

- Based on the fracture orientations observed from ATV logs collected in the five separate borehole locations, two predominant fracture trends are apparent at the site: one fracture population trending approximately S85°W and the other trending approximately N75°E. Although the overall direction of groundwater flow is generally south to southwest at the site, localized groundwater flow variations in fractured rock underlying the landfill may exist at each location based on the fracture orientations observed in the boreholes. Based on the predominant fracture patterns it appears that the migration of COCs in groundwater through the fractured bedrock in the source area may be more westerly.

- Groundwater samples collected from compliance monitor wells located near the western boundary of the site contain VOCs, general chemistry parameters and metals at concentrations exceeding WQPSs and WQOs. These exceedances in wells located west of the waste appear to suggest westerly oriented fracture trends, and the potential that groundwater with concentrations of VOCs exceeding MCLs may be migrating offsite in the west and southwest portion of the site. Therefore, an apparent gap in the monitoring network exists in the areas west-southwest of monitoring wells POGW-14 and POGW-16.

- Groundwater analytical data collected during the source characterization, Phase II EMP, and routine semi-annual sampling events indicate VOC impacts exceeding MCLs are primarily localized in the northwest portion of the landfill, near monitor well POGW-14. The portion of the landfill near monitor well POGW-14 comprises an apparent localized “source area.”

- Concentrations of TCE and cis-1,2-DCE increased significantly in all POPW-series piezometers between the first quarter and third quarter 2005 sampling events. Current groundwater elevations are at historical highs for the site suggesting there may be localized occurrences where groundwater is currently in contact with waste, which may be the cause for significant increases in VOC concentrations during the third quarter 2005 monitoring event.

Based on the current site conceptual model, the primary groundwater flow direction is southerly. However, the presence of higher concentrations of COCs in groundwater samples collected from wells located near the western site boundary than in downgradient monitor wells suggests localized westerly flow variations and the possibility of offsite migration of COCs in groundwater to the west. Therefore, an apparent gap exists in the monitoring network west-southwest of monitor wells POGW-14 and POGW-16.

4.2 Sources

Four apparent sources of COC impacts are evident based on the SCM: A liquid release that migrated to groundwater resulting in significant VOC impacts on the western side of the landfill (i.e. POGW-14); areas of the landfill that have the potential to contact groundwater due to fluctuating groundwater levels; areas that were historically exposed to infiltration of surface water prior to improvements of the cap and storm water management measures; and areas where landfill gas migrated to groundwater and COCs have partitioned from the gas phase into groundwater. The COCs present in groundwater may have also resulted from the routine operation of a permitted, unlined landfill during 1949 to 1975. The date, time, place, and mass of any release have not been determined. The COCs detected at concentrations above MCLs in groundwater samples collected at the site include:

<u>Volatile Organic Compounds (VOCs)</u>

- Tetrachloroethene (PCE);
- Trichloroethene (TCE);
- Cis-1,2-dichloroethene (cis-1,2-DCE);
- Vinyl chloride;
- 1,1-dichloroethane; and
- Dichlorodifluoromethane.

General Chemistry Parameters and Metals

- Total Dissolved Solids (TDS);
- Chloride;
- Sulfate;
- Calcium:
- Magnesium;
- Potassium; and
- Sodium.

4.3 Groundwater

In groundwater samples collected from onsite and offsite monitor wells, concentrations of TDS, chloride and metal parameters have routinely exceeded the water quality protection standards (WQPSs) for the site (Table 2). The exceedence of general chemistry parameters and metals in groundwater may be due to natural geologic variations between the alluvium and fractured bedrock (Section 2.3.8).

Trichloroethene [(TCE); up to 1,520 micrograms per liter (µg/L)], cis-1,2-dichloroethene [(cis-1,2-DCE); up to 280 µg/L], tetrachloroethene (PCE), and vinyl chloride were previously detected in groundwater samples collected from former compliance monitor well POGW-7. POGW-7 was located near the western boundary crossgradient of the landfill, approximately 800 feet upgradient of the southern property line. This monitor well was destroyed in January 2000 due to an extended screen length and replaced with monitor well POGW-14 which has a shorter screened interval. Concentrations of VOCs (cis-1,2-DCE and TCE) in groundwater samples collected from monitor well POGW-14 have also routinely exceeded MCLs.

Landfill related VOCs [including 1,4-dichlorobenzene(1,4-DCB), cis-1,2-DCE, TCE, and vinyl chloride] have been detected in groundwater samples collected from downgradient monitor well POGW-16. Landfill related VOCs have not been detected above “estimated” levels [concentrations reported above the laboratory method detection limit (MDL) but below the reporting limit] in groundwater samples collected from background (POGW-6, POGW-9, POGW-10), or downgradient compliance wells (POGW-11, POGW-12, POGW-13, POGW-17A/17B and POGW-18A/18B). Relatively low concentrations of PCE, TCE, and cis-1,2-DCE have historically been detected in groundwater samples collected from downgradient monitor well POGW-15.

VOC concentrations in groundwater samples collected from monitor wells at the downgradient property boundary decrease significantly, and with the exception of non-

landfill related constituents (chloroform and toluene) detected in groundwater samples recently collected from POGW-17A/17B and POGW-18A/18B, VOCs have never been detected above MCLs in offsite downgradient monitor wells POGW-11, POGW-12, POGW-13, POGW-17A/17B and POGW-18A/18B. Based on concentrations of degradation products (cis-1,2-DCE and vinyl chloride) detected in groundwater samples collected from the POPW-series piezometers and monitor well POGW-16, it appears that reductive dechlorination is occurring in site groundwater. In addition, ethene was detected in groundwater samples collected from monitor wells POGW-14, POGW-16, POGW-17A/17B and from piezometers POPW-2A, POPW-2B, POPW-4 during the first and third quarter 2005 monitoring events at concentrations ranging from 0.15 to 4.14 µg/L. The detection of ethene indicates that complete reductive dechlorination of TCE in groundwater is occurring.

4.4 Geochemical Evaluation Between Total VOCs and Chloride Concentrations

To assess historical groundwater analytical data for evidence of leachate or landfill gas impacts, total VOC concentrations were compared to the concentration of a conservative leachate tracer (chloride) in the same groundwater sample. If leachate is contributing to VOC concentrations, then increased concentrations of chloride will be associated with increased VOC concentrations. However, if relatively consistent chloride concentrations are associated with increased VOC concentrations, then a landfill gas source is suggested.

In the groundwater samples collected from monitor well POGW-7, prior to being destroyed in May 2000, elevated chloride concentrations associated with elevated concentrations of VOCs were observed. Chloride concentrations in groundwater samples collected from POGW-7 ranged from 500 to 1,100 mg/L, and were associated with total VOC concentrations ranging from 773 to 1,738 µg/l (Figure 14). These data appear to be consistent with leachate impacts as the source of the VOCs. In addition, the concentration of TCE in groundwater in samples collected from former well POGW-7 were higher than that which could be attained by equilibrium partitioning of TCE from landfill gas to groundwater. A similar association of elevated chloride concentrations with elevated VOC concentrations has been observed for groundwater samples collected from existing monitor well POGW-14 and piezometers POPW-1 and POPW-3 (all in the suspected “source area”). Therefore, VOCs detected in groundwater samples collected from former monitor well POGW-7 and existing monitor well POGW-14 and piezometers POPW-1 and POPW-3 appear to be attributable to water (leachate, surface water or groundwater) in contact with waste and not landfill gas.

In contrast, chloride concentrations and total VOC concentrations either remain relatively stable or decrease in piezometers POPW-2A and POPW-2B (near the suspected "source area") suggesting a landfill gas source. In addition, dichlorodifluoromethane (DCDFM) has been detected in groundwater samples collected from piezometers POPW-2A and POPW-2B. DCDFM is a compound that is a gas at room temperature and its presence generally suggests gas-phase transport to groundwater.

Groundwater quality data from downgradient monitor wells POGW-15 and POGW-16, and former downgradient monitor well POGW-8 show the opposite relationship from what would be expected from leachate impacts. Relatively stable chloride concentrations are associated with increased VOC concentrations (Figure 14). This relationship appears to be more consistent with landfill gas as the source of the detected VOCs, rather than groundwater in contact with waste. In addition, DCDFM was routinely detected in groundwater samples collected from monitor well POGW-8DCDFM and has been detected in groundwater samples collected from monitor wells POGW-15 and POGW-16. The presence of DCDFM in groundwater samples collected from former and current downgradient monitor wells suggests gas-phase transport of VOCs to groundwater. However, the consistent presence of 1,4-DCB in groundwater samples collected from downgradient monitor well POGW-16 suggests a minor impact from water in contact with waste as an additional source.

Based on this investigation and previous investigations, four primary sources of groundwater impacts are evident. Three sources provide leachate-type evidence of groundwater impacts (leachate, surface water infiltration, and contact with groundwater). However, the most widespread source appears to be LFG impacts to groundwater beneath the footprint of the landfill.

4.4.1 Migration Pathways

Three potential pathways for landfill-related constituent migration have been evaluated for the site. A conceptual model of the potential pathways is presented in Figure 13. The pathways are as follows:

- Migration in the vapor phase from refuse and impacted groundwater to indoor air of the residences along the southern property boundary (vapor pathway);
- Migration through groundwater in shallow alluvium/extremely weathered granitic rock overlying moderately- to slightly weathered bedrock; and
- Migration through groundwater in fractured rock.

4.4.2 Vapor Pathway

The refuse at the landfill is capped with a cover consisting of 2 feet of clean soil on the top deck of the landfill and on the slopes (IT, 1999). The soil cover acts as a low permeability layer by reducing the flux of volatile constituents. Empirical field studies using flux chamber measurements indicate that a compacted soil layer of just 6 inches could reduce the rate of VOC emissions in the range of 98 to 100 percent (Suder and Schmidt, 1992). Therefore, constituents volatilizing from groundwater and diffusing through the subsurface at the site will likely have negligible concentrations at the surface (outdoor) above the landfill due to the depth to constituents as well as dilution from mixing with ambient outdoor air. The soil cover, in addition to ambient air dilution, will likely deter groundwater vapors from posing a health impact to receptors located outdoors at the landfill. The potential may exist in the adjoining area south of the landfill for vapors to migrate by advection and diffusion through the subsurface into indoor air due to the proximity of residences along the southern property boundary. However, as previously discussed in Section 3.2, soil vapor sample analytical results do not support offsite advective landfill gas migration to the south.

The results of soil vapor sampling conducted during the Phase II EMP and in June 2005 indicated relatively low concentrations of VOCs are present in soil vapor samples collected near the southern property boundary and beneath Dehia Street approximately 120 feet south from the southern property boundary (Figure 16). The primary COC detected in soil vapor samples collected from the two independent soil vapor surveys was benzene (Appendix H, Table H-1). The highest benzene concentrations identified in soil vapor sampling conducted in 2004 and 2005 were 68 ppbv in a sample collected at an approximate depth of 18 feet bgs from boring SG-9 advanced in the southwest corner of the site, and 49 ppbv in a sample collected at an approximate depth of five feet bgs from boring SG-10 advanced near the west end of Dehia Street. In general, the highest concentrations of benzene in soil vapor were encountered in the southwest portion of the site and at the west end of Dehia Street. In addition, benzene concentrations in soil vapor generally increase between the southern site boundary and Dehia Street (Figure 16). Furthermore, with the exception of borings SG-10, -11, -16 and -17, benzene concentrations in soil vapor are either relatively consistent with depth (SG-1, -2, -9, -18 and -19) or decrease with depth (SG-12, -13, -14, and -15). "Estimated" concentrations of benzene have been reported in groundwater samples collected from monitor well POGW-16 located 120 feet crossgradient of SG-9, and 170 feet upgradient of SG-10. Based on Henry's Law equilibrium constants, the "estimated" benzene concentrations reported in groundwater samples collected from POGW-16 are sufficient to result in the benzene concentrations of approximately 20 to 25 ppbv in soil vapor. However, as previously discussed in Section 3.2.2, benzene concentrations detected in soil vapor samples collected from boring SG-9 in 2004, and in 7 of the 20 soil vapor samples collected in 2005 beneath Dehia Street and El Mar Avenue

exceeded the "predicted" equivalent benzene concentration which could be attributed to groundwater volatilization. Therefore, it appears that a source other than groundwater in the area south of the site is contributing to the detected benzene concentrations in soil vapor samples collected during this assessment.

Using current methods of risk assessment which conservatively evaluate the risk potential using reasonable site-specific and conservative default assumptions, cancer and noncancer health hazards for offsite residents are not likely as a result of potential exposures to constituents detected in soil vapor samples collected along the southern perimeter of the site and beneath Dehia Street and El Mar Avenue (Section 4.6). Therefore, vapor exposure appears to be an unlikely pathway.

4.4.3 Shallow Groundwater

Shallow groundwater occurs within the alluvium and weathered bedrock beyond the southern boundary of the site and is considered a secondary pathway for COC migration in groundwater due to downward vertical gradients observed in monitor wells (Section 3.1.1). The direction of shallow groundwater flow is generally south to southwest downgradient of the site (Figure 5). VOC concentrations in shallow groundwater samples collected from downgradient offsite monitor wells POGW-12, -13, -15, -17A/17B and -18A/18B are below MCLs. In addition, based on the BIOCHLOR™ modeling performed during the Phase II EMP, VOCs would likely attenuate within 160 feet from the source area, which is supported by recent groundwater monitoring data. Residents located downgradient of the landfill are located within the city limits of Poway and are using Poway municipal water. Therefore, the shallow groundwater pathway is considered incomplete.

A well survey was performed to identify the location of domestic water wells in the vicinity of the landfill. This survey consisted of contacting the County and the Department of Water Resources (DWR). The well survey identified several domestic groundwater wells within a 1-mile radius of the site (Figure 6). Most of the wells identified in the DWR database were installed in the early 1950s and 1960s prior to the development of the residential area south of the site. Since this area is served with municipal potable water by the City of Poway, it is not likely that wells identified in the DWR database are still in use. A request for owner information is still pending from the DWR for the downgradient domestic wells.

4.4.4 Deep Groundwater Pathway

Groundwater flow through the fractured granitic bedrock beneath the landfill is a pathway for COC migration in groundwater. The direction of groundwater flow is

generally south to southwest at an average hydraulic gradient ranging from 0.03 to 0.13 feet per foot (ft/ft) (Figure 5). Based on the fracture orientations observed from ATV logs collected from the five borehole locations at the site, the groundwater flow direction in the fractured rock may vary at each location (Section 2.3.6). Aquifer test data indicate variable hydraulic conductivities in the fractured rock ranging from 0.04 to 0.58 feet/day. Furthermore, the lack of significant aquifer response in observation wells during pumping suggests a low degree of hydraulic connection between the fractures and between the upper, intermediate and lower fractured zones screened by the monitor wells (GeoSyntec, 2004a). Based on MNA parameters collected from site monitor wells, biodegradation appears to be occurring at the site and mitigating constituent migration (GeoSyntec, 2005). The closest downgradient domestic well may be located approximately 2,000 ft southwest of the site (Figure 6). Therefore, due to the low hydraulic conductivity of the fractured rock, the concentrations of VOCs in downgradient offsite monitor wells, evidence of natural attenuation and biodegradation occurring in groundwater, and the distance from the site to the downgradient domestic well, the groundwater pathway is considered incomplete.

4.5 Updated Human Health Risk Assessment

This section summarizes the results of an updated human health risk assessment performed to assess potential risk resulting from constituents detected in soil vapor samples to the single-family residential neighborhood adjacent to the southern property boundary. Procedures, data used in the risk assessment, model input parameters, model results, and references cited are provided in Appendix H. The purpose of this updated risk assessment was to further evaluate potential impact on human health from potential exposure to constituents present in environmental media downgradient of the landfill. In August 2004, GeoSyntec performed a preliminary human health risk assessment based on soil vapor samples collected at the southern site boundary (GeoSyntec, 2004b). In June 2005, soil vapor samples were collected within the residential community downgradient of the site to further evaluate the lateral extent of VOCs in soil vapor in the subsurface. The approach used in this updated risk assessment followed guidance from the San Diego County Department of Environmental Health (DEH, 2004), the U.S. Environmental Protection Agency (USEPA, 1989), and the California EPA (Cal-EPA, 1999).

4.6 Data Review and Evaluation

As previously discussed in Section 3.2, our evaluation of the laboratory analytical data for landfill gas samples collected from the LFG extraction wells at the site in 2002, and soil vapor samples collected along the southern site boundary in 2004 and beneath Dehia Street and El Mar Avenue in 2005 suggests that a contributing source, or sources of VOCs in soil vapor, are located in the adjoining residential area south of the site. The

focus of the risk assessment was to evaluate potential human health risks associated with VOCs that were detected in soil vapor samples collected along the southern site boundary in 2004, and in the residential area located south of the site in 2005 and their potential migration from the subsurface into indoor air.

The June 2005 soil vapor survey involved collecting 20 soil vapor samples at depths of 1.5 and 5 feet bgs from nine boring locations along Dehia Street and one boring in El Mar Avenue downgradient of the site (Table 3). Additionally, seven soil samples were collected to characterize the physical properties (e.g., bulk density, total porosity, air filled porosity, total organic carbon, and moisture content) of soil in the area where the two soil vapor survey locations was performed (Table 4). A description of the June 2005 soil vapor sampling procedures is included in Appendix B, and copies of the June 2005 soil vapor sample collection logs are provided in Appendix E.

4.6.1 Updated Risk Characterization Results

Chemical-specific, cumulative cancer risks and noncancer hazard index (HI) were calculated for current offsite residents potentially exposed to constituents detected in soil vapor samples and potentially volatilizing from the subsurface into a residence (Appendix H). According to the Department of Toxic Substances Control (DTSC), in general, a cancer risk estimation greater than 1×10^{-6} or total noncancer HI greater than 1 may potentially indicate an adverse threat to human health (Cal-EPA, 1999). Therefore, it is generally inferred that a calculated cancer risk less than 1×10^{-6} and a noncancer HI of 1 or less based on potential exposure to constituents detected in soil vapor indicate that adverse health effects would not likely be of concern. When discussed herein, the calculated potential cancer risk and potential non-cancer hazard are based on potential exposure to the constituents detected in soil vapor samples collected along the southern site boundary in 2004 and beneath Dehia Street and El Mar Avenue in 2005. Results of the risk characterization are discussed below.

The risk and hazard estimates presented herein assume a resident is exposed 350 days per year for 30 years to constituents detected in soil vapor samples and potentially volatilizing into a residential structure. The conservative nature of the default values (e.g., open crack space, building air exchange rate, and the assumption of no biodegradation or other loss mechanism for the COCs) likely results in a higher modeled indoor air concentration. A range of potential risk estimates was developed using both the DEH Vapor Risk model and the Johnson and Ettinger (J&E) vapor intrusion model.

USEPA recommends using the 95% upper confidence limit (UCL95) of the arithmetic mean as the appropriate estimate of the average concentration for the site (US EPA, 1992). Therefore, for comparison to the maximum exposure point concentrations (EPCs), 95% upper confidence limit (UCL95) of the arithmetic mean was calculated for

each constituent of potential concern (COPC) and used as EPCs if the potential risk using maximum concentrations exceed a target risk goal. As an initial step, the site analytical data were evaluated to establish the type of distributional assumption that best fits the data.

A comparison between the results of the preliminary risk assessment and updated risk assessment using the DEH Vapor Risk model, the J&E vapor intrusion model, maximum exposure point concentrations (EPCs) and UCL95 concentrations is summarized in the following table.

Data Used	DEH Vapor Risk Model				J&E Vapor Intrusion Model			
	Cancer Risk		Non-cancer Hazard		Cancer Risk		Non-cancer Hazard	
	Adult	Adult/Child	Adult	Child	Adult	Adult/Child	Adult	Child
August 2004	4.1E-07	5.3E-07	1.8E-03	4.3E-03	3.2E-06	4.0E-06	3.8E-02	8.9E-02
June 2005	3.2E-07	4.0E-07	1.2E-02	2.8E-02	2.6E-06	3.3E-06	8.7E-02	2.0E-01
UCL95	-	-	-	-	1.4E-06	1.8E-06	3.3E-02	7.7E-02

"-" indicates the model was not analyzed because the potential calculated cancer risk using maximum concentrations was less than $10^{-6.}$

Using the DEH Vapor Risk model and maximum EPCs, the potential adult cancer risk was estimated at 3.2 x 10^{-7}, while the noncancer hazard was estimated at 1.2 x 10^{-2} for an adult resident. The potential cancer risk was estimated at 4.0 x 10^{-7} for a resident with integrated child and adult exposures. A noncancer hazard of 2.8 x 10^{-2} was estimated for a child resident. The estimated cancer risks and noncancer hazards resulting from potential exposure to COPCs identified in soil vapor samples during the 2004 and 2005 investigations using the DEH vapor model are less than the target health goals of 1 x 10^{-6} and 1, respectively.

Using the J&E vapor intrusion model and maximum EPCs, the potential adult cancer risk was estimated at 2.6 x 10^{-6}, while the potential noncancer hazard was estimated at 8.7 x 10^{-2} for an adult resident. The potential cancer risk was estimated at 3.3 x 10^{-6} for a resident with integrated child and adult exposures. The primary constituent representing the highest potential cancer risk is benzene. PCE and bromodichloromethane also contributed to the potential risk estimate. A noncancer hazard of 2.0 x 10^{-1} was estimated for a child resident, which is less than the benchmark level of 1. Using the J&E model and maximum EPCs, the estimated cancer risks exceed the target risk goal of 1 x 10^{-6}; therefore, for comparison, the risks were calculated using 95% upper confidence limit (UCL95) concentrations as the EPCs. Using the J&E model and UCL95 EPCs, the potential cancer risk was estimated at 1.4 x 10^{-6} for an adult resident and 1.8 x 10^{-6} for a resident with integrated child and adult exposures. The estimated noncancer hazard for a child resident was less than the benchmark level of 1. It

should be noted that if a bio-attenuation factor of 10 is considered, which is commonly applied for benzene and other fuel constituents, the J&E model would yield lower predicted indoor air concentrations representing acceptable risks.

4.7 Summary

The updated human health risk assessment using maximum EPCs did not change significantly when compared to the results from the risk assessment conducted during the Phase II EMP. Although the cancer risk estimated using the J&E model and maximum EPCs still slightly exceeds the DEH target risk goal of 1×10^{-6}, the inputs used in the model were conservative and likely resulted in an overestimation of potential risk. Use of bioattenuation factors would result in calculations yielding acceptable potential risk. Based on a distributional assumption using the J&E model and UCL95 concentrations, the potential cancer risk is approximately equivalent to the DEH target risk goal of 1×10^{-6}.

Using current methods of risk assessment, which conservatively evaluate the potential for risk using reasonable site-specific and conservative default assumptions, cancer and noncancer health hazards for offsite residents are not likely to occur as a result of potential exposures to constituents detected in soil vapor samples collected along the southern site boundary in 2004 and beneath Dehia Street and El Mar Avenue in 2005.

5. DELINEATION OF RELEASE

Since 1991, a variety of constituents have been identified in samples collected from groundwater monitor wells located at the Poway Landfill (IT, 1993). The primary COCs detected above MCLs in groundwater at the site are PCE, TCE, cis-1,2 DCE and vinyl chloride (Figure 15). In addition, low concentrations of 1,1-dichloroethane and DCDFM have been detected sporadically above MCLs in groundwater at the site.

5.1 Nature and Extent of Groundwater Impacts

Thirteen groundwater monitor wells comprise the Poway Landfill groundwater monitoring network (Figure 15). Three of these groundwater monitor wells are installed upgradient of the refuse (POGW-6, POGW-9, and POGW-10) and ten are installed downgradient of the refuse (POGW-11, POGW-12, POGW-13, POGW-14, POGW-15, POGW-16, POGW-17A/17B, and POGW-18A/18B). In addition, five piezometers (POPW-1, POPW-2A, POPW-2B, POPW-3, and POPW-4) have been sampled to further evaluate VOC concentrations in the suspected "source area." Of these thirteen monitor wells, only three onsite monitor wells, POGW-14, POGW-15 and POGW-16 and all five piezometers have contained detectable concentrations of VOCs (primarily TCE, cis-1,2-DCE and vinyl chloride) exceeding MCLs (Figure 15).

Historically, landfill-related constituents have not been detected in samples collected from downgradient compliance monitor wells POGW-12 and POGW-13. Trace concentrations (above the laboratory method detection limit but below the laboratory reporting limit) of chloroform, acetone, DCDFM, and toluene were detected in groundwater samples collected from recently installed nested monitor wells POGW-17A/17B and POGW-18A/18B located downgradient of the site.

Chloroform is commonly associated with chlorinated municipal water and the offsite area south of the landfill and the onsite area around the flare station are irrigated with municipal water. Chloroform has previously been detected in samples collected from downgradient offsite wells POGW-12 and -13, and onsite piezometers POPW-2A and -2B. However, chloroform was also detected in two field blanks collected during the July 2005 groundwater sampling event suggesting the potential that sample containers provided by the laboratory or the distilled water used to fill the field blank samples may have been contaminated with low concentrations of chloroform. Therefore, chloroform may not be attributable to the landfill.

Acetone is a constituent found in landfill gas, is a common laboratory contaminant, and may be naturally produced (Heins et. al., 1991). During the July 2005 groundwater monitoring event, acetone was detected in samples collected from monitor

wells located upgradient of the landfill (POGW-6 and -10), monitor wells and piezometers located in the western portion of the site (POGW-14 and -16, and POPW-1, -2A, -2B, -3 and -4), downgradient offsite monitor wells(POGW-17B, -18A, and -18B). During the July 2005 monitoring event acetone was also detected in both field blanks, one of two trip blanks prepared at the laboratory, and in the equipment blank. In contrast, acetone was not detected in the samples collected in January 2005 from any of these wells (monitor wells POGW-17B, -18A, and -18B did not exist in January 2005), or in the field blanks, equipment blank or trip blanks. Therefore, the presence of acetone in samples collected in July 2005 is believed to be attributable to the laboratory and not the landfill.

Historically, toluene is not a constituent commonly detected in groundwater samples collected from monitor wells at the site during routine monitoring. During the initial sampling event conducted in June 2005 for downgradient offsite monitor wells POGW-17A/17B and -18A/18B, toluene was detected in samples collected from all four wells at concentrations ranging from 1.0 to 1.9 µg/l. During the July 2005 semi-annual sampling event toluene was detected in the groundwater samples collected from POGW-14 and POGW-18B at "estimated" concentrations of 0.39 µg/l and 0.37 µg/l, respectively. Based on the historical absence of toluene in groundwater samples collected during routine semi-annual monitoring events, and the presence of toluene at "estimated" concentrations in only two monitor wells during the July 2005 sampling event suggests that toluene is unrelated to the landfill. However, its presence will be evaluated during future monitoring events.

The current groundwater analytical data suggest that the extent of VOC impacts downgradient of the site appear to be adequately assessed. Therefore, further downgradient assessment of VOCs in groundwater does not appear to be warranted.

General chemistry parameters and metals measured in groundwater samples collected from the POPW-series piezometers are significantly different than groundwater samples collected from upgradient and downgradient monitor wells at the site (Figure 8). Concentrations of COD, chloride, specific conductance, nitrate, sulfate and TDS are all less in groundwater samples collected from upgradient and downgradient monitor wells than in groundwater samples collected in the POPW-series piezometers, indicating no significant groundwater impacts have occurred in downgradient groundwater as a result of the landfill.

Groundwater samples collected from compliance monitor wells located on the west site boundary contain concentrations of VOCs that exceed MCLs. Therefore, it appears that groundwater with concentrations of VOCs exceeding MCLs may be migrating offsite in the western portion of the site. These data suggest that VOCs impacts to groundwater have not been delineated west of monitor wells POGW-14 and

POGW-16. Additional monitor wells are needed to further evaluate the lateral extent west of the site.

5.2 Monitored Natural Attenuation

Natural attenuation is the reduction in mass or concentration of a chemical in groundwater over time or distance from the source due to naturally occurring physical, chemical, and biological processes. Several lines of evidence can be used to assess that natural attenuation processes are occurring in groundwater at a site. The five processes that were evaluated at the site include: dilution, dispersion, dechlorination, biodegradation, and volatilization. When it has been shown that these processes are capable of attaining the remediation objectives for a site, natural attenuation may be selected alone or in combination with other more active remedies as a remedial alternative (Wiedemeier, et. al., 1998). Chlorinated hydrocarbons, the constituents of concern at the site, can biodegrade via reductive dechlorination. In this process, the chlorinated hydrocarbons are themselves electron acceptors and an adequate supply of electron donors is required for this process to proceed. Electron donors would include natural organic carbon or petroleum hydrocarbons. If an adequate supply of electron donors is not available at the site, reductive dechlorination will not proceed and natural attenuation would be limited to the physical and chemical processes.

Since August 2004, supplemental water quality analyses have been performed on groundwater samples collected from all site monitor wells and piezometers during semi-annual monitoring events to evaluate the inherent capabilities of the native microorganisms to degrade and naturally attenuate the VOCs in site groundwater (GeoSyntec, 2005) (Table 6). The MNA parameters and criteria used to evaluate if natural continuation is occurring are presented in the following table.

Parameter	Concentration	Comments
Oxygen	<0.5 to 5.0 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations.
Nitrate	<1 mg/L	At higher concentrations may compete with reductive pathway.
Total Iron	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions.
Sulfate	<20 mg/L	At higher concentrations may compete with reductive pathway.
Sulfide	>1 mg/L	Reductive pathway possible.
ORP	<50 mV	Reductive pathway possible.
	<-100mV	Reductive pathway likely.
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic.

Parameter	Concentration	Comments
PCE	-	Material released.
TCE	-	Material released and daughter product of PCE.
DCE	-	Daughter product of TCE.
VC	-	Daughter product of DCE.
Ethene	-	Daughter product of VC.

- Greater than detection limit.

VOC concentrations in groundwater samples collected from monitor wells at the downgradient property boundary decrease significantly, and with the exception of chloroform, VOCs have not been detected above MCLs in offsite downgradient monitor wells POGW-11, POGW-12, POGW-13, POGW-17A, POGW-17B/17B and POGW-18A/18B. Based on concentrations of degradation product (cis-1,2-DCE) detected in groundwater samples collected from the POPW-series piezometers and monitor wells POGW-14 and POGW-16, it appears that reductive dechlorination is occurring in site groundwater (Figure 15). Ethene was detected in groundwater samples collected from monitor wells POGW-14, POGW-16, POGW-17A and POGW-18A and from piezometers POPW-2A, POPW-2B, POPW-3 and POPW-4 during the current and previous monitoring events at concentrations ranging from 0.15 µg/l to 4.14 µg/L (Table 6). The detection of ethene indicates that complete reductive dechlorination of TCE in groundwater is occurring due to the indigenous bacteria. The rate of biodegradation and its ability to mitigate constituent migration may be determined based on future monitoring.

Relatively low DO concentrations in localized groundwater beneath the site indicates that conditions favorable for natural attenuation of chlorinated organics are present in some portions of the site. DO concentrations of 3.0 mg/L or less during the July 2005 monitoring event were measured in groundwater samples collected from monitor wells POGW-6, -9, -11, -12, -14, -17A and piezometers POPW-2A, -2B, and -3. In addition, low DO concentrations detected in groundwater samples collected from monitor wells POGW-14 and-17A, and from piezometers POPW-2A, -2B, and -3 appear to correlate with ethene detections.

ORP in groundwater indicates the relative tendency to accept or donate electrons. ORP values less than 50 millivolts (mV) generally indicates the potential for reductive dechlorination is present, and ORP values less than -100 mV, indicates that conditions favorable for natural attenuation of chlorinated organics are present. ORP values are variable across the site, but consistently low ORP values less than 100 mV combined with the presence of ethane in samples collected from monitor wells POGW-14 and POGW-16 indicate reductive dechlorination is occurring in localized areas at the site. The higher ORP values (>100 mV) detected in groundwater from background monitor wells POGW-6 and POGW-10 suggest recharge of water infiltrating into the fractured

granitic bedrock. The higher ORP values (>50 mV) detected in groundwater samples collected from downgradient offsite monitor wells located south of the site suggests infiltration of municipal water from irrigation at the surrounding residences. Other analytical results from groundwater samples collected from site monitor wells and piezometers, for ammonia, total organic carbon, nitrate, dissolved iron, sulfate, and sulfide, also generally indicate that natural attenuation at the site may be limited, based on the three sampling events.

Evidence that VOCs in groundwater are being naturally attenuated include:

- VOC concentrations decline to non-detect levels in the downgradient offsite monitor wells;
- PCE and TCE degradation products (cis-1,2-DCE and vinyl chloride) are present in groundwater samples collected from downgradient monitor wells;
- Ethene has been detected in groundwater samples from downgradient wells which indicates the complete biodegradation of chlorinated ethenes; and
- Several MNA parameters (DO, ORP and ethene) indicate localized conditions may be favorable for anaerobic degradation of VOCs.

Because sufficient data has been collected to demonstrate that natural attenuation is occurring, an abbreviated list of MNA parameters (ORP, DO, ethene) should be suitable to document the effectiveness of MNA during future monitoring events.

6. ENGINEERING FEASIBILITY STUDY

A preliminary screening of remedial alternatives was presented in the Source Characterization Report submitted to the County and RWQCB in April 2004 (GeoSyntec, 2004a). This engineering feasibility study incorporates data collected during the current investigation and previous studies performed at the site.

6.1 Screening Analysis

The technologies evaluated in the screening analysis were selected as the most appropriate to address VOC concentrations in groundwater at the site. Based on the screening analysis, the feasible groundwater and landfill gas remediation technologies are as follows:

- Environmental Monitoring
  - Groundwater Monitoring
  - Landfill Gas Monitoring
- Source Control
  - Leachate-Type Sources
  - Landfill Gas
- Source Removal
  - Dual-Phase Extraction (DPE)
- Ex-Situ Treatment of VOCs
  - Groundwater Pump and Treat
- In-Situ Treatment of VOCs
  - Monitored Natural Attenuation
  - Enhanced Bioremediation

6.2 Engineering Feasibility Analysis

The conceptual scope of each of these technologies is described in the following sections. The selected remedy will likely consist of a combination of multiple technologies. The Assessment of Corrective Measures in terms of effectiveness, capital and operation and maintenance (O&M) costs, and implementability criteria is presented in Table 7. Each technology is assessed according to the criteria in terms of relative

magnitude (Low, Medium, High). The advantages and disadvantages of each technology have also been summarized.

6.2.1 Environmental Monitoring

Groundwater Monitoring

Routine groundwater monitoring will continue to be performed to monitor groundwater quality. Continued monitoring of the existing background and compliance monitor wells will provide data that will be used to document trends in VOC concentrations in groundwater.

As the County is required by the RWQCB to perform routine groundwater monitoring, there are no additional costs for implementation and maintenance of this corrective action measure. However, this measure is only used to detect the presence of potential impacts and not treat them. Therefore, this corrective action measure will not be effective on controlling VOC impacts to groundwater.

Landfill Gas Monitoring

The County is required by the Air Pollution Control District (APCD) to perform routine LFG monitoring. Currently, there are two probes (MP-1 and MP-2) along the southern site boundary for the monitoring of subsurface landfill gas (LFG) migration (Figure 17). Routine monitoring of these probes is currently performed to monitor potential off-site migration of LFG and to assess the effectiveness of LFG control at the site. The existing LFG monitoring probes are suitable for field monitoring to assess the potential for LFG migration, but the probes may not be compatible with collection of soil vapor samples for laboratory analyses of VOCs. VOCs were detected in soil vapor samples collected along the southern property boundary in 2004, and in soil vapor samples collected beneath Dehia Street and El Mar Avenue in 2005. Therefore, based on the previous detection of VOCs in soil vapor samples collected along the southern site boundary, permanent vapor monitoring probes designed specifically for the purpose of collecting vapor samples for laboratory analyses appears to be warranted.

Aside from the capital cost of installing additional probes, there are no additional costs for implementation and maintenance of this corrective action measure other than sample collection and analysis. However, this measure is only used to detect the presence of potential impacts and not treat them. Therefore, this corrective action measure will not be effective on controlling LFG impacts to groundwater or soil vapor.

6.2.2 Source Control

As described in the Site Conceptual Model, the presence of VOCs in groundwater at the site is likely due to water in contact with waste and LFG in contact with groundwater. To reduce VOC concentrations in groundwater, control of the groundwater source and LFG source is proposed as a corrective action measure.

Leachate-Type Source Control

Leachate is generated through the contact of water with waste materials. The typical sources of water in landfills are the infiltration of precipitation, surface water run-on, and inherent water contained within the waste materials contained within the landfill. Once water enters the refuse, it is contained within the porosity of the waste materials. However, once the porosity of the waste materials has reached field capacity, additional influent liquid will migrate out of the waste materials as leachate. Leachate may then migrate toward the groundwater table and mix with groundwater, resulting in potential impacts.

Leachate is typically controlled through the use of a leachate collection and removal system (LCRS) installed during landfill construction. The LCRS is a relatively new technology, when compared to the age of the Poway Landfill, and was consequently not installed when the landfill was constructed. It is impractical and infeasible to install an LCRS post-construction. In the absence of an LCRS, leachate generation is typically controlled through the installation of a cover system designed to minimize the infiltration of surface water into the waste mass and/or the installation of a dewatering system to minimize groundwater contact with waste. An efficient cover system is designed to maximize the evaporation-transpiration and run-off of precipitation and other surface waters. A dewatering system installed beneath a landfill post-construction, typically utilizes groundwater extraction wells to affect a localized depression of the water table.

The County maintains current storm water best management practices (BMPs) at the landfill during the rain season (October through April). The BMPs include maintenance grading of the cover system, maintaining vegetation on the cover system, and controlling precipitation runoff through a surface water management system. With the continued maintenance and management of these engineering controls, the infiltration of precipitation and surface water into the waste mass will be minimized, thereby controlling the generation of leachate. While there is no present dewatering system at the site, Section 6.2.3 describes a potential remedial measure to extract and treat VOC-impacted groundwater. Such a measure could be designed to provide ancillary benefit as a dewatering system.

Landfill improvements to control leachate generation through cover system maintenance are moderately effective and represent little difficulty during implementation. However, this corrective action measure requires that moderate capital expenditure be budgeted for continued maintenance of the cover system and the installation and routine monitoring and replacement of BMPs. As a LCRS was not installed at the landfill during construction, it is possible that leachate is generated by groundwater coming in contact with the waste mass. Installing a dewatering system is judged to be moderately to highly effective in minimizing the generation of leachate in localized areas where waste is in contact with groundwater. However, the capital and O&M costs of such a system are likely to be high. Current site conditions do not appear to warrant the installation of a dewatering system.

Landfill Gas Control

Landfill gas impacts on groundwater include the partitioning of VOCs from landfill gas into groundwater. Impacts to groundwater can originate from small quantities of landfill gas. Thus, minimizing the contact between landfill gas and groundwater will reduce the potential for future groundwater impacts by VOCs contained in the landfill gas. Furthermore, the accumulation of landfill gas within the waste mass results in increased pressure gradients that may provide the mechanism for offsite migration.

Controlling landfill gas at a landfill is accomplished through the installation of a landfill gas extraction system within the refuse. Landfill gas extraction systems are typically designed, constructed, and operated for the sole purpose of extracting large quantities of landfill gas that contain high percentages of methane gas. These extraction systems target large quantities of methane rich landfill gas to allow for the flaring and burning of the gas with little or no additional fuels required for combustion. These systems are not typically designed and operated for the small quantities of landfill gas that may impact groundwater. However, additional landfill gas extraction wells can be added to an existing extraction system to enhance the capability of the system at controlling smaller quantities of gas without adversely affecting system performance.

In June 2000, SCS Engineers conducted a study on the performance of the existing LFG extraction system (SCS, 2000). Based on the findings of this study, the LFG extraction system was upgraded to improve performance. The improvements included the installation of seven additional LFG extraction wells in December 2000. The upgraded LFG extraction system has been somewhat effective in controlling the source of groundwater impacts; however, the system appears to be operating aerobically (thus, inefficiently) in portions of the landfill. As demonstrated by VOCs detected in groundwater, additional upgrades or optimization appear warranted to mitigate LFG impacts to groundwater.

Based on the findings of the current LFG system evaluation, as much as 50 feet of the waste prism is not subjected to gas extraction. These areas represent the highest potential for LFG impacts to groundwater. Three LFG extraction wells are recommended in these areas to improve vertical coverage and the effectiveness of the LFG system (Section 3.3). The objective of additional LFG wells is to focus on extraction of gas that may be "pooled" at the bottom of the refuse prism. In addition, the existing LFG extraction well seals should be inspected and repaired, as necessary, to prevent air intrusion at the surface from migrating into the waste prism. The County should also evaluate the cost/benefit of using supplemental fuel to sustain combustion for longer operating times to control LFG migration during periods of non-operation.

Landfill gas system improvements can be highly effective but may represent a high degree of difficulty during implementation, as the installation of additional extraction wells would necessitate the drilling through the cap and landfill waste. Furthermore, the technology requires that long term monitoring and reporting be evaluated to optimize the system, causing a corresponding marked increase in the O&M costs. As a result, improvements to the landfill gas extraction system have been assessed to be a favorable corrective action measure. The ability of this corrective measure to mitigate landfill impacts to levels consistent with water quality criteria is likely, but would only be effective in addressing impacts due to landfill gas migration to groundwater.

6.2.3 Source Removal – Dual-Phase Extraction

Based on the site data, significant VOC impacts in groundwater are present in the northwest portion of the site. Source removal using dual-phase extraction (DPE) technology was considered as a remedial technology, due to its effectiveness in mitigating isolated impacts. DPE technology uses a blower to induce a high vacuum on an extraction well to remove VOCs concurrently from both groundwater and soil vapor phases. The DPE process generates liquid and vapor effluent waste streams. Conceptual designs suggest that the effluent streams may be discharged into the existing LFG control system flare system; however, that may add to the O&M costs of that system.

The use of source removal was evaluated and determined to be moderately effective, and present a moderate capital cost and moderate degree of difficulty during implementation. This technology will require the installation of additional equipment at the site and may also require additional air discharge permitting. The indefinite operation period and handling of effluent waste streams may result in prohibitively large O&M costs. Therefore, prior to selecting this alternative, a pilot study should be preformed to refine the design and associated long term costs. The ability of this corrective measure to

mitigate landfill impacts to levels consistent with water quality criteria is feasible but would only be effective in addressing constituents in the "source area."

6.2.4 Ex-Situ Treatment of VOCs

Groundwater Pump and Treat

Based on the results of the Site Conceptual Model, groundwater potentially in contact with refuse in the northwestern and central portions of the landfill may be the source of leachate-type impacts and result in COCs detected in the groundwater. Therefore, dewatering to lower the water table in the vicinity of the waste and ex-situ treatment of extracted groundwater was considered.

A system of dewatering wells would be designed, installed, and operated to lower the water table below the point at which it contacts waste. Based on preliminary analysis of potential extraction rates, dewatering wells would likely result in low production. Extracted groundwater would then be treated to remove COCs, likely using granular activated carbon (GAC) or vaporization with the LFG system flare. If GAC is used to remove VOCs, it is likely that the effluent process water from the treatment system would require management. It is anticipated that the quantity of water extracted could be stored and used for landscape irrigation and dust control at the site. Alternatively, this effluent water could be permitted for discharge to a regional sanitary sewer system for a fee.

The use of pump and treat dewatering was evaluated and determined to be moderately effective and present a high degree of difficulty during implementation. However, the relatively low projected production rate of wells would result in inefficiencies within the extraction and treatment system. Furthermore, the indefinite operation period and handling of effluent waste streams result in prohibitively large O&M cost, therefore making this an unfavorable corrective action measure. The ability of this corrective measure to mitigate landfill impacts to levels consistent with water quality criteria is feasible but would only be effective in addressing constituents associated with groundwater in contact with waste.

6.2.5 In-Situ Treatment

Monitored Natural Attenuation

Monitored natural attenuation (MNA) is the remedial technology where by groundwater parameters are measured to monitor the inherent capabilities of native micro-organisms to degrade and naturally attenuate VOCs. The biological degradation of chlorinated hydrocarbons has been demonstrated for the site and is supported in the discussions presented in Section 5 and the Source Characterization Report (GeoSyntec, 2004a). The degradation rate is usually predictable based on modeling of environmental factors, such as electron acceptor and donor concentrations, VOC concentrations, aquifer flow characteristics, and geochemical characteristics of the matrix. Although the rate of degradation as a result of natural processes is usually slow, the results of the risk assessment indicate that there is an insignificant risk from residual groundwater impacts, thus making natural attenuation a favorable corrective action measure.

Although it will not prevent off-site migration of VOC impacts, MNA is both highly effective and implementable. The technology requires that long term monitoring and reporting be performed to assess effectiveness, but routine monitoring is currently being performed and the additional effort to monitor MNA parameters will not likely result in major increases in the O&M costs. The ability of this corrective measure to mitigate landfill impacts to levels consistent with water quality criteria is feasible but would need to be confirmed.

Enhanced Bioremediation

Enhanced bioremediation is the remedial technology whereby the natural biological degradation of chlorinated hydrocarbons is enhanced through the application of specialized compounds, including bacteria and micro-organisms. Often during the process of biological degradation of VOCs, there exists a point where a compound may not degrade to its most inert components without the presence of otherwise naturally occurring bacteria. Through bioaugmentation these necessary bacteria are added to the system and the degradation is completed.

A system of injection wells would be designed, permitted, and installed to facilitate the application of bioaugmentation compounds to the groundwater in the northwest area of the landfill. The appropriate bioenhancement compounds will be selected based on the MNA parameters collected and analyses conducted to determine which degradation compounds are present in groundwater. Continued monitoring of these indicators is necessary to assess the effectiveness of the biodegradation process. Although bioenhancement compounds are generally accepted as established remedial

technologies, permits will be required from the RWQCB to allow their discharge to groundwater.

Enhanced bioremediation is highly effective, but requires a moderate degree of difficulty during planning. In addition, the implementation of this technology will likely result in moderate difficulty during injection well installation and permitting. Although the technology requires that long term monitoring and reporting be performed to assess effectiveness, routine monitoring is currently being performed and will not likely result in major increases in the O&M costs. The ability of this corrective measure to mitigate landfill impacts to levels consistent with water quality criteria is likely.

6.3 Summary

The engineering feasibility study presented herein assessed the cost, effectiveness, and implementability of several remedial alternatives including; continued groundwater and LFG monitoring, leachate control, LFG control, DPE source removal, pump and treat technology, bioremediation, and monitored natural attenuation. A pilot study is recommended to evaluate the effectiveness of DPE as a source removal alternative. MNA in combination with landfill gas control appear to be effective remedial alternatives for the site. In addition, enhanced bioremediation or DPE may be used if the MNA process is determined to be ineffective to control COC migration. To evaluate the effectiveness of LFG control mitigation measures, and further evaluate VOC concentrations detected in soil vapor samples collected along the southern property boundary, permanent vapor monitor probes should be installed to facilitate routine sampling. If supported by future monitoring, a vertical air curtain may be warranted to reduce the potential for offsite migration of LFG. Collectively these alternatives should be able to mitigate apparent landfill impacts to levels consistent with water quality objectives, water quality protection standards, and the protection of human health.

7. CORRECTIVE ACTION PROGRAM

The corrective action program recommended for the Poway Landfill addresses source control, source removal, and natural attenuation of landfill-related impacts at the site as methods for mitigation of impacted groundwater in the northwest portion of the site. The specific corrective action program includes:

- Monitoring;
- Source Control;
- Source Removal; and
- Monitored Natural Attenuation.

7.1 Groundwater Monitoring

Based on the current site conceptual model, the primary groundwater flow direction is southerly. However, the presence of higher concentrations of COCs in groundwater samples collected from wells located near the western site boundary than in downgradient monitor wells suggests localized westerly flow variations and the possibility of offsite migration of COCs in groundwater to the west. To adequately support the monitored natural attenuation alternative, two nested monitor well pairs, one west of POGW-14 and the other west of POGW-16, appear to be warranted.

The nested monitor well pairs will be installed and screened in the upper and intermediate fracture zone to further characterize the fractured rock and to evaluate the extent of potential landfill-related constituents west and southwest of the site (Figure 17). Analytical groundwater data collected from the proposed nested monitor well pairs will be used to further support MNA, and determine if additional remediation is warranted.

7.2 Source Control

Sources of groundwater impacts at the site include landfill gas partitioning to groundwater and apparent saturated waste creating impacts to groundwater in the northwest portion of the site. One option for source control was selected as a means to mitigate the source of groundwater impacts at the site and one option for source removal was selected as a means to evaluate if offsite migration can be minimized and monitored as described in the following sections.

7.2.1 Cover and Storm Water Maintenance

In accordance with waste discharge requirements (WDRs) established by the RWQCB in Order No. 94-165 (RWQCB, 1994), the County will continue to maintain storm water BMPs during the rainy season (October through April). The BMPs include maintenance grading of the cover system, maintaining vegetation on the cover system, and controlling precipitation runoff through a surface water management system. With the continued maintenance and management of these engineering controls, the infiltration of precipitation and surface water into the waste prism will be minimized, thereby controlling the generation of leachate.

7.2.2 Landfill Gas System Upgrades

Based on the monthly monitoring records collected by SCS during June through December 2004, the landfill appears to be aerobic and even though the flare is operating for 6.5 hours a day, the gas system is still causing air intrusion into the landfill. The existing LFG extraction wells (except EW-7) indicate that aerobic decomposition is occurring throughout the monitored refuse areas.

Based on the findings of the LFG system evaluation, three LFG extraction wells are recommended in areas to improve vertical coverage and the effectiveness of the LFG system (Figure 17). In addition, LFG extraction well seals will be evaluated and repaired, as needed, to mitigate air intrusion at the surface and migration into the waste prism. The County will also re-evaluate the operating times and whether adding make up fuel to sustain longer operating times to control LFG migration is warranted.

Currently, two probes (MP-1 and MP-2) exist along the southern site boundary for the monitoring of subsurface LFG migration. Monthly routine monitoring of probes MP-1 through MP-5 are currently performed to evaluate potential off-site migration of LFG and to assess the effectiveness of LFG control at the site. If warranted based on future monitoring, the County will re-evaluate other corrective action alternatives (e.g. air curtain).

7.3 Monitored Natural Attenuation

Natural attenuation appears to be occurring to some degree at the site as discussed in Section 5. As a remedial alternative, monitored natural attenuation includes analysis of groundwater samples for additional parameters to monitor the inherent capabilities of the native microorganisms to degrade and naturally attenuate chlorinated VOCs. The degradation rate is usually predictable based on modeling of environmental factors such as electron acceptor and donor concentrations, VOC concentrations, groundwater flow

characteristics, and geochemical characteristics of the matrix. Although the rate of degradation as a result of natural processes is usually slow, the results of the risk assessment indicate that there is no significant risk from residual groundwater impacts, making natural attenuation a favorable corrective action alternative.

The presence or absence of COCs and other MNA parameters (alkalinity, ammonia, chloride, dissolved oxygen, dissolved and total iron, oxidation/reduction potential, nitrate, nitrite, total organic carbon, sulfate, sulfide, and ethene) downgradient of the landfill are currently being assessed as part of four consecutive semi-annual groundwater sampling events in all monitor wells and piezometers. After this initial evaluation period, sampling for MNA parameters will be discontinued in background monitor wells and some of the downgradient monitor wells. It is likely that downgradient monitor wells POGW-14, POGW-15 and POGW-16 and piezometers POPW-1, -2A, -2B –3, -4 and the proposed nested monitor well pairs installed west of monitor wells POGW-14 and POGW-16 will continue to be sampled for a subset of MNA parameters.

7.3.1 Source Removal-Dual Phase Extraction Pilot Study

A DPE pilot study is recommended to evaluate removal of the chlorinated compounds detected in groundwater in the "source area." Because of the complexity of constituent transport in fractured granitic bedrock, the DPE pilot study will also evaluate whether DPE combined with other technologies (bioremediation, air sparging, or bioventing) will provide effective source removal system for the site. The pilot study will likely require an independent system from the existing LFG extraction system due to vacuums needed to effectively extract groundwater and vapor from the "source area."

8. CORRECTIVE ACTION MONITORING AND REPORTING PROGRAM

Corrective action groundwater monitoring will be used to monitor the effectiveness of the proposed corrective measures. Landfill gas migration and further evaluation of VOCs in soil vapor will be assessed by collecting vapor samples from existing and proposed LFG probes located at the southern site property boundary.

8.1 Corrective Action Groundwater Monitoring

Currently, thirteen monitor wells the groundwater monitoring network for the Poway landfill. Not all of these monitor wells are needed to evaluate the effectiveness of corrective measures. The County previously requested that monitor wells POGW-10 and POGW-12 be converted to piezometers because they provide redundant data. After an assessment of baseline data from the new monitor wells is performed a final corrective action monitoring network will be developed.

Per Order No. 94-165, the monitoring network at the site currently consists of nine monitor wells. In addition, monitor wells POGW-17B and POGW-18B will be added to the monitoring network during the August 2005 monitoring event and sampled during future routine semi-annual monitoring events. The proposed groundwater monitoring network is summarized as follows:

Well Name	Purpose
POGW-6	Background Monitor Well
POGW-9	Background Monitor Well
POGW-11	Downgradient Monitor Well
POGW-13	Downgradient Monitor Well
POGW-14	Downgradient Monitor Well
POGW-15	Downgradient Monitor Well
POGW-16	Downgradient Monitor Well
POGW-17B	Downgradient Monitor Well
POGW-18B	Downgradient Monitor Well

8.2 Corrective Action Monitoring Parameters

In compliance with Section C.3.b of MRP No. 94-165 and the revised MRP [GeoSyntec, 2000b] approved by the RWQCB in a letter dated 10 August 2000

[RWQCB, 2000], groundwater samples are collected from the monitor wells semi-annually, and analyzed as follows:

Parameter	Method
Chloride	SM4500-Cl-B
Nitrate as nitrogen	EPA 353.3
Field pH, field conductivity	Field Method
Sulfate	EPA 375.4
Total Dissolved Solids (TDS)	EPA 160.1
Bicarbonate, carbonate	EPA 310.1
Chemical Oxygen Demand (COD)	EPA 410.4
Dissolved calcium, potassium, magnesium, and sodium	EPA 6010B
Volatile Organic Compounds (VOCs)	EPA 8260B

Since August 2004, supplemental water quality analyses have been performed on groundwater samples collected from all site monitor wells and piezometers as part of three consecutive semi-annual monitoring events to evaluate the inherent capabilities of the native microorganisms to degrade and naturally attenuate the VOCs in site groundwater (GeoSyntec, 2005). Based on this initial screening of MNA parameters, the selected site-specific MNA parameters that support evidence that natural attenuation is occurring in groundwater at the site and within the site vicinity are presented in the table below. Groundwater samples collected from downgradient monitor wells POGW-14, POGW-15 and POGW-16 and the two proposed nested monitor well pairs will be sampled for MNA parameters in addition to the routine parameters during semi-annual monitoring events. Groundwater samples will continue to be collected from piezometers POPW-1, -2A, -2B, -3 and -4 during routine monitoring events and analyzed for VOCs, chloride, total dissolved solids, pH and MNA parameters as follows:

Parameter	Method
VOCs	8260B
chloride	SM4500-Cl-B
total dissolved solids	EPA 160.1
Field pH, field conductivity	Field Method
Dissolved Oxygen	Field Measurement
Oxidation Reduction Potential	Field Measurement
Ethene	RSK-175M

8.3 Landfill Gas Control

Currently, the LFG system is performing and meets regulatory compliance. However, because the LFG system monitoring records indicate the landfill has been aerobic during July through December 2004, three extraction wells and optimization of

the LFG system appear to be necessary to control LFG impacts. The County will consult with SCS to install three extraction wells and to optimize the performance of the LFG system. In addition, soil vapor sampling probes will be installed near the southern site boundary. Soil vapor samples will be collected from all probes at the southern site property boundary and analyzed for VOCs by EPA Method TO-15 and fixed gases by Method ASTM-D-1946.

8.4 Monitoring and Reporting Frequency

Groundwater monitor wells in the routine monitoring program will continue to be monitored on a semi-annual basis. Downgradient monitor wells POGW-14, POGW-15, POGW-16, the proposed nested monitor well pairs installed west of the site, and all five piezometers will be sampled for MNA parameters during semi-annual monitoring events for four consecutive monitoring events. After this initial evaluation period, all monitor wells will return to the semi-annual monitoring program. The effectiveness of these results will be discussed in the regularly scheduled semi-annual groundwater monitoring reports submitted to the RWQCB on April 30 and October 30 of each year.

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TABLES

Table 1
Summary of Groundwater Depths and Elevations
Poway Landfill
Poway, California

Well Number	Top of Casing Elevation (ft msl)	Date	Depth to Bottom (ft toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)
POPW-1	724.07	04/18/03	116.00	94.46	629.61
		04/23/03	116.00	92.89	631.18
		05/05/03	116.00	92.12	631.95
		05/12/03	116.00	91.80	632.27
		05/15/03	116.00	91.74	632.33
		06/17/03	116.00	91.10	632.97
		08/26/03	116.00	90.50	633.57
		03/15/04	116.00	91.74	632.33
		06/04/04	116.00	91.67	632.40
		08/19/04	116.00	92.74	631.33
		01/24/05	116.00	85.50	638.57
		07/12/05	116.00	75.63	648.44
		07/19/05	116.00	75.58	648.49
POPW-2A	722.74	04/18/03	121.00	113.05	609.69
		04/23/03	121.00	103.62	619.12
		05/05/03	121.00	97.40	625.34
		05/12/03	121.00	96.01	626.73
		05/15/03	121.00	95.87	626.87
		06/17/03	121.00	95.72	627.02
		08/26/03	121.00	95.53	627.21
		03/15/04	121.00	96.63	626.11
		06/04/04	121.00	96.46	626.28
		08/19/04	121.00	96.91	625.83
		01/24/05	121.00	88.55	634.19
		07/12/05	121.00	80.42	642.32
		07/19/05	121.00	80.20	642.54
POPW-2B	722.74	04/18/03	155.00	95.10	627.64
		04/23/03	155.00	94.93	627.81
		05/05/03	155.00	95.45	627.29
		05/12/03	155.00	94.92	627.82
		05/15/03	155.00	94.98	627.76
		06/17/03	155.00	95.01	627.73
		08/26/03	155.00	94.78	627.96
		03/15/04	155.00	96.09	626.65
		06/04/04	155.00	95.88	626.86
		08/19/04	155.00	96.37	626.37
		01/24/05	155.00	95.10	627.64
	722.24	07/12/05	155.00	79.68	642.56
		07/19/05	155.00	79.33	642.91
POPW-3	724.71	04/18/03	121.00	112.76	611.95
		04/23/03	121.00	105.54	619.17
		05/05/03	121.00	97.61	627.10
		05/12/03	121.00	90.92	633.79
		05/15/03	121.00	88.84	635.87
		06/17/03	121.00	76.65	648.06
		08/26/03	121.00	71.20	653.51
		03/15/04	121.00	71.84	652.87
		06/04/04	121.00	71.39	653.32
		08/19/04	121.00	72.38	652.33
		01/24/05	121.00	69.05	655.66
		07/12/05	121.00	51.91	672.80
		07/19/05	121.00	51.86	672.85

Table 1
Summary of Groundwater Depths and Elevations
Poway Landfill
Poway, California

Well Number	Top of Casing Elevation (ft msl)	Date	Depth to Bottom (ft toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)
POPW-4	706.49	04/18/03	113.50	95.77	610.72
		04/23/03	113.50	95.81	610.68
		05/05/03	113.50	95.98	610.51
		05/12/03	113.50	95.97	610.52
		05/15/03	113.50	96.08	610.41
		06/17/03	113.50	96.45	610.04
		08/26/03	113.50	96.52	609.97
		03/15/04	113.50	97.70	608.79
		06/04/04	113.50	97.85	608.64
		08/19/04	113.50	98.40	608.09
		01/24/05	113.50	97.85	608.64
		07/12/05	113.50	82.62	623.87
		07/19/05	113.50	82.43	624.06
POGW-6	695.35	02/01/91	35.26	17.26	678.09
		02/05/91	35.00	17.30	678.05
		04/11/91	35.30	12.70	682.65
		07/22/91	35.25	13.17	682.18
		10/16/91	34.90	14.43	680.92
		12/20/93	35.00	5.35	690.00
		05/03/94	35.00	4.92	690.43
		11/22/94	35.30	8.00	687.35
		09/29/95	35.30	4.12	691.23
		02/22/96	35.30	5.70	689.65
		08/15/96	35.30	7.85	687.50
		02/13/97	35.30	5.95	689.40
		08/26/97	35.30	9.24	686.11
		02/18/98	35.30	6.28	689.07
		08/27/98	35.30	3.94	691.41
		03/01/99	35.30	5.26	690.09
		09/02/99	35.30	8.93	686.42
		02/28/00	35.30	9.73	685.62
		08/02/00	35.30	11.78	683.57
		02/05/01	35.30	14.83	680.52
		07/31/01	34.60	12.61	682.74
		02/15/02	34.60	15.72	679.63
		08/02/02	34.60	17.19	678.16
		01/31/03	34.60	19.69	675.66
		03/11/03	34.60	15.56	679.79
		03/19/03	34.60	14.42	680.93
		07/25/03	34.60	14.60	680.75
		08/26/03	34.60	15.34	680.01
		03/15/04	34.60	16.07	679.28
		06/04/04	34.60	15.63	679.72
		08/19/04	34.60	17.06	678.29
		01/24/05	34.60	11.32	684.03
		07/12/05	34.60	4.33	691.02
		07/19/05	34.60	4.36	690.99

Table 1
Summary of Groundwater Depths and Elevations
Poway Landfill
Poway, California

Well Number	Top of Casing Elevation (ft msl)	Date	Depth to Bottom (ft toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)
POGW-7	721.45	02/01/91	163.40	88.40	633.05
		02/05/91	163.45	91.25	630.20
		04/11/91	163.50	89.10	632.35
		07/22/91	163.45	86.33	635.12
		10/15/91	163.55	85.51	635.94
		12/20/93	160.00	73.11	648.34
		05/03/94	160.00	74.58	646.87
		11/08/94	160.00	76.72	644.73
		08/10/95	160.00	70.52	650.93
		02/22/96	160.00	74.45	647.00
		08/15/96	160.00	76.55	644.90
		02/13/97	160.00	77.70	643.75
		08/26/97	160.00	77.00	644.45
		02/19/98	160.00	77.75	643.70
		08/27/98	160.00	69.66	651.79
		03/01/99	160.00	73.25	648.20
		09/02/99	160.00	75.57	645.88
POGW-8	619.77	02/01/91	59.80	36.55	583.22
		02/05/91	60.25	36.50	583.27
		04/11/91	60.20	36.90	582.87
		07/22/91	60.26	36.74	583.03
		10/15/91	60.30	36.70	583.07
		12/20/93	58.00	16.33	603.44
		05/03/94	58.00	16.42	603.35
		11/08/94	60.31	19.35	600.42
		08/10/95	60.13	11.08	608.69
POGW-9	725.05	02/22/96	83.50	37.45	687.60
		08/15/96	83.50	40.45	684.60
		02/13/97	83.50	40.67	684.38
		08/26/97	83.50	43.07	681.98
		02/18/98	83.50	43.47	681.58
		08/27/98	83.50	30.27	694.78
		03/01/99	83.50	36.83	688.22
		09/02/99	83.50	40.15	684.90
		02/28/00	83.50	42.97	682.08
		08/02/00	83.50	44.87	680.18
		02/05/01	83.50	48.20	676.85
		07/31/01	84.36	47.11	677.94
		02/15/02	84.36	50.46	674.59
		08/02/02	84.36	52.38	672.67
		01/31/03	84.36	53.48	671.57
		03/11/03	84.36	53.50	671.55
		03/19/03	84.36	53.35	671.70
		07/25/03	84.36	51.50	673.55
		08/26/03	84.36	51.88	673.17
		03/15/04	84.36	52.15	672.90
		06/04/04	84.36	52.39	672.66
		08/19/04	84.36	53.27	671.78
		01/24/05	84.36	52.10	672.95
		07/12/05	84.36	28.12	696.93
		07/19/05	84.36	43.75	681.30

Table 1
Summary of Groundwater Depths and Elevations
Poway Landfill
Poway, California

Well Number	Top of Casing Elevation (ft msl)	Date	Depth to Bottom (ft toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)
POGW-10	710.56	02/22/96	52.60	41.00	669.56
		08/15/96	52.60	45.25	665.31
		02/13/97	52.60	46.08	664.48
		08/26/97	52.60	44.07	666.49
		02/19/98	52.60	47.31	663.25
		08/27/98	52.60	28.87	681.69
		03/01/99	52.60	38.80	671.76
		09/02/99	52.60	43.48	667.08
		02/28/00	52.60	46.05	664.51
		08/02/00	52.60	46.10	664.46
		02/05/01	52.60	49.65	660.91
		07/31/01	53.86	43.92	666.64
		02/15/02	53.86	47.02	663.54
		08/02/02	53.86	49.12	661.44
		01/31/03	53.86	52.52	658.04
		03/11/03	53.86	53.30	657.26
		03/19/03	53.86	53.26	657.30
		07/25/03	53.86	47.95	662.61
		08/26/03	53.86	47.21	663.35
		03/15/04	53.86	48.95	661.61
		06/04/04	53.86	48.82	661.74
		08/19/04	53.86	49.62	660.94
		01/24/05	53.86	39.65	670.91
		07/12/05	53.86	28.25	682.31
		07/19/05	53.86	28.75	681.81
POGW-11	628.71	04/09/96	54.20	43.35	585.36
		08/15/96	54.20	45.18	583.53
		02/13/97	54.20	44.11	584.60
		08/26/97	54.20	46.40	582.31
		02/18/98	54.20	43.07	585.64
		08/27/98	54.20	38.10	590.61
		03/01/99	54.20	42.54	586.17
		09/02/99	54.20	44.90	583.81
		02/28/00	54.20	47.53	581.18
		08/02/00	54.20	48.43	580.28
		02/05/01	54.20	51.79	576.92
		07/31/01	54.20	48.46	580.25
		02/15/02	54.20	48.50	580.21
		08/02/02	54.20	51.38	577.33
		01/31/03	54.20	52.22	576.49
		03/11/03	54.20	51.78	576.93
		03/19/03	54.20	51.68	577.03
		07/25/03	54.20	49.10	579.61
		08/26/03	54.20	49.38	579.33
		03/15/04	54.20	51.13	577.58
		06/04/04	54.20	51.05	577.66
		08/19/04	54.20	51.69	577.02
		01/24/05	54.20	47.81	580.90
		07/12/05	54.20	41.92	586.79
		07/19/05	54.20	42.00	586.71

Table 1
Summary of Groundwater Depths and Elevations
Poway Landfill
Poway, California

Well Number	Top of Casing Elevation (ft msl)	Date	Depth to Bottom (ft toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)
POGW-12	594.72	02/22/96	15.80	10.10	584.62
		08/15/96	15.80	11.95	582.77
		02/13/97	15.80	10.25	584.47
		08/26/97	15.80	12.48	582.24
		02/19/98	15.80	10.63	584.09
		08/27/98	15.80	7.51	587.21
		03/01/99	15.80	9.00	585.72
		09/02/99	15.80	10.76	583.96
		03/06/00	15.80	12.32	582.40
		08/02/00	15.80	11.41	583.31
		02/05/01	15.80	13.26	581.46
		07/31/01	15.76	9.16	585.56
		02/15/02	15.76	9.67	585.05
		08/02/02	15.76	9.41	585.31
		01/31/03	15.76	9.83	584.89
		03/11/03	15.76	8.92	585.80
		03/19/03	15.76	8.72	586.00
		07/25/03	15.76	9.12	585.60
		08/26/03	15.76	9.52	585.20
		03/15/04	15.76	9.73	584.99
		06/04/04	15.76	9.53	585.19
		08/19/04	15.76	10.12	584.60
		01/24/05	15.76	7.03	587.69
		07/12/05	15.76	10.98	583.74
		07/19/05	15.76	11.19	583.53
POGW-13	594.88	02/22/96	52.60	12.20	582.68
		08/15/96	52.60	13.90	580.98
		02/13/97	52.60	13.22	581.66
		08/26/97	52.60	14.40	580.48
		02/19/98	52.60	12.83	582.05
		08/27/98	52.60	7.25	587.63
		03/01/99	52.60	10.46	584.42
		09/02/99	52.60	12.49	582.39
		02/28/00	52.60	14.96	579.92
		08/02/00	52.60	15.61	579.27
		02/05/01	52.60	18.46	576.42
		07/31/01	52.52	15.07	579.81
		02/15/02	52.52	16.64	578.24
		08/01/02	52.52	17.54	577.34
		01/31/03	52.52	17.91	576.97
		03/11/03	52.52	17.91	576.97
		03/19/03	52.52	17.00	577.88
		07/25/03	52.52	15.57	579.31
		08/26/03	52.52	15.70	579.18
		03/15/04	52.52	16.04	578.84
		06/04/04	52.52	16.54	578.34
		08/19/04	52.52	17.06	577.82
		01/24/05	52.52	12.90	581.98
		07/12/05	52.52	10.18	584.70
		07/19/05	52.52	10.28	584.60

Table 1
Summary of Groundwater Depths and Elevations
Poway Landfill
Poway, California

Well Number	Top of Casing Elevation (ft msl)	Date	Depth to Bottom (ft toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)
POGW-14	722.61	02/28/00	226.60	87.33	635.28
		08/02/00	226.60	88.35	634.26
		02/05/01	226.60	91.79	630.82
		07/31/01	225.68	90.31	632.30
		02/15/02	225.68	94.05	628.56
		08/02/02	225.68	96.90	625.71
		01/31/03	225.68	99.41	623.20
		03/11/03	225.68	99.78	622.83
		03/19/03	225.68	99.76	622.85
		07/25/03	225.68	98.88	623.73
		08/26/03	225.68	99.09	623.52
		03/15/04	225.68	99.18	623.43
		06/04/04	225.68	99.87	622.74
		08/19/04	225.68	100.86	621.75
		01/24/05	225.68	99.14	623.47
		07/12/05	225.68	83.11	639.50
		07/19/05	225.68	82.83	639.78
POGW-15	606.60	07/31/01	24.29	13.75	592.85
		02/15/02	24.29	16.78	589.82
		08/02/02	24.29	18.69	587.91
		01/31/03	24.29	20.17	586.43
		03/11/03	24.29	19.69	586.91
		03/19/03	24.29	19.77	586.83
		07/25/03	24.29	19.21	587.39
		08/26/03	24.29	19.39	587.21
		03/15/04	24.29	19.39	587.21
		06/04/04	24.29	20.72	585.88
		08/19/04	24.29	21.19	585.41
		01/24/05	24.29	12.58	594.02
		07/12/05	24.29	9.91	596.69
		07/19/05	24.29	9.86	596.74
POGW-16	643.49	06/04/04	69.50	59.29	584.20
		06/30/04	69.50	59.40	584.09
		07/26/04	69.50	59.41	584.08
		08/19/04	69.50	59.92	583.57
		01/24/05	69.50	56.69	586.80
		07/12/05	69.50	48.86	594.63
		07/19/05	69.50	56.69	586.80
POGW-17A	602.64	07/12/05	18.50	14.15	588.49
		07/19/05	18.50	14.08	588.56
POGW-17B	602.50	07/12/05	45.50	16.46	586.04
		07/19/05	45.50	16.56	586.08
POGW-18A	616.42	07/12/05	18.00	6.60	609.82
		07/19/05	18.00	6.77	609.65
POGW-18B	616.54	07/12/05	45.50	17.85	598.69
		07/19/05	45.50	18.05	598.49

ft msl - Feet above mean sea level.
ft toc - Feet below top of casing.

Table 2
Summary of Groundwater Analytical Results
Poway Landfill
Poway, California

			Background Wells						Compliance Wells																			
			POGW-6		POGW-9		POGW-10		POGW-11		POGW-12		POGW-13		POGW-14		POGW-15		POGW-16		POGW-17A		POGW-17B		POGW-18A		POGW-18B	
	UNITS	WQPS	1/25/2005	7/20/2005	1/25/2005	7/21/2005	1/25/2005	7/20/2005	1/25/2005	7/21/2005	1/25/2005	7/21/2005	1/25/2005	7/21/2005	1/26/2005	7/21/2005	1/25/2005	7/21/2005	1/25/2005	7/20/2005	6/27/2005	7/21/2005	6/27/2005	7/21/2005	6/27/2005	7/21/2005	6/27/2005	7/21/2005
General Chemistry																												
Bicarbonate Alkalinity	mg/L	NE	240	180	240	230	260	170	130	120	130	190	190	220	140	200	280	350	470	560	-	390	-	360	-	190	-	320
Carbonate Alkalinity	mg/L	NE	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	-	ND<0.85	-	ND<0.85	-	ND<0.85	-	ND<0.85
Chemical Oxygen Demand	mg/L	55.89	23	18	15	38	10	28	20	15	13	18	13	23	31	**86**	20	20	25	28	**190**	**420**	13	31	28	38	41	**81**
Chloride	mg/L	314	190	300	130	88	92	79	**610**	**330**	79	140	140	180	170	180	66	94	260	170	**470**	**320**	190	210	78	88	170	160
Conductivity	µS/cm	NE	1253	1527	1186	971.7	1038	875.1	1782	1201	422	1475	1228	1637	1821	1027	1282	851.7	1821	1775	4720	2571	2150	1865	1380	1402	1810	1901
Nitrate (as N)	mg/L	32.8	16	**73**	2.1	0.7	10	6.6	18	9.1	4.2	0.69	5	9.6	0.029J	0.038J	21	6.2	0.032J	0.35	0.092	1.6	0.022	5.2	0.0051	10	0.036	4.5
pH	pH	5.47-8.28	6.38	6.85	7.3	6.85	7.01	7.17	6.6	6.91	6.9	6.51	6.7	6.91	6.48	6.60	7.3	7.01	6.48	5.91	7.28	6.75	6.61	7.11	7.09	6.55	6.91	7.01
Sulfate	mg/L	292	200	220	73	67	84	95	120	190	120	250	230	ND<0.042	55	24	110	56	130	98	-	**360**	-	240	-	170	-	**340**
Total Dissolved Solids (TDS)	mg/L	1115	900	980	640	460	610	540	**1400**	1000	560	840	870	1000	530	570	720	620	1100	930	**1800**	**1500**	1100	**1200**	750	760	**1200**	**1200**
Metals, Dissolved																												
Calcium	mg/L	77.23	46.4	65.9	57.6	36.7	49	35.7	**97.5**	72.5	39.7	**78.6**	52	57.2	37.2	43.8	54.2	53.6	**92.8**	**91.9**	**96.2**	**91.2**	**88.2**	**86.7**	38.5	35.7	54.1	56.3
Magnesium	mg/L	80.89	53.3	78.7	37.9	26.5	27.6	30.1	**112**	**81.6**	28.6	55.2	42	48.9	36.3	39.3	41.3	39.2	**124**	**93.0**	77.8	77.1	**82**	**81.4**	48.1	46.2	42.9	39
Potassium	mg/L	11.68	3.1	7.35	9.01	7.08	**22.4**	**12.3**	4.85	4.74	0.324J	1.17	2.89	4.16	5.55	6.69	0.63	0.948	10.2	**12.2**	10.1	7.51	3.84	2.67	3.87	2.13	10.4	7.43
Sodium	mg/L	150	**188**	**182**	108	72.3	100	84.3	**206**	**155**	**92.4**	141	**175**	**203**	77	80.1	138	120	111	113	**425**	**333**	**191**	**180**	136	116	**282**	**285**
Volatile Organic Compounds																												
1,1,1,2-Tetrachloroethane	µg/L	ND	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37
1,1,1-Trichloroethane	µg/L	ND	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32
1,1,2,2-Tetrachloroethane	µg/L	ND	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37
1,1,2-Trichloroethane	µg/L	ND	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54
1,1-Dichloroethane	µg/L	ND	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53
1,1-Dichloroethene	µg/L	ND	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31
1,1-Dichloropropene	µg/L	ND	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21
1,2,3-Trichlorobenzene	µg/L	ND	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39
1,2,3-Trichloropropane	µg/L	ND	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.1	ND<2.1	ND<2.0	ND<2.0	ND<2.1	ND<2.1	ND<2.2	ND<2.2
1,2,4-Trichlorobenzene	µg/L	ND	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35
1,2,4-Trimethylbenzene	µg/L	ND	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26
1,2-Dibromo-3-chloropropane	µg/L	ND	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.1	ND<2.1	ND<2.2	ND<2.2	ND<2.3	ND<2.3	ND<2.4	ND<2.4
1,2-Dibromoethane	µg/L	ND	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81
1,2-Dichlorobenzene	µg/L	ND	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24
1,2-Dichloroethane	µg/L	ND	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	**0.4J**	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22
1,2-Dichloropropane	µg/L	ND	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	0.83J	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28
1,3,5-Trimethylbenzene	µg/L	ND	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19
1,3-Dichlorobenzene	µg/L	ND	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38
1,3-Dichloropropane	µg/L	ND	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
1,4-Dichlorobenzene	µg/L	ND	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	**3**	**5.4**	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
2,2-Dichloropropane	µg/L	ND	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.40	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.40	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4
2-Butanone	µg/L	ND	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.1	ND<4.1	ND<4.0	ND<4.0	ND<4.1	ND<4.1
2-Chlorotoluene	µg/L	ND	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.20	ND<0.20	ND<0.21	ND<0.21	ND<0.22	ND<0.22	ND<0.23	ND<0.23
2-Hexanone	µg/L	ND	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.5	ND<1.5	ND<1.6	ND<1.6	ND<1.7	ND<1.7	ND<1.8	ND<1.8
4-Chlorotoluene	µg/L	ND	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
Acetone	µg/L	ND	ND<6.1	**18**	ND<6.1	ND<6.1	ND<6.1	**20**	ND<6.1	ND<6.1	ND<6.1	**6.9J**	ND<6.1	ND<6.1	ND<6.1	**12**	ND<6.1	ND<6.1	ND<6.1	**26**	ND<6.1	ND<6.1	ND<6.1	**6.1J**	**6.7J**	**6.4J**	ND<6.1	**6.7J**
Acrolein	µg/L	ND	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.28	ND<4.28	ND<4.28	ND<4.28	ND<4.28	ND<4.28	ND<4.28	ND<4.28
Acrylonitrile	µg/L	ND	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<5.58	ND<5.58	ND<5.58	ND<5.58	ND<5.58	ND<5.58	ND<5.58	ND<5.58
Benzene	µg/L	ND	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	**0.29J**	**0.31J**	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26
Bromobenzene	µg/L	ND	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47
Bromochloromethane	µg/L	ND	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68
Bromodichloromethane	µg/L	ND	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27
Bromoform	µg/L	ND	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62
Bromomethane	µg/L	ND	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9
Carbon tetrachloride	µg/L	ND	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42
Chlorobenzene	µg/L	ND	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	**0.49J**	**0.87J**	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36
Chloroethane	µg/L	ND	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.42	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52
Chloroform	µg/L	ND	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	**2.2**	**0.39J**	**1.8**	**1.5**	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	**0.42J**	**0.31J**	ND<0.22	ND<0.22	**1.2**	**1.5**
Chloromethane	µg/L	ND	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<0.52	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8
cis-1,2-Dichloroethene	µg/L	ND	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	**10**	**26**	ND<0.35	**0.40J**	**42**	**27**	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35
cis-1,3-Dichloropropene	µg/L	ND	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45
Dibromochloromethane	µg/L	ND	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45
Dibromomethane	µg/L	ND	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42
Dichlorodifluoromethane	µg/L	ND	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	**0.82J**	ND<0.27	ND<0.27	ND<0.27	ND<0.27	**0.67J**	**0.48J**	ND<0.27	ND<0.27	ND<0.27	ND<0.27
Ethylbenzene	µg/L	ND	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17
Hexachlorobutadiene	µg/L	ND	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39
Isopropylbenzene (Cumene)	µg/L	ND	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24
Isopropyltoluene	µg/L	ND	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21

Table 2
Summary of Groundwater Analytical Results
Poway Landfill
Poway, California

			Background Wells						Compliance Wells																			
			POGW-6		POGW-9		POGW-10		POGW-11		POGW-12		POGW-13		POGW-14		POGW-15		POGW-16		POGW-17A		POGW-17B		POGW-18A		POGW-18B	
	UNITS	WQPS	1/25/2005	7/20/2005	1/25/2005	7/21/2005	1/25/2005	7/20/2005	1/25/2005	7/21/2005	1/25/2005	7/21/2005	1/25/2005	7/21/2005	1/26/2005	7/21/2005	1/25/2005	7/21/2005	1/25/2005	7/20/2005	6/27/2005	7/21/2005	6/27/2005	7/21/2005	6/27/2005	7/21/2005	6/27/2005	7/21/2005
Volatile Organic Compounds																												
Methylene chloride	µg/L	ND	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	**2.7J**	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6
Methyl-tert-butyl-ether (MTBE)	µg/L	ND	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
Naphthalene	µg/L	ND	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95
n-Butylbenzene	µg/L	ND	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
n-Propylbenzene	µg/L	ND	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
sec-Butylbenzene	µg/L	ND	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21
Styrene	µg/L	ND	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
tert-Butylbenzene	µg/L	ND	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.29	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17
Tetrachloroethene	µg/L	ND	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	**1.2**	**0.91J**	**0.76J**	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
Toluene	µg/L	ND	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	**0.39J**	ND<0.35	ND<0.35	ND<0.35	ND<0.35	**1.9**	ND<0.35	**1.4**	ND<0.35	**1**	ND<0.35	**1.9**	**0.37J**
trans-1,2-Dichloroethene	µg/L	ND	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
trans-1,3-Dichloropropene	µg/L	ND	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.35	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31
Trichloroethene	µg/L	ND	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	**49**	**10**	ND<0.3	ND<0.3	**5.8**	**4.0**	ND<0.30	ND<0.30	ND<0.30	ND<0.30	ND<0.30	ND<0.30	ND<0.30	ND<0.30
Trichlorofluoromethane	µg/L	ND	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36
Vinyl chloride	µg/L	ND	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	**0.5**	**0.34J**	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33
Xylenes, total	µg/L	ND	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38

Bolded values exceed Water Quality Protection Standards (WQPS).
mg/L - Milligrams per liter.
µg/L - Micrograms per liter.
µS/cm - Microseimens per centimeter.
NE - Not established.
ND- Not detected at concentrations greater than or equal to method detection limit.
NA - Not applicable.
RL - Reporting limit.
J- Trace concentration detected between the method detection limit and the practical quantification limit
- Not analyzed.
D - The analyte concentration was reported from analysis of the diluted sample

Table 2
Summary of Groundwater Analytical Results
Poway Landfill
Poway, California

			Piezometers										QA/QC Samples													
			POPW-1		POPW-2A		POPW-2B		POPW-3		POPW-4		FB				EB		TB				MB			
	UNITS	WQPS	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/25/2005	1/26/2005	7/20/2005	7/21/2005	1/26/2005	7/20/2005	1/25/2005	1/26/2005	7/20/2005	7/21/2005	1/25/2005	1/26/2005	7/25/2005	7/26/2005
General Chemistry																										
Bicarbonate Alkalinity	mg/L	NE	84	280	550	410	230	180	200	220	170	240	-	-	-	-	ND<0.85	2.2	-	-	-	-	-	-	-	-
Carbonate Alkalinity	mg/L	NE	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	ND<0.85	-	-	-	-	ND<0.85	ND<0.85	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	55.89	31	46	43	54	41	33	13	38	33	28	-	-	-	-	ND<4.6	10	-	-	-	-	ND<4.6	ND<4.6	ND<4.6	ND<4.7
Chloride	mg/L	314	37	**570**	290	**430**	**510**	**470**	**330**	**410**	300	260	-	-	-	-	4.2	1.1J	-	-	-	-	ND<1	ND<1	-	-
Conductivity	µS/cm	NE	2466	3601	3507	2851	2866	2891	2610	3120	2210	2095	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate (as N)	mg/L	32.8	12	7.4	**37**	**39**	2.7	9.8	0.17	0.099J	2.8	6.5	-	-	-	-	ND<0.029	0.080J	-	-	-	-	ND<0.029	ND<0.029	ND<0.029	ND<0.029
pH	pH	5.47-8.28	6.13	5.40	6.90	6.27	6.20	5.50	7.30	6.57	6.18	6.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	292	140	**730**	**590**	**480**	**480**	**330**	69	110	**450**	**350**	-	-	-	-	ND<0.42	ND<0.42	-	-	-	-	ND<0.42	ND<0.42	ND<0.42	ND<0.42
Total Dissolved Solids (TDS)	mg/L	1115	510	**2400**	**1800**	**2200**	**1700**	**1600**	830	1000	**1300**	**1200**	-	-	-	-	3.3	2	-	-	-	-	-	-	-	-
Metals, Dissolved																										
Calcium	mg/L	77.23	35.5	**91.9**	**158**	**150**	**120**	**105**	**87.1**	**108**	**86.8**	**78**	-	-	-	-	0.018J	0.0746J	-	-	-	-	0.012J	ND<0.00932	ND<0.00932	ND<0.00932
Magnesium	mg/L	80.89	33.6	**93**	**137**	**183**	**143**	**130**	70.2	**89.4**	**109**	**92.5**	-	-	-	-	ND<0.00328	0.00958J	-	-	-	-	ND<0.00328	ND<0.00328	ND<0.00328	ND<0.00328
Potassium	mg/L	11.68	0.862	**12.2**	**18.7**	**13.8**	**14.9**	**13.2**	11.4	10.9	**13.5**	**12.3**	-	-	-	-	ND<0.0561	0.24J	-	-	-	-	ND<0.0561	ND<0.0561	ND<0.0561	ND<0.0561
Sodium	mg/L	150	**53.3**	113	**322**	**327**	**249**	**216**	119	118	**203**	**176**	-	-	-	-	ND<0.0192	0.295J	-	-	-	-	ND<0.0192	ND<0.0192	ND<0.0192	ND<0.0192
Volatile Organic Compounds																										
1,1,1,2-Tetrachloroethane	µg/L	ND	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37
1,1,1-Trichloroethane	µg/L	ND	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32	ND<0.32
1,1,2,2-Tetrachloroethane	µg/L	ND	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37	ND<0.37
1,1,2-Trichloroethane	µg/L	ND	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54	ND<0.54
1,1-Dichloroethane	µg/L	ND	ND<0.53	**0.95J**	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53	ND<0.53
1,1-Dichloroethene	µg/L	ND	ND<0.31	**0.72J**	ND<0.31	ND<0.31	ND<0.31	**0.47J**	ND<0.31	**0.36J**	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31
1,1-Dichloropropene	µg/L	ND	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21
1,2,3-Trichlorobenzene	µg/L	ND	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	**0.89J**	ND<0.39	ND<0.39	ND<0.39
1,2,3-Trichloropropane	µg/L	ND	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.3	ND<2.4	ND<2.3	ND<2.3	ND<2.4	ND<2.4	ND<2.3	ND<2.3	ND<2.4	ND<2.5
1,2,4-Trichlorobenzene	µg/L	ND	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	**0.59J**	ND<0.35	ND<0.35	ND<0.35
1,2,4-Trimethylbenzene	µg/L	ND	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26
1,2-Dibromo-3-chloropropane	µg/L	ND	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.6	ND<2.5	ND<2.5	ND<2.6	ND<2.6	ND<2.5	ND<2.5	ND<2.6	ND<2.7
1,2-Dibromoethane	µg/L	ND	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81	ND<0.81
1,2-Dichlorobenzene	µg/L	ND	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	**0.37J**	ND<0.24	ND<0.24	ND<0.24
1,2-Dichloroethane	µg/L	ND	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22
1,2-Dichloropropane	µg/L	ND	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28	ND<0.28
1,3,5-Trimethylbenzene	µg/L	ND	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19
1,3-Dichlorobenzene	µg/L	ND	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38
1,3-Dichloropropane	µg/L	ND	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
1,4-Dichlorobenzene	µg/L	ND	ND<0.3	**0.92J**	ND<0.3	ND<0.3	**0.3J**	**1.2**	ND<0.3	ND<0.3	**0.38J**	**0.48J**	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
2,2-Dichloropropane	µg/L	ND	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4	ND<0.4
2-Butanone	µg/L	ND	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	ND<4.2	**14**	ND<4.2	ND<4.2	ND<4.2	ND<4.2	**320**	**370**	ND<4.2	ND<4.3	ND<4.2	ND<4.2	ND<4.3	ND<4.3	ND<4.2	ND<4.2	ND<4.3	ND<4.4
2-Chlorotoluene	µg/L	ND	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.25	ND<0.24	ND<0.24	ND<0.25	ND<0.25	ND<0.24	ND<0.24	ND<0.25	ND<0.26
2-Hexanone	µg/L	ND	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.9	ND<1.10	ND<1.9	ND<1.9	ND<1.10	ND<1.10	ND<1.9	ND<1.9	ND<1.10	ND<1.11
4-Chlorotoluene	µg/L	ND	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.4	ND<0.3	ND<0.3	ND<0.4	ND<0.4	ND<0.3	ND<0.3	ND<0.4	ND<0.5
Acetone	µg/L	ND	ND<6.1	**17**	ND<6.1	**21**	ND<6.1	**36**	ND<6.1	**250**	ND<6.1	**29**	ND<6.1	ND<6.1	**290**	**110**	ND<6.1	**20**	ND<6.1	ND<6.1	**21**	ND<6.1	ND<6.1	ND<6.1	ND<6.2	ND<6.3
Acrolein	µg/L	ND	ND<4.3	ND<4.3	ND<4.3	**0.31J**	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.3	ND<4.4	ND<4.3	ND<4.3	ND<4.4	ND<4.4	ND<4.3	ND<4.3	ND<4.4	ND<4.5
Acrylonitrile	µg/L	ND	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.6	ND<3.7	ND<3.6	ND<3.6	ND<3.7	ND<3.7	ND<3.6	ND<3.6	ND<3.7	ND<3.8
Benzene	µg/L	ND	ND<0.26	**0.8**	ND<0.26	ND<0.26	**0.66**	**0.39J**	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26	ND<0.26
Bromobenzene	µg/L	ND	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47	ND<0.47
Bromochloromethane	µg/L	ND	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68	ND<0.68
Bromodichloromethane	µg/L	ND	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27
Bromoform	µg/L	ND	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62	ND<0.62
Bromomethane	µg/L	ND	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.9	ND<2.10	ND<2.9	ND<2.9	ND<2.10	ND<2.10	ND<2.9	ND<2.9	ND<2.10	ND<2.11
Carbon tetrachloride	µg/L	ND	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42
Chlorobenzene	µg/L	ND	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36
Chloroethane	µg/L	ND	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52	ND<0.52
Chloroform	µg/L	ND	ND<0.22	**1.3**	**0.34J**	**0.55J**	**0.35J**	**0.48J**	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	**1.6**	**1.4**	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.22
Chloromethane	µg/L	ND	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.8	ND<1.9	ND<1.8	ND<1.8	ND<1.9	ND<1.9	ND<1.8	ND<1.8	ND<1.9	ND<1.10
cis-1,2-Dichloroethene	µg/L	ND	**3.3**	**200**	**42**	**72**	**110**	**160**	**24**	**43**	**5**	**33**	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35
cis-1,3-Dichloropropene	µg/L	ND	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45
Dibromochloromethane	µg/L	ND	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45	ND<0.45
Dibromomethane	µg/L	ND	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42	ND<0.42
Dichlorodifluoromethane	µg/L	ND	ND<0.27	ND<0.27	**0.47J**	ND<0.27	**0.64J**	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27
Ethylbenzene	µg/L	ND	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17
Hexachlorobutadiene	µg/L	ND	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39	ND<0.39
Isopropylbenzene (Cumene)	µg/L	ND	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24	ND<0.24
Isopropyltoluene	µg/L	ND	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21

Table 2
Summary of Groundwater Analytical Results
Poway Landfill
Poway, California

			Piezometers										QA/QC Samples													
			POPW-1		POPW-2A		POPW-2B		POPW-3		POPW-4		FB				EB		TB				MB			
	UNITS	WQPS	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/25/2005	1/26/2005	7/20/2005	7/21/2005	1/26/2005	7/20/2005	1/25/2005	1/26/2005	7/20/2005	7/21/2005	1/25/2005	1/26/2005	7/25/2005	7/26/2005
Volatile Organic Compounds																										
Methylene chloride	µg/L	ND	ND<2.6	**23**	ND<2.6	**3.3J**	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.6	**4.3J**	ND<2.6	ND<2.6	ND<2.6	ND<2.6	ND<2.7	**3.9J**	ND<2.6	**2.8J**	ND<2.6	**3.2J**	**2.8J**	ND<2.6	ND<2.6
Methyl-tert-butyl-ether (MTBE)	µg/L	ND	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	**0.40J**	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
Naphthalene	µg/L	ND	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	ND<0.95	**1.5J**	ND<0.95	ND<0.95	ND<0.95
n-Butylbenzene	µg/L	ND	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
n-Propylbenzene	µg/L	ND	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
sec-Butylbenzene	µg/L	ND	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21
Styrene	µg/L	ND	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
tert-Butylbenzene	µg/L	ND	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17	ND<0.17
Tetrachloroethene	µg/L	ND	ND<0.29	**2.2**	**0.69J**	**0.51J**	**0.39J**	**1.3**	ND<0.29	ND<0.29	ND<0.29	**1.4**	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
Toluene	µg/L	ND	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35	ND<0.35
trans-1,2-Dichloroethene	µg/L	ND	ND<0.29	**1.5**	ND<0.29	ND<0.29	ND<0.29	**0.68J**	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29	ND<0.29
trans-1,3-Dichloropropene	µg/L	ND	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31	ND<0.31
Trichloroethene	µg/L	ND	**30**	**840**	**120**	**120**	**130**	**280**	**53**	**190**	**2.7**	**28**	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
Trichlorofluoromethane	µg/L	ND	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36	ND<0.36
Vinyl chloride	µg/L	ND	ND<0.33	**1.6**	**2.9**	**2.9**	**0.54**	**0.71**	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33	ND<0.33
Xylenes, total	µg/L	ND	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38	ND<0.38

Bolded values exceed Water Quality Protection Standards (WQPS).
mg/L - Milligrams per liter.
µg/L - Micrograms per liter.
µS/cm - Microseimens per centimeter.
NE - Not established.
ND- Not detected at concentrations greater than or equal to method detection limit.
NA - Not applicable.
RL - Reporting limit.
J- Trace concentration detected between the method detection limit and the practical quantification limit
- Not analyzed.
D - The analyte concentration was reported from analysis of the diluted sample

Table 3
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-10@1.5'	SG-10@5'	SG-11@1.5'	SG-11@5.0'	SG-12@1.5'	SG-12@5.0'	SG-13@1.5'	SG-13@5.0'	SG-14@1.5'	SG-14@5'	SG-15@1.5'
		6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005
Fixed Gases (ASTM D-1946)												
Oxygen (O_2) + Argon (Ar)	%bv	19.9	19.8	16.5	17	16.4	14.8	21.2	18.1	14.3	14.5	15.1
Nitrogen (N_2)	%bv	79.3	79.6	80.4	80.9	80.2	79.6	78.5	80.2	80.7	80.8	80
Methane (CH_4)	%bv	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Carbon Monoxide (CO)	%bv	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Carbon Dioxide (CO_2)	%bv	0.9	0.6	3.0	2.1	3.4	5.7	0.28	1.7	5.0	4.7	4.8
Volatile Organic Compounds (EPA TO-15)												
1,1,1-trichloroethane	ppbV	ND<0.58	ND<0.43	ND<0.76	ND<0.67	ND<0.68	ND<0.43	ND<0.75	ND<0.43	ND<0.43	ND<0.43	ND<1.2
1,1,2,2-tetrachloroethane	ppbV	ND<0.66	ND<0.50	ND<0.87	ND<0.76	ND<0.77	ND<0.50	ND<0.86	ND<0.50	ND<0.50	ND<0.49	ND<1.4
1,1,2-trichloro-1,2,2-trifluoroethane	ppbV	**6.5**	**9.3**	ND<1.1	ND<0.97	ND<0.98	ND<0.63	ND<1.1	ND<0.63	ND<0.63	ND<0.62	ND<1.8
1,1,2-trichloroethane	ppbV	ND<0.59	ND<0.45	ND<0.78	ND<0.68	ND<0.69	ND<0.45	ND<0.77	ND<0.45	ND<0.45	ND<0.44	ND<1.2
1,1-dichloroethane	ppbV	ND<0.93	ND<0.70	ND<1.2	ND<1.1	ND<1.1	ND<0.70	ND<1.2	ND<0.70	ND<0.70	ND<0.69	ND<1.9
1,1-dichloroethene	ppbV	ND<0.73	ND<0.54	ND<0.95	ND<0.84	ND<0.85	ND<0.54	ND<0.95	ND<0.54	ND<0.54	ND<0.53	ND<1.5
1,2,4-trichlorobenzene	ppbV	ND<0.30	ND<0.22	ND<0.39	ND<0.34	ND<0.35	ND<0.22	ND<0.39	ND<0.22	ND<0.22	ND<0.22	ND<0.62
1,2,4-trimethylbenzene	ppbV	**35**	**12**	ND<0.79	**11**	ND<0.70	**2**	**86**	**120**	**4.7**	**5.5**	ND<1.3
1,2-dibromoethane	ppbV	ND<0.58	ND<0.44	ND<0.76	ND<0.67	ND<0.68	ND<0.44	ND<0.76	ND<0.44	ND<0.44	ND<0.43	ND<1.2
1,2-dichloro-1,1,2,2-tetrafluoroethane	ppbV	-	-	-	-	-	-	-	-	-	-	-
1,2-dichlorobenzene	ppbV	ND<0.70	ND<0.52	ND<0.92	ND<0.80	ND<0.81	ND<0.52	ND<0.91	ND<0.52	ND<0.52	ND<0.51	ND<1.5
1,2-dichloroethane	ppbV	ND<0.61	ND<0.46	ND<0.81	ND<0.71	ND<0.72	ND<0.46	ND<0.80	ND<0.46	ND<0.46	ND<0.45	ND<1.3
1,2-dichloropropane	ppbV	ND<0.61	ND<0.46	ND<0.80	ND<0.70	ND<0.71	ND<0.46	ND<0.80	ND<0.46	ND<0.46	ND<0.45	ND<1.3
1,3,5-trimethylbenzene	ppbV	**10**	**3**	ND<0.74	**3**	ND<0.66	ND<0.42	**30**	**26**	**1.4**	**1.4**	ND<1.2
1,3-dichlorobenzene	ppbV	ND<0.76	ND<0.57	ND<0.99	ND<0.87	ND<0.88	ND<0.57	**1.5**	ND<0.57	ND<0.57	ND<0.56	ND<1.6
1,4-dichlorobenzene	ppbV	ND<0.75	ND<0.56	ND<0.98	ND<0.86	ND<0.87	ND<0.56	ND<0.97	ND<0.56	ND<0.56	ND<0.55	ND<1.6
2-butanone	ppbV	**22**	**27**	**5.3**	**35**	**9.5**	**5.3**	**21**	**7.4**	**17**	**10**	**11**
2-hexanone	ppbV	ND<0.93	**2.4**	ND<1.2	**3.3**	ND<1.1	ND<0.70	ND<1.2	**2.3**	ND<0.70	**1.4**	ND<1.9
4-ethyltoluene	ppbV	**6.9**	**2.5**	ND<0.79	**3.3**	ND<0.70	ND<0.45	**25**	**25**	**1.4**	**1.4**	ND<1.2
4-methyl-2-pentanone	ppbV	**12**	**13**	ND<0.88	**23**	ND<0.78	ND<0.50	ND<0.87	**4.1**	**4.7**	**6.2**	ND<1.4
Acetone	ppbV	**510**	**570**	**67**	**510**	**100**	**55**	**1100**	**280**	**150**	**130**	**190**
Benzene	ppbV	**12**	**49**	**4.9**	**47**	**19**	**10**	**22**	**7.4**	**22**	**5**	**12**
Benzyl chloride	ppbV	ND<0.51	ND<0.38	ND<0.67	ND<0.58	ND<0.59	ND<0.38	ND<0.66	ND<0.49	ND<0.38	ND<0.37	ND<1.1
Bromodichloromethane	ppbV	**1.4**	ND<0.49	ND<0.86	**1.8**	ND<0.76	ND<0.49	**2.9**	ND<0.47	**9**	**13**	ND<1.4
Bromoform	ppbV	ND<0.62	ND<0.47	ND<0.82	ND<0.72	ND<0.72	ND<0.47	ND<0.81	ND<0.64	ND<0.47	ND<0.46	ND<1.3
Bromomethane	ppbV	ND<0.85	ND<0.64	ND<1.1	ND<0.97	ND<0.99	ND<0.64	ND<1.1	ND<0.41	ND<0.64	ND<0.62	ND<1.8

Table 3
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-10@1.5'	SG-10@5'	SG-11@1.5'	SG-11@5.0'	SG-12@1.5'	SG-12@5.0'	SG-13@1.5'	SG-13@5.0'	SG-14@1.5'	SG-14@5'	SG-15@1.5'
		6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005
c-1,2-dichloroethene	ppbV	ND<0.55	ND<0.41	ND<0.72	ND<0.63	ND<0.64	ND<0.41	ND<0.72	ND<0.66	ND<0.41	ND<0.40	ND<1.1
c-1,3-dichloropropene	ppbV	ND<0.88	ND<0.66	ND<1.2	ND<1.0	ND<1.0	ND<0.66	ND<1.1	ND<0.69	ND<0.66	ND<0.65	ND<1.8
Carbon disulfide	ppbV	**1.6**	**2.5**	ND<1.2	**2.1**	ND<1.1	ND<0.69	**1.3**	ND<0.55	ND<0.69	ND<0.68	ND<1.9
Carbon tetrachloride	ppbV	ND<0.73	ND<0.55	ND<0.96	ND<0.84	ND<0.85	ND<0.55	ND<0.95	ND<0.47	ND<0.55	ND<0.54	ND<1.5
Chlorobenzene	ppbV	ND<0.62	ND<0.47	ND<0.82	ND<0.72	ND<0.73	ND<0.47	ND<0.81	**0.86**	ND<0.47	ND<0.46	ND<1.3
Chloroethane	ppbV	**16**	**6**	**2.8**	**1.6**	**1.5**	ND<0.56	ND<0.97	ND<0.56	**1.8**	ND<0.55	**12.0**
Chloroform	ppbV	**2.2**	**2.1**	**1.3**	**8.8**	**1.9**	ND<0.44	**3.7**	ND<0.44	**97**	**150**	**3.4**
Chloromethane	ppbV	**4.7**	**3.1**	**2.7**	**1.5**	**1.6**	ND<0.40	**2.6**	**1.2**	ND<0.40	ND<0.40	**7.3**
Dibromochloromethane	ppbV	ND<0.64	ND<0.48	ND<0.84	ND<0.74	ND<0.75	ND<0.48	ND<0.83	ND<0.48	ND<0.48	ND<0.47	ND<1.3
Dichlorodifluoromethane	ppbV	**1.1**	**1.1**	ND<1.2	ND<1.0	ND<1.0	ND<0.66	**2.3**	**2.1**	ND<0.66	ND<0.65	ND<1.8
Ethylbenzene	ppbV	**13**	**7.3**	**1.3**	**14**	**2.1**	**1.1**	**23**	**35**	**4.5**	**2.9**	**2.6**
Hexachloro-1,3-butadiene	ppbV	ND<1.0	ND<0.77	ND<1.3	ND<1.2	ND<1.2	ND<0.77	ND<1.3	ND<0.77	ND<0.77	ND<0.75	ND<2.1
Isopropanol	ppbV	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride	ppbV	ND<0.65	ND<0.48	ND<0.85	ND<0.74	ND<0.75	ND<0.48	ND<0.84	ND<0.48	ND<0.48	ND<0.47	ND<1.3
Methyl-t-butyl-ether (MTBE)	ppbV	ND<0.61	ND<0.46	ND<0.80	ND<0.70	ND<0.71	ND<0.46	ND<0.79	ND<0.46	ND<0.46	ND<0.45	ND<1.3
o-xylene	ppbV	**29**	**9.3**	**2.3**	**21**	**1.8**	**1.2**	**48**	**63**	**4.1**	**3.9**	**4.8**
p/m-xylene	ppbV	**44**	**22**	**5**	**48**	**4.8**	**3.3**	**78**	**120**	**11**	**12**	**9.9**
Styrene	ppbV	ND<0.50	ND<0.37	ND<0.66	ND<0.58	ND<0.58	ND<0.37	ND<0.65	ND<0.37	ND<0.37	ND<0.37	ND<1.0
Tetrachloroethene	ppbV	ND<0.67	ND<0.50	ND<0.88	**1.3**	**25**	**53.0**	ND<0.87	**2.1**	ND<0.50	**0.8**	ND<1.4
Toluene	ppbV	**30**	**48**	**6.5**	**59**	**14**	**7.8**	**54**	**51**	**32**	**15**	**11**
trans-1,2-dichloroethene	ppbV	ND<0.90	ND<0.68	ND<1.2	ND<1.0	ND<1.1	ND<0.68	ND<1.2	ND<0.66	ND<0.68	ND<0.66	ND<1.9
trans-1,3-dichloropropene	ppbV	ND<0.88	ND<0.66	ND<1.2	ND<1.0	ND<1.0	ND<0.66	ND<1.1	ND<0.42	ND<0.66	ND<0.65	ND<1.8
Trichloroethene	ppbV	ND<0.56	**1.2**	ND<0.74	**1.3**	ND<0.66	**0.75**	ND<0.73	ND<0.65	ND<0.42	ND<0.41	ND<1.2
Trichlorofluoromethane	ppbV	ND<0.87	ND<0.65	**3.1**	**2.7**	ND<1.0	ND<0.65	ND<1.1	ND<0.55	ND<0.65	ND<0.64	ND<1.8
Vinyl acetate	ppbV	ND<0.73	ND<0.55	ND<0.96	ND<0.84	ND<0.85	ND<0.55	ND<0.95	**26**	ND<0.55	ND<0.54	ND<1.5
Vinyl chloride	ppbV	ND<0.61	ND<0.46	ND<0.80	ND<0.70	ND<0.71	ND<0.46	ND<0.79	ND<0.46	ND<0.46	ND<0.45	ND<1.3

ND - Not detected at concentrations greater than or equal to the Method detection limit (MDL) listed
RL - Reporting limit
ppbV - parts per billion by volume
%bv - Percent by volume

Table 3
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-15@5'	SG-16@1.5'	SG-16@5'	SG-17@1.5'	SG-17@5.0'	SG-18@1.5'	SG-18@5'	SG-19@1.5'	SG-19@5.0'
		6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005
Fixed Gases (ASTM D-1946)										
Oxygen (O_2) + Argon (Ar)	%bv	13.4	18.3	15.4	19.2	11.7	17.2	14.7	20.5	16.5
Nitrogen (N_2)	%bv	78.7	79.6	80.5	79.8	83.8	78.7	79.4	78.8	79.5
Methane (CH_4)	%bv	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Carbon Monoxide (CO)	%bv	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Carbon Dioxide (CO_2)	%bv	7.9	2.1	4.1	1.0	4.5	4.1	5.9	0.7	4.1
Volatile Organic Compounds (EPA TO-15)										
1,1,1-trichloroethane	ppbV	ND<0.44	ND<0.60	ND<0.44	ND<0.50	ND<0.43	ND<0.49	ND<0.43	ND<0.66	ND<0.45
1,1,2,2-tetrachloroethane	ppbV	ND<0.50	ND<0.69	ND<0.50	ND<0.57	ND<0.50	ND<0.56	ND<0.50	ND<0.75	ND<0.51
1,1,2-trichloro-1,2,2-trifluoroethane	ppbV	ND<0.64	ND<0.87	**2.1**	ND<0.72	**1.8**	ND<0.71	ND<0.63	ND<0.96	ND<0.65
1,1,2-trichloroethane	ppbV	ND<0.45	ND<0.62	ND<0.45	ND<0.51	ND<0.45	ND<0.50	ND<0.45	ND<0.68	ND<0.46
1,1-dichloroethane	ppbV	ND<0.70	ND<0.97	ND<0.70	ND<0.80	ND<0.70	ND<0.79	ND<0.70	ND<1.1	ND<0.72
1,1-dichloroethene	ppbV	ND<0.55	ND<0.75	ND<0.55	ND<0.62	ND<0.54	ND<0.61	ND<0.54	ND<0.82	ND<0.56
1,2,4-trichlorobenzene	ppbV	ND<0.23	ND<0.31	ND<0.23	ND<0.26	ND<0.22	ND<0.25	ND<0.22	ND<0.34	ND<0.23
1,2,4-trimethylbenzene	ppbV	**3.7**	**43**	**16**	**3.1**	**5**	**3.9**	**4.4**	**70**	**17**
1,2-dibromoethane	ppbV	ND<0.44	ND<0.60	ND<0.44	ND<0.50	ND<0.44	ND<0.49	ND<0.44	ND<0.66	ND<0.45
1,2-dichloro-1,1,2,2-tetrafluoroethane	ppbV	-	-	-	-	-	-	-	-	-
1,2-dichlorobenzene	ppbV	ND<0.53	ND<0.72	ND<0.53	ND<0.60	ND<0.52	ND<0.59	ND<0.52	ND<0.79	ND<0.54
1,2-dichloroethane	ppbV	ND<0.46	ND<0.64	ND<0.46	ND<0.53	ND<0.46	ND<0.52	ND<0.46	ND<0.70	ND<0.47
1,2-dichloropropane	ppbV	ND<0.46	ND<0.63	ND<0.46	ND<0.53	ND<0.46	ND<0.52	ND<0.46	ND<0.70	ND<0.47
1,3,5-trimethylbenzene	ppbV	ND<0.43	**13**	**3.8**	ND<0.49	**1.1**	**0.93**	**0.92**	**20**	**3.9**
1,3-dichlorobenzene	ppbV	ND<0.57	ND<0.79	ND<0.57	ND<0.65	ND<0.57	ND<0.64	ND<0.57	ND<0.86	ND<0.58
1,4-dichlorobenzene	ppbV	ND<0.56	ND<0.78	ND<0.56	ND<0.64	ND<0.56	ND<0.63	ND<0.56	ND<0.85	ND<0.58
2-butanone	ppbV	**4.1**	**22**	**31**	**14**	**13**	**11**	**9.5**	**10**	**8.1**
2-hexanone	ppbV	ND<0.70	ND<0.97	**3.4**	ND<0.80	ND<0.70	ND<0.79	ND<0.70	ND<1.1	ND<0.72
4-ethyltoluene	ppbV	**0.88**	**8.8**	**3.1**	ND<0.51	**1.3**	**1.1**	**1.1**	**15**	**2.8**
4-methyl-2-pentanone	ppbV	**4.2**	**12**	**12**	**5.9**	**3.6**	**3.2**	**5.7**	**9.5**	**3**
Acetone	ppbV	**42**	**720**	**650**	**180**	**300**	**120**	**190**	**1000**	**220**
Benzene	ppbV	**4.1**	**10**	**38**	**10**	**21**	**15**	**14**	**12**	**11**
Benzyl chloride	ppbV	ND<0.38	ND<0.53	ND<0.38	ND<0.44	ND<0.38	ND<0.43	ND<0.38	ND<0.58	ND<0.39
Bromodichloromethane	ppbV	ND<0.49	**1.2**	ND<0.49	**1.3**	ND<0.49	**1.8**	ND<0.49	**1.5**	**1**
Bromoform	ppbV	ND<0.47	ND<0.64	ND<0.47	ND<0.53	ND<0.47	ND<0.52	ND<0.47	ND<0.71	ND<0.48
Bromomethane	ppbV	ND<0.64	ND<0.88	ND<0.64	ND<0.73	ND<0.64	ND<0.71	ND<0.64	ND<0.96	ND<0.65

Table 3
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-15@5'	SG-16@1.5'	SG-16@5'	SG-17@1.5'	SG-17@5.0'	SG-18@1.5'	SG-18@5'	SG-19@1.5'	SG-19@5.0'
		6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005
c-1,2-dichloroethene	ppbV	ND<0.42	ND<0.57	ND<0.42	ND<0.47	ND<0.41	ND<0.46	ND<0.41	ND<0.62	ND<0.42
c-1,3-dichloropropene	ppbV	ND<0.66	ND<0.91	ND<0.66	ND<0.76	ND<0.66	ND<0.74	ND<0.66	ND<1.0	ND<0.68
Carbon disulfide	ppbV	ND<0.70	**2.3**	**2.8**	**1.8**	ND<0.69	**1.3**	**0.8**	**1.6**	ND<0.71
Carbon tetrachloride	ppbV	ND<0.55	ND<0.76	ND<0.55	ND<0.63	ND<0.55	ND<0.62	ND<0.55	ND<0.83	ND<0.56
Chlorobenzene	ppbV	ND<0.47	ND<0.65	ND<0.47	ND<0.54	ND<0.47	ND<0.53	ND<0.47	ND<0.71	ND<0.48
Chloroethane	ppbV	ND<0.56	**7.5**	**2.7**	**9.9**	ND<0.56	**5.6**	ND<0.56	**3.2**	ND<0.58
Chloroform	ppbV	**7.9**	**2.3**	**2.8**	**2.3**	ND<0.44	**5.2**	**9.9**	**5.6**	**11**
Chloromethane	ppbV	ND<0.41	**9.9**	**4**	**2.4**	**1.2**	**2.7**	**1**	ND<0.61	**1.2**
Dibromochloromethane	ppbV	ND<0.48	ND<0.66	ND<0.48	ND<0.55	ND<0.48	ND<0.54	ND<0.48	ND<0.73	ND<0.49
Dichlorodifluoromethane	ppbV	ND<0.67	ND<0.92	ND<0.67	ND<0.76	ND<0.66	ND<0.75	ND<0.66	ND<1.0	ND<0.68
Ethylbenzene	ppbV	**13**	**19**	**6.7**	**2.2**	**4.5**	**2.8**	**2.6**	**28**	**4.2**
Hexachloro-1,3-butadiene	ppbV	ND<0.77	ND<1.1	ND<0.77	ND<0.88	ND<0.77	ND<0.86	ND<0.77	ND<1.2	ND<0.79
Isopropanol	ppbV	-	-	-	-	-	-	-	-	-
Methylene chloride	ppbV	ND<0.49	ND<0.67	ND<0.49	ND<0.55	ND<0.48	ND<0.54	ND<0.48	ND<0.73	ND<0.50
Methyl-t-butyl-ether (MTBE)	ppbV	ND<0.46	ND<0.63	ND<0.46	ND<0.52	ND<0.46	ND<0.51	ND<0.46	ND<0.69	ND<0.47
o-xylene	ppbV	**33**	**40**	**9.4**	**3.4**	**4.3**	**3.9**	**3.5**	**59**	**8**
p/m-xylene	ppbV	**60**	**61**	**20**	**7.5**	**10**	**9.7**	**9**	**97**	**14**
Styrene	ppbV	ND<0.38	ND<0.52	**1.8**	ND<0.43	ND<0.37	ND<0.42	ND<0.37	ND<0.57	ND<0.39
Tetrachloroethene	ppbV	ND<0.51	ND<0.70	ND<0.51	ND<0.58	ND<0.50	ND<0.57	ND<0.50	ND<0.76	ND<0.52
Toluene	ppbV	**7.1**	**38**	**31**	**8.7**	**16**	**13**	**10**	**62**	**16**
trans-1,2-dichloroethene	ppbV	ND<0.68	ND<0.93	ND<0.68	ND<0.77	ND<0.68	ND<0.76	ND<0.68	ND<1.0	ND<0.69
trans-1,3-dichloropropene	ppbV	ND<0.66	ND<0.91	ND<0.66	ND<0.76	ND<0.66	ND<0.74	ND<0.66	ND<1.0	ND<0.68
Trichloroethene	ppbV	ND<0.43	ND<0.58	**0.93**	ND<0.48	ND<0.42	ND<0.47	ND<0.42	ND<0.64	ND<0.43
Trichlorofluoromethane	ppbV	ND<0.66	ND<0.90	ND<0.66	ND<0.75	**7.7**	ND<0.74	ND<0.65	ND<0.99	ND<0.67
Vinyl acetate	ppbV	ND<0.55	ND<0.76	ND<0.55	ND<0.63	ND<0.55	ND<0.62	ND<0.55	ND<0.83	ND<0.56
Vinyl chloride	ppbV	ND<0.46	ND<0.63	ND<0.46	ND<0.52	ND<0.46	ND<0.51	ND<0.46	ND<0.69	ND<0.47

ND - Not detected at concentrations greater than or equal to the Method detection limit (MDL) listed

RL - Reporting limit

ppbV - parts per billion by volume

%bv - Percent by volume

Table 4
Summary of Soil Physical Properties
Poway Landfill
Poway, California

Sample ID	Sample Depth (feet bgs)	Total Organic Carbon (mg/kg)	Fraction Organic Carbon, foc (unitless)	Moisture Content (% wt)	Bulk Density (g/cm^3)	Porosity (%)			Hydraulic Conductivity (cm/s)
						Total	Water-Filled	Air-Filled	
B-1	8	710	0.0007	6.2	1.74	36.2	10.8	25.4	3.2E-04
B-2	10	1050	0.0011	6.9	1.75	35.6	12.4	23.2	1.7E-04
B-3	16	990	0.0010	7.4	1.78	34.5	13.2	21.3	1.3E-04
SG-11	5	720	0.0007	10.0	1.70	36.8	17.0	19.8	1.5E-06
SG-12	5	1100	0.0011	7.8	1.78	33.9	13.9	20.0	5.6E-06
SG-13	1	1350	0.0014	8.6	1.73	35.8	14.9	21.0	3.6E-06
SG-15	5	990	0.0010	5.3	1.59	40.4	8.5	31.9	6.9E-05
Average Stratum A =		987	0.0010	7.5	1.72	36.2	12.9	23.2	9.9E-05

foc = $TOC/10^6$
% wt - Percent by weight
g/cm^3 - grams per cubic centimeter
mg/kg - milligrams per kilogram
cm/s - Centimeters per second

Table 5
Landfill Gas Extraction System Investigation
Poway Landfill - Poway, California

Gas Well	Casing Height ags (ft)	Total Depth From Surface (ft)	Depth to Water (ft)	Screen Interval (ft)	Water Column (ft)
EW-1	3.5	63.3	No Water	17-63.3	-
EW-2	4.04	74.81	72.75	29.1-74.81	2.06
EW-3	4.08	58.4	58.38	23.5-58.4	0.02
EW-4	3.5	34.1	No Water	14.9-34.1	-
EW-5	3.66	23.6	23.2	12.3-23.6	0.4
EW-6	3.54	24.1	No Water	14-24.1	-
EW-7	4.2	46.06	46.02	15.4-46.06	0.04
EW-8	3.62	40.35	No Water	14.3-40.35	-
EW-9	2.93	23.57	No Water	12-23.57	-
EW-10	3.63	24.65	No Water	14.7-24.65	-
EW-11	3.16	24.2	No Water	15-24.2	-
EW-12	3	30.6	No Water	13.2-30.6	-
EW-13	3.73	24.59	24.55	17-24.59	0.04
EW-14	2.25	52.35	No Water	21-52.35	-
EW-15	3.16	24.9	No Water	18-24.9	-
EW-16	4.29	44.2	44.05	26.2-44.2	0.15
EW-17	4	38.15	37.95	21.5-38.15	0.2
EW-18	4.33	53.08	52	22.6-53.08	1.08
EW-19	4.04	72.9	72.71	39.5-72.9	0.19
EW-20	3.92	43.7	43.5	28-43.7	0.2
EW-21	3.79	52.75	52.49	31-52.75	0.26

Note:
An Olympus PT400 camera system was used to inspect the gas extraction wells for water and screen intervals.
ags - Above Ground Surface
- No water

Table 6
Summary of Supplemental Monitored Natural Attenuation Analytical Results
Poway Landfill
Poway, California

				Background Wells						Compliance Wells					
				POGW-6		POGW-9		POGW-10		POGW-11		POGW-12		POGW-13	
	UNITS	WQPS	RL	1/25/2005	7/20/2005	1/25/2005	7/21/2005	1/25/2005	7/20/2005	1/25/2005		1/25/2005	7/21/2005	1/25/2005	7/21/2005
Monitored Natural Attenuation Constituents															
Ammonia	mg/L	NE	0.1		ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094
Ethene	µg/L	NE	1.0	ND<0.0933	ND<0.0933	ND<0.0933	ND<0.0933	ND<0.0933	ND<0.0933	ND<0.0933	ND<0.0933	ND<0.0933	ND<0.0933	ND<0.0933	ND<0.0933
Nitrite (as N)	mg/L	NE	0.1	0.023	0.0094J	ND<0.0022	0.0057J	ND<0.0022	0.0094J	ND<0.0022	ND<0.0022	ND<0.0022	0.042	ND<0.0022	ND<0.0022
[1]Oxidation/Reduction Potential	mV	NE	-	96	125	131	-45	94	149	117	37	29	59	47	142
[1]Oxygen, Dissolved	mg/L	NE	-	2.78	2.9	9.12	1.7	4.02	3.8	2.1	3.0	1.67	2.0	4.65	3.9
Sulfide	mg/L	NE	0.05	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042
Total Organic Carbon	mg/L	NE	0.5	20	5.9	5.5	7.1	5.1	5.9	4.7	4.5	4.6	5.8	5.7	5.3
Iron, Total	mg/L	NE	0.1	-	0.283B	-	1.2	-	0.0406B,J	-	0.35	-	0.678	-	0.0376
Iron, Dissolved	mg/L	1.2	0.1	ND<0.00784	ND<0.00784	ND<0.00784	0.0208J	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784

Bolded values exceed water quality protection standards (WQPS)
mg/L - Milligrams per liter
µg/L - Micrograms per liter
mV - Millivolts
NE - Not established
ND - Not detected at concentrations greater than or equal to method detection limits (MDL)
RL - Reporting Limit
J - Trace concentration between the MDL and the RL
B - Trace concentration was detected in the method blank
[1] - Sample analyzed in the field by BBC Environmental, Inc.

Table 6
Summary of Supplemental Monitored Natural Attenuation Analytical Results
Poway Landfill
Poway, California

				Compliance Wells													
				POGW-14		POGW-15		POGW-16		POGW-17A		POGW-17B		POGW-18A		POGW-18B	
	UNITS	WQPS	RL	1/26/2005	7/21/2005	1/25/2005	7/21/2005	1/25/2005	7/20/2005	6/27/2005	7/21/2005	6/27/2005	7/21/2005	6/27/2005	7/21/2005	6/27/2005	7/21/2005
Monitored Natural Attenuation Constituents																	
Ammonia	mg/L	NE	0.1	ND<0.094	5.7	ND<0.094	ND<0.094	ND<0.094	0.21	-	0.28	ND<0.0944	ND<0.094	ND<0.0944	ND<0.094	ND<0.0944	ND<0.094
Ethene	µg/L	NE	1.0	0.23J	0.480J	ND<0.0933	ND<0.0933	0.53J	0.140J	1.31	2.87	ND<0.0933	ND<0.0933	ND<0.0933	0.120J	0.27	ND<0.0933
Nitrite (as N)	mg/L	NE	0.1	ND<0.0022	ND<0.0022	ND<0.0022	ND<0.0022	ND<0.0022	0.011	-	0.14	-	0.031	-	ND<0.0022	-	0.13
[1]Oxidation/Reduction Potential	mV	NE	-	-198	-195	104	20	-234	-150	-	80	-	125	-	130	-	119
[1]Oxygen, Dissolved	mg/L	NE	-	0.58	1.7	6.08	2.6	0.42	4.3	-	1.5	-	3.4	-	4.7	-	4.4
Sulfide	mg/L	NE	0.05	0.05	1.1	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042
Total Organic Carbon	mg/L	NE	0.5	2.9	15	6.4	7.1	15	17	3.8	8.3	3.8	9.5	3.6	5.5	3.2	6.3
Iron, Total	mg/L	NE	0.1	-	1.58	-	0.934	-	2.59B	-	1050	-	4.45	-	4.62	-	26.4
Iron, Dissolved	mg/L	1.2	0.1	1.02	0.75	ND<0.00784	ND<0.00784	0.163	0.153B	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	0.0276	0.00908J	ND<0.00784	ND<0.00784

Bolded values exceed water quality protection standards (WQPS)
mg/L - Milligrams per liter
µg/L - Micrograms per liter
mV - Millivolts
NE - Not established
ND - Not detected at concentrations greater than or equal to method detection limits (MDL)
RL - Reporting Limit
J - Trace concentration between the MDL and the RL
B - Trace concentration was detected in the method blank
[1] - Sample analyzed in the field by BBC Environmental, Inc.

Table 6
Summary of Supplemental Monitored Natural Attenuation Analytical Results
Poway Landfill
Poway, California

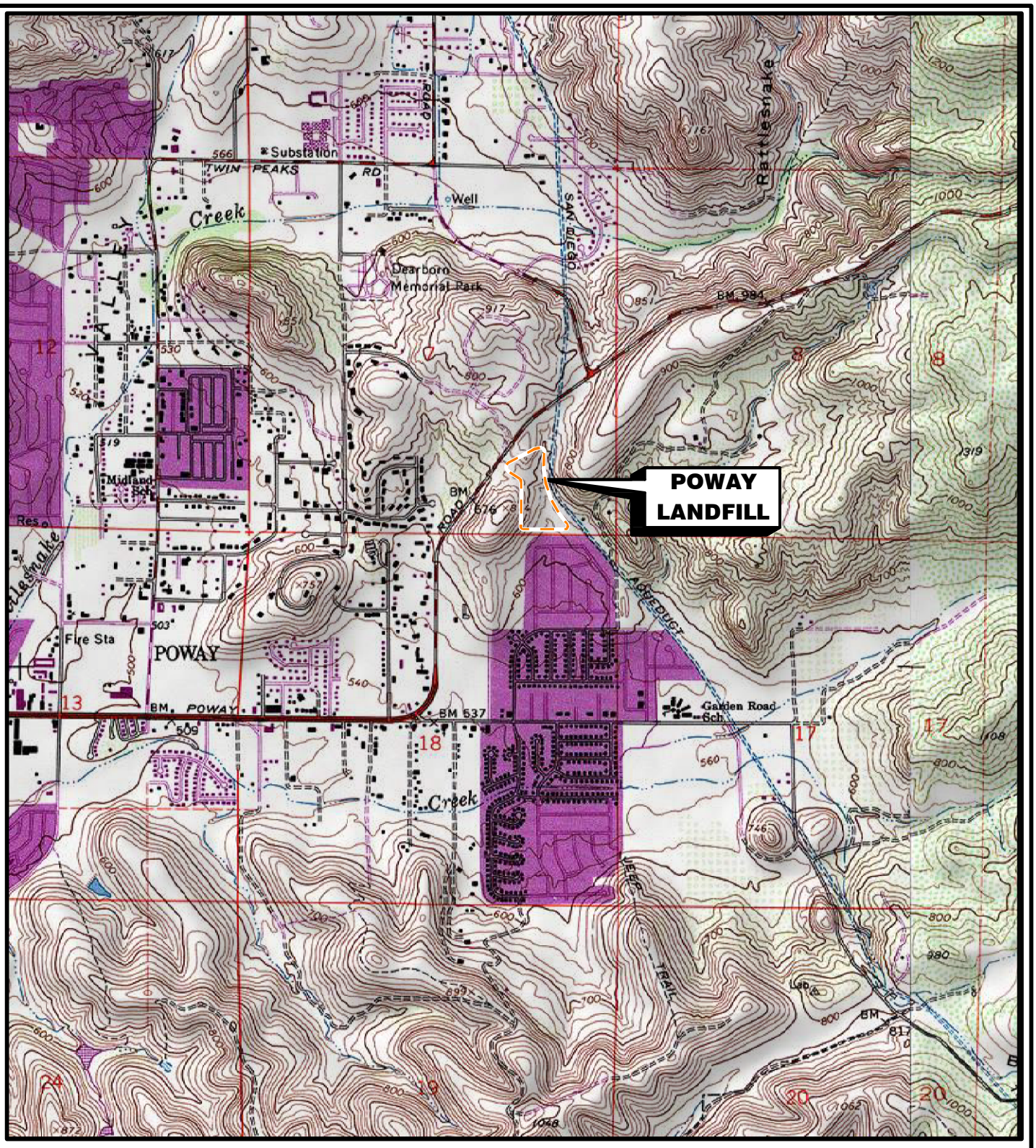
				Piezometers									
				POPW-1		POPW-2A		POPW-2B		POPW-3		POPW-4	
	UNITS	WQPS	RL	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/26/2005	7/20/2005	1/26/2005	7/20/2005
Monitored Natural Attenuation Constituents													
Ammonia	mg/L	NE	0.1	ND<0.094	ND<0.094	ND<0.094	0.14	0.28	ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094
Ethene	µg/L	NE	1.0	ND<0.0933	ND<0.0933	0.25J	0.560J	4.41	0.0800J	ND<0.0933	0.270J	0.15J	0.0900J
Nitrite (as N)	mg/L	NE	0.1	0.005J	ND<0.0022	0.052	0.12	0.13	0.0060J	ND<0.0022	ND<0.0022	0.012	0.0092J
[1]Oxidation/Reduction Potential	mV	NE	-	92	170	101	110	120	141	92	47	124	187
[1]Oxygen, Dissolved	mg/L	NE	-	5.93	3.3	0.37	2.9	0.94	2.9	2.43	2.3	0.52	3.2
Sulfide	mg/L	NE	0.05	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042	ND<0.042
Total Organic Carbon	mg/L	NE	0.5	11	16	14	14	9.4	8.5	3.8	4.9	7.6	11
Iron, Total	mg/L	NE	0.1	-	0.139B	-	16.3B	-	2.07B	-	14.5B	-	0.418B
Iron, Dissolved	mg/L	1.2	0.1	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784	ND<0.00784

Bolded values exceed water quality protection standards (WQPS)
mg/L - Milligrams per liter
µg/L - Micrograms per liter
mV - Millivolts
NE - Not established
ND - Not detected at concentrations greater than or equal to method detection limits (MDL)
RL - Reporting Limit
J - Trace concentration between the MDL and the RL
B - Trace concentration was detected in the method blank
[1] - Sample analyzed in the field by BBC Environmental, Inc.

Table 7
Assessment of Corrective Measures
Poway Landfill - Poway, California

Remedy	Effectiveness	Cost		Difficulty to Implement	Advantages	Disadvantages
		Capital	Operation and Maintenance			
Groundwater Monitoring	Low	Low	Low	Low	• Utilizes present infrastructure for monitoring	• Environmental impacts possible, as no treatment is performed
Landfill Gas Monitoring	Low	Low	Low	Low	• Utilizes present infrastructure for monitoring	• Environmental impacts possible, as no treatment is performed • May require additional monitor probe installation
Source Removal	Medium	Medium	Low to Medium	Medium	• Removes localized impacts to groundwater using modified SVE approach	• Will require additional infrastructure and modification of existing LFG extraction system
Leachate Control	Low to Medium	Low	Medium	Low	• Effective for controlling leachate due to surface water infiltration • County already performs routine maintenance of landfill cap	• Requires routine O&M of landfill cap, such as grading and BMPs
Landfill Gas Control	Medium	Low	Medium	Low	• Effective for controlling LFG impacts to groundwater • May result in further minimization of potential offsite LFG impacts	• Indefinite operation, maintenance, and monitoring (OMM) period and cost • Medium capital/O&M costs
Groundwater Pumping and Ex-situ Treatment	Low to Medium	High	High	High	• Potentially effective for controlling potential off-site migration of VOC impacted groundwater	• Low yielding geologic formation will yield inefficient operation • Waste discharge permits required for extracted groundwater • Indefinite operation, maintenance, and monitoring period and cost • High capital/O&M costs and difficult to implement
Monitored Natural Attenuation (MNA)	Medium to High	Medium	Low	Low	• Effective for treating existing VOC impacts to groundwater • Low cost – utilizes locally present bacteria to attenuate VOCs	• Requires additional well installation • Requires sampling and analyses for additional parameters
Biostimulation	Medium to High	Medium	Medium	Medium	• Effective for accelerating the treatment of existing VOC impacts to groundwater • Effective in treating VOC degradation products	• May require permits to discharge biostimulation compounds to soil and groundwater • Medium capital cost and difficulty in implementation

FIGURES



SOURCE:
NATIONAL GEOGRAPHIC (CALIFORNIA)
SEAMLESS USGS TOPOGRAPHIC MAPS ON CD-ROM
POWERED BY TOPO

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2,000 1,000 0 2,000 4,000
SCALE IN FEET

GEOSYNTEC CONSULTANTS

SITE LOCATION POWAY LANDFILL POWAY, CALIFORNIA	FIGURE NO. 1 PROJECT NO. NCP2005 DATE: NOVEMBER 2005

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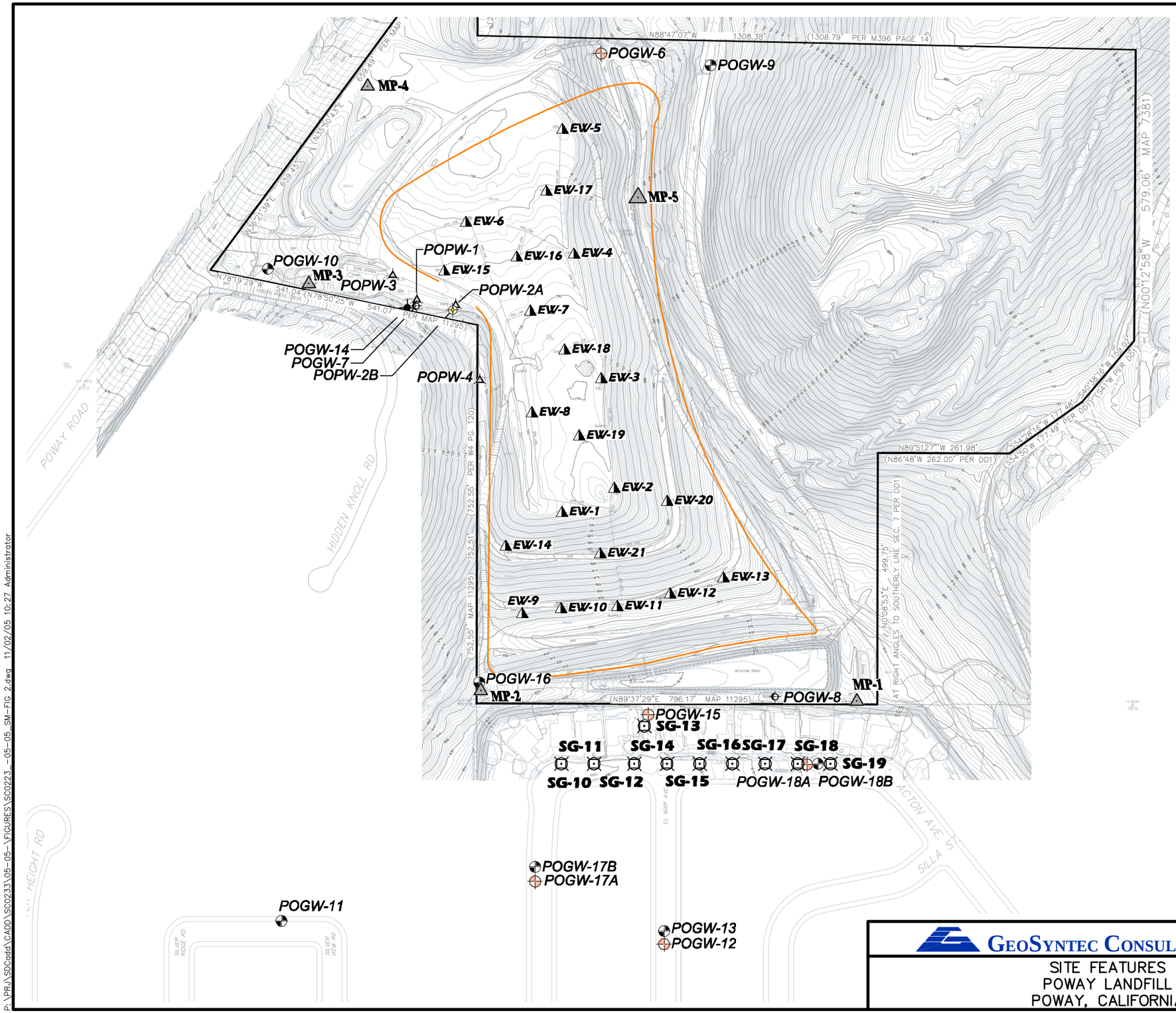

LEGEND

POGW-6	ALLUVIAL GROUNDWATER MONITOR WELL
POGW-9	UPPER FRACTURE ZONE GROUNDWATER MONITOR WELL
POPW-1	UPPER FRACTURE ZONE GROUNDWATER PIEZOMETER
POPW-2B	INTERMEDIATE FRACTURE ZONE GROUNDWATER PIEZOMETER
POGW-14	LOWER FRACTURE ZONE GROUNDWATER MONITOR WELL
POGW-8	DESTROYED GROUNDWATER MONITOR WELL
EW-1	LANDFILL GAS EXTRACTION WELL
MP-1	LANDFILL GAS MONITORING PROBE
SG-10	SOIL VAPOR BORING
	APPROXIMATE PROPERTY BOUNDARY
	APPROXIMATE TRASH/REFUSE BOUNDARY
	EXISTING PAVED ROAD
	EXISTING DIRT ROAD

N

200 100 0 200

SCALE IN FEET

GEOSYNTEC CONSULTANTS

BASE MAP REFERENCE:
Stewart Geo Technologies
July 2002

SITE FEATURES
POWAY LANDFILL
POWAY, CALIFORNIA

FIGURE NO. 2
PROJECT NO. SC0233-05-05
DATE: AUGUST 2005

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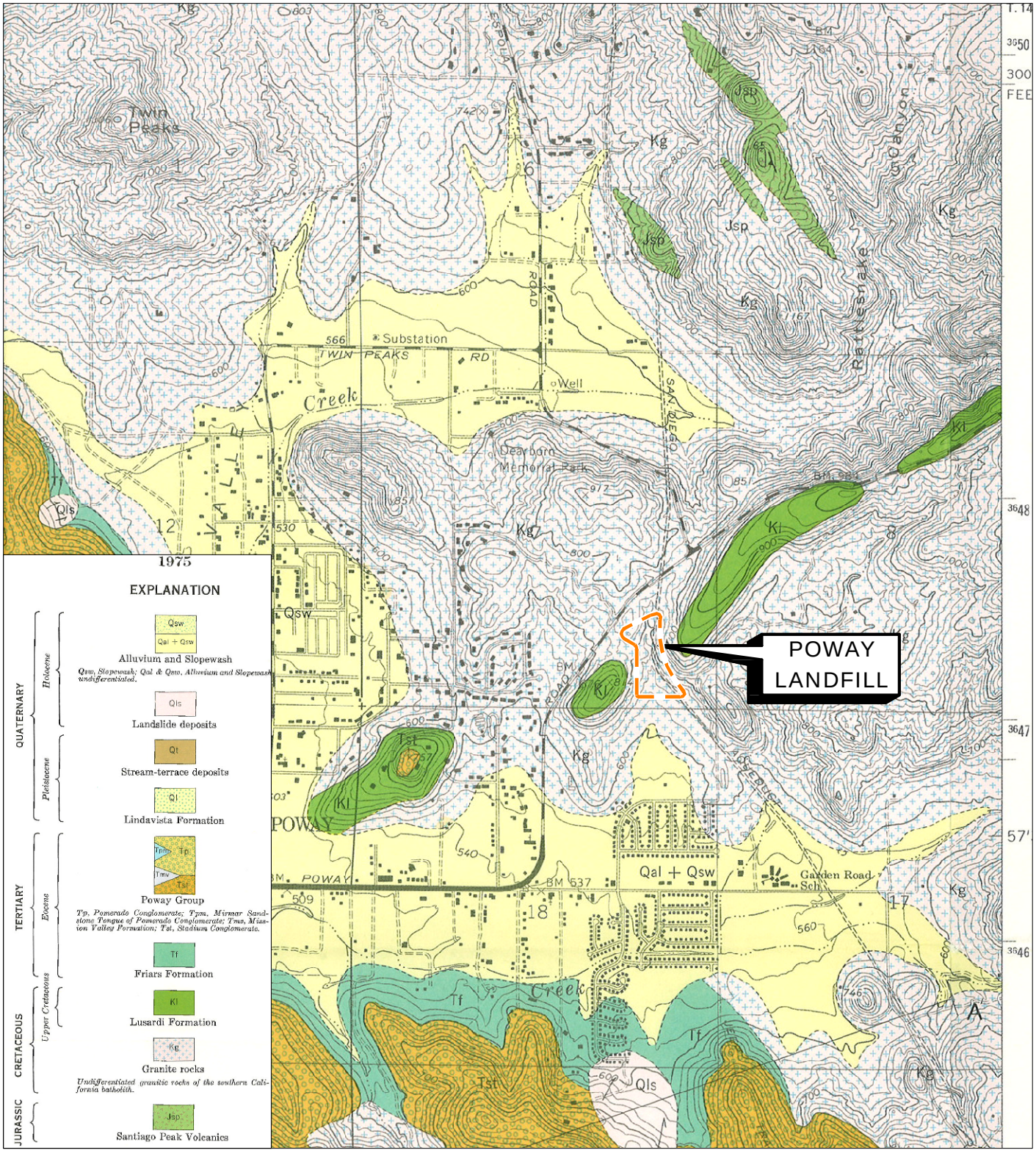


SOURCE:
GEOLOGY OF THE POWAY QUADRANGLE
SAN DIEGO COUNTY, CALIFORNIA
by Michael P. Kennedy and G.L. Peterson

N

2,000 1,000 0 2,000 4,000
SCALE IN FEET

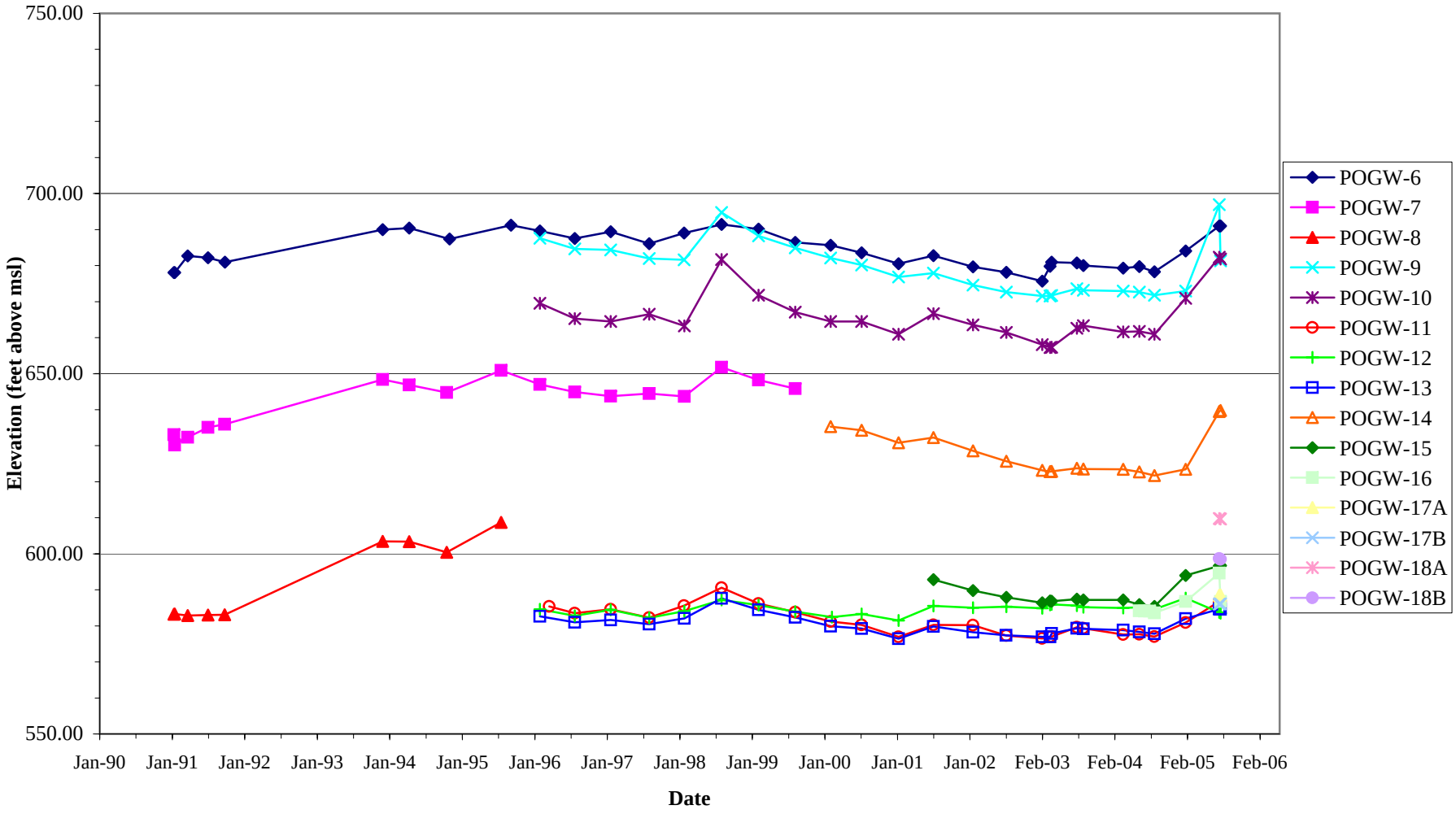
GEOSYNTEC CONSULTANTS

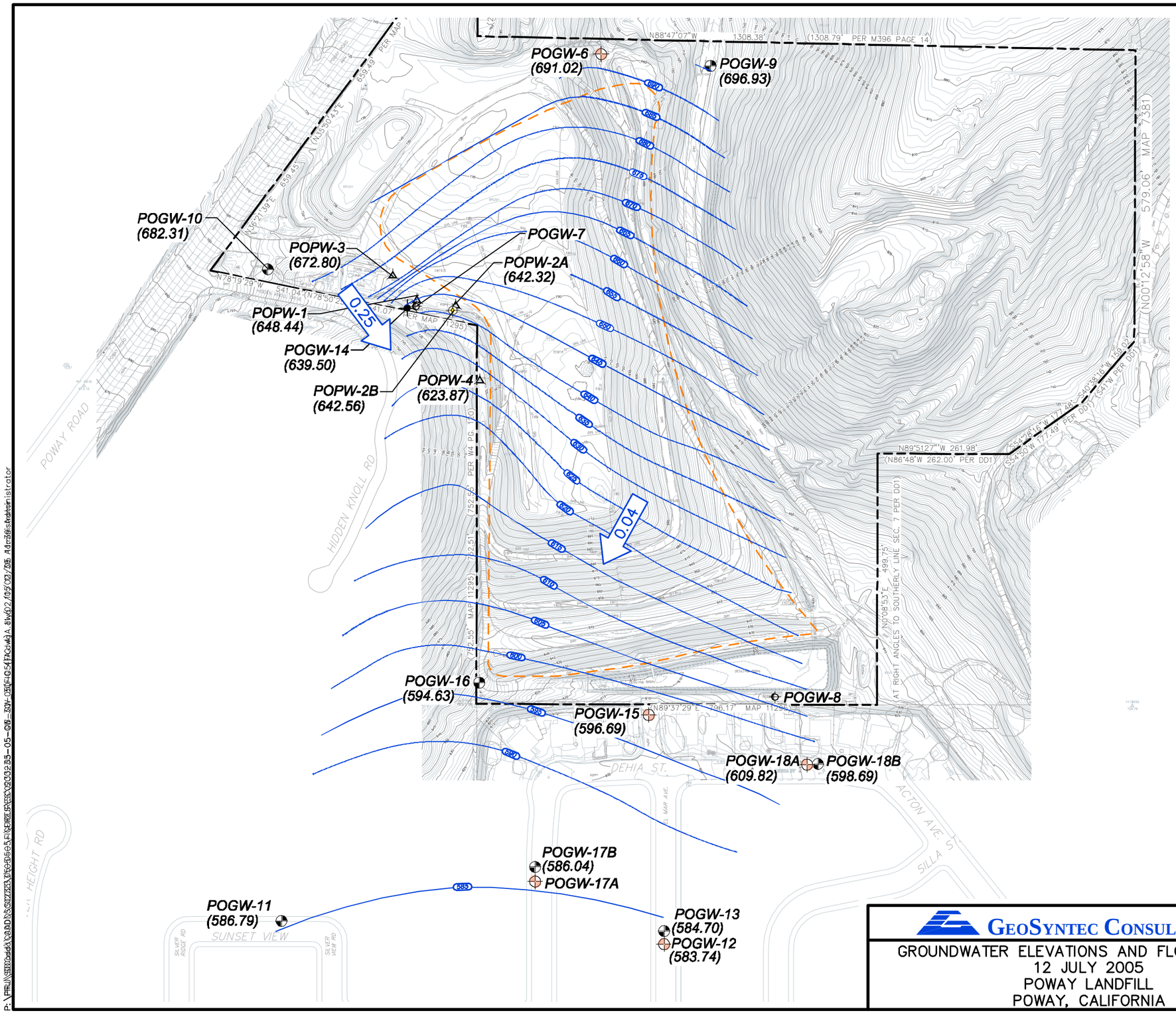
SITE GEOLOGY MAP (REGIONAL GEOLOGY) POWAY LANDFILL POWAY, CALIFORNIA	FIGURE NO. 3 PROJECT NO. SC0233-05-05 DATE: JULY 2005

P:\PRJ\SDCadd\CADD\SC0233\05-05-\FIGURES\SC0223_05-05_SITE-GEOLOGY -FIG 3.dwg 12/15/05 20:51 Administrator

GeoSyntec Consultants

Figure 4
Groundwater Elevation Fluctuations
Poway Landfill





LEGEND

POGW-6	ALLUVIAL GROUNDWATER MONITOR WELL
POGW-9	UPPER FRACTURE ZONE GROUNDWATER MONITOR WELL
POPW-1	UPPER FRACTURE ZONE GROUNDWATER PIEZOMETER
POPW-2B	INTERMEDIATE FRACTURE ZONE GROUNDWATER PIEZOMETER
POGW-14	LOWER FRACTURE ZONE GROUNDWATER MONITOR WELL
POGW-8	DESTROYED GROUNDWATER MONITOR WELL
	APPROXIMATE PROPERTY BOUNDARY
	APPROXIMATE TRASH/REFUSE BOUNDARY
	EXISTING PAVED ROAD
	EXISTING DIRT ROAD
620	GROUNDWATER ELEVATION CONTOUR
0.25	APPROXIMATE GROUNDWATER FLOW DIRECTION AND HYDRAULIC GRADIENT (FT/FT)

NOTES:

1. GROUNDWATER ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL
2. WELLS POGW-6, POGW-12, POGW-17A, POGW-18A ARE ALLUVIALWELLS AND ARE NOT USED IN GROUNDWATER CONTOURING. POPW-2B IS AN INTERMEDIATE FRACTURE ZONE WELL AND WAS NOT USED IN GROUNDWATER CONTOURING. POGW-14 IS A DEEP FRACTURE ZONE WELL AND WAS NOT USED IN GROUNDWATER CONTOURING.

200 100 0 200

SCALE IN FEET

GEOSYNTEC CONSULTANTS

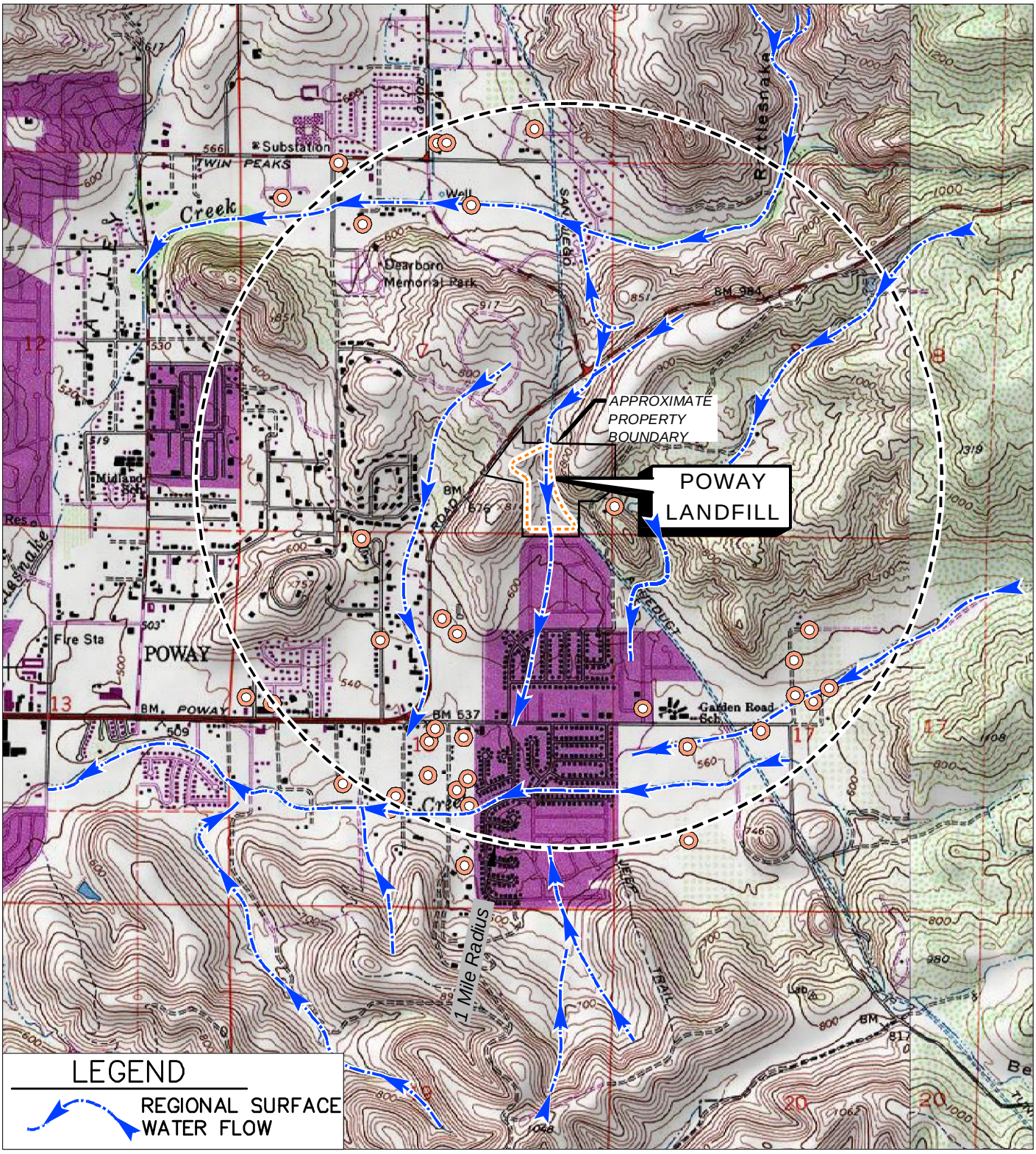
BASE MAP REFERENCE:
Stewart Geo Technologies
July 2002

GROUNDWATER ELEVATIONS AND FLOW DIRECTION
12 JULY 2005
POWAY LANDFILL
POWAY, CALIFORNIA

FIGURE NO. 5

PROJECT NO. SC0233-05-05

DATE: AUGUST 2005



SOURCE:
NATIONAL GEOGRAPHIC (CALIFORNIA)
SEAMLESS USGS TOPOGRAPHIC MAPS ON CD-ROM
POWERED BY TOPO

GEOSYNTEC CONSULTANTS

HYDROLOGIC FEATURES POWAY LANDFILL POWAY, CALIFORNIA	FIGURE NO. 6 PROJECT NO. SC0233-05-05 DATE: AUGUST 2005

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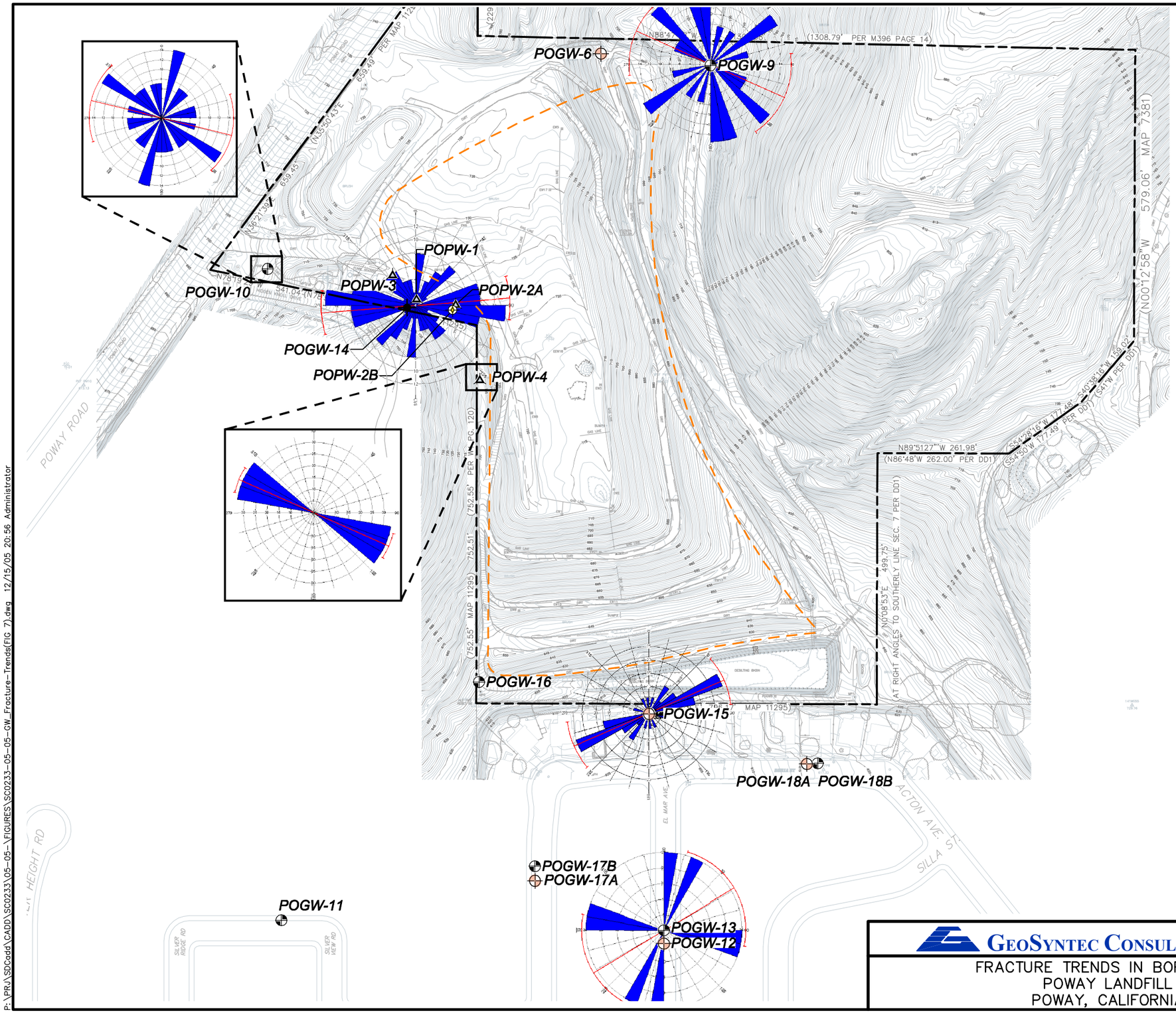

LEGEND

POGW-6	ALLUVIAL GROUNDWATER MONITOR WELL
POGW-9	UPPER FRACTURE ZONE GROUNDWATER MONITOR WELL
POPW-1	UPPER FRACTURE ZONE GROUNDWATER PIEZOMETER
POPW-2B	INTERMEDIATE FRACTURE ZONE GROUNDWATER PIEZOMETER
POGW-14	LOWER FRACTURE ZONE GROUNDWATER MONITOR WELL
	APPROXIMATE PROPERTY BOUNDARY
	APPROXIMATE TRASH/REFUSE BOUNDARY
	EXISTING PAVED ROAD
	EXISTING DIRT ROAD

200 100 0 200

SCALE IN FEET

GEOSYNTEC CONSULTANTS

BASE MAP REFERENCE:
Stewart Geo Technologies
July 2002

FRACTURE TRENDS IN BOREHOLES
POWAY LANDFILL
POWAY, CALIFORNIA

FIGURE NO. 7
PROJECT NO. SC0233-05-05
DATE: AUGUST 2005

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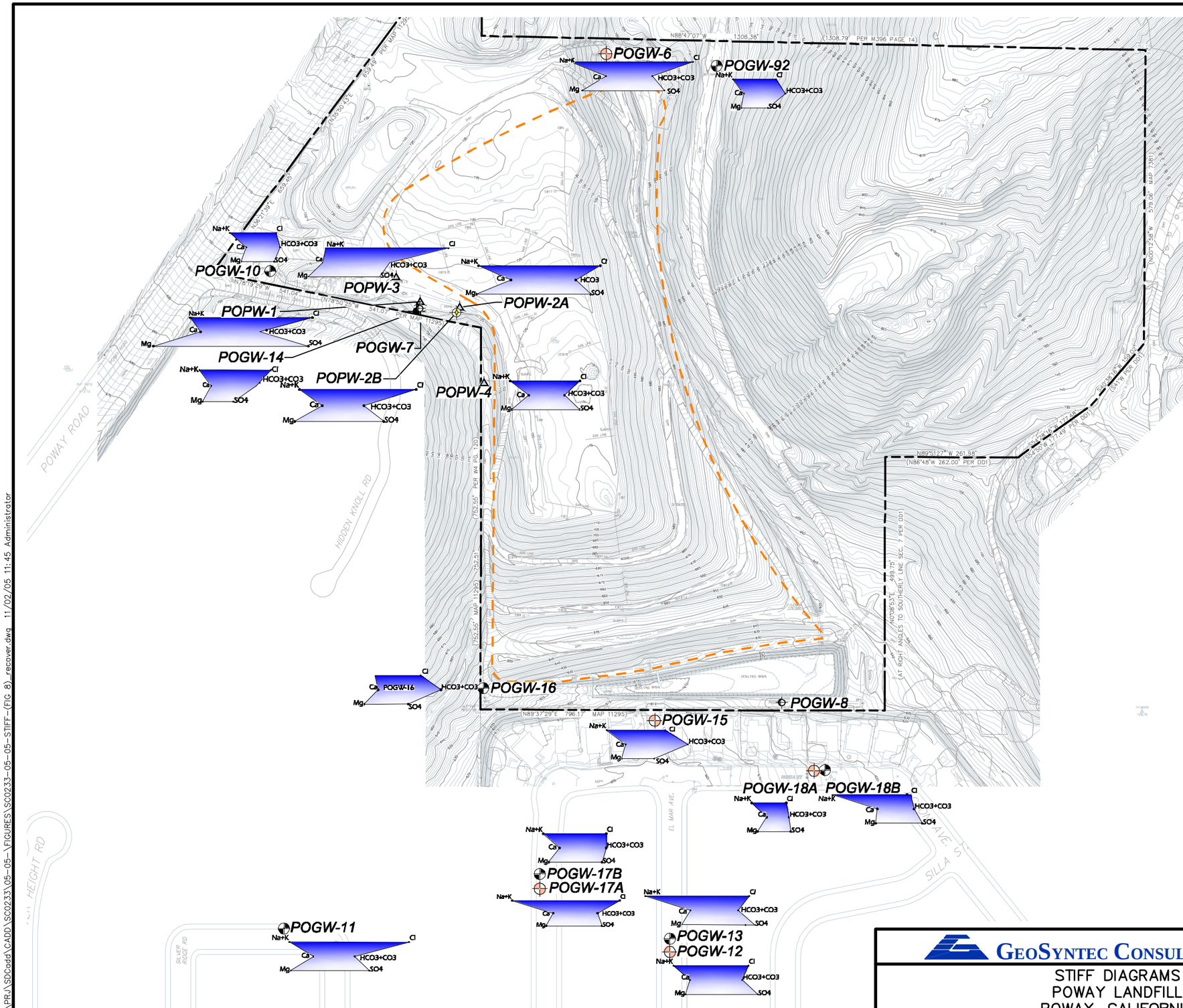
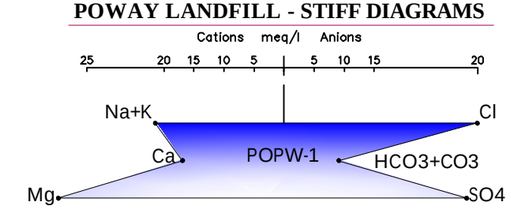


LEGEND

POGW-6	ALLUVIAL GROUNDWATER MONITOR WELL
POGW-9	UPPER FRACTURE ZONE GROUNDWATER MONITOR WELL
POPW-1	UPPER FRACTURE ZONE GROUNDWATER PIEZOMETER
POPW-2B	INTERMEDIATE FRACTURE ZONE GROUNDWATER PIEZOMETER
POGW-14	LOWER FRACTURE ZONE GROUNDWATER MONITOR WELL
POGW-8	DESTROYED GROUNDWATER MONITOR WELL
	APPROXIMATE PROPERTY BOUNDARY
	APPROXIMATE TRASH/REFUSE BOUNDARY
	EXISTING PAVED ROAD
	EXISTING DIRT ROAD

POWAY LANDFILL - STIFF DIAGRAMS



200 100 0 200

SCALE IN FEET

GEOSYNTEC CONSULTANTS

BASE MAP REFERENCE:
Stewart Geo Technologies
July 2002

STIFF DIAGRAMS
POWAY LANDFILL
POWAY, CALIFORNIA

FIGURE NO. 8
PROJECT NO. SC0233-05-05
DATE: AUGUST 2005

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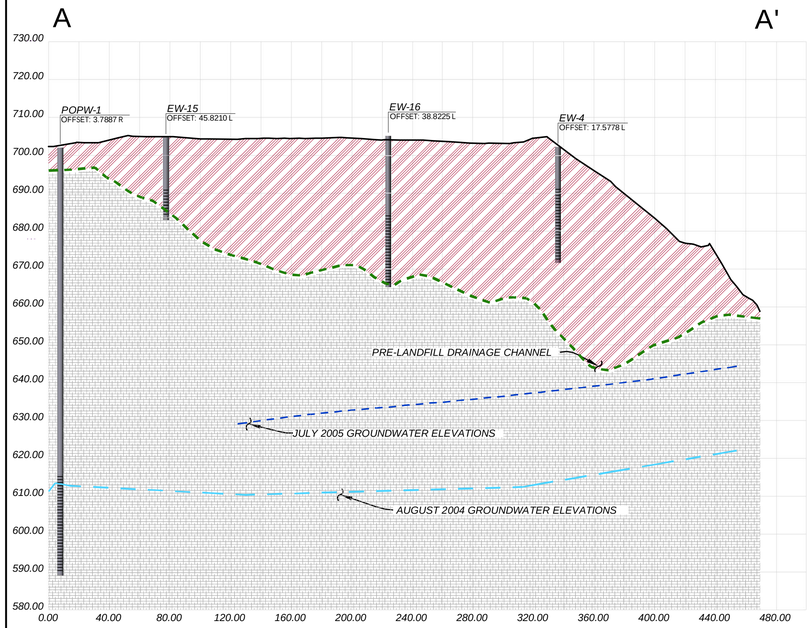

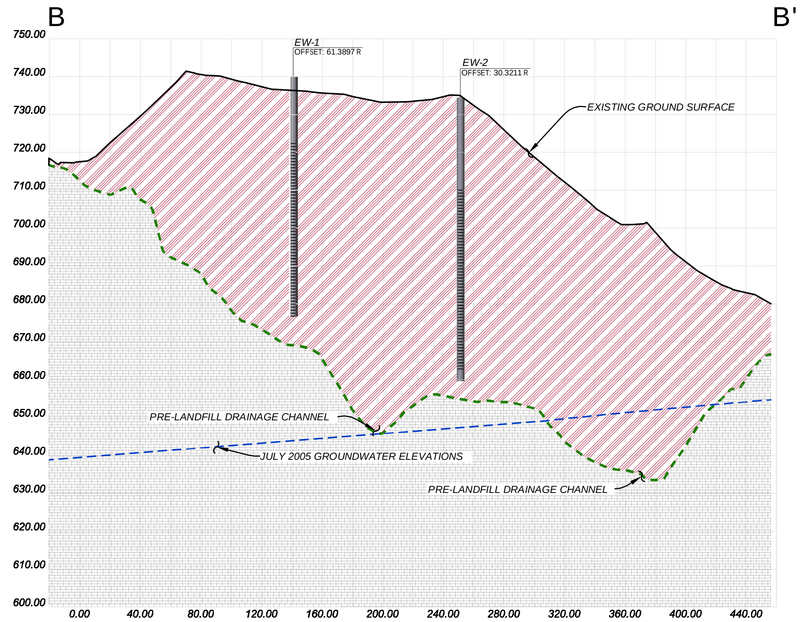

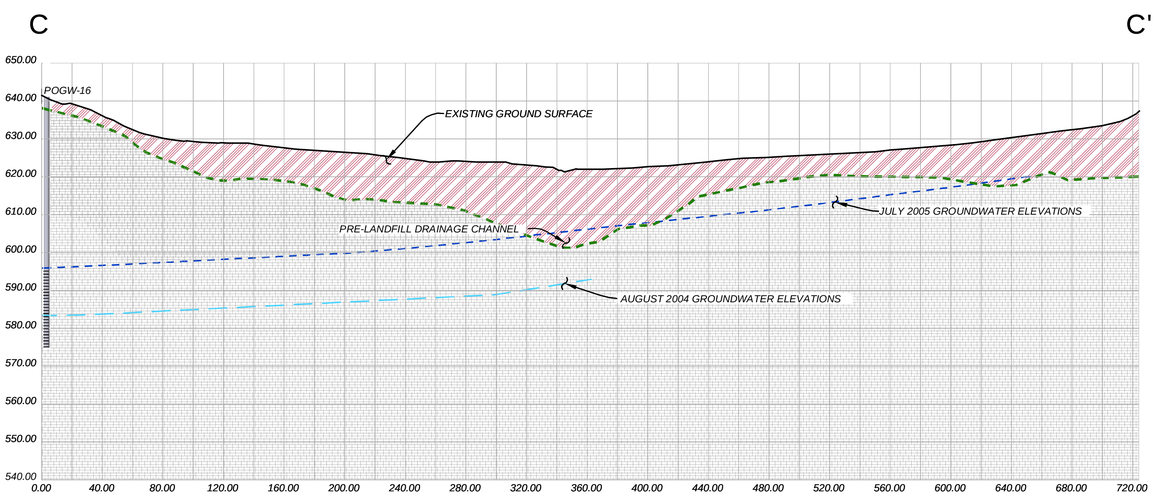

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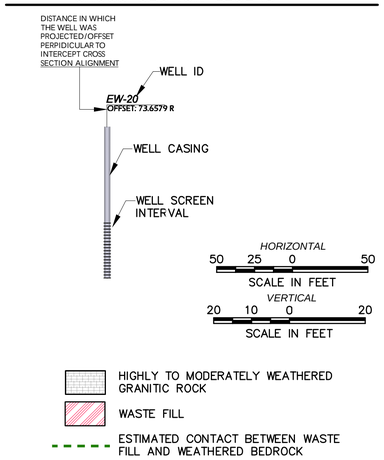

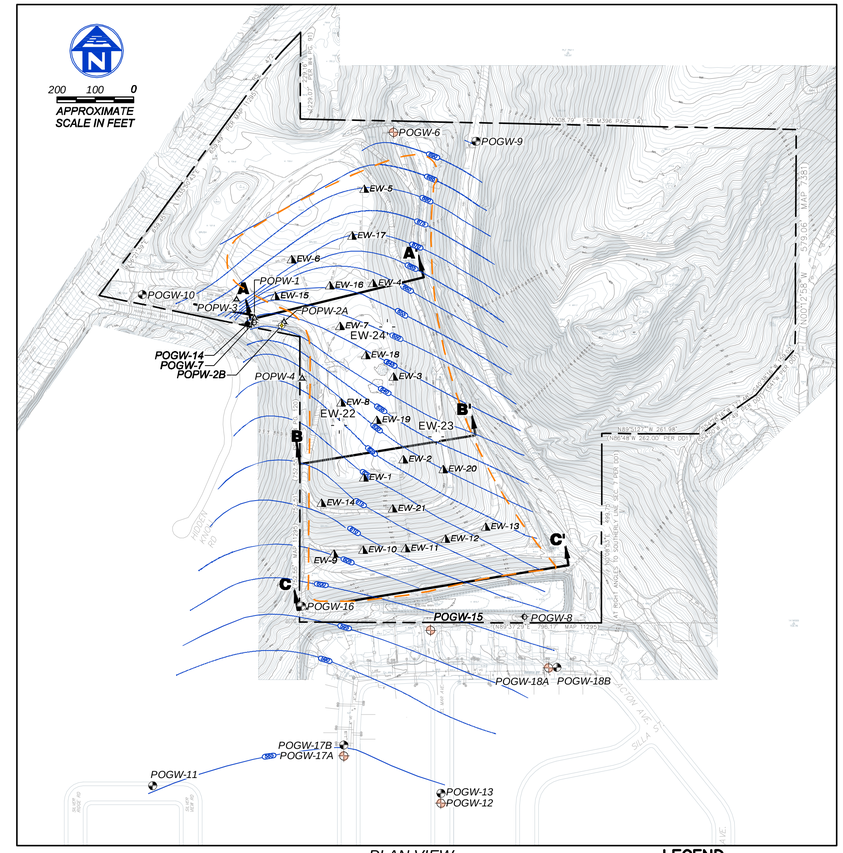

PLAN VIEW
1"=200'

LEGEND

POGW-6	ALLUVIAL GROUNDWATER MONITOR WELL
POGW-9	UPPER FRACTURE ZONE GROUNDWATER MONITOR WELL
POPW-1	UPPER FRACTURE ZONE GROUNDWATER PIEZOMETER
POPW-2B	INTERMEDIATE FRACTURE ZONE GROUNDWATER PIEZOMETER
EW-22	PROPOSED LANDFILL GAS EXTRACTION WELL
POGW-14	LOWER FRACTURE ZONE GROUNDWATER MONITOR WELL
POGW-8	DESTROYED GROUNDWATER MONITOR WELL
EW-1	LANDFILL GAS EXTRACTION WELL
	APPROXIMATE PROPERTY BOUNDARY
	APPROXIMATE TRASH/REFUSE BOUNDARY
	EXISTING PAVED ROAD
	EXISTING DIRT ROAD
590	GROUNDWATER ELEVATION CONTOUR
0.13	APPROXIMATE GROUNDWATER FLOW DIRECTION AND HYDRAULIC GRADIENT (FT/FT)
C C'	SECTION LOCATION

NOTES:
1. GROUNDWATER ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL
2. WELLS POGW-6, POGW-12, POGW-17A, POGW-18A ARE ALLUVIAL WELLS AND ARE NOT USED IN GROUNDWATER CONTOURING. POPW-2B IS AN INTERMEDIATE FRACTURE ZONE WELL AND WAS NOT USED IN GROUNDWATER CONTOURING. POGW-14 IS A DEEP FRACTURE ZONE WELL AND WAS NOT USED IN GROUNDWATER CONTOURING.

GEOSYNTEC CONSULTANTS

BASE MAP REFERENCE: Stewart Geo Technologies July 2002

GAS EXTRACTION WELL FIELD AND DEPTH TO WASTE
CROSS SECTIONS A THROUGH C
POWAY LANDFILL
POWAY, CALIFORNIA

FIGURE NO.	9
PROJECT NO.	SC0233-05-05
DATE:	AUGUST 2005

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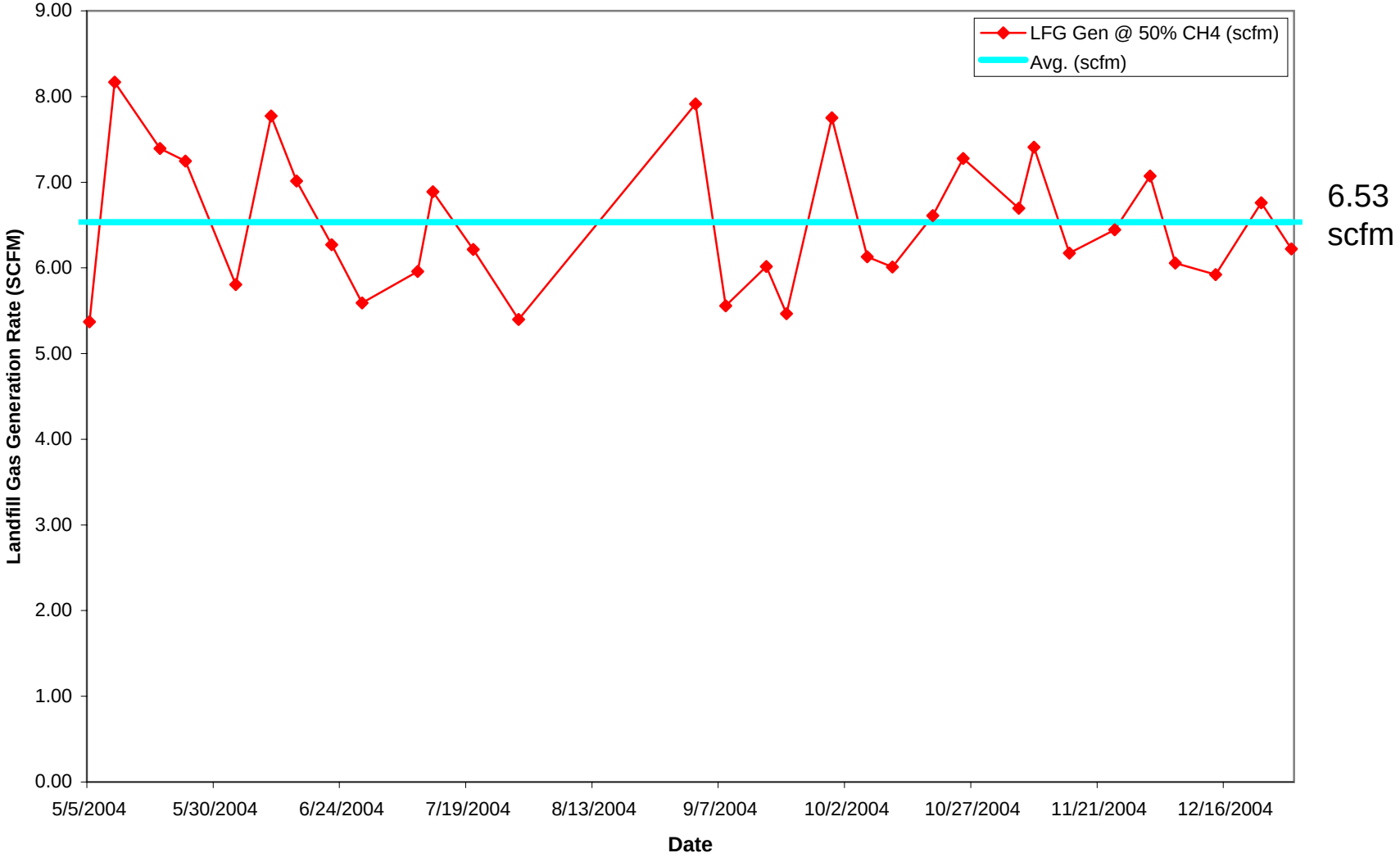
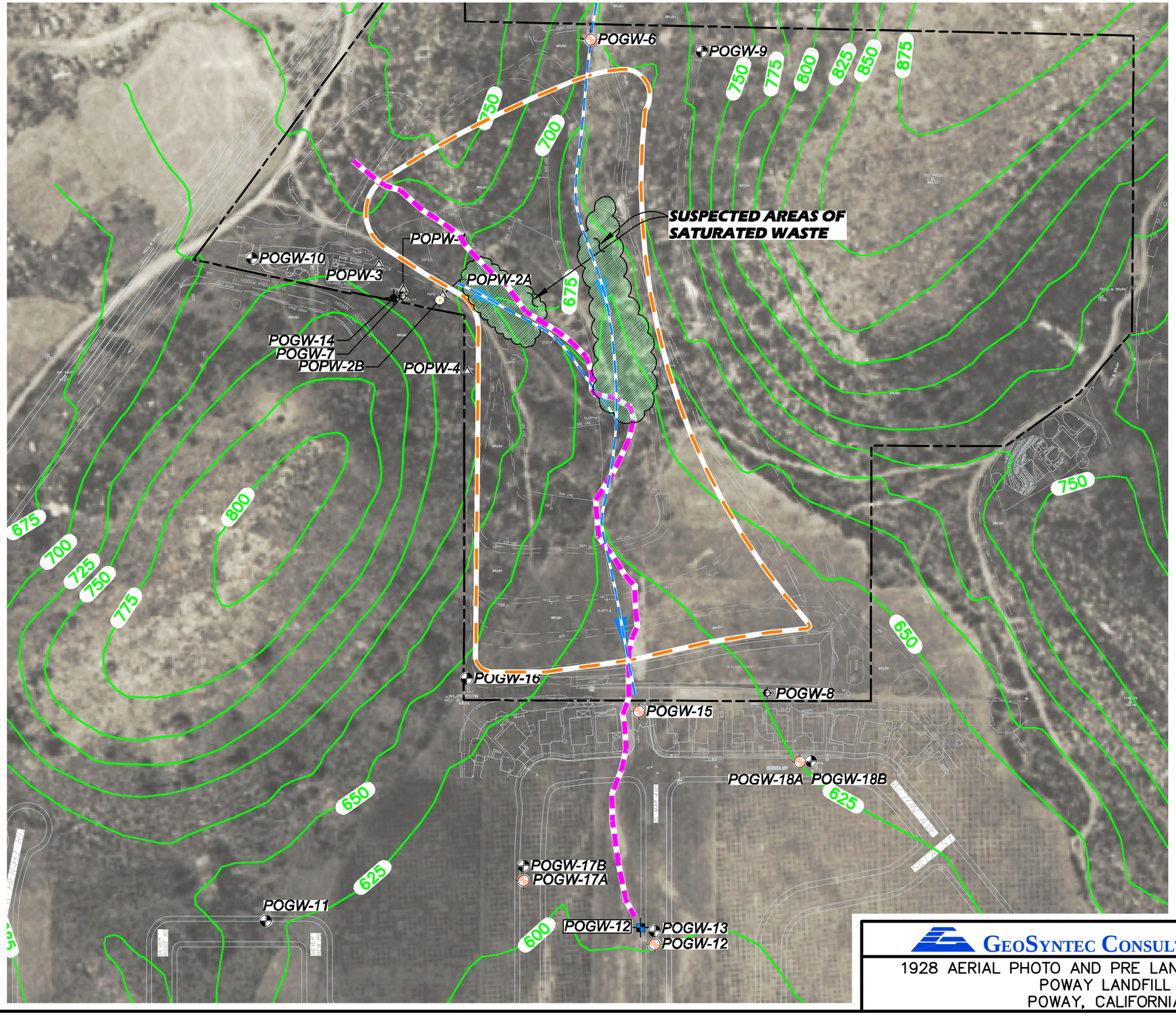
Figure 10
Landfill Gas Generation Rate
Poway Landfill
Poway, California





LEGEND

POGW-6	ALLUVIAL GROUNDWATER MONITOR WELL
POGW-9	UPPER FRACTURE ZONE GROUNDWATER MONITOR WELL
POPW-1	UPPER FRACTURE ZONE GROUNDWATER PIEZOMETER
POPW-2B	INTERMEDIATE FRACTURE ZONE GROUNDWATER PIEZOMETER
POGW-14	LOWER FRACTURE ZONE GROUNDWATER MONITOR WELL
POGW-8	DESTROYED GROUNDWATER MONITOR WELL
	APPROXIMATE PROPERTY BOUNDARY
	APPROXIMATE TRASH/REFUSE BOUNDARY
	EXISTING PAVED ROAD
	EXISTING DIRT ROAD
600	PRE-LANDFILL CONTOUR AND ELEVATION (IT, 1993)
	APPROXIMATE COURSE OF HISTORICAL SURFACE WATER DRAINAGE BASED ON PRE-LANDFILL TOPOGRAPHY
	SURFACE WATER CHANNEL (1928 AERIAL)

N

200 100 0 200

SCALE IN FEET

GEOSYNTEC CONSULTANTS

BASE MAP REFERENCE:
Stewart Geo Technologies
July 2002

1928 AERIAL PHOTO AND PRE LANDFILL CONTOURS
POWAY LANDFILL
POWAY, CALIFORNIA

FIGURE NO. 11
PROJECT NO. SC0233-05-05
DATE: AUGUST 2005

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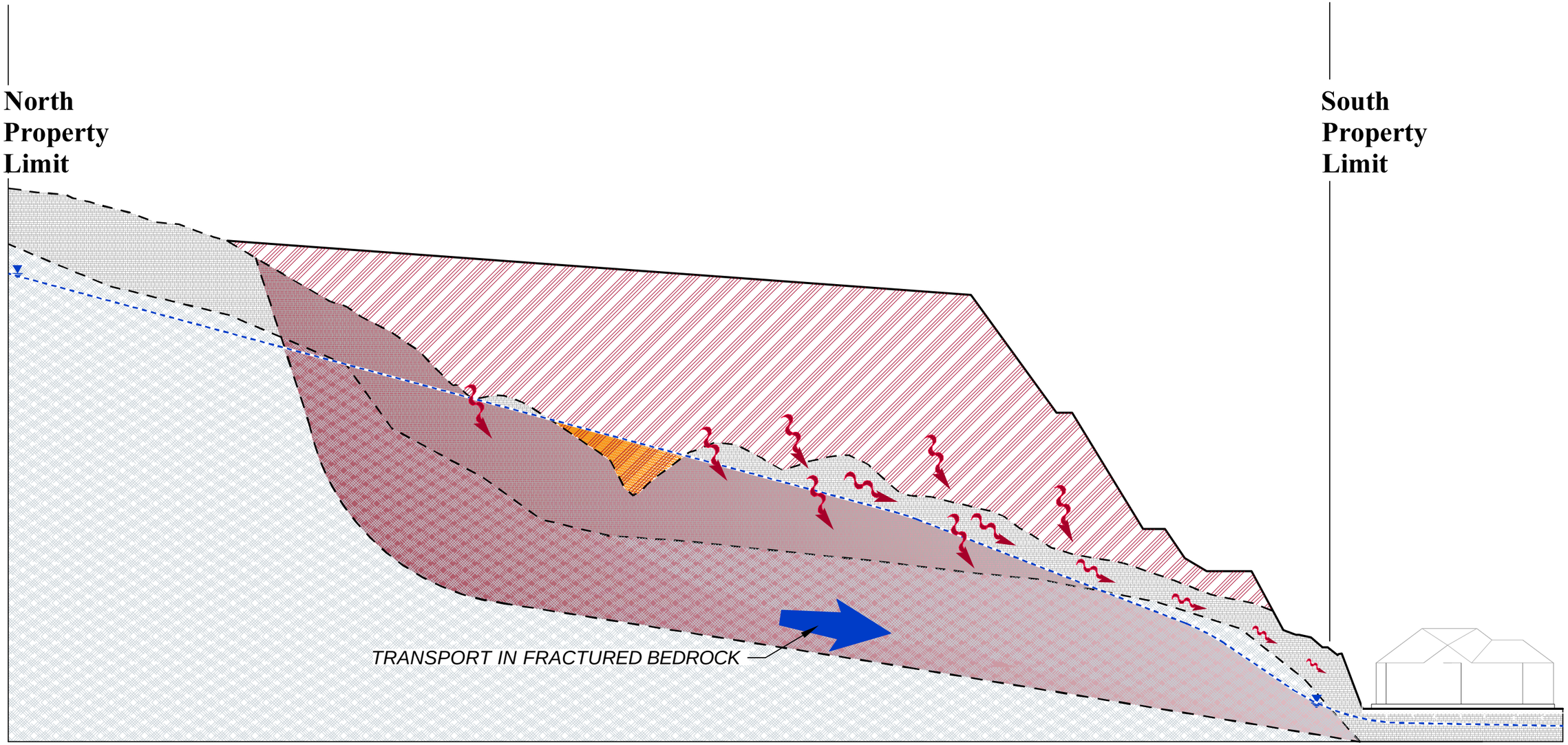


LEGEND

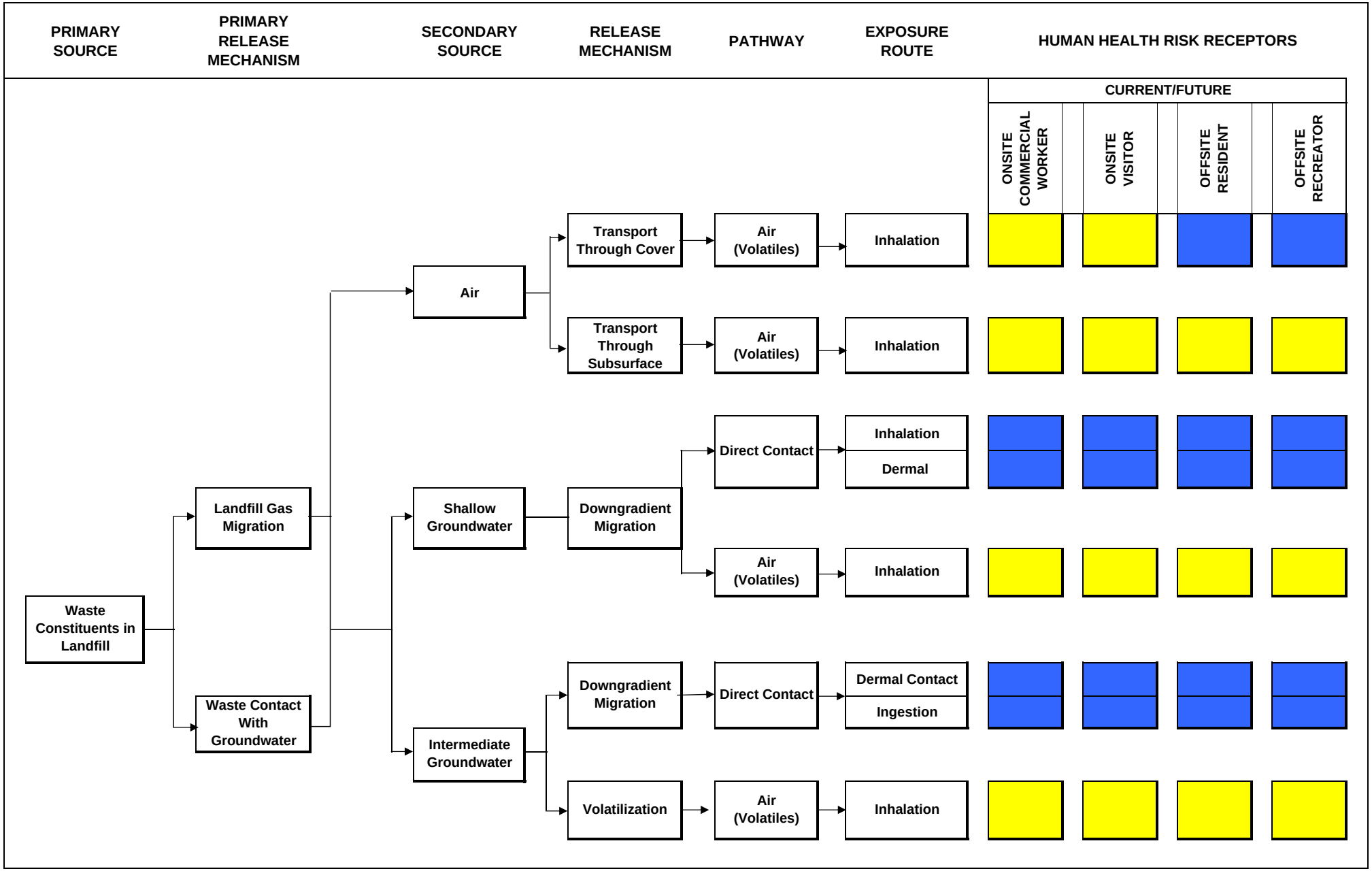
- EXTREMELY TO ODERATELY WEATHERED BEDROCK
- MODERATELY TO SLIGHTLY WEATHERED FRACTURED BEDROCK
- WASTE FILL
- POSSIBLE SOURCE AREA /SATURATED WASTE
- VOC TRANSPORT IN FRACTURED BEDROCK
- REPRESENTS POTENTIAL LANDFILL GAS MIGRATION FLOW DIRECTION

GEOSYNTEC CONSULTANTS

CONCEPTUAL SITE MODEL
POWAY LANDFILL
POWAY, CALIFORNIA

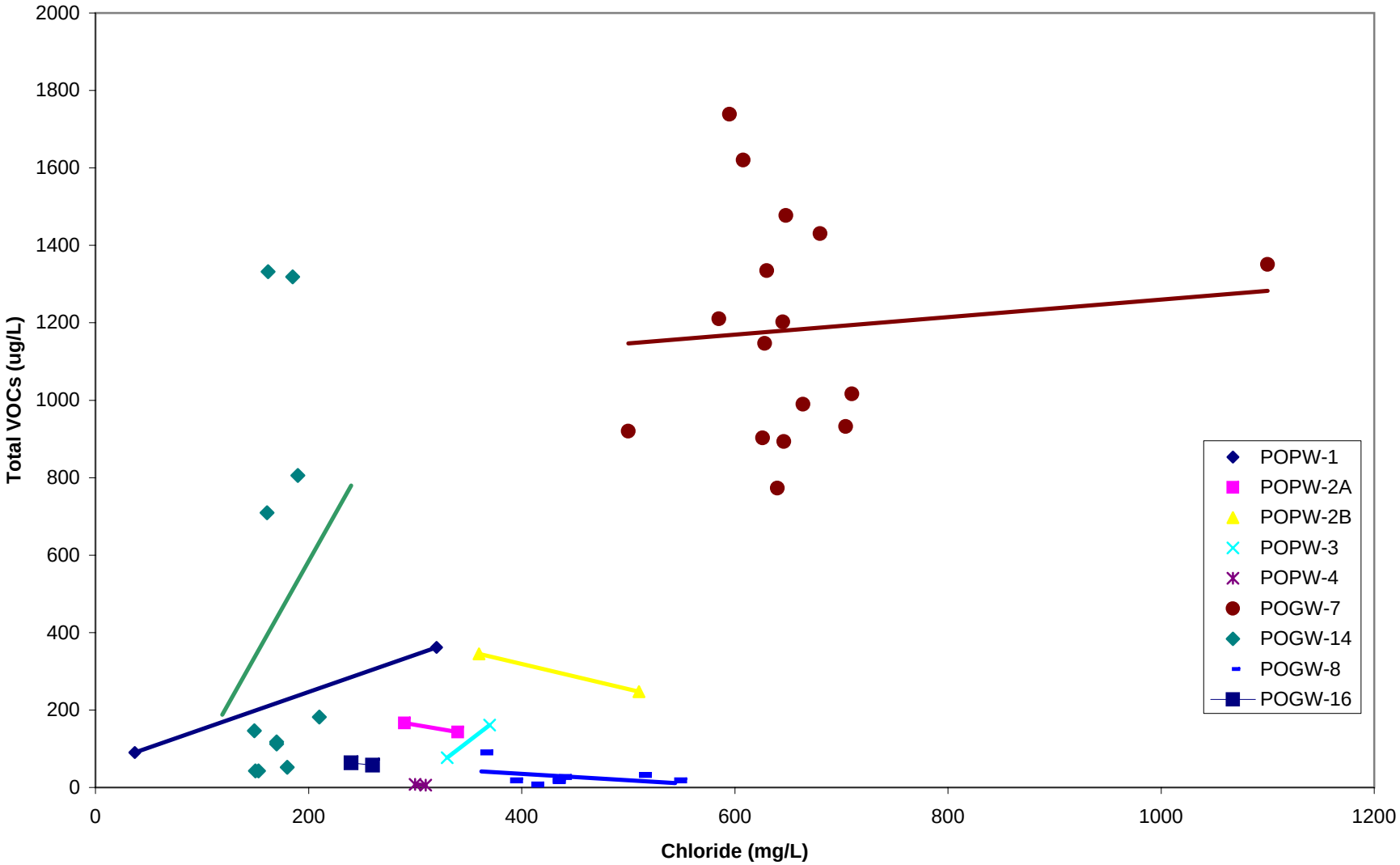
FIGURE NO. 12
PROJECT NO. SC0233-05-05
DATE: AUGUST 2005

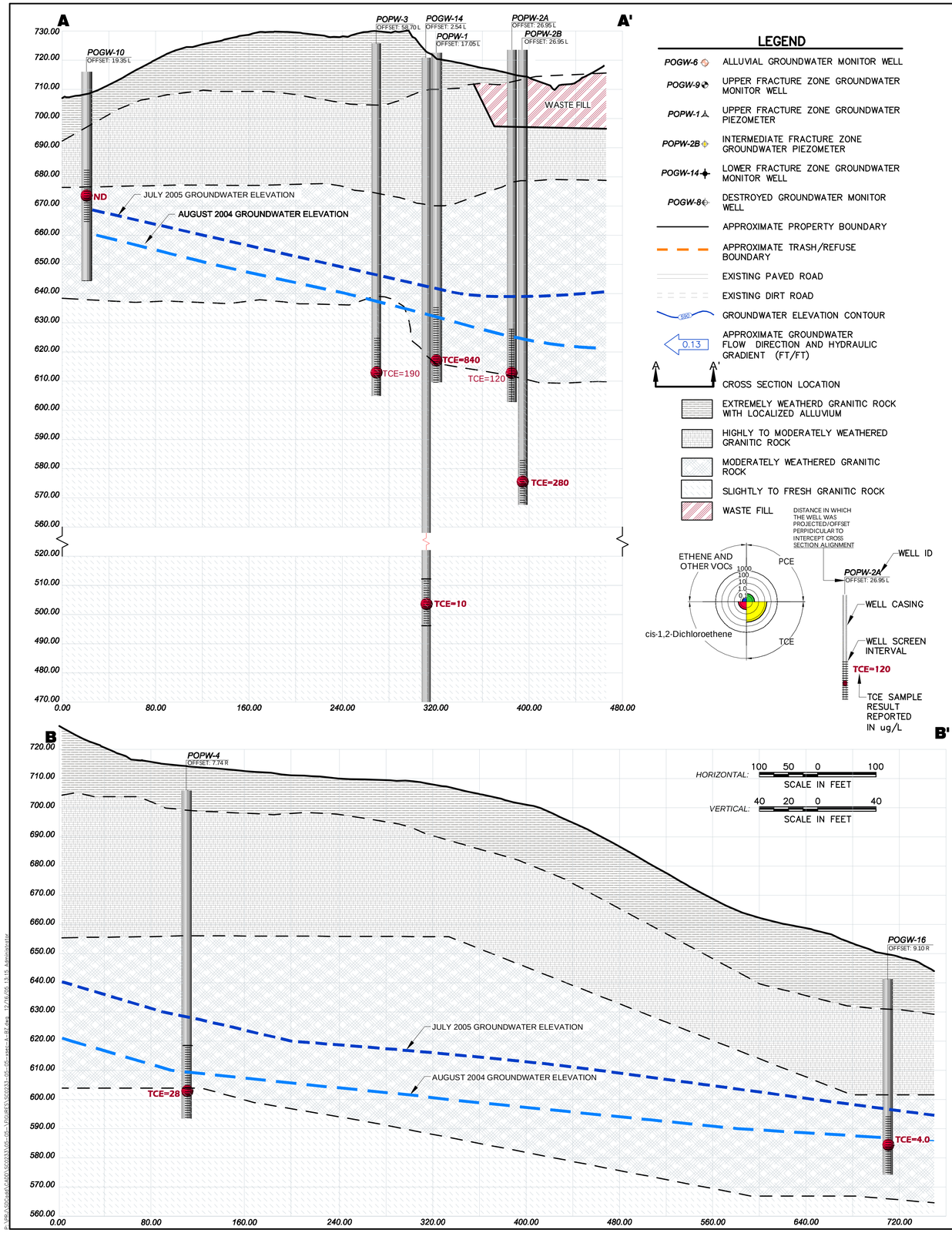
Figure 13
Conceptual Model of Pathway and Receptors
Poway Landfill
Poway, California

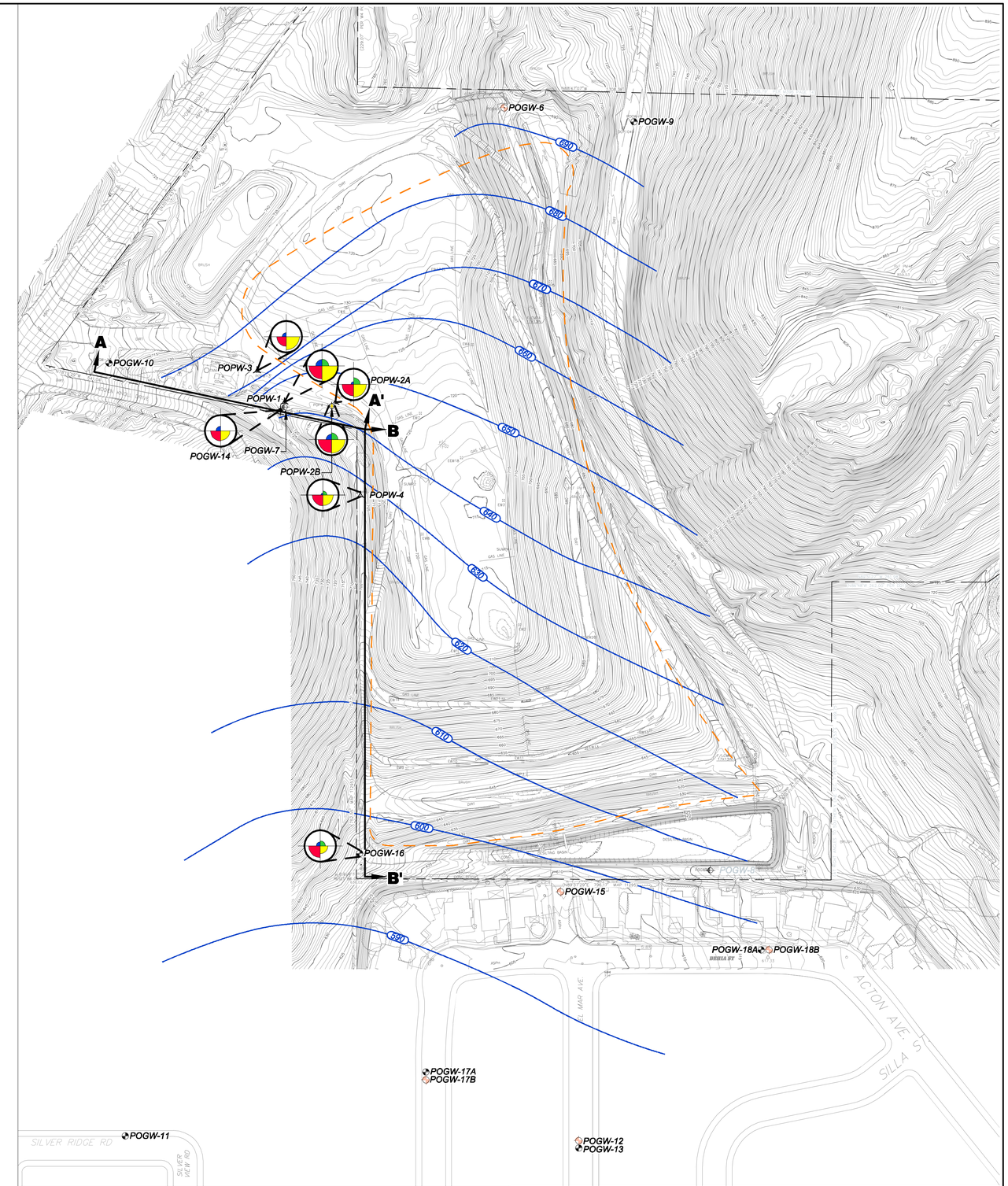


NOTES: Complete exposure pathway; Potentially complete but insignificant exposure pathway; Incomplete exposure pathway

Figure 14
Chloride Vs. Total VOCs
Poway Landfill
Poway, California







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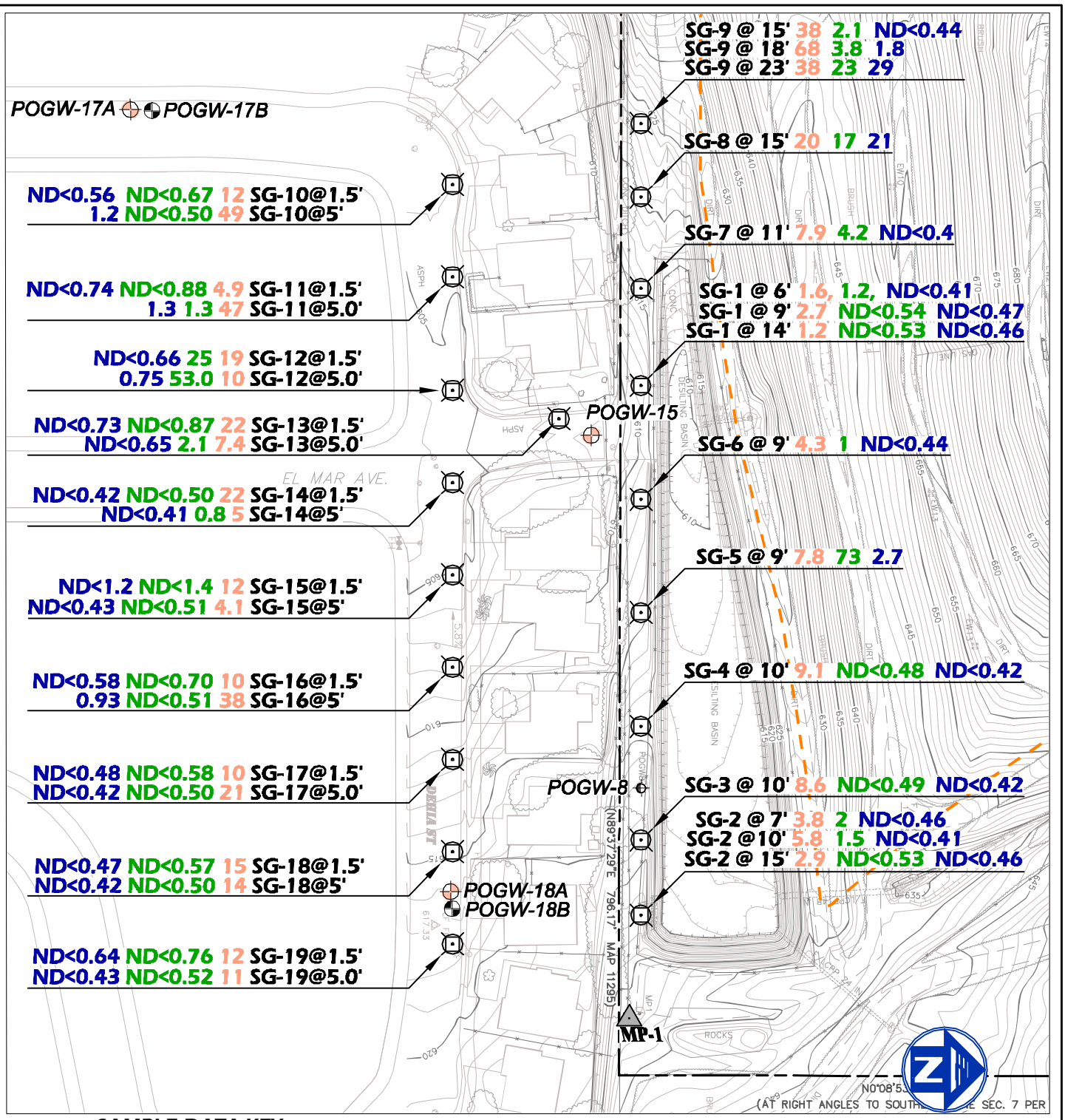
SCALE IN FEET

BASE MAP REFERENCE:
Stewart Geo Technologies
July 2002

GEOSYNTEC CONSULTANTS

VOC TRENDS IN GROUNDWATER JULY 2005
CROSS SECTIONS A–A' AND B–B'
POWAY LANDFILL
POWAY CALIFORNIA

FIGURE NO.	15
PROJECT NO.	SC0233-05-05
DATE:	AUGUST 2005



SAMPLE DATA KEY

SG-2 @ 15' 2.9 ND<0.53 ND<0.46

Sampling ID and Depth BGS. Benzene TCE PCE

LEGEND

SG-10 EXISTING SOIL GAS SAMPLING LOCATION

MP-1 LANDFILL GAS MONITORING PROBE

POGW-18A ALLUVIAL GROUNDWATER MONITOR WELL

POGW-18B UPPER FRACTURE ZONE GROUNDWATER MONITOR WELL

100 50 0 SCALE IN FEET

GEOSYNTEC CONSULTANTS

BASE MAP REFERENCE: Stewart Geo Technologies July 2002

PRIMARY VOC VAPOR CONCENTRATIONS IN SOIL
POWAY LANDFILL
POWAY, CALIFORNIA

FIGURE NO. 16
PROJECT NO. SC0233-05-05
DATE: AUGUST 2005

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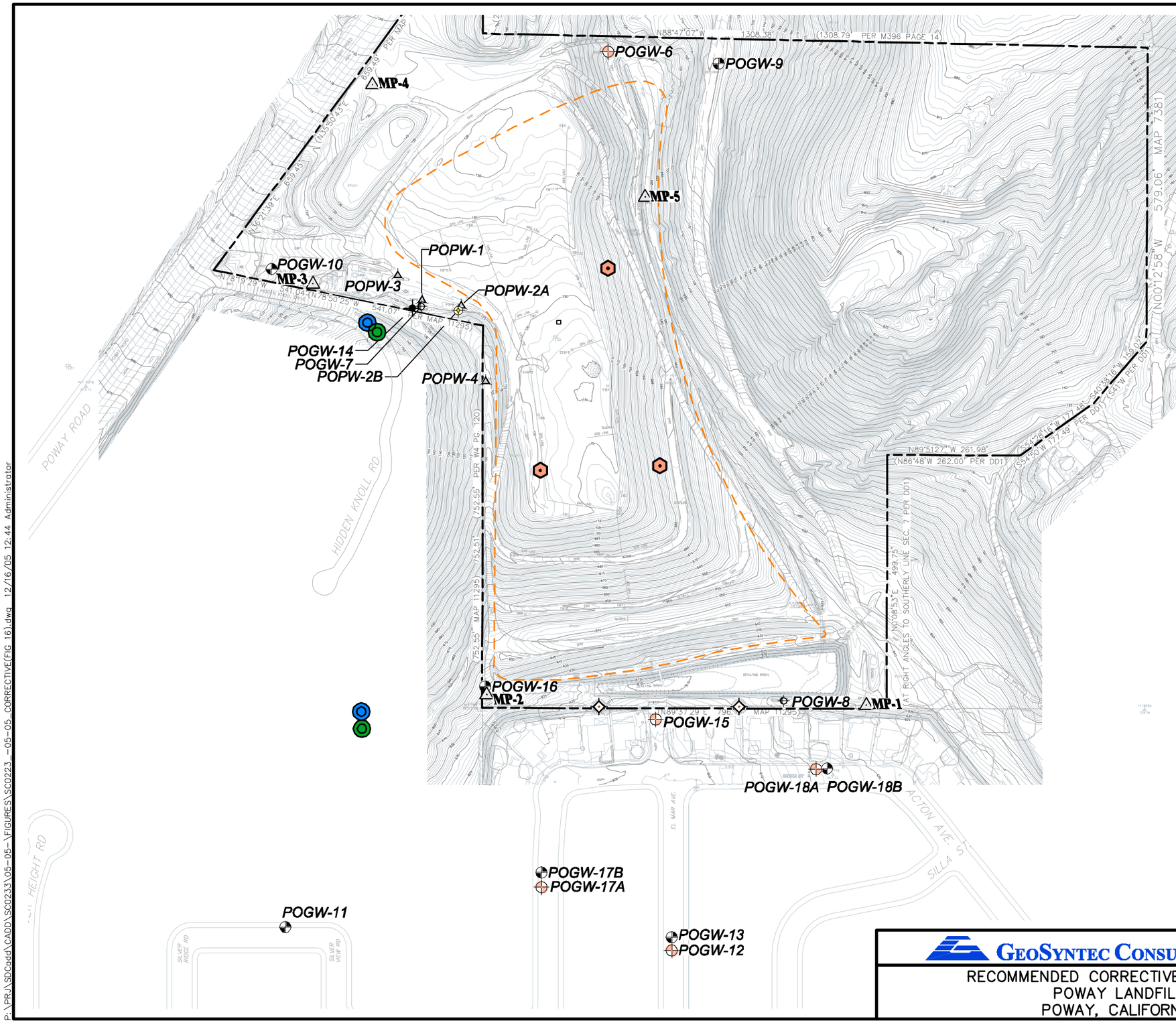


LEGEND

- PROPOSED MONITORING PROBE
- PROPOSED UPPER FRACTURE ZONE GROUNDWATER MONITOR WELL
- PROPOSED INTERMEDIATE FRACTURE ZONE GROUNDWATER MONITOR WELL
- PROPOSED LANDFILL GAS EXTRACTION WELL
- POGW-6 — ALLUVIAL GROUNDWATER MONITOR WELL
- POGW-9 — UPPER FRACTURE ZONE GROUNDWATER MONITOR WELL
- POPW-1 — UPPER FRACTURE ZONE GROUNDWATER PIEZOMETER
- POPW-2B — INTERMEDIATE FRACTURE ZONE GROUNDWATER PIEZOMETER
- POGW-14 — LOWER FRACTURE ZONE GROUNDWATER MONITOR WELL
- MP-1 — LANDFILL GAS MONITORING PROBE
- POGW-8 — DESTROYED GROUNDWATER MONITOR WELL
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE TRASH/REFUSE BOUNDARY
- EXISTING PAVED ROAD
- EXISTING DIRT ROAD

N

200 100 0 200

SCALE IN FEET

BASE MAP REFERENCE:
Stewart Geo Technologies
July 2002

GEOSYNTEC CONSULTANTS

RECOMMENDED CORRECTIVE MEASURES
POWAY LANDFILL
POWAY, CALIFORNIA

FIGURE NO. 17
PROJECT NO. SC0233-05-05
DATE: AUGUST 2005

P:\PRJ\SDCadd\CADD\SC0233\05-05-\FIGURES\SC0223 -05-05 CORRECTIVE(FIG 16).dwg 12/16/05 12:44 Administrator

APPENDIX A
WELL INSTALLATION PERMIT
AND
SUBSURFACE SURVEYS GEOPHYSICAL REPORTS

PERMIT #LMON103132
A.P.N. #323-371-02-00
323-374-04-00
EST #H86018

COUNTY OF SAN DIEGO
DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
MONITORING WELL PROGRAM

MONITORING WELL AND BORING CONSTRUCTION AND DESTRUCTION PERMIT

SITE NAME: OFF-SITE FROM POWAY LANDFILL

SITE ADDRESS: 14504-14550 DEHIA ST(IN STREET ADJACENT TO),
POWAY, CA 92064

PERMIT TO: **INSTALL 2 NESTED GROUNDWATER MONITORING WELLS**

PERMIT APPROVAL DATE: MAY 18, 2005

PERMIT EXPIRES ON: SEPTEMBER 15, 2005

RESPONSIBLE PARTY: COUNTY OF SAN DIEGO, DPW

PERMIT CONDITIONS:

1. Wells must have a **minimum 3-foot concrete surface seal**. The surface seal shall consist of concrete able to withstand the maximum anticipated load without cracking or deteriorating. The concrete should meet Class A specifications of a minimum 4000-pound compressive strength.

2. All water and soil resulting from the activities covered by this permit must be managed, stored and disposed of as specified in the SAM Manual in Section 5, E- 4. (**http://www.sdcounty.ca.gov/deh/lwq/sam/manual_guidelines.html**). In addition, drill cuttings must be properly handled and disposed in compliance with the Stormwater Best Management Practices of the local jurisdiction.

3. Within 60 days of completing work, submit a well construction report, including all well and/or boring logs and laboratory data to the Well Permit Desk. This report must include all items required by the SAM Manual, Section 5, Pages 6 & 7.

4. This office must be given 48-hour notice of any drilling activity on this site and advanced notification of drilling cancellation. Please contact the Well Permit Desk at 338-2339.

NOTE: **This permit does not constitute approval of a work plan as defined in Section 2722 of Article 11 of C.C.R., Title 23. Work plans are required for all unauthorized release investigations in San Diego County.**

APPROVED BY: Mike Vernetti DATE: 05/18/2005
MIKE VERNETTI

NOTIFIED: 5/18/05 V.m.msg
msc

DEH:SAM-9075 (3/05)

RECEIVED
05 MAY 9 AM 11 16
MAILROOM

PERMIT APPLICATION GROUNDWATER AND VADOSE MONITORING WELLS AND EXPLORATORY OR TEST BORINGS

OFFICE USE ONLY
PERMIT LMON # 103132
SAM CASE Y/N# 86418
DATE RECEIVED: 5-9-05
FEE PAID: $450.-
CHECK # 805

A. RESPONSIBLE PARTY County of San Diego, Dept of Public Works, Landfill Mng. Phone 858-495-5480
(The person, persons, or company responsible for the construction, maintenance, and destruction of the proposed borings and/or wells.)
Mailing Address 5201 Ruffin Rd, ste D City San Diego State CA Zip 92123
Contact Person Barry Pulver Phone 858-495-5480 Ext. Fax

B. SITE ASSESSMENT PROJECT NUMBER – IF APPLICABLE #

C. CONSULTING FIRM GeoSyntec Consultants
Mailing Address 11305 Rancho Bernardo Rd, ste 101 City San Diego State CA Zip 92127
Registered Professional Veryl Wittig Registration # 7115 (RG)
Contact Person Sean McClain Phone 858-674-6559 Ext. 203 Fax 858-674-6586

D. DRILLING COMPANY WDC Exploration & Wells C57# 283326
Contact Name Joe Spedale
Mailing Address 5566 Arrow Highway City Montclair State CA Zip 91763
Phone 800-974-2769 Fax 909-931-4017

E. CONSTRUCTION INFORMATION

TYPE OF WELLS/ BORINGS TO BE CONSTRUCTED	#	MATERIALS TO BE USED: CASING	MATERIALS TO BE USED: SEAL/BORING BACKFILL	PROPOSED CONSTRUCTION	
				Estimated groundwater depth: 10 ft.	
				Estimated depth of boring 45.5 ft.	
☒ Groundwater	2	Not Applicable ____	☐ Neat Cement	Concrete surface seal	0 to 3 See Attach diagram
☐ Vadose	___	Type PVC	☒ Cement & Bentonite	Annular seal	____ to ____
☐ Boring	___	Gauge SH-40	☐ Sand-Cement	Bentonite transition seal	____ to ____
☐ Other	___	Diameter 2-inch	☐ Bentonite	Filter Pack	____ to ____
		Well Screen Size 0.02	☐ Other	Perforation	____ to ____
NUMBER OF WELLS TO BE DESTROYED		Filter Pack #3	Borehole diameter 10-inches		
☐	___	Drilling Method: ☐ Auger ☐ Mud Rotary ☐ Percussion	☒ Air Rotary ☐ Other	NOTE: Attach a well construction diagram for wells with multiple completions	

I agree to comply with the requirements of the current Site Assessment and Mitigation Manual, and with all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction.

DRILLER'S SIGNATURE [signature] DATE 11/12/04

Within 60 days of completion, I will furnish the Monitoring Well Permit Desk with a complete and accurate well/boring log. I will certify the design and construction or destruction of the well/borings in accordance with the permit application.

PE/RCE/CEG SIGNATURE [signature] DATE 5/6/05

SITE INFORMATION

1. **ASSESSOR'S PARCEL NUMBER** Adjacent to 321-200-38
   Site Name Poway Landfill
   Site Address 14900 Poway Road City Poway Zip 92064-

   PROPERTY OWNER County of San Diego
   Phone 858-495-5480 Ext. Fax _____
   Mailing Address 5201 Ruffin Road, Suite D City San Diego State CA
   Zip 92123-

   NUMBER OF WELLS 2- **TYPE OF WELLS** Monitor Well

2. **ASSESSOR'S PARCEL NUMBER** _____
   Site Name _____
   Site Address _____ City _____ Zip _____

   PROPERTY OWNER _____
   Phone _____ Ext. _____ Fax _____
   Mailing Address _____ City _____ State __ Zip _____

   NUMBER OF WELLS _____ **TYPE OF WELLS** _____

3. **ASSESSOR'S PARCEL NUMBER** _____
   Site Name _____
   Site Address _____ City _____ Zip _____

   PROPERTY OWNER _____
   Phone _____ Ext. _____ Fax _____
   Mailing Address _____ City _____ State __ Zip _____

   NUMBER OF WELLS _____ **TYPE OF WELLS** _____

4. **ASSESSOR'S PARCEL NUMBER** _____
   Site Name _____
   Site Address _____ City _____ Zip _____

   PROPERTY OWNER _____
   Phone _____ Ext. _____ Fax _____
   Mailing Address _____ City _____ State __ Zip _____

   NUMBER OF WELLS _____ **TYPE OF WELLS** _____

G. FEES (in effect beginning July 1, 2004, through June 30, 2005)

ACTIVITY	FEE SCHEDULE	AMOUNT
Permit for Well Installations Only (Groundwater Monitoring Wells, Vadose, Vapor Extraction Wells)	$175.00 for the first monitoring well	1 **$175.00**
Permit for Well Maintenance Inspection (Valid for three years)	$ 95.00 for first well maintenance inspection	1 **$95.00**
Each Additional New Well	$150.00 for each additional well installation	1 x **$150.00** ____
	$30.00 for each additional well maintenance inspection	1 x **$30.00** ____
Permit for Borings Only *(CPT's, Hydropunch, Geoprobes, Temporary Well Points, etc.)*	$175.00 for the first boring	___ x **$175.00** ____
	$45.00 for each additional boring	___ x **$45.00** ____
Permit for Well Destructions Only	$175.00 for the first destruction	___ x **$175.00**
	$115.00 for each additional destruction ...	___ x **$115.00**
Permit for any Combination of Well Installations, Borings, & Destructions *(except UST backfill permit)*	The first activity will be $175.00	___ x **$175.00** ____
	Additional activities will be as follows:	
	$150.00 for each additional well	___ x **$150.00** ____
	$ 95.00 for first well maintenance inspection	___ x **$ 95.00** ____
	$ 30.00 for each additional well maintenance inspection	___ x **$ 30.00** ____
	$ 45.00 for each additional boring	___ x **$ 45.00** ____
	$115.00 for each well destruction	___ x **$115.00** ____
Permit for Underground Storage Tank Monitoring System in Backfill *(i.e. Enhanced Leak Detection)*	**$310.00 (Flat Fee)**	**$310.00**
	TOTAL COST OF PERMIT	$ 450.00

H. **QUESTIONNAIRE: Please answer all applicable questions completely. For well destructions, complete only #1 below and submit any required supportive documentation.**

1. If wells are to be destroyed, provide a description of method of destruction NA

2. What is the purpose of the well/boring investigation?

   ☒ a. Part of an ongoing site assessment case in which DEH or another government regulator is the lead agency.

   ☐ b. Part of a Phase I investigation for property ownership transfer or: _____

   ☐ c. Geotechnical investigation for proposed construction, land stabilization or:

   ☐ d. Other: _____

3. What procedures will be used to prevent the well/boring from providing an avenue to contamination during construction? The monitor wells will be installed imediately after the borings are completed

4. What field procedures will be utilized to determine if contamination exists? The cuttings will be screened with a photoionization detector (PID) and a sample from the cuttings will be submitted to an analytical laboratory for analysis

5. What procedures will be used to determine whether samples will be sent for laboratory testing or archiving? Groundwater samples will be submitted to an analytical laboratory

6. What constituents will be monitored and tested (Include EPA Laboratory Test Methods to be used)? VOCs EPA Method 8260B, general chemistry, and metal parameters

7. How will samples be transported and preserved? Groundwater samples will be stored on ice/refrgerated until they are picked up by a courier

8. What sampling methods will be used? Soil cuttings and groundwater will be stored in 55-gallon drums and one soil and groundwater sample will be collected from each drum.

9. Are you proposing a variation from the methods and/or procedures presented in the requirements for the construction or destruction of Vadose and Groundwater Monitoring Wells (Current SAM Manual Requirements)? If yes, specify these variations and include a well construction diagram and all required supporting documentation. Refer to the SAM Manual Appendix B for monitoring well guidelines (http://www/sdcounty.ca.gov/deh/lwq/sam/monitoring_well.html). :yes

10. Are you proposing a variation in drilling and destruction of soil borings from the methods and/or procedures specified in the current SAM manual? If yes, specify these variations and include a destruction diagram. No

11. What procedures will be used to ensure that the drilling equipment will introduce no contamination? Drilling equipment will be steamed cleaned prior to drilling onsite

12. What methods will be used to clean sampling equipment? Sampling equipment will be triple rinsed with alconox and distilled water

13. What cleaning method will be used to clean casing and screen prior to installation? New casing will be used which will arrive onsite pre-wrapped

County of San Diego

GARY W. ERBECK
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
P.O. BOX 129261, SAN DIEGO, CA 92112-9261
(619) 338-2222 FAX (619) 338-2377
1-800-253-9933

RICHARD HAAS
ASSISTANT DIRECTOR

PROPERTY OWNER RESPONSIBILITY ACKNOWLEDGEMENT

Proposed locations for subsurface work:

Property Address: City of poway

Assessor's Parcel Number (APN): Adjacent to 321-200-38

I, _____, owner of the property/properties listed above, give my permission to _____ (consulting company, contractor) to conduct the following work at the locations stated above.

☐ Install _____ monitoring wells ☐ Destroy _____ monitoring wells ☐ Drill _____ soil borings

The person who causes to have a monitoring well installed or an existing well destroyed on this property is defined as the *Responsible Party*. San Diego County Code, Section 67.424, states that: "Monitoring wells shall be maintained to meet construction or destruction standards. If a monitoring well does not meet construction or destruction standards, the *Responsible Party* must repair, reconstruct or destroy the monitoring well so it meets the standards. The property owner, if different than the *Responsible Party*, must take the necessary actions to repair, reconstruct or destroy the monitoring well so it meets the standards if the *Responsible Party* does not complete the necessary actions."

A soil boring is used specifically to sample soil and, because there are construction and destruction standards, is included in the definition of a monitoring well even though no maintenance is required. These standards are outlined in the County of San Diego Site Assessment and Mitigation (SAM) Manual and the State of California Well Standards Bulletin 74-90.

I understand that _____ (registered professional) of _____ (consulting company) and authorized signer for _____ (drilling company) have submitted a signed application to the Department of Environmental Health in which they have agreed to complete the above-stated work according the requirements of the current SAM Manual, all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction.

I also understand that if either the registered professional and/or the licensed drilling company should fail in their responsibilities as defined in San Diego County Code, Section 67.424, I, as the property owner, must take the necessary actions to repair, reconstruct or destroy the monitoring well so it meets the standards if the Responsible Party does not complete the necessary actions.

The scope of work covered by this Acknowledgement will expire one year from the date of the property owner's signature below. If an extension of time beyond one year is required to complete the proposed drilling activities or additional work is proposed, a new Property Owner Responsibility Agreement will be required.

Property Owner Signature: See Right of way permit Date: _____

Print Name: _____ Title: _____

Company: _____

GeoSyntec Consultants

Proposed Well Construction

:e: Poway Landfill

Date: 5/6/2005

Well ID POGW-17A and POGW-17B

Drilling Method: Air Rotary Hammer

Drilling Company: WDC Exploration and Wells

Proposed Boring Depth: 45.5 feet bgs

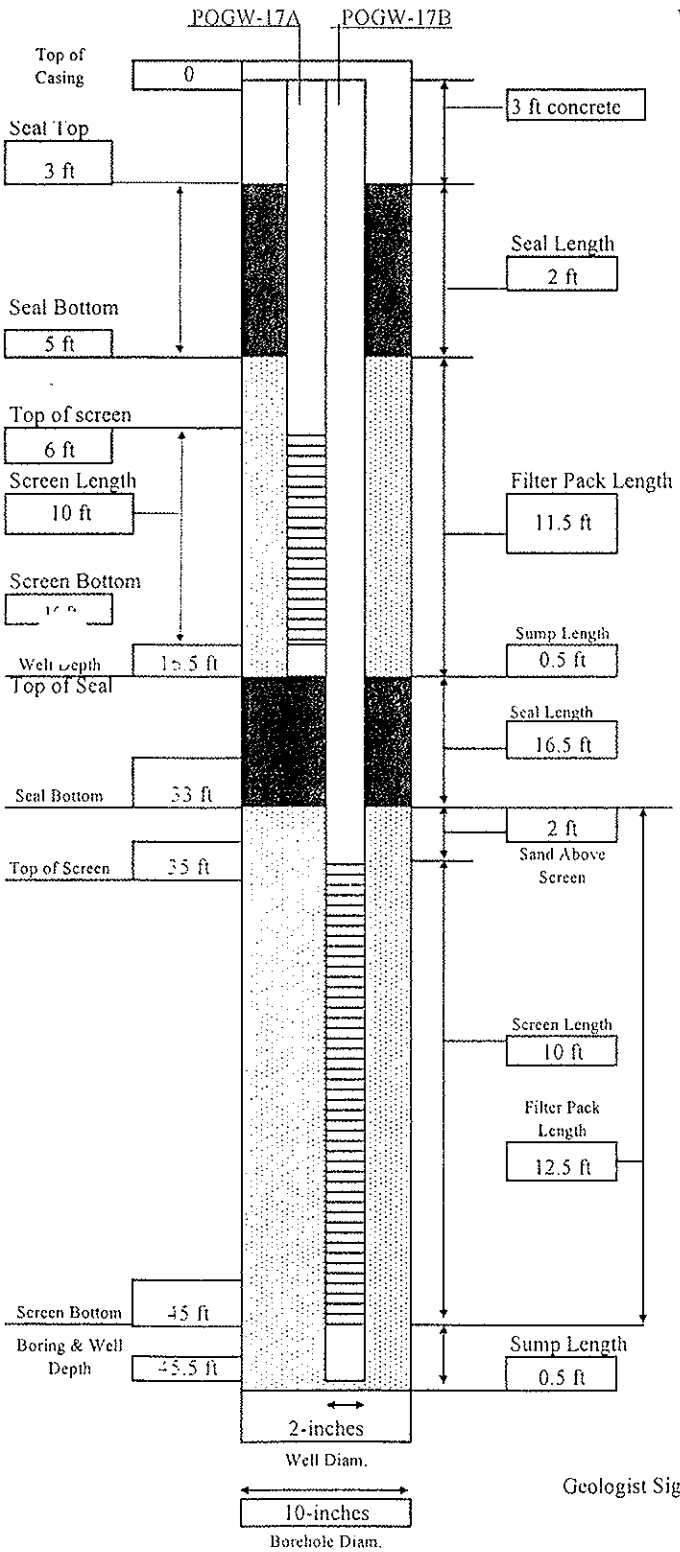
Drillers:

Proposed Boring Diameter: 10-inches

Geologist: Sean McClain

Proposed Well Depth: POGW-17A = 16.5 feet, POGW-17B = 45.5 feet bgs

Well Diameter: 2 nested wells, each 2-inches diameter



Proposed Well Construction:

Material: Schedule 40 PVC

Inside Diamter: 2-inches

Screen Slot Size: 0.02

Screen Beg.: POGW-17A =6" 17B = 35' End: 17A = 16" 17B = 45'

Sump Y / N

Type/Lenth: 0.5 ft

Proposed Filter Pack:

Type/Brand: Montery Sand #3

Amount Used:

Placement Method: Hand Pour

Proposed Seal:

Type/Brand: Bentonite chips/pellets

Amount Used:

Vol. Fluid Added:

Set-up Time:

Placement Method: Tremie below water table; hand pour above water table

Proposed Grout:

Type/Brand:

Amount Used:

Vol. Fluid Added:

Placement Method:

Proposed Well Completion:

Above Grade / Below Grade

Guard Posts? Y / N

Pad Size: 3X3

Cover Type/Size: 10-inch steel Flush Mount

Comments: Two 2-inch monitor wells installed in a 10-inch borehole with a two-inch spacer between wells.

Geologist Signature:

J:\standard\forms\WDC xls\17A and 17B

GeoSyntec Consultants

Proposed Well Construction

S Poway Landfill

Well ID POGW-18A and POGW-18B

Drilling Company: WDC Exploration and Wells

Drillers:

Geologist: Sean McClain

Date: 5/6/2005

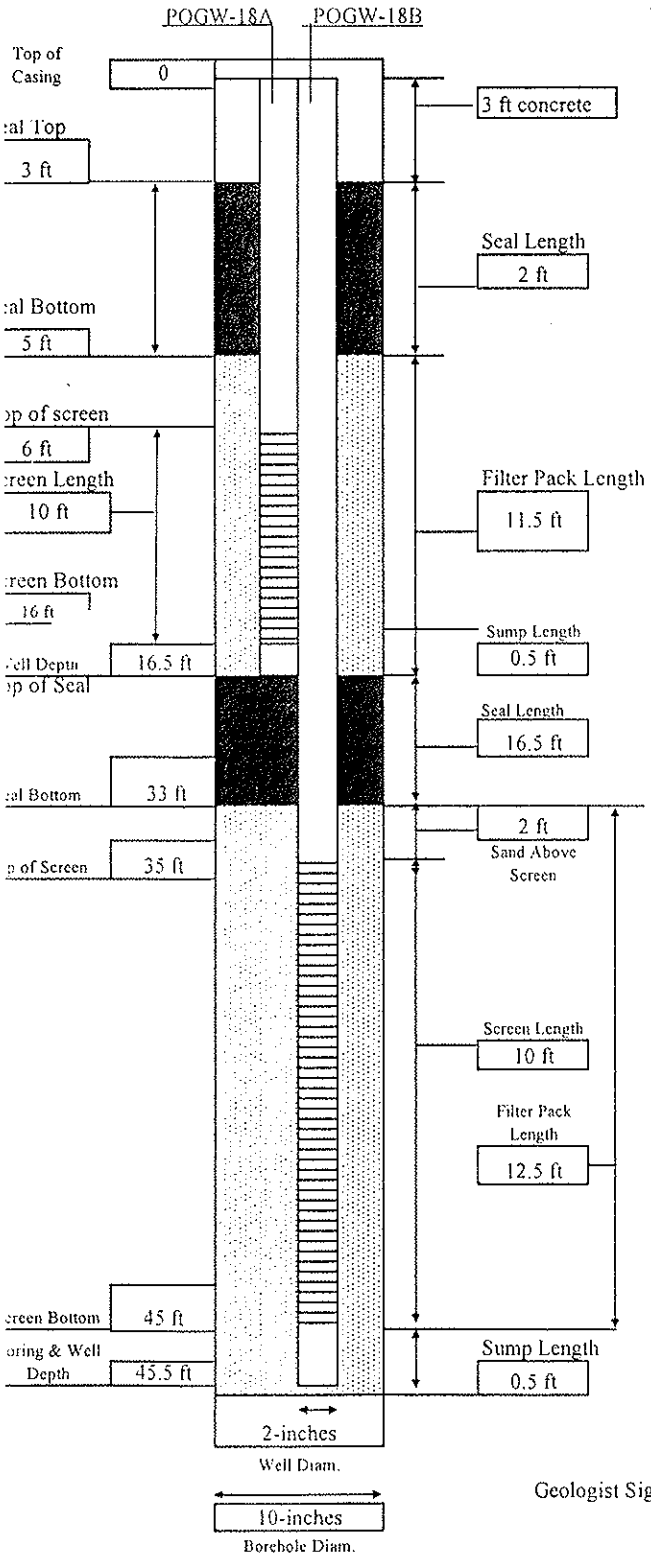
Drilling Method: Air Rotary Hammer

Proposed Boring Depth: 45.5 feet bgs

Proposed Boring Diameter: 10-inches

Proposed Well Depth: POGW-18A = 16.5 feet, POGW-18B = 45.5 feet bgs

Well Diameter: 2 nested wells, each 2-inches diameter



Proposed Well Construction:

Material: Schedule 40 PVC

Inside Diamter: 2-inches

Screen Slot Size: 0.02

Screen Beg.: POGW-18A =6" 18B = 35' End: 18A = 16" 18B = 45'

Sump Y / N

Type/Lenth: 0.5 ft

Proposed Filter Pack:

Type/Brand: Montery Sand #3

Amount Used:

Placement Method: Hand Pour

Proposed Seal:

Type/Brand: Bentonite chips/pellets

Amount Used:

Vol. Fluid Added:

Set-up Time:

Placement Method: Tremmie below water table; hand pour above water table

Proposed Grout:

Type/Brand:

Amount Used:

Vol. Fluid Added:

Placement Method:

Proposed Well Completion:

Above Grade / Below Grade

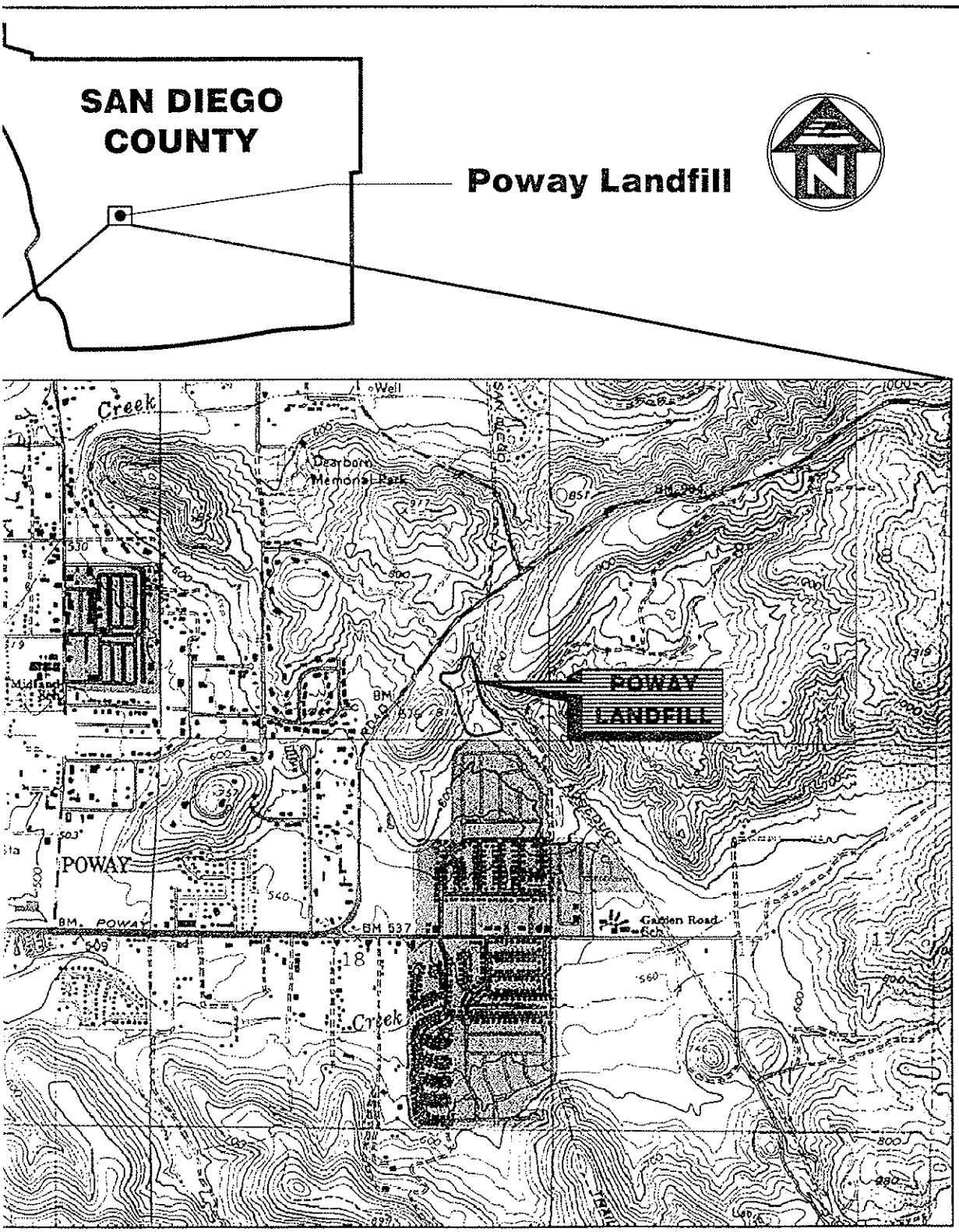
Guard Posts? Y / N

Pad Size: 3X3

Cover Type/Size: 10-inch steel Flush Mount

Comments: Two 2-inch monitor wells installed in a 10-inch borehole with a two-inch spacer between wells.

Geologist Signature:

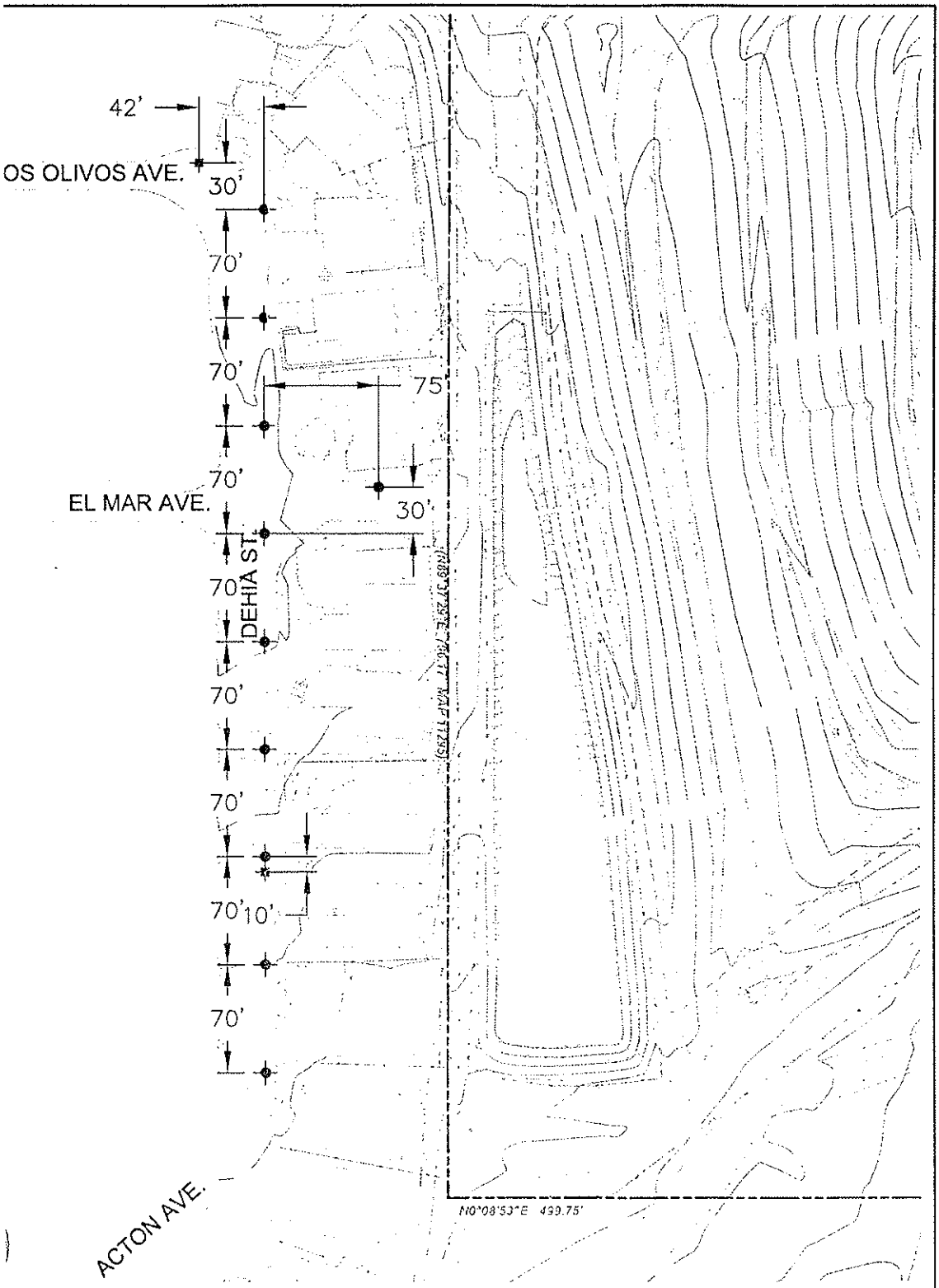


EOGRAPHIC (CALIFORNIA)
USGS TOPOGRAPHIC MAPS ON CD-ROM
Y TOPO

GEOSYNTEC CONSULTANTS

SITE LOCATION POWAY LANDFILL POWAY, CALIFORNIA	FIGURE NO. 1 PROJECT NO. SC0233 DATE: NOVEMBER 2004

_LOC.DWG 200468 TLZ



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LEGEND

PROPOSED GROUNDWATER MONITOR WELL

PROPOSED SOIL GAS BORING

oSYNTEC CONSULTANTS

BASE MAP REFERENCE:
Stewart Geo Technologies July 2002

) G JNDWATER MONITOR WELLS
SOIL GAS BORING LOCATIONS
POWAY LANDFILL
POWAY, CALIFORNIA

FIGURE NO.	2
PROJECT NO.	SC0233
DATE:	JANUARY 2005

ROW NO. 05-38

CITY OF POWAY

PUBLIC RIGHT-OF-WAY PERMIT

Associated Plan No. _____
Contact Person _____
Address _____

APPLICANT PLEASE FILL OUT NUMBERED ITEMS 1-4: Phone No. _____

1. APPLICANT, [illegible], hereby requests permission to work in the following streets or other public easements (provide owner, address, and property description):
[illegible] see attachment

2. TO INSTALL (provide type of installation and approximate dimensions, length, width, and depth):
2 monitor wells (see attachment) to be located 3'-4' from curb

3. ___ PRIVATE DEVELOPMENT ___ SOUTH POWAY ___ CITY PROJECT

4. Contractor [illegible] Subcontractors Water Development of [illegible]

Job superintendent [illegible] License No. [illegible]

Address [illegible]

Contractor's License No. [illegible] Type of License [illegible]

APPLICANT MUST SUBMIT THE FOLLOWING WITH THE APPLICATION:

1. Copy of the Contractor's license (Type A required).
2. Certificate of insurance for worker's compensation and general liability in the amount of $1 million naming the City as an additional insured.
3. Detailed and scaled traffic control plan for all phases of work.
4. Detailed construction schedule and clear description of work.
5. Itemized cost estimate (unless fees were previously paid with an approved plan listed above).
6. All applicable fees and deposits.

PRE-APPROVED
NOT FOR CONSTRUCTION
PENDING PRE-CONSTRUCTION MEETING

NOTE: Application will not be accepted unless items 1-6 are provided. In some cases, the City will consider a waiver of a part of the requirements of items 1-3 with submittal of a waiver request.

Hours of work [illegible] (8:30 a.m. and 3:30 p.m. unless otherwise specified).

Contractor must call Underground Service Alert at 1-800-422-4133 to have utilities marked out before the preconstruction meeting. After approval of permit, the City Inspector will contact the contractor and set up a time for a pre-construction meeting. City inspector must have a minimum of 48-hours notification prior to scheduling of pre-construction meeting and construction. Location of all utility cabinets or structures are subject to review, and may require an MDRA to be processed through Development Services Department, Planning division.

In consideration of the granting of this application, the permittee agrees to, and by this instrument, does hold the City of Poway, its elective and appointed officials, officers, agents, and employees harmless from any liability for claims for work done and material furnished upon the property, or any improvements made on the property covered by this permit. Permittee further agrees to hold and save harmless from any claim, cause of action, liability or responsibility for any accident, loss or damage to persons or property caused by the negligence of the Permittee, secured by the submitted certificate of insurance, arising out of the work undertaken pursuant to this permit, or any other permits that may be granted pursuant thereto. **I, the applicant, have read and understand the front and back of this application and will abide by its rules and regulations.**

Signature of Applicant [illegible] Date [illegible]

Approved [illegible] Date [illegible]
Traffic Engineer

[illegible] Date [illegible]
Senior Civil Engineer

PERMIT VALID UNTIL: [illegible] Inspector [illegible] Date [illegible]

APPROVED EXTENSION DATE _____ By: _____

DEPARTMENT OF DEVELOPMENT SERVICES

RECEIPT OF FEES FOR LAND DEVELOPMENT ACTIVITIES

CITY OF POWAY — THE CITY IN THE COUNTRY

Project Name: Poway Landfill Monitoring Wells Developer: GeoSyntec Consultants

Address: 14900 Poway Rd Project No: ROW 05-38

Check No.: 775 Received By: EM Date: 3·1·05

ACTIVITY	ACCOUNT	FEES PAID
Boundary Adjustment ($1,000/Application)	100-305-7735	
Certificate of Compliance ($1,000/Application)	100-305-7735	
Certificate of Correction ($100/Fee)		
Drainage Fee (See Schedule)	232-305-7712	
Easement Dedication ($1,000/Application)	100-305-7735	
Final/Parcel Map Plan Fee ($1,000 Sheet)	100-305-7735	
Grading Permit Fee ($100/Permit)	100-305-7235	
Grading Plan Check Fee (See Schedule)	100-305-7735	
Improvement Plan Administrative Fee ($100 Sheet)	100-305-7735	
Improvement Plan Check Fee (See Schedule)	100-305-7735	
Inspection Fee (See Schedule)	100-306-7737	850.00
Merger ($800/Application)	100-305-7735	
Minor Development Review ($500/Lot)	100-306-7737	
Miscellaneous (CIP Plans, Blueprints, Photocopies, etc.)	100-305-7736	
Park Fee (See Schedule)	411-305-7630	
Reimbursement Agreement ($1,000 + 1% Total Reimbursement Amount)	100-305-788	
Right-of-Way Permit or Blasting Permit ($50/Permit)(See Schedule)	100-305-7234	50.00
SEWER		
Clean Out Box ($50/Box)	520-305-7683	
Clean Out Inspection Fee ($25/Connection)	520-403-7685	
Line Charge/Indirect Benefit Fee (See Schedule)	520-305-7683	
Sewer Connection Fee (See Schedule)	520-305-7683	
Temporary Sewer Connection ($500/Application)	520-305-7613	
Soils Report Review (See Schedule)	100-305-7735	
treet Light Annexation Fee (See Schedule)	275-305-7711	
Traffic Mitigation Fee (See Schedule)	222-305-7713	
Vacation ($1,500 or $2,500/Application)	100-305-7735	
WATER		
Temporary Water connection ($500/Application)	510-305-7613	
Unmetered Landscape Water/Construction Water (See Schedule)	510-400-7642	
Water Authority Fee (See Schedule) PAID BY SEPARATE CHECK	510-305-7668	
Water Base Capacity Fee (See Schedule)	510-305-7667	
Water Lateral (See Schedule)	510-305-7669	
Water Meter/Backflow Prevention Device (See Schedule)	510-305-7669	
Water System Analysis (See Schedule)	100-305-7612	
Stormwater Pollution Prevention Plan Check Fee	100-305-7735	
Stormwater Pollution Prevention Inspection Fee	100-306-7737	
TOTAL		900.00

M:\engserv\eng forms\Land Development forms\Receipt of Fees for Dev Svcs.doc

13325 Civic Center Drive, Poway, CA 92064-5755 (858) 668-4600

GEOSYNTEC CONSULTANTS, INC.
SAN DIEGO ACCOUNT
11305 RANCHO BERNARDO RD. STE. 107
SAN DIEGO, CA 92127

775

DATE 2/28/05 63-476/670 74

PAY TO THE ORDER OF City of Poway (right-of-way-permit) $ 2900.00

Two thousand Nine Hundred 00/100 DOLLARS

citibank

CITIBANK, F.S.B. BR. #74
3660 WEST HILLSBORO BOULEVARD
DEERFIELD BEACH, FL 33441

FOR P.O. 01208 SC0233/03/01 B

Yvonne Shelley

⑈000775⑈ ⑆067004764⑆ 3290049632⑈

CITY OF POWAY
P.O. BOX 789
POWAY, CA 92074

DEVELOPER DEPOSIT AND SECURITIES ADVICE FORM

DP NUMBER _____
DATE _____
INITIAL _____

PROJECT NO./REFERENCE NO. ROW 05-38

ACCOUNT REFERENCE NO. 761-8481-7895-7000

NAME GeoSyntec Consultants

TRANSACTION REQUESTED (Check box)

- ☐ CHARGES INCURRED
- ☐ CORRECTION
- ☐ INVOICE PAID
- ☐ REQUEST INVOICE (Complete the following)
- ☐ ADDITIONAL RECEIPT
- ☐ LOW BALANCE (Printout attached)
- ☐ INITIAL DEPOSIT (Complete the following)
- ☐ REFUND
- ☐ OTHER _____

NAME OF PROJECT Poway Landfill Monitoring Wells

DEVELOPER'S NAME GeoSyntec Consultants

DEVELOPER'S ADDRESS 11305 Rancho Bernardo Rd Ste 101
SD, CA 92127

ACTIVITY

CATEGORY	ACCOUNT NUMBER	AMOUNT RECEIVED
Grading Plan Check	5910	
Grading Inspection	5920	
Final Map Check	5930	
Improvement Plan Check	5940	
Improvement Inspection	5950	
Boundary Adjustment	5960	
Miscellaneous	5970	
Security Deposit	5980	2000.00
Landscape Deposit		
TOTAL		2000.00

COMMENTS

$1000.00 per each of 2 wells

PREPARED BY Elisa Marrone DATE 3.1.05

775

GEOSYNTEC CONSULTANTS, INC.
SAN DIEGO ACCOUNT
11305 RANCHO BERNARDO RD. STE. 107
SAN DIEGO, CA 92127

DATE 2/28/05

63-476/670 74

PAY TO THE ORDER OF City of Poway (right-of-way-permit) $ 2,900.00

Two thousand Nine Hundred 00/100 DOLLARS

citibank®
CITIBANK, F.S.B. BR. #74
3660 WEST HILLSBORO BOULEVARD
DEERFIELD BEACH, FL 33441

FOR P.O. 01208 SC0233/03/01 B

Yvonne Shelley MP

⑈000775⑈ ⑆067004764⑆ 3290049632⑈

City of Poway

Printed Date 4/1/2005 4:29:52 PM

Insurance Certification Record

Department: Development Services

Approved

nsured	Geosyntec Consultants, inc
Job or Project	ROW Permit
Contact	Pat Phelps
Contract No.	05-038

General Liability	☑	9/1/2005	*Professional Liability*	☑	9/1/2005
Auto Liability	☑	9/1/2005	*Wkrs Compensation*	☑	9/1/2005
Excess Liability	☑	9/1/2005	*Misc. Liability*	☐	
Endorsement	☐	General	*Renewal Needed*	☑	

Notes

Sub Surface Surveys

215 So. Highway 101, Suite 203 P.O. Box 1152 Solana Beach, CA 92075
Telephone: (858) 481-8949 Facsimile: (858) 481-8998 E mail: geop@subsurfacesurveys.com

June 9, 2005

GeoSyntec
11305 Rancho Bernardo Road, Suite 101
San Diego, California 92127

Project/Invoice Number 05-219

Attn: **Sean McClain**

Re: Geophysical Investigation, clearance of 11 boreholes located near the Poway Landfill, Poway, CA.

This report is to present the results of our geophysical survey carried out in the residential area near the Poway Landfill located at Dehia Street and Los Olivos Avenue, in Poway, California (Fig. 1) on May 27, 2005. The purpose of the survey was to locate and identify, insofar as possible, piping, conduit, and other buried features that exist in the immediate vicinity of 11 proposed boreholes in the street.

A combination of electromagnetic induction (EM), magnetometry, and ground penetrating radar (GPR) was applied to the search. A utility locator with line tracing capabilities was also brought to the field and used where risers exist onto which a signal could be impressed and traced.

Multiple methods were utilized because each instrument senses different material properties of the ground and buried objects. At any given site the situation, geologic and cultural, may be such that one or more of the instruments may record excessive "noise", the ground may not provide sufficient contrasts, or there may be overlapping anomalies, for a given instrument to be effective. Summarily stated, there are generally instrumental limits and interpretational impediments.

Survey Design – Eleven proposed boreholes, in Dehia Street and Los Olivos Avenue, were pre-selected and marked by the client. With projects such as this, where there is ongoing traffic, parked cars, etc., the best use of time is achieved by systematically traversing with multiple instruments while monitoring them continuously. The M-scope, EM-61, magnetic gradiometer and GPR were traversed systematically over the eleven proposed drill locations along the eight lines of the standard search pattern (Diagram A), wherein, there are two sets of three parallel lines, mutually orthogonal, and two diagonals, all centered on the marked drill location. Adjacent parallel lines are approximately 5 feet apart, and each line is approximately 20 feet long, access permitting. Other traverses were taken, access permitting, for detailing and confirmation where anomalous conditions were found.

Sub Surface Surveys

SITE LOCATION MAP

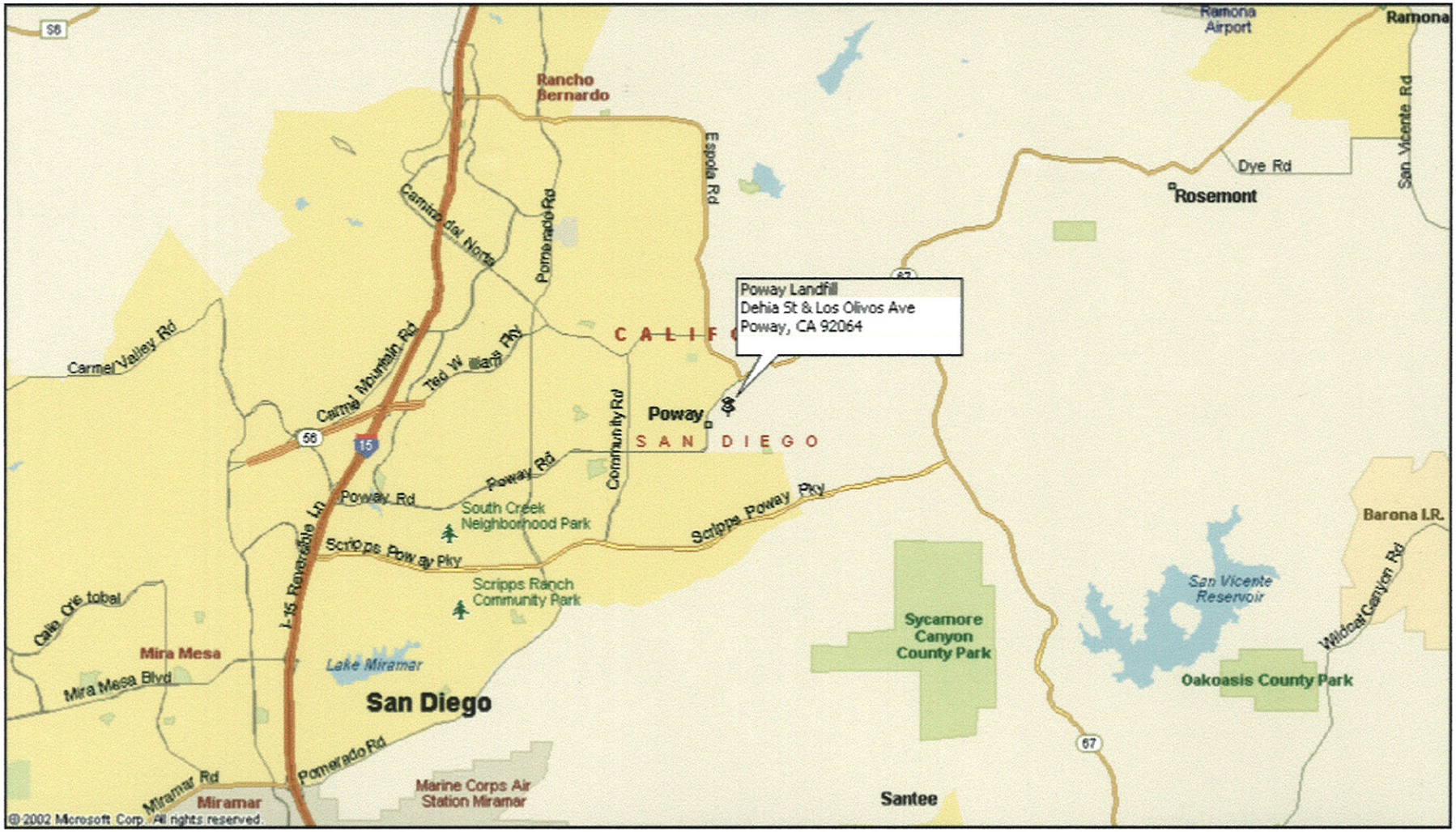


FIGURE 1

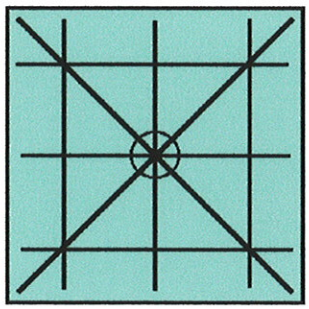


Diagram A: Standard search pattern around borehole

Hard copy of the EM data was not acquired, that is, discrete readings on the nodes of a grid were not recorded that could be put into a contoured map format. Rather, the instruments' meters were read continuously during traverses to detect excursions of the readouts that might have meaning in terms of buried objects. The lack of hard copy for EM data sets does not degrade the quality of the surveys in any way. Hard copy merely provides a basis for report documentation of these geophysical fields, if such documentation is needed.

A Fischer M-Scope and a Geonics' model EM-61 were used for the EM sampling. The magnetic gradiometer was a Schonstedt, model GA-52C and a Sensors & Software Noggin Ground Penetrating Radar unit produced the radar images. A Metrotech 9890 utility locator rounded out the tools applied.

Brief Description of the Geophysical Methods Applied - The M-Scope device energizes the ground by producing an alternating primary magnetic field with AC current in a transmitting coil. If conducting materials are within the area of influence of the primary field, AC eddy currents are induced to flow in the conductors. A receiving coil senses the secondary magnetic field produced by these eddy currents, and outputs the response as anomalous conditions. The strength of the secondary field is a function of the conductivity of the object, say a pipe, tank or cluster of drums, its size, and its depth and position relative to the instrument's two coils. Conductive objects, to a depth of approximately 7 feet below ground surface (bgs) for the M-Scope are sensed. The device is also somewhat focused; that is, it is more sensitive to conductors below the instrument than it is to conductors off to the side.

The EM61 instrument is a high resolution, time-domain device for detecting buried conductive objects. It consists of a powerful transmitter that generates a pulsed primary magnetic field when its coils are energized, which induces eddy currents in nearby conductive objects. The decay of the eddy currents, following the input pulse, is measured by the coils, which in turn serve as receiver coils. The decay rate is measured for two coils, mounted concentrically, one above the other. By making the measurements at a relatively long time interval (measured in milliseconds) after termination of the primary pulse, the response is nearly independent of the electrical conductivity of the ground. Thus, the instrument is a super-sensitive metal detector. Due to its unique coil arrangement, the response curve is a single well-defined positive peak directly over a buried conductive object. This facilitates quick and accurate location of targets.

The magnetic gradiometer has two flux gate magnetic fixed sensors that are passed closely to and over the ground. When not in close proximity to a magnetic object, that is, only in the earth's field, the instrument emits a sound signal at a low equency. When the instrument passes over a buried iron or steel object, so that locally there is a high magnetic gradient, the frequency of the emitted sound increases. The frequency is a function of the gradient between the two sensors.

The line locator is used to passively detect energized high voltage electric lines and electrical conduit (50-60 Hz), VLF signals (14-22 kHz), as well as to actively trace other utilities. Where risers are present, the utility locator transmitter can be connected directly to the object, and a signal (9.8-82 kHz) is sent traveling along the conductor, pipe, conduit, etc. In the absence of a riser, the transmitter can be used to impress an input signal on the utility by induction. In either case, the receiver unit is tuned to the input signal, and is used to actively trace the signal along the pipe's surface projection.

The GPR instrument beams energy into the ground from its transducer/antenna, in the form of electromagnetic waves. A portion of this energy is reflected back to the antenna at a boundary in the subsurface across which there is an electrical contrast. The instrument produces a continuous record of the reflected energy as the antenna is traversed across the ground surface. The greater the electrical contrast, the higher the amplitude of the returned energy. The radar wave travels at a velocity unique to the material properties of the ground being investigated, and when these velocities are known, the two-way travel times can be converted to depth. The depth of penetration and image resolution produced are a function of ground electrical conductivity and dielectric constant.

Interpretation - The interpretation took place in real time as the survey progressed, and accordingly, the findings of our investigation were marked on the ground cover at the site. The intent of this document is to demonstrate the procedure, and report the findings of the work.

The EM instruments, along with the line tracer, were effective at locating and delineating utilities over the search area. GPR was useful at detecting non-metallic as well as metallic lines and utilities. According to principles of physics, radar ~enetration is a function of soil conductivity and dielectric constant. At this site local conditions were reasonably favorable .e to the nature of the soil and materials covering the survey areas. This resulted in radar penetration down to approximately 3.0 to 3.5 feet bgs.

Conclusions - All piping or utilities detected during the survey were marked in spray chalk on the ground surface (red for electric, blue for water, green for sewer, orange for communications, and white for unknown). Each proposed borehole location was painted out with a white circle and yellow "SSS" (Figs. 2-12). The proposed boring located in Los Olivos Avenue (Fig. 2) was moved approximately five feet to the south, away from a water line and an electric line. The proposed boring located at the intersection of Los Olivos Avenue and Dehia Street was moved approximately three feet to the west due to an unidentified line (Figure 3). The proposed boring pictured in Figure 11 was moved about two feet to the south due to an electric corridor.

Subsurface Survey's professional personnel are trained and experienced and have completed thousands of projects since the companies inception in 1988. It is our policy to work diligently to bring this training and experience to bear to acquire quality data sets, which in turn, can provide clues useful in formulating our interpretations. Still, non-uniqueness of interpretations, methodological limitations, and non-target interferences are prevailing problems. Subsurface Surveys makes no guarantee either expressed or implied regarding the accuracy of the interpretations presented. And, in no event will Subsurface Surveys be liable for any direct, indirect, special, incidental, or consequential damages resulting from interpretations and opinions presented herewith.

All data acquired in these surveys are in confidential file in this office, and are available for review by your staff, or by us at your request, at any time. We appreciate the opportunity to participate in this project. Please call, if there are questions.

Kristen L. Whitney
Staff Geophysicist

Gary W. Crosby, PhD, GP# 960
Senior Geophysicist

Sub Surface Surveys

BOREHOLE PHOTOGRAPHS

Dehia Street & Los Olivos Avenue
Poway, California

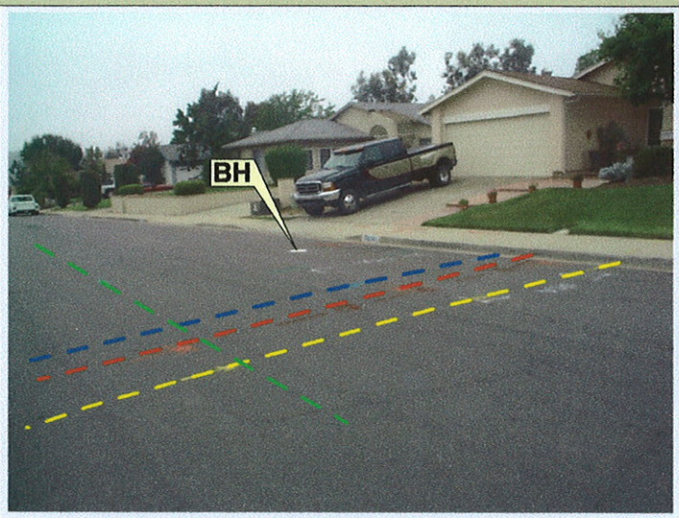


FIGURE 2

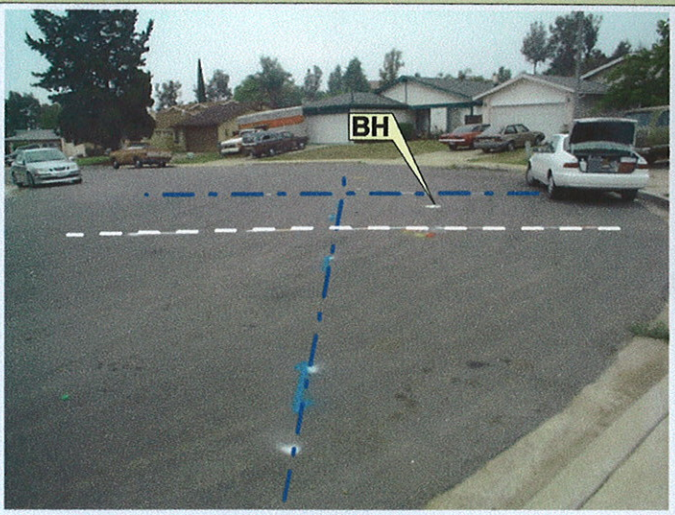


FIGURE 3

FIGURE 4

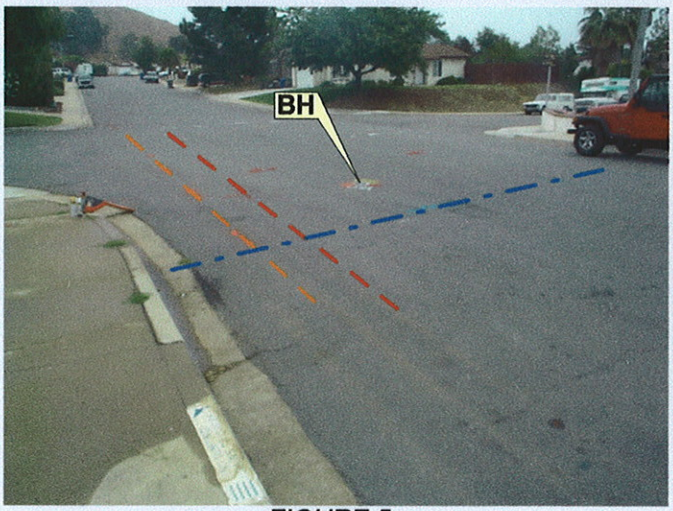


FIGURE 5

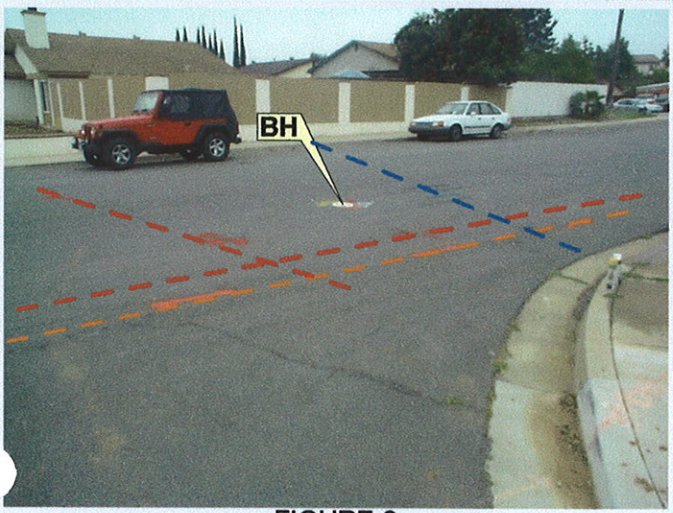


FIGURE 6

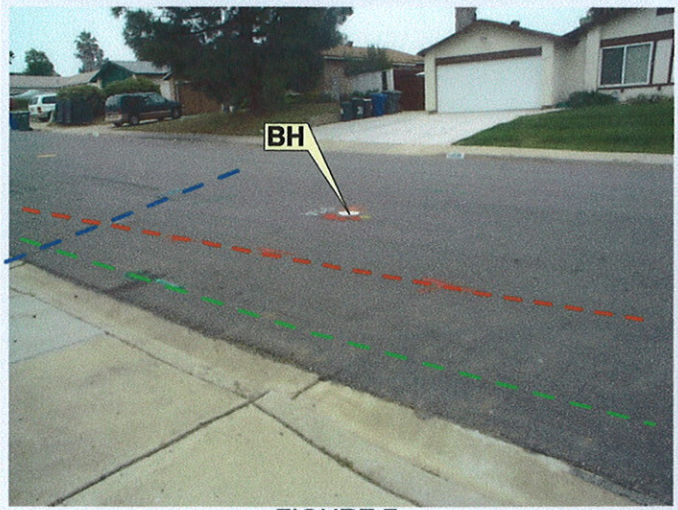


FIGURE 7

Sub Surface Surveys

BOREHOLE PHOTOGRAPHS

Dehia Street & Los Olivos Avenue
Poway, California

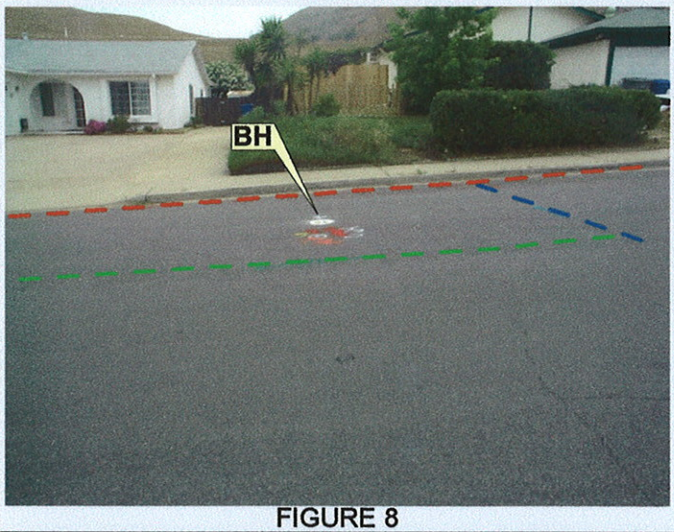


FIGURE 8

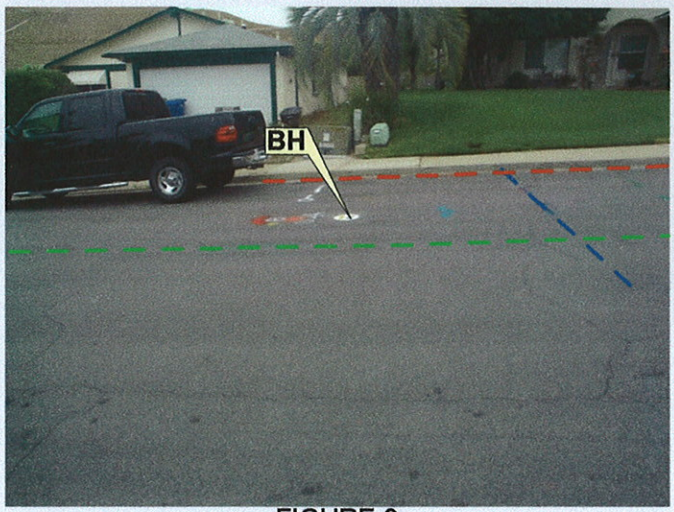


FIGURE 9

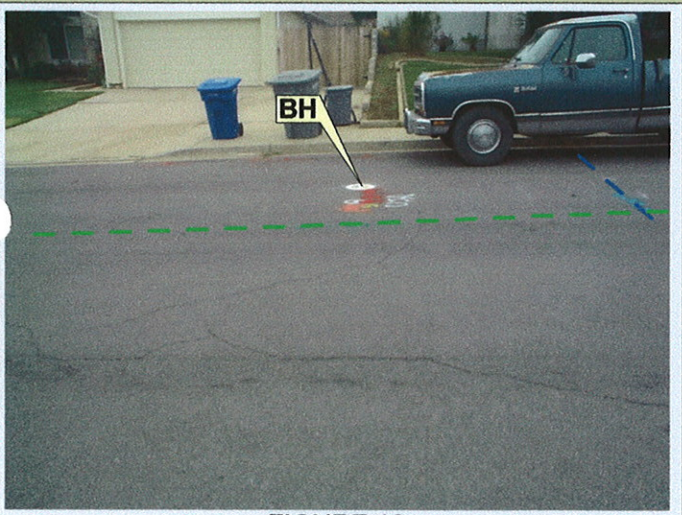


FIGURE 10

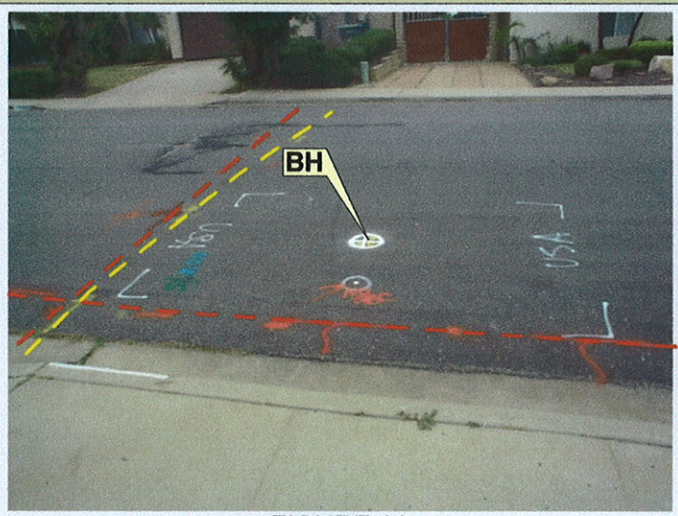


FIGURE 11

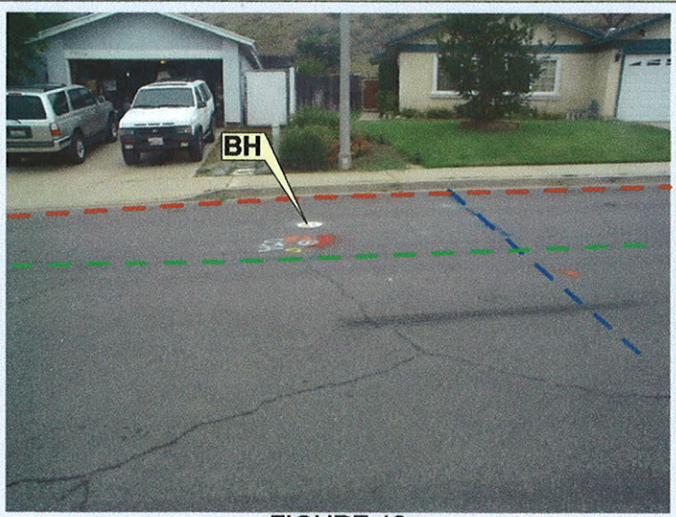


FIGURE 12

SubSurface Surveys & Associates, Inc.
An Applied Geophysical Company

215 S. Hwy 101, Suite 203
Solana Beach, CA 92075

Office: (858) 481-8949
Fax: (858) 481-8998

April 13, 2005

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127

Attn: **Shawn McClain** re: Seismic refraction survey, Poway Landfill, Poway, CA

This brief letter report covers the methodology, data and findings of a seismic refraction survey, Project No. SC0233, carried out over the Poway Landfill at 14879 Poway Road in Poway, California on March 28, 2005. The survey consists of three lines; line 1 has three spreads back-to-back, and lines 2 and 3 are made up of two spreads each. Seven spreads total were shot. Purpose of the survey was to determine depth to bedrock beneath the wastes.

A Bison 24 channel seismograph system, was applied to the task. This instrument has DIFP, ddigital instantaneous floating point. This translates into a computer-controlled seismograph that records incoming signals at all instrument settings, and the records are then analyzed by the computer in virtual real time, which in turn outputs optimum, balanced traces with maximum informational content.

Survey Design – The Line Location map (Fig. 2) shows the position and layout directions of the three refraction lines. Generally, they are oriented approximately east-west, orthogonal to the elongate direction of the landfill, or stated in another way, orthogonal to the local direction of the stream channel into which the wastes were deposited.

The spreads were laid out in a standard arrangement, namely 10 foot geophone intervals with 10 foot off end shots forward and reverse. Except for the ends of the lines, far offend shots were fired (hammer blows) at 80 feet from the nearest geophone. Thus, there were seven shots per spread, except for the outside ends of the outside spreads. The far offend shots were designed to allow a deeper image beneath the landfill. In addition to the off end shots three split spread shots were fired. A mid split spread, between geophones 12 and 13, and two asymmetrical split spreads between geophones 6 and 7, and 18 and 19, completed the five shots. There is a double interval between geophones 12 and 13. Thus, each spread is 250 feet long, measured from offend shot to far offset geophone.

Source was a heavy-duty sledge hammer with an inertial switch. The hammer was slammed onto a metal plate that was coupled to the ground. Definitive energy arrivals were recorded at the far offset geophones that were somewhat corrupted by traffic and wind noise. Vertical stacking was carried out to build energy and to serve as a further "noise" abatement strategy. Elevations of all shot and geophone positions were surveyed in, and then input into the modeling program. Elevation of the forward shot point was arbitrarily taken to be zero feet, and then all other elevations along the given line were relative to the assigned value at the forward shot point. A detailed topographic map was available (see Fig. 2); consequently, the line

Poway, California, United States

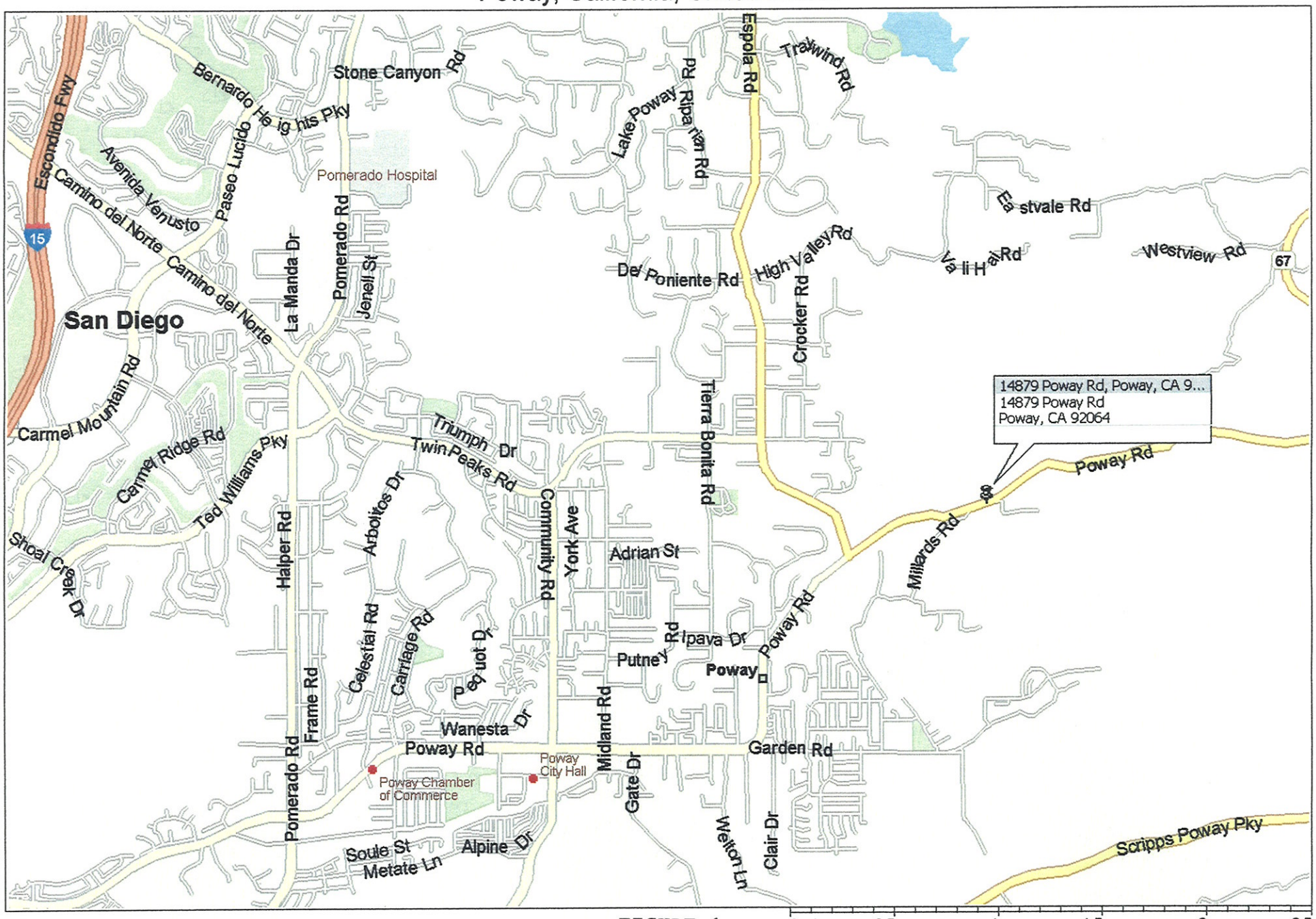


FIGURE 1

Copyright © 1988-2002 Microsoft Corp. and/or its suppliers. All rights reserved. http://www.microsoft.com/streets
© Copyright 2001 by Geographic Data Technology, Inc. All rights reserved. © 2001 Navigation Technologies. All rights reserved. This data includes information taken with permission from Canadian authorities © Her Majesty the Queen in Right of Canada.

Seismic Line Location Map

Poway Landfill -- Poway, California

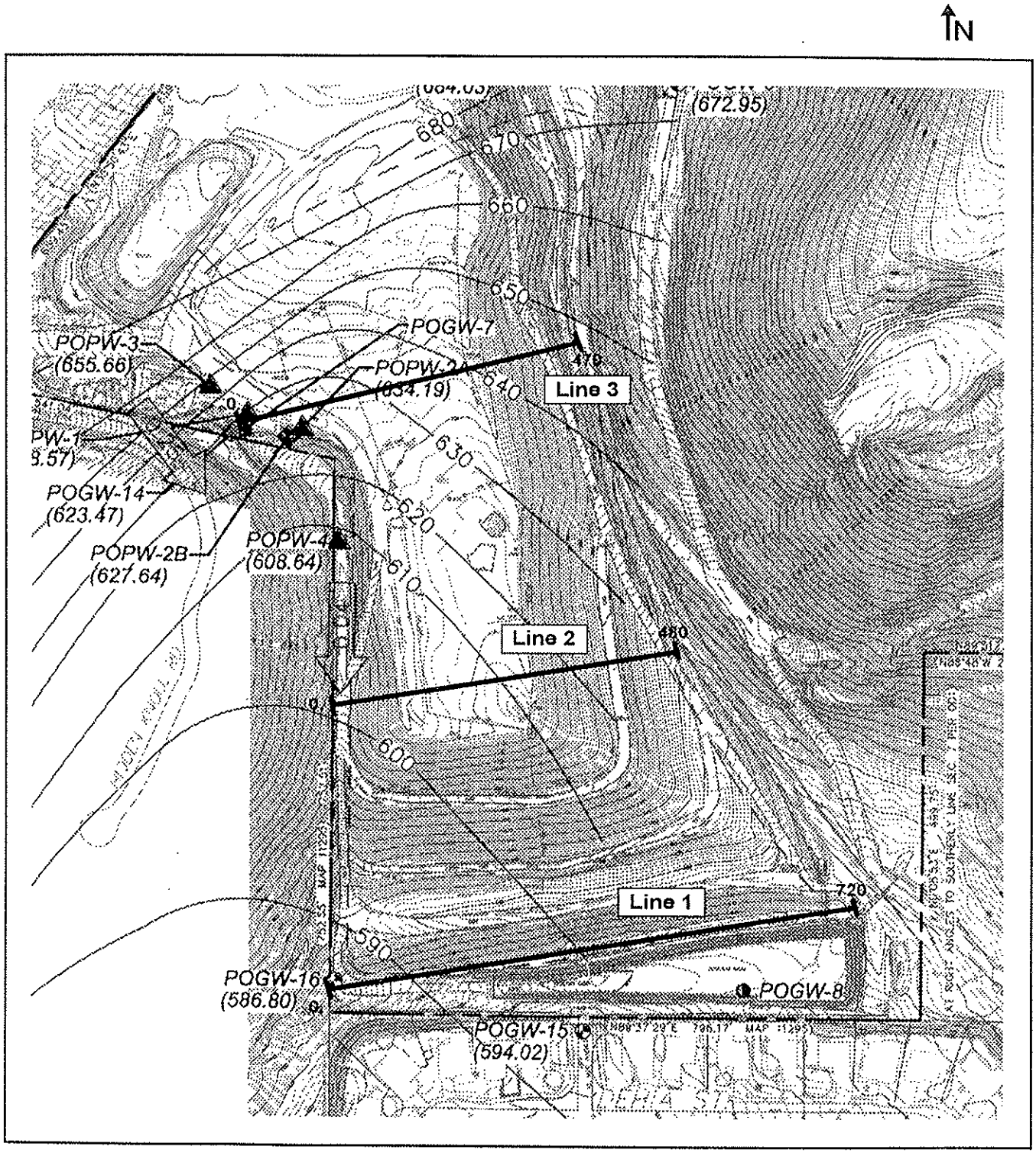


FIGURE 2

location map was registered to the topo map, and the relative elevations were converted to absolute. Stakes were planted in the ground at the positions of the off end shots.

Geologic Setting – The site is on Mesozoic metamorphic and granitic rocks of the Peninsular Ranges Batholith. From observations of nearby outcrops, it appears that granite is continuous beneath the landfill. The batholith consists of dominantly granite clan rocks, but includes some host and roof pendant metamorphic rocks. These have been mapped in nearby areas. Although relatively minor, volume-wise, basic intrusive bodies are present in some places, but these have not been mapped in the local area.

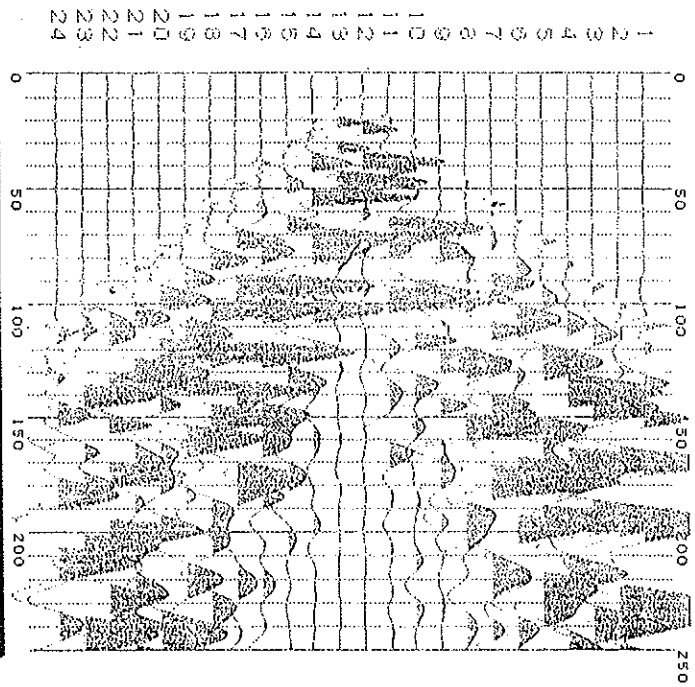
Brief Description of the Geophysical Method Applied – Seismic refraction investigates the subsurface by generating arrival time and offset distance information to determine the path and velocity of an elastic disturbance in the ground. He disturbance is created by shot, hammer, weight drop, or some comparable method for putting impulsive energy into the ground detectors are laid out at regular intervals in a line to measure the first arrival energy and the time of its arrival. The data are plotted in time-distance graphs, from which velocity of and depth to layers can be calculated. This is possible because rays (a continuum point on an expanding wave front) of the disturbance wave follows a direct route and is the first arrival energy at the close-in geophones. And the rays are refracted across layer boundaries where there is a difference in elastic and density properties. The critically refracted ray travels along the layer interface, at the speed of the lower layer, and continuously "feeds" energy back to the surface, to be successively detected by the line of geophones.

Shots are normally reversed from one end of the line to the other, to determine whether or not the layering is horizontal or dipping. And the split spread shots give redundancy to improve the interpretation. The acquired data are computationally intense. A ray-tracing computer program, SIPT2 in this instance, is used to iterative honor all refracting surfaces, velocities, and to be able to consider a large number of layers, where they are present. A first energy arrival picking program, with such features as zoom, filtering, time stretching, separation of traces, AGC and balancing of traces, is also applied.

Interpretation – Monitor records are produced in the field with each shot (e.g. Fig. 3). These are prints of the raw data as it comes in to the recorder. They show the quality of the data, so that the operator can determine whether of not the data are pickable, or shots need to be repeated. Two representative monitor records are illustrated, the mid split spread is from line 3, spread 2, and a forward near off end from line 1, spread 1.

More of the shooting parameters are listed below the monitor records (Fig. 3).

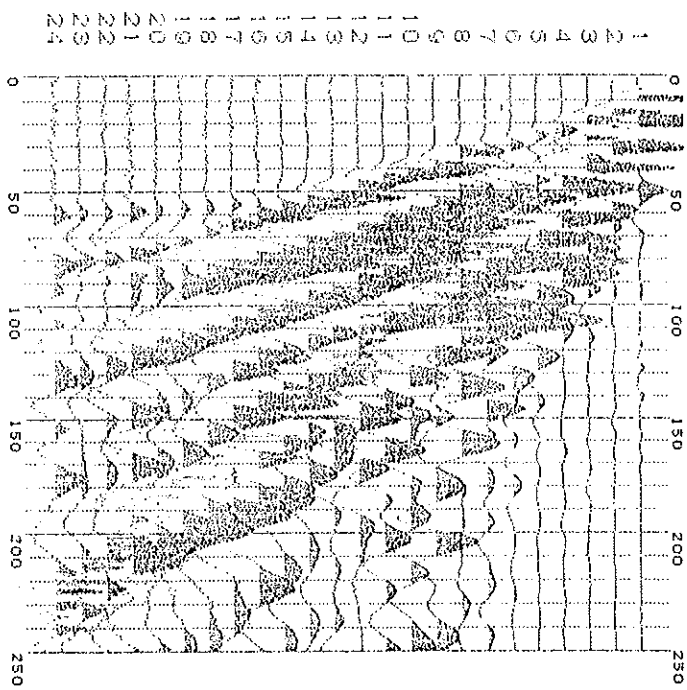
The first pick information, geophone positions, shot locations, and geometry of the spreads are input to a routine that produces a time-distance plot. This plot (Fig. 4) exhibits eight curves that express the first energy arrivals from the five (or seven) shots, one each, near forward off end, far forward off end, near forward reverse, far reverse off end, and the three split spreads. The split spreads, however, produce two curves each going in opposite directions. The data show an irregular and asymmetrical pattern. The data exhibit a two layer case, as is indicated by the two generalized straight lines superposed on the reverse near off end curve.



BISON 9000 SERIES

Record Name: POWA0042
Date 03:28:05 Time 16:25
Hi-cut 2000 Lo-cut 16
Sample rt .500ms Stacks 0003
Delay(ms) 0 DFhc Out
Channels 24 DFlc Out
Samples 000500
Rec len 250ms Agc Off
Time scale = 10.0 (ms)/division.

P	CH	GN	STK	EX	P	CH	GN	STK	EX
+	01	M	0003	07	+	13	M	0003	14
+	02	M	0003	08	+	14	M	0003	12
+	03	M	0003	08	+	15	M	0003	11
+	04	M	0003	09	+	16	M	0003	10
+	05	M	0003	09	+	17	M	0003	09
+	06	M	0003	10	+	18	M	0003	09
+	07	M	0003	10	+	19	M	0003	09
+	08	M	0003	11	+	20	M	0003	08
+	09	M	0003	12	+	21	M	0003	08
+	10	M	0003	12	+	22	M	0003	07
+	11	M	0003	12	+	23	M	0003	07
+	12	M	0003	15	+	24	M	0003	07

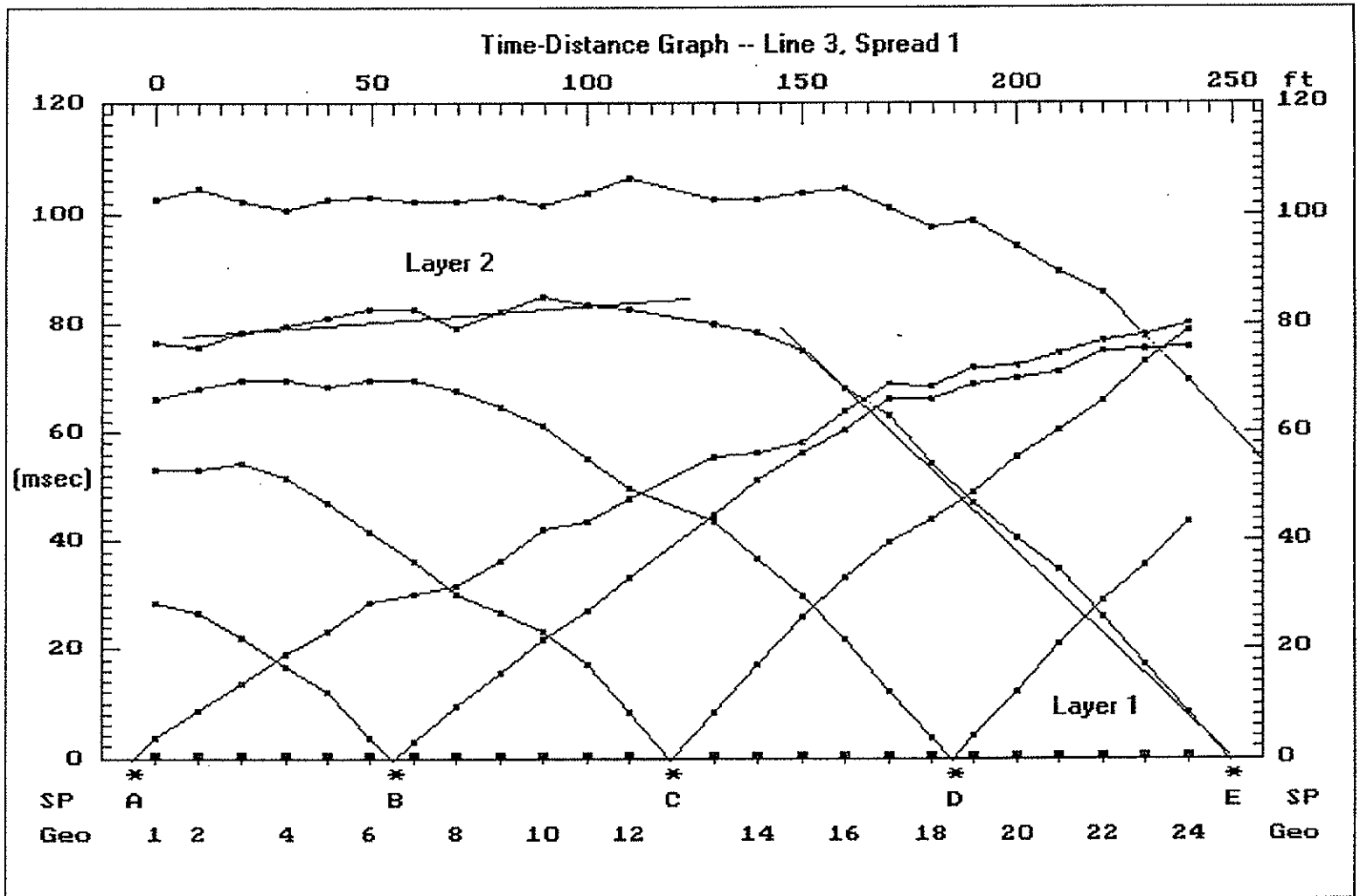


BISON 9000 SERIES

Record Name: POWA0001
Date 03:28:05 Time 08:21
Hi-cut 2000 Lo-cut 16
Sample rt .500ms Stacks 0004
Delay(ms) 0 DFhc Out
Channels 24 DFlc Out
Samples 000500
Rec len 250ms Agc Off
Time scale = 10.0 (ms)/division.

P	CH	GN	STK	EX	P	CH	GN	STK	EX
+	01	M	0004	15	+	13	M	0004	06
+	02	M	0004	14	+	14	M	0004	06
+	03	M	0004	12	+	15	M	0004	06
+	04	M	0004	11	+	16	M	0004	05
+	05	M	0004	11	+	17	M	0004	05
+	06	M	0004	10	+	18	M	0004	05
+	07	M	0004	09	+	19	M	0004	05
+	08	M	0004	08	+	20	M	0004	05
+	09	M	0004	07	+	21	M	0004	04
+	10	M	0004	07	+	22	M	0004	05
+	11	M	0004	07	+	23	M	0004	05
+	12	M	0004	07	+	24	M	0004	04

FIGURE 3



Seismic Refraction Survey 3/28/05	Poway Landfill FIGURE 4
GeoSyntec Project No. SC0233	Poway, California

There is considerable relief on the surface, and on the layer 1/layer 2 interface (see the model for line 3, spread 1, Fig. 10). This results in a situation where rays traveling in the faster second layer arrive at the far distant geophones, before the shallow traveling rays arrive. This is a fairly unusual situation; however, it is possible when interface slopes depart sufficiently from horizontal and non-uniform thickness. This is consistent with the fact that the wastes were deposited in a natural drainage channel. Minor undulations in the curves, based on the raw data, are, to some extent, explained by the fact that elevation corrections are not yet applied to the data in the time-distance plot. And some of the irregularity is explained by lateral velocity changes. Variations in the positions of the "dog-legs" in the several curves are mostly an expression of the laterally changing thickness of the upper layer.

Models were calculated for each of the spreads (Figs. 5-11). The spreads in a given line may be placed together, end-to-end with the indicated overlap, to view the entire line. It is seen that there is a good match at the positions of the overlap. Line 1 is a three layer case, while lines 2 and 3 are two layer cases. It is seen (Fig. 2) that line 1 is essentially off the landfill, whereas lines 2 and 3 are on the landfill. This results in a marked depth distance to the second layer. Because layer 2 is much shallower under line 1, the depth of investigation, under line 1, is sufficient to sense a third layer.

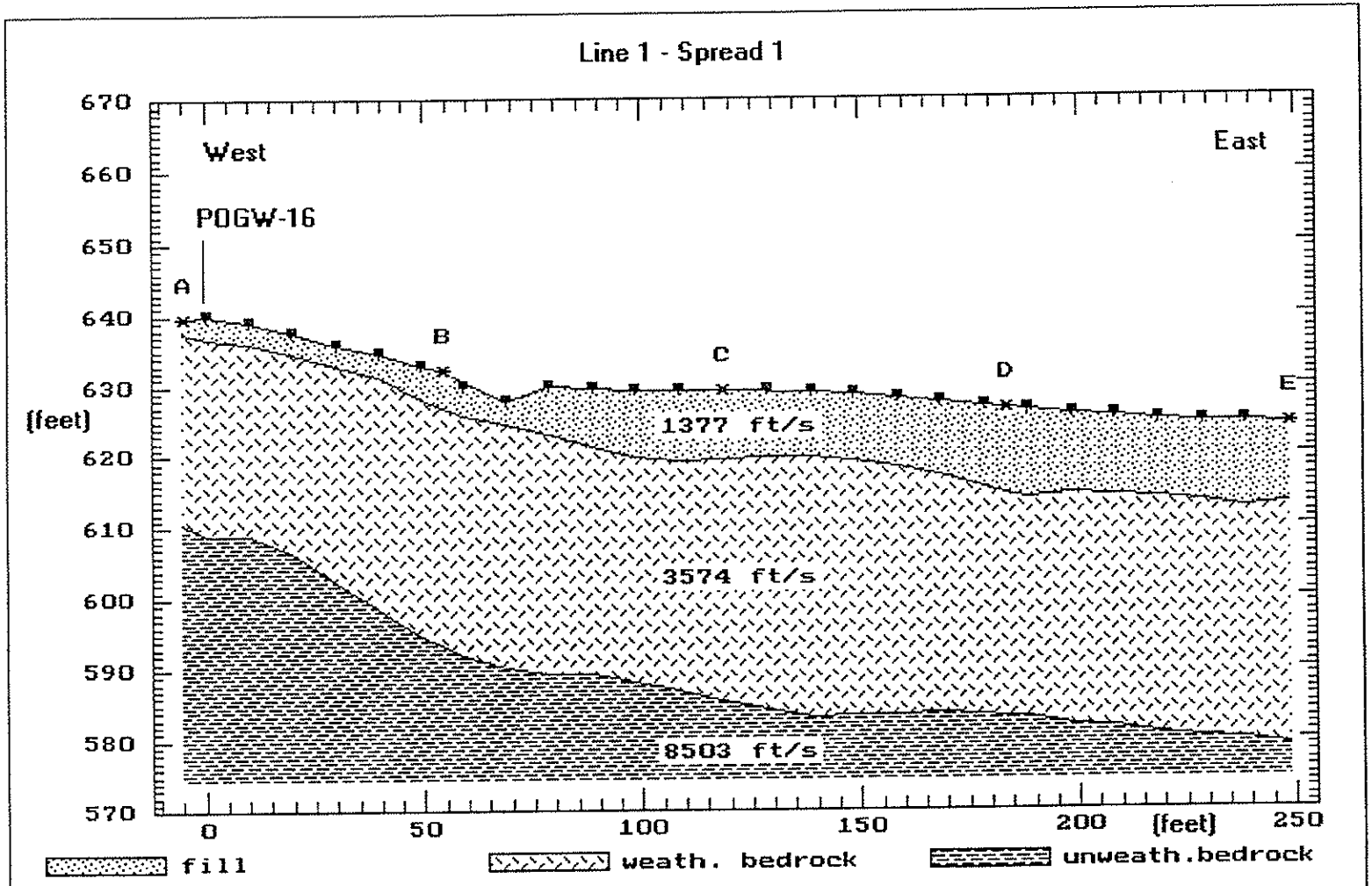
The topmost layer under lines 2 and 3 consist of the landfill wastes and includes the top seal. Apparently, the velocity of the wastes and clayey, poorly compacted seal material are near identical, so that they cannot be discretely distinguished in the seismic data. The seal is likely 5 or 6 feet thick, but thickens at the edges. It is seen that line 1 is at the toe edge of the landfill. The top layer there is probably all seal materials, where it is thicker, especially where the channel of the drainage emerges from beneath the landfill.

Average velocity of layer 1 is 1340 ft/sec, with small variation. The thickness, naturally, varies by a large amount. Its thickness over the old channel is in the order of 85 feet. It decreases to feather edge at the sides, for example, at the west edge of line 2 where weathered granite is exposed.

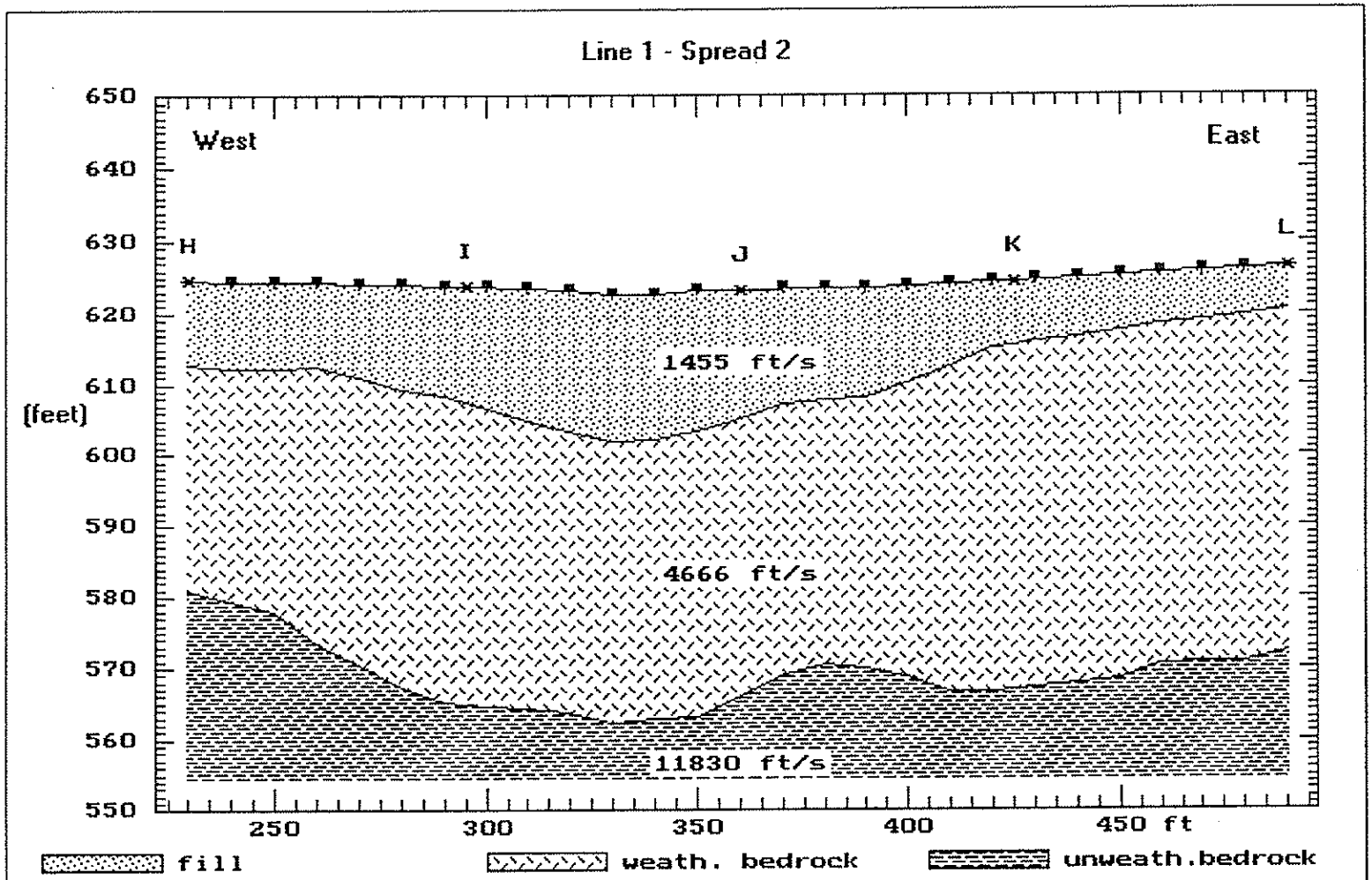
The second layer is apparently weathered granite clan rock, as indicated at exposures and based on seismic velocities. Average velocity is 4420 ft/sec with low variation. It appears that the base of the landfill was not "prepared" for receiving wastes, as most landfills are. Usually the materials that are amenable to blade work are removed, and the removed material is stockpiled for use in cell boundaries development within the landfill, and for top seal material.

The third layer under line 1 has an average velocity of 9825 ft/sec with moderate variation. Logically, it is unweathered granite. Thickness was not sensed. Its thickness is unknown, but is presumed to be exceedingly great.

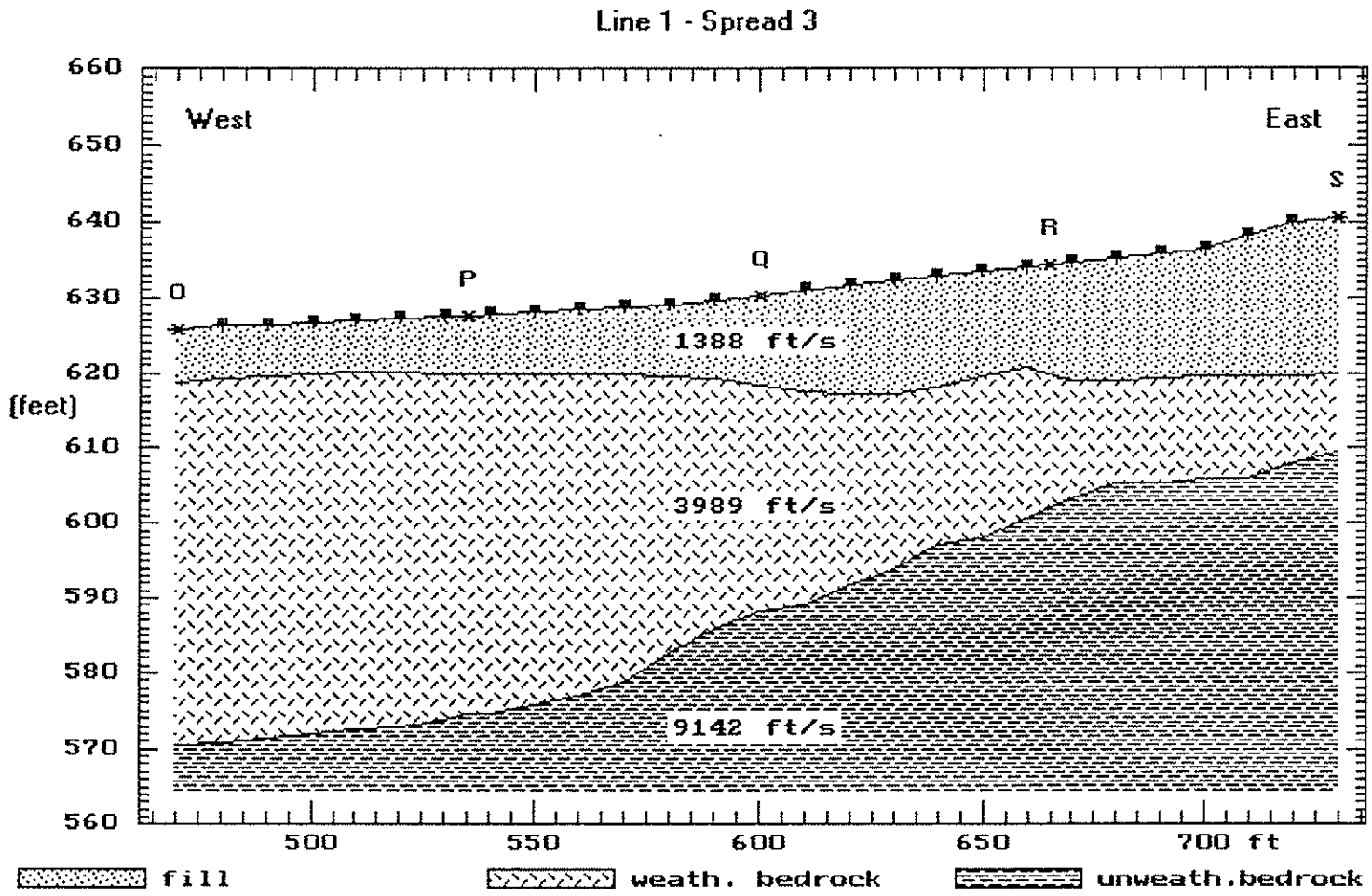
The channel into which the wastes were deposited, bifurcates upstream, so that both are imaged on line 3 (Figs. 10-11). The main one is on the east side and is seen to be beneath the east edge of the landfill. The landfill extends into the other channel; consequently, the landfill extends a considerable distance west of the main channel. The main channel remains on the east side under line 2 (Fig. 9), and the tributary channel is still to the west of the main channel (Fig. 8). The two channels appear to intersect somewhere between lines 1 and 2 inasmuch as



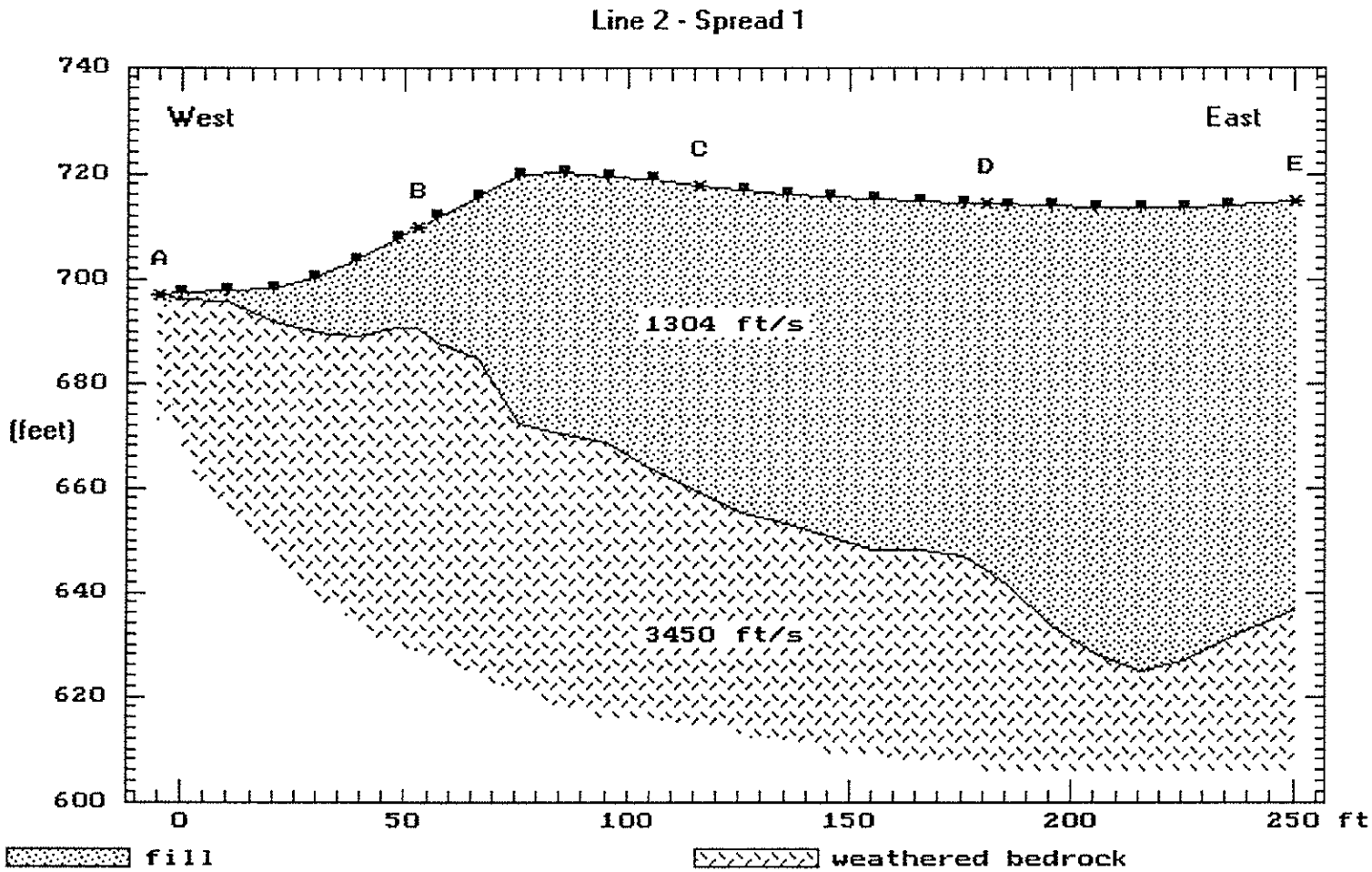
Seismic Refraction Survey 3/28/05	Poway Landfill FIGURE 5
GeoSyntec Project No. SC0233	Poway, California



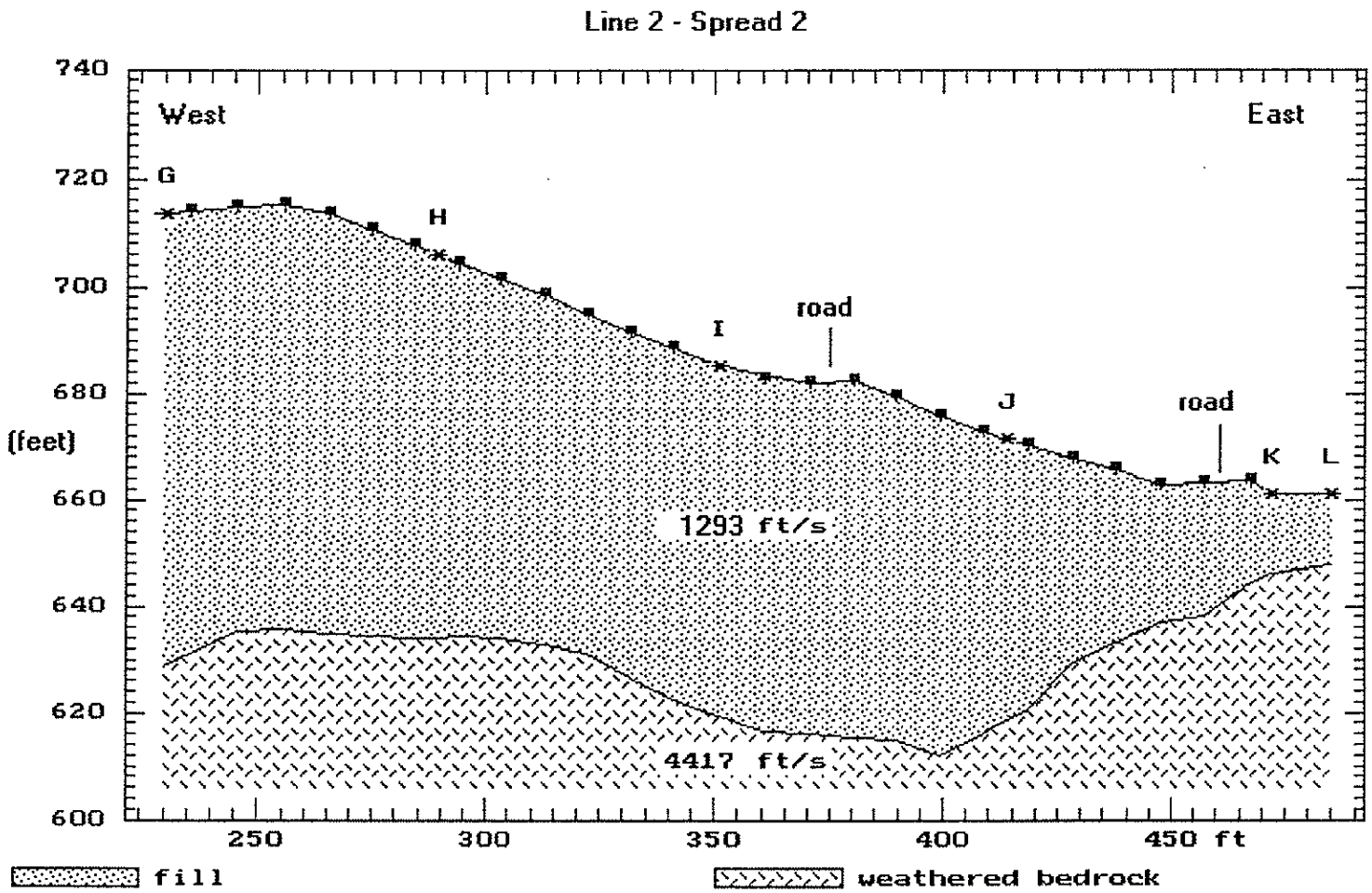
Seismic Refraction Survey 3/28/05	Poway Landfill FIGURE 6
GeoSyntec Project No. SC0233	Poway, California



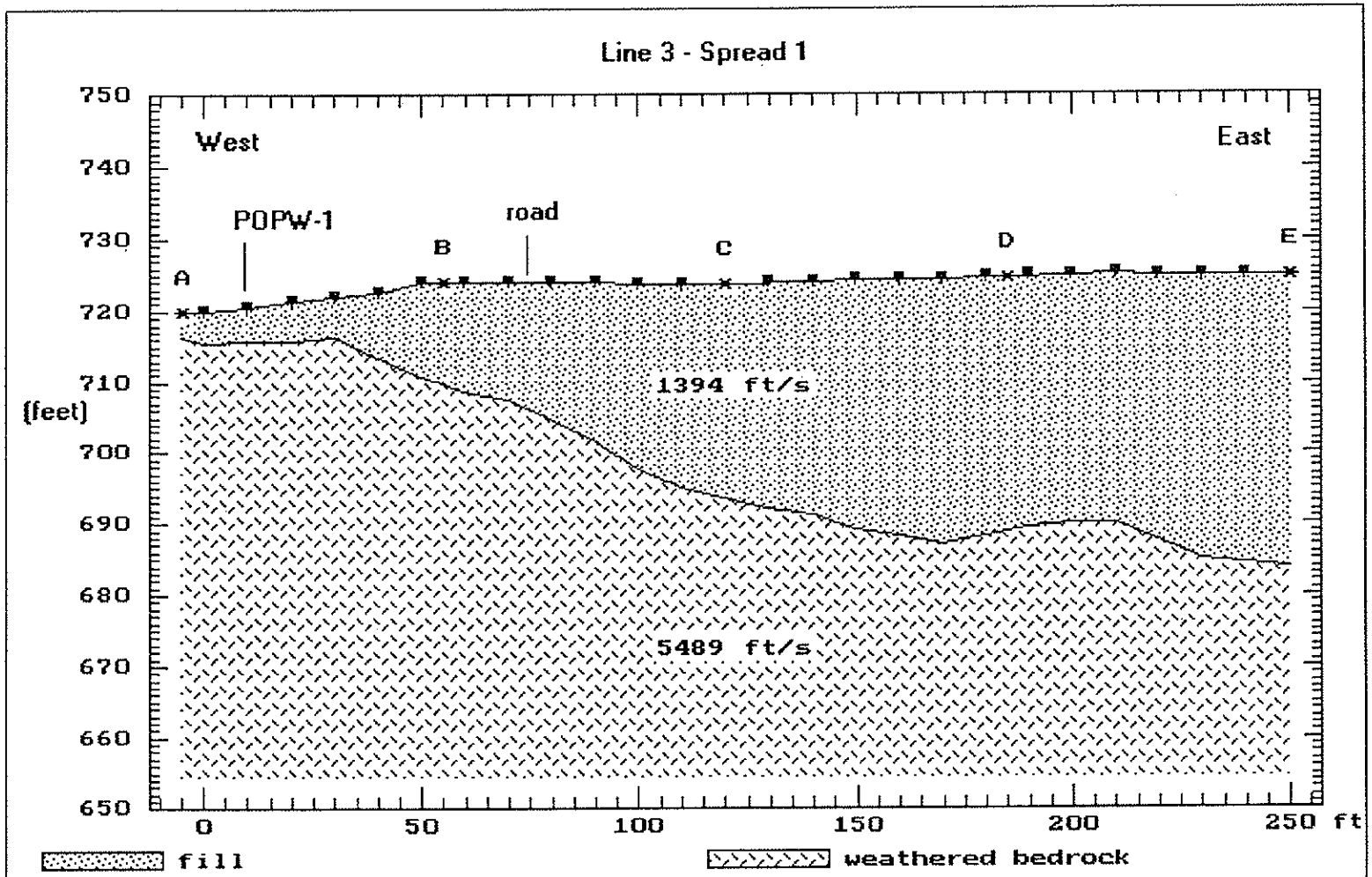
Seismic Refraction Survey 3/28/05	Poway Landfill FIGURE 7
GeoSyntec Project No. SC0233	Poway, California



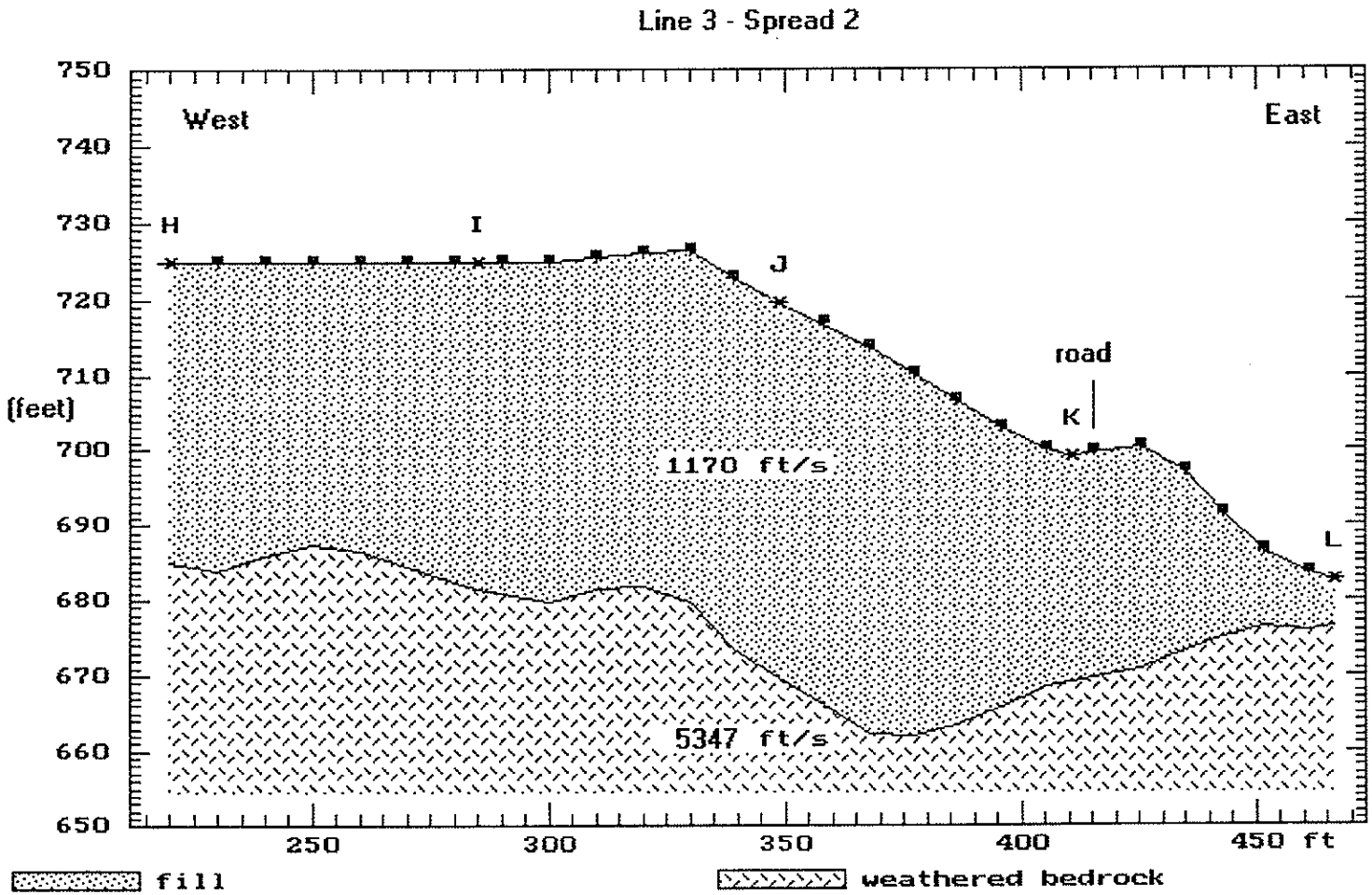
Seismic Refraction Survey 3/28/05	Poway Landfill FIGURE 8
GeoSyntec Project No. SC0233	Poway, California



Seismic Refraction Survey 3/28/05	Poway Landfill FIGURE 9
GeoSyntec Project No. SC0233	Poway, California



Seismic Refraction Survey 3/28/05	Poway Landfill FIGURE 10
GeoSyntec Project No. SC0233	Poway, California



Seismic Refraction Survey 3/28/05	Poway Landfill FIGURE 11
GeoSyntec Project No. SC0233	Poway, California

only one channel is seen beneath line 1.

The Caterpillar Rippability Chart (Fig. 12) indicates that layers 1 and 2 are rippable everywhere, and layer 3, unweathered granite, is non-rippable. The chart is empirical, based on many pairs of data relating seismic velocity to performance of various size cats. The chart illustrated is for a D9 Caterpillar.

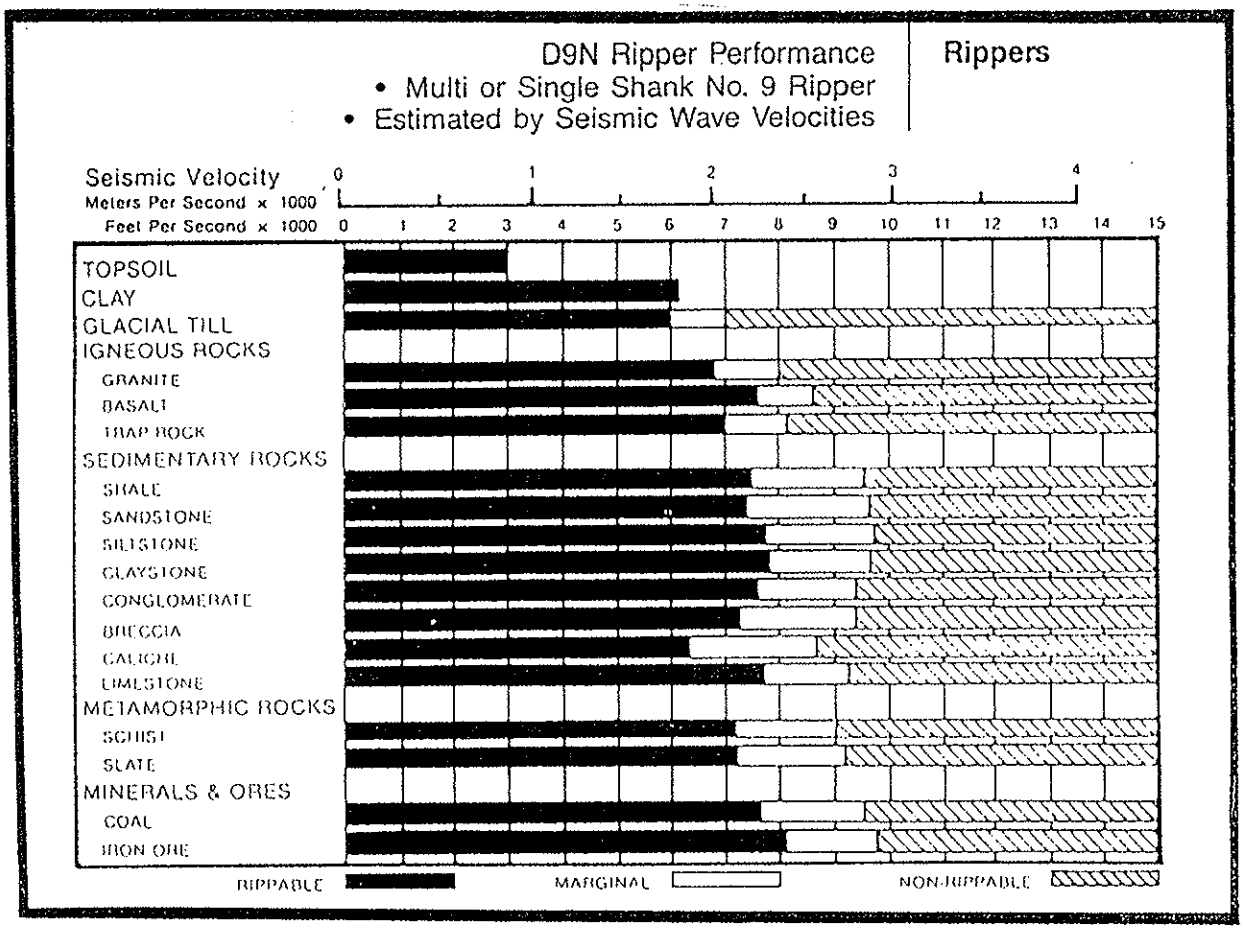


Figure 12. Caterpillar Rippability Chart.

SubSurface Surveys and Associates professional personnel are trained and experienced and have completed thousands of projects since the company's inception in 1988. It is our policy to work diligently to bring this training and experience to bear to acquire quality data sets, which in turn, can provide clues useful in formulating our interpretations. Still, non-uniqueness of interpretations, methodological limitations, and non-target interferences are prevailing problems. SubSurface Surveys and Associates makes no guarantee either expressed or implied regarding the accuracy of the interpretations presented. And in no event will SubSurface Surveys and Associates be liable for any direct, indirect, special, incidental, or consequential damages resulting from interpretations presented herewith.

Conclusions – Maximum thickness of the landfill is in the order of 85 feet in the position of the main channel into which the wastes were dumped. Because of this thickness, and the limited depth of investigation, approximately 105 feet, only the top seal, wastes, and weathered granite

are imaged under the main part of the landfill, lines 2 and 3. Under line 1, essentially off the landfill in the downstream direction, sensed unweathered granite beneath weathered granite. Only the unweathered granite, of the section imaged, is non-rippable. The confluence of the main stream channel, into which the wastes were dumped, and the tributary channel, coming in from the west, appears to be a little farther to the south than was previously mapped.

Gary W. Crosby

Gary W. Crosby, PhD, GP 960

APPENDIX B
FIELD PROCEDURES

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FIELD PROCEDURES

This appendix describes the field procedures including: encroachment permitting, drilling and nested monitor well installation, soil vapor sampling and analytical procedures; groundwater sampling and analytical procedures, quality assurance/quality control samples; and analytical methods for samples collected during the period from February through July 2005 at the Poway Landfill.

B.1 Permitting

An encroachment permit was obtained from the City of Poway Planning Department for the purpose of drilling and installing monitor wells and collecting soil vapor samples within the public right-of-way of Dehia Street and El Mar and Los Olivos Avenues (Appendix A). In addition, a well installation permit was obtained from the County of San Diego Department of Environmental Health (DEH) prior to the initiation of field activities (Appendix A). Underground Service Alert was notified 48 hours prior to drilling to clear the boring locations of underground utilities. In addition, GeoSyntec subcontracted Subsurface Surveys, Inc. to perform a geophysical survey in the areas to be investigated at the site to ascertain the location of utilities and other potential subsurface obstructions.

B.2 Active Soil Vapor Sampling Methodology

A soil vapor profile was performed approximately 70 feet south of the southern property boundary in the public right-of way of Dehia Street and El Mar Avenue south of the landfill. At each sampling location a drive rod was advanced using a direct push rig to a depth of approximately 5 feet below ground surface (bgs). Twenty soil vapor samples were collected at depths of 1.5 and 5 feet bgs (Figure 2).

The drive rods were advanced to the desired depth, a ¼-inch polyurethane sampling tube was placed to the desired depth of 1.5 and 5 feet and backfilled with approximately 6-inches of sand, and the rods were extracted from the boring. During the installation of the sampling tubes hydrated bentonite was used to seal the interval between the ground surface and the 1.5 foot sample point, and between the 1.5 and 5 foot depth interval to prevent ambient air intrusion. To ensure stagnant or ambient air was removed from each sampling system and to assure samples collected are representative of subsurface conditions, three purge volumes of “dead space” were removed from each sampling point using a vacuum pump. To limit stripping, prevent ambient air from diluting the soil vapor samples, and to reduce the variability of purging rates, all soil vapor samples were purged and sampled at a rate of approximately 200 milliliters per minute (ml/min). Prior to sample collection, a leak-check compound (shaving cream containing isopropanol) was placed on the hydrated bentonite seal at ground surface and

on the exposed sampling tubes to determine whether leakage occurred. Leak tests, purge volume tests, and soil vapor sampling was not conducted for at least 30 minutes following probe installation to allow for subsurface conditions to equilibrate. After the soil vapor probes were adequately purged, samples were collected in Summa™ Canisters.

After each use, drive rods and other reusable components were properly decontaminated to prevent cross-contamination by the three stage wash and rinse method. The Summa™ Canisters were labeled and transported to the laboratory in their original containers. The individual who collected the samples prepared them for shipment, completed the chain-of-custody form, and signed the form when transferring the samples to the laboratory courier. Soil vapor samples were installed and collected in general accordance with Department of Toxic Substances Control (DTSC) and Site Assessment and Mitigation (SAM) Manual guidelines (DEH, 2004). Each sampling point was backfilled with bentonite upon completion, the bentonite was hydrated and then the surface was patched with asphalt to match the existing surface condition.

B.3 Drilling

Two pilot borings were advanced on 6 and 8 June 2005 using a Schramm truck mounted air-rotary casing-hammer drill rig. A ten-inch diameter temporary drive casing was advanced through the residuum to the top of competent granitic bedrock to prevent caving of noncohesive soils and to improve circulation and cuttings return. After encountering competent bedrock, the borings were advanced to a total depth of 45.5 feet bgs using an eight-inch diameter down-hole hammer bit. The two borings were logged by a GeoSyntec geologist working under the direction of a California Professional Geologist. Subsurface conditions encountered during drilling were described in the field and recorded on a field boring log. Drilling was conducted according to current SAM Manual guidelines (DEH, 2004). The boring logs for POGW-17A/17B and POGW-18A/18B are included in Appendix C.

B.4 Monitor Well Construction

At the conclusion of drilling, each boring was converted to two nested monitor wells. Each nested monitor well consists of two, 2-inch schedule 40 PVC well casings with 10 feet of 0.020-inch factory slotted screen and a threaded well cap at the bottom. The annular space was backfilled with a filter pack consisting of #3 sand installed from 0.5 feet below the bottom of the lower screen to 2 feet above the top of the lower screen. A 15.5-foot bentonite seal was placed above the lower filter pack and hydrated with potable water for 30 minutes. A filter pack for the upper nested monitor wells extended from the top of the bentonite seal between the two screened intervals to approximately two feet above the top of the upper screened interval. A 3-foot bentonite seal was placed above the upper filter pack of POGW-17A and POGW-18A. The annular space in the

upper three feet of each boring was backfilled with concrete, and the surface was completed with a locking 12-inch diameter flush mount cover secured in a 3 foot by 3 foot concrete pad. Each monitor well was labeled with the well name on a metal tag.

B.5 Nested Monitor Wells Development

The nested monitor well pairs were developed by surging and bailing until the field parameters (pH, temperature, conductivity, and turbidity) stabilized to within 10 percent, and at least 1.5 borehole volumes were removed or until the monitor well went dry. Drilling cuttings and fluids generated during drilling were transported to the top of the landfill and placed on plastic sheeting in accordance with best management practices (BMPs). Drill cuttings were neatly spread on the ground in a designated area at the landfill, and purged groundwater was used at the landfill for dust control.

B.6 Monitor Well Surveying

The nested monitor wells were surveyed both vertically and horizontally by a licensed surveyor in the State of California.

Well ID	TOC Elevation	Northing	Easting
POGW-17A	602.64	32.9626	-117.018528
POGW-17B	602.504	32.9626	-117.018529
POGW-18A	616.416	32.96317	-117.016702
POGW-17B	616.542	32.96317	-117.016701

TOC Elevation – Top of casing elevation above mean sea level

B.7 Groundwater Sample Collection

On 27 June 2005 prior to purging, the depth to groundwater in nested monitor wells POGW-17A/17B and POGW-18A/18B was measured. All four monitor wells were then purged using a 2-inch diameter, stainless steel, Grundfos® submersible dedicated pump until two borehole volumes of groundwater were removed. During the third quarter 2005 sampling event, sampling was performed by BBC, a subcontractor to GeoSyntec. Dedicated groundwater pumping systems were used for sample collection in monitor wells POGW-6, POGW-9, POGW-10, POGW-11, POGW-12, POGW-13, POGW-15, POGW-16, POGW-17A/17B and POGW-18A/18B. Each pump system consists of a 2-inch-diameter, stainless steel, submersible Grundfos® pump connected to an electrical lead wire and discharge hose. Monitor well POPW-14 and monitoring piezometers POPW-1, POPW-2A, POPW-2B, POPW-3, and POPW-4 were purged and sampled using a portable pump.

Each well was purged as described above until at least 1.5 boreholes of groundwater were removed (for fast recharging wells) or to dryness (for slow recharging wells). Field parameters (pH, specific conductance, turbidity, dissolved oxygen,

oxidation reduction potential, and temperature) were measured during purging. Dissolved oxygen and oxidation reduction potential were also measured prior to purging. Purged groundwater was used for dust control at the landfill.

B.7.1 Sample Handling

The following subsections summarize the methods that were used for sample labeling, identification, containerizing, preservation, transportation, and maintaining proper chain of custody.

B.7.2 Sample Containers and Preservation

Groundwater samples were collected in laboratory-prepared containers for analyses as follows:

ANALYSIS	PRESERVATIVE	SAMPLE BOTTLES
Volatile organic compounds	HCl and Ice	(3) 40 ml VOAs
COD	H_2SO_4 and Ice	(1) 250 ml glass
Chloride, TDS, Nitrate, Sulfate, Carbonate, Bicarbonate, calcium, magnesium, potassium, and sodium	Ice	(2) 1 liter poly

TDS - Total dissolved solids
COD – Chemical oxygen demand
HCl – Hydrochloric acid
VOA – Volatile organic analysis

B.7.3 Sample Transportation

Sample bottles were labeled, capped, sealed in plastic bags, stored on ice, and transported in an insulated cooler to the laboratory. The individual who collected the samples prepared them for shipment, completed the chain-of-custody form, and signed the form when transferring the samples to the laboratory courier.

B.7.4 Chain of Custody Procedures

A chain-of-custody form was used to record possession of the samples from the time of collection to arrival at the laboratory. The samples were released to the laboratory by signature to the chain-of custody form. The laboratory control officer verified samples listed on the chain-of custody form were present; verified sample integrity; and that proper sample preservation procedures were utilized.

B.7.5 Field Quality Assurance/Quality Control

QA/QC for field procedures refers to methods to check the quality of the field techniques. Field instruments were calibrated in accordance with the manufacturer's instructions at the beginning of each field day.

In addition to the primary groundwater samples, the following QA/QC samples were collected:

Equipment Blank. When wells were purged, or samples were collected using non-dedicated pumps, an equipment blank, consisting of deionized water was transferred from its original container and run through the sampling equipment to evaluate the potential for cross-contamination of groundwater samples during sample collection. One equipment blank was collected during groundwater sampling activities in July 2005. The equipment blank was analyzed for VOCs, metals, general chemistry parameters, and COD.

Field Blank. A field blank, consisting of deionized water transferred from its original container to a sample container in the field was collected to evaluate the potential for airborne VOCs to impact the groundwater samples during sample collection. Field blanks were collected during groundwater sampling activities in June 2005 and July 2005 and analyzed for the same VOCs as the groundwater sample.

Trip Blank. Trip blanks, provided by the laboratory, were used to evaluate whether VOC contamination occurred during sample transport or storage. A trip blank consists of a deionized water sample transported to the field by sampling personnel, shipped along with the groundwater samples to the laboratory, and analyzed for the same VOCs as the groundwater samples.

B.7.6 Analytical Methods

Analytical methods requested for the groundwater samples were listed on each chain-of-custody form. Laboratory analyses for all constituents were performed at Calscience Environmental Laboratories located in Garden Grove, California. This laboratory is certified under the California Department of Health Services Laboratory Program. The following sections briefly describe the analytical methods employed by the laboratory.

B.7.7 Volatile Organic Compounds

Groundwater samples were analyzed for VOCs using EPA Method 8260B. This method uses gas chromatography to separate and identify the sample constituents by

mass spectrography. Detection limits are reported on the certificates of analysis (Appendix D) as both the reporting limit (RL) and the method detection limit (MDL). The laboratory RL is the lowest concentration at which a detected compound can be quantified to within 10 percent of the constituents actual concentration (99% certainty). The MDL is the lowest concentration at which a compound can be detected (99% certainty). A "J" qualifier on the certificates of analysis and the analytical tables indicates compounds detected at “trace” concentrations between the MDL and the RL. Trace concentrations are too low for accurate quantification and are estimated by the laboratory.

B.7.8 Dissolved Metals

Upon receipt at the laboratory, the groundwater samples for dissolved metals analysis were filtered and preserved. Dissolved metals were analyzed by EPA Method 6010B.

B.7.9 General Chemistry Parameters

Specific conductance, pH, temperature, and turbidity were measured in the field. TDS was analyzed by EPA Method 160.1. Chemical oxygen demand was analyzed using EPA Method 410.4.

B.7.10 Anions

Carbonate and bicarbonate were analyzed using EPA Method 310.1. Sulfate and nitrate as nitrogen were analyzed using EPA Methods 375.4 and 353.3, respectively. Chloride was analyzed using standard method SM 4500-CL-B.

APPENDIX C
BORING LOGS AND WELL CONSTRUCTION DIAGRAMS

GEOSYNTEC CONSULTANTS

11305 Rancho Bernardo Rd, Suite 101
San Diego, CA 92127
Tel: (858) 674-6559 Fax: (858) 674-6586

PROJECT Evaluation Monitoring Program
PROJECT LOCATION Poway Landfill
PROJECT NUMBER SC0233

KEY SHEET - CLASSIFICATIONS AND SYMBOLS

GS FORM: KEY 09/99

EMPIRICAL CORRELATIONS WITH STANDARD PENETRATION RESISTANCE N VALUES *

	N VALUE * (BLOWS/FT)	CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS/SQ FT)
FINE GRAINED SOILS	0 - 2	VERY SOFT	<0.25
	3 - 4	SOFT	0.25 - 0.50
	5 - 8	FIRM	0.50 - 1.00
	9 - 15	STIFF	1.00 - 2.00
	16 - 30	VERY STIFF	2.00 - 4.00
	31 - 50	HARD	>4.00
	>50	VERY HARD	

	N VALUE * (BLOWS/FT)	RELATIVE DENSITY
COARSE GRAINED SOILS	0 - 4	VERY LOOSE
	5 - 10	LOOSE
	11 - 30	MEDIUM DENSE
	31 - 50	DENSE
	>50	VERY DENSE

* ASTM D 1586; NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 IN. O.D., 1.4 IN. I.D. SAMPLER ONE FOOT.

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

MAJOR DIVISIONS			SYMBOLS	DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL COARSER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO.4 SIEVE	CLEAN GRAVELS — LITTLE OR NO FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES — APPRECIABLE AMOUNT OF FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING NO.4 SIEVE	CLEAN SANDS — LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES — APPRECIABLE AMOUNT OF FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL FINER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT

NOTE: DUAL SYMBOLS USED FOR BORDERLINE CLASSIFICATIONS

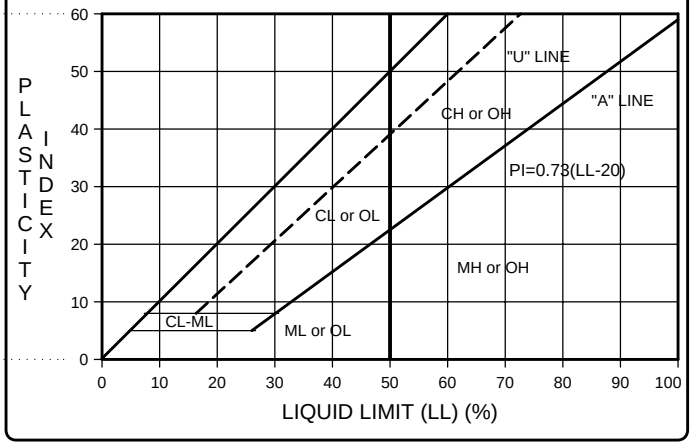
PARTICLE SIZE IDENTIFICATION

BOULDERS	>300 mm
COBBLES	75 - 300 mm
GRAVEL: COARSE	19.0 - 75 mm
GRAVEL: FINE	4.75 - 19 mm
SAND: COARSE	2.00 - 4.75 mm
SAND: MEDIUM	0.425 - 2.00 mm
SAND: FINE	0.075 - 0.425 mm
SILT	0.075 - 0.002 mm
CLAY	<0.002 mm

WELL GRADED - HAVING WIDE RANGE OF GRAIN SIZES AND APPRECIABLE AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES

POORLY GRADED - PREDOMINANTLY ONE GRAIN SIZE, OR HAVING A RANGE OF SIZES WITH SOME INTERMEDIATE SIZES MISSING

PLASTICITY CHART



OTHER MATERIAL SYMBOLS

Siltstone
Sandstone
Siltstone/Claystone
Claystone
Shale
Siltstone/Sandstone
Conglomerate
Volcanic
Sand
Silt
Silty Sand
Evaporite
Artificial Fill
Debris Fill
Burn Ash

WELL SYMBOLS

ASPHALT
GROUT
FILTER PACK
BENTONITE
NATIVE/ SLOUGH
CENTRAL-IZER
CONCRETE

SAMPLER AND OTHER SYMBOLS

BULK SAMPLE
SPLIT SPOON
GRAB SAMPLE
HAND AUGER
CORE
GROUNDWATER SAMPLE

Water Level at Time Drilling, or as Shown
Static Water Level

MSL: Mean Sea Level
AGS: Above Ground Surface
BGS: Below Ground Surface
BTOC: Below Top of Casing
HSA: Hollow Stem Auger

GEOSYNTEC CONSULTANTS
11305 Rancho Bernardo Rd, Suite 101
San Diego, CA 92127
Tel: (858) 674-6559 Fax: (858) 674-6586

GS FORM: CORE3 10/00

BOREHOLE LOG

BORING POGW-17A/17B **SHEET** 1 OF 2
START DATE 6 Jun 05 **Ground Surface** 603.00 FT.
FINISH DATE 7 Jun 05
PROJECT Evaluation Monitoring Program
LOCATION Poway Landfill
PROJECT NUMBER SC0233

DEPTH (ft)	MATERIAL DESCRIPTION	Well Construction Material	ELEVATION (ft)	SAMPLES NUMBER	TYPE	BLOWS PER 6"	RECOVERY (%)	PID READING (ppm)	TIME	COMMENTS
	Asphalt approximately 4-inches.									
	Silty Sand (SM) dry to moist,light brown [5YR 6/3], fine-to-medium grained, 50% fine sand 30% medium sand 20% silt.	Surface Completion - 12-inch well box set in a 3-foot by 3-foot concrete pad (Approximatley 26 cubic feet).								Hand auger to 5 feet bgs.
	Changes to reddish brown [5YR 3/4].		600						2	
5		Hydrated Enviroplug medium bentonite chips (3 cubic feet).								Begin drilling with 20 feet of casing and 20 feet of pipe.
		(2) 2-inch diameter schedule 40 PVC casings with centralizers.	595						2	
10		RMC Pacific #3 sand (9 cubic feet).								
		2-inch diameter 0.020-inch slot schedule 40 PVC screen.	590						3	
15										Groundwater measured on 6/7/05 at 8:30 AM.
			585						2	
	Same as above.									
20	**Granodiorite (Kg)** Drills to highly weathered, yellow-orange with black specs; 60% quartz, 20% mafics, 10% other minerals, iron-oxide staining approximately 30% to 40%.									Drilling becomes harder. Add 20 feet of pipe.
			580						4	
25		Hydrated Enviroplug medium bentonite chips (~12 cubic feet).								Groundwater encountered during drilling.
			575						5	
30	Same as above.									
			570						4	
		RMC Pacific #3 sand (9 cubic feet).								
35										

CONTRACTOR WDC Exploration and Wells **NORTHING** 32.96
EQUIPMENT IngersollRand T3W **EASTING** -117.02
DRILL MTHD Air Rotary **ANGLE** Vertical
DIAMETER 10" **BEARING** ------
LOGGER S. McClain **REVIEWER** V. Wittig **PRINTED** 15 Dec 05

REMARKS: Nested monitor wells were constructed with a 2-inch spacer between the wells.

COORDINATE SYSTEM:
SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GEOSYNTEC CONSULTANTS
11305 Rancho Bernardo Rd, Suite 101
San Diego, CA 92127
Tel: (858) 674-6559 Fax: (858) 674-6586

GS FORM: CORE3 10/00

BOREHOLE LOG

BORING POGW-17A/17B **SHEET** 2 **OF** 2
START DATE 6 Jun 05 **Ground Surface** 603.00 FT.
FINISH DATE 7 Jun 05
PROJECT Evaluation Monitoring Program
LOCATION Poway Landfill
PROJECT NUMBER SC0233

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOLIC LOG	WELL LOG	Well Construction Material	ELEVATION (ft)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS PER 6"	SAMPLES RECOVERY (%)	SAMPLES PID READING (ppm)	TIME	COMMENTS
												Add 20 feet of pipe.
					565						4	
40	Becomes moderatley weathered, yellow-orange with black specs; 60% quartz, 20% mafics, 10% other minerals, iron-oxide staining approximately 10% to 20%.			2-inch diameter 0.020-inch slot schedule 40 PVC screen with centralizers.								
					560						6	
45												

Total Depth = Approximately 45.5 feet bgs.

Veryl Wittig
Professional Geologist No. 7115

CONTRACTOR WDC Exploration and Wells **NORTHING** 32.96
EQUIPMENT IngersollRand T3W **EASTING** -117.02
DRILL MTHD Air Rotary **ANGLE** Vertical
DIAMETER 10" **BEARING** ------
LOGGER S. McClain **REVIEWER** V. Wittig **PRINTED** 15 Dec 05

REMARKS: Nested monitor wells were constructed with a 2-inch spacer between the wells.

COORDINATE SYSTEM:
SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GEOSYNTEC CONSULTANTS
11305 Rancho Bernardo Rd, Suite 101
San Diego, CA 92127
Tel: (858) 674-6559 Fax: (858) 674-6586

GS FORM: CORE3 10/00

BOREHOLE LOG

BORING POGW-18A/18B **SHEET** 1 OF 2
START DATE 7 Jun 05 **Ground Surface** 617.00 FT.
FINISH DATE 8 Jun 05
PROJECT Evaluation Monitoring Program
LOCATION Poway Landfill
PROJECT NUMBER SC0233

DEPTH (ft)	MATERIAL DESCRIPTION	Well Construction Material	ELEVATION (ft)	SAMPLES NUMBER	TYPE	BLOWS PER 6"	RECOVERY (%)	PID READING (ppm)	TIME	COMMENTS
	Asphalt approximately 4-inches.									
	Silty Sand (SM) dry to moist, light brown [5YR 6/3], fine-to-medium grained, 50% fine sand 30% medium sand 20% silt.	Surface Completion - 12-inch well box set in a 3-foot by 3-foot concrete pad (Approximatley 26 cubic feet).	615							Hand auger to 5 feet bgs.
	Changes to reddish brown [5YR 3/4].								2	
5		Hydrated Enviroplug medium bentonite chips (3 cubic feet).								Begin drilling with 20 feet of casing and 20 feet of pipe.
		(2) 2-inch diameter schedule 40 PVC casings with centralizers.	610						2	
										Groundwater measured on 6/8/05.
10		RMC Pacific #3 sand (~9 cubic feet).								
		2-inch diameter 0.020-inch slot schedule 40 PVC screen.	605						3	
15	Same as above.									
			600						2	
	Granodiorite (Kg) Drills to highly weathered, yellow-orange with black specs; 60% quartz, 20% mafics, 10% other minerals, iron-oxide staining approximately 30% to 40%.									Drilling becomes hard. Add 20 feet of pipe.
20										
			595						4	
25		Hydrated Enviroplug medium bentonite chips (~12 cubic feet).								
			590						5	
										Groundwater encountered during drilling.
30										
			585						4	
		RMC Pacific #3 sand (9 cubic feet).								Becomes very hard drilling.
35										

CONTRACTOR WDC Exploration and Wells **NORTHING** 32.96
EQUIPMENT IngersollRand T3W **EASTING** -117.02
DRILL MTHD Air Rotary **ANGLE** Vertical
DIAMETER 10" **BEARING** ------
LOGGER S. McClain **REVIEWER** V. Wittig **PRINTED** 15 Dec 05

REMARKS: Nested monitor wells were constructed with a 2-inch spacer between the wells.

COORDINATE SYSTEM:
SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GEOSYNTEC CONSULTANTS
11305 Rancho Bernardo Rd, Suite 101
San Diego, CA 92127
Tel: (858) 674-6559 Fax: (858) 674-6586

GS FORM: CORE3 10/00

BOREHOLE LOG

BORING POGW-18A/18B **SHEET** 2 **OF** 2
START DATE 7 Jun 05 **Ground Surface** 617.00 FT.
FINISH DATE 8 Jun 05
PROJECT Evaluation Monitoring Program
LOCATION Poway Landfill
PROJECT NUMBER SC0233

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOLIC LOG	WELL LOG	Well Construction Material	ELEVATION (ft)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS PER 6"	SAMPLES RECOVERY (%)	SAMPLES PID READING (ppm)	TIME	COMMENTS
	Becomes moderatley weathered, yellow-orange with black specs; 60% quartz, 20% mafics, 10% other mineralsiron-oxide staining approximately 10% to 20%.											Add 20 feet of pipe.
					580						6	
40				2-inch diameter 0.020-inch slot schedule 40 PVC screen with centralizers.								Stop drilling, sheared a pin on drill rig.
					575						11	
	Becomes fresh to slightly weathered, white with black specs trace to some yellow-orange; 60% quartz, 20% mafics, 10% other minerals iron-oxide staining approximately <10%.											
45												
	Total Depth = Approximately 45.5 feet bgs.											

Veryl Wittig
Professional Geologist No. 7115

CONTRACTOR WDC Exploration and Wells **NORTHING** 32.96
EQUIPMENT IngersollRand T3W **EASTING** -117.02
DRILL MTHD Air Rotary **ANGLE** Vertical
DIAMETER 10" **BEARING** ------
LOGGER S. McClain **REVIEWER** V. Wittig **PRINTED** 15 Dec 05

REMARKS: Nested monitor wells were constructed with a 2-inch spacer between the wells.

COORDINATE SYSTEM:
SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

APPENDIX D
LABORATORY ANALYTICAL CERTIFICATES

Calscience Environmental Laboratories, Inc.

July 06, 2005

Sean McClain
GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Subject: **Calscience Work Order No.: 05-06-1796**
Client Reference: Poway Landfill / SC-0233-03-01

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 6/28/2005 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/28/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1796
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	RSK-175M

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-17A	**05-06-1796-2**	**06/27/05**	**Aqueous**	**N/A**	**06/29/05**	**050629L02**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	1.31	1.00	0.0933	1		ug/L

POGW-17B	**05-06-1796-3**	**06/27/05**	**Aqueous**	**N/A**	**06/29/05**	**050629L02**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-18A	**05-06-1796-4**	**06/27/05**	**Aqueous**	**N/A**	**06/29/05**	**050629L02**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-18B	**05-06-1796-5**	**06/27/05**	**Aqueous**	**N/A**	**06/29/05**	**050629L02**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	0.270	1.00	0.0933	1	J	ug/L

Method Blank	**099-12-010-996**	**N/A**	**Aqueous**	**N/A**	**06/29/05**	**050629L02**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796
Preparation: EPA 3005A Filt. / EPA 7470A Filt.
Method: EPA 6010B / EPA 7470A

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-17B	**05-06-1796-3**	**06/27/05**	**Aqueous**	**06/29/05**	**06/30/05**	**050629L06F**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.
-Mercury was analyzed on 6/29/2005 1:47:40 PM with batch 050629L01F

Parameter	Result	RL	MDL	DF	Qual	Units
Antimony	ND	0.0150	0.00209	1		mg/L
Arsenic	ND	0.0100	0.00308	1		mg/L
Barium	0.0212	0.0100	0.000719	1		mg/L
Beryllium	ND	0.00100	0.000176	1		mg/L
Cadmium	ND	0.00500	0.000350	1		mg/L
Chromium	0.00101	0.00500	0.000350	1	J	mg/L
Cobalt	0.000942	0.00500	0.000696	1	J	mg/L
Copper	0.00286	0.00500	0.00134	1	J	mg/L
Mercury	ND	0.00050	0.0000672	1		mg/L
Nickel	0.00334	0.00500	0.00137	1	J	mg/L
Selenium	0.00617	0.0150	0.00295	1	J	mg/L
Silver	ND	0.00500	0.000400	1		mg/L
Thallium	ND	0.0150	0.00233	1		mg/L
Vanadium	0.0237	0.0050	0.000314	1		mg/L
Zinc	ND	0.0100	0.000848	1		mg/L
Calcium	88.2	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	82.0	0.1	0.00328	1		mg/L
Manganese	0.0407	0.0050	0.000689	1		mg/L
Potassium	3.84	0.50	0.0561	1		mg/L
Sodium	191	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796
Preparation: EPA 3005A Filt. / EPA 7470A Filt.
Method: EPA 6010B / EPA 7470A

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-18A	**05-06-1796-4**	**06/27/05**	**Aqueous**	**06/29/05**	**06/30/05**	**050629L06F**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.
-Mercury was analyzed on 6/29/2005 1:49:54 PM with batch 050629L01F

Parameter	Result	RL	MDL	DF	Qual	Units
Antimony	ND	0.0150	0.00209	1		mg/L
Arsenic	ND	0.0100	0.00308	1		mg/L
Barium	0.00594	0.0100	0.000719	1	J	mg/L
Beryllium	ND	0.00100	0.000176	1		mg/L
Cadmium	ND	0.00500	0.000350	1		mg/L
Chromium	ND	0.00500	0.000350	1		mg/L
Cobalt	ND	0.00500	0.000696	1		mg/L
Copper	0.00310	0.00500	0.00134	1	J	mg/L
Mercury	ND	0.00050	0.0000672	1		mg/L
Nickel	0.00162	0.00500	0.00137	1	J	mg/L
Selenium	0.00452	0.0150	0.00295	1	J	mg/L
Silver	ND	0.00500	0.000400	1		mg/L
Thallium	ND	0.0150	0.00233	1		mg/L
Vanadium	0.00689	0.00500	0.000314	1		mg/L
Zinc	ND	0.0100	0.000848	1		mg/L
Calcium	38.5	0.1	0.00932	1		mg/L
Iron	0.0276	0.100	0.00784	1	J	mg/L
Magnesium	48.1	0.1	0.00328	1		mg/L
Manganese	0.0284	0.0050	0.000689	1		mg/L
Potassium	3.87	0.50	0.0561	1		mg/L
Sodium	136	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796
Preparation: EPA 3005A Filt. / EPA 7470A Filt.
Method: EPA 6010B / EPA 7470A

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-18B	**05-06-1796-5**	**06/27/05**	**Aqueous**	**06/29/05**	**06/30/05**	**050629L06F**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.
-Mercury was analyzed on 6/29/2005 1:52:09 PM with batch 050629L01F

Parameter	Result	RL	MDL	DF	Qual	Units
Antimony	ND	0.0150	0.00209	1		mg/L
Arsenic	0.00321	0.0100	0.00308	1	J	mg/L
Barium	0.0156	0.0100	0.000719	1		mg/L
Beryllium	ND	0.00100	0.000176	1		mg/L
Cadmium	ND	0.00500	0.000350	1		mg/L
Chromium	ND	0.00500	0.000350	1		mg/L
Cobalt	0.00105	0.00500	0.000696	1	J	mg/L
Copper	0.00336	0.00500	0.00134	1	J	mg/L
Mercury	ND	0.00050	0.0000672	1		mg/L
Nickel	0.00236	0.00500	0.00137	1	J	mg/L
Selenium	0.00721	0.0150	0.00295	1	J	mg/L
Silver	ND	0.00500	0.000400	1		mg/L
Thallium	ND	0.0150	0.00233	1		mg/L
Vanadium	0.0217	0.0050	0.000314	1		mg/L
Zinc	ND	0.0100	0.000848	1		mg/L
Calcium	54.1	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	42.9	0.1	0.00328	1		mg/L
Manganese	0.142	0.005	0.000689	1		mg/L
Potassium	10.4	0.5	0.0561	1		mg/L
Sodium	282	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796
Preparation: EPA 3005A Filt. / EPA 7470A Filt.
Method: EPA 6010B / EPA 7470A

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-17A	**05-06-1796-6**	**06/28/05**	**Aqueous**	**06/29/05**	**06/30/05**	**050629L06F**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.
-Mercury was analyzed on 6/29/2005 1:54:24 PM with batch 050629L01F

Parameter	Result	RL	MDL	DF	Qual	Units
Antimony	ND	0.0150	0.00209	1		mg/L
Arsenic	ND	0.0100	0.00308	1		mg/L
Barium	0.0340	0.0100	0.000719	1		mg/L
Beryllium	ND	0.00100	0.000176	1		mg/L
Cadmium	ND	0.00500	0.000350	1		mg/L
Chromium	ND	0.00500	0.000350	1		mg/L
Cobalt	0.00225	0.00500	0.000696	1	J	mg/L
Copper	0.00295	0.00500	0.00134	1	J	mg/L
Mercury	ND	0.00050	0.0000672	1		mg/L
Nickel	0.00518	0.00500	0.00137	1		mg/L
Selenium	0.00675	0.0150	0.00295	1	J	mg/L
Silver	ND	0.00500	0.000400	1		mg/L
Thallium	ND	0.0150	0.00233	1		mg/L
Vanadium	0.0107	0.0050	0.000314	1		mg/L
Zinc	0.00272	0.0100	0.000848	1	J	mg/L
Calcium	96.2	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	77.8	0.1	0.00328	1		mg/L
Manganese	0.712	0.005	0.000689	1		mg/L
Potassium	10.1	0.5	0.0561	1		mg/L
Sodium	425	0.500	0.0192	1		mg/L

Method Blank	**099-04-008-1,988**	**N/A**	**Aqueous**	**06/29/05**	**06/29/05**	**050629L01F**

Parameter	Result	RL	MDL	DF	Qual	Units
Mercury	ND	0.00050	0.0000672	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796
Preparation: EPA 3005A Filt. / EPA 7470A Filt.
Method: EPA 6010B / EPA 7470A

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**097-01-003-5,068**	**N/A**	**Aqueous**	**06/29/05**	**06/30/05**	**050629L06F**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Antimony	ND	0.0150	0.00209	1		mg/L
Arsenic	ND	0.0100	0.00308	1		mg/L
Barium	ND	0.0100	0.000719	1		mg/L
Beryllium	ND	0.00100	0.000176	1		mg/L
Cadmium	ND	0.00500	0.000350	1		mg/L
Chromium	ND	0.00500	0.000350	1		mg/L
Cobalt	ND	0.00500	0.000696	1		mg/L
Copper	ND	0.00500	0.00134	1		mg/L
Nickel	ND	0.00500	0.00137	1		mg/L
Selenium	ND	0.0150	0.00295	1		mg/L
Silver	ND	0.00500	0.000400	1		mg/L
Thallium	ND	0.0150	0.00233	1		mg/L
Vanadium	ND	0.00500	0.000314	1		mg/L
Zinc	ND	0.0100	0.000848	1		mg/L
Calcium	ND	0.100	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	ND	0.100	0.00328	1		mg/L
Manganese	ND	0.00500	0.000689	1		mg/L
Potassium	ND	0.500	0.0561	1		mg/L
Sodium	ND	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/28/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1796
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: Poway Landfill / SC-0233-03-01			Page 1 of 6

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-FB	**05-06-1796-1**	**06/27/05**	**Aqueous**	**06/29/05**	**06/29/05**	**050629L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	133	74-140		1,2-Dichloroethane-d4	127	74-146	
Toluene-d8	97	88-112		1,4-Bromofluorobenzene	87	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/28/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1796
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: Poway Landfill / SC-0233-03-01			Page 2 of 6

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-17A	**05-06-1796-2**	**06/27/05**	**Aqueous**	**06/29/05**	**06/29/05**	**050629L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	1.9	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	125	74-140		1,2-Dichloroethane-d4	122	74-146	
Toluene-d8	101	88-112		1,4-Bromofluorobenzene	88	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/28/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1796
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: Poway Landfill / SC-0233-03-01			Page 3 of 6

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-17B	**05-06-1796-3**	**06/27/05**	**Aqueous**	**06/29/05**	**06/29/05**	**050629L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	0.42	1.0	0.22	1	J	Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	1.4	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	0.67	1.0	0.27	1	J	Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	115	74-140		1,2-Dichloroethane-d4	111	74-146	
Toluene-d8	101	88-112		1,4-Bromofluorobenzene	90	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-18A	**05-06-1796-4**	**06/27/05**	**Aqueous**	**06/29/05**	**06/29/05**	**050629L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	6.7	10.0	6.1	1	J	Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	1.0	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	110	74-140		1,2-Dichloroethane-d4	110	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	88	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/28/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1796
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: Poway Landfill / SC-0233-03-01			Page 5 of 6

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-18B	**05-06-1796-5**	**06/27/05**	**Aqueous**	**06/29/05**	**06/29/05**	**050629L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	1.2	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	1.9	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	133	74-140		1,2-Dichloroethane-d4	131	74-146	
Toluene-d8	99	88-112		1,4-Bromofluorobenzene	88	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/28/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1796
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: Poway Landfill / SC-0233-03-01			Page 6 of 6

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-006-14,837**	**N/A**	**Aqueous**	**06/29/05**	**06/29/05**	**050629L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	3.3	10.0	2.6	1	J
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	111	74-140		1,2-Dichloroethane-d4	108	74-146	
Toluene-d8	97	88-112		1,4-Bromofluorobenzene	87	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-17A	**05-06-1796-2**	**06/27/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved (1)	1800	10	1.0	1		mg/L	N/A	06/30/05	EPA 160.1
Nitrite (as N) (1)	0.092	0.010	0.0022	1		mg/L	N/A	06/28/05	EPA 354.1
Sulfide, Total (1)	ND	0.050	0.042	1		mg/L	N/A	06/29/05	EPA 376.2
Chemical Oxygen Demand (1)	190	5	4.6	1		mg/L	N/A	06/29/05	EPA 410.4
Carbon, Total Organic (1)	3.8	0.5	0.012	1		mg/L	N/A	06/28/05	EPA 415.1

POGW-17B	**05-06-1796-3**	**06/27/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved (1)	1100	10	1.0	1		mg/L	N/A	06/30/05	EPA 160.1
Turbidity (1)	6.5	0.10	0.044	1		NTU	N/A	06/29/05	EPA 180.1
Ammonia (1)	ND	0.10	0.094	1		mg/L	N/A	06/29/05	EPA 350.2
Nitrite (as N) (1)	0.022	0.010	0.0022	1		mg/L	N/A	06/28/05	EPA 354.1
Sulfide, Total (1)	ND	0.050	0.042	1		mg/L	N/A	06/29/05	EPA 376.2
Chemical Oxygen Demand (1)	13	5	4.6	1		mg/L	N/A	06/29/05	EPA 410.4
Carbon, Total Organic (1)	3.8	0.5	0.012	1		mg/L	N/A	06/28/05	EPA 415.1

POGW-18A	**05-06-1796-4**	**06/27/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved (1)	750	1.0	1.0	1		mg/L	N/A	06/30/05	EPA 160.1
Turbidity (1)	89	1.0	0.044	1		NTU	N/A	06/29/05	EPA 180.1
Ammonia (1)	ND	0.10	0.094	1		mg/L	N/A	06/29/05	EPA 350.2
Nitrite (as N) (1)	0.0051	0.010	0.0022	1	J	mg/L	N/A	06/28/05	EPA 354.1
Sulfide, Total (1)	ND	0.050	0.042	1		mg/L	N/A	06/29/05	EPA 376.2
Chemical Oxygen Demand (1)	28	5	4.6	1		mg/L	N/A	06/29/05	EPA 410.4
Carbon, Total Organic (1)	3.6	0.5	0.012	1		mg/L	N/A	06/28/05	EPA 415.1

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-18B	**05-06-1796-5**	**06/27/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved (1)	1200	10	1.0	1		mg/L	N/A	06/30/05	EPA 160.1
Turbidity (1)	400	10	0.044	1		NTU	N/A	06/29/05	EPA 180.1
Ammonia (1)	ND	0.10	0.094	1		mg/L	N/A	06/29/05	EPA 350.2
Nitrite (as N) (1)	0.036	0.010	0.0022	1		mg/L	N/A	06/28/05	EPA 354.1
Sulfide, Total (1)	ND	0.050	0.042	1		mg/L	N/A	06/29/05	EPA 376.2
Chemical Oxygen Demand (1)	41	5	4.6	1		mg/L	N/A	06/29/05	EPA 410.4
Carbon, Total Organic (1)	3.2	0.5	0.012	1		mg/L	N/A	06/28/05	EPA 415.1

POGW-17A	**05-06-1796-6**	**06/28/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Turbidity (1)	480	10	0.044	1		NTU	N/A	06/29/05	EPA 180.1
Ammonia (1)	0.21	0.10	0.094	1		mg/L	N/A	06/29/05	EPA 350.2

Method Blank	**N/A**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Ammonia (1)	ND	0.10	0.094	1		mg/L	N/A	06/29/05	EPA 350.2
Nitrite (as N) (1)	ND	0.010	0.0022	1		mg/L	N/A	06/28/05	EPA 354.1
Sulfide, Total (1)	ND	0.050	0.042	1		mg/L	N/A	06/29/05	EPA 376.2
Chemical Oxygen Demand (1)	ND	5.0	4.6	1		mg/L	N/A	06/29/05	EPA 410.4
Carbon, Total Organic (1)	ND	0.50	0.012	1		mg/L	N/A	06/28/05	EPA 415.1

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796
Preparation: EPA 3010A Total
Method: EPA 6010B

Project Poway Landfill / SC-0233-03-01

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-06-1794-2	**Aqueous**	**ICP 3300**	**06/29/05**	**06/30/05**	**050629S06**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Antimony	105	105	80-120	0	0-20	
Arsenic	108	108	80-120	0	0-20	
Barium	112	111	80-120	1	0-20	
Beryllium	107	106	80-120	0	0-20	
Cadmium	108	108	80-120	0	0-20	
Chromium	108	108	80-120	0	0-20	
Cobalt	109	108	80-120	0	0-20	
Copper	97	96	80-120	1	0-20	
Nickel	110	109	80-120	0	0-20	
Selenium	104	104	80-120	0	0-20	
Silver	106	106	80-120	0	0-20	
Thallium	107	108	80-120	0	0-20	
Vanadium	108	108	80-120	1	0-20	
Zinc	109	109	80-120	1	0-20	
Calcium	121	119	80-120	2	0-20	3
Iron	114	114	80-120	1	0-20	
Magnesium	110	110	80-120	0	0-20	
Manganese	106	105	80-120	1	0-20	
Potassium	109	108	80-120	1	0-20	
Sodium	100	98	80-120	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796
Preparation: EPA 7470A Filt.
Method: EPA 7470A

Project Poway Landfill / SC-0233-03-01

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-06-1799-3	**Aqueous**	**Mercury**	**06/29/05**	**06/29/05**	**050629S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	114	87	71-134	27	0-14	4

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796
Preparation: EPA 5030B
Method: EPA 8260B

Project Poway Landfill / SC-0233-03-01

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-06-1790-1	**Aqueous**	**GC/MS FF**	**06/29/05**	**06/29/05**	**050629S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	110	111	88-118	0	0-7	
Carbon Tetrachloride	114	115	67-145	1	0-11	
Chlorobenzene	108	106	88-118	2	0-7	
1,2-Dichlorobenzene	109	108	86-116	1	0-8	
1,1-Dichloroethene	103	108	70-130	4	0-25	
Toluene	113	107	87-123	5	0-8	
Trichloroethene	107	107	79-127	0	0-10	
Vinyl Chloride	93	98	69-129	5	0-13	
Methyl-t-Butyl Ether (MTBE)	101	102	71-131	0	0-13	
Tert-Butyl Alcohol (TBA)	112	108	36-168	4	0-45	
Diisopropyl Ether (DIPE)	110	108	81-123	2	0-9	
Ethyl-t-Butyl Ether (ETBE)	95	102	72-126	7	0-12	
Tert-Amyl-Methyl Ether (TAME)	99	99	72-126	1	0-12	
Ethanol	114	113	53-149	0	0-31	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-06-1796

Project: Poway Landfill / SC-0233-03-01

Matrix: Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrite (as N)	EPA 354.1	POGW-18B	06/28/05	N/A	74	74	70-130	0	0-25	
Carbon, Total Organic	EPA 415.1	05-06-1792-1	06/28/05	N/A	103	103	70-130	0	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-06-1796

Project: Poway Landfill / SC-0233-03-01

Matrix: Aqueous

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Turbidity	EPA 180.1	POGW-18A	06/29/05	89	87	1	0-25	
Chemical Oxygen Demand	EPA 410.4	05-06-1512-1	06/29/05	4500	4600	1	0-25	
Ammonia	EPA 350.2	POGW-17B	06/29/05	ND	ND	NA	0-25	
Sulfide, Total	EPA 376.2	05-06-1755-1	06/29/05	15000	15000	0	0-25	
Solids, Total Dissolved	EPA 160.1	05-06-1862-1	06/30/05	1400	1400	1	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1796
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	RSK-175M

Project: Poway Landfill / SC-0233-03-01

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-996	**Aqueous**	**GC 33**	**N/A**	**06/29/05**	**050629L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	101	99	79-109	2	0-20	
Ethane	101	99	80-120	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1796
San Diego, CA 92127-1461		Preparation:	EPA 3005A Filt.
		Method:	EPA 6010B

Project: Poway Landfill / SC-0233-03-01

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
097-01-003-5,068	**Aqueous**	**ICP 3300**	**06/30/05**	**050629-I-06 d**	**050629L06F**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Antimony	0.500	0.515	103	80-120	
Arsenic	0.500	0.530	106	80-120	
Barium	0.500	0.547	109	80-120	
Beryllium	0.500	0.520	104	80-120	
Cadmium	0.500	0.536	107	80-120	
Chromium	0.500	0.532	106	80-120	
Cobalt	0.500	0.539	108	80-120	
Copper	0.500	0.484	97	80-120	
Nickel	0.500	0.540	108	80-120	
Selenium	0.500	0.503	101	80-120	
Silver	0.250	0.255	102	80-120	
Thallium	0.500	0.525	105	80-120	
Vanadium	0.500	0.529	106	80-120	
Zinc	0.500	0.533	107	80-120	
Calcium	0.500	0.515	103	80-120	
Iron	0.500	0.562	112	80-120	
Magnesium	0.500	0.543	109	80-120	
Manganese	0.500	0.515	103	80-120	
Potassium	5.00	5.15	103	80-120	
Sodium	5.00	5.14	103	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	N/A
Work Order No:	05-06-1796
Preparation:	EPA 7470A Filt.
Method:	EPA 7470A

Project: Poway Landfill / SC-0233-03-01

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-04-008-1,988	**Aqueous**	**Mercury**	**06/29/05**	**06/29/05**	**050629L01F**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	107	107	90-122	0	0-14	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1796
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project: Poway Landfill / SC-0233-03-01

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-006-14,837	**Aqueous**	**GC/MS FF**	**06/29/05**	**06/29/05**	**050629L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	113	110	84-120	3	0-8	
Carbon Tetrachloride	119	114	63-147	4	0-10	
Chlorobenzene	108	106	89-119	1	0-7	
1,2-Dichlorobenzene	110	107	89-119	3	0-9	
1,1-Dichloroethene	96	102	77-125	6	0-16	
Toluene	113	111	83-125	2	0-9	
Trichloroethene	111	109	89-119	2	0-8	
Vinyl Chloride	97	95	63-135	2	0-13	
Methyl-t-Butyl Ether (MTBE)	106	107	82-118	1	0-13	
Tert-Butyl Alcohol (TBA)	95	114	46-154	18	0-32	
Diisopropyl Ether (DIPE)	108	111	81-123	3	0-11	
Ethyl-t-Butyl Ether (ETBE)	106	103	74-122	3	0-12	
Tert-Amyl-Methyl Ether (TAME)	111	107	76-124	4	0-10	
Ethanol	99	104	60-138	5	0-32	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-06-1796

Project: Poway Landfill / SC-0233-03-01

Matrix : Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Nitrite (as N)	EPA 354.1	099-05-077-174	06/28/05	N/A	0.025	0.025	100	80-120	
Carbon, Total Organic	EPA 415.1	099-05-097-1,934	06/28/05	N/A	5.0	5.5	110	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 05-06-1796

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Document Number: 1356

Analysis Request and Chain of Custody Record

Project Name: Poway Landfill	Project Number: SC-0233-03-01
Samplers Names: JKinehart, SAadnes	Project Contact: Sean McClain
Laboratory Name: Cal Science	Lab Contact: Steve Nowak
Lab Address: Westchester / CA.	Lab Phone: 714-895-5494
	Carrier/Waybill No.: Pick-up

Page 1 of 1

White copy: to accompany samples

Yellow copy: field copy

Required Analyses

Bottle Type and Volume/Preservative

Number of Containers

	Sample Name	Date	Time	Sample Type	VOCs by 8260 (VOA / HCL)	Metals / Gen Chem (POLY / ~~GLASS~~ / ~~JRR~~ / 1L)	~~SVOCs by 8270~~ (~~POLY~~ / ~~1L~~)	Ethene (GLASS / HCL)	COD/TOC (GLASS / H2SO4)	TDS (POLY / 1L)	Ammonia (Amber / H2SO4)	Nitrite (POLY / 500ml)	Sulfide (POLY / NaOH / 2NaCl)		Comments (1796)	Lab Use Only: Condition of Bottles
1	POGW-FB	6-27-05	10:47	Water	2											
2	POGW-17A	6-27-05	16:32		3	~~1~~		2	1	1		1	1			
3	POGW-17B	6-27-05	15:30		3	1		2	1	1	1	1	1			
4	POGW-18A	6-27-05	12:20		3	1		2	1	1	1	1	1			
5	POGW-18B	6-27-05	12:51		3	1		2	1	1	1	1	1			
6	POGW-17A	6-28-05	1000			1					1					

Special Instructions: Please Perform turbidity Analysis!

Turn-around Time: ☐ Normal ☒ Rush: 4/8 hour VOC's only

1. Relinquished by (Signiture/Affiliation): Steve Aadnes GeoSyntec	Date 6/28/05 Time 1005	1. Received by (Signiture/Affiliation): [signature] CEL	Date 6/28/5 Time 1155
2. Relinquished by (Signiture/Affiliation)	Date Time	2. Received by (Signiture/Affiliation)	Date Time
3. Relinquished by (Signiture/Affiliation): [signature]	Date 6/28/5 Time 1655	3. Received by (Signiture/Affiliation): [signature] CEL	Date 6/28/05 Time 1655

GEOSYNTEC CONSULTANTS 11305 Rancho Bernardo Road, Suite 101, San Diego, CA 92127 (858) 674-6559 Fax: (858) 674-6586

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 05 - 06 - 1796

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec

DATE: 6/28/5

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
✓ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

3.7 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: [illegible]

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: [illegible]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: [illegible]

COMMENTS:

Calscience Environmental Laboratories, Inc.

August 02, 2005

Dave Skippon
GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Subject: **Calscience Work Order No.: 05-07-1304**
Client Reference: SD Inactive Landfill / Poway

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 7/22/2005 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	RSK-175M

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-9	**05-07-1304-1**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-11	**05-07-1304-2**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-12	**05-07-1304-3**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-13	**05-07-1304-4**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-14	**05-07-1304-5**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	0.480	1.00	0.0933	1	J	ug/L

POGW-15	**05-07-1304-6**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-17A	**05-07-1304-7**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	2.87	1.00	0.0933	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	RSK-175M

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-17B	**05-07-1304-8**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-18A	**05-07-1304-9**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	0.120	1.00	0.0933	1	J	ug/L

POGW-18B	**05-07-1304-10**	**07/21/05**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

Method Blank	**099-12-010-1,041**	**N/A**	**Aqueous**	**N/A**	**07/29/05**	**050729L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 3005A Filt.
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-9	**05-07-1304-1**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	36.7	0.1	0.00932	1		mg/L
Iron	0.0208	0.100	0.00784	1	J	mg/L
Magnesium	26.5	0.1	0.00328	1		mg/L
Potassium	7.08	0.50	0.0561	1		mg/L
Sodium	72.3	0.5	0.0192	1		mg/L

POGW-11	**05-07-1304-2**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	72.5	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	81.6	0.1	0.00328	1		mg/L
Potassium	4.74	0.50	0.0561	1		mg/L
Sodium	155	0.500	0.0192	1		mg/L

POGW-12	**05-07-1304-3**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	78.6	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	55.2	0.1	0.00328	1		mg/L
Potassium	1.17	0.50	0.0561	1		mg/L
Sodium	141	0.500	0.0192	1		mg/L

POGW-13	**05-07-1304-4**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	57.2	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	48.9	0.1	0.00328	1		mg/L
Potassium	4.16	0.50	0.0561	1		mg/L
Sodium	203	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 3005A Filt.
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-14	**05-07-1304-5**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	43.8	0.1	0.00932	1		mg/L
Iron	0.750	0.100	0.00784	1		mg/L
Magnesium	39.3	0.1	0.00328	1		mg/L
Potassium	6.69	0.50	0.0561	1		mg/L
Sodium	80.1	0.5	0.0192	1		mg/L

POGW-15	**05-07-1304-6**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	53.6	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	39.2	0.1	0.00328	1		mg/L
Potassium	0.948	0.500	0.0561	1		mg/L
Sodium	120	0.500	0.0192	1		mg/L

POGW-17A	**05-07-1304-7**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	91.2	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	77.1	0.1	0.00328	1		mg/L
Potassium	7.51	0.50	0.0561	1		mg/L
Sodium	333	0.500	0.0192	1		mg/L

POGW-17B	**05-07-1304-8**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	86.7	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	81.4	0.1	0.00328	1		mg/L
Potassium	2.67	0.50	0.0561	1		mg/L
Sodium	180	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 3005A Filt.
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-18A	**05-07-1304-9**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	35.7	0.1	0.00932	1		mg/L
Iron	0.00908	0.100	0.00784	1	J	mg/L
Magnesium	46.2	0.1	0.00328	1		mg/L
Potassium	2.13	0.50	0.0561	1		mg/L
Sodium	116	0.500	0.0192	1		mg/L

POGW-18B	**05-07-1304-10**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	56.3	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	39.0	0.1	0.00328	1		mg/L
Potassium	7.43	0.50	0.0561	1		mg/L
Sodium	285	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 3010A Total
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-9	**05-07-1304-1**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	1.20	0.10	0.00784	1		mg/L

POGW-11	**05-07-1304-2**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	0.350	0.100	0.00784	1		mg/L

POGW-12	**05-07-1304-3**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	0.678	0.100	0.00784	1		mg/L

POGW-13	**05-07-1304-4**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	0.0376	0.100	0.00784	1	J	mg/L

POGW-14	**05-07-1304-5**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	1.58	0.10	0.00784	1		mg/L

POGW-15	**05-07-1304-6**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	0.934	0.100	0.00784	1		mg/L

POGW-17A	**05-07-1304-7**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	1050	1	0.0784	10		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 3010A Total
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-17B	**05-07-1304-8**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	4.45	0.10	0.00784	1		mg/L

POGW-18A	**05-07-1304-9**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	4.62	0.10	0.00784	1		mg/L

POGW-18B	**05-07-1304-10**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	26.4	0.1	0.00784	1		mg/L

Method Blank	**097-01-003-5,156**	**N/A**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L09**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	ND	0.100	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	ND	0.100	0.00328	1		mg/L
Potassium	ND	0.500	0.0561	1		mg/L
Sodium	ND	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 1 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-9	**05-07-1304-1**	**07/21/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	97	74-140		1,2-Dichloroethane-d4	106	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	96	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/22/05
Work Order No:	05-07-1304
Preparation:	EPA 5030B
Method:	EPA 8260B
Units:	ug/L

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-11	**05-07-1304-2**	**07/21/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	97	74-140		1,2-Dichloroethane-d4	105	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	95	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 3 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-12	**05-07-1304-3**	**07/21/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	6.9	10.0	6.1	1	J	Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	0.39	1.0	0.22	1	J	Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	98	74-140		1,2-Dichloroethane-d4	107	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	95	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/22/05
Work Order No:	05-07-1304
Preparation:	EPA 5030B
Method:	EPA 8260B
Units:	ug/L

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-13	**05-07-1304-4**	**07/21/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	1.5	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	99	74-140		1,2-Dichloroethane-d4	106	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	94	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 5 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-14	**05-07-1304-5**	**07/21/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	12	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	0.39	1.0	0.35	1	J
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	10	1	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	26	1	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	99	74-140		1,2-Dichloroethane-d4	106	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	95	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 6 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-15	**05-07-1304-6**	**07/21/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	1.2	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	0.82	1.0	0.27	1	J	Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	1.2	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	0.40	1.0	0.35	1	J	Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	98	74-140		1,2-Dichloroethane-d4	105	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	95	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 7 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-17A	**05-07-1304-7**	**07/21/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	97	74-140		1,2-Dichloroethane-d4	104	74-146	
Toluene-d8	97	88-112		1,4-Bromofluorobenzene	93	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 8 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-17B	**05-07-1304-8**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L02**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	6.1	10.0	6.1	1	J	Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	0.31	1.0	0.22	1	J	Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	0.48	1.0	0.27	1	J	Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	98	74-140		1,2-Dichloroethane-d4	105	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	94	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 9 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-18A	**05-07-1304-9**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L02**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	6.4	10.0	6.1	1	J	Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	101	74-140		1,2-Dichloroethane-d4	109	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	93	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 10 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-18B	**05-07-1304-10**	**07/21/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L02**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	6.7	10.0	6.1	1	J	Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	1.5	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	0.37	1.0	0.35	1	J
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	100	74-140		1,2-Dichloroethane-d4	107	74-146	
Toluene-d8	96	88-112		1,4-Bromofluorobenzene	92	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 11 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
QAFB	**05-07-1304-11**	**07/21/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	110	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	370	100	4.2	10		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	1.4	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	95	74-140		1,2-Dichloroethane-d4	101	74-146	
Toluene-d8	97	88-112		1,4-Bromofluorobenzene	95	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/22/05
Work Order No:	05-07-1304
Preparation:	EPA 5030B
Method:	EPA 8260B
Units:	ug/L

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
QATB	**05-07-1304-12**	**07/21/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	95	74-140		1,2-Dichloroethane-d4	103	74-146	
Toluene-d8	97	88-112		1,4-Bromofluorobenzene	96	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 13 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-006-15,104**	**N/A**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	95	74-140		1,2-Dichloroethane-d4	100	74-146	
Toluene-d8	98	88-112		1,4-Bromofluorobenzene	96	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 14 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-006-15,108**	**N/A**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L02**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	98	74-140		1,2-Dichloroethane-d4	105	74-146	
Toluene-d8	99	88-112		1,4-Bromofluorobenzene	94	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/22/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 15 of 15

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-006-15,119**	**N/A**	**Aqueous**	**07/26/05**	**07/26/05**	**050726L01**

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	97	74-140		1,2-Dichloroethane-d4	108	74-146	
Toluene-d8	97	88-112		1,4-Bromofluorobenzene	95	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/22/05
Work Order No: 05-07-1304

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-9	**05-07-1304-1**	**07/21/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	460	1.0	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	0.70	0.10	0.029	1		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N) (1)	0.0057	0.010	0.0022	1	J	mg/L	N/A	07/22/05	EPA 354.1
Sulfate	67	4	0.84	2		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	38	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	7.1	0.5	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	230	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	88	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

POGW-11	**05-07-1304-2**	**07/21/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	1000	10	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	9.1	2.5	0.73	25		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	190	10	2.1	5		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	15	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	4.5	0.5	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	120	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	330	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/22/05
Work Order No: 05-07-1304

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-12	**05-07-1304-3**	**07/21/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	840	1.0	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	0.69	0.10	0.029	1		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	0.042	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	250	20	4.2	10		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	18	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	5.8	0.5	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	190	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	140	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

POGW-13	**05-07-1304-4**	**07/21/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	1000	10	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	9.6	2.5	0.73	25		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	280	20	4.2	10		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	23	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	5.3	0.5	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	220	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	180	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/22/05
Work Order No: 05-07-1304

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-14	**05-07-1304-5**	**07/21/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	570	1.0	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	5.7	0.1	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N) (1)	0.038	0.10	0.029	1	J	mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	24	2	0.42	1		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	1.1	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	86	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	15	0.50	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	200	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	180	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

POGW-15	**05-07-1304-6**	**07/21/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	620	1.0	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	6.2	1.0	0.29	10		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	56	4	0.84	2		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	20	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	7.1	0.5	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	350	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	94	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/22/05
Work Order No: 05-07-1304

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-17A	**05-07-1304-7**	**07/21/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	1500	10	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	0.28	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	1.6	0.2	0.058	2		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	0.14	0.02	0.0044	2		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	360	50	11	25		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	420	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	8.3	0.5	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	390	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	320	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

POGW-17B	**05-07-1304-8**	**07/21/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	1200	10	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	5.2	1.0	0.29	10		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	0.031	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	240	20	4.2	10		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	31	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	9.5	2.5	0.49	5		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	360	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	210	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/22/05
Work Order No: 05-07-1304

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-18A	**05-07-1304-9**	**07/21/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	760	1.0	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	10	2	0.73	25		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	170	20	4.2	10		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	38	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	5.5	0.5	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	190	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	88	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

POGW-18B	**05-07-1304-10**	**07/21/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	1200	10	1.0	1		mg/L	N/A	07/26/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	4.5	1.0	0.29	10		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	0.13	0.02	0.0044	2		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	340	20	4.2	10		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	81	5	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	6.3	0.5	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Bicarbonate (as CaCO3)	320	5.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/27/05	SM 2320B
Chloride	160	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/22/05
Work Order No: 05-07-1304

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
Method Blank		**N/A**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/27/05	EPA 350.2
Nitrate (as N)	ND	0.10	0.029	1		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	ND	0.10	0.42	1		mg/L	N/A	07/28/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/28/05	EPA 376.2
Chemical Oxygen Demand	ND	5.0	4.6	1		mg/L	N/A	07/27/05	EPA 410.4
Carbon, Total Organic	ND	0.50	0.097	1		mg/L	N/A	07/25/05	EPA 415.1
Chloride (1)	ND	2.0	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C
Chloride	ND	2.0	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/22/05
Work Order No:	05-07-1304
Preparation:	EPA 3010A Total
Method:	EPA 6010B

Project SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
POGW-9	**Aqueous**	**ICP 3300**	**07/25/05**	**07/26/05**	**050725S09**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Calcium	4X	4X	80-120	4X	0-20	Q
Iron	119	107	80-120	4	0-20	
Magnesium	4X	4X	80-120	4X	0-20	Q
Potassium	110	98	80-120	5	0-20	
Sodium	4X	4X	80-120	4X	0-20	Q

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/22/05
Work Order No:	05-07-1304
Preparation:	EPA 5030B
Method:	EPA 8260B

Project SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-07-1278-15	**Aqueous**	**GC/MS O**	**07/25/05**	**07/25/05**	**050725S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	98	99	88-118	1	0-7	
Carbon Tetrachloride	86	90	67-145	5	0-11	
Chlorobenzene	106	107	88-118	1	0-7	
1,2-Dichlorobenzene	106	107	86-116	1	0-8	
1,1-Dichloroethene	94	96	70-130	2	0-25	
Toluene	102	101	87-123	1	0-8	
Trichloroethene	103	102	79-127	0	0-10	
Vinyl Chloride	98	100	69-129	1	0-13	
Methyl-t-Butyl Ether (MTBE)	86	89	71-131	2	0-13	
Tert-Butyl Alcohol (TBA)	75	77	36-168	3	0-45	
Diisopropyl Ether (DIPE)	86	87	81-123	1	0-9	
Ethyl-t-Butyl Ether (ETBE)	86	87	72-126	1	0-12	
Tert-Amyl-Methyl Ether (TAME)	91	92	72-126	1	0-12	
Ethanol	80	82	53-149	3	0-31	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/22/05
Work Order No:	05-07-1304
Preparation:	EPA 5030B
Method:	EPA 8260B

Project SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-07-1245-23	**Aqueous**	**GC/MS O**	**07/25/05**	**07/26/05**	**050725S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	98	98	88-118	1	0-7	
Carbon Tetrachloride	89	91	67-145	2	0-11	
Chlorobenzene	105	105	88-118	1	0-7	
1,2-Dichlorobenzene	107	107	86-116	0	0-8	
1,1-Dichloroethene	99	99	70-130	0	0-25	
Toluene	99	100	87-123	1	0-8	
Trichloroethene	101	102	79-127	0	0-10	
Vinyl Chloride	107	107	69-129	0	0-13	
Methyl-t-Butyl Ether (MTBE)	86	89	71-131	3	0-13	
Tert-Butyl Alcohol (TBA)	70	75	36-168	7	0-45	
Diisopropyl Ether (DIPE)	88	90	81-123	2	0-9	
Ethyl-t-Butyl Ether (ETBE)	85	87	72-126	3	0-12	
Tert-Amyl-Methyl Ether (TAME)	88	90	72-126	2	0-12	
Ethanol	78	80	53-149	2	0-31	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/22/05
Work Order No:	05-07-1304
Preparation:	EPA 5030B
Method:	EPA 8260B

Project SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-07-1390-2	**Aqueous**	**GC/MS O**	**07/26/05**	**07/26/05**	**050726S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	96	98	88-118	1	0-7	
Carbon Tetrachloride	90	93	67-145	3	0-11	
Chlorobenzene	105	106	88-118	1	0-7	
1,2-Dichlorobenzene	104	107	86-116	3	0-8	
1,1-Dichloroethene	91	94	70-130	3	0-25	
Toluene	100	101	87-123	0	0-8	
Trichloroethene	100	102	79-127	2	0-10	
Vinyl Chloride	115	115	69-129	0	0-13	
Methyl-t-Butyl Ether (MTBE)	86	87	71-131	2	0-13	
Tert-Butyl Alcohol (TBA)	75	79	36-168	4	0-45	
Diisopropyl Ether (DIPE)	85	88	81-123	3	0-9	
Ethyl-t-Butyl Ether (ETBE)	85	86	72-126	2	0-12	
Tert-Amyl-Methyl Ether (TAME)	87	89	72-126	2	0-12	
Ethanol	76	86	53-149	13	0-31	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-07-1304

Project: SD Inactive Landfill / Poway

Matrix: Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrite (as N)	EPA 354.1	05-07-1240-1	07/22/05	N/A	92	94	70-130	2	0-25	
Sulfate	EPA 375.4	05-07-1272-9	07/28/05	N/A	104	113	70-130	5	0-25	
Nitrate (as N)	EPA 353.3/354.1	05-07-1240-1	07/22/05	N/A	71	73	70-130	0	0-25	
Carbon, Total Organic	EPA 415.1	POGW-9	07/25/05	N/A	92	87	70-130	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-07-1304

Project: SD Inactive Landfill / Poway

Matrix: Aqueous

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Chloride	SM 4500-Cl C	05-07-1240-1	07/26/05	300	290	2	0-25	
Chloride	SM 4500-Cl C	POGW-18B	07/26/05	160	160	1	0-25	
Chemical Oxygen Demand	EPA 410.4	05-07-1455-1	07/27/05	250	260	1	0-25	
Ammonia	EPA 350.2	05-07-1385-1	07/27/05	ND	ND	NA	0-25	
Sulfide, Total	EPA 376.2	POGW-9	07/28/05	ND	ND	NA	0-25	
Solids, Total Dissolved	EPA 160.1	05-07-1240-7	07/26/05	1000	990	1	0-25	
Solids, Total Dissolved	EPA 160.1	05-07-1329-1	07/26/05	880	910	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	RSK-175M

Project: SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-1,041	**Aqueous**	**GC 33**	**N/A**	**07/29/05**	**050729L03**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	105	100	79-109	5	0-20	
Ethane	106	100	80-120	6	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 3010A Total
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
097-01-003-5,156	**Aqueous**	**ICP 3300**	**07/26/05**	**050725-I-09**	**050725L09**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Calcium	0.500	0.524	105	80-120	
Iron	0.500	0.555	111	80-120	
Magnesium	0.500	0.521	104	80-120	
Potassium	5.00	5.05	101	80-120	
Sodium	5.00	5.10	102	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project: SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-006-15,104	**Aqueous**	**GC/MS O**	**07/25/05**	**07/25/05**	**050725L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	97	98	84-120	1	0-8	
Carbon Tetrachloride	88	88	63-147	1	0-10	
Chlorobenzene	105	107	89-119	2	0-7	
1,2-Dichlorobenzene	105	108	89-119	3	0-9	
1,1-Dichloroethene	96	97	77-125	1	0-16	
Toluene	100	101	83-125	1	0-9	
Trichloroethene	101	102	89-119	1	0-8	
Vinyl Chloride	96	98	63-135	3	0-13	
Methyl-t-Butyl Ether (MTBE)	88	89	82-118	2	0-13	
Tert-Butyl Alcohol (TBA)	77	79	46-154	4	0-32	
Diisopropyl Ether (DIPE)	86	87	81-123	1	0-11	
Ethyl-t-Butyl Ether (ETBE)	87	89	74-122	2	0-12	
Tert-Amyl-Methyl Ether (TAME)	90	93	76-124	3	0-10	
Ethanol	85	84	60-138	2	0-32	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project: SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-006-15,108	**Aqueous**	**GC/MS O**	**07/25/05**	**07/25/05**	**050725L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	97	98	84-120	1	0-8	
Carbon Tetrachloride	91	91	63-147	0	0-10	
Chlorobenzene	106	106	89-119	0	0-7	
1,2-Dichlorobenzene	107	106	89-119	1	0-9	
1,1-Dichloroethene	97	96	77-125	1	0-16	
Toluene	101	101	83-125	0	0-9	
Trichloroethene	105	105	89-119	1	0-8	
Vinyl Chloride	106	109	63-135	3	0-13	
Methyl-t-Butyl Ether (MTBE)	84	84	82-118	0	0-13	
Tert-Butyl Alcohol (TBA)	61	60	46-154	2	0-32	
Diisopropyl Ether (DIPE)	88	88	81-123	0	0-11	
Ethyl-t-Butyl Ether (ETBE)	86	86	74-122	0	0-12	
Tert-Amyl-Methyl Ether (TAME)	88	88	76-124	0	0-10	
Ethanol	62	63	60-138	2	0-32	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1304
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project: SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-006-15,119	**Aqueous**	**GC/MS O**	**07/26/05**	**07/26/05**	**050726L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	98	98	84-120	0	0-8	
Carbon Tetrachloride	92	90	63-147	2	0-10	
Chlorobenzene	107	106	89-119	1	0-7	
1,2-Dichlorobenzene	107	107	89-119	0	0-9	
1,1-Dichloroethene	94	92	77-125	2	0-16	
Toluene	101	101	83-125	0	0-9	
Trichloroethene	103	103	89-119	0	0-8	
Vinyl Chloride	114	112	63-135	2	0-13	
Methyl-t-Butyl Ether (MTBE)	87	87	82-118	0	0-13	
Tert-Butyl Alcohol (TBA)	73	75	46-154	3	0-32	
Diisopropyl Ether (DIPE)	88	87	81-123	1	0-11	
Ethyl-t-Butyl Ether (ETBE)	87	85	74-122	2	0-12	
Tert-Amyl-Methyl Ether (TAME)	90	91	76-124	1	0-10	
Ethanol	101	93	60-138	8	0-32	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-07-1304

Project: SD Inactive Landfill / Poway

Matrix : Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Nitrite (as N)	EPA 354.1	099-05-077-177	07/22/05	N/A	0.025	0.022	88	80-120	
Sulfate	EPA 375.4	099-05-091-1,256	07/28/05	N/A	20	20	102	80-120	
Nitrate (as N)	EPA 353.3/354.1	099-04-011-322	07/22/05	N/A	0.50	0.49	99	80-120	
Carbon, Total Organic	EPA 415.1	099-05-097-1,957	07/25/05	N/A	10	9.3	93	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 05-07-1304

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

07-1304

Document Number: 1153 ~~1304~~

Analysis Request and Chain of Custody Record

Project Name: S.D. County Inactive Landfills	Project Number: Poway Landfill
Samplers Names: Scott Lutz BBC Env.	Project Contact: D. Skippon
Laboratory Name: Cal Science Env. Labs	Lab Contact: S. Nowak
Lab Address: 7440 Lincoln Way, Garden Grove, CA	Lab Phone: 714-895-5494
	Carrier/Waybill No.: Lab Courier

Page 1 of 1

White copy: to accompany samples

Yellow copy: field copy

Required Analyses

Bottle Type and Volume/Preservative

Number of Containers

Sample Name	Date	Time	Sample Type	VOCs by 8260 (VOA HCl)	Metals+ Gen Chem Nitrite (Poly None)	SVOCs by 8270	Ethene (Glass HCl)	COD+TOC (Glass H2SO4)	TDS (Poly None)	Ammonia (Glass H2SO4)	Sulfide (Poly NaOH+ZnAc)			Comments	Lab Use Only: Condition of Bottles
POGW-9	7/21/05	0904	H_2O	3	1		2	1	1	1	1				
POGW-11		1006		3	1		2	1	1	1	1				
POGW-12		1040		3	1		2	1	1	1	1				
POGW-13		1222		3	1		2	1	1	1	1				
POGW-14		0944		3	1		2	1	1	1	1				
POGW15		1027		3	1		2	1	1	1	1				
POGW-17A		1158		3	1		2	1	1	1	1				
POGW-17B		1204		3	1		2	1	1	1	1				
POGW-18A		1429		3	1		2	1	1	1	1				
POGW-18B		1441		3	1		2	1	1	1	1				
QAFB		1456		2											
QATB	7/21/05	—	H_2O	2											

Special Instructions: FILTER & PRESERVE METALS UPON RECIEPT
GEN CHEM INCLUDES - NO_3 (AS N) SO_4, Cl, CO_3, HCO_3
DISSOLVED METALS - Ca, Mg, Na, K, Fe - TOTAL Fe

Turn-around Time: ☒ Normal ☐ Rush: _____

1. Relinquished by (Signiture/Affiliation) [signature] BBC Env.	Date 7/22/5 Time 1315	1. Received by (Signiture/Affiliation) [signature] CEL	Date 7/22/5 Time 1315
2. Relinquished by (Signiture/Affiliation)	Date Time	2. Received by (Signiture/Affiliation)	Date Time
3. Relinquished by (Signiture/Affiliation) [signature] CEL	Date 7/22/5 Time 1745	3. Received by (Signiture/Affiliation) [signature] CEL	Date 7/22/05 Time 1745

GeoSyntec Consultants 11305 Rancho Bernardo Road, Suite 101, San Diego, CA 92127 (858) 674-6559 Fax: (858) 674-6586

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 05 - 07 - 1304

Cooler 1 of 2

SAMPLE RECEIPT FORM

CLIENT: Geosyntec **DATE:** 7/22/15

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- ____ Chilled, cooler with temperature blank provided.
- ____ Chilled, cooler without temperature blank.
- ✓ Chilled and placed in cooler with wet ice.
- ____ Ambient and placed in cooler with wet ice.
- ____ Ambient temperature.
- 3.7 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- ____ °C Temperature blank.
- ____ °C IR thermometer.
- ____ Ambient temperature.

Initial: [illegible]

CUSTODY SEAL INTACT:

Sample(s): ____ Cooler: ____ No (Not Intact) : ____ Not Applicable (N/A): ✓

Initial: [illegible]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: [illegible]

COMMENTS:

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 05 - 07 - 1304

Cooler 2 of 2

SAMPLE RECEIPT FORM

CLIENT: Geosyntec **DATE:** 7/22/5

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- ____ Chilled, cooler with temperature blank provided.
- ____ Chilled, cooler without temperature blank.
- ✓ Chilled and placed in cooler with wet ice.
- ____ Ambient and placed in cooler with wet ice.
- ____ Ambient temperature.

3.7 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- ____ °C Temperature blank.
- ____ °C IR thermometer.
- ____ Ambient temperature.

Initial: [illegible]

CUSTODY SEAL INTACT:

Sample(s): ____ Cooler: ____ No (Not Intact) : ____ Not Applicable (N/A): ✓

Initial: [illegible]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: [illegible]

COMMENTS:

Calscience Environmental Laboratories, Inc.

July 29, 2005

Dave Skippon
GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Subject: **Calscience Work Order No.: 05-07-1240**
Client Reference: SD Inactive Landfill / Poway

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 7/21/2005 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	RSK-175M

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-6	**05-07-1240-1**	**07/20/05**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-10	**05-07-1240-2**	**07/20/05**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POGW-16	**05-07-1240-3**	**07/20/05**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	0.140	1.00	0.0933	1	J	ug/L

POPW-1	**05-07-1240-4**	**07/20/05**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

POPW-2A	**05-07-1240-5**	**07/20/05**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	0.560	1.00	0.0933	1	J	ug/L

POPW-2B	**05-07-1240-6**	**07/20/05**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	0.0800	1.00	0.0933	1	J	ug/L

POPW-3	**05-07-1240-7**	**07/20/05**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	0.270	1.00	0.0933	1	J	ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	RSK-175M

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POPW-4	**05-07-1240-8**	**07/20/05**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	0.0900	1.00	0.0933	1	J	ug/L

QCEB	**05-07-1240-10**	**07/20/05**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

Method Blank	**099-12-010-1,034**	**N/A**	**Aqueous**	**N/A**	**07/28/05**	**050728L02**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Ethylene	ND	1.00	0.0933	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 3005A Filt.
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-6	**05-07-1240-1**	**07/20/05**	**Aqueous**	**07/22/05**	**07/26/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	65.9	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	78.7	0.1	0.00328	1		mg/L
Potassium	7.35	0.50	0.0561	1		mg/L
Sodium	182	0.500	0.0192	1		mg/L

POGW-10	**05-07-1240-2**	**07/20/05**	**Aqueous**	**07/22/05**	**07/26/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	35.7	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	30.1	0.1	0.00328	1		mg/L
Potassium	12.3	0.5	0.0561	1		mg/L
Sodium	84.3	0.5	0.0192	1		mg/L

POGW-16	**05-07-1240-3**	**07/20/05**	**Aqueous**	**07/22/05**	**07/26/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	91.9	0.1	0.00932	1		mg/L
Iron	0.153	0.100	0.00784	1	B	mg/L
Magnesium	93.0	0.1	0.00328	1		mg/L
Potassium	12.2	0.5	0.0561	1		mg/L
Sodium	113	0.500	0.0192	1		mg/L

POPW-1	**05-07-1240-4**	**07/20/05**	**Aqueous**	**07/22/05**	**07/26/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	169	0.100	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	228	0.100	0.00328	1		mg/L
Potassium	12.2	0.5	0.0561	1		mg/L
Sodium	239	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 3005A Filt.
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POPW-2A	**05-07-1240-5**	**07/20/05**	**Aqueous**	**07/22/05**	**07/26/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	150	0.100	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	183	0.100	0.00328	1		mg/L
Potassium	13.8	0.5	0.0561	1		mg/L
Sodium	327	0.500	0.0192	1		mg/L

POPW-2B	**05-07-1240-6**	**07/20/05**	**Aqueous**	**07/22/05**	**07/26/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	105	0.100	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	130	0.100	0.00328	1		mg/L
Potassium	13.2	0.5	0.0561	1		mg/L
Sodium	216	0.500	0.0192	1		mg/L

POPW-3	**05-07-1240-7**	**07/20/05**	**Aqueous**	**07/22/05**	**07/26/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	108	0.100	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	89.4	0.1	0.00328	1		mg/L
Potassium	10.9	0.5	0.0561	1		mg/L
Sodium	118	0.500	0.0192	1		mg/L

POPW-4	**05-07-1240-8**	**07/20/05**	**Aqueous**	**07/22/05**	**07/26/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	78.0	0.1	0.00932	1		mg/L
Iron	ND	0.100	0.00784	1		mg/L
Magnesium	92.5	0.1	0.00328	1		mg/L
Potassium	12.3	0.5	0.0561	1		mg/L
Sodium	176	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 3005A Filt.
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
QCEB	**05-07-1240-10**	**07/20/05**	**Aqueous**	**07/22/05**	**07/26/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	0.0746	0.100	0.00932	1	J	mg/L
Iron	0.0324	0.100	0.00784	1	B,J	mg/L
Magnesium	0.00958	0.100	0.00328	1	J	mg/L
Potassium	0.240	0.500	0.0561	1	J	mg/L
Sodium	0.295	0.500	0.0192	1	J	mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 3010A Total
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-6	**05-07-1240-1**	**07/20/05**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	0.283	0.100	0.00784	1	B	mg/L

POGW-10	**05-07-1240-2**	**07/20/05**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	0.0406	0.100	0.00784	1	B,J	mg/L

POGW-16	**05-07-1240-3**	**07/20/05**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	2.59	0.10	0.00784	1	B	mg/L

POPW-1	**05-07-1240-4**	**07/20/05**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	0.139	0.100	0.00784	1	B	mg/L

POPW-2A	**05-07-1240-5**	**07/20/05**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	16.3	0.1	0.00784	1	B	mg/L

POPW-2B	**05-07-1240-6**	**07/20/05**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	2.07	0.10	0.00784	1	B	mg/L

POPW-3	**05-07-1240-7**	**07/20/05**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	14.5	0.1	0.00784	1	B	mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 3010A Total
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POPW-4	**05-07-1240-8**	**07/20/05**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	0.418	0.100	0.00784	1	B	mg/L

QCEB	**05-07-1240-10**	**07/20/05**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Iron	0.0199	0.100	0.00784	1	B,J	mg/L

Method Blank	**097-01-003-5,152**	**N/A**	**Aqueous**	**07/22/05**	**07/25/05**	**050722L03**

Comment(s):-Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Calcium	ND	0.100	0.00932	1		mg/L
Iron	0.0131	0.100	0.00784	1	J	mg/L
Magnesium	ND	0.100	0.00328	1		mg/L
Potassium	ND	0.500	0.0561	1		mg/L
Sodium	ND	0.500	0.0192	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 1 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-6	**05-07-1240-1**	**07/20/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	18	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	106	74-140		1,2-Dichloroethane-d4	100	74-146	
Toluene-d8	104	88-112		1,4-Bromofluorobenzene	84	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 2 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-10	**05-07-1240-2**	**07/20/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	20	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	112	74-140		1,2-Dichloroethane-d4	107	74-146	
Toluene-d8	104	88-112		1,4-Bromofluorobenzene	84	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 3 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POGW-16	**05-07-1240-3**	**07/20/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	26	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	0.31	0.50	0.26	1	J	1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	0.87	1.0	0.36	1	J	Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	0.76	1.0	0.29	1	J
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	5.4	1.0	0.30	1		Trichloroethene	4.0	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	27	1	0.35	1		Vinyl Chloride	0.34	0.50	0.33	1	J
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	113	74-140		1,2-Dichloroethane-d4	112	74-146	
Toluene-d8	104	88-112		1,4-Bromofluorobenzene	84	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 4 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POPW-1	**05-07-1240-4**	**07/20/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	17	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	0.80	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	23	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	1.3	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	2.2	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	0.92	1.0	0.30	1	J	Trichloroethene	840	10		10	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	0.95	1.0	0.53	1	J	1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	0.72	1.0	0.31	1	J	1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	200	10		10		Vinyl Chloride	1.6	0.5	0.33	1	
t-1,2-Dichloroethene	1.5	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	108	74-140		1,2-Dichloroethane-d4	105	74-146	
Toluene-d8	105	88-112		1,4-Bromofluorobenzene	83	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 5 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POPW-2A	**05-07-1240-5**	**07/20/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	21	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	0.31	0.50	0.26	1	J	1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	3.3	10.0	2.6	1	J
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	0.55	1.0	0.22	1	J	Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	0.51	1.0	0.29	1	J
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	120	1	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	72	1	0.35	1		Vinyl Chloride	2.9	0.5	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	111	74-140		1,2-Dichloroethane-d4	106	74-146	
Toluene-d8	106	88-112		1,4-Bromofluorobenzene	83	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 6 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POPW-2B	**05-07-1240-6**	**07/20/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	36	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	0.39	0.50	0.26	1	J	1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	0.48	1.0	0.22	1	J	Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	1.3	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	1.2	1.0	0.30	1		Trichloroethene	280	2		2	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	0.47	1.0	0.31	1	J	1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	160	1	0.35	1		Vinyl Chloride	0.71	0.50	0.33	1	
t-1,2-Dichloroethene	0.68	1.0	0.29	1	J	p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	109	74-140		1,2-Dichloroethane-d4	107	74-146	
Toluene-d8	106	88-112		1,4-Bromofluorobenzene	83	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 7 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POPW-3	**05-07-1240-7**	**07/20/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	250	20		2		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	14	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	190	1	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	0.36	1.0	0.31	1	J	1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	43	1	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	0.40	1.0	0.29	1	J

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	114	74-140		1,2-Dichloroethane-d4	112	74-146	
Toluene-d8	105	88-112		1,4-Bromofluorobenzene	83	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 8 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
POPW-4	**05-07-1240-8**	**07/20/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	29	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	1.4	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	0.48	1.0	0.30	1	J	Trichloroethene	28	1	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	33	1	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	119	74-140		1,2-Dichloroethane-d4	117	74-146	
Toluene-d8	106	88-112		1,4-Bromofluorobenzene	82	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
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Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
QCFB	**05-07-1240-9**	**07/20/05**	**Aqueous**	**07/25/05**	**07/26/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	290	100		10		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	320	100		10		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	1.6	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	108	74-140		1,2-Dichloroethane-d4	102	74-146	
Toluene-d8	105	88-112		1,4-Bromofluorobenzene	86	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
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Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
QCEB	**05-07-1240-10**	**07/20/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	20	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	118	74-140		1,2-Dichloroethane-d4	115	74-146	
Toluene-d8	107	88-112		1,4-Bromofluorobenzene	81	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 11 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
QCTB	**05-07-1240-11**	**07/20/05**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	21	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	2.8	10.0	2.6	1	J
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	122	74-140		1,2-Dichloroethane-d4	118	74-146	
Toluene-d8	106	88-112		1,4-Bromofluorobenzene	82	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 12 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-006-15,105**	**N/A**	**Aqueous**	**07/25/05**	**07/25/05**	**050725L01**

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10	6.1	1		Acrylonitrile	ND	20	3.6	1	
Benzene	ND	0.50	0.26	1		1,3-Dichloropropane	ND	1.0	0.30	1	
Bromobenzene	ND	1.0	0.47	1		2,2-Dichloropropane	ND	1.0	0.40	1	
Bromochloromethane	ND	1.0	0.68	1		1,1-Dichloropropene	ND	1.0	0.21	1	
Bromodichloromethane	ND	1.0	0.27	1		c-1,3-Dichloropropene	ND	0.50	0.45	1	
Bromoform	ND	1.0	0.62	1		t-1,3-Dichloropropene	ND	0.50	0.31	1	
Bromomethane	ND	10	2.9	1		Ethylbenzene	ND	1.0	0.17	1	
2-Butanone	ND	10	4.2	1		2-Hexanone	ND	10	1.9	1	
n-Butylbenzene	ND	1.0	0.29	1		Isopropylbenzene	ND	1.0	0.24	1	
sec-Butylbenzene	ND	1.0	0.21	1		p-Isopropyltoluene	ND	1.0	0.21	1	
tert-Butylbenzene	ND	1.0	0.17	1		Methylene Chloride	ND	10	2.6	1	
Carbon Tetrachloride	ND	0.50	0.42	1		4-Methyl-2-Pentanone	ND	10	2.4	1	
Chlorobenzene	ND	1.0	0.36	1		Naphthalene	ND	10	0.95	1	
Chloroethane	ND	1.0	0.52	1		n-Propylbenzene	ND	1.0	0.30	1	
Chloroform	ND	1.0	0.22	1		Styrene	ND	1.0	0.29	1	
Chloromethane	ND	10	1.8	1		1,1,1,2-Tetrachloroethane	ND	1.0	0.37	1	
2-Chlorotoluene	ND	1.0	0.24	1		1,1,2,2-Tetrachloroethane	ND	1.0	0.37	1	
4-Chlorotoluene	ND	1.0	0.30	1		Tetrachloroethene	ND	1.0	0.29	1	
Dibromochloromethane	ND	1.0	0.45	1		Toluene	ND	1.0	0.35	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	2.5	1		1,2,3-Trichlorobenzene	ND	1.0	0.39	1	
1,2-Dibromoethane	ND	1.0	0.81	1		1,2,4-Trichlorobenzene	ND	1.0	0.35	1	
Dibromomethane	ND	1.0	0.42	1		1,1,1-Trichloroethane	ND	1.0	0.32	1	
1,2-Dichlorobenzene	ND	1.0	0.24	1		Hexachloro-1,3-Butadiene	ND	20	0.39	1	
1,3-Dichlorobenzene	ND	1.0	0.38	1		1,1,2-Trichloroethane	ND	1.0	0.54	1	
1,4-Dichlorobenzene	ND	1.0	0.30	1		Trichloroethene	ND	1.0	0.30	1	
Dichlorodifluoromethane	ND	1.0	0.27	1		Trichlorofluoromethane	ND	10	0.36	1	
1,1-Dichloroethane	ND	1.0	0.53	1		1,2,3-Trichloropropane	ND	5.0	2.3	1	
1,2-Dichloroethane	ND	0.50	0.22	1		1,2,4-Trimethylbenzene	ND	1.0	0.26	1	
1,1-Dichloroethene	ND	1.0	0.31	1		1,3,5-Trimethylbenzene	ND	1.0	0.19	1	
c-1,2-Dichloroethene	ND	1.0	0.35	1		Vinyl Chloride	ND	0.50	0.33	1	
t-1,2-Dichloroethene	ND	1.0	0.29	1		p/m-Xylene	ND	1.0	0.38	1	
1,2-Dichloropropane	ND	1.0	0.28	1		o-Xylene	ND	1.0	0.21	1	
Acrolein	ND	20	4.3	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.29	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	103	74-140		1,2-Dichloroethane-d4	101	74-146	
Toluene-d8	103	88-112		1,4-Bromofluorobenzene	87	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	07/21/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: SD Inactive Landfill / Poway			Page 13 of 13

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-006-15,118**	**N/A**	**Aqueous**	**07/26/05**	**07/26/05**	**050726L01**

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Acetone	ND	10		1		Acrylonitrile	ND	20		1	
Benzene	ND	0.50		1		1,3-Dichloropropane	ND	1.0		1	
Bromobenzene	ND	1.0		1		2,2-Dichloropropane	ND	1.0		1	
Bromochloromethane	ND	1.0		1		1,1-Dichloropropene	ND	1.0		1	
Bromodichloromethane	ND	1.0		1		c-1,3-Dichloropropene	ND	0.50		1	
Bromoform	ND	1.0		1		t-1,3-Dichloropropene	ND	0.50		1	
Bromomethane	ND	10		1		Ethylbenzene	ND	1.0		1	
2-Butanone	ND	10		1		2-Hexanone	ND	10		1	
n-Butylbenzene	ND	1.0		1		Isopropylbenzene	ND	1.0		1	
sec-Butylbenzene	ND	1.0		1		p-Isopropyltoluene	ND	1.0		1	
tert-Butylbenzene	ND	1.0		1		Methylene Chloride	ND	10		1	
Carbon Tetrachloride	ND	0.50		1		4-Methyl-2-Pentanone	ND	10		1	
Chlorobenzene	ND	1.0		1		Naphthalene	ND	10		1	
Chloroethane	ND	1.0		1		n-Propylbenzene	ND	1.0		1	
Chloroform	ND	1.0		1		Styrene	ND	1.0		1	
Chloromethane	ND	10		1		1,1,1,2-Tetrachloroethane	ND	1.0		1	
2-Chlorotoluene	ND	1.0		1		1,1,2,2-Tetrachloroethane	ND	1.0		1	
4-Chlorotoluene	ND	1.0		1		Tetrachloroethene	ND	1.0		1	
Dibromochloromethane	ND	1.0		1		Toluene	ND	1.0		1	
1,2-Dibromo-3-Chloropropane	ND	5.0		1		1,2,3-Trichlorobenzene	ND	1.0		1	
1,2-Dibromoethane	ND	1.0		1		1,2,4-Trichlorobenzene	ND	1.0		1	
Dibromomethane	ND	1.0		1		1,1,1-Trichloroethane	ND	1.0		1	
1,2-Dichlorobenzene	ND	1.0		1		Hexachloro-1,3-Butadiene	ND	20		1	
1,3-Dichlorobenzene	ND	1.0		1		1,1,2-Trichloroethane	ND	1.0		1	
1,4-Dichlorobenzene	ND	1.0		1		Trichloroethene	ND	1.0		1	
Dichlorodifluoromethane	ND	1.0		1		Trichlorofluoromethane	ND	10		1	
1,1-Dichloroethane	ND	1.0		1		1,2,3-Trichloropropane	ND	5.0		1	
1,2-Dichloroethane	ND	0.50		1		1,2,4-Trimethylbenzene	ND	1.0		1	
1,1-Dichloroethene	ND	1.0		1		1,3,5-Trimethylbenzene	ND	1.0		1	
c-1,2-Dichloroethene	ND	1.0		1		Vinyl Chloride	ND	0.50		1	
t-1,2-Dichloroethene	ND	1.0		1		p/m-Xylene	ND	1.0		1	
1,2-Dichloropropane	ND	1.0		1		o-Xylene	ND	1.0		1	
Acrolein	ND	20		1		Methyl-t-Butyl Ether (MTBE)	ND	1.0		1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	101	74-140		1,2-Dichloroethane-d4	97	74-146	
Toluene-d8	100	88-112		1,4-Bromofluorobenzene	87	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/21/05
Work Order No: 05-07-1240

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-6	**05-07-1240-1**	**07/20/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	980	1.0	1.0	1		mg/L	N/A	07/20/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N)	5.5	1.0	0.29	10		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N) (1)	0.0094	0.010	0.0022	1	J	mg/L	N/A	07/22/05	EPA 354.1
Sulfate	220	20	4.2	10		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	18	5	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	5.9	0.5	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Bicarbonate (as CaCO3)	180	5.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Chloride	300	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

POGW-10	**05-07-1240-2**	**07/20/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	540	1.0	1.0	1		mg/L	N/A	07/20/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N)	6.6	1.0	0.29	10		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N) (1)	0.0050	0.010	0.0022	1	J	mg/L	N/A	07/22/05	EPA 354.1
Sulfate	95	10	2.1	5		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	28	5	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	6.0	0.5	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Bicarbonate (as CaCO3)	170	5.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Chloride	79	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/21/05
Work Order No: 05-07-1240

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-16	**05-07-1240-3**	**07/20/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	930	1.0	1.0	1		mg/L	N/A	07/20/05	EPA 160.1
Ammonia	0.21	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N)	0.35	0.10	0.029	1		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	0.011	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	98	10	2.1	5		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	28	5	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	17	0.50	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Bicarbonate (as CaCO3)	560	5.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Chloride	170	2	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

POPW-1	**05-07-1240-4**	**07/20/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	2400	10	1.0	1		mg/L	N/A	07/20/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N)	7.4	1.0	0.29	10		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	730	100	21	50		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	46	5	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	16	0.50	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Bicarbonate (as CaCO3)	280	5.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Chloride	570	10	5.0	5		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/21/05
Work Order No: 05-07-1240

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POPW-2A	**05-07-1240-5**	**07/20/05**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	2200	10	1.0	1		mg/L	N/A	07/20/05	EPA 160.1
Ammonia	0.14	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N)	39	5	1.5	50		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	0.12	0.02	0.0044	2		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	480	100	21	50		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	54	5	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	14	0.50	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Bicarbonate (as CaCO3)	410	5.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Chloride	430	4	2.0	2		mg/L	N/A	07/26/05	SM 4500-Cl C

POPW-2B	**05-07-1240-6**	**07/20/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	1600	10	1.0	1		mg/L	N/A	07/20/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N)	9.8	2.5	0.73	25		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N) (1)	0.0060	0.010	0.0022	1	J	mg/L	N/A	07/22/05	EPA 354.1
Sulfate	330	50	11	25		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	33	5	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	8.5	0.5	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Bicarbonate (as CaCO3)	180	5.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Chloride	470	4	2.0	2		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/21/05
Work Order No: 05-07-1240

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POPW-3	**05-07-1240-7**	**07/20/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	1000	10	1.0	1		mg/L	N/A	07/20/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N) (1)	0.099	0.10	0.029	1	J	mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	110	10	2.1	5		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	38	5	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	4.9	0.5	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Bicarbonate (as CaCO3)	220	5.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Chloride	410	4	2.0	2		mg/L	N/A	07/26/05	SM 4500-Cl C

POPW-4	**05-07-1240-8**	**07/20/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	1200	10	1.0	1		mg/L	N/A	07/20/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N)	6.5	1.0	0.29	10		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N) (1)	0.0092	0.010	0.0022	1	J	mg/L	N/A	07/22/05	EPA 354.1
Sulfate	350	20	4.2	10		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	28	5	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	11	0.50	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Bicarbonate (as CaCO3)	240	5.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Chloride	260	4	2.0	2		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 07/21/05
Work Order No: 05-07-1240

Project: SD Inactive Landfill / Poway

Client Sample Number	Lab Sample Number	Date Collected	Matrix
QCEB	**05-07-1240-10**	**07/20/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total Dissolved	2.0	1.0	1.0	1		mg/L	N/A	07/20/05	EPA 160.1
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N) (1)	0.080	0.10	0.029	1	J	mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	ND	2.0	0.42	1		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	10	5	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	0.51	0.50	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Bicarbonate (as CaCO3)	2.2	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Carbonate (as CaCO3)	ND	1.0	0.85	1		mg/L	N/A	07/26/05	SM 2320B
Chloride (1)	1.1	2.0	1.0	1	J	mg/L	N/A	07/26/05	SM 4500-Cl C

Method Blank	**N/A**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Ammonia	ND	0.10	0.094	1		mg/L	N/A	07/26/05	EPA 350.2
Nitrate (as N)	ND	0.10	0.029	1		mg/L	N/A	07/22/05	EPA 353.3/354.1
Nitrite (as N)	ND	0.010	0.0022	1		mg/L	N/A	07/22/05	EPA 354.1
Sulfate	ND	2.0	0.42	1		mg/L	N/A	07/27/05	EPA 375.4
Sulfide, Total	ND	0.050	0.042	1		mg/L	N/A	07/25/05	EPA 376.2
Chemical Oxygen Demand	ND	5.0	4.6	1		mg/L	N/A	07/25/05	EPA 410.4
Carbon, Total Organic	ND	0.50	0.097	1		mg/L	N/A	07/22/05	EPA 415.1
Chloride (1)	ND	2.0	1.0	1		mg/L	N/A	07/26/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/21/05
Work Order No:	05-07-1240
Preparation:	EPA 3010A Total
Method:	EPA 6010B

Project SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
POGW-6	**Aqueous**	**ICP 3300**	**07/22/05**	**07/27/05**	**050722S03**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Calcium	4X	4X	80-120	4X	0-20	Q
Iron	114	111	80-120	2	0-20	
Magnesium	4X	4X	80-120	4X	0-20	Q
Potassium	96	111	80-120	6	0-20	
Sodium	4X	4X	80-120	4X	0-20	Q

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/21/05
Work Order No:	05-07-1240
Preparation:	EPA 5030B
Method:	EPA 8260B

Project SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
POGW-6	**Aqueous**	**GC/MS FF**	**07/25/05**	**07/25/05**	**050725S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	113	112	88-118	1	0-7	
Carbon Tetrachloride	106	107	67-145	1	0-11	
Chlorobenzene	108	107	88-118	1	0-7	
1,2-Dichlorobenzene	111	111	86-116	0	0-8	
1,1-Dichloroethene	98	98	70-130	1	0-25	
Toluene	119	120	87-123	0	0-8	
Trichloroethene	107	109	79-127	2	0-10	
Vinyl Chloride	95	98	69-129	2	0-13	
Methyl-t-Butyl Ether (MTBE)	93	99	71-131	7	0-13	
Tert-Butyl Alcohol (TBA)	86	96	36-168	11	0-45	
Diisopropyl Ether (DIPE)	101	102	81-123	1	0-9	
Ethyl-t-Butyl Ether (ETBE)	93	100	72-126	8	0-12	
Tert-Amyl-Methyl Ether (TAME)	97	103	72-126	6	0-12	
Ethanol	106	106	53-149	0	0-31	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	07/21/05
Work Order No:	05-07-1240
Preparation:	EPA 5030B
Method:	EPA 8260B

Project SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-07-1306-3	**Aqueous**	**GC/MS FF**	**07/26/05**	**07/26/05**	**050726S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	117	115	88-118	2	0-7	
Carbon Tetrachloride	107	106	67-145	0	0-11	
Chlorobenzene	108	108	88-118	0	0-7	
1,2-Dichlorobenzene	113	112	86-116	1	0-8	
1,1-Dichloroethene	102	102	70-130	1	0-25	
Toluene	122	122	87-123	0	0-8	
Trichloroethene	112	110	79-127	1	0-10	
Vinyl Chloride	99	99	69-129	1	0-13	
Methyl-t-Butyl Ether (MTBE)	101	101	71-131	1	0-13	
Tert-Butyl Alcohol (TBA)	72	96	36-168	28	0-45	
Diisopropyl Ether (DIPE)	110	109	81-123	2	0-9	
Ethyl-t-Butyl Ether (ETBE)	100	100	72-126	0	0-12	
Tert-Amyl-Methyl Ether (TAME)	106	107	72-126	1	0-12	
Ethanol	100	114	53-149	13	0-31	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-07-1240

Project: SD Inactive Landfill / Poway

Matrix: Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrite (as N)	EPA 354.1	POGW-6	07/22/05	N/A	92	94	70-130	2	0-25	
Sulfate	EPA 375.4	05-07-1057-1	07/27/05	N/A	90	99	70-130	7	0-25	
Nitrate (as N)	EPA 353.3/354.1	POGW-6	07/22/05	N/A	71	73	70-130	0	0-25	
Carbon, Total Organic	EPA 415.1	POGW-6	07/22/05	N/A	92	88	70-130	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-07-1240

Project: SD Inactive Landfill / Poway

Matrix: Aqueous

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Chloride	SM 4500-Cl C	POGW-6	07/26/05	300	290	2	0-25	
Alkalinity, Total (as CaCO3)	SM 2320B	POGW-6	07/26/05	180	180	1	0-25	
Bicarbonate (as CaCO3)	SM 2320B	POGW-6	07/26/05	180	180	0	0-25	
Carbonate (as CaCO3)	SM 2320B	POGW-6	07/26/05	ND	ND	NA	0-25	
Hydroxide (as CaCO3)	SM 2320B	POGW-6	07/26/05	ND	ND	NA	0-25	
Chemical Oxygen Demand	EPA 410.4	POGW-6	07/25/05	18	18	1	0-25	
Ammonia	EPA 350.2	POGW-6	07/26/05	ND	ND	NA	0-25	
Sulfide, Total	EPA 376.2	05-07-1148-1	07/25/05	ND	ND	NA	0-25	
Solids, Total Dissolved	EPA 160.1	POPW-3	07/20/05	1000	990	1	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	RSK-175M

Project: SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-1,034	**Aqueous**	**GC 33**	**N/A**	**07/28/05**	**050728L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	97	100	79-109	3	0-20	
Ethane	97	100	80-120	3	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 3010A Total
		Method:	EPA 6010B

Project: SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
097-01-003-5,152	**Aqueous**	**ICP 3300**	**07/25/05**	**050722-I-03**	**050722L03**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Calcium	0.500	0.500	100	80-120	
Iron	0.500	0.531	106	80-120	
Magnesium	0.500	0.511	102	80-120	
Potassium	5.00	5.09	102	80-120	
Sodium	5.00	5.08	102	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project: SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-006-15,105	**Aqueous**	**GC/MS FF**	**07/25/05**	**07/25/05**	**050725L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	113	113	84-120	0	0-8	
Carbon Tetrachloride	109	112	63-147	2	0-10	
Chlorobenzene	107	106	89-119	0	0-7	
1,2-Dichlorobenzene	112	112	89-119	0	0-9	
1,1-Dichloroethene	99	101	77-125	2	0-16	
Toluene	116	119	83-125	2	0-9	
Trichloroethene	109	110	89-119	1	0-8	
Vinyl Chloride	97	99	63-135	2	0-13	
Methyl-t-Butyl Ether (MTBE)	103	105	82-118	2	0-13	
Tert-Butyl Alcohol (TBA)	96	100	46-154	4	0-32	
Diisopropyl Ether (DIPE)	106	105	81-123	1	0-11	
Ethyl-t-Butyl Ether (ETBE)	106	111	74-122	4	0-12	
Tert-Amyl-Methyl Ether (TAME)	113	113	76-124	0	0-10	
Ethanol	90	104	60-138	15	0-32	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-07-1240
San Diego, CA 92127-1461		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project: SD Inactive Landfill / Poway

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-006-15,118	**Aqueous**	**GC/MS FF**	**07/26/05**	**07/26/05**	**050726L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	113	113	84-120	0	0-8	
Carbon Tetrachloride	106	105	63-147	1	0-10	
Chlorobenzene	106	105	89-119	1	0-7	
1,2-Dichlorobenzene	111	111	89-119	1	0-9	
1,1-Dichloroethene	101	101	77-125	1	0-16	
Toluene	118	119	83-125	0	0-9	
Trichloroethene	110	109	89-119	0	0-8	
Vinyl Chloride	99	98	63-135	1	0-13	
Methyl-t-Butyl Ether (MTBE)	104	105	82-118	1	0-13	
Tert-Butyl Alcohol (TBA)	95	97	46-154	2	0-32	
Diisopropyl Ether (DIPE)	105	106	81-123	1	0-11	
Ethyl-t-Butyl Ether (ETBE)	105	109	74-122	4	0-12	
Tert-Amyl-Methyl Ether (TAME)	113	113	76-124	0	0-10	
Ethanol	98	92	60-138	6	0-32	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-07-1240

Project: SD Inactive Landfill / Poway

Matrix : Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Nitrite (as N)	EPA 354.1	099-05-077-177	07/22/05	N/A	0.025	0.022	88	80-120	
Sulfate	EPA 375.4	099-05-091-1,253	07/27/05	N/A	20	21	103	80-120	
Nitrate (as N)	EPA 353.3/354.1	099-04-011-322	07/22/05	N/A	0.50	0.49	99	80-120	
Carbon, Total Organic	EPA 415.1	099-05-097-1,955	07/22/05	N/A	10	9.8	98	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 05-07-1240

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Document Number: 1152

Analysis Request and Chain of Custody Record

05-07-1240

Page 1 of 1

Project Name: SD County Inactive Landfills	Project Number: Poway Landfill
Samplers Names: SEL BBC ENV.	Project Contact: D. Skipper
Laboratory Name: Cal Science - Env. Labs	Lab Contact: S. Nowak
Lab Address: 7440 Lincoln Way, Garden Grove, Ca	Lab Phone: 714-895-5494
	Carrier/Waybill No.: Lab Courier

Required Analyses: VOCs by 8260; Metals + Gen Chem + Nitrite; SVOCs by 8270; TDS; COD + TOC; Ammonia; Sulfide; Ethane

White copy: to accompany samples

Yellow copy: field copy

Bottle Type and Volume/Preservative: VOA HCl; Poly None; Poly None; Glass H_2SO_4; Amber H_2SO_4; Poly Nitric Zinc; Amber HCl

	Sample Name	Date	Time	Sample Type	VOA HCl	Poly None		Poly None	Glass H_2SO_4	Amber H_2SO_4	Poly Nitric Zinc	Amber HCl			Comments	Lab Use Only: Condition of Bottles
1	POGW-6	7/20/05	1427	H_2O	3	1		1	1	1	1	2				
2	POGW-10		1506		3	1		1	1	1	1	2				
3	POGW-16		1448		3	1		1	1	1	1	2				
4	POPW-1		1235		3	1		1	1	1	1	2				
5	POPW-2A		1055		3	1		1	1	1	1	2				
6	POPW-2B		~~1057~~ 1020		3	1		1	1	1	1	2				
7	POPW-3		1007		3	1		1	1	1	1	2				
8	POPW-4		1124		3	1		1	1	1	1	2				
9	QCFB		1512		2											
10	QCEB		0710		3	1		1	1	1	1	2				
11	QCTB	7/20/05	—	H_2O	2											

Special Instructions: Gen Chem includes NO_3 (as N), SO_4, Cl, NO_3, HCO_3, Nitrite
Metals include Ca, Mg, K, Na, Fe - Total Fe
Filter & preserve metals samples upon reciept

Turn-around Time: ☒ Normal ☐ Rush: _____

1. Relinquished by (Signature/Affiliation) BBC Env.	Date 7/21/5 Time 1355	1. Received by (Signature/Affiliation) CEL	Date 7/21/5 Time 1355
2. Relinquished by (Signature/Affiliation)	Date Time	2. Received by (Signature/Affiliation)	Date Time
3. Relinquished by (Signature/Affiliation)	Date 7/21/5 Time 1730	3. Received by (Signature/Affiliation) CEL	Date 7/21/05 Time 17:30

GeoSyntec Consultants 11305 Rancho Bernardo Road, Suite 101, San Diego, CA 92127 (858) 674-6559 Fax: (858) 674-6586

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 05 - 0 7 - 1 2 4 0

Cooler 1 **of** 7

SAMPLE RECEIPT FORM

CLIENT: Geosyntec **DATE:** 7/21/5

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- ____ Chilled, cooler with temperature blank provided.
- ____ Chilled, cooler without temperature blank.
- ✓ Chilled and placed in cooler with wet ice.
- ____ Ambient and placed in cooler with wet ice.
- ____ Ambient temperature.

3.9 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- ____ °C Temperature blank.
- ____ °C IR thermometer.
- ____ Ambient temperature.

Initial: [illegible]

CUSTODY SEAL INTACT:

Sample(s): ____ Cooler: ____ No (Not Intact) : ____ Not Applicable (N/A): ✓

Initial: [illegible]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: [illegible]

COMMENTS:

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 05 - 0 7 - 1 2 4 0

Cooler 2 **of** 2

SAMPLE RECEIPT FORM

CLIENT: Geosyntec **DATE:** 7/21/15

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- ____ Chilled, cooler with temperature blank provided.
- ____ Chilled, cooler without temperature blank.
- ✓ Chilled and placed in cooler with wet ice.
- ____ Ambient and placed in cooler with wet ice.
- ____ Ambient temperature.

3.9 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- ____ °C Temperature blank.
- ____ °C IR thermometer.
- ____ Ambient temperature.

Initial: [illegible]

CUSTODY SEAL INTACT:

Sample(s): ____ Cooler: ____ No (Not Intact) : ____ Not Applicable (N/A): ✓

Initial: [illegible]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: [illegible]

COMMENTS:

Calscience Environmental Laboratories, Inc.

Supplemental Report 1

July 13, 2005

Sean McClain
GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Subject: **Calscience Work Order No.: 05-06-1796**
Client Reference: Poway Landfill / SC-0233-03-01

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 6/28/2005 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: 06/28/05
Work Order No: 05-06-1796

Project: Poway Landfill / SC-0233-03-01

Client Sample Number	Lab Sample Number	Date Collected	Matrix
POGW-17A	**05-06-1796-2**	**06/27/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chloride (1)	470	2	1.0	1		mg/L	N/A	07/07/05	SM 4500-Cl C

POGW-17B	**05-06-1796-3**	**06/27/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chloride (1)	190	2	1.0	1		mg/L	N/A	07/07/05	SM 4500-Cl C

POGW-18A	**05-06-1796-4**	**06/27/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chloride (1)	78	2	1.0	1		mg/L	N/A	07/07/05	SM 4500-Cl C

POGW-18B	**05-06-1796-5**	**06/27/05**	**Aqueous**

Comment(s): (1) Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chloride (1)	170	2	1.0	1		mg/L	N/A	07/07/05	SM 4500-Cl C

Method Blank		**N/A**	**Aqueous**

Parameter	Result	RL	MDL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chloride (1)	ND	2.0	1.0	1		mg/L	N/A	07/07/05	SM 4500-Cl C

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-06-1796

Project: Poway Landfill / SC-0233-03-01

Matrix: Aqueous

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Chloride	SM 4500-Cl C	POGW-18B	07/07/05	170	170	1	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 05-06-1796

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Document Number: 1356

Analysis Request and Chain of Custody Record

Project Name: Poway Landfill	Project Number: SC-0233-03-01
Samplers Names: JKinehart, SAadnes	Project Contact: Sean McClain
Laboratory Name: Cal Science	Lab Contact: Steve Nowak
Lab Address: Westchester / CA.	Lab Phone: 714-895-5494
	Carrier/Waybill No.: Pick-up

Page 1 of 1

White copy: to accompany samples

Yellow copy: field copy

Required Analyses

Bottle Type and Volume/Preservative

Number of Containers

	Sample Name	Date	Time	Sample Type	VOCs by 8260 (VOA / HCL)	Metals/Gen Chem (POLY / ~~GLASS~~ / ~~JRR~~ / 1L)	~~SVOCs by 8270~~ (~~POLY~~ / ~~1L~~)	Ethene (GLASS / HCL)	COD/TOC (GLASS / H2SO4)	TDS (POLY / 1L)	Ammonia (Amber / H2SO4)	Nitrite (POLY / 500ml)	Sulfide (POLY / NaOH / 2NaCl)		Comments (1796)	Lab Use Only: Condition of Bottles
1	POGW-FB	6-27-05	10:47	Water	2											
2	POGW-17A	6-27-05	16:32		3	~~1~~		2	1	1		1	1			
3	POGW-17B	6-27-05	15:30		3	1		2	1	1	1	1	1			
4	POGW-18A	6-27-05	12:20		3	1		2	1	1	1	1	1			
5	POGW-18B	6-27-05	12:51		3	1		2	1	1	1	1	1			
6	POGW-17A	6-28-05	1000			1					1					

Special Instructions: Please Perform turbidity Analysis!

Turn-around Time: ☐ Normal ☒ Rush: 4/8 hour VOC's only

1. Relinquished by (Signiture/Affiliation): Steve Aadnes GeoSyntec	Date 6/28/05 Time 1005	1. Received by (Signiture/Affiliation): [signature] CEL	Date 6/28/5 Time 1155
2. Relinquished by (Signiture/Affiliation)	Date Time	2. Received by (Signiture/Affiliation)	Date Time
3. Relinquished by (Signiture/Affiliation): [signature]	Date 6/28/5 Time 1655	3. Received by (Signiture/Affiliation): [signature] CEL	Date 6/28/05 Time 1655

GEOSYNTEC CONSULTANTS 11305 Rancho Bernardo Road, Suite 101, San Diego, CA 92127 (858) 674-6559 Fax: (858) 674-6586

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 05 - 06 - 1796

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec

DATE: 6/28/5

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- ____ Chilled, cooler with temperature blank provided.
- ____ Chilled, cooler without temperature blank.
- ✓ Chilled and placed in cooler with wet ice.
- ____ Ambient and placed in cooler with wet ice.
- ____ Ambient temperature.

3.7 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- ____ °C Temperature blank.
- ____ °C IR thermometer.
- ____ Ambient temperature.

Initial: [illegible]

CUSTODY SEAL INTACT:

Sample(s): ____ Cooler: ____ No (Not Intact) : ____ Not Applicable (N/A): ✓

Initial: [illegible]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: [illegible]

COMMENTS:

APPENDIX E
SOIL GAS AND GROUNDWATER COLLECTION LOGS

GEOSYNTEC CONSULTANTS

ACTIVE SOIL GAS SAMPLING FIELD DATA SHEET

Project No: SC0233 **Phase No:** 3 **Task No:** 7

Site Name: Poway Landfill **Sampler(s):** S. AADNES **Date:** 6/15/2005

Sample I.D.	SG-13 @ 1' 5"	SG-13 @ 5'	SG-11 @ 5'	SG-11 @ 1.5'	
Sample Depth (bgs)	1' 5"	5'	5'	1.5'	
SUMMA I.D.	1162	1172	1916	1854	
Analysis/Method	EPA TO-15	EPA TO-15	EPA TO-15	EPA TO-15	
Purging					
Flow Rate (mL/min)	100	200	200	100	
Total Time	10 seconds	45 seconds	46 seconds	10 seconds	
Volume Purged (mL)	17	150	152	17	
Sampling					
Flow Rate (mL/min)	100	200	200	100	
Time (Start)	1249	1151	1346	1350	
Time (Stop)	1338	1247	1410	1406	
Total Time	49	56	24	16	
Pressure Gauge (Pre)	-30.0	-30.0	-30.0	-30.0	
Pressure Gauge (Post)	-15.0	-1.0	-3.0	-15.0	
Summa Went to Ambient	NO	NO	NO	NO	

General Comments:

-Samples @ 200ml/ Min 3 Purge Volumes
-leak detect cueam prior to sampling -Shallow probes 3L
-Shallow probes, purge and sample 100ml
-Collect 5 soil samples @ completions/ 4-5 '/ 1-1'

GEOSYNTEC CONSULTANTS

ACTIVE SOIL GAS SAMPLING FIELD DATA SHEET

Project No: SC0233 **Phase No:** 3 **Task No:** 7

Site Name: Poway Landfill **Sampler(s):** S. AADNES **Date:** 6/15/2005

Sample I.D.	SG-12 @ 5'	SG-12 @ 1.5'	SG-14 @ 5'	SG-14 @ 1.5'	
Sample Depth (bgs)	5'	1.5'	5'	1.5'	
SUMMA I.D.	1867	24118	243	1756	
Analysis/Method	EPA TO-15	EPA TO-15	EPA TO-15	EPA TO-15	
Purging					
Flow Rate (mL/min)	200	100	200	100	
Total Time	46	10	46	10	
Volume Purged (mL)	152	17	152	17	
Sampling					
Flow Rate (mL/min)	200	100	200	100	
Time (Start)	1416	1418	1427	1429	
Time (Stop)	1434	1431	1504	1444	
Total Time	18	13	37	15	
Pressure Gauge (Pre)	-30.0	-30.0	-30.0	-30.0	
Pressure Gauge (Post)	-2.0	-15.0	-4.0	0.0	
Summa Went to Ambient	NO	NO	NO	NO	

General Comments:

GEOSYNTEC CONSULTANTS

ACTIVE SOIL GAS SAMPLING FIELD DATA SHEET

Project No: SC0233 **Phase No:** 3 **Task No:** 7

Site Name: Poway Landfill **Sampler(s):** S. AADNES **Date:** 6/15/2005

Sample I.D.	SG-15 @ 5'	SG-15 @ 1.5'	SG-17 @ 5'	SG-17 @ 1.5'	
Sample Depth (bgs)	5'	1.5'	5'	1.5'	
SUMMA I.D.	1760	1894	194	1740	
Analysis/Method	EPA TO-15	EPA TO-15	EPA TO-15	EPA TO-15	
Purging					
Flow Rate (mL/min)	200	100	200	100	
Total Time	46	10	46	10	
Volume Purged (mL)	152	17	152	17	
Sampling					
Flow Rate (mL/min)	200	100	200	100	
Time (Start)	1445	1447	1456	1458	
Time (Stop)	1500	1455	1520	1509	
Total Time	15	8	24	11	
Pressure Gauge (Pre)	-30.0	-30.0	-30.0	-30.0	
Pressure Gauge (Post)	-4.0	-12.0	-4.0	-8.0	
Summa Went to Ambient	NO	NO	NO	NO	

General Comments:

GEOSYNTEC CONSULTANTS

ACTIVE SOIL GAS SAMPLING FIELD DATA SHEET

Project No: SC0233 **Phase No:** 3 **Task No:** 7

Site Name: Poway Landfill **Sampler(s):** S. AADNES **Date:** 6/15/2005

Sample I.D.	SG-18 @ 5'	SG-18 @ 1.5'	SG-19 @ 5'	SG-19 @ 1.5'	
Sample Depth (bgs)	5'	1.5'	5'	1.5'	
SUMMA I.D.	263	1697	1856	D050	
Analysis/Method	EPA TO-15	EPA TO-15	EPA TO-15	EPA TO-15	
Purging					
Flow Rate (mL/min)	200	100	200	100	
Total Time	46	10	46	10	
Volume Purged (mL)	152	17	152	17	
Sampling					
Flow Rate (mL/min)	200	100	200	100	
Time (Start)	1521	1523	1535	1539	
Time (Stop)	1537	1540	1610	1613	
Total Time	16	17	35	34	
Pressure Gauge (Pre)	-30.0	-30.0	-30.0	-30.0	
Pressure Gauge (Post)	-6.0	0.0	0.0	14.0	
Summa Went to Ambient	NO	NO	NO	NO	

General Comments:

GEOSYNTEC CONSULTANTS

ACTIVE SOIL GAS SAMPLING FIELD DATA SHEET

Project No: SC0233 **Phase No:** 3 **Task No:** 7

Site Name: Poway Landfill **Sampler(s):** S. AADNES **Date:** 6/15/2005

Sample I.D.	SG-16 @ 5'	SG-16 @ 1.5'	SG-10 @ 5'	SG-10 @ 1.5	
Sample Depth (bgs)	5'	1.5'	5'	1.5'	
SUMMA I.D.	278	1915	1686	1694	
Analysis/Method	EPA TO-15	EPA TO-15	EPA TO-15	EPA TO-15	
Purging					
Flow Rate (mL/min)	200	100	200	100	
Total Time	46	10	46	10	
Volume Purged (mL)	152	17	152	17	
Sampling					
Flow Rate (mL/min)	200	100	200	100	
Time (Start)	1620	1622	1703	1706	
Time (Stop)	1654	1656	1737	1730	
Total Time	34	34	34	24	
Pressure Gauge (Pre)	-30.0	-30.0	-30.0	-30.0	
Pressure Gauge (Post)	-2.0	-10.0	-4.0	-10.0	
Summa Went to Ambient	NO	NO	NO	NO	

General Comments:

WELL DEVELOPMENT LOG

GeoSyntec Consultants
11305 Rancho Bernardo Rd., Suite 101
San Diego, CA 92127
Telephone: (858) 674-6559
Fax: (858) 674-6586

Project Name: Poway Landfill	Well I.D.: 17 A
Project Number: SC-0233	Developer: GeoSyntec
Weather: Sunny 80	Subcontractor: N.A
Date of Development: 6/14/05	Water Quality Meter I.D.: Horiba U-22
Development Criteria: 10% or 3 borehole volumes	Depth of Pump (ft): 17.30
Well Condition: Good	

Equipment	Surging/Development
Bladder Pump	N.A
Hand Pump	N.A
Submersible Pump	2" Grundfos
Bailer (size)	2"
Surge Block	2"

Well Data		Conversions	Well Development		Recovery Data
Casing Diameter (ft)	2" = 0.17'	2" = 0.17 ft	Max Depth/Development (ft)	18.0	% Recovery N.A
Borehole Diameter (ft)	10" = 0.83'	4" = 0.33 ft	Total Volume Purged (gal)	18.0	
Filter Pack Porosity (dec.)	0.25	5" = 0.42 ft			PR = (1-(RD/MD)) x 100
Well Depth (ft)	(Surg) ~~17.03~~ 18.15	6" = 0.50 ft	BV=(5.87)(CD²+P(BD²-CD²))(WCH)		
Depth to Water (ft)	12.74	7" = 0.58 ft	CD=Casing Diameter in feet		PR=Percent Recovery
Water Column Height (ft)	5.41	8" = 0.67 ft	BD=Borehole Diameter in feet		RD=Residual Drawdown
Borehole Volume (gal)	1.1 ~~0.00~~ x WCH = 5.95	9" = 0.75 ft	P=Porosity of Filter Pack (decimal)		MD=Max Drawdown
3 Borehole Volumes (gal)	17.85	10" = 0.83 ft	WCH=(Well Depth - Depth to Water)		

Purging Data					Cumulative Total Removed		Water Characteristics				Comments
Date	Time Begin	Time Finish	Pump Rate (gpm)	Water Removed (gal)	GAL	Borehole Volumes	pH	EC (µS/cm)	Turbidity (NTU)	Temp. (°C)	
6/14/05	1355		Begin Surging			—	—	—	—	—	—
	1415		Finish Surging / Begin Bailing						—	—	—
	1444	—	—	5.0	5.0	—	—	—	—	—	Bailed Dry / 1st Recovery
	1551	—	—	3.0	8.0	—	—	—	—	—	Bailed Dry DTW=18
	1608	Install Pump			—	—	—	—	—	—	—
	1609	—	71.0	1.0	9.0	—	6.99	1.43	OTL	26.0	DTW = 11.70
	1611	—	71.0	1.5	10.5	—	6.83	1.18	OTL	26.2	DTW = 13.60
	1614	—	71.0	1.5	12.0	—	6.81	1.18	OTL	25.7	DTW = 15.10
	1616	—	71.0	1.5	13.5	—	6.79	1.18	OTL	25.7	DTW = 16.22
	1618	—	71.0	1.5	15.0	—	6.77	1.18	OTL	25.7	DTW = 16.71
	1620	—	71.0	1.5	16.5	—	6.78	1.19	OTL	25.9	DTW = 17.10
	1622	—	71.0	1.5	18.0	—	6.79	1.19	OTL	25.9	DTW = 17.27 Dry!

Purge Water Disposal: Drums on Landfill

Field Personnel Signature: [signature]

WELL DEVELOPMENT LOG

GeoSyntec Consultants
11305 Rancho Bernardo Rd., Suite 101
San Diego, CA 92127
Telephone: (858) 674-6559
Fax: (858) 674-6586

Project Name: Poway Landfill	Well I.D.: 17B
Project Number: SL-0233	Developer: GeoSyntec
Weather: Sunny 80	Subcontractor: N.A
Date of Development: 6/14/05	Water Quality Meter I.D.: 4-22 Horiba
Development Criteria: 10% or 3 borehole Volumes	Depth of Pump (ft): 17.30
Well Condition: Good	

Equipment	Surging/Development
Bladder Pump	N.A
Hand Pump	N.A
Submersible Pump	2" Grundfos
Bailer (size)	2"
Surge Block	2"

Well Data		Conversions
Casing Diameter (ft)	0.17'	2" = 0.17 ft
Borehole Diameter (ft)	0.83'	4" = 0.33 ft
Filter Pack Porosity (dec.)	0.25	5" = 0.42 ft
Well Depth (ft)	45.00	6" = 0.50 ft
Depth to Water (ft)	15.97	7" = 0.58 ft
Water Column Height (ft)	29.03	8" = 0.67 ft
Borehole Volume (gal)	1.1 ~~0.00~~ x WCH = 31.93	9" = 0.75 ft
3 Borehole Volumes (gal)	95.80	10" = 0.83 ft

Well Development	
Max Depth/Development (ft)	22.60
Total Volume Purged (gal)	99.0

$BV=(5.87)(CD^2+P(BD^2-CD^2))(WCH)$
CD=Casing Diameter in feet
BD=Borehole Diameter in feet
P=Porosity of Filter Pack (decimal)
WCH=(Well Depth - Depth to Water)

Recovery Data

% Recovery N.A

$PR = (1-(RD/MD)) \times 100$

PR=Percent Recovery
RD=Residual Drawdown
MD=Max Drawdown

Purging Data					Cumulative Total Removed		Water Characteristics				Comments
Date	Time Begin	Time Finish	Pump Rate (gpm)	Water Removed (gal)	GAL	Borehole Volumes	pH	EC (µS/cm)	Turbidity (NTU)	Temp. (°C)	
6/14/05	1450	-	Begin Surging			-	-	-	-	-	-
	1508	-	Complete Surging			-	-	-	-	-	-
	1510	-	1.0	Begin Pumping			-	-	-	-	-
	1515	-	1.0	5.0	5.0	-	7.19	1.87	517	24.4	DTW= 22.6
	1518	-	<1.0	4.0	9.0	-	7.01	1.86	128	23.8	DTW= 20.83
	1524	-	<1.0	9.0	18.0	-	6.98	1.84	25.4	24.2	-
	1533	-	<1.0	13.0	31.0	-	6.96	1.82	7.6	24.1	DTW= 20.35
	1543	-	2.0	10.0	51.0	-	6.89	1.83	10.0	24.0	DTW= 20.35
	1545	-	2.0	4.0	55.0	-	6.89	1.83	9.4	24.1	DTW= 20.45
	1550	-	2.0	10.0	65.0	-	6.89	1.89	9.6	24.2	DTW= 20.45
	1558	-	2.0	16.0	81.0	-	6.90	1.88	9.0	24.1	DTW= 20.45
	1600	-	2.0	4.0	85.0	-	6.90	1.88	4.2	24.4	DTW= 20.45
	1605	-	2.0	10.0	95.0	-	6.91	1.88	4.0	24.5	DTW= 20.45
	1607	-	2.0	4.0	99.0	-	6.91	1.88	4.0	24.5	DTW= 20.45

Purge Water Disposal: Drums on Landfill

Field Personnel Signature: [signature]

WELL DEVELOPMENT LOG

GeoSyntec Consultants
11305 Rancho Bernardo Rd., Suite 101
San Diego, CA 92127
Telephone: (858) 674-6559
Fax: (858) 674-6586

Project Name: Poway Landfill	Well I.D.: 18A
Project Number: SL-0233	Developer: GeoSyntec
Weather: Sunny 84	Subcontractor: N/A
Date of Development: 6/13/05 / 6/14/05	Water Quality Meter I.D.: Horiba U-22
Development Criteria: 10% or 3 borehole volumes	Depth of Pump (ft): 16.00
Well Condition: Good	

Equipment	Surging/Development
Bladder Pump	N/A
Hand Pump	N/A
Submersible Pump	2" Grundfos
Bailer (size)	2"
Surge Block	2"

Well Data		Conversions
Casing Diameter (ft)	2" = 0.17'	2" = 0.17 ft
Borehole Diameter (ft)	10" = 0.83'	4" = 0.33 ft
Filter Pack Porosity (dec.)	0.25	5" = 0.42 ft
Well Depth (ft)	17.03	6" = 0.50 ft
Depth to Water (ft)	6.50	7" = 0.58 ft
Water Column Height (ft)	10.53	8" = 0.67 ft
Borehole Volume (gal)	1.1 ~~0.00~~ x WCH = 11.58	9" = 0.75 ft
3 Borehole Volumes (gal)	34.74	10" = 0.83 ft

Well Development	Recovery Data
Max Depth/Development (ft) 16.00	% Recovery N.A
Total Volume Purged (gal) 47.0	
	PR = (1-(RD/MD)) x 100
$BV=(5.87)(CD^2+P(BD^2-CD^2))(WCH)$	
CD=Casing Diameter in feet	PR=Percent Recovery
BD=Borehole Diameter in feet	RD=Residual Drawdown
P=Porosity of Filter Pack (decimal)	MD=Max Drawdown
WCH=(Well Depth - Depth to Water)	

Purging Data					Cumulative Total Removed		Water Characteristics				Comments
Date	Time Begin	Time Finish	Pump Rate (gpm)	Water Removed (gal)	GAL	Borehole Volumes	pH	EC (µS/cm)	Turbidity (NTU)	Temp. (°C)	
6/13/05	~~2:56~~ 1456	1506	Begin & end Surging								
	1515	–	–	2.5	–	–	–	–	–	–	Bailed Dry
6/14/05	1144	–		~~7~~.5.0	7.5	Begin	Bailing	–	–	–	Bailed Dry DTW = 6.5
	1206	–	1	–	7.5	–	6.95	1.30	OTL	26.2	DTW = 9.5
	1209	–	1	3	10.5	–	7.15	1.30	OTL	26.1	DTW = 10.95
	1214	–	1	5.5	16	–	7.34	1.43	OTL	25.4	" = 13.2
	1223	–	1	9	25	–	7.47	1.48	OTL	25.3	" = 14.05
	1230	–	1	7	32	–	7.46	1.48	OTL	25.3	" = 14.65
	1233	–	–	–	–	–	–	–	–	–	Pumped Dry!
	1314	Recharged			–	–	–	–	–	–	DTW = 7.15
	1315	–	–	–	–	–	–	–	–	–	Begin Pumping!
	1317	–	1.0	2.0	34	–	7.09	1.16	449	26.2	Water clearer
	1320	–	1.0	3.0	37	–	6.96	1.17	417	26.2	DTW = 10.95
	1322	–	1.0	2.0	39	–	6.96	1.17	425	26.2	DTW = 12.85
	1325	–	1.0	3.0	42	–	7.05	1.17	427	26.2	DTW = 12.99
	1327	–	71.0	1.5	43.5	–	7.06	1.17	431	26.2	DTW = 13.75
	1329	–	71.0	1.5	45.0	–	7.06	1.17	440	26.2	DTW = 14.35
	1333		71.0	2.0	47.0	–	7.06	1.17	411	26.2	Pumped Dry

Purge Water Disposal: Drums on Landfill

Field Personnel Signature: [signature]

WELL DEVELOPMENT LOG

GeoSyntec Consultants
11305 Rancho Bernardo Rd., Suite 101
San Diego, CA 92127
Telephone: (858) 674-6559
Fax: (858) 674-6586

Project Name: Poway Landfill	Well I.D.: 18-B
Project Number: SC-0233	Developer: GeoSyntec
Weather: Sunny 84	Subcontractor: N.A
Date of Development: 13 June 05	Water Quality Meter I.D.: Horiba U-22
Development Criteria: 10% or 3 borehole Volumes	Depth of Pump (ft): 42.70
Well Condition: Good	

Equipment	Surging/Development
Bladder Pump	N.A
Hand Pump	N.A
Submersible Pump	2" Grundfos
Bailer (size)	2"
Surge Block	2"

Well Data		Conversions
Casing Diameter (ft) (5.02)	0.83'	2" = 0.17 ft
Borehole Diameter (ft)	0.17	4" = 0.33 ft
Filter Pack Porosity (dec.)	0.25	5" = 0.42 ft
Well Depth (ft)	44.50	6" = 0.50 ft
Depth to Water (ft)	17.65	7" = 0.58 ft
Water Column Height (ft)	26.85	8" = 0.67 ft
Borehole Volume (gal)	1.1 ~~0.00~~ x WCH = 29.54	9" = 0.75 ft
3 Borehole Volumes (gal)	88.62	10" = 0.83 ft

Well Development	Recovery Data
Max Depth/Development (ft) 42.70	% Recovery N.A
Total Volume Purged (gal) 90.0	
BV=(5.87)(CD²+P(BD²-CD²))(WCH)	PR = (1-(RD/MD)) x 100
CD=Casing Diameter in feet	PR=Percent Recovery
BD=Borehole Diameter in feet	RD=Residual Drawdown
P=Porosity of Filter Pack (decimal)	MD=Max Drawdown
WCH=(Well Depth - Depth to Water)	

Purging Data					Cumulative Total Removed		Water Characteristics				Comments
Date	Time Begin	Time Finish	Pump Rate (gpm)	Water Removed (gal)	GAL	Borehole Volumes	pH	EC (µS/cm)	Turbidity (NTU)	Temp. (°C)	
6/13/05	1217	Begin Surging			–	–	–	–	–	–	–
	1237	End Surging			–	–	–	–	–	–	–
	1238	Begin Bailing			1.0	–	–	–	–	–	1.5% fines
	1304	–	1.5	–	6.0	–	7.15	2.77	OTL	27.6	Pumping
	1311	–	1.5	10.5	16.5	–	7.56	2.57	OTL	25.5	DTW = 32.50
	1314	–	1.5	6.0	21.0	–	7.50	2.78	OTL	25.5	DTW = 34.90
	1317	–	2.0	6.0	27.0	–	7.59	2.41	OTL	25.5	DTW = 35.7
	1323	–	2.0	12.0	39.0	–	8.84	3.13	OTL	24.8	DTW = 39.8
	1329	–	2.0	12.0	51.0	–	–	–	–	–	Pumped Dry / DTW = 42.7
	1405	–	2.0	–	51.0	–	7.98	2.71	OTL	24.7	DTW = 25.4 / Begin Pumping
	1409	–	2.0	8.0	59.0	–	7.66	2.39	385	24.6	DTW = 35.0
	1411	–	2.0	4.0	63.0	–	7.53	2.26	485	25.0	DTW = 37.50
	1414	–	2.0	6.0	69.0	–	7.57	2.05	485	25.0	DTW = 39.05
	1417	–	2.0	6.0	75.0	–	7.52	2.04	485	24.9	DTW = 40.70
	1418	–	2.0	2.0	77.0	–	–	–	–	–	Pumped Dry / DTW = 42.70
	1443	–	2.0	–	77.0	–	7.17	2.04	484	24.9	DTW = 34.4 / Begin Pumping
	1447	–	2.0	8.0	85.0	–	7.11	2.10	485	24.4	DTW = 38.80
	1449	–	1.0	2.0	87.0	–	7.12	1.98	866	24.6	DTW = 40.80
	1450	–	1.0	1.0	88.0	–	7.13	2.00	800	24.9	DTW = 42.0
	1452	–	1.0	2.0	90.0	–	7.14	2.10	810	25.0	DTW = 42.70 / Pumped Dry

Purge Water Disposal: Drums on Landfill

Field Personnel Signature:

GEOSYNTEC CONSULTANTS

Poway Well Development/Sampling

CALIBRATION LOG FOR WATER SAMPLING

Date	Time	Instrument Description			Calibration Fluid						S/m Reading				Comments
		Brand	Type	Serial #	Brand	Lot #	pH	Cond (uS/cm)	Turb (NTU)	DO (mg/L)	pH	Cond S/m	Turb (NTU)	DO (mg/L)	
6/13/05	11:30	Horiba	U22	927062	Horiba	907001	4.00	4.49	0	N/A	4.00	.458	2.8	4.32	cond measured S/M
6/14/05	1130	↓	↓	↓	↓	↓	↓	↓	↓	↓	4.02	.453	0.2	6.60	"
6-27-05	10:00am	Horiba	U22	405 3006	Horiba	907001	4.00	4.51			4.03	4.52	2	8.51	cond meas in s/m

-- Not Applicable

County of San Diego
Landfill Management

Second Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-17A

Well Data:

Sample Type: Groundwater
Well Depth (ft): 18.5
Casing Elevation (ft):

Weather: Sunny 80
Diameter of Well (in.): 2
Diameter of Borehole (in.): 8
Filter Pack (ft): 11.5

Well Purging:

Equipment: dedicated 2" Grunfros
Depth to Water Surface (ft): 13.65
Feet of Water in Well: 4.85
A) Casing volume above filter pack: 4.85 X 0.17 = .8245
B) Filter Pack Volume (gal): 11.5 X 0.8 = 9.2
Borehole volume (gal): A + B = 10.02
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 15.04

Immiscible layer Y/N?:
Max. depth during purging (ft): 16.5
80 percent recovery: 61.40 %
Depth at time of sampling (ft): 14.75
Total Volume Purged (gal.): 2.8

	Time	pH	S/m EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)	DTW
Purge	14:32	7.31	3.13	25.10	•	3.80	172	1.00		15.0
	14:35	7.28	4.72	25.06	•	1.44	114	1.00	dry	16.5
Sample										

% Recovered:
Depth of Pump (feet): 16.5
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2S0_4	Ammonia
1 x 250ml	Poly	N	4°C	Nitrite
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

Date/Time: 6-27-05 @ 1632
Sample ID: POGW-17A
COC #: 1356
Field Crew: Steve Aadnes J Rinehart
Samplers Signature: [signature]

Comments:
6/28/05 DTW = 13.85 @ 1000 / Ammonia + Gen. Chem. / Metals
Sampled on 6/28/05 @ 1000

County of San Diego
Landfill Management

Second Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-17B

Well Data:
Sample Type: Groundwater
Well Depth (ft): 45
Casing Elevation (ft):

Weather: Sunny 85
Diameter of Well (in.): 2
Diameter of Borehole (in.): 10
Filter Pack (ft): 12.5

Well Purging:
Equipment: dedicated 2" Grunfos
Depth to Water Surface (ft): 16.17
Feet of Water in Well: 28.83
A) Casing volume above filter pack: 4 X 0.17 = 4.90
B) Filter Pack Volume (gal): 12.5 X 1.1 = 13.75
Borehole volume (gal): A + B = 18.65
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 27.98

Immiscible layer Y/N?
Max. depth during purging (ft): 22.50
80 percent recovery: 100%
Depth at time of sampling (ft): 16.17
Total Volume Purged (gal.): 30.0

Began purging 2:43

	Time	pH	sl mEC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)	DTW
Purge	2:44	6.76	1.83	23.57	*	2.90	64	1.00		21.45
	2:48	6.67	4.13	23.76	*	1.08	72	1.00		21.80
	2:51	6.66	2.70	23.68	*	1.02	74	1.00		22.0
	2:55	6.63	2.17	23.71	*	0.89	78	< 1.00		22.5
	3:05	6.60	1.99	23.69	*	0.82	81	< 1.00		22.2
Sample	15:12	6.61	2.15	23.72		0.80	83	< 1.00		22.5

% Recovered: 90%
Depth of Pump (feet): 44.00
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2S0_4	Ammonia
1 x 250ml	Poly	N	4°C	Nitrite
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

Date/Time: 6-27-05 15:30
Sample ID: POGW-17B
COC #: 1356
Field Crew: S. Aadnes / Rinehart
Samplers Signature:

Comments:
Turbidity on U-22 not working - Lab will perform turbidity.

County of San Diego
Landfill Management

Second Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-18A

Well Data:

Sample Type: Groundwater
Well Depth (ft): 18
Casing Elevation (ft): 706.50

Weather: sunny °75
Diameter of Well (in.): 2
Diameter of Borehole (in.): 8
Filter Pack (ft): 11.5

Well Purging:

Equipment: dedicated 2" Grunfos
Depth to Water Surface (ft): 6.30
Feet of Water in Well: 11.7
A) Casing volume above filter pack: 0.2 X 0.17 = .007
B) Filter Pack Volume (gal): 11.5 X 0.8 = 9.2
Borehole volume (gal): A + B = 9.21
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 13.82

Immiscible layer Y/N?: N
Max. depth during purging (ft): 16.0
80 percent recovery: 92.47%
Depth at time of sampling (ft): 14.6
Total Volume Purged (gal.): ~~20.0~~ 15.00 JK

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	10:31	6.63	1.3	25.97	955	6.94	160	1.00	DTW 8.50
	10:34	6.80	1.13	26.44	·	8.56	148	1.00	DTW 9.50
	10:36	6.80	1.27	26.39	·	4.30	140	1.00	DTW 9.50
	10:37	6.86	1.30	26.36	·	3.86	134	>1.00	DTW 11.15
	10:44	6.95	1.32	26.89	·	3.86	127	>1.00	DTW 10.85
	10:49	7.09	1.38	26.11	·	3.52	122	>1.00	DTW 13.25

% Recovered: 92.47%
Depth of Pump (feet): 16.5
Purge Water Disposal: Collected and Sprayed

Sample Collection:

	Volume	Container	Filtered	Pres.	Parameters
✓	3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
✓	2 x 125ml	Glass	N	HCl, 4°C	Ethene
✓	1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
✓	1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
✓	1 x 1 L	Poly	N	4°C	TDS
✓	1 x 1 L	Amber	N	H_2SO_4	Ammonia
	1 x 250ml	Poly	N	4°C	Nitrite
	1 x 250ml	Poly	N	NaOH, $ZnAc_2$,4°C	Sulfide

Date/Time: 6-27-05 10:12
Sample ID: POGW-18A
COC #: 13560
Field Crew: Stew Addnes + Jessica Rinehart
Samplers Signature:

Comments: Water very clear. Turbidity on U-22 not working. lab will perform turbidity.

Time	pH	EC	Temp	TURB	DO	ORP	pumprate	DTW
→ 10:53	7.15	1.41	26.21	·	3.45	118	>1.00	13.85
10:55	7.15	1.41	26.22	·	3.44	118	>1.00	14.19
10:57	7.16	1.41	26.21	·	3.44	117	>1.00	14.6 stable

sampled @ 12:20

County of San Diego
Landfill Management

Second Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-18B

Well Data:

Sample Type: Groundwater
Well Depth (ft): 45
Casing Elevation (ft):

Weather: Sunny °88
Diameter of Well (in.): 4
Diameter of Borehole (in.): 8
Filter Pack (ft): 12.5

Well Purging:

Equipment: dedicated 2" Grunfos
Depth to Water Surface (ft): 17.24
Feet of Water in Well: 27.76
Borehole Volume (gal): ~~12.5~~ X 1.1 = 13.75
A) Casing volume above filter pack: 15.26 X 0.17 = 2.59
B) Filter Pack Volume (gal): 12.5 X 1.1 = 13.75
Borehole volume (gal): A + B = 16.34
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 24.51

Immiscible layer Y/N?:
Max. depth during purging (ft): 44.0
80 percent recovery: 91%
Depth at time of sampling (ft): 19.65
Total Volume Purged (gal.): 25.0

	Time	pH	~~S/m~~ EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	DTW
Purge	11:22	6.97	1.89	24.10	-	6.60	117	1.00	23.6
	11:26	6.93	1.87	24.19	-	4.86	88	1.00	27.2
	11:30	6.93	1.86	24.45	-	4.95	80	~~1~~ 1.00	29.9
	11:34	6.92	1.86	24.52	-	4.87	83	~~1~~ 1.00	34.5
	11:4~~6~~	6.91	1.81	24.44	—	4.28	90	~~1~~ 1.00	40.3
	11:52	6.91	1.81	24.44	—	4.07	90	~~1~~ 1.00	44.0 dry

% Recovered: 91%
Depth of Pump (feet): SWL ~~43.0~~ 44.0
Purge Water Disposal: Collected and Sprayed

Sample Collection:

	Volume	Container	Filtered	Pres.	Parameters
✓	3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
✓	2 x 125ml	Glass	N	HCl, 4°C	Ethene
✓	1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl, CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
✓	1 x 250ml	Glass	N	H_2SO, 4°C	COD, TOC
✓	1 x 1 L	Poly	N	4°C	TDS
✓	1 x 1 L	Amber	N	H_2SO_4	Ammonia
✓	1 x 250ml	Poly	N	4°C	Nitrite
✓	1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

Date/Time: 6-27-05
Sample ID: POGW-18B
COC #: 1356
Field Crew: Steve Andnes, Jessica Rinehart
Samplers Signature:

Comments:
Turbidity on the U22 not working. Lab will perform turbidity.

Time:	PH:	EC:	Temp	Turb	DO	ORP	PR	DTW
12:41	7.08	1.87	27.18	:	4.02	110	1.00	25.30
12:44	6.90	1.88	24.14	:	4.51	112	1.00	32.40
12:48	6.91	1.93	24.24	:	5.00	111	1.00	34.80
12:51	6.88	1.92	24.50	:	5.62	109	1.00	36.50

Poway Landfill
Groundwater Sample Collection Log
POW-FB

Well Data:

Sample Type: Groundwater
QA/QC

Sample Collection:

Location: POGW-18A

Weather: sunny 88°

Volume	Container	Filtered	Pres.	Parameters
2 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260

Date/Time: 6-27-05 10:47
Sample ID: POW-FB
COC #: 1356
Field Crew: Steve Andres, Jessica Rinehart
Samplers Signature: J. Rinehart

GEOSYNTEC CONSULTANTS

CALIBRATION LOG FOR WATER SAMPLING
POWAY LANDFILL 3Q05

Date	Time	Instrument Description			Calibration Fluid							Reading					Comments
		Brand	Type	Serial #	Brand	Lot #	pH	Cond (uS/cm)	Turb (NTU)	ORP (mV)	DO (mg/L)	pH	Cond (uS/cm)	Turb (NTU)	ORP (mV)	DO (mg/L)	
7/19/05	9:00 & 16:30	Insitu	MP9000	33147	Insitu	32820		----	----	----	----	7	----	----	----	----	No Drift @ EOD
7/19/05	9:00 & 16:30	Insitu	MP9000	33147	Insitu	32820	----	----	----	232	----	----	---	----	232	----	No Drift @ EOD
7/19/05	9:00 & 16:30	Insitu	MP9000	33147	Insitu	32820	----	7980	----	----	----	---	7980	----	----	----	No Drift @ EOD
7/19/05	9:00 & 16:30	Insitu	MP9000	33147	Insitu	32820	----	----	----	----	8.9	----	----	----	----	8.9	No Drift @ EOD
7/19/05	9:00 & 16:30	Insitu	MP9000	33147	Insitu	32820	----	----	0	----	---	---	0	----	----	----	No Drift @ EOD
7/20/05	5:30 &17:00	Insitu	MP9000	33147	Insitu	32820		----	----	----	----	7	----	----	----	----	No Drift @ EOD
7/20/05	5:30 &17:00	Insitu	MP9000	33147	Insitu	32820	----	----	----	232	----	----	---	----	232	----	No Drift @ EOD
7/20/05	5:30 &17:00	Insitu	MP9000	33147	Insitu	32820	----	7980	----	----	----	---	7980	----	----	----	No Drift @ EOD
7/20/05	5:30 &17:00	Insitu	MP9000	33147	Insitu	32820	----	----	----	----	8.9	----	----	----	----	8.9	No Drift @ EOD
7/20/05	5:30 &17:00	Insitu	MP9000	33147	Insitu	32820	----	----	0	----	---	---	0	----	----	----	No Drift @ EOD
7/21/05	5:30 & 16:15	Insitu	MP9000	33147	Insitu	32820		----	----	----	----	7	----	----	----	----	No Drift @ EOD
7/21/05	5:30 & 16:15	Insitu	MP9000	33147	Insitu	32820	----	----	----	232	----	----	---	----	232	----	No Drift @ EOD
7/21/05	5:30 & 16:15	Insitu	MP9000	33147	Insitu	32820	----	7980	----	----	----	---	7980	----	----	----	No Drift @ EOD
7/21/05	5:30 & 16:15	Insitu	MP9000	33147	Insitu	32820	----	----	----	----	8.9	----	----	----	----	8.9	No Drift @ EOD
7/21/05	5:30 & 16:15	Insitu	MP9000	33147	Insitu	32820	----	----	0	----	---	---	0	----	----	----	No Drift @ EOD

-- Not Applicable, EOD = end of day

POGW-14 - NEW PUMP INSTALLED - CAN NOT REMOVE WELL CAP (FIXED). COULD NOT DROP INSITU - TO MEASURE D.O. and ORP.

GEOSYNTEC CONSULTANTS

POWAY LANDFILL
GROUNDWATER GAUGING SHEET

Date: 7/ 11/2005
Sampler: SEL, BBC Environmental, Inc.

Well #	Depth to Water	Previous DTW	Gauge Time	Well Box Type	Well Cap Type	Survey Point	DO mg/L	ORP mV
POGW-6	4.36	11.32	1308	MON	Non-INW	TOC TO N.	2.46	159
POGW-9	43.75	52.10	1337	M/D	INW	TOC TO N.	8.75	127
POGW-10	28.75	39.65	1256	MON	INW	TOC TO N.	4.40	93
POGW-11	42.00	47.81	1101	Emco Wheaton	INW	TOC TO N.	8.38	176
POGW-12	11.19	7.03	1234	M/D	INW	TOC TO N.	2.73	-31
POGW-13	10.28	12.90	1226	M/D	INW	TOC TO N.	3.36	130
POGW-14	82.83	99.14	1237	MON	~~Non-INW~~ ~~INW~~	TOC TO N.	–	–
POGW-15	9.86	12.58	1118	M/D	INW	TOC TO N.	9.52	148
POGW-16	118.80	56.69	1325	MON	INW	TOC TO N.	2.57	-171
POGW-17A	14.08	--	1203	EW	INW	TOC N	3.37	-3
POGW-17B	16.80	--	~~1236~~ 1206	EW	INW	TOC BM	3.14	43
POGW-18A	6.77	--	1132	EW	INW	TOC N	6.23	155
POGW-18B	18.05	--	1134	EW	INW	TOC N	4.02	148
NO LOCK — POPW-1	75.58	85.50	1413	MON	NO-PUMP	TOC TO N.	2.70	152
POPW-2A	30.20	88.55	1359	M/D	NO-PUMP	TOC TO N.	2.83	141
POPW-2B	79.33	95.10	1402	M/D	NO-PUMP	TOC TO N.	2.29	149
POPW-3	51.08	69.05	1444	M/D	NO-PUMP	TOC TO N.	1.97	156
POPW-4	82.43	97.85	1342	MON	NO-PUMP	TOC TO N.	2.54	74

-- Not Applicable, MON = Monument, M/D = Morrison/Dubuque, INW = Instrumentation West, TOC to N. = Top of Casing to North.

DO and ORP measured in well following gauging and prior to purging. All readings were taken upon stabilization. Typically 20-30 minutes.

Poway Landfill
Groundwater Sample Collection Log
POGW-6

Well Data:

Sample Type: Groundwater
Well Depth (ft): 34.60
Casing Elevation (ft): 695.35

Weather: Sunny, Hot
Diameter of Well (in.): 4
Diameter of Borehole (in.): 10
Filter Pack (ft): 25

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 4.36
Feet of Water in Well: 30.24
Borehole Volume (gal): 30.24 X 1.5 = 45.4
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 68.1

Immiscible layer Y/N?: N
Max. depth during purging (ft): 10.45
80 percent recovery: 5.58
Depth at time of sampling (ft): 5.58
Total Volume Purged (gal.): 68.1

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	1347	6.48	2486	28.02	1081.7	4.8	78	-	0
	1400	6.93	1543	21.14	3.0	3.1	119	1.7	227
	1415	6.92	1525	21.28	7.3	2.9	123	1.8	454
	1424	6.80	1525	21.18	0.5	3.0	127	1.8	681
Sample	1427	6.85	1527	21.21	7.5	2.9	125	—	681

% Recovered: 80%
Depth of Pump (feet): 31
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl, CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO_4, 4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4, 4°C	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

+ Nitrite

Date/Time: 7/20/05 1127
Sample ID: POGW-6
COC #: 1152
Field Crew: SEL
Samplers Signature:

Comments:

County of San Diego
Landfill Management

Third Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-9

Well Data:

Sample Type: Groundwater
Well Depth (ft): 84.36
Casing Elevation (ft): 725.05

Weather: Sunny, Cool
Diameter of Well (in.): 4
Diameter of Borehole (in.): 10
Filter Pack (ft): 23

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 43.75
Feet of Water in Well: 40.61
Borehole volume (gal): 40.61 X 1.5 = 60.9
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): 72.1 - 84.36
80 percent recovery: 51.9
Depth at time of sampling (ft): ≈66.5
Total Volume Purged (gal.): 44.6

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0648	6.71	865.2	20.93	26.1	2.1	142	-	0
	0654	6.81	227.1	20.97	6.7	1.6	-139	3.4	20.3
	0701	6.66	608.0	21.26	25.8	1.6	-72	3.1	40.6
	0703	6.79	913.0	21.35	17.7	1.9	-36	3.0	44.6
	0703	PURGED TO BOTTOM			-	-	-	-	44.6
Sample	0904	6.85	971.7	22.75	27.5	1.7	-45	-	44.6

% Recovered: 19%
Depth of Pump (feet): 81
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2S0_4,4°C	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$,4°C	Sulfide

+ NITRITE

Date/Time: 7/21/05 0904
Sample ID: POGW-9
COC #: 1153
Field Crew: SEL
Samplers Signature:

Comments: PURGED AT 255 Hz

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County of San Diego
Landfill Management

Third Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-10

Well Data:

Sample Type: Groundwater
Well Depth (ft): 53.86
Casing Elevation (ft): 710.56

Weather: Sunny, Cool
Diameter of Well (in.): 4
Diameter of Borehole (in.): 10
Filter Pack (ft): 23

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 28.75
Feet of Water in Well: 25.11
Borehole Volume (gal): 25.11 X 1.5 = 37.7
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): DRY - 53.86
80 percent recovery: 33.77
Depth at time of sampling (ft): 35.71
Total Volume Purged (gal.): 25.5

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0648	7.45	952.1	25.71	11.7	3.4	146	–	0
	0651	6.95	836.7	25.65	8.0	3.7	159	4.2	12.6
	0655	7.15	867.4	25.47	7.4	3.6	147	3.6	25.2
	0656	7.08	868.2	25.51	7.5	3.7	148	3.2	25.5
	0656	PURGED	TO	BOTTOM	–	–	–	–	25.5
Sample	1506	7.17	895.1	26.57	7.9	3.8	149	–	25.5

% Recovered: 72%
Depth of Pump (feet): 50
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4,4°C	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

+ NITRITE

Date/Time: 7/20/05 1506
Sample ID: POGW-10
COC #: 1152
Field Crew: SEL
Samplers Signature:

Comments: PURGED AT 225 Hz

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County of San Diego
Landfill Management

Third Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-11

Well Data:

Sample Type: Groundwater
Well Depth (ft): 54.20
Casing Elevation (ft): 628.71

Weather: Sunny, Hot
Diameter of Well (in.): 4
Diameter of Borehole (in.): 10
Filter Pack (ft): 19

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 42.00
Feet of Water in Well: 12.2
Borehole Volume (gal): 12.2 X 1.5 = 18.3
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): 54.2 - DRY
80 percent recovery: 44.44
Depth at time of sampling (ft): 47.2
Total Volume Purged (gal.): 13.2

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0756	6.73	1029	23.45	3.0	3.6	-11	-	0
	0800	6.81	1001	23.45	5.9	3.4	12	1.5	6.1
	0804	6.87	1212	23.65	15.1	3.1	27	1.5	12.2
	0805	6.87	1222	23.60	16.2	3.1	32	1.5	13.2
	0805	PURGED	TO	BOTTOM	-	-	-	.	13.2
Sample	1106	6.91	1201	23.77	18.9	3.0	57	-	13.2

% Recovered: 57%
Depth of Pump (feet): 51
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl, CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO_4, 4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4, 4°C	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

+ NITRITE

Date/Time: 7/21/05 1106
Sample ID: POGW-11
COC #: 1153
Field Crew: SCL
Samplers Signature:

Comments: PURGED AT 185

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County of San Diego
Landfill Management

Third Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-12

Well Data:

Sample Type: Groundwater
Well Depth (ft): 15.76
Casing Elevation (ft): 594.72

Weather: Sunny, Hot
Diameter of Well (in.): 4
Diameter of Borehole (in.): 10
Filter Pack (ft): 12

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 11.19
Feet of Water in Well: 4.57
Borehole Volume (gal): 4.57 X 1.5 = 6.9
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): 15.76 → DRY
80 percent recovery: 12.10
Depth at time of sampling (ft): 12.72
Total Volume Purged (gal.): 3.8

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0834	6.53	1023	25.82	23.8	2.4	50	-	0
	0837	6.32	1418	24.98	7.6	2.7	55	0.8	2.3
	0839	6.31	1424	25.08	7.9	1.7	54	0.7	3.8
	0839	PURGED TO BOTTOM			-	-	-	-	3.8
Sample	1040	6.51	1475	26.11	11.5	2.0	59	-	3.8

% Recovered: 67%
Depth of Pump (feet): 13
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl, CO3, HCO3 + NITRITE Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO_4, 4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4, 4°C	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

Date/Time: 7/21/05 1040
Sample ID: POGW-12
COC #: 1153
Field Crew: SEL
Samplers Signature:

Comments: VOC'S

sampling sheets3q05.xls\Poway

Poway Landfill
Groundwater Sample Collection Log
POGW-13

Well Data:

Sample Type: Groundwater
Well Depth (ft): 52.52
Casing Elevation (ft): 594.88

Weather: Sunny, Hot
Diameter of Well (in.): 4
Diameter of Borehole (in.): 10
Filter Pack (ft): 25

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 10.28
Feet of Water in Well: 42.24
A) Casing volume above filter pack: 17.24 X 0.65 = 11.2
B) Filter Pack Volume (gal): 25X1.5 = 37.5
Borehole volume (gal): A + B = 48.7
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 73.1

Immiscible layer Y/N?: N
Max. depth during purging (ft): 27.0
80 percent recovery: 13.6
Depth at time of sampling (ft): 10.28
Total Volume Purged (gal.): 73.2

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	1047	6.09	1677	24.86	6.1	4.9	77	-	0
	1057	6.90	1296	23.70	1.4	4.0	120	2.4	24.4
	1110	6.78	1581	23.75	3.4	3.9	128	2.1	48.8
	1122	6.79	1624	23.69	2.8	3.7	131	2.1	73.2
	1122	Stopped	Purging		-	-	-	-	73.2
Sample	1222	6.91	1637	24.11	7.7	3.9	142	-	73.2

% Recovered: 100%
Depth of Pump (feet): 50
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO_4,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4,4°C	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$,4°C	Sulfide

NITRITE

Date/Time: 7/21/05 1222
Sample ID: POGW-13
COC #: 1153
Field Crew: SR
Samplers Signature:

Comments: Purge at 1605 Hrs

Poway Landfill
Groundwater Sample Collection Log
POGW-14

Well Data:

Sample Type: Groundwater
Well Depth (ft): 225.68
Casing Elevation (ft): 722.61

Weather: Sunny, Warm
Diameter of Well (in.): 4
Diameter of Borehole (in.): 10
Filter Pack (ft): 21

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 82.83
Feet of Water in Well: 142.85
Borehole Volume (gal): 142.85 X 1.5 = 214.3
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): 225.68 - DRY
80 percent recovery: 111.4
Depth at time of sampling (ft): 185.7
Total Volume Purged (gal.): 81.7

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0721	6.81	916.3	21.36	12.5	2.4	-202	-	0
	0737	6.51	1009	24.04	4.9	1.5	-244	4.5	71.4
	0740	6.50	1011	24.10	7.1	1.5	-244	4.3	81.7
	0740	Purged to Bottom			-	-	-	-	81.7
Sample	0941	6.60	1027	25.10	11.7	1.7	-195	-	81.7

% Recovered: 28%
Depth of Pump (feet): 223
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

+ Nitrate

Date/Time: 7/21/05 0944
Sample ID: POGW-14
COC #: 1153
Field Crew: SEL
Samplers Signature:

Comments: Strong H_2S odor
New Pump installed need 3-4 adapter & hose barb fitting and hose for top of pump - like 2 at Jamacha

County of San Diego
Landfill Management

Third Quarter 2005

Geosyntec Con...

Poway Landfill
Groundwater Sample Collection Log
POGW-15

Well Data:

Sample Type: Groundwater
Well Depth (ft): 24.29
Casing Elevation (ft): 606.60

Weather: Sunny, Hot
Diameter of Well (in.): 4
Diameter of Borehole (in.): 10
Filter Pack (ft): 24

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 9.86
Feet of Water in Well: 14.43
Borehole Volume (gal): 14.43 X 1.5 = 21.6
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): 24.29 → DRY
80 percent recovery: 12.75
Depth at time of sampling (ft): 12.91
Total Volume Purged (gal.): 20.6

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0815	6.62	852.0	23.10	5.4	2.9	19	–	0
	0818	6.98	853.9	24.06	36.9	2.4	14	2.4	7.2
	0823	6.94	863.8	23.45	29.2	2.4	19	1.8	14.4
	0827	6.86	802.8	23.14	36.5	3.0	27	1.7	20.6
	0827	Purged to Bottom			–	–	–	–	20.6
Sample	0827	7.01	851.7	23.75	30.1	2.6	20	–	20.6

% Recovered: 79%
Depth of Pump (feet): 21
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

+ Nitrite

Date/Time: 7/21/05
Sample ID: POGW-15
COC #: 1153
Field Crew: SEL
Samplers Signature:

Comments: Purged at 155 Hz

sampling sheets3q05 xls\Poway

Poway Landfill
Groundwater Sample Collection Log
POGW-16

Well Data:

Sample Type: Groundwater
Well Depth (ft): 69.50
Casing Elevation (ft): 643.49

Weather: Sunny Hot
Diameter of Well (in.): 4
Diameter of Borehole (in.): 8
Filter Pack (ft): 22

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 48.80
Feet of Water in Well: 20.7
Borehole Volume (gal): 20.7 X 1.1 = 22.8
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 34.2

Immiscible layer Y/N?: N
Max. depth during purging (ft): 69.80 → DRY
80 percent recovery: 72.94
Depth at time of sampling (ft): 73.95
Total Volume Purged (gal.): 25.9

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	1149	5.86	4760	41.61	27.6	4.4	199	✓	0
	1155	4.50	1357	24.90	23.7	4.6	-248	1.9	11.4
	1205	4.87	1535	25.76	16.3	4.5	-164	1.4	22.8
	1209	4.85	1556	26.16	21.6	4.4	-125	1.3	25.9
Sample	1448	5.91	1775	25.15	29.7	4.3	-160	-	25.9

% Recovered: 75%
Depth of Pump (feet): 68
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
1 x 250ml	Poly	N	4°C	Nitrite
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

Date/Time: 7/20/05 1448
Sample ID: POGW-16
COC #: 1152
Field Crew: SEL
Samplers Signature:

Comments: STRONG H2S ODOR

PURGE AT 205 Hz

County of San Diego
Landfill Management

Third Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-17A

Well Data:

Sample Type: Groundwater
Well Depth (ft): 18.5

Weather: Sunny, Hot
Diameter of Well (in.): 2
Diameter of Borehole (in.): 8
Filter Pack (ft): 11.5

Well Purging:

Equipment: Dedicated ~~14.08~~ 2" Grunfos Pump
Depth to Water Surface (ft): 14.08
Feet of Water in Well: 4.92
A) Casing volume above filter pack: ~~X 0.17 =~~
B) Filter Pack Volume (gal): ~~11.5 X 0.8 = 9.2~~ 4.92 x 0.8 = 3.5
Borehole volume (gal): A + B = 3.5
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): 18.5 → DRY
80 percent recovery: 14.96
Depth at time of sampling (ft): 15.75
Total Volume Purged (gal.): 1.2

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0848	6.54	2274	26.81	2627.0	2.5	52	–	0
	0851	6.43	2396	25.66	2627.9	1.6	52	0.4	1.2
	0851	Purged to Bottom			–	–	–	–	1.2
Sample	1158	6.75	2571	26.71	2791.1	1.5	50	–	1.2

% Recovered: 62%
Depth of Pump (feet): 16.5
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2S0_4	Ammonia
1 x 250ml	Poly	N	4°C	Nitrite
1 x 250ml	Poly	N	NaOH, $ZnAc_{2,4}$°c	Sulfide

Date/Time: 7/21/05 1158
Sample ID: POGW-17A
COC #: 1153
Field Crew: SEC
Samplers Signature: [signature]

Comments: Very Sandy

sampling sheets3q05.xls\Poway

Poway Landfill
Groundwater Sample Collection Log
POGW-17B

Well Data:

Sample Type: Groundwater
Well Depth (ft): 45

Weather: Sunny Hot
Diameter of Well (in.): 2
Diameter of Borehole (in.): 10
Filter Pack (ft): 12.5

Well Purging:

Equipment: 2" Dedicated Pump
Depth to Water Surface (ft): 16.56
Feet of Water in Well: 28.44
A) Casing volume above filter pack: 15.9 X 0.17 = 2.7
B) Filter Pack Volume (gal): 12.5 X 1.1 = 13.75
Borehole volume (gal): A + B = 16.5
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 24.8

Immiscible layer Y/N?: N
Max. depth during purging (ft): 21.30
80 percent recovery: 17.51
Depth at time of sampling (ft): 17.51
Total Volume Purged (gal.): 24.9

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	1130	6.80	1628	23.72	3.8	3.7	131	~	0
	1142	6.99	1870	24.66	1.6	3.2	125	0.7	8.3
	1153	7.03	1856	24.32	1.4	3.5	125	0.7	16.6
	1203	7.10	1858	24.55	0.5	3.2	124	0.8	24.9
Sample	1204	7.11	1865	24.37	0.9	3.4	125	~	24.9

% Recovered: 80%
Depth of Pump (feet): 44
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
1 x 250ml	Poly	N	4°C	Nitrite
1 x 250ml	Poly	N	NaOH, $ZnAc_2$,4°C	Sulfide

Date/Time: 7/21/05 1204
Sample ID: POGW-17B
COC #: 1153
Field Crew: SEL
Samplers Signature:

Comments: Purge at 130 Hz

Poway Landfill
Groundwater Sample Collection Log
POGW-18A

Well Data:

Sample Type: Groundwater
Well Depth (ft): 18
706.50

Weather: Sunny, Hot
Diameter of Well (in.): 2
Diameter of Borehole (in.): 8
Filter Pack (ft): 11.5

Well Purging:

Equipment: 2" Dedicated Bailer
Depth to Water Surface (ft): 6.77
Feet of Water in Well: 11.23
A) Casing volume above filter pack: 0 X 0.17 = 0
B) Filter Pack Volume (gal): 11.5 X 0.8 = 9.0
Borehole volume (gal): A + B = 9.0
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 13.5

Immiscible layer Y/N?: N
Max. depth during purging (ft): DRY - 18.0
80 percent recovery: 9.02
Depth at time of sampling (ft): 8.00
Total Volume Purged (gal.): 13.5

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	1239	6.28	1996	27.86	161.8	4.7	132	–	0
	1248	6.62	1256	1256	2985	5.0	128	1.5	4.5
	1252	6.67	1241	27.75	2991	4.9	130	0.6	7.0
	1340	6.25	1257	26.56	2957.1	4.8	130	1.0	9.0
	1352	6.71	1381	26.54	2051.2	4.6	133	0.4	13.5
Sample	1429	6.55	1402	25.78	1095.7	4.7	130	—	13.5

- Bottom
- Recovered At 1338

% Recovered: 89%
Depth of Pump (feet): 16
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl, CO3, HCO3
				Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO_4, 4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

+ Nitrate

Date/Time: 7/21/05 1429
Sample ID: POGW-18A
COC #: 1153
Field Crew: SK
Samplers Signature:

Comments: Purged to Bottom Well Recovered - Recharge to Full Volume.

County of San Diego
Landfill Management

Third Quarter 2005

Geosyntec Consultants

Poway Landfill
Groundwater Sample Collection Log
POGW-18B

Well Data:
Sample Type: Groundwater
Well Depth (ft): 45

Weather: Sunny, Hot
Diameter of Well (in.): 2
Diameter of Borehole (in.): 10
Filter Pack (ft):

Well Purging:
Equipment: 2" Dedicate Pump
Depth to Water Surface (ft): 18.05
Feet of Water in Well: 26.95
Borehole Volume (gal) 12.5 X 1.1 = 13.75
A) Casing volume above filter pack: 14.45 X 0.17 = 2.5
B) Filter Pack Volume (gal): 12.5 X 1.1 = 13.75
Borehole volume (gal): A + B = 16.3
Minimum Purge Volume (gal): Borehole Volume X 1.5 = 24.5

Immiscible layer Y/N?: N
Max. depth during purging (ft): 42.71
80 percent recovery: 22.98
Depth at time of sampling (ft): 18.74
Total Volume Purged (gal.): 24.5

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	1258	6.25	1911	24.53	197.3	4.9	154	-	0
	1312	6.59	1960	25.84	105.3	4.0	142		8.3
	1324	6.91	1920	25.97	91.7	4.6	130		16.3
	1336	6.85	1935	26.01	95.1	4.5	127		24.5
Sample	1441	7.01	1901	25.77	87.2	4.4	119	-	24.5

% Recovered: 97%
Depth of Pump (feet): 44
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2S0_4	Ammonia
1 x 250ml	Poly	N	4°C	Nitrite
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

Date/Time: 7/21/05 1441
Sample ID: POGW-18B
COC #: 1153
Field Crew: SEC
Samplers Signature:

Comments:

unty of San Diego
ndfill Management

Third Quarter 2005

Poway Landfill
Groundwater Sample Collection Log
POPW-1

ll Data:

mple Type:	Groundwater	Weather:	Sunny Warm
ell Depth (ft):	116	Diameter of Well (in.):	4
asing Elevation (ft):	742.08	Diameter of Borehole (in.):	8
		Filter Pack (ft):	31

Well Purging:

quipment:	7550	Immiscible layer Y/N?:	N
epth to Water Surface (ft):	40.42	Max. depth during purging (ft):	44.5
eet of Water in Well:	6.	80 percent recovery:	82.76
orehole Volume (gal):	40.42 X 1.1 = 44.5	Depth at time of sampling (ft):	81.88.
inimum Purge Volume (gal):	Borehole Volume X 1.5 = 66.8	Total Volume Purged (gal.):	66.8

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0942	5.84	3092	26.80	1112.6	4.3	139	—	0
	1004	5.56	2446	25.45	317	3.1	145		22.3
	1027	5.38	3532	25.73	41.3	3.1	150		44.6
	1047	5.25	3597	26.06	59.9	3.2	156		66.8
Sample	1335	5.40	3601	26.91	39.1	3.3	170	—	66.8

% Recovered: 82% Depth of Pump (feet):
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
1 x 250ml	Poly	N	4°C	Nitrite
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

Date/Time: 7/20/05 1235
Sample ID: POPW-1
COC #: 1152
Field Crew: SEL
Samplers Signature:

Comments: Pump Set 2' off Bottom

Purged at 260-275 Hz

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Poway Landfill
Groundwater Sample Collection Log
POPW-2A

Well Data:

Sample Type: Groundwater
Well Depth (ft): 121
Casing Elevation (ft): 722.75

Weather: Sunny, Warm
Diameter of Well (in.): 2
Diameter of Borehole (in.): 8
Filter Pack (ft): 31

Well Purging:

Equipment: 2" Grundfos Pump
Depth to Water Surface (ft): 80.20
Feet of Water in Well: 40.8
A Borehole Volume (gal): 31 X 0.8 = 24.8
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): 121 - DRY
80 percent recovery: 88.36
Depth at time of sampling (ft): 102.7
Total Volume Purged (gal.): 19.9

B 9.2 x .17 = 1.6 A+B = 26.4

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0837	5.58	2922	27.01	386.9	3.3	126	-	0
	0841	6.08	2851	25.34	522.2	3.6	110	2.2	8.8
	0846	6.22	2947	25.62	2627.0	2.9	102	2.0	17.6
	0848	6.21	[illegible]	25.69	1476.2	2.9	103	1.8	19.9
	0848	-	2966	-	-	-	-	-	19.9
Sample	1055	6.27	2851	25.97	1271.7	2.9	110	-	19.9

% Recovered: 45%
Depth of Pump (feet): ~119'
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl, CO3, HCO3
				Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO_4, 4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

+ Nitrite

Date/Time: 7/20/05 1055
Sample ID: POPW-2A
COC #: 1152
Field Crew: SEL
Samplers Signature:

Comments: Pump Set 2' off Bottom

Purged at 350 ml

Poway Landfill
Groundwater Sample Collection Log
POPW-2B

Well Data:

Sample Type: Groundwater
Well Depth (ft): 155
Casing Elevation (ft): 722.75

Weather: Sunny, Warm
Diameter of Well (in.): 8
Diameter of Borehole (in.): 2
Filter Pack (ft): 18

Well Purging:

Equipment: 2" Grundfos Pump
Depth to Water Surface (ft): 79.33
Feet of Water in Well: 75.67
A) Casing volume above filter pack: 57.67 X 0.17 = 9.8
B) Filter Pack Volume (gal):18 X 0.8 = 14.4
Borehole volume (gal): A + B = 24.2 x1.5 = 36.3
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): ~~150.85~~ 145.22
80 percent recovery: 92.50
Depth at time of sampling (ft): 79.05
Total Volume Purged (gal.): 36.3

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	~~[illegible]~~	5.70	2781	25.60	306.8	2.9	98	–	0
	0814	5.41	2847	25.00	143.6	2.7	125	1.6	81
	0818	5.55	2859	25.54	332.7	2.6	122	1.8	162
	0824	5.54	2856	25.82	126.0	2.6	132	1.6	242
	0832	5.45	2873	26.05	145.0	2.9	140	1.6	363
Sample	1020	5.50	2891	25.75	75.7	2.9	141	–	363

% Recovered: 99%
Depth of Pump (feet): ~153'
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl, CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO, 4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

+ Nitrite

Date/Time: 7/20/05 1020
Sample ID: POPW-2B
COC #: 1152
Field Crew: SEL
Samplers Signature:

Comments: Pump set 2' off bottom

Purged @ 355 Hz

Well did not purge dry - purged full volume.

Poway Landfill
Groundwater Sample Collection Log
POPW-3

Well Data:

Sample Type: Groundwater
Well Depth (ft): 121
Casing Elevation (ft): 724.72

Weather: Sunny, Cool
Diameter of Well (in.): 4
Diameter of Borehole (in.): 8
Filter Pack (ft): 27

Well Purging:

Equipment: 2" Pump
Depth to Water Surface (ft): 51.86
Feet of Water in Well: 69.14
Borehole Volume (gal): 69.14 X 1.1 = 76.1
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): 121.0 → DRY
80 percent recovery: 65.7
Depth at time of sampling (ft): 113.21
Total Volume Purged (gal.): 53.0

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0721	6.95	2134	24.90	148.0	3.9	87	–	0
	0730	6.80	1816	24.75	250	2.1	44	1.5	25.4
	0752	6.54	1969	24.69	322	2.2	30	1.6	50.8
	0754	6.40	2058	24.65	139.3	2.2	23	1.6	53.0
Sample	1007	6.57	2120	24.50	147.1	2.3	47	–	53.0

% Recovered: 11%
Depth of Pump (feet): ~119'
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl, CO3, HCO3 + Nitrite
				Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO, 4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$, 4°C	Sulfide

Date/Time: 07/20/05 1007
Sample ID: POPW-3
COC #: 1152
Field Crew: SEL
Samplers Signature:

Comments: Pump Set 2' off Bottom

Purged at 275 Hz

Poway Landfill
Groundwater Sample Collection Log
POPW-4

Well Data:

Sample Type: Groundwater
Well Depth (ft): 113
Casing Elevation (ft): 706.50

Weather: Sunny Warm
Diameter of Well (in.): 4
Diameter of Borehole (in.): 8
Filter Pack (ft):

Well Purging:

Equipment: 2" Pump
Depth to Water Surface (ft): 82.43
Feet of Water in Well: 30.57
Borehole Volume (gal): 30.57 X 1.1 = 33.6 x 1.5 = 50.4
Purge Volume (gal): = Purge dry (slow recovery)

Immiscible layer Y/N?: N
Max. depth during purging (ft): 110.5
80 percent recovery: 88.04
Depth at time of sampling (ft): 83.02
Total Volume Purged (gal.): 50.4

	Time	pH	EC (µS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Pump Rate (gpm)	Vol. Purged (gal)
Purge	0902	6.35	3045	27.01	557.7	4.8	113	–	0
	0907	5.74	2054	25.48	27.4	4.0	136	2.2	11.2
	0913	5.94	[illegible]	25.71	14.7	3.8	-57	2.0	22.4
	0919	5.77	2038	25.66	29.2	3.6	31	2.0	33.6
	0936	5.71	2086	25.77	29.0	3.4	141	1.5	50.4
Sample	1124	6.75	2095	26.65	24.7	3.2	187	–	50.4

% Recovered: [illegible] 98% Depth of Pump (feet): ~111'
Purge Water Disposal: Collected and Sprayed

Sample Collection:

Volume	Container	Filtered	Pres.	Parameters
3 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3, HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC
1 x 1 L	Poly	N	4°C	TDS
1 x 1 L	Amber	N	H_2SO_4	Ammonia
~~1 x 250ml~~	~~Poly~~	~~N~~	~~4°C~~	~~Nitrite~~
1 x 250ml	Poly	N	NaOH, $ZnAc_2$,4°C	Sulfide

+ NITRITE

Date/Time: 7/20/05 1124
Sample ID: POPW-4
COC #: 1152
Field Crew: SEI
Samplers Signature:

Comments: Pump Set 2' off Bottom of well Purged full volume

Purged at 355 Hz

Poway Landfill
Groundwater Sample Collection Log
POW-EB

Well Data:

Sample Type: Groundwater
QA/QC

Sample Collection:

Location: Near POW-3

Weather: Sunny, Cool

Volume	Container	Filtered	Pres.	Parameters
2 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260
2 x 125ml	Glass	N	HCl, 4°C	Ethene
1 x 1 L	Poly	N	4°C	General Chemistry: NO_3 (as N), SO_4, Cl,CO3,-HCO3 Dissolved Metals: Ca, Mg, K, Na, Fe, Total Fe
1 x 1 L	Poly	N	4°C	TDS
1 x 250ml	Glass	N	H_2SO,4°C	COD, TOC

Date/Time: 7/20/05 0710
Sample ID: POW-EB
COC #:
Field Crew: SEL
Samplers Signature:

Poway Landfill
Groundwater Sample Collection Log
POW-FB

Well Data:

Sample Type: Groundwater
QA/QC

Sample Collection:

Location: NEAR POGM-10

Weather: SUNNY HOT

Volume	Container	Filtered	Pres.	Parameters
2 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260

Date/Time: 7/20/05 1512
Sample ID: Sample ID:
COC #:
Field Crew: SEL
Samplers Signature:

Poway Landfill
Groundwater Sample Collection Log
POW-FB

Well Data:

Sample Type: Groundwater
QA/QC

Sample Collection:

Location: Near POGW - 18 Cluster

Weather: Sunny Hot

Volume	Container	Filtered	Pres.	Parameters
2 x 40 ml	VOA	N	HCl, 4°C	VOCs by 8260

Date/Time: 7/21/05 1456
Sample ID: POW-FB
COC #: 1153
Field Crew: SEL
Samplers Signature:

Document Number: 1152

Analysis Request and Chain of Custody Record

Project Name: SD County Inactive Landfills	Project Number: Pogey Canyon
Samplers Names: [illegible] BBC ENV.	Project Contact: D. Skipper
Laboratory Name: The Source Env. Labs	Lab Contact: S. Nowak
Lab Address: 7440 Lincoln Way, Garden Grove, CA	Lab Phone: 714.895.5494
	Carrier/Waybill No.: Lab Courier

Page 1 of 1

White copy: to accompany samples

Yellow copy: field copy

Required Analyses: VOCs by 8260; Metals (Cr, Pb, Ni); SVOCs by 8270; TDS; COD-TOC; Ammonia; Sulfide; Ethane

Bottle Type and Volume/Preservative: 40ml HCl; 1L Amber; 1L Nitric; 1L Amber; 1L Amber; 1L Amber; 1L Amber HCl

Sample Name	Date	Time	Sample Type	VOCs	Metals	SVOCs	TDS	COD-TOC	Ammonia	Sulfide	Ethane			Comments	Lab Use Only: Condition of Bottles
POGW-6	7/20/05	1427	H_2O	3	1		1	1	1	1	2				
POGW-10		1506		3	1		1	1	1	1	2				
POGW-16		1448		3	1		1	1	1	1	2				
POSW-1		1235		3	1		1	1	1	1	2				
POPW-2A		1055		3	1		1	1	1	1	2				
POPW-2B		~~1052~~ 1020		3	1		1	1	1	1	2				
POPW-3		1027		3	1		1	1	1	1	2				
POPW-4		1124		3	1		1	1	1	1	2				
QCFB		1512		2											
QCEB		0710		3	1		1	1	1	1	2				
QCTB	7/20/05	—	H_2O	2											

Special Instructions: Gen Chem includes NO_3 (as N), SO_4, Cl, Alk, HCO_3, Nonhe
Metals include Cr, Mg, Ni, Fe Total Fe
Please reference attached sample chain receipt

Turn-around Time: ☒ Normal ☐ Rush: _____

1. Relinquished by (Signature/Affiliation): BBC ENV.	Date 7/21/05 Time 1355	1. Received by (Signature/Affiliation): CEL	Date 7/21/05 Time 1553
2. Relinquished by (Signature/Affiliation)	Date Time	2. Received by (Signature/Affiliation)	Date Time
3. Relinquished by (Signature/Affiliation)	Date Time	3. Received by (Signature/Affiliation)	Date Time

Document Number: 1153

Analysis Request and Chain of Custody Record

Page 1 of 1

Project Name: SD County Inactive Landfills	Project Number: Poway Landfill
Samplers Names: Scott Cure BBC ENV.	Project Contact: D. Skippen
Laboratory Name: The Science Env. Labs	Lab Contact: S. Newark
Lab Address: 7440 Lincoln Way, Garden Grove, CA	Lab Phone: 714-895-5494
	Carrier/Waybill No.: LAB Courier

Required Analyses

White copy: to accompany samples

Yellow copy: field copy

Sample Name	Date	Time	Sample Type	VOCs by 8260	Gen Chem Metals+ Nitrate	SVOCs by 8270	Ethane	COD+TOC	TDS	Ammonia	Sulfide			Comments	Lab Use Only: Condition of Bottles
				Bottle Type and Volume/Preservative											
				VOA HCl	Poly None		Glass HCl	Glass H2SO4	Poly None	Glass H2SO4	Poly NaOH/ZnAc				
				Number of Containers											
POGW-9	7/21/05	0904	H_2O	3	1		2	1	1	1	1				
POGW-11		1006		3	1		2	1	1	1	1				
POGW-12		1040		3	1		2	1	1	1	1				
POGW-13		1222		3	1		2	1	1	1	1				
POGW-14		0944		3	1		2	1	1	1	1				
POGW15		1027		3	1		2	1	1	1	1				
POGW-17A		1150		3	1		2	1	1	1	1				
POGW-17B		1204		3	1		2	1	1	1	1				
POGW-18A		1429		3	1		2	1	1	1	1				
POGW-18B		1441		3	1		2	1	1	1	1				
QAFB		1456		2											
QATB	7/21/05	—	H_2O	2											

Special Instructions: FILTER & PRESERVE METALS UPON RECIEPT
GEN CHEM INCLUDES - NO_3 (AS N), SO_4, Cl, CO_3, HCO_3
DISSOLVED METALS - Ca, Mg, Na, K, Fe - TOTAL Fe

Turn-around Time: ☒ Normal ☐ Rush: _____

1. Relinquished by (Signature/Affiliation) BBC ENV. Date / Time	1. Received by (Signature/Affiliation) Date / Time
2. Relinquished by (Signature/Affiliation) Date / Time	2. Received by (Signature/Affiliation) Date / Time
3. Relinquished by (Signature/Affiliation) Date / Time	3. Received by (Signature/Affiliation) Date / Time

SUMMARY OF SAMPLING PROCEDURES
COUNTY OF SAN DIEGO INACTIVE LANDFILL SITES

Groundwater sampling procedures at the County of San Diego Inactive Landfill Sites shall follow procedures outlined in the most current version of the County of San Diego Department of Environmental Health Site Assessment and Mitigation (SAM) manual. The following is intended as a summary of these procedures, and provides a means for the subcontractor (BBC Environmental) to certify that these procedures were followed.

Water Level Gauging

Water levels will be gauged prior to the start of each sampling event using an electronic depth sounder to the nearest 1/100 of a foot from the surveyed elevation point on the top of each well casing or sounding tube. Any immiscible fluids on the water level meter will be noted on the sampling logs. The water level meter will be decontaminated between wells by washing in a solution of Alquinox, followed by rinsing with distilled water.

The condition of each monitor well shall be documented on the sampling forms (i.e. well seal, well bolts, well pad, well lock). Should any wells be in need of repair (i.e., missing bolts, inoperable well locks, or other damage) notify GeoSyntec immediately of the damage.

Well Purging and Sampling

The dedicated Grundfos sampling system in each monitor well shall be used for purging and sampling. If the sampling system is non-operational a single-use disposable bailer or portable Grundfos pump shall be used. Purging at domestic or corrective action wells shall consist of removing 50 gallons of water prior to sampling.

Fast recovering monitor wells (>80 percent recovery in two hours)

A minimum of one and one half borehole volumes of water should be removed from each well if field water quality measurements have stabilized within 10 percent. If field water quality parameters have not stabilized, continue purging until field parameters have stabilized or until 3 borehole volumes have been removed, whichever occurs first.

Once purging is completed and field parameters have stabilized fast recovering wells may be sampled after the water level has recovered to at least 80 percent of the pre-purge water level.

Slow recovering monitor wells (<80 percent recovery in two hours)

Remove one borehole volume of water. Obtain sample as soon after 2 hours as possible.

Sample Collection and Handling

Groundwater samples will be collected directly from the dedicated discharge tubing of the pump into the appropriate containers supplied by the analytical laboratory. Groundwater samples from domestic wells should be collected from the spigot closest to the wellhead. Volatile organics analyses (VOA) samples should be collected by slowing the pumping rate to a thin flowing stream, and filling the sample bottles. The VOA sample bottles shall be completely filled and contain no air bubbles.

APPENDIX F
SOIL VAPOR LABORATORY DATA

Calscience Environmental Laboratories, Inc.

July 06, 2005

Sean McClain
GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Subject: **Calscience Work Order No.: 05-06-1091**
Client Reference: Poway Landfill / SC-0233-03-07

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 6/16/2005 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Sampled:	06/15/05
11305 Rancho Bernardo Road, Suite 101		Date Received:	06/16/05
San Diego, CA 92127-1461		Date Analyzed:	06/17-20/05
		Work Order No.:	05-06-1091
Attn:	Sean McClain	Method:	ASTM D-1946
RE:	Poway Landfill / SC-0233-03-07	Page 1 of 9	

All concentrations are reported in percent (%) by volume.

Analyte	Concentration	Reporting Limit
Sample Number: SG-13@1.5'		
Oxygen (O_2) + Argon (Ar)	21.2	0.25
Nitrogen (N_2)	78.5	0.25
Methane (CH_4)	ND	0.25
Carbon Monoxide (CO)	ND	0.25
Carbon Dioxide (CO_2)	0.28	0.25
Sample Number: SG-13@5.0'		
Oxygen (O_2) + Argon (Ar)	18.1	0.15
Nitrogen (N_2)	80.2	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	1.7	0.15
Sample Number: SG-11@5.0'		
Oxygen (O_2)	17.0	0.15
Nitrogen (N_2)	80.9	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	2.1	0.15

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Sampled:	06/15/05
11305 Rancho Bernardo Road, Suite 101		Date Received:	06/16/05
San Diego, CA 92127-1461		Date Analyzed:	06/17-20/05
		Work Order No.:	05-06-1091
Attn:	Sean McClain	Method:	ASTM D-1946
RE:	Poway Landfill / SC-0233-03-07	Page 2 of 9	

All concentrations are reported in percent (%) by volume.

Analyte	Concentration	Reporting Limit
Sample Number: SG-11@1.5'		
Oxygen (O_2) + Argon (Ar)	16.5	0.26
Nitrogen (N_2)	80.4	0.26
Methane (CH_4)	ND	0.26
Carbon Monoxide (CO)	ND	0.26
Carbon Dioxide (CO_2)	3.0	0.26
Sample Number: SG-12@5.0'		
Oxygen (O_2) + Argon (Ar)	14.8	0.14
Nitrogen (N_2)	79.6	0.14
Methane (CH_4)	ND	0.14
Carbon Monoxide (CO)	ND	0.14
Carbon Dioxide (CO_2)	5.7	0.14
Sample Number: SG-12@1.5'		
Oxygen (O_2)	16.4	0.23
Nitrogen (N_2)	80.2	0.23
Methane (CH_4)	ND	0.23
Carbon Monoxide (CO)	ND	0.23
Carbon Dioxide (CO_2)	3.4	0.23

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Sampled:	06/15/05
11305 Rancho Bernardo Road, Suite 101		Date Received:	06/16/05
San Diego, CA 92127-1461		Date Analyzed:	06/17-20/05
		Work Order No.:	05-06-1091
Attn:	Sean McClain	Method:	ASTM D-1946
RE:	Poway Landfill / SC-0233-03-07	Page 3 of 9	

All concentrations are reported in percent (%) by volume.

Analyte	Concentration	Reporting Limit
Sample Number: SG-14@5'		
Oxygen (O_2) + Argon (Ar)	14.5	0.15
Nitrogen (N_2)	80.8	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	4.7	0.15
Sample Number: SG-14@1.5'		
Oxygen (O_2) + Argon (Ar)	14.3	0.15
Nitrogen (N_2)	80.7	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	5.0	0.15
Sample Number: SG-15@5'		
Oxygen (O_2)	13.4	0.15
Nitrogen (N_2)	78.7	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	7.9	0.15

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Sampled:	06/15/05
11305 Rancho Bernardo Road, Suite 101		Date Received:	06/16/05
San Diego, CA 92127-1461		Date Analyzed:	06/17-20/05
		Work Order No.:	05-06-1091
Attn:	Sean McClain	Method:	ASTM D-1946
RE:	Poway Landfill / SC-0233-03-07	Page 4 of 9	

All concentrations are reported in percent (%) by volume.

Analyte	Concentration	Reporting Limit
Sample Number: SG-15@1.5'		
Oxygen (O_2) + Argon (Ar)	15.1	0.20
Nitrogen (N_2)	80.0	0.20
Methane (CH_4)	ND	0.20
Carbon Monoxide (CO)	ND	0.20
Carbon Dioxide (CO_2)	4.8	0.20
Sample Number: SG-17@5.0'		
Oxygen (O_2) + Argon (Ar)	11.7	0.15
Nitrogen (N_2)	83.8	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	4.5	0.15
Sample Number: SG-17@1.5'		
Oxygen (O_2)	19.2	0.17
Nitrogen (N_2)	79.8	0.17
Methane (CH_4)	ND	0.17
Carbon Monoxide (CO)	ND	0.17
Carbon Dioxide (CO_2)	1.0	0.17

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Sampled:	06/15/05
11305 Rancho Bernardo Road, Suite 101		Date Received:	06/16/05
San Diego, CA 92127-1461		Date Analyzed:	06/17-20/05
		Work Order No.:	05-06-1091
Attn:	Sean McClain	Method:	ASTM D-1946
RE:	Poway Landfill / SC-0233-03-07	Page 5 of 9	

All concentrations are reported in percent (%) by volume.

Analyte	Concentration	Reporting Limit
Sample Number: SG-18@5'		
Oxygen (O_2) + Argon (Ar)	14.7	0.15
Nitrogen (N_2)	79.4	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	5.9	0.15
Sample Number: SG-18@1.5'		
Oxygen (O_2) + Argon (Ar)	17.2	0.17
Nitrogen (N_2)	78.7	0.17
Methane (CH_4)	ND	0.17
Carbon Monoxide (CO)	ND	0.17
Carbon Dioxide (CO_2)	4.1	0.17
Sample Number: SG-19@5.0'		
Oxygen (O_2)	16.5	0.15
Nitrogen (N_2)	79.5	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	4.1	0.15

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Sampled:	06/15/05
11305 Rancho Bernardo Road, Suite 101		Date Received:	06/16/05
San Diego, CA 92127-1461		Date Analyzed:	06/17-20/05
		Work Order No.:	05-06-1091
Attn:	Sean McClain	Method:	ASTM D-1946
RE:	Poway Landfill / SC-0233-03-07	Page 6 of 9	

All concentrations are reported in percent (%) by volume.

Analyte	Concentration	Reporting Limit
Sample Number: SG-19@1.5'		
Oxygen (O_2) + Argon (Ar)	20.5	0.22
Nitrogen (N_2)	78.8	0.22
Methane (CH_4)	ND	0.22
Carbon Monoxide (CO)	ND	0.22
Carbon Dioxide (CO_2)	0.7	0.22
Sample Number: SG-16@5'		
Oxygen (O_2) + Argon (Ar)	15.4	0.15
Nitrogen (N_2)	80.5	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	4.1	0.15
Sample Number: SG-16@1.5'		
Oxygen (O_2)	18.3	0.20
Nitrogen (N_2)	79.6	0.20
Methane (CH_4)	ND	0.20
Carbon Monoxide (CO)	ND	0.20
Carbon Dioxide (CO_2)	2.1	0.20

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Sampled:	06/15/05
11305 Rancho Bernardo Road, Suite 101		Date Received:	06/16/05
San Diego, CA 92127-1461		Date Analyzed:	06/17-20/05
		Work Order No.:	05-06-1091
Attn:	Sean McClain	Method:	ASTM D-1946
RE:	Poway Landfill / SC-0233-03-07	Page 7 of 9	

All concentrations are reported in percent (%) by volume.

Analyte	Concentration	Reporting Limit
Sample Number: SG-10@5'		
Oxygen (O_2) + Argon (Ar)	19.8	0.15
Nitrogen (N_2)	79.6	0.15
Methane (CH_4)	ND	0.15
Carbon Monoxide (CO)	ND	0.15
Carbon Dioxide (CO_2)	0.6	0.15
Sample Number: SG-10@1.5'		
Oxygen (O_2) + Argon (Ar)	19.9	0.20
Nitrogen (N_2)	79.3	0.20
Methane (CH_4)	ND	0.20
Carbon Monoxide (CO)	ND	0.20
Carbon Dioxide (CO_2)	0.9	0.20
Sample Number: Method Blank (050617L01)		
Oxygen (O_2)	ND	0.1
Nitrogen (N_2)	ND	0.1
Methane (CH_4)	ND	0.1
Carbon Monoxide (CO)	ND	0.1
Carbon Dioxide (CO_2)	ND	0.1

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Sampled:	N/A
11305 Rancho Bernardo Road, Suite 101		Date Received:	N/A
San Diego, CA 92127-1461		Date Analyzed:	06/17-20/05
		Work Order No.:	05-06-1091
Attn:	Sean McClain	Method:	ASTM D-1946
RE:	Poway Landfill / SC-0233-03-07	Page 8 of 9	

All concentrations are reported in percent (%) by volume.

Analyte	Concentration	Reporting Limit
Sample Number: Method Blank (050618L01)		
Oxygen (O_2) + Argon (Ar)	ND	0.1
Nitrogen (N_2)	ND	0.1
Methane (CH_4)	ND	0.1
Carbon Monoxide (CO)	ND	0.1
Carbon Dioxide (CO_2)	ND	0.1
Sample Number: Method Blank (050620L01)		
Oxygen (O_2) + Argon (Ar)	ND	0.1
Nitrogen (N_2)	ND	0.1
Methane (CH_4)	ND	0.1
Carbon Monoxide (CO)	ND	0.1
Carbon Dioxide (CO_2)	ND	0.1

Calscience Environmental Laboratories, Inc.

ACCREDITED IN ACCORDANCE WITH nelac

ANALYTICAL REPORT

GeoSyntec Consultants	Date Sampled:	N/A
11305 Rancho Bernardo Road, Suite 101	Date Received:	N/A
San Diego, CA 92127-1461	Date Analyzed:	06/17-20/05
	Work Order No.:	05-06-1091
Attn: Sean McClain	Method:	ASTM D-1946
RE: Poway Landfill / SC-0233-03-07	Page 9 of 9	

All concentrations are reported in percent (%) by volume.

QA/QC

Sample Number: Laboratory Control Sample (050617L01)

Analyte	Sample Conc.	Duplicate Conc.	%RPD	Control Limits (%)
Oxygen (O_2) + Argon (Ar)	18.1	18.1	0	0 - 30
Nitrogen (N_2)	67.0	67.2	0	0 - 30
Carbon Dioxide (CO_2)	4.06	4.08	0	0 - 30

Sample Number: Laboratory Control Sample (050618L01)

Analyte	Sample Conc.	Duplicate Conc.	%RPD	Control Limits (%)
Oxygen (O_2) + Argon (Ar)	18.5	18.3	1	0 - 30
Nitrogen (N_2)	68.6	67.7	1	0 - 30
Carbon Dioxide (CO_2)	4.32	4.26	1	0 - 30

Sample Number: Laboratory Control Sample (050620L01)

Analyte	Sample Conc.	Duplicate Conc.	%RPD	Control Limits (%)
Oxygen (O_2) + Argon (Ar)	18.6	17.9	4	0 - 30
Nitrogen (N_2)	69.2	66.5	4	0 - 30
Carbon Dioxide (CO_2)	4.33	4.13	5	0 - 30

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-13@1.5'	**05-06-1091-1**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	1100	50	50		t-1,3-Dichloropropene	ND	2.5	2.5	
Benzene	22	1	2.5		Ethylbenzene	23	1	2.5	
Benzyl Chloride	ND	2.5	2.5		4-Ethyltoluene	25	1	2.5	
Bromodichloromethane	2.9	1.3	2.5		Hexachloro-1,3-Butadiene	ND	2.5	2.5	
Bromoform	ND	1.3	2.5		2-Hexanone	ND	2.5	2.5	
Bromomethane	ND	1.3	2.5		Methyl-t-Butyl Ether (MTBE)	ND	5.0	2.5	
2-Butanone	21	2	2.5		Methylene Chloride	ND	5.0	2.5	
Carbon Disulfide	1.3	1.3	2.5		4-Methyl-2-Pentanone	ND	2.5	2.5	
Carbon Tetrachloride	ND	1.3	2.5		o-Xylene	48	1	2.5	
Chlorobenzene	ND	1.3	2.5		p/m-Xylene	78	2	2.5	
Chloroethane	ND	1.3	2.5		Styrene	ND	2.5	2.5	
Chloroform	3.7	1.3	2.5		Tetrachloroethene	ND	1.3	2.5	
Chloromethane	2.6	1.3	2.5		Toluene	54	1	2.5	
Dibromochloromethane	ND	1.3	2.5		Trichloroethene	ND	1.3	2.5	
Dichlorodifluoromethane	2.3	1.3	2.5		Trichlorofluoromethane	ND	2.5	2.5	
1,1-Dichloroethane	ND	1.3	2.5		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	2.5	2.5	
1,1-Dichloroethene	ND	1.3	2.5		1,1,1-Trichloroethane	ND	1.3	2.5	
1,2-Dibromoethane	ND	1.3	2.5		1,1,2-Trichloroethane	ND	1.3	2.5	
Dichlorotetrafluoroethane	ND	5.0	2.5		1,1,1,2-Tetrachloroethane	ND	1.3	2.5	
1,2-Dichlorobenzene	ND	1.3	2.5		1,3,5-Trimethylbenzene	30	1	2.5	
1,2-Dichloroethane	ND	1.3	2.5		1,1,2,2-Tetrachloroethane	ND	2.5	2.5	
1,2-Dichloropropane	ND	1.3	2.5		1,2,4-Trimethylbenzene	86	50	50	
1,3-Dichlorobenzene	1.5	1.3	2.5		1,2,4-Trichlorobenzene	ND	2.5	2.5	
1,4-Dichlorobenzene	ND	1.3	2.5		Vinyl Acetate	ND	2.5	2.5	
c-1,3-Dichloropropene	ND	1.3	2.5		Vinyl Chloride	ND	1.3	2.5	
c-1,2-Dichloroethene	ND	1.3	2.5		Isopropanol	ND	13	2.5	
t-1,2-Dichloroethene	ND	1.3	2.5						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-13@5.0'	**05-06-1091-2**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	280	14	14.4		t-1,3-Dichloropropene	ND	1.4	1.44	
Benzene	7.4	0.7	1.44		Ethylbenzene	35	0.72	1.44	
Benzyl Chloride	ND	1.4	1.44		4-Ethyltoluene	25	0.72	1.44	
Bromodichloromethane	ND	0.72	1.44		Hexachloro-1,3-Butadiene	ND	1.4	1.44	
Bromoform	ND	0.72	1.44		2-Hexanone	2.3	1.4	1.44	
Bromomethane	ND	0.72	1.44		Methyl-t-Butyl Ether (MTBE)	ND	2.9	1.44	
2-Butanone	7.4	1.4	1.44		Methylene Chloride	ND	2.9	1.44	
Carbon Disulfide	ND	0.72	1.44		4-Methyl-2-Pentanone	4.1	1.4	1.44	
Carbon Tetrachloride	ND	0.72	1.44		o-Xylene	63	0.72	1.44	
Chlorobenzene	0.86	0.72	1.44		p/m-Xylene	120	1	1.44	
Chloroethane	ND	0.72	1.44		Styrene	ND	1.4	1.44	
Chloroform	ND	0.72	1.44		Tetrachloroethene	2.1	0.7	1.44	
Chloromethane	1.2	0.7	1.44		Toluene	51	0.72	1.44	
Dibromochloromethane	ND	0.72	1.44		Trichloroethene	ND	0.72	1.44	
Dichlorodifluoromethane	2.1	0.7	1.44		Trichlorofluoromethane	ND	1.4	1.44	
1,1-Dichloroethane	ND	0.72	1.44		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.4	1.44	
1,1-Dichloroethene	ND	0.72	1.44		1,1,1-Trichloroethane	ND	0.72	1.44	
1,2-Dibromoethane	ND	0.72	1.44		1,1,2-Trichloroethane	ND	0.72	1.44	
Dichlorotetrafluoroethane	ND	2.9	1.44		1,1,1,2-Tetrachloroethane	ND	0.72	1.44	
1,2-Dichlorobenzene	ND	0.72	1.44		1,3,5-Trimethylbenzene	26	0.72	1.44	
1,2-Dichloroethane	ND	0.72	1.44		1,1,2,2-Tetrachloroethane	ND	1.4	1.44	
1,2-Dichloropropane	ND	0.72	1.44		1,2,4-Trimethylbenzene	120	14	14.4	
1,3-Dichlorobenzene	ND	0.72	1.44		1,2,4-Trichlorobenzene	ND	1.4	1.44	
1,4-Dichlorobenzene	ND	0.72	1.44		Vinyl Acetate	26	1	1.44	
c-1,3-Dichloropropene	ND	0.72	1.44		Vinyl Chloride	ND	0.72	1.44	
c-1,2-Dichloroethene	ND	0.72	1.44		Isopropanol	ND	7.2	1.44	
t-1,2-Dichloroethene	ND	0.72	1.44						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-11@5.0'	**05-06-1091-3**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	510	15	14.7		t-1,3-Dichloropropene	ND	2.2	2.21	
Benzene	47	1	2.21		Ethylbenzene	14	1	2.21	
Benzyl Chloride	ND	2.2	2.21		4-Ethyltoluene	3.3	1.1	2.21	
Bromodichloromethane	1.8	1.1	2.21		Hexachloro-1,3-Butadiene	ND	2.2	2.21	
Bromoform	ND	1.1	2.21		2-Hexanone	3.3	2.2	2.21	
Bromomethane	ND	1.1	2.21		Methyl-t-Butyl Ether (MTBE)	ND	4.4	2.21	
2-Butanone	35	2	2.21		Methylene Chloride	ND	4.4	2.21	
Carbon Disulfide	2.1	1.1	2.21		4-Methyl-2-Pentanone	23	2	2.21	
Carbon Tetrachloride	ND	1.1	2.21		o-Xylene	21	1	2.21	
Chlorobenzene	ND	1.1	2.21		p/m-Xylene	48	2	2.21	
Chloroethane	1.6	1.1	2.21		Styrene	ND	2.2	2.21	
Chloroform	8.8	1.1	2.21		Tetrachloroethene	1.3	1.1	2.21	
Chloromethane	1.5	1.1	2.21		Toluene	59	1	2.21	
Dibromochloromethane	ND	1.1	2.21		Trichloroethene	1.3	1.1	2.21	
Dichlorodifluoromethane	ND	1.1	2.21		Trichlorofluoromethane	2.7	2.2	2.21	
1,1-Dichloroethane	ND	1.1	2.21		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	2.2	2.21	
1,1-Dichloroethene	ND	1.1	2.21		1,1,1-Trichloroethane	ND	1.1	2.21	
1,2-Dibromoethane	ND	1.1	2.21		1,1,2-Trichloroethane	ND	1.1	2.21	
Dichlorotetrafluoroethane	ND	4.4	2.21		1,1,1,2-Tetrachloroethane	ND	1.1	2.21	
1,2-Dichlorobenzene	ND	1.1	2.21		1,3,5-Trimethylbenzene	3.0	1.1	2.21	
1,2-Dichloroethane	ND	1.1	2.21		1,1,2,2-Tetrachloroethane	ND	2.2	2.21	
1,2-Dichloropropane	ND	1.1	2.21		1,2,4-Trimethylbenzene	11	2	2.21	
1,3-Dichlorobenzene	ND	1.1	2.21		1,2,4-Trichlorobenzene	ND	2.2	2.21	
1,4-Dichlorobenzene	ND	1.1	2.21		Vinyl Acetate	ND	2.2	2.21	
c-1,3-Dichloropropene	ND	1.1	2.21		Vinyl Chloride	ND	1.1	2.21	
c-1,2-Dichloroethene	ND	1.1	2.21		Isopropanol	ND	11	2.21	
t-1,2-Dichloroethene	ND	1.1	2.21						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-11@1.5'	**05-06-1091-4**	**06/15/05**	**Air**	**N/A**	**06/20/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	67	2	2.52		t-1,3-Dichloropropene	ND	2.5	2.52	
Benzene	4.9	1.3	2.52		Ethylbenzene	1.3	1.3	2.52	
Benzyl Chloride	ND	2.5	2.52		4-Ethyltoluene	ND	1.3	2.52	
Bromodichloromethane	ND	1.3	2.52		Hexachloro-1,3-Butadiene	ND	2.5	2.52	
Bromoform	ND	1.3	2.52		2-Hexanone	ND	2.5	2.52	
Bromomethane	ND	1.3	2.52		Methyl-t-Butyl Ether (MTBE)	ND	5.0	2.52	
2-Butanone	5.3	2.5	2.52		Methylene Chloride	ND	5.0	2.52	
Carbon Disulfide	ND	1.3	2.52		4-Methyl-2-Pentanone	ND	2.5	2.52	
Carbon Tetrachloride	ND	1.3	2.52		o-Xylene	2.3	1.3	2.52	
Chlorobenzene	ND	1.3	2.52		p/m-Xylene	5.0	2.5	2.52	
Chloroethane	2.8	1.3	2.52		Styrene	ND	2.5	2.52	
Chloroform	1.3	1.3	2.52		Tetrachloroethene	ND	1.3	2.52	
Chloromethane	2.7	1.3	2.52		Toluene	6.5	1.3	2.52	
Dibromochloromethane	ND	1.3	2.52		Trichloroethene	ND	1.3	2.52	
Dichlorodifluoromethane	ND	1.3	2.52		Trichlorofluoromethane	3.1	2.5	2.52	
1,1-Dichloroethane	ND	1.3	2.52		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	2.5	2.52	
1,1-Dichloroethene	ND	1.3	2.52		1,1,1-Trichloroethane	ND	1.3	2.52	
1,2-Dibromoethane	ND	1.3	2.52		1,1,2-Trichloroethane	ND	1.3	2.52	
Dichlorotetrafluoroethane	ND	5.0	2.52		1,1,1,2-Tetrachloroethane	ND	1.3	2.52	
1,2-Dichlorobenzene	ND	1.3	2.52		1,3,5-Trimethylbenzene	ND	1.3	2.52	
1,2-Dichloroethane	ND	1.3	2.52		1,1,2,2-Tetrachloroethane	ND	2.5	2.52	
1,2-Dichloropropane	ND	1.3	2.52		1,2,4-Trimethylbenzene	ND	2.5	2.52	
1,3-Dichlorobenzene	ND	1.3	2.52		1,2,4-Trichlorobenzene	ND	2.5	2.52	
1,4-Dichlorobenzene	ND	1.3	2.52		Vinyl Acetate	ND	2.5	2.52	
c-1,3-Dichloropropene	ND	1.3	2.52		Vinyl Chloride	ND	1.3	2.52	
c-1,2-Dichloroethene	ND	1.3	2.52		Isopropanol	ND	13	2.52	
t-1,2-Dichloroethene	ND	1.3	2.52						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-12@5.0'	**05-06-1091-5**	**06/15/05**	**Air**	**N/A**	**06/20/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	55	1	1.44		t-1,3-Dichloropropene	ND	1.4	1.44	
Benzene	10	0.72	1.44		Ethylbenzene	1.1	0.7	1.44	
Benzyl Chloride	ND	1.4	1.44		4-Ethyltoluene	ND	0.72	1.44	
Bromodichloromethane	ND	0.72	1.44		Hexachloro-1,3-Butadiene	ND	1.4	1.44	
Bromoform	ND	0.72	1.44		2-Hexanone	ND	1.4	1.44	
Bromomethane	ND	0.72	1.44		Methyl-t-Butyl Ether (MTBE)	ND	2.9	1.44	
2-Butanone	5.3	1.4	1.44		Methylene Chloride	ND	2.9	1.44	
Carbon Disulfide	ND	0.72	1.44		4-Methyl-2-Pentanone	ND	1.4	1.44	
Carbon Tetrachloride	ND	0.72	1.44		o-Xylene	1.2	0.7	1.44	
Chlorobenzene	ND	0.72	1.44		p/m-Xylene	3.3	1.4	1.44	
Chloroethane	ND	0.72	1.44		Styrene	ND	1.4	1.44	
Chloroform	ND	0.72	1.44		Tetrachloroethene	53	0.72	1.44	
Chloromethane	ND	0.72	1.44		Toluene	7.8	0.7	1.44	
Dibromochloromethane	ND	0.72	1.44		Trichloroethene	0.75	0.72	1.44	
Dichlorodifluoromethane	ND	0.72	1.44		Trichlorofluoromethane	ND	1.4	1.44	
1,1-Dichloroethane	ND	0.72	1.44		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.4	1.44	
1,1-Dichloroethene	ND	0.72	1.44		1,1,1-Trichloroethane	ND	0.72	1.44	
1,2-Dibromoethane	ND	0.72	1.44		1,1,2-Trichloroethane	ND	0.72	1.44	
Dichlorotetrafluoroethane	ND	2.9	1.44		1,1,1,2-Tetrachloroethane	ND	0.72	1.44	
1,2-Dichlorobenzene	ND	0.72	1.44		1,3,5-Trimethylbenzene	ND	0.72	1.44	
1,2-Dichloroethane	ND	0.72	1.44		1,1,2,2-Tetrachloroethane	ND	1.4	1.44	
1,2-Dichloropropane	ND	0.72	1.44		1,2,4-Trimethylbenzene	2.0	1.4	1.44	
1,3-Dichlorobenzene	ND	0.72	1.44		1,2,4-Trichlorobenzene	ND	1.4	1.44	
1,4-Dichlorobenzene	ND	0.72	1.44		Vinyl Acetate	ND	1.4	1.44	
c-1,3-Dichloropropene	ND	0.72	1.44		Vinyl Chloride	ND	0.72	1.44	
c-1,2-Dichloroethene	ND	0.72	1.44		Isopropanol	ND	7.2	1.44	
t-1,2-Dichloroethene	ND	0.72	1.44						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-12@1.5'	**05-06-1091-6**	**06/15/05**	**Air**	**N/A**	**06/20/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	100	2	2.24		t-1,3-Dichloropropene	ND	2.2	2.24	
Benzene	19	1	2.24		Ethylbenzene	2.1	1.1	2.24	
Benzyl Chloride	ND	2.2	2.24		4-Ethyltoluene	ND	1.1	2.24	
Bromodichloromethane	ND	1.1	2.24		Hexachloro-1,3-Butadiene	ND	2.2	2.24	
Bromoform	ND	1.1	2.24		2-Hexanone	ND	2.2	2.24	
Bromomethane	ND	1.1	2.24		Methyl-t-Butyl Ether (MTBE)	ND	4.5	2.24	
2-Butanone	9.5	2.2	2.24		Methylene Chloride	ND	4.5	2.24	
Carbon Disulfide	ND	1.1	2.24		4-Methyl-2-Pentanone	ND	2.2	2.24	
Carbon Tetrachloride	ND	1.1	2.24		o-Xylene	1.8	1.1	2.24	
Chlorobenzene	ND	1.1	2.24		p/m-Xylene	4.8	2.2	2.24	
Chloroethane	1.5	1.1	2.24		Styrene	ND	2.2	2.24	
Chloroform	1.9	1.1	2.24		Tetrachloroethene	25	1	2.24	
Chloromethane	1.6	1.1	2.24		Toluene	14	1	2.24	
Dibromochloromethane	ND	1.1	2.24		Trichloroethene	ND	1.1	2.24	
Dichlorodifluoromethane	ND	1.1	2.24		Trichlorofluoromethane	ND	2.2	2.24	
1,1-Dichloroethane	ND	1.1	2.24		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	2.2	2.24	
1,1-Dichloroethene	ND	1.1	2.24		1,1,1-Trichloroethane	ND	1.1	2.24	
1,2-Dibromoethane	ND	1.1	2.24		1,1,2-Trichloroethane	ND	1.1	2.24	
Dichlorotetrafluoroethane	ND	4.5	2.24		1,1,1,2-Tetrachloroethane	ND	1.1	2.24	
1,2-Dichlorobenzene	ND	1.1	2.24		1,3,5-Trimethylbenzene	ND	1.1	2.24	
1,2-Dichloroethane	ND	1.1	2.24		1,1,2,2-Tetrachloroethane	ND	2.2	2.24	
1,2-Dichloropropane	ND	1.1	2.24		1,2,4-Trimethylbenzene	ND	2.2	2.24	
1,3-Dichlorobenzene	ND	1.1	2.24		1,2,4-Trichlorobenzene	ND	2.2	2.24	
1,4-Dichlorobenzene	ND	1.1	2.24		Vinyl Acetate	ND	2.2	2.24	
c-1,3-Dichloropropene	ND	1.1	2.24		Vinyl Chloride	ND	1.1	2.24	
c-1,2-Dichloroethene	ND	1.1	2.24		Isopropanol	ND	11	2.24	
t-1,2-Dichloroethene	ND	1.1	2.24						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-14@5'	**05-06-1091-7**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	130	14	14.1		t-1,3-Dichloropropene	ND	1.4	1.41	
Benzene	5.0	0.7	1.41		Ethylbenzene	2.9	0.7	1.41	
Benzyl Chloride	ND	1.4	1.41		4-Ethyltoluene	1.4	0.7	1.41	
Bromodichloromethane	13	0.71	1.41		Hexachloro-1,3-Butadiene	ND	1.4	1.41	
Bromoform	ND	0.71	1.41		2-Hexanone	1.4	1.4	1.41	
Bromomethane	ND	0.71	1.41		Methyl-t-Butyl Ether (MTBE)	ND	2.8	1.41	
2-Butanone	10	1	1.41		Methylene Chloride	ND	2.8	1.41	
Carbon Disulfide	ND	0.71	1.41		4-Methyl-2-Pentanone	6.2	1.4	1.41	
Carbon Tetrachloride	ND	0.71	1.41		o-Xylene	3.9	0.7	1.41	
Chlorobenzene	ND	0.71	1.41		p/m-Xylene	12	1	1.41	
Chloroethane	ND	0.71	1.41		Styrene	ND	1.4	1.41	
Chloroform	150	7	14.1		Tetrachloroethene	0.80	0.71	1.41	
Chloromethane	ND	0.71	1.41		Toluene	15	0.71	1.41	
Dibromochloromethane	ND	0.71	1.41		Trichloroethene	ND	0.71	1.41	
Dichlorodifluoromethane	ND	0.71	1.41		Trichlorofluoromethane	ND	1.4	1.41	
1,1-Dichloroethane	ND	0.71	1.41		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.4	1.41	
1,1-Dichloroethene	ND	0.71	1.41		1,1,1-Trichloroethane	ND	0.71	1.41	
1,2-Dibromoethane	ND	0.71	1.41		1,1,2-Trichloroethane	ND	0.71	1.41	
Dichlorotetrafluoroethane	ND	2.8	1.41		1,1,1,2-Tetrachloroethane	ND	0.71	1.41	
1,2-Dichlorobenzene	ND	0.71	1.41		1,3,5-Trimethylbenzene	1.4	0.7	1.41	
1,2-Dichloroethane	ND	0.71	1.41		1,1,2,2-Tetrachloroethane	ND	1.4	1.41	
1,2-Dichloropropane	ND	0.71	1.41		1,2,4-Trimethylbenzene	5.5	1.4	1.41	
1,3-Dichlorobenzene	ND	0.71	1.41		1,2,4-Trichlorobenzene	ND	1.4	1.41	
1,4-Dichlorobenzene	ND	0.71	1.41		Vinyl Acetate	ND	1.4	1.41	
c-1,3-Dichloropropene	ND	0.71	1.41		Vinyl Chloride	ND	0.71	1.41	
c-1,2-Dichloroethene	ND	0.71	1.41		Isopropanol	ND	7.1	1.41	
t-1,2-Dichloroethene	ND	0.71	1.41						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-14@1.5'	**05-06-1091-8**	**06/15/05**	**Air**	**N/A**	**06/28/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	150	5	5.76		t-1,3-Dichloropropene	ND	1.4	1.44	
Benzene	22	0.72	1.44		Ethylbenzene	4.5	0.7	1.44	
Benzyl Chloride	ND	1.4	1.44		4-Ethyltoluene	1.4	0.7	1.44	
Bromodichloromethane	9.0	0.7	1.44		Hexachloro-1,3-Butadiene	ND	1.4	1.44	
Bromoform	ND	0.72	1.44		2-Hexanone	ND	1.4	1.44	
Bromomethane	ND	0.72	1.44		Methyl-t-Butyl Ether (MTBE)	ND	2.9	1.44	
2-Butanone	17	1	1.44		Methylene Chloride	ND	2.9	1.44	
Carbon Disulfide	ND	0.72	1.44		4-Methyl-2-Pentanone	4.7	1.4	1.44	
Carbon Tetrachloride	ND	0.72	1.44		o-Xylene	4.1	0.7	1.44	
Chlorobenzene	ND	0.72	1.44		p/m-Xylene	11	1	1.44	
Chloroethane	1.8	0.7	1.44		Styrene	ND	1.4	1.44	
Chloroform	97	2	5.76		Tetrachloroethene	ND	0.72	1.44	
Chloromethane	ND	0.72	1.44		Toluene	32	0.72	1.44	
Dibromochloromethane	ND	0.72	1.44		Trichloroethene	ND	0.72	1.44	
Dichlorodifluoromethane	ND	0.72	1.44		Trichlorofluoromethane	ND	1.4	1.44	
1,1-Dichloroethane	ND	0.72	1.44		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.4	1.44	
1,1-Dichloroethene	ND	0.72	1.44		1,1,1-Trichloroethane	ND	0.72	1.44	
1,2-Dibromoethane	ND	0.72	1.44		1,1,2-Trichloroethane	ND	0.72	1.44	
Dichlorotetrafluoroethane	ND	2.9	1.44		1,1,1,2-Tetrachloroethane	ND	0.72	1.44	
1,2-Dichlorobenzene	ND	0.72	1.44		1,3,5-Trimethylbenzene	1.4	0.7	1.44	
1,2-Dichloroethane	ND	0.72	1.44		1,1,2,2-Tetrachloroethane	ND	1.4	1.44	
1,2-Dichloropropane	ND	0.72	1.44		1,2,4-Trimethylbenzene	4.7	1.4	1.44	
1,3-Dichlorobenzene	ND	0.72	1.44		1,2,4-Trichlorobenzene	ND	1.4	1.44	
1,4-Dichlorobenzene	ND	0.72	1.44		Vinyl Acetate	ND	1.4	1.44	
c-1,3-Dichloropropene	ND	0.72	1.44		Vinyl Chloride	ND	0.72	1.44	
c-1,2-Dichloroethene	ND	0.72	1.44		Isopropanol	ND	7.2	1.44	
t-1,2-Dichloroethene	ND	0.72	1.44						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-15@5'	**05-06-1091-9**	**06/15/05**	**Air**	**N/A**	**06/20/05**	**050619L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	42	1	1.45		t-1,3-Dichloropropene	ND	1.5	1.45	
Benzene	4.1	0.7	1.45		Ethylbenzene	13	0.73	1.45	
Benzyl Chloride	ND	1.5	1.45		4-Ethyltoluene	0.88	0.73	1.45	
Bromodichloromethane	ND	0.73	1.45		Hexachloro-1,3-Butadiene	ND	1.5	1.45	
Bromoform	ND	0.73	1.45		2-Hexanone	ND	1.5	1.45	
Bromomethane	ND	0.73	1.45		Methyl-t-Butyl Ether (MTBE)	ND	2.9	1.45	
2-Butanone	4.1	1.5	1.45		Methylene Chloride	ND	2.9	1.45	
Carbon Disulfide	ND	0.73	1.45		4-Methyl-2-Pentanone	4.2	1.5	1.45	
Carbon Tetrachloride	ND	0.73	1.45		o-Xylene	33	0.73	1.45	
Chlorobenzene	ND	0.73	1.45		p/m-Xylene	60	1	1.45	
Chloroethane	ND	0.73	1.45		Styrene	ND	1.5	1.45	
Chloroform	7.9	0.7	1.45		Tetrachloroethene	ND	0.73	1.45	
Chloromethane	ND	0.73	1.45		Toluene	7.1	0.7	1.45	
Dibromochloromethane	ND	0.73	1.45		Trichloroethene	ND	0.73	1.45	
Dichlorodifluoromethane	ND	0.73	1.45		Trichlorofluoromethane	ND	1.5	1.45	
1,1-Dichloroethane	ND	0.73	1.45		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.5	1.45	
1,1-Dichloroethene	ND	0.73	1.45		1,1,1-Trichloroethane	ND	0.73	1.45	
1,2-Dibromoethane	ND	0.73	1.45		1,1,2-Trichloroethane	ND	0.73	1.45	
Dichlorotetrafluoroethane	ND	2.9	1.45		1,1,1,2-Tetrachloroethane	ND	0.73	1.45	
1,2-Dichlorobenzene	ND	0.73	1.45		1,3,5-Trimethylbenzene	ND	0.73	1.45	
1,2-Dichloroethane	ND	0.73	1.45		1,1,2,2-Tetrachloroethane	ND	1.5	1.45	
1,2-Dichloropropane	ND	0.73	1.45		1,2,4-Trimethylbenzene	3.7	1.5	1.45	
1,3-Dichlorobenzene	ND	0.73	1.45		1,2,4-Trichlorobenzene	ND	1.5	1.45	
1,4-Dichlorobenzene	ND	0.73	1.45		Vinyl Acetate	ND	1.5	1.45	
c-1,3-Dichloropropene	ND	0.73	1.45		Vinyl Chloride	ND	0.73	1.45	
c-1,2-Dichloroethene	ND	0.73	1.45		Isopropanol	ND	7.3	1.45	
t-1,2-Dichloroethene	ND	0.73	1.45						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-15@1.5'	**05-06-1091-10**	**06/15/05**	**Air**	**N/A**	**06/20/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	190	4	4		t-1,3-Dichloropropene	ND	4.0	4	
Benzene	12	2	4		Ethylbenzene	2.6	2.0	4	
Benzyl Chloride	ND	4.0	4		4-Ethyltoluene	ND	2.0	4	
Bromodichloromethane	ND	2.0	4		Hexachloro-1,3-Butadiene	ND	4.0	4	
Bromoform	ND	2.0	4		2-Hexanone	ND	4.0	4	
Bromomethane	ND	2.0	4		Methyl-t-Butyl Ether (MTBE)	ND	8.0	4	
2-Butanone	11	4	4		Methylene Chloride	ND	8.0	4	
Carbon Disulfide	ND	2.0	4		4-Methyl-2-Pentanone	ND	4.0	4	
Carbon Tetrachloride	ND	2.0	4		o-Xylene	4.8	2.0	4	
Chlorobenzene	ND	2.0	4		p/m-Xylene	9.9	4.0	4	
Chloroethane	12	2	4		Styrene	ND	4.0	4	
Chloroform	3.4	2.0	4		Tetrachloroethene	ND	2.0	4	
Chloromethane	7.3	2.0	4		Toluene	11	2	4	
Dibromochloromethane	ND	2.0	4		Trichloroethene	ND	2.0	4	
Dichlorodifluoromethane	ND	2.0	4		Trichlorofluoromethane	ND	4.0	4	
1,1-Dichloroethane	ND	2.0	4		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	4.0	4	
1,1-Dichloroethene	ND	2.0	4		1,1,1-Trichloroethane	ND	2.0	4	
1,2-Dibromoethane	ND	2.0	4		1,1,2-Trichloroethane	ND	2.0	4	
Dichlorotetrafluoroethane	ND	8.0	4		1,1,1,2-Tetrachloroethane	ND	2.0	4	
1,2-Dichlorobenzene	ND	2.0	4		1,3,5-Trimethylbenzene	ND	2.0	4	
1,2-Dichloroethane	ND	2.0	4		1,1,2,2-Tetrachloroethane	ND	4.0	4	
1,2-Dichloropropane	ND	2.0	4		1,2,4-Trimethylbenzene	ND	4.0	4	
1,3-Dichlorobenzene	ND	2.0	4		1,2,4-Trichlorobenzene	ND	4.0	4	
1,4-Dichlorobenzene	ND	2.0	4		Vinyl Acetate	ND	4.0	4	
c-1,3-Dichloropropene	ND	2.0	4		Vinyl Chloride	ND	2.0	4	
c-1,2-Dichloroethene	ND	2.0	4		Isopropanol	ND	20	4	
t-1,2-Dichloroethene	ND	2.0	4						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-17@5.0'	**05-06-1091-11**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	300	14	14.4		t-1,3-Dichloropropene	ND	1.4	1.44	
Benzene	21	0.72	1.44		Ethylbenzene	4.5	0.7	1.44	
Benzyl Chloride	ND	1.4	1.44		4-Ethyltoluene	1.3	0.7	1.44	
Bromodichloromethane	ND	0.72	1.44		Hexachloro-1,3-Butadiene	ND	1.4	1.44	
Bromoform	ND	0.72	1.44		2-Hexanone	ND	1.4	1.44	
Bromomethane	ND	0.72	1.44		Methyl-t-Butyl Ether (MTBE)	ND	2.9	1.44	
2-Butanone	13	1	1.44		Methylene Chloride	ND	2.9	1.44	
Carbon Disulfide	ND	0.72	1.44		4-Methyl-2-Pentanone	3.6	1.4	1.44	
Carbon Tetrachloride	ND	0.72	1.44		o-Xylene	4.3	0.7	1.44	
Chlorobenzene	ND	0.72	1.44		p/m-Xylene	10	1	1.44	
Chloroethane	ND	0.72	1.44		Styrene	ND	1.4	1.44	
Chloroform	ND	0.72	1.44		Tetrachloroethene	ND	0.72	1.44	
Chloromethane	1.2	0.7	1.44		Toluene	16	0.72	1.44	
Dibromochloromethane	ND	0.72	1.44		Trichloroethene	ND	0.72	1.44	
Dichlorodifluoromethane	ND	0.72	1.44		Trichlorofluoromethane	7.7	1.4	1.44	
1,1-Dichloroethane	ND	0.72	1.44		1,1,2-Trichloro-1,2,2-Trifluoroethane	1.8	1.4	1.44	
1,1-Dichloroethene	ND	0.72	1.44		1,1,1-Trichloroethane	ND	0.72	1.44	
1,2-Dibromoethane	ND	0.72	1.44		1,1,2-Trichloroethane	ND	0.72	1.44	
Dichlorotetrafluoroethane	ND	2.9	1.44		1,1,1,2-Tetrachloroethane	ND	0.72	1.44	
1,2-Dichlorobenzene	ND	0.72	1.44		1,3,5-Trimethylbenzene	1.1	0.7	1.44	
1,2-Dichloroethane	ND	0.72	1.44		1,1,2,2-Tetrachloroethane	ND	1.4	1.44	
1,2-Dichloropropane	ND	0.72	1.44		1,2,4-Trimethylbenzene	5.0	1.4	1.44	
1,3-Dichlorobenzene	ND	0.72	1.44		1,2,4-Trichlorobenzene	ND	1.4	1.44	
1,4-Dichlorobenzene	ND	0.72	1.44		Vinyl Acetate	ND	1.4	1.44	
c-1,3-Dichloropropene	ND	0.72	1.44		Vinyl Chloride	ND	0.72	1.44	
c-1,2-Dichloroethene	ND	0.72	1.44		Isopropanol	ND	7.2	1.44	
t-1,2-Dichloroethene	ND	0.72	1.44						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-17@1.5'	**05-06-1091-12**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	180	17	16.5		t-1,3-Dichloropropene	ND	1.7	1.65	
Benzene	10	0.83	1.65		Ethylbenzene	2.2	0.8	1.65	
Benzyl Chloride	ND	1.7	1.65		4-Ethyltoluene	ND	0.83	1.65	
Bromodichloromethane	1.3	0.8	1.65		Hexachloro-1,3-Butadiene	ND	1.7	1.65	
Bromoform	ND	0.83	1.65		2-Hexanone	ND	1.7	1.65	
Bromomethane	ND	0.83	1.65		Methyl-t-Butyl Ether (MTBE)	ND	3.3	1.65	
2-Butanone	14	1	1.65		Methylene Chloride	ND	3.3	1.65	
Carbon Disulfide	1.8	0.8	1.65		4-Methyl-2-Pentanone	5.9	1.7	1.65	
Carbon Tetrachloride	ND	0.83	1.65		o-Xylene	3.4	0.8	1.65	
Chlorobenzene	ND	0.83	1.65		p/m-Xylene	7.5	1.7	1.65	
Chloroethane	9.9	0.8	1.65		Styrene	ND	1.7	1.65	
Chloroform	2.3	0.8	1.65		Tetrachloroethene	ND	0.83	1.65	
Chloromethane	2.4	0.8	1.65		Toluene	8.7	0.8	1.65	
Dibromochloromethane	ND	0.83	1.65		Trichloroethene	ND	0.83	1.65	
Dichlorodifluoromethane	ND	0.83	1.65		Trichlorofluoromethane	ND	1.7	1.65	
1,1-Dichloroethane	ND	0.83	1.65		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.7	1.65	
1,1-Dichloroethene	ND	0.83	1.65		1,1,1-Trichloroethane	ND	0.83	1.65	
1,2-Dibromoethane	ND	0.83	1.65		1,1,2-Trichloroethane	ND	0.83	1.65	
Dichlorotetrafluoroethane	ND	3.3	1.65		1,1,1,2-Tetrachloroethane	ND	0.83	1.65	
1,2-Dichlorobenzene	ND	0.83	1.65		1,3,5-Trimethylbenzene	ND	0.83	1.65	
1,2-Dichloroethane	ND	0.83	1.65		1,1,2,2-Tetrachloroethane	ND	1.7	1.65	
1,2-Dichloropropane	ND	0.83	1.65		1,2,4-Trimethylbenzene	3.1	1.7	1.65	
1,3-Dichlorobenzene	ND	0.83	1.65		1,2,4-Trichlorobenzene	ND	1.7	1.65	
1,4-Dichlorobenzene	ND	0.83	1.65		Vinyl Acetate	ND	1.7	1.65	
c-1,3-Dichloropropene	ND	0.83	1.65		Vinyl Chloride	ND	0.83	1.65	
c-1,2-Dichloroethene	ND	0.83	1.65		Isopropanol	ND	8.3	1.65	
t-1,2-Dichloroethene	ND	0.83	1.65						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-18@5'	**05-06-1091-13**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	190	14	14.4		t-1,3-Dichloropropene	ND	1.4	1.44	
Benzene	14	0.72	1.44		Ethylbenzene	2.6	0.7	1.44	
Benzyl Chloride	ND	1.4	1.44		4-Ethyltoluene	1.1	0.7	1.44	
Bromodichloromethane	ND	0.72	1.44		Hexachloro-1,3-Butadiene	ND	1.4	1.44	
Bromoform	ND	0.72	1.44		2-Hexanone	ND	1.4	1.44	
Bromomethane	ND	0.72	1.44		Methyl-t-Butyl Ether (MTBE)	ND	2.9	1.44	
2-Butanone	9.5	1.4	1.44		Methylene Chloride	ND	2.9	1.44	
Carbon Disulfide	0.84	0.72	1.44		4-Methyl-2-Pentanone	5.7	1.4	1.44	
Carbon Tetrachloride	ND	0.72	1.44		o-Xylene	3.5	0.7	1.44	
Chlorobenzene	ND	0.72	1.44		p/m-Xylene	9.0	1.4	1.44	
Chloroethane	ND	0.72	1.44		Styrene	ND	1.4	1.44	
Chloroform	9.9	0.7	1.44		Tetrachloroethene	ND	0.72	1.44	
Chloromethane	0.99	0.72	1.44		Toluene	10	0.72	1.44	
Dibromochloromethane	ND	0.72	1.44		Trichloroethene	ND	0.72	1.44	
Dichlorodifluoromethane	ND	0.72	1.44		Trichlorofluoromethane	ND	1.4	1.44	
1,1-Dichloroethane	ND	0.72	1.44		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.4	1.44	
1,1-Dichloroethene	ND	0.72	1.44		1,1,1-Trichloroethane	ND	0.72	1.44	
1,2-Dibromoethane	ND	0.72	1.44		1,1,2-Trichloroethane	ND	0.72	1.44	
Dichlorotetrafluoroethane	ND	2.9	1.44		1,1,1,2-Tetrachloroethane	ND	0.72	1.44	
1,2-Dichlorobenzene	ND	0.72	1.44		1,3,5-Trimethylbenzene	0.92	0.72	1.44	
1,2-Dichloroethane	ND	0.72	1.44		1,1,2,2-Tetrachloroethane	ND	1.4	1.44	
1,2-Dichloropropane	ND	0.72	1.44		1,2,4-Trimethylbenzene	4.4	1.4	1.44	
1,3-Dichlorobenzene	ND	0.72	1.44		1,2,4-Trichlorobenzene	ND	1.4	1.44	
1,4-Dichlorobenzene	ND	0.72	1.44		Vinyl Acetate	ND	1.4	1.44	
c-1,3-Dichloropropene	ND	0.72	1.44		Vinyl Chloride	ND	0.72	1.44	
c-1,2-Dichloroethene	ND	0.72	1.44		Isopropanol	ND	7.2	1.44	
t-1,2-Dichloroethene	ND	0.72	1.44						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-18@1.5'	**05-06-1091-14**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	120	16	16.2		t-1,3-Dichloropropene	ND	1.6	1.62	
Benzene	15	0.81	1.62		Ethylbenzene	2.8	0.8	1.62	
Benzyl Chloride	ND	1.6	1.62		4-Ethyltoluene	1.1	0.8	1.62	
Bromodichloromethane	1.8	0.8	1.62		Hexachloro-1,3-Butadiene	ND	1.6	1.62	
Bromoform	ND	0.81	1.62		2-Hexanone	ND	1.6	1.62	
Bromomethane	ND	0.81	1.62		Methyl-t-Butyl Ether (MTBE)	ND	3.2	1.62	
2-Butanone	11	1	1.62		Methylene Chloride	ND	3.2	1.62	
Carbon Disulfide	1.3	0.8	1.62		4-Methyl-2-Pentanone	3.2	1.6	1.62	
Carbon Tetrachloride	ND	0.81	1.62		o-Xylene	3.9	0.8	1.62	
Chlorobenzene	ND	0.81	1.62		p/m-Xylene	9.7	1.6	1.62	
Chloroethane	5.6	0.8	1.62		Styrene	ND	1.6	1.62	
Chloroform	5.2	0.8	1.62		Tetrachloroethene	ND	0.81	1.62	
Chloromethane	2.7	0.8	1.62		Toluene	13	0.81	1.62	
Dibromochloromethane	ND	0.81	1.62		Trichloroethene	ND	0.81	1.62	
Dichlorodifluoromethane	ND	0.81	1.62		Trichlorofluoromethane	ND	1.6	1.62	
1,1-Dichloroethane	ND	0.81	1.62		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.6	1.62	
1,1-Dichloroethene	ND	0.81	1.62		1,1,1-Trichloroethane	ND	0.81	1.62	
1,2-Dibromoethane	ND	0.81	1.62		1,1,2-Trichloroethane	ND	0.81	1.62	
Dichlorotetrafluoroethane	ND	3.2	1.62		1,1,1,2-Tetrachloroethane	ND	0.81	1.62	
1,2-Dichlorobenzene	ND	0.81	1.62		1,3,5-Trimethylbenzene	0.93	0.81	1.62	
1,2-Dichloroethane	ND	0.81	1.62		1,1,2,2-Tetrachloroethane	ND	1.6	1.62	
1,2-Dichloropropane	ND	0.81	1.62		1,2,4-Trimethylbenzene	3.9	1.6	1.62	
1,3-Dichlorobenzene	ND	0.81	1.62		1,2,4-Trichlorobenzene	ND	1.6	1.62	
1,4-Dichlorobenzene	ND	0.81	1.62		Vinyl Acetate	ND	1.6	1.62	
c-1,3-Dichloropropene	ND	0.81	1.62		Vinyl Chloride	ND	0.81	1.62	
c-1,2-Dichloroethene	ND	0.81	1.62		Isopropanol	ND	8.1	1.62	
t-1,2-Dichloroethene	ND	0.81	1.62						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-19@5.0'	**05-06-1091-15**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	220	15	14.8		t-1,3-Dichloropropene	ND	1.5	1.48	
Benzene	11	0.74	1.48		Ethylbenzene	4.2	0.7	1.48	
Benzyl Chloride	ND	1.5	1.48		4-Ethyltoluene	2.8	0.7	1.48	
Bromodichloromethane	0.97	0.74	1.48		Hexachloro-1,3-Butadiene	ND	1.5	1.48	
Bromoform	ND	0.74	1.48		2-Hexanone	ND	1.5	1.48	
Bromomethane	ND	0.74	1.48		Methyl-t-Butyl Ether (MTBE)	ND	3.0	1.48	
2-Butanone	8.1	1.5	1.48		Methylene Chloride	ND	3.0	1.48	
Carbon Disulfide	ND	0.74	1.48		4-Methyl-2-Pentanone	3.0	1.5	1.48	
Carbon Tetrachloride	ND	0.74	1.48		o-Xylene	8.0	0.7	1.48	
Chlorobenzene	ND	0.74	1.48		p/m-Xylene	14	1	1.48	
Chloroethane	ND	0.74	1.48		Styrene	ND	1.5	1.48	
Chloroform	11	0.74	1.48		Tetrachloroethene	ND	0.74	1.48	
Chloromethane	1.2	0.7	1.48		Toluene	16	0.74	1.48	
Dibromochloromethane	ND	0.74	1.48		Trichloroethene	ND	0.74	1.48	
Dichlorodifluoromethane	ND	0.74	1.48		Trichlorofluoromethane	ND	1.5	1.48	
1,1-Dichloroethane	ND	0.74	1.48		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.5	1.48	
1,1-Dichloroethene	ND	0.74	1.48		1,1,1-Trichloroethane	ND	0.74	1.48	
1,2-Dibromoethane	ND	0.74	1.48		1,1,2-Trichloroethane	ND	0.74	1.48	
Dichlorotetrafluoroethane	ND	3.0	1.48		1,1,1,2-Tetrachloroethane	ND	0.74	1.48	
1,2-Dichlorobenzene	ND	0.74	1.48		1,3,5-Trimethylbenzene	3.9	0.7	1.48	
1,2-Dichloroethane	ND	0.74	1.48		1,1,2,2-Tetrachloroethane	ND	1.5	1.48	
1,2-Dichloropropane	ND	0.74	1.48		1,2,4-Trimethylbenzene	17	1	1.48	
1,3-Dichlorobenzene	ND	0.74	1.48		1,2,4-Trichlorobenzene	ND	1.5	1.48	
1,4-Dichlorobenzene	ND	0.74	1.48		Vinyl Acetate	ND	1.5	1.48	
c-1,3-Dichloropropene	ND	0.74	1.48		Vinyl Chloride	ND	0.74	1.48	
c-1,2-Dichloroethene	ND	0.74	1.48		Isopropanol	ND	7.4	1.48	
t-1,2-Dichloroethene	ND	0.74	1.48						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-19@1.5'	**05-06-1091-16**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	1000	22	21.8		t-1,3-Dichloropropene	ND	2.2	2.18	
Benzene	12	1	2.18		Ethylbenzene	28	1	2.18	
Benzyl Chloride	ND	2.2	2.18		4-Ethyltoluene	15	1	2.18	
Bromodichloromethane	1.5	1.1	2.18		Hexachloro-1,3-Butadiene	ND	2.2	2.18	
Bromoform	ND	1.1	2.18		2-Hexanone	ND	2.2	2.18	
Bromomethane	ND	1.1	2.18		Methyl-t-Butyl Ether (MTBE)	ND	4.4	2.18	
2-Butanone	10	2	2.18		Methylene Chloride	ND	4.4	2.18	
Carbon Disulfide	1.6	1.1	2.18		4-Methyl-2-Pentanone	9.5	2.2	2.18	
Carbon Tetrachloride	ND	1.1	2.18		o-Xylene	59	1	2.18	
Chlorobenzene	ND	1.1	2.18		p/m-Xylene	97	2	2.18	
Chloroethane	3.2	1.1	2.18		Styrene	ND	2.2	2.18	
Chloroform	5.6	1.1	2.18		Tetrachloroethene	ND	1.1	2.18	
Chloromethane	ND	1.1	2.18		Toluene	62	1	2.18	
Dibromochloromethane	ND	1.1	2.18		Trichloroethene	ND	1.1	2.18	
Dichlorodifluoromethane	ND	1.1	2.18		Trichlorofluoromethane	ND	2.2	2.18	
1,1-Dichloroethane	ND	1.1	2.18		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	2.2	2.18	
1,1-Dichloroethene	ND	1.1	2.18		1,1,1-Trichloroethane	ND	1.1	2.18	
1,2-Dibromoethane	ND	1.1	2.18		1,1,2-Trichloroethane	ND	1.1	2.18	
Dichlorotetrafluoroethane	ND	4.4	2.18		1,1,1,2-Tetrachloroethane	ND	1.1	2.18	
1,2-Dichlorobenzene	ND	1.1	2.18		1,3,5-Trimethylbenzene	20	1	2.18	
1,2-Dichloroethane	ND	1.1	2.18		1,1,2,2-Tetrachloroethane	ND	2.2	2.18	
1,2-Dichloropropane	ND	1.1	2.18		1,2,4-Trimethylbenzene	70	2	2.18	
1,3-Dichlorobenzene	ND	1.1	2.18		1,2,4-Trichlorobenzene	ND	2.2	2.18	
1,4-Dichlorobenzene	ND	1.1	2.18		Vinyl Acetate	ND	2.2	2.18	
c-1,3-Dichloropropene	ND	1.1	2.18		Vinyl Chloride	ND	1.1	2.18	
c-1,2-Dichloroethene	ND	1.1	2.18		Isopropanol	ND	11	2.18	
t-1,2-Dichloroethene	ND	1.1	2.18						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-16@5'	**05-06-1091-17**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	650	29	29		t-1,3-Dichloropropene	ND	1.5	1.45	
Benzene	38	0.73	1.45		Ethylbenzene	6.7	0.7	1.45	
Benzyl Chloride	ND	1.5	1.45		4-Ethyltoluene	3.1	0.7	1.45	
Bromodichloromethane	ND	0.73	1.45		Hexachloro-1,3-Butadiene	ND	1.5	1.45	
Bromoform	ND	0.73	1.45		2-Hexanone	3.4	1.5	1.45	
Bromomethane	ND	0.73	1.45		Methyl-t-Butyl Ether (MTBE)	ND	2.9	1.45	
2-Butanone	31	1	1.45		Methylene Chloride	ND	2.9	1.45	
Carbon Disulfide	2.8	0.7	1.45		4-Methyl-2-Pentanone	12	1	1.45	
Carbon Tetrachloride	ND	0.73	1.45		o-Xylene	9.4	0.7	1.45	
Chlorobenzene	ND	0.73	1.45		p/m-Xylene	20	1	1.45	
Chloroethane	2.7	0.7	1.45		Styrene	1.8	1.5	1.45	
Chloroform	2.8	0.7	1.45		Tetrachloroethene	ND	0.73	1.45	
Chloromethane	4.0	0.7	1.45		Toluene	31	0.73	1.45	
Dibromochloromethane	ND	0.73	1.45		Trichloroethene	0.93	0.73	1.45	
Dichlorodifluoromethane	ND	0.73	1.45		Trichlorofluoromethane	ND	1.5	1.45	
1,1-Dichloroethane	ND	0.73	1.45		1,1,2-Trichloro-1,2,2-Trifluoroethane	2.1	1.5	1.45	
1,1-Dichloroethene	ND	0.73	1.45		1,1,1-Trichloroethane	ND	0.73	1.45	
1,2-Dibromoethane	ND	0.73	1.45		1,1,2-Trichloroethane	ND	0.73	1.45	
Dichlorotetrafluoroethane	ND	2.9	1.45		1,1,1,2-Tetrachloroethane	ND	0.73	1.45	
1,2-Dichlorobenzene	ND	0.73	1.45		1,3,5-Trimethylbenzene	3.8	0.7	1.45	
1,2-Dichloroethane	ND	0.73	1.45		1,1,2,2-Tetrachloroethane	ND	1.5	1.45	
1,2-Dichloropropane	ND	0.73	1.45		1,2,4-Trimethylbenzene	16	1	1.45	
1,3-Dichlorobenzene	ND	0.73	1.45		1,2,4-Trichlorobenzene	ND	1.5	1.45	
1,4-Dichlorobenzene	ND	0.73	1.45		Vinyl Acetate	ND	1.5	1.45	
c-1,3-Dichloropropene	ND	0.73	1.45		Vinyl Chloride	ND	0.73	1.45	
c-1,2-Dichloroethene	ND	0.73	1.45		Isopropanol	ND	7.3	1.45	
t-1,2-Dichloroethene	ND	0.73	1.45						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-16@1.5'	**05-06-1091-18**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	720	20	19.9		t-1,3-Dichloropropene	ND	2.0	1.99	
Benzene	10	1	1.99		Ethylbenzene	19	1	1.99	
Benzyl Chloride	ND	2.0	1.99		4-Ethyltoluene	8.8	1.0	1.99	
Bromodichloromethane	1.2	1.0	1.99		Hexachloro-1,3-Butadiene	ND	2.0	1.99	
Bromoform	ND	1.0	1.99		2-Hexanone	ND	2.0	1.99	
Bromomethane	ND	1.0	1.99		Methyl-t-Butyl Ether (MTBE)	ND	4.0	1.99	
2-Butanone	22	2	1.99		Methylene Chloride	ND	4.0	1.99	
Carbon Disulfide	2.3	1.0	1.99		4-Methyl-2-Pentanone	12	2	1.99	
Carbon Tetrachloride	ND	1.0	1.99		o-Xylene	40	1	1.99	
Chlorobenzene	ND	1.0	1.99		p/m-Xylene	61	2	1.99	
Chloroethane	7.5	1.0	1.99		Styrene	ND	2.0	1.99	
Chloroform	2.3	1.0	1.99		Tetrachloroethene	ND	1.0	1.99	
Chloromethane	9.9	1.0	1.99		Toluene	38	1	1.99	
Dibromochloromethane	ND	1.0	1.99		Trichloroethene	ND	1.0	1.99	
Dichlorodifluoromethane	ND	1.0	1.99		Trichlorofluoromethane	ND	2.0	1.99	
1,1-Dichloroethane	ND	1.0	1.99		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	2.0	1.99	
1,1-Dichloroethene	ND	1.0	1.99		1,1,1-Trichloroethane	ND	1.0	1.99	
1,2-Dibromoethane	ND	1.0	1.99		1,1,2-Trichloroethane	ND	1.0	1.99	
Dichlorotetrafluoroethane	ND	4.0	1.99		1,1,1,2-Tetrachloroethane	ND	1.0	1.99	
1,2-Dichlorobenzene	ND	1.0	1.99		1,3,5-Trimethylbenzene	13	1	1.99	
1,2-Dichloroethane	ND	1.0	1.99		1,1,2,2-Tetrachloroethane	ND	2.0	1.99	
1,2-Dichloropropane	ND	1.0	1.99		1,2,4-Trimethylbenzene	43	2	1.99	
1,3-Dichlorobenzene	ND	1.0	1.99		1,2,4-Trichlorobenzene	ND	2.0	1.99	
1,4-Dichlorobenzene	ND	1.0	1.99		Vinyl Acetate	ND	2.0	1.99	
c-1,3-Dichloropropene	ND	1.0	1.99		Vinyl Chloride	ND	1.0	1.99	
c-1,2-Dichloroethene	ND	1.0	1.99		Isopropanol	ND	10	1.99	
t-1,2-Dichloroethene	ND	1.0	1.99						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-10@5'	**05-06-1091-19**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	570	14	14.4		t-1,3-Dichloropropene	ND	1.4	1.44	
Benzene	49	0.72	1.44		Ethylbenzene	7.3	0.7	1.44	
Benzyl Chloride	ND	1.4	1.44		4-Ethyltoluene	2.5	0.7	1.44	
Bromodichloromethane	ND	0.72	1.44		Hexachloro-1,3-Butadiene	ND	1.4	1.44	
Bromoform	ND	0.72	1.44		2-Hexanone	2.4	1.4	1.44	
Bromomethane	ND	0.72	1.44		Methyl-t-Butyl Ether (MTBE)	ND	2.9	1.44	
2-Butanone	27	1	1.44		Methylene Chloride	ND	2.9	1.44	
Carbon Disulfide	2.5	0.7	1.44		4-Methyl-2-Pentanone	13	1	1.44	
Carbon Tetrachloride	ND	0.72	1.44		o-Xylene	9.3	0.7	1.44	
Chlorobenzene	ND	0.72	1.44		p/m-Xylene	22	1	1.44	
Chloroethane	6.0	0.7	1.44		Styrene	ND	1.4	1.44	
Chloroform	2.1	0.7	1.44		Tetrachloroethene	ND	0.72	1.44	
Chloromethane	3.1	0.7	1.44		Toluene	48	0.72	1.44	
Dibromochloromethane	ND	0.72	1.44		Trichloroethene	1.2	0.7	1.44	
Dichlorodifluoromethane	1.1	0.7	1.44		Trichlorofluoromethane	ND	1.4	1.44	
1,1-Dichloroethane	ND	0.72	1.44		1,1,2-Trichloro-1,2,2-Trifluoroethane	9.3	1.4	1.44	
1,1-Dichloroethene	ND	0.72	1.44		1,1,1-Trichloroethane	ND	0.72	1.44	
1,2-Dibromoethane	ND	0.72	1.44		1,1,2-Trichloroethane	ND	0.72	1.44	
Dichlorotetrafluoroethane	ND	2.9	1.44		1,1,1,2-Tetrachloroethane	ND	0.72	1.44	
1,2-Dichlorobenzene	ND	0.72	1.44		1,3,5-Trimethylbenzene	3.0	0.7	1.44	
1,2-Dichloroethane	ND	0.72	1.44		1,1,2,2-Tetrachloroethane	ND	1.4	1.44	
1,2-Dichloropropane	ND	0.72	1.44		1,2,4-Trimethylbenzene	12	1	1.44	
1,3-Dichlorobenzene	ND	0.72	1.44		1,2,4-Trichlorobenzene	ND	1.4	1.44	
1,4-Dichlorobenzene	ND	0.72	1.44		Vinyl Acetate	ND	1.4	1.44	
c-1,3-Dichloropropene	ND	0.72	1.44		Vinyl Chloride	ND	0.72	1.44	
c-1,2-Dichloroethene	ND	0.72	1.44		Isopropanol	ND	7.2	1.44	
t-1,2-Dichloroethene	ND	0.72	1.44						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SG-10@1.5'	**05-06-1091-20**	**06/15/05**	**Air**	**N/A**	**06/21/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	510	38	38.4		t-1,3-Dichloropropene	ND	1.9	1.92	
Benzene	12	0.96	1.92		Ethylbenzene	13	0.96	1.92	
Benzyl Chloride	ND	1.9	1.92		4-Ethyltoluene	6.9	0.9	1.92	
Bromodichloromethane	1.4	0.9	1.92		Hexachloro-1,3-Butadiene	ND	1.9	1.92	
Bromoform	ND	0.96	1.92		2-Hexanone	ND	1.9	1.92	
Bromomethane	ND	0.96	1.92		Methyl-t-Butyl Ether (MTBE)	ND	3.8	1.92	
2-Butanone	22	1	1.92		Methylene Chloride	ND	3.8	1.92	
Carbon Disulfide	1.6	0.9	1.92		4-Methyl-2-Pentanone	12	1	1.92	
Carbon Tetrachloride	ND	0.96	1.92		o-Xylene	29	0.96	1.92	
Chlorobenzene	ND	0.96	1.92		p/m-Xylene	44	1	1.92	
Chloroethane	16	0.96	1.92		Styrene	ND	1.9	1.92	
Chloroform	2.2	0.9	1.92		Tetrachloroethene	ND	0.96	1.92	
Chloromethane	4.7	0.9	1.92		Toluene	30	0.96	1.92	
Dibromochloromethane	ND	0.96	1.92		Trichloroethene	ND	0.96	1.92	
Dichlorodifluoromethane	1.1	0.9	1.92		Trichlorofluoromethane	ND	1.9	1.92	
1,1-Dichloroethane	ND	0.96	1.92		1,1,2-Trichloro-1,2,2-Trifluoroethane	6.5	1.9	1.92	
1,1-Dichloroethene	ND	0.96	1.92		1,1,1-Trichloroethane	ND	0.96	1.92	
1,2-Dibromoethane	ND	0.96	1.92		1,1,2-Trichloroethane	ND	0.96	1.92	
Dichlorotetrafluoroethane	ND	3.8	1.92		1,1,1,2-Tetrachloroethane	ND	0.96	1.92	
1,2-Dichlorobenzene	ND	0.96	1.92		1,3,5-Trimethylbenzene	10	0.96	1.92	
1,2-Dichloroethane	ND	0.96	1.92		1,1,2,2-Tetrachloroethane	ND	1.9	1.92	
1,2-Dichloropropane	ND	0.96	1.92		1,2,4-Trimethylbenzene	35	1	1.92	
1,3-Dichlorobenzene	ND	0.96	1.92		1,2,4-Trichlorobenzene	ND	1.9	1.92	
1,4-Dichlorobenzene	ND	0.96	1.92		Vinyl Acetate	ND	1.9	1.92	
c-1,3-Dichloropropene	ND	0.96	1.92		Vinyl Chloride	ND	0.96	1.92	
c-1,2-Dichloroethene	ND	0.96	1.92		Isopropanol	ND	9.6	1.92	
t-1,2-Dichloroethene	ND	0.96	1.92						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**095-01-021-3,123**	**N/A**	**Air**	**N/A**	**06/20/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	1.0	1		Isopropanol	ND	5.0	1	
t-1,3-Dichloropropene	ND	1.0	1		Benzene	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Benzyl Chloride	ND	1.0	1	
4-Ethyltoluene	ND	0.50	1		Bromodichloromethane	ND	0.50	1	
Hexachloro-1,3-Butadiene	ND	1.0	1		Bromoform	ND	0.50	1	
2-Hexanone	ND	1.0	1		Bromomethane	ND	0.50	1	
Methyl-t-Butyl Ether (MTBE)	ND	2.0	1		2-Butanone	ND	1.0	1	
Methylene Chloride	ND	2.0	1		Carbon Disulfide	ND	0.50	1	
4-Methyl-2-Pentanone	ND	1.0	1		Carbon Tetrachloride	ND	0.50	1	
o-Xylene	ND	0.50	1		Chlorobenzene	ND	0.50	1	
p/m-Xylene	ND	1.0	1		Chloroethane	ND	0.50	1	
Styrene	ND	1.0	1		Chloroform	ND	0.50	1	
Tetrachloroethene	ND	0.50	1		Chloromethane	ND	0.50	1	
Toluene	ND	0.50	1		Dibromochloromethane	ND	0.50	1	
Trichloroethene	ND	0.50	1		Dichlorodifluoromethane	ND	0.50	1	
Trichlorofluoromethane	ND	1.0	1		1,1-Dichloroethane	ND	0.50	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.0	1		1,1-Dichloroethene	ND	0.50	1	
1,1,1-Trichloroethane	ND	0.50	1		1,2-Dibromoethane	ND	0.50	1	
1,1,2-Trichloroethane	ND	0.50	1		Dichlorotetrafluoroethane	ND	2.0	1	
1,1,1,2-Tetrachloroethane	ND	0.50	1		1,2-Dichlorobenzene	ND	0.50	1	
1,3,5-Trimethylbenzene	ND	0.50	1		1,2-Dichloroethane	ND	0.50	1	
1,1,2,2-Tetrachloroethane	ND	1.0	1		1,2-Dichloropropane	ND	0.50	1	
1,2,4-Trimethylbenzene	ND	1.0	1		1,3-Dichlorobenzene	ND	0.50	1	
1,2,4-Trichlorobenzene	ND	1.0	1		1,4-Dichlorobenzene	ND	0.50	1	
Vinyl Acetate	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Vinyl Chloride	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
1,1-Difluoroethane	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**095-01-021-3,124**	**N/A**	**Air**	**N/A**	**06/21/05**	**050621L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	1.0	1		Isopropanol	ND	2.0	1	
t-1,3-Dichloropropene	ND	1.0	1		Benzene	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Benzyl Chloride	ND	1.0	1	
4-Ethyltoluene	ND	0.50	1		Bromodichloromethane	ND	0.50	1	
Hexachloro-1,3-Butadiene	ND	1.0	1		Bromoform	ND	0.50	1	
2-Hexanone	ND	1.0	1		Bromomethane	ND	0.50	1	
Methyl-t-Butyl Ether (MTBE)	ND	2.0	1		2-Butanone	ND	1.0	1	
Methylene Chloride	ND	2.0	1		Carbon Disulfide	ND	0.50	1	
4-Methyl-2-Pentanone	ND	1.0	1		Carbon Tetrachloride	ND	0.50	1	
o-Xylene	ND	0.50	1		Chlorobenzene	ND	0.50	1	
p/m-Xylene	ND	1.0	1		Chloroethane	ND	0.50	1	
Styrene	ND	1.0	1		Chloroform	ND	0.50	1	
Tetrachloroethene	ND	0.50	1		Chloromethane	ND	0.50	1	
Toluene	ND	0.50	1		Dibromochloromethane	ND	0.50	1	
Trichloroethene	ND	0.50	1		Dichlorodifluoromethane	ND	0.50	1	
Trichlorofluoromethane	ND	1.0	1		1,1-Dichloroethane	ND	0.50	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.0	1		1,1-Dichloroethene	ND	0.50	1	
1,1,1-Trichloroethane	ND	0.50	1		1,2-Dibromoethane	ND	0.50	1	
1,1,2-Trichloroethane	ND	0.50	1		Dichlorotetrafluoroethane	ND	2.0	1	
1,1,1,2-Tetrachloroethane	ND	0.50	1		1,2-Dichlorobenzene	ND	0.50	1	
1,3,5-Trimethylbenzene	ND	0.50	1		1,2-Dichloroethane	ND	0.50	1	
1,1,2,2-Tetrachloroethane	ND	1.0	1		1,2-Dichloropropane	ND	0.50	1	
1,2,4-Trimethylbenzene	ND	1.0	1		1,3-Dichlorobenzene	ND	0.50	1	
1,2,4-Trichlorobenzene	ND	1.0	1		1,4-Dichlorobenzene	ND	0.50	1	
Vinyl Acetate	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Vinyl Chloride	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
1,1-Difluoroethane	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**095-01-021-3,125**	**N/A**	**Air**	**N/A**	**06/20/05**	**050620L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	1.0	1		t-1,3-Dichloropropene	ND	1.0	1	
Benzene	ND	0.50	1		Ethylbenzene	ND	0.50	1	
Benzyl Chloride	ND	1.0	1		4-Ethyltoluene	ND	0.50	1	
Bromodichloromethane	ND	0.50	1		Hexachloro-1,3-Butadiene	ND	1.0	1	
Bromoform	ND	0.50	1		2-Hexanone	ND	1.0	1	
Bromomethane	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	2.0	1	
2-Butanone	ND	1.0	1		Methylene Chloride	ND	2.0	1	
Carbon Disulfide	ND	0.50	1		4-Methyl-2-Pentanone	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		o-Xylene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		p/m-Xylene	ND	1.0	1	
Chloroethane	ND	0.50	1		Styrene	ND	1.0	1	
Chloroform	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
Chloromethane	ND	0.50	1		Toluene	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		Trichloroethene	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichlorofluoromethane	ND	1.0	1	
1,1-Dichloroethane	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.0	1	
1,1-Dichloroethene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorotetrafluoroethane	ND	2.0	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,3,5-Trimethylbenzene	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
1,2-Dichloropropane	ND	0.50	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	0.50	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	0.50	1		Vinyl Acetate	ND	1.0	1	
c-1,3-Dichloropropene	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	0.50	1		Isopropanol	ND	5.0	1	
t-1,2-Dichloroethene	ND	0.50	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**095-01-021-3,127**	**N/A**	**Air**	**N/A**	**06/19/05**	**050619L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	1.0	1		Isopropanol	ND	5.0	1	
t-1,3-Dichloropropene	ND	1.0	1		Benzene	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Benzyl Chloride	ND	1.0	1	
4-Ethyltoluene	ND	0.50	1		Bromodichloromethane	ND	0.50	1	
Hexachloro-1,3-Butadiene	ND	1.0	1		Bromoform	ND	0.50	1	
2-Hexanone	ND	1.0	1		Bromomethane	ND	0.50	1	
Methyl-t-Butyl Ether (MTBE)	ND	2.0	1		2-Butanone	ND	1.0	1	
Methylene Chloride	ND	2.0	1		Carbon Disulfide	ND	0.50	1	
4-Methyl-2-Pentanone	ND	1.0	1		Carbon Tetrachloride	ND	0.50	1	
o-Xylene	ND	0.50	1		Chlorobenzene	ND	0.50	1	
p/m-Xylene	ND	1.0	1		Chloroethane	ND	0.50	1	
Styrene	ND	1.0	1		Chloroform	ND	0.50	1	
Tetrachloroethene	ND	0.50	1		Chloromethane	ND	0.50	1	
Toluene	ND	0.50	1		Dibromochloromethane	ND	0.50	1	
Trichloroethene	ND	0.50	1		Dichlorodifluoromethane	ND	0.50	1	
Trichlorofluoromethane	ND	1.0	1		1,1-Dichloroethane	ND	0.50	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.0	1		1,1-Dichloroethene	ND	0.50	1	
1,1,1-Trichloroethane	ND	0.50	1		1,2-Dibromoethane	ND	0.50	1	
1,1,2-Trichloroethane	ND	0.50	1		Dichlorotetrafluoroethane	ND	2.0	1	
1,1,1,2-Tetrachloroethane	ND	0.50	1		1,2-Dichlorobenzene	ND	0.50	1	
1,3,5-Trimethylbenzene	ND	0.50	1		1,2-Dichloroethane	ND	0.50	1	
1,1,2,2-Tetrachloroethane	ND	1.0	1		1,2-Dichloropropane	ND	0.50	1	
1,2,4-Trimethylbenzene	ND	1.0	1		1,3-Dichlorobenzene	ND	0.50	1	
1,2,4-Trichlorobenzene	ND	1.0	1		1,4-Dichlorobenzene	ND	0.50	1	
Vinyl Acetate	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Vinyl Chloride	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
1,1-Difluoroethane	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	06/16/05
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ppb (v/v)

Project: Poway Landfill / SC-0233-03-07

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**095-01-021-3,142**	**N/A**	**Air**	**N/A**	**06/28/05**	**050628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	1.0	1		Isopropanol	ND	5.0	1	
t-1,3-Dichloropropene	ND	1.0	1		Benzene	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Benzyl Chloride	ND	1.0	1	
4-Ethyltoluene	ND	0.50	1		Bromodichloromethane	ND	0.50	1	
Hexachloro-1,3-Butadiene	ND	1.0	1		Bromoform	ND	0.50	1	
2-Hexanone	ND	1.0	1		Bromomethane	ND	0.50	1	
Methyl-t-Butyl Ether (MTBE)	ND	2.0	1		2-Butanone	ND	1.0	1	
Methylene Chloride	ND	2.0	1		Carbon Disulfide	ND	0.50	1	
4-Methyl-2-Pentanone	ND	1.0	1		Carbon Tetrachloride	ND	0.50	1	
o-Xylene	ND	0.50	1		Chlorobenzene	ND	0.50	1	
p/m-Xylene	ND	1.0	1		Chloroethane	ND	0.50	1	
Styrene	ND	1.0	1		Chloroform	ND	0.50	1	
Tetrachloroethene	ND	0.50	1		Chloromethane	ND	0.50	1	
Toluene	ND	0.50	1		Dibromochloromethane	ND	0.50	1	
Trichloroethene	ND	0.50	1		Dichlorodifluoromethane	ND	0.50	1	
Trichlorofluoromethane	ND	1.0	1		1,1-Dichloroethane	ND	0.50	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1.0	1		1,1-Dichloroethene	ND	0.50	1	
1,1,1-Trichloroethane	ND	0.50	1		1,2-Dibromoethane	ND	0.50	1	
1,1,2-Trichloroethane	ND	0.50	1		Dichlorotetrafluoroethane	ND	2.0	1	
1,1,1,2-Tetrachloroethane	ND	0.50	1		1,2-Dichlorobenzene	ND	0.50	1	
1,3,5-Trimethylbenzene	ND	0.50	1		1,2-Dichloroethane	ND	0.50	1	
1,1,2,2-Tetrachloroethane	ND	1.0	1		1,2-Dichloropropane	ND	0.50	1	
1,2,4-Trimethylbenzene	ND	1.0	1		1,3-Dichlorobenzene	ND	0.50	1	
1,2,4-Trichlorobenzene	ND	1.0	1		1,4-Dichlorobenzene	ND	0.50	1	
Vinyl Acetate	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Vinyl Chloride	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
1,1-Difluoroethane	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	N/A
Work Order No:	05-06-1091
Preparation:	N/A
Method:	EPA TO-15

Project: Poway Landfill / SC-0233-03-07

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-021-3,123	**Air**	**GC/MS K**	**N/A**	**06/20/05**	**050620L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	98	99	61-121	1	0-37	
Bromoform	119	124	62-134	4	0-38	
Carbon Tetrachloride	114	116	56-128	2	0-42	
1,2-Dibromoethane	98	101	63-123	3	0-38	
1,2-Dichlorobenzene	119	124	41-149	4	0-62	
1,2-Dichloroethane	122	123	63-123	1	0-37	
1,2-Dichloropropane	99	100	61-121	0	0-37	
1,4-Dichlorobenzene	114	118	51-147	4	0-49	
c-1,3-Dichloropropene	101	101	62-128	0	0-37	
Ethylbenzene	100	103	61-127	4	0-38	
o-Xylene	105	109	58-130	4	0-38	
p/m-Xylene	104	108	57-129	4	0-39	
Tetrachloroethene	102	106	59-119	3	0-40	
Toluene	97	100	60-120	3	0-39	
Trichloroethene	106	106	65-119	0	0-38	
1,1,2-Trichloroethane	104	103	64-124	0	0-37	
Vinyl Chloride	112	122	58-124	8	0-37	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-06-1091
Preparation: N/A
Method: EPA TO-15

Project: Poway Landfill / SC-0233-03-07

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-021-3,127	**Air**	**GC/MS DD**	**N/A**	**06/19/05**	**050619L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	104	105	61-121	1	0-37	
Bromoform	96	100	62-134	4	0-38	
Carbon Tetrachloride	107	107	56-128	1	0-42	
1,2-Dibromoethane	108	114	63-123	5	0-38	
1,2-Dichlorobenzene	98	121	41-149	21	0-62	
1,2-Dichloroethane	107	110	63-123	3	0-37	
1,2-Dichloropropane	101	102	61-121	1	0-37	
1,4-Dichlorobenzene	96	100	51-147	4	0-49	
c-1,3-Dichloropropene	109	109	62-128	0	0-37	
Ethylbenzene	106	111	61-127	4	0-38	
o-Xylene	104	108	58-130	4	0-38	
p/m-Xylene	105	109	57-129	4	0-39	
Tetrachloroethene	102	108	59-119	6	0-40	
Toluene	112	117	60-120	5	0-39	
Trichloroethene	111	112	65-119	2	0-38	
1,1,2-Trichloroethane	105	107	64-124	2	0-37	
Vinyl Chloride	112	116	58-124	4	0-37	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received: N/A
Work Order No: 05-06-1091
Preparation: N/A
Method: EPA TO-15

Project: Poway Landfill / SC-0233-03-07

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-021-3,125	**Air**	**GC/MS DD**	**N/A**	**06/20/05**	**050620L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	108	107	61-121	1	0-37	
Bromoform	88	87	62-134	2	0-38	
Carbon Tetrachloride	95	94	56-128	1	0-42	
1,2-Dibromoethane	102	100	63-123	2	0-38	
1,2-Dichlorobenzene	101	102	41-149	1	0-62	
1,2-Dichloroethane	106	106	63-123	0	0-37	
1,2-Dichloropropane	102	99	61-121	2	0-37	
1,4-Dichlorobenzene	99	99	51-147	1	0-49	
c-1,3-Dichloropropene	109	108	62-128	1	0-37	
Ethylbenzene	102	100	61-127	2	0-38	
o-Xylene	97	97	58-130	0	0-38	
p/m-Xylene	96	95	57-129	1	0-39	
Tetrachloroethene	100	98	59-119	3	0-40	
Toluene	108	105	60-120	3	0-39	
Trichloroethene	108	107	65-119	1	0-38	
1,1,2-Trichloroethane	106	105	64-124	1	0-37	
Vinyl Chloride	105	112	58-124	7	0-37	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
11305 Rancho Bernardo Road, Suite 101
San Diego, CA 92127-1461

Date Received:	N/A
Work Order No:	05-06-1091
Preparation:	N/A
Method:	EPA TO-15

Project: Poway Landfill / SC-0233-03-07

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-021-3,124	**Air**	**GC/MS K**	**N/A**	**06/21/05**	**050621L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	96	95	61-121	1	0-37	
Bromoform	123	121	62-134	2	0-38	
Carbon Tetrachloride	119	121	56-128	1	0-42	
1,2-Dibromoethane	99	98	63-123	1	0-38	
1,2-Dichlorobenzene	114	116	41-149	2	0-62	
1,2-Dichloroethane	118	117	63-123	0	0-37	
1,2-Dichloropropane	96	96	61-121	1	0-37	
1,4-Dichlorobenzene	112	113	51-147	1	0-49	
c-1,3-Dichloropropene	98	98	62-128	1	0-37	
Ethylbenzene	101	98	61-127	3	0-38	
o-Xylene	107	106	58-130	1	0-38	
p/m-Xylene	107	105	57-129	2	0-39	
Tetrachloroethene	103	101	59-119	2	0-40	
Toluene	96	94	60-120	2	0-39	
Trichloroethene	105	104	65-119	1	0-38	
1,1,2-Trichloroethane	100	100	64-124	0	0-37	
Vinyl Chloride	113	110	58-124	3	0-37	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants		Date Received:	N/A
11305 Rancho Bernardo Road, Suite 101		Work Order No:	05-06-1091
San Diego, CA 92127-1461		Preparation:	N/A
		Method:	EPA TO-15

Project: Poway Landfill / SC-0233-03-07

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-021-3,142	**Air**	**GC/MS DD**	**N/A**	**06/28/05**	**050628L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	102	103	61-121	1	0-37	
Bromoform	112	111	62-134	1	0-38	
Carbon Tetrachloride	119	119	56-128	0	0-42	
1,2-Dibromoethane	106	106	63-123	1	0-38	
1,2-Dichlorobenzene	114	111	41-149	2	0-62	
1,2-Dichloroethane	108	107	63-123	0	0-37	
1,2-Dichloropropane	103	105	61-121	2	0-37	
1,4-Dichlorobenzene	111	110	51-147	1	0-49	
c-1,3-Dichloropropene	109	111	62-128	1	0-37	
Ethylbenzene	107	107	61-127	0	0-38	
o-Xylene	113	111	58-130	2	0-38	
p/m-Xylene	112	111	57-129	1	0-39	
Tetrachloroethene	93	94	59-119	0	0-40	
Toluene	101	101	60-120	0	0-39	
Trichloroethene	107	108	65-119	1	0-38	
1,1,2-Trichloroethane	107	110	64-124	2	0-37	
Vinyl Chloride	106	105	58-124	1	0-37	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 05-06-1091

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Document Number: 1348

Analysis Request and Chain of Custody Record

1091

Page 1 of 2

Project Name: Poway	Project Number: SC-0233-03-07
Samplers Names: Stew Aadnes	Project Contact: Sean McClain
Laboratory Name: Cal Science	Lab Contact: Steve Nowak
Lab Address: 7440 Lincoln Way, Garden Grove, CA 92841	Lab Phone: 714-895-5494
	Carrier/Waybill No.: Pick-up

White copy: to accompany samples

Yellow copy: field copy

Required Analyses

Bottle Type and Volume/Preservative

Number of Containers

	Sample Name	Date	Time	Sample Type	VOCs by ___	Metals	SVOCs by 8270	EPA TO-15 + fixed gases							Comments	Lab Use Only: Condition of Bottles
								6L Suma								
1	SG-13 @ 1.5'	15 June 05	1338	Vapor				1								
2	SG-13 @ 5.0'		1247					1								
3	SG-11 @ 5.0'		1410					1								
4	SG-11 @ 1.5'		1406					1								
5	SG-12 @ 5.0'		1434					1								
6	SG-12 @ 1.5'		1431					1								
7	SG-14 @ 5'		1504					1								
8	SG-14 @ 1.5'		1444					1								
9	SG-15 @ 5'		1500					1								
10	SG-15 @ 1.5'		1455					1								
11	SG-17 @ 5.0'		1520					1								
12	SG-17 @ 1.5'		1509					1								

Special Instructions:

Turn-around Time: ☒ Normal ☐ Rush: ___

1. Relinquished by (Signiture/Affiliation) GeoSyntec	Date 6/16/06 Time 1135	1. Received by (Signiture/Affiliation) CEL	Date 6/16/5 Time 1135
2. Relinquished by (Signiture/Affiliation)	Date Time	2. Received by (Signiture/Affiliation)	Date Time
3. Relinquished by (Signiture/Affiliation)	Date 6/16/5 Time 1630	3. Received by (Signiture/Affiliation) CEL	Date 6/16/05 Time 1630

GEOSYNTEC CONSULTANTS 11305 Rancho Bernardo Road, Suite 101, San Diego, CA 92127 (858) 674-6559 Fax: (858) 674-6586

Analysis Request and Chain of Custody Record

1091

Page 2 of 2

Continued from Document Number: 1348

Project Name: Poway

Project Number: SG-0233-03-07

White copy: to accompany samples

Yellow copy: field copy

Required Analyses: VOCs by ____; Metals; SVOCs by 8270; EPA TO-15 + Fixed Gases

Bottle Type and Volume/Preservative: 6L SUMZ

	Sample Name	Date	Time	Sample Type	VOCs by ____	Metals	SVOCs by 8270	EPA TO-15 + Fixed Gases							Comments	Lab Use Only: Condition of Bottles
13	SG-18 @ 5'	15 June 05	1537	Vapor				1								
14	SG-18 @ 1.5'		1540					1								
15	SG-19 @ 5.0'		1610					1								
16	SG-19 @ 1.5'		1613					1								
17	SG-16 @ 5'		1654					1								
18	SG-16 @ 1.5'		1656					1								
19	SG-10 @ 5'		1737					1								
20	SG-10 @ 1.5'		1730					1								

GEOSYNTEC CONSULTANTS 11305 Rancho Bernardo Road, Suite 101, San Diego, CA 92127 (858) 674-6559 Fax: (858) 674-6586

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 05 - 06 - 1091

Cooler 0 of 0

SAMPLE RECEIPT FORM

CLIENT: Geosyntec

DATE: 6/16/5

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
✓ Ambient temperature.

_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: [signature]

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: [signature]

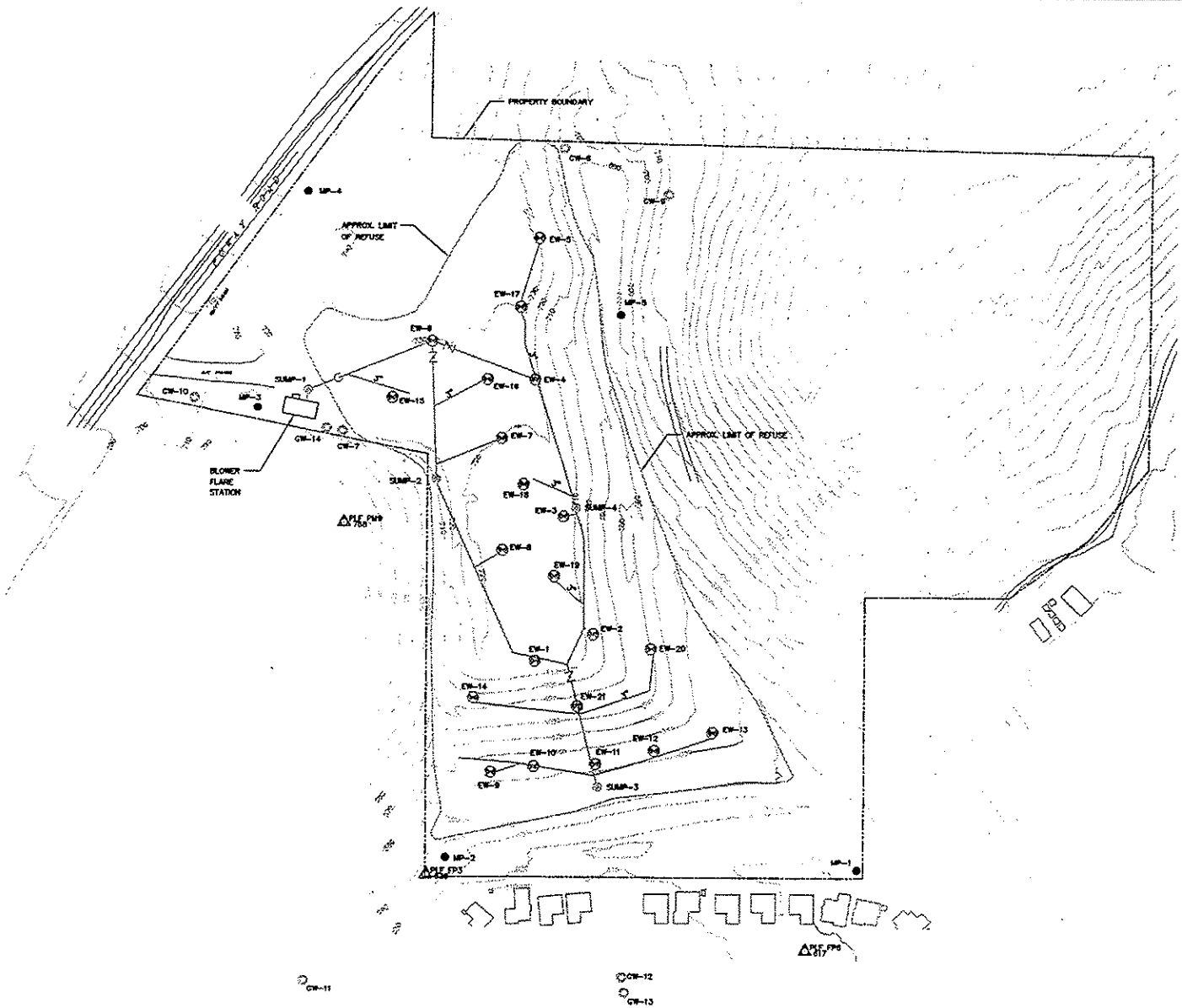
SAMPLE CONDITION:

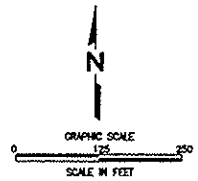
	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: [signature]

COMMENTS:

APPENDIX G
LANDFILL GAS SYSTEM COLLECTION LOGS





LEGEND

- EW-1 — EXTRACTION WELL
- PLF PW8 — CONTROL POINT
- MP-3 — MONITORING PROBE
- SUMP-4 — CONDENSATE SUMP
- GW-8 — GROUNDWATER MONITORING WELL
- APPROXIMATE LIMITS OF REFUSE
- PROPERTY BOUNDARY
- GAS EXTRACTION HEADER PIPING

EXTRACTION WELL SCHEDULE

WELL NO.	LOCATION COORDINATES (1)		WELL DEPTH 'D' (FT.)	ELEVATION (FT.)(AMSL) (1)(2)
	NORTH	EAST		
EW-1	1,931,398	6,325,994	60	720
EW-2	1,931,644	6,326,098	78	710
EW-3	1,931,882	6,326,072	35	(3)
EW-4	1,932,109	6,326,018	35	(3)
EW-5	1,932,307	6,325,965	20	726
EW-6	1,932,172	6,325,833	20	721
EW-7	1,931,998	6,325,831	41	723
EW-8	1,931,794	6,325,834	40	719
EW-9	1,931,385	6,325,815	30	673
EW-10	1,931,435	6,325,982	20	688
EW-11	1,931,408	6,326,104	20	688
EW-12	1,931,434	6,326,208	27	685
EW-13	1,931,446	6,326,315	20	681
EW-14	1,931,529	6,325,882	50	688
EW-15	1,932,075	6,325,790	20	725
EW-16	1,932,103	6,325,904	40	740
EW-17	1,932,234	6,325,983	26	746
EW-18	1,931,819	6,325,999	50	728
EW-19	1,931,748	6,326,029	70	721
EW-20	1,931,618	6,326,203	40	686
EW-21	1,931,514	6,326,070	50	685

MONITORING PROBE SCHEDULE

PROBE NO.	LOCATION COORDINATES (1)		PROBE DEPTH 'D' (FT.)	ELEVATION (FT.)(AMSL) (1)(2)
	NORTH	EAST		
MP-1	1,931,219	6,326,580	15	641
MP-2	1,931,240	6,325,833	15	640
MP-3	1,932,040	6,325,481	10, 47.5, 85	720
MP-4	1,932,441	6,325,608	10, 55, 110	724
MP-5	1,932,220	6,326,143	10, 45	682

CONTROL POINT DATA

POINT ID	NORTH	EAST	ELEVATION
PLF PW8	1,932,604	6,325,821	754
PLF PW9	1,931,849	6,325,673	788
PLF FP3	1,931,219	6,325,526	638
PLF FP6	1,931,080	6,326,314	617

CALIFORNIA COORDINATE SYSTEM ZONE 6, NAD 83 DATUM, USFT

NOTES:

1. COORDINATES AND ELEVATIONS ARE BASED ON SURVEY COMPLETED OCTOBER, 2003 BY SCS ENGINEERS UTILIZING A TRIMBLE PRO XRS GLOBAL POSITIONING SYSTEM AND ASSOCIATED SOFTWARE. NORTH AND EAST COORDINATES ARE PER THE STATE PLANE COORDINATE SYSTEM.

2. AMSL = ABOVE MEAN SEA LEVEL: SURVEY POINT WAS GROUND SURFACE IMMEDIATELY ADJACENT TO WELL OR PROBE CASING PIPE.

3. EXTRACTION WELLS WERE NOT LOCATED DURING GPS FIELD SURVEY. COORDINATES WERE DERIVED FROM PREVIOUS MAPS, BUT ELEVATION DATA WAS NOT AVAILABLE.

4. TOPOGRAPHY PROVIDED BY SAN DIEGO COUNTY SURVEYOR.

POWAY LANDFILL - GAS CONTROL AND MONITORING SYSTEM

SCS FIELD SERVICES

Poway Landfill Probe Data - 06/01/2004 through 06/30/2004

Field Technician and Weather Conditions								
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction		
AG	06/03/2004	71	29.9	Mostly Clear	Light Wind	E		
Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Comments
MP-01S	06/03/2004	12:00	0.0	1.0	19.7	79.3	0.0	
MP-02S	06/03/2004	12:05	0.0	2.3	18.8	78.9	0.0	
MP-03D	06/03/2004	12:19	0.0	3.0	18.2	78.8	0.0	
MP-03M	06/03/2004	12:14	0.0	3.7	17.4	78.9	0.0	
MP-03S	06/03/2004	12:12	0.0	3.3	17.8	78.9	0.0	
MP-04D	06/03/2004	11:44	0.0	0.0	20.4	79.6	0.0	
MP-04M	06/03/2004	11:39	0.0	4.1	17.6	78.3	0.0	
MP-04S	06/03/2004	11:36	0.0	0.6	20.4	79.0	0.0	
MP-05D	06/03/2004	11:54	0.0	7.7	11.0	81.3	0.0	
MP-05S	06/03/2004	11:50	0.0	6.1	11.0	82.9	0.0	

SAN DIEGO MONTHLY LANDFILL GAS COLLECTION SYSTEM MONITORING
FIELD DATA SHEET

LANDFILL GAS COLLECTION SYSTEM MONITORING

SITE: Poway

DATE: 5 / 19 / 04 TIME: 7:00 AM – 9:30 AM

LOCATION OF ANY AREA EXCEEDING 500 ppmv MEASURED AS METHANE

COMMENTS: No exceedances were detected.

TECHNICIAN: Craig Cissel REVIEWED BY:

SURFACE EMISSIONS EXCEEDANCE
REMEDIATION NOTIFICATION AND CONTROL

Site Name: POLK
Wind Direction: EAST
Instrument: TVA 1000

Weather: Cloudy
Temp.: 68°
Cal. Gas 500 ppm

Wind Speed: 0
Bar. Press.: 29.94
Cal. Reading: 499

RECORD NO.:	LOCATION:	DATE IDENTIFIED: 5-21-04
EXCEEDANCE VALUE (ppmv):		INSPECTOR: CRAIG CISSELL
INSPECTOR COMMENTS: NO EXCEEDANCES FOUND		

LANDFILL OPERATIONS NOTIFICATION NO. 1.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 1

DATE:	TIME:	NAME:	INITIALS:
DESCRIPTION:			

10-DAY RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

LANDFILL OPERATIONS NOTIFICATION NO. 2.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 2

DATE:	TIME:	NAME:	INITIALS:
DESCRIPTION:			

1-MONTH RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

07201034.00

POWAY
BLOWER/FLARE STATION

DATE 5-5-04 OPERATOR Craig Cissell
TEMPERATURE 85 BAR. PRESSURE 29.9
WEATHER Sunny WIND 5MPH@W

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	OSCILLATING -6.5				88°	100%	
KNOCKOUT ΔP	-1						
AFTER KNOCKOUT	OSCILLATING -7.0					100%	
BLOWER OUTLET	OSCILLATING +48.8					100%	
FLAME ARRESTOR ΔP	Ø				110		
FLARE INLET	+48.7	32.1	28.7	Ø	110	100%	

ALARM PANEL LIGHTS NONE

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 10 x10	TIMER CYCLE 5:45AM - 12:06 PM
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1598
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 63.24 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 94 PSI HOUR METER 7578	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM .68
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 800 gal	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 5-10-04 OPERATOR Craig Cissell
TEMPERATURE 78 BAR. PRESSURE 29.9
WEATHER Cloudy WIND 8 mph @ W

LOCATION	PRESS (IN W.C.)	CH_4 (% VOL)	CO_2 (% VOL)	O_2 (% VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.6				78°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-7.8					100%	
BLOWER OUTLET	+49.0					100%	
FLAME ARRESTOR ΔP	Ø				89°		
FLARE INLET	+48.2	44.0	37.8	Ø	89°	100%	

ALARM PANEL LIGHTS LO BAT on AUTO DIALER
6V Model PS-640 4.5 Amp Hr.

BLOWER IN OPERATION 1 (2)
AMPS 2.7 CMF 10 x10

TIMER CYCLE 5:45 - 12:06PM

OXYGEN METER
SET POINT 3.5
ACTUAL POINT 0.2

FLARE TEMPERATURE
SET POINT 1600
ACTUAL POINT 1603

AUXILIARY GAS ON (OFF)
PILOT GAS (ON) OFF
PILOT GAS PRESSURE Ø PSI

FLOW RATE
70.15 SCFM

AIR COMPRESSOR:
CHECK OIL OK
DRAIN WATER OK
TANK PRESS 92 PSI
HOUR METER 7585

THERMOCOUPLE IN USE:
TOP MIDDLE (BOTTOM)

RETENTION TIMES
TOP —
MIDDLE —
BOTTOM .71

MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 700 GAL

CONDENSATE TRANSFER FROM KNOCKOUT
HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 5-19-04
TEMPERATURE 76
WEATHER OVER CAST

OPERATOR CRAIG CASWELL
BAR. PRESSURE 29.9
WIND 2 MPH @ W

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.6				74°	50%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-6.9					100%	
BLOWER OUTLET	+51.7					100%	
FLAME ARRESTOR ΔP	Ø				88°		
FLARE INLET	+51.2	39.8	33.1	Ø	88°	100%	

ALARM PANEL LIGHTS NONE

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 10 x10	TIMER CYCLE 5:45 – 12:06
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1596
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 70.20 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 94 PSI HOUR METER 7597	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM —
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 700	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

* Sump #4 BEE HIVE, NEEDS TO BE REMOVED

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 5/24/04 OPERATOR Craig Cisek
TEMPERATURE 80 BAR. PRESSURE 29.9
WEATHER PARTLY CLOUDY WIND 2 MPH @ W

LOCATION	PRESS (IN. WC)	CH4 (% VOL)	CO2 (% VOL)	O2 (% VOL)	TEMP (°F)	% VALVE POSITION	REMARKS
HEADER	-3.7				77	50	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-7.0					100	
BLOWER OUTLET	+51.8					100	
FLAME ARRESTOR ΔP	Ø				90		
FLARE INLET	+51.0	39.2	32.6	Ø	90	100	

ALARM PANEL LIGHTS NONE

BLOWER IN OPERATION 1 (2) AMPS 2.8 CMF 9 x10	TIMER CYCLE 5:45 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1604
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 69.88 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 94 PSI HOUR METER 7599	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM —
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 700	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

Poway Landfill Probe Data /12/2004 through 06/30/2004

Field Technician and Weather Conditions								
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction		
Cissell	06/15/2004	68	29.9	Clear	Light Wind	W		
Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Comments
MP-01S	06/15/2004	08:28	0.0	1.2	19.6	79.2	0.0	
MP-02S	06/15/2004	08:24	0.0	2.5	18.4	79.1	0.0	
MP-03D	06/15/2004	08:48	0.0	2.1	19.0	78.9	0.0	
MP-03M	06/15/2004	08:46	0.0	3.6	17.2	79.2	0.0	
MP-03S	06/15/2004	08:44	0.0	5.5	16.0	78.5	0.0	
MP-04D	06/15/2004	08:40	0.0	0.3	20.0	79.7	0.0	
MP-04M	06/15/2004	08:39	0.0	3.8	17.5	78.7	0.0	
MP-04S	06/15/2004	08:37	0.0	0.4	20.0	79.6	0.0	
MP-05D	06/15/2004	08:34	0.0	4.1	15.0	80.9	0.0	
MP-05S	06/15/2004	08:32	0.0	8.3	7.0	84.7	0.0	

Poway Landfill Well Data - 12/2004 through 06/30/2004

Field Technician and Weather Conditions						
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction
Cissell	06/15/2004	68	29.9	Clear	Light Wind	W

Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Temp (Deg F)	Flow (scfm)	Comments
EW-01	06/15/2004	07:43	40.0	44.4	0.0	15.6	-0.6	77	8	Max flow;
EW-02	06/15/2004	07:38	36.7	42.5	0.0	20.8	-0.4	79	0	Max flow;
EW-03	06/15/2004	07:28	38.2	43.2	0.0	18.6	-0.7	74	8	
EW-04	06/15/2004	07:20	29.3	36.0	0.0	34.7	-0.6	73	4	
EW-05	06/15/2004	06:57	30.8	34.1	0.0	35.1	-0.2	74	6	
EW-06	06/15/2004	07:05	0.1	1.8	20.2	77.9	0.0	71	0	Closed this date;
EW-06	06/15/2004	07:06	0.1	1.8	20.2	77.9	0.0	71	0	Decom High O2;
EW-07	06/15/2004	07:14	28.9	36.5	0.0	34.6	-0.4	78	3	
EW-08	06/15/2004	07:47	36.6	41.5	0.0	21.9	-0.5	78	5	
EW-09	06/15/2004	08:20	23.3	36.9	0.0	39.8	-0.2	79	1	
EW-10	06/15/2004	08:15	31.0	40.8	0.0	28.2	-0.3	80	2	
EW-11	06/15/2004	08:10	22.9	36.0	0.0	41.1	-0.2	80	1	
EW-12	06/15/2004	08:06	31.0	37.8	0.0	31.2	-0.1	80	1	
EW-13	06/15/2004	08:04	17.5	33.7	0.0	48.8	0.0	78	1	
EW-14	06/15/2004	07:54	35.6	44.2	0.0	20.2	-0.2	79	4	
EW-15	06/15/2004	07:09	12.5	26.0	0.0	61.5	0.0	76	0	Closed this date;
EW-16	06/15/2004	07:18	26.2	29.1	0.0	44.7	-0.3	77	2	
EW-17	06/15/2004	07:01	29.2	32.0	0.0	38.8	-0.5	76	2	
EW-18	06/15/2004	07:23	39.4	41.6	0.0	19.0	-0.9	76	4	Max flow;
EW-19	06/15/2004	07:32	53.3	46.7	0.0	0.0	-0.8	81	8	Max flow;
EW-20	06/15/2004	08:00	39.6	42.6	0.0	17.8	-0.5	81	3	Max flow;
EW-21	06/15/2004	07:57	49.4	47.1	0.0	3.5	-0.6	83	2	Max flow;

Most recent value for remaining GEM IDs at site not monitored during reporting period.		
Well with maximum temperature during reporting period		
EW-21	06/15/2004	Temperature = 83
Well with minimum temperature during reporting period		
EW-06	06/15/2004	Temperature = 71
EW-06	06/15/2004	Temperature = 71

SURFACE EMISSIONS EXCEEDANCE
REMEDIATION NOTIFICATION AND CONTROL

Site Name: Poway
Wind Direction: W
Instrument: TVA 1000

Weather: Cloudy
Temp.: 72°
Cal. Gas 500 PPM

Wind Speed: 5 MPH
Bar. Press.: 29.9
Cal. Reading: 498 PPM

RECORD NO.: 1	LOCATION: Poway	DATE IDENTIFIED: 6-22-04
EXCEEDANCE VALUE (ppmv):	INSPECTOR: Craig Cassell	
INSPECTOR COMMENTS: No exceedances were detected		

LANDFILL OPERATIONS NOTIFICATION NO. 1.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 1

DATE:	TIME:	NAME:	INITIALS:

DESCRIPTION:

10-DAY RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

LANDFILL OPERATIONS NOTIFICATION NO. 2.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 2

DATE:	TIME:	NAME:	INITIALS:

DESCRIPTION:

1-MONTH RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

SAN DIEGO MONTHLY LANDFILL GAS COLLECTION SYSTEM MONITORING
FIELD DATA SHEET

LANDFILL GAS COLLECTION SYSTEM MONITORING

SITE: Poway

DATE: 06 / 22 / 04 TIME: 7:30 AM

LOCATION OF ANY AREA EXCEEDING 500 ppmv MEASURED AS METHANE

COMMENTS: No exceedances were detected.

TECHNICIAN: Craig Cissell REVIEWED BY:

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 6-3-04
TEMPERATURE 82
WEATHER SUNNY

OPERATOR CRAIG CISSELL
BAR. PRESSURE 29.9
WIND 10MPH @ W

LOCATION	PRESS (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.6				92°	100	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-4.4					100	
BLOWER OUTLET	+52.0					100	
FLAME ARRESTOR ΔP	Ø				101°		
FLARE INLET	+51.4	30.9	31.4	Ø	101°	100	

ALARM PANEL LIGHTS NONE

BLOWER IN OPERATION 1 (2)
AMPS 2.7 CMF 10 x10

TIMER CYCLE 0600 - 1200

OXYGEN METER
SET POINT 3.5
ACTUAL POINT 0.3

FLARE TEMPERATURE
SET POINT 1600
ACTUAL POINT 1630

AUXILIARY GAS ON (OFF)
PILOT GAS (ON) OFF
PILOT GAS PRESSURE Ø PSI

FLOW RATE
71.0 SCFM

AIR COMPRESSOR:
CHECK OIL OK
DRAIN WATER OK
TANK PRESS 96 PSI
HOUR METER 7616

THERMOCOUPLE IN USE:
TOP MIDDLE (BOTTOM)

RETENTION TIMES
TOP
MIDDLE
BOTTOM .76

MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 750

CONDENSATE TRANSFER FROM KNOCKOUT
HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 6-10-04 OPERATOR Craig Cissell
TEMPERATURE 68 BAR. PRESSURE 29.9
WEATHER CLEAR WIND Ø

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.0				70°	33%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-14.1					100	
BLOWER OUTLET	+48.1					100	
FLAME ARRESTOR ΔP	Ø				80°		
FLARE INLET	+47.8	42.0	34.6	0.1	80°	100	

ALARM PANEL LIGHTS ESTOP ENGAGED

BLOWER IN OPERATION 1 (2)
AMPS 2.8 CMF 12 x10

TIMER CYCLE 5:45AM 12:06PM

OXYGEN METER
SET POINT 3.5
ACTUAL POINT 0.3

FLARE TEMPERATURE
SET POINT 1600
ACTUAL POINT 1609

AUXILIARY GAS ON (OFF)
PILOT GAS (ON) OFF
PILOT GAS PRESSURE ~~12~~ Ø PSI

FLOW RATE
69.94 SCFM

AIR COMPRESSOR:
CHECK OIL OK
DRAIN WATER OK
TANK PRESS 92 PSI
HOUR METER 7624

THERMOCOUPLE IN USE:
TOP MIDDLE (BOTTOM)

RETENTION TIMES
TOP
MIDDLE
BOTTOM 76

MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 750

CONDENSATE TRANSFER FROM KNOCKOUT
HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034.00

POWAY
BLOWER/FLARE STATION

DATE 6-15-04
TEMPERATURE 69°
WEATHER CLOUDY

OPERATOR Craig Cussell
BAR. PRESSURE 29.9
WIND 2 MPH @ W

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.4				75	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-4.2					100%	
BLOWER OUTLET	+53.8					100%	
FLAME ARRESTOR ΔP	Ø				90°		
FLARE INLET	+53.2	38.5	40.5	Ø	90°	100%	

ALARM PANEL LIGHTS NONE

BLOWER IN OPERATION 1 (2) AMPS 2.8 CMF 12 x10	TIMER CYCLE 5:45AM – 12:00 PM
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.3	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1624
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 68.86 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 92 PSI HOUR METER 7630	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM 72
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 775	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 06-22-04 OPERATOR CRAIG CISSELL
TEMPERATURE 67° BAR. PRESSURE 29.9
WEATHER CLOUDY WIND 2MPH @ W

LOCATION	PRESS. (IN. WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.6				74°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-4.4					100%	
BLOWER OUTLET	+54.0					100%	
FLAME ARRESTOR ΔP	Ø				79°		
FLARE INLET	+53.3	34.7	31.3	Ø	79°	100%	

ALARM PANEL LIGHTS OK

BLOWER IN OPERATION 1 (2) AMPS 2.8 CMF 12 x10	TIMER CYCLE 5:45AM – 12:00PM
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.3	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1610
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 68.31 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 94 PSI HOUR METER 7638	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM 78
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 800	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034.00

POWAY
BLOWER/FLARE STATION

DATE 6-28-04
TEMPERATURE 65°
WEATHER CLOUDY

OPERATOR CRAIG CASSELL
BAR. PRESSURE 29.9
WIND WSW 5MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.6				76°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-4.6					100%	
BLOWER OUTLET	+54.4					100%	
FLAME ARRESTOR ΔP	Ø				89°		
FLARE INLET	+53.8	+31.3	29.7	Ø	89°	100%	

ALARM PANEL LIGHTS OK

BLOWER IN OPERATION 1 (2)
AMPS 2.8 CMF 12 x10

TIMER CYCLE 5:45AM - 12:06PM

OXYGEN METER
SET POINT 3.5
ACTUAL POINT 0.2

FLARE TEMPERATURE
SET POINT 1600
ACTUAL POINT 1616

AUXILIARY GAS ON (OFF)
PILOT GAS (ON) OFF
PILOT GAS PRESSURE Ø PSI

FLOW RATE
67.50 SCFM

AIR COMPRESSOR:
CHECK OIL OK
DRAIN WATER OK
TANK PRESS 92 PSI
HOUR METER 7645

THERMOCOUPLE IN USE:
TOP MIDDLE (BOTTOM)

RETENTION TIMES
TOP
MIDDLE
BOTTOM

MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 800

CONDENSATE TRANSFER FROM KNOCKOUT
HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

Poway Landfill Probe Data J7/01/2004 through 07/31/2004

Field Technician and Weather Conditions								
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction		
Cissell	07/09/2004	67	29.9	Cloudy	Light Wind	W		
Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Comments
MP-01S	07/09/2004	06:45	0.0	1.1	20.1	78.8	0.0	
MP-02S	07/09/2004	06:50	0.0	2.5	19.1	78.4	0.0	
MP-03D	07/09/2004	06:23	0.0	5.5	16.4	78.1	0.0	
MP-03M	07/09/2004	06:19	0.0	6.0	15.7	78.3	0.0	
MP-03S	07/09/2004	06:15	0.0	5.1	16.8	78.1	0.0	
MP-04D	07/09/2004	06:34	0.0	0.2	20.6	79.2	0.0	
MP-04M	07/09/2004	06:30	0.0	4.4	17.8	77.8	0.0	
MP-04S	07/09/2004	06:26	0.0	0.7	20.4	78.9	0.0	
MP-05D	07/09/2004	06:40	0.0	8.4	11.0	80.6	0.0	
MP-05S	07/09/2004	06:37	0.0	7.7	11.9	80.4	0.0	

Poway Landfill Well Data - 07/01/2004 through 07/31/2004

Field Technician and Weather Conditions						
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction
Cissell	07/12/2004	72	29.9	Clear	Light Wind	W

Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Temp (Deg F)	Flow (scfm)	Comments
EW-01	07/12/2004	07:14	34.2	32.8	0.0	33.0	-0.4	81	4	
EW-02	07/12/2004	07:07	28.5	29.2	0.7	41.6	-0.4	82	0	
EW-03	07/12/2004	06:59	35.3	31.3	0.0	33.4	-0.5	76	7	
EW-04	07/12/2004	06:50	28.7	29.0	0.0	42.3	-0.4	80	3	
EW-05	07/12/2004	06:19	34.2	29.9	0.4	35.5	-0.2	77	1	
EW-06	07/12/2004	06:31	22.6	20.3	0.4	56.7	0.0	70	0	
EW-07	07/12/2004	06:41	26.7	28.3	0.0	45.0	-0.2	76	2	
EW-08	07/12/2004	07:19	31.7	30.5	0.0	37.8	-0.4	78	4	
EW-09	07/12/2004	07:55	21.4	28.2	0.0	50.4	-0.2	84	1	
EW-10	07/12/2004	07:53	27.3	30.5	0.0	42.2	-0.2	85	1	
EW-11	07/12/2004	07:50	22.0	27.8	0.0	50.2	-0.1	85	0	
EW-12	07/12/2004	07:47	30.2	29.8	0.0	40.0	-0.2	84	2	
EW-13	07/12/2004	07:44	15.5	26.1	0.0	58.4	0.0	84	0	
EW-14	07/12/2004	07:23	31.6	33.0	0.0	35.4	-0.2	81	4	
EW-15	07/12/2004	06:36	10.8	20.2	0.0	69.0	0.0	77	0	Closed this date;
EW-16	07/12/2004	06:45	25.3	23.6	0.0	51.1	-0.3	78	2	
EW-17	07/12/2004	06:24	33.5	28.0	0.0	38.5	-0.5	78	2	
EW-18	07/12/2004	06:54	35.2	32.1	0.0	32.7	-0.8	81	2	
EW-19	07/12/2004	07:03	47.5	37.0	0.0	15.5	-0.6	83	5	Max flow;
EW-20	07/12/2004	07:32	37.6	33.8	0.0	28.6	-0.4	83	3	
EW-20	07/12/2004	07:33	37.6	33.8	0.0	28.6	-0.5	83	3	
EW-21	07/12/2004	07:29	46.0	36.5	0.0	17.5	-0.6	86	2	Max flow;

Most recent value for remaining GEM IDs at site not monitored during reporting period.

Well with maximum temperature during reporting period

EW-21	07/12/2004	Temperature = 86

Well with minimum temperature during reporting period

EW-06	07/12/2004	Temperature = 70

SCS FIELD SERVICES

SAN DIEGO MONTHLY LANDFILL GAS COLLECTION SYSTEM MONITORING
FIELD DATA SHEET

LANDFILL GAS COLLECTION SYSTEM MONITORING

SITE: Poway

DATE: 07 / 23 / 04 TIME: 7:00AM

LOCATION OF ANY AREA EXCEEDING 500 ppmv MEASURED AS METHANE

COMMENTS: No exceedences were detected

TECHNICIAN: Craig Cissell REVIEWED BY:

SURFACE EMISSIONS EXCEEDANCE
REMEDIATION NOTIFICATION AND CONTROL

Site Name: Poway
Wind Direction: W @ 2 MPH
Instrument: TVA-1000

Weather: OVERCAST
Temp.: 70°
Cal. Gas 500 PPM

Wind Speed: 2-4 MPH
Bar. Press.: 29.9
Cal. Reading: 505 PPM

RECORD NO.:	LOCATION: Poway	DATE IDENTIFIED: 07-23-04
EXCEEDANCE VALUE (ppmv): Ø	INSPECTOR: Cissell	
INSPECTOR COMMENTS: No exceedences were detected.		

LANDFILL OPERATIONS NOTIFICATION NO. 1.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 1

DATE:	TIME:	NAME:	INITIALS:
DESCRIPTION:			

10-DAY RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

LANDFILL OPERATIONS NOTIFICATION NO. 2.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 2

DATE:	TIME:	NAME:	INITIALS:
DESCRIPTION:			

1-MONTH RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 7-9-04 OPERATOR CRAIG CINELL
TEMPERATURE 67° BAR. PRESSURE 29.9
WEATHER CLOUDY WIND W @ 2 MPH

LOCATION	PRESS (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.6				78°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-4.4					100%	
BLOWER OUTLET	+54.2					100%	
FLAME ARRESTOR ΔP	Ø				80°		
FLARE INLET	+53.7	33.0	30.4	Ø	80°	100%	

ALARM PANEL LIGHTS OK / NONE

BLOWER IN OPERATION 1 (2)
AMPS 2.8 CMF 12 x10

TIMER CYCLE 5:45 - 12:06

OXYGEN METER
SET POINT 3.5
ACTUAL POINT 0.2

FLARE TEMPERATURE
SET POINT 1600
ACTUAL POINT 1610

AUXILIARY GAS ON (OFF)
PILOT GAS (ON) OFF
PILOT GAS PRESSURE Ø PSI

FLOW RATE
168.23 SCFM

AIR COMPRESSOR:
CHECK OIL OK
DRAIN WATER OK
TANK PRESS 94 PSI
HOUR METER 7658

THERMOCOUPLE IN USE:
TOP MIDDLE (BOTTOM)

RETENTION TIMES
TOP —
MIDDLE —
BOTTOM —

MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 825

CONDENSATE TRANSFER FROM KNOCKOUT
HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034.00

POWAY
BLOWER/FLARE STATION

DATE 7-12-04
TEMPERATURE 68°
WEATHER CLEAR

OPERATOR CISSELL
BAR. PRESSURE 29.9
WIND NOSE

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.1				72°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-10.9					100%	
BLOWER OUTLET	+48.0					100%	
FLAME ARRESTOR ΔP	Ø				66°		
FLARE INLET	+47.8	42.2	34.1	Ø	66°	100%	

ALARM PANEL LIGHTS OK

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 10 x10	TIMER CYCLE 5:45AM – 12:06 PM.
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1630
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 69.95 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 7661	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 825	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

SCS FIELD SERVICES
BFS SHUT DOWN REPORT

1 DATE 7-12-04 TIME 6:15 PROJ. NAME/NO 07201034.00

2 SITE LOCATION POWAY

3 ALARM TELEPHONE DIALER CALL-OUT (YES) _____ NO _____

4 ALERT CONDITION POWER OFF

5 ALERT CONDITION ACKNOWLEDEGED BY CISSELL

6 NAME OF INVESTIGATION TECHNICIAN CISSELL

7 ARRIVAL DATE AND TIME 7-12-04

8 REASON FOR ALARM POWER WAS TURNED OFF DUE TO FIRE CLOSE BY.

9 CORRECTIVE ACTION TAKEN REBOOT COMPUTER AND RESTART COMPRESSOR.

10 RECOMMENDATIONS NONE

11 LFG/BFS STATUS UPON DEPARTURE IN OPERATION (YES)/NO
ESTIMATED DATE/TIME SYSTEM WENT DOWN 7-11-04 @ 11:30 AM
DATE/TIME SYSTEM WAS RESTARTED 7-12-04 @ 6:30 AM
ESTIMATED TOTAL SYSTEM SHUT-DOWN TIME 1 hr.

12 CLIENT NOTIFICATION YES/(NO)
REPRESENTATIVE NOTIFIED _____
DATE _____ TIME _____

13 ADDITIONAL COMMENTS _____

07201034.00

POWAY
BLOWER/FLARE STATION

DATE 7-20-04
TEMPERATURE 75°
WEATHER CLEAR

OPERATOR CRAIG CISSELL
BAR. PRESSURE 29.9
WIND WSW 2MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.4				80°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-4.2					100%	
BLOWER OUTLET	+53.2					100%	
FLAME ARRESTOR ΔP	Ø				85°		
FLARE INLET	+52.6	34.7	31.3	Ø	85°	100%	

ALARM PANEL LIGHTS NONE / OK

BLOWER IN OPERATION 1 (2)
AMPS 2.7 CMF 10 x10

TIMER CYCLE 5:45AM – 12:06PM

OXYGEN METER
SET POINT 3.5
ACTUAL POINT 0.3

FLARE TEMPERATURE
SET POINT 1600
ACTUAL POINT 1596

AUXILIARY GAS ON (OFF)
PILOT GAS (ON) OFF
PILOT GAS PRESSURE Ø PSI

FLOW RATE 67.70 SCFM

AIR COMPRESSOR:
CHECK OIL OK
DRAIN WATER OK
TANK PRESS 96 PSI
HOUR METER 7671

THERMOCOUPLE IN USE:
TOP MIDDLE (BOTTOM)

RETENTION TIMES
TOP
MIDDLE
BOTTOM .71

MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 900 GAL

CONDENSATE TRANSFER FROM KNOCKOUT
HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

COUNTY OF SAN DIEGO
QUARTERLY CHECKLIST

SITE LOCATION: Poway

DATE: 7-23-04 PERSONNEL: Craig Cissell

DESCRIPTION	CHECKED	REMARKS
1. CHECK SPARK IGNITORS.	✓	
2. CHECK SPARK IGNITION WIRING AND COILS.	✓	
3. CHECK SIGHT GLASS ON FLARES.	✓	
4. CHECK OPERATION OF DAMPER MOTORS.	✓	
5. ROTATE BLOWER OPERATION.	✓	
6. CHECK AIR COMPRESSOR FLUID LEVELS.	✓	
7. CHECK AIR COMPRESSOR DRIVE BELT TENSION AND WEAR.	✓	
8. CHECK GREASE FOR BLOWERS/BEARINGS.	✓	
9. CHECK BLOWER DRIVE BELT TENSION AND WEAR.	✓	
10. CHECK FLARE BURNER HEADS (VISUALLY).	✓	
11. CHECK PIPING IN BFS FOR LEAKS (USE PPM METER).	✓	

COMMENTS: None

REVIEWED BY: [signature] DATE: 8/2/04

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 7-29-04 OPERATOR Cissell
TEMPERATURE 76° BAR. PRESSURE 29.9
WEATHER Clear WIND W @ 3MPH

LOCATION	PRESS (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-3.5				84°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-4.2					100%	
BLOWER OUTLET	+52.5					100%	
FLAME ARRESTOR ΔP	Ø				96°		
FLARE INLET	+51.8	31.2	29.8	Ø	96°	100%	

ALARM PANEL LIGHTS None/OK

BLOWER IN OPERATION (1) 2 AMPS 2.9 CMF 13 x10	TIMER CYCLE 5:40am – 12:06pm
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.3	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1593
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 65.40 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 7682	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM .71
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 900	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

Poway Landfill Probe Data 09/1/2004 through 9/30/2004

Field Technician and Weather Conditions								
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction		
Cissell	09/08/2004	78	29.9	Clear	Light Wind	W		
Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Comments
MP-01S	09/08/2004	09:21	0.0	0.8	20.1	79.1	0.0	
MP-02S	09/08/2004	09:26	0.0	2.4	18.8	78.8	0.0	
MP-03D	09/08/2004	08:49	0.0	6.0	15.1	78.9	0.0	
MP-03M	09/08/2004	08:41	0.0	6.2	15.0	78.8	0.0	
MP-03S	09/08/2004	08:37	0.0	6.2	14.7	79.1	0.0	
MP-04D	09/08/2004	09:06	0.0	0.0	20.8	79.2	0.0	
MP-04M	09/08/2004	08:59	0.0	4.5	17.7	77.8	0.0	
MP-04S	09/08/2004	08:53	0.0	0.4	20.5	79.1	0.0	
MP-05D	09/08/2004	09:16	0.0	8.1	11.6	80.3	0.0	
MP-05S	09/08/2004	09:12	0.0	6.2	14.9	78.9	0.0	

Poway Landfill Well Data - 09/1/2004 through 9/30/2004

Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Temp (Deg F)	Flow (scfm)	Comments
EW-15	09/20/2004	Temperature = 80								
EW-16	09/20/2004	Temperature = 80								
EW-17	09/20/2004	Temperature = 80								
EW-18	09/20/2004	Temperature = 80								
EW-19	09/20/2004	Temperature = 80								
EW-20	09/20/2004	Temperature = 80								
EW-21	09/20/2004	Temperature = 80								
EW-01	09/20/2004	Temperature = 80								

Poway Landfill Well Data - 09/1/2004 through 9/30/2004

Field Technician and Weather Conditions						
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction
Cissell	09/20/2004	68	29.9	Clear	Light Wind	W

Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Temp (Deg F)	Flow (scfm)	Comments
EW-01	09/20/2004	10:32	29.8	31.6	0.0	38.6	-0.2	80	2	
EW-02	09/20/2004	10:29	25.8	29.3	0.0	44.9	0.0	80	0	
EW-03	09/20/2004	10:24	26.1	30.2	0.0	43.7	-0.2	80	1	
EW-04	09/20/2004	10:19	26.3	28.2	0.0	45.5	-0.2	80	1	
EW-05	09/20/2004	10:04	21.8	23.0	0.9	54.3	-0.2	80	0	
EW-06	09/20/2004	10:10	25.5	22.8	0.0	51.7	-0.1	82	0	
EW-07	09/20/2004	10:14	24.9	28.2	0.0	46.9	0.0	80	1	
EW-08	09/20/2004	10:34	26.2	29.0	0.0	44.8	0.0	80	2	
EW-09	09/20/2004	10:54	16.0	26.1	0.0	57.9	0.0	80	1	
EW-10	09/20/2004	10:52	22.8	28.8	0.0	48.4	-0.3	80	2	
EW-11	09/20/2004	10:49	13.4	24.7	0.0	61.9	-0.2	80	1	
EW-12	09/20/2004	10:47	20.6	26.6	0.4	52.4	-0.1	80	0	
EW-13	09/20/2004	10:44	11.0	24.7	0.0	64.3	0.0	80	0	
EW-14	09/20/2004	10:36	31.6	32.8	0.0	35.6	0.0	80	2	
EW-15	09/20/2004	10:12	18.5	22.8	0.0	58.7	0.0	80	0	
EW-16	09/20/2004	10:16	21.0	22.4	0.0	56.6	0.0	80	0	
EW-17	09/20/2004	10:07	19.6	23.0	0.0	57.4	-0.4	80	0	
EW-18	09/20/2004	10:21	31.7	30.4	0.0	37.9	-1.4	80	8	
EW-19	09/20/2004	10:26	42.7	35.0	0.0	22.3	-1.6	80	12	
EW-20	09/20/2004	10:41	35.5	33.7	0.0	30.8	-1.2	80	8	
EW-21	09/20/2004	10:39	43.5	35.7	0.0	20.8	-1.3	80	8	

Most recent value for remaining GEM IDs at site not monitored during reporting period.

Well with maximum temperature during reporting period

EW-06	09/20/2004	Temperature = 82

Well with minimum temperature during reporting period

EW-02	09/20/2004	Temperature = 80
EW-03	09/20/2004	Temperature = 80
EW-04	09/20/2004	Temperature = 80
EW-05	09/20/2004	Temperature = 80
EW-07	09/20/2004	Temperature = 80
EW-08	09/20/2004	Temperature = 80
EW-09	09/20/2004	Temperature = 80
EW-10	09/20/2004	Temperature = 80
EW-11	09/20/2004	Temperature = 80
EW-12	09/20/2004	Temperature = 80
EW-13	09/20/2004	Temperature = 80
EW-14	09/20/2004	Temperature = 80

SAN DIEGO MONTHLY LANDFILL GAS COLLECTION SYSTEM MONITORING
FIELD DATA SHEET

LANDFILL GAS COLLECTION SYSTEM MONITORING

SITE: Poway

DATE: 09 / 29 / 04 TIME: 2:30

LOCATION OF ANY AREA EXCEEDING 500 ppmv MEASURED AS METHANE

COMMENTS: NO EXCEEDANCES DETECTED.

TECHNICIAN: Cissell REVIEWED BY:

SURFACE EMISSIONS EXCEEDANCE
REMEDIATION NOTIFICATION AND CONTROL

Site Name: Poway
Wind Direction: N
Instrument: TVA 1000

Weather: Cloudy
Temp.: 74°
Cal. Gas 500 PPM

Wind Speed: 5 MPH
Bar. Press.: 29.9
Cal. Reading: 507 PPM

RECORD NO.:	LOCATION: Poway	DATE IDENTIFIED: 9-29-04
EXCEEDANCE VALUE (ppmv): Ø	INSPECTOR: Cissell	
INSPECTOR COMMENTS: No exceedances detected		

LANDFILL OPERATIONS NOTIFICATION NO. 1.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 1

DATE:	TIME:	NAME:	INITIALS:
DESCRIPTION:			

10-DAY RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

LANDFILL OPERATIONS NOTIFICATION NO. 2.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 2

DATE:	TIME:	NAME:	INITIALS:
DESCRIPTION:			

1-MONTH RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 9-2-04 OPERATOR Cissell
TEMPERATURE 74° BAR. PRESSURE 29.9
WEATHER CLEAR WIND W @ 7MPH

LOCATION	PRESS (IN-WC)	CH4 (%-VOL)	CO2 (%-VOL)	O2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-2.9				102°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-4.6					100%	
BLOWER OUTLET	+49.2					100%	
FLAME ARRESTOR ΔP	Ø				115°		
FLARE INLET	+40.6	42.0	33.5	Ø	115°	100%	

ALARM PANEL LIGHTS NONE / OK

BLOWER IN OPERATION 1 (2) AMPS 2.5 CMF 8 x10	TIMER CYCLE 5:35 – 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT .1	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1642
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 70.48 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 98 PSI HOUR METER 7751	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM .91
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 915	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 9-8-04 OPERATOR Cissell
TEMPERATURE 76° BAR. PRESSURE 29.9
WEATHER CLEAR WIND W 2MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-4.0				86°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-4.9					100%	
BLOWER OUTLET	+51.5					100%	
FLAME ARRESTOR ΔP	Ø				110°		
FLARE INLET	+50.9	31.9	30.3	0.1	110°	100%	

ALARM PANEL LIGHTS NONE / OK

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 10 x10	TIMER CYCLE 5:35 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.4	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1608
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 65.15 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 100 PSI HOUR METER 7758	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM .92
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 915	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 9-16-04 OPERATOR Cissell
TEMPERATURE 80° BAR. PRESSURE 29.9
WEATHER Clear WIND W @ 5 MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-4.0				96°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-48					100%	
BLOWER OUTLET	+50.8					100%	
FLAME ARRESTOR ΔP	Ø				115°		
FLARE INLET	+50.1	33.3	31.3	Ø	115°	100%	

ALARM PANEL LIGHTS OK / None

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 10 x10	TIMER CYCLE 5:35-12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.3	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1655
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 67.57 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 100 PSI HOUR METER 7875	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM .97
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 915	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 9-20-04 OPERATOR Cissell
TEMPERATURE 70° BAR. PRESSURE 29.9
WEATHER SLIGHTLY CLOUDY WIND W @ 2MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-4.2				84°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-5.0					100%	
BLOWER OUTLET	+52.4					100%	
FLAME ARRESTOR ΔP	Ø				112°		
FLARE INLET	+51.6	30.4	30.8	Ø	112°	100%	

ALARM PANEL LIGHTS NONE / OK

BLOWER IN OPERATION 1 (2) AMPS 2.8 CMF 10 x10	TIMER CYCLE 5:45 - 12:03
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1580
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 66.71 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 100 PSI PSI HOUR METER 7879	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM 1.01
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 915	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

SCS FIELD SERVICES
BFS SHUT DOWN REPORT

1 DATE 9-20-04 TIME 11:00 PROJ. NAME/NO 07201034.00

2 SITE LOCATION POWAY

3 ALARM TELEPHONE DIALER CALL-OUT YES X NO

4 ALERT CONDITION FLARE FAILURE

5 ALERT CONDITION ACKNOWLEDEGED BY CISSELL

6 NAME OF INVESTIGATION TECHNICIAN CISSELL

7 ARRIVAL DATE AND TIME 9-20-04 10:00

8 REASON FOR ALARM FLARE FAILURE

9 CORRECTIVE ACTION TAKEN ADJUST FLARE (O_2) CHOKE - LOWER

10 RECOMMENDATIONS NONE

11 LFG/BFS STATUS UPON DEPARTURE IN OPERATION (YES/NO)
ESTIMATED DATE/TIME SYSTEM WENT DOWN 6:00 AM 9-20-04
DATE/TIME SYSTEM WAS RESTARTED 10:30 AM 9-20-04
ESTIMATED TOTAL SYSTEM SHUT-DOWN TIME 4 1/2 hrs

12 CLIENT NOTIFICATION YES/(NO)
REPRESENTATIVE NOTIFIED
DATE TIME

13 ADDITIONAL COMMENTS NONE

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 9-29-04 OPERATOR Cissell
TEMPERATURE 74° BAR. PRESSURE 29.9
WEATHER Cloudy WIND W @ 5 MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-4.3				80°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-5.2					100%	
BLOWER OUTLET	+52.0					100%	
FLAME ARRESTOR ΔP	Ø				118°		
FLARE INLET	+51.6	42.5	43.0	Ø	118°	100%	

ALARM PANEL LIGHTS NONE / OK

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 10 x10	TIMER CYCLE 5:35 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.3	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1608
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 68.23 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 100 PSI HOUR METER 7890	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM 1.02
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 925	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

LOW AIR PRESSURE FAULT ?

Poway Landfill Probe Data 10/1/2004 through 10/31/2004

Field Technician and Weather Conditions						
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction
Cissell	10/06/2004	74	29.9	Clear	Light Wind	W

Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Comments
MP-01S	10/06/2004	10:28	0.0	0.7	19.8	79.5	0.0	
MP-02S	10/06/2004	10:23	0.0	2.5	18.2	79.3	0.0	
MP-03D	10/06/2004	11:16	0.0	6.1	14.4	79.5	0.0	
MP-03M	10/06/2004	11:08	0.0	6.3	14.2	79.5	0.0	
MP-03S	10/06/2004	11:04	0.0	7.5	12.8	79.7	0.0	
MP-04D	10/06/2004	10:59	0.0	0.0	20.6	79.4	0.0	Water Blockage;
MP-04M	10/06/2004	10:47	0.0	4.4	17.4	78.2	0.0	
MP-04S	10/06/2004	10:42	0.0	0.3	20.0	79.7	0.0	
MP-05D	10/06/2004	10:37	0.0	8.2	11.3	80.5	0.0	
MP-05S	10/06/2004	10:33	0.0	5.5	15.4	79.1	0.0	

Poway Landfill Well Data - .0/1/2004 through 10/31/2004

Field Technician and Weather Conditions						
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction
Cissell	10/06/2004	74	29.9	Clear	Light Wind	W

Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Temp (Deg F)	Flow (scfm)	Comments
EW-01	10/06/2004	09:37	24.6	30.1	0.0	45.3	0.0	85	1	
EW-02	10/06/2004	09:32	22.2	28.6	0.0	49.2	-0.1	83	0	
EW-03	10/06/2004	08:59	20.9	30.4	0.0	48.7	0.0	93	0	
EW-04	10/06/2004	08:11	26.4	28.5	0.0	45.1	-0.3	80	0	
EW-05	10/06/2004	07:39	22.6	24.0	1.1	52.3	0.0	82	0	
EW-06	10/06/2004	07:50	20.6	21.9	0.0	57.5	-0.2	76	0	
EW-07	10/06/2004	08:02	22.3	27.2	0.5	50.0	-0.2	78	0	
EW-08	10/06/2004	09:41	24.1	29.6	0.0	46.3	-0.2	85	2	
EW-09	10/06/2004	10:15	16.7	27.1	0.0	56.2	-0.2	91	1	
EW-10	10/06/2004	10:12	22.5	29.2	0.0	48.3	-0.2	89	2	
EW-11	10/06/2004	10:08	14.3	25.9	0.0	59.8	-0.2	89	1	
EW-12	10/06/2004	10:04	29.0	30.4	0.0	40.6	-0.1	86	1	
EW-13	10/06/2004	10:01	11.3	25.1	0.0	63.6	-0.1	88	0	
EW-14	10/06/2004	09:46	29.0	33.1	0.0	37.9	-0.1	88	2	
EW-15	10/06/2004	07:57	16.0	22.3	0.0	61.7	-0.1	75	0	
EW-16	10/06/2004	08:06	20.1	22.2	0.0	57.7	0.0	87	0	
EW-17	10/06/2004	07:46	21.4	24.4	0.0	54.2	-0.3	79	0	
EW-18	10/06/2004	08:16	31.4	31.3	0.0	37.3	-1.8	88	9	
EW-19	10/06/2004	09:26	44.9	37.1	0.0	18.0	-2.1	92	13	
EW-20	10/06/2004	09:54	33.5	34.1	0.0	32.4	-1.4	86	9	
EW-21	10/06/2004	09:50	41.6	36.4	0.0	22.0	-1.8	88	9	

Most recent value for remaining GEM IDs at site not monitored during reporting period.

Well with maximum temperature during reporting period

EW-03	10/06/2004	Temperature = 93

Well with minimum temperature during reporting period

EW-15	10/06/2004	Temperature = 75

SCS FIELD SERVICES

07201034.00

POWAY
BLOWER/FLARE STATION

DATE 10-6-04 OPERATOR Cissell
TEMPERATURE 74° BAR. PRESSURE 29.9
WEATHER CLEAR WIND W @ 3MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-4.8				73°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-5.6					100%	
BLOWER OUTLET	+53.5					100%	
FLAME ARRESTOR ΔP	Ø				108°		
FLARE INLET	+52.8	34.2	32.0	Ø	108°	100%	

ALARM PANEL LIGHTS LOW AIR PRESSURE FAULT / OK

BLOWER IN OPERATION 1 (2)
AMPS 2.8 CMF 12 x10

TIMER CYCLE 5:35-12:00

OXYGEN METER
SET POINT 3.5
ACTUAL POINT 0.2

FLARE TEMPERATURE
SET POINT 1600
ACTUAL POINT 1620

AUXILIARY GAS ON (OFF)
PILOT GAS (ON) OFF
PILOT GAS PRESSURE Ø PSI

FLOW RATE 67.04 SCFM

AIR COMPRESSOR:
CHECK OIL OK
DRAIN WATER OK
TANK PRESS 100 PSI
HOUR METER 7898

THERMOCOUPLE IN USE:
TOP MIDDLE (BOTTOM)

RETENTION TIMES
TOP
MIDDLE
BOTTOM .77

MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 925

CONDENSATE TRANSFER FROM KNOCKOUT
HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 10-11-04 OPERATOR CISSELL
TEMPERATURE 74° BAR. PRESSURE 29.9
WEATHER CLEAR WIND W@ 3mph

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-4.7				86°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-5.4					100%	
BLOWER OUTLET	+50.8					100%	
FLAME ARRESTOR ΔP	Ø				112°		
FLARE INLET	+50.2	33.5	32.0	Ø	112°	100%	

ALARM PANEL LIGHTS NONE / OK

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 9 x10	TIMER CYCLE 5:35-12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.3	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1618
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 67.10 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 7904	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM .71
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 925	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 10-19-04 OPERATOR Cissell
TEMPERATURE 70° BAR. PRESSURE 29.9
WEATHER Rain WIND W @ 2MPH

LOCATION	PRESS (IN.WC)	CH_4 (% VOL)	CO_2 (% VOL)	O_2 (% VOL)	TEMP (F)	VALVE POSITION	REMARKS
HEADER	-5.1				70°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-5.9					100%	
BLOWER OUTLET	+53.2					100%	
FLAME ARRESTOR ΔP	Ø				90°		
FLARE INLET	+52.6	36.6	32.5	Ø	90°	100%	

ALARM PANEL LIGHTS OK/NONE

BLOWER IN OPERATION 1 (2) AMPS 2.8 CMF 12 x10	TIMER CYCLE 5:35 – 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1598
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 67.54 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 8088	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM .79
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 975	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

*LOW AIR PRESSURE FAULT

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 10-25-04 OPERATOR Cissell
TEMPERATURE 70 BAR. PRESSURE 29.9
WEATHER Cloudy / Sprinkle WIND W @ 2 mph

LOCATION	PRESS (IN-WC)	CH4 (% VOL)	CO2 (% VOL)	O2 (% VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-4.8				71°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-5.7					100%	
BLOWER OUTLET	+51.8					100%	
FLAME ARRESTOR ΔP	Ø				92°		
FLARE INLET	+51.2	39.7	33.3	Ø	92°	100%	

ALARM PANEL LIGHTS OK / None

BLOWER IN OPERATION (1) 2
AMPS 2.9 CMF 13 x10

TIMER CYCLE 5:35-12:00

OXYGEN METER
SET POINT 3.5
ACTUAL POINT 0.2

FLARE TEMPERATURE
SET POINT 1600
ACTUAL POINT 1587

AUXILIARY GAS ON (OFF)
PILOT GAS (ON) OFF
PILOT GAS PRESSURE Ø PSI

FLOW RATE
68.57 SCFM

AIR COMPRESSOR:
CHECK OIL OK
DRAIN WATER OK
TANK PRESS 97 PSI
HOUR METER 8011

THERMOCOUPLE IN USE:
TOP MIDDLE (BOTTOM)

RETENTION TIMES
TOP
MIDDLE
BOTTOM

MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 925

CONDENSATE TRANSFER FROM KNOCKOUT
HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

COUNTY OF SAN DIEGO
QUARTERLY CHECKLIST

SITE LOCATION: Poway

DATE: 10-25-04 PERSONNEL: Cassell

DESCRIPTION	CHECKED	REMARKS
1. CHECK SPARK IGNITORS.	✓	
2. CHECK SPARK IGNITION WIRING AND COILS.	✓	
3. CHECK SIGHT GLASS ON FLARES.	✓	
4. CHECK OPERATION OF DAMPER MOTORS.	✓	
5. ROTATE BLOWER OPERATION.	✓	
6. CHECK AIR COMPRESSOR FLUID LEVELS.	✓	
7. CHECK AIR COMPRESSOR DRIVE BELT TENSION AND WEAR.	✓	
8. CHECK GREASE FOR BLOWERS/BEARINGS.	✓	
9. CHECK BLOWER DRIVE BELT TENSION AND WEAR.	✓	
10. CHECK FLARE BURNER HEADS (VISUALLY).	✓	
11. CHECK PIPING IN BFS FOR LEAKS (USE PPM METER).	✓	

COMMENTS: ~~None~~ NEED TO REPAIR PROPANE PIPING REQ:

REVIEWED BY: [signature] DATE: 11-1-04

SURFACE EMISSIONS EXCEEDANCE
REMEDIATION NOTIFICATION AND CONTROL

Site Name: Poway
Wind Direction: W
Instrument: TVA 1000

Weather: Cloudy
Temp.: 70°
Cal. Gas 500 PPM

Wind Speed: 2 MPH
Bar. Press.: 29.9
Cal. Reading: 497 PPM

RECORD NO.:	LOCATION: Poway	DATE IDENTIFIED: 10-25-04
EXCEEDANCE VALUE (ppmv):		INSPECTOR: Cissell
INSPECTOR COMMENTS: No exceedances were observed		

LANDFILL OPERATIONS NOTIFICATION NO. 1.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 1

DATE:	TIME:	NAME:	INITIALS:
DESCRIPTION:			

10-DAY RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

LANDFILL OPERATIONS NOTIFICATION NO. 2.

NAME	INITIALS	DATE	TIME	ORGANIZATION

REMEDIATION RESPONSE NO. 2

DATE:	TIME:	NAME:	INITIALS:
DESCRIPTION:			

1-MONTH RECHECK

DATE	TIME	VALUE (ppmv)	NAME	INITIALS

SAN DIEGO MONTHLY LANDFILL GAS COLLECTION SYSTEM MONITORING
FIELD DATA SHEET

LANDFILL GAS COLLECTION SYSTEM MONITORING

SITE: Poway

DATE: 10 / 25 / 04 TIME: 11:00

LOCATION OF ANY AREA EXCEEDING 500 ppmv MEASURED AS METHANE

COMMENTS: No exceedances were noted

TECHNICIAN: Cassell REVIEWED BY: [signature]

Poway Landfill Probe Data - 11/01/2004 through 11/30/2004

Field Technician and Weather Conditions								
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction		
Cissell	11/08/2004	65	29.9	Raining	Light Wind	W		
Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Comments
MP-01S	11/08/2004	09:31	0.0	1.2	19.2	79.6	0.0	
MP-02S	11/08/2004	09:36	0.0	2.8	17.5	79.7	0.0	
MP-03D	11/08/2004	11:35	0.0	2.4	18.6	79.0	0.0	
MP-03M	11/08/2004	11:33	0.0	6.7	13.8	79.5	0.0	
MP-03S	11/08/2004	11:29	0.0	8.3	8.1	83.6	0.0	
MP-04D	11/08/2004	09:10	0.0	0.2	20.4	79.4	0.0	Water Blockage;
MP-04M	11/08/2004	09:02	0.0	3.2	17.4	79.4	0.0	Water Blockage;
MP-04S	11/08/2004	08:53	0.0	0.9	18.2	80.9	0.0	
MP-05D	11/08/2004	09:25	0.0	8.7	10.6	80.7	0.0	
MP-05S	11/08/2004	09:20	0.0	7.3	11.6	81.1	0.0	

Poway Landfill Well Data - . ı/01/2004 through 11/30/2004

Field Technician and Weather Conditions						
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction
Cissell	11/08/2004	65	29.9	Raining	Light Wind	W

Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Temp (Deg F)	Flow (scfm)	Comments
EW-01	11/08/2004	11:21	29.8	31.2	0.0	39.0	-0.2	64	0	
EW-02	11/08/2004	11:18	27.7	29.5	0.0	42.8	-0.2	85	0	
EW-03	11/08/2004	11:08	26.3	30.0	0.0	43.7	-0.5	70	1	
EW-04	11/08/2004	10:49	30.7	29.2	0.0	40.1	-0.2	89	1	
EW-05	11/08/2004	10:15	26.4	24.7	0.0	48.9	0.0	84	0	
EW-06	11/08/2004	10:31	26.8	24.3	0.0	48.9	-0.1	74	0	
EW-07	11/08/2004	10:40	25.1	28.0	0.0	46.9	-0.2	67	1	
EW-08	11/08/2004	11:24	26.8	29.6	0.0	43.6	-0.4	68	3	
EW-09	11/08/2004	10:11	26.1	28.4	0.0	45.5	-0.2	91	2	
EW-10	11/08/2004	09:57	32.1	30.6	0.0	37.3	-0.2	74	0	
EW-10	11/08/2004	09:58	32.1	30.6	0.0	37.3	-0.2	74	1	
EW-11	11/08/2004	09:54	26.1	28.4	0.0	45.5	-0.4	74	1	
EW-12	11/08/2004	09:52	31.1	29.8	0.0	39.1	-0.2	72	0	
EW-13	11/08/2004	09:49	19.0	26.5	0.0	54.5	-0.1	75	1	
EW-14	11/08/2004	09:40	32.7	32.9	0.0	34.4	-0.3	78	2	
EW-15	11/08/2004	10:34	23.5	24.8	0.0	51.7	-0.2	70	0	
EW-16	11/08/2004	10:44	24.7	22.3	0.0	53.0	-0.2	67	0	
EW-17	11/08/2004	10:28	29.1	25.7	0.0	45.2	-0.2	81	5	
EW-18	11/08/2004	10:52	32.0	31.0	0.0	37.0	-1.8	92	7	
EW-19	11/08/2004	11:11	45.3	35.7	0.0	19.0	-2.5	91	13	
EW-20	11/08/2004	09:46	35.9	33.4	0.0	30.7	-1.5	83	8	
EW-21	11/08/2004	09:43	43.2	35.2	0.0	21.6	-2.1	86	9	

Most recent value for remaining GEM IDs at site not monitored during reporting period.

Well with maximum temperature during reporting period

EW-18	11/08/2004	Temperature = 92

Well with minimum temperature during reporting period

EW-01	11/08/2004	Temperature = 64

SCS FIELD SERVICES

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 11-05-04
TEMPERATURE 68
WEATHER CLEAR

OPERATOR Cisner
BAR. PRESSURE 29.9
WIND W@ 2MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP. (°F)	VALVE POSITION	REMARKS
HEADER	-5.1				64	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-5.8					100%	
BLOWER OUTLET	+525					100%	
FLAME ARRESTOR ΔP	Ø				98°		
FLARE INLET	+52.0	37.1	32.5	Ø	98°	100%	

ALARM PANEL LIGHTS LOW AIR PRESSURE FAULT / OK

BLOWER IN OPERATION (1) 2 AMPS 2.9 CMF 13 x10	TIMER CYCLE 5:45 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1597
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 67.50 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 8024	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM —
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 940	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 11-8-04
TEMPERATURE 65°
WEATHER CLOUDY

OPERATOR Cissell
BAR. PRESSURE 29.9
WIND W 05 MPH

LOCATION *	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-4.9				66°	100%	
KNOCKOUT ΔP	|						
AFTER KNOCKOUT	-7.4					100%	
BLOWER OUTLET	+51.6					100%	
FLAME ARRESTOR ΔP	Ø				94°		
FLARE INLET	+51.1	40.1	33.3	Ø	94°	100%	

ALARM PANEL LIGHTS NONE / OK

BLOWER IN OPERATION 1 (2) AMPS 2.9 CMF 13 x10	TIMER CYCLE 5:45 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1610
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 69.10 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 8028	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM —
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 940	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

* Blower #1 IMPENDING OVERLOAD / OVERLOAD

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 11-15-04 OPERATOR Cissell
TEMPERATURE 70° BAR. PRESSURE 29.9
WEATHER Clear WIND WD 3mph

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP. (°F)	VALVE POSITION	REMARKS
HEADER	-5.1				68°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-5.8					100%	
BLOWER OUTLET	+52.6					100%	
FLAME ARRESTOR ΔP	Ø				107°		
FLARE INLET	+52.0	34.9	31.8	Ø	107°	100%	

ALARM PANEL LIGHTS LOW AIR PRESSURE FAULT / OK

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 10 x10	TIMER CYCLE ~~7:00~~ 8:45 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.1	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1589
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 66.15 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 8036	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM —
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 950 GAL	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

* PROPANE LINES NEED TO BE REPAINTED (RED).

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 11-24-04 OPERATOR Gisell
TEMPERATURE 50° BAR. PRESSURE 29.9
WEATHER Clear WIND W @ 2MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	[illegible] (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-5.9				56°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-6.8					100%	
BLOWER OUTLET	+54.8					100%	
FLAME ARRESTOR ΔP	Ø				80°		
FLARE INLET	+54.2	35.0	32.6	0.2	80°	100%	

ALARM PANEL LIGHTS LOW AIR PRESSURE FAULT / OK

BLOWER IN OPERATION 1 (2) AMPS 2.8 CMF 12 x10	TIMER CYCLE 5:45 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1604
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 68.86 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 8047	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM —
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 1000	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

* PROBE LINES NEED TO BE REPLACED REA

SAN DIEGO COUNTY LFG SYSTEMS
MONTHLY CHECKLIST

LOCATION: Poway		PERSONNEL: Cissell	
DATE: 11-15-04		TIME: 12:00	
	DESCRIPTION	CHECKED	REMARKS
1	CHECK AIR COMPRESSOR OIL	✓	
2	CHECK AIR COMPRESSOR AIR FILTERS	✓	
3	CHECK AIR COMPRESSOR DRIVE BELT TENSION AND WEAR	✓	
4	CHECK BFS PRESSURE GAUGES		
5	CHECK BFS TEMPERATURE GAUGES	✓	
6	ROTATE/BUMP ALL NON-OPERATING BLOWERS (IF APPLICABLE)	✓	Blower #1 impeding overload.
7	CHECK ABOVE GROUND PIPING FOR SETTLEMENT (IF APPLICABLE)	✓	
8	GAS EMISSIONS: CHECK PIPING IN BFS FOR LEAKS (USE PPM METER)	✓	OK
9	GAS EMISSIONS: CHECK ALL WELLS, VAULTS, TANKS, & EXTERNAL PIPING (USE PPM METER)	✓	OK

COMMENTS:

REVIEWED BY: [signature] DATE: 11/30/04

Poway Landfill Probe Data · .2/1/2004 through 12/31/2004

Field Technician and Weather Conditions						
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction
Cissell	12/14/2004	60	29.9	Cloudy	Light Wind	W

Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Comments
MP-01S	12/14/2004	09:25	0.0	1.0	19.8	79.2	0.0	
MP-02S	12/14/2004	09:21	0.0	2.9	17.9	79.2	0.0	
MP-03D	12/14/2004	07:58	0.0	9.3	11.0	79.7	0.0	
MP-03M	12/14/2004	07:50	0.0	9.6	10.6	79.8	0.0	
MP-03S	12/14/2004	07:46	0.0	8.7	10.6	80.7	0.0	
MP-04D	12/14/2004	08:11	0.0	0.4	20.8	78.8	0.0	Water Blockage;
MP-04M	12/14/2004	08:06	0.0	4.3	17.7	78.0	0.0	Water Blockage;
MP-04S	12/14/2004	08:02	0.0	2.0	19.4	78.6	0.0	
MP-05D	12/14/2004	09:31	0.0	1.8	18.9	79.3	0.0	
MP-05S	12/14/2004	09:30	0.0	2.1	17.8	80.1	0.0	

Poway Landfill Well Data - 1/2004 through 12/31/2004

Field Technician and Weather Conditions						
Technician	Date	Ambient Temp	Barometric Pressure (in - Hg)	General Weather	Wind Speed	Wind Direction
Cissell	12/14/2004	60	29.9	Cloudy	Light Wind	W

Name	Date	Time	Methane (% by vol)	Carbon Dioxide (% by vol)	Oxygen (% by vol)	Balance Gas (% by vol)	Static Press (Inch H2O)	Temp (Deg F)	Flow (scfm)	Comments
EW-01	12/14/2004	08:50	17.3	26.5	0.0	56.2	-0.1	75	0	
EW-02	12/14/2004	08:47	15.9	24.9	0.0	59.2	-0.1	81	0	
EW-03	12/14/2004	08:42	14.2	27.0	0.0	58.8	-0.2	68	0	
EW-04	12/14/2004	08:36	27.2	28.1	0.0	44.7	-0.3	73	0	
EW-05	12/14/2004	08:19	28.0	23.8	0.1	48.1	0.0	61	0	
EW-06	12/14/2004	08:25	21.3	21.0	0.0	57.7	0.0	67	0	
EW-07	12/14/2004	08:31	23.6	26.8	0.0	49.6	-0.2	69	0	
EW-08	12/14/2004	08:54	22.9	28.4	0.0	48.7	-0.4	75	0	
EW-09	12/14/2004	09:16	17.6	26.1	0.0	56.3	0.0	72	0	
EW-10	12/14/2004	09:14	18.0	26.3	0.2	55.5	-0.2	67	0	
EW-11	12/14/2004	09:12	9.6	20.7	2.1	67.6	0.0	69	0	Closed this date;
EW-12	12/14/2004	09:09	16.5	25.0	0.5	58.0	0.0	70	0	
EW-13	12/14/2004	09:06	9.6	21.9	0.1	68.4	0.0	78	0	
EW-14	12/14/2004	08:58	25.0	30.4	0.0	44.6	-0.2	78	0	
EW-15	12/14/2004	08:27	14.9	21.2	0.0	63.9	0.0	66	0	
EW-16	12/14/2004	08:33	23.5	21.0	0.0	55.5	-0.2	67	0	
EW-17	12/14/2004	08:22	26.8	23.2	0.0	50.0	-0.2	70	0	
EW-18	12/14/2004	08:38	31.0	30.8	0.0	38.2	-1.8	81	8	
EW-19	12/14/2004	08:44	43.7	35.5	0.0	20.8	-2.5	82	14	
EW-20	12/14/2004	09:03	30.5	31.6	0.0	37.9	-2.1	82	11	
EW-21	12/14/2004	09:00	39.6	34.6	0.0	25.8	-3.2	86	13	

Most recent value for remaining GEM IDs at site not monitored during reporting period.

Well with maximum temperature during reporting period

EW-21	12/14/2004	Temperature = 86

Well with minimum temperature during reporting period

EW-05	12/14/2004	Temperature = 61

SCS FIELD SERVICES

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 12-1-04
TEMPERATURE 40°
WEATHER CLEAR

OPERATOR CASIELL
BAR. PRESSURE 29.9
WIND Ø

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-5.6				53°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-9.0					100%	
BLOWER OUTLET	+52.8					100%	
FLAME ARRESTOR ΔP	Ø				70°		
FLARE INLET	+51.4	38.2	34.0	0.5	70°	100%	

ALARM PANEL LIGHTS LOW AIR PRESSURE FAULT / OK

BLOWER IN OPERATION 1 (2) AMPS 2.8 CMF 12 x10	TIMER CYCLE 5:35 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.3	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1605
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 69.25 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 8056	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM —
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 1025	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 12-6-04 OPERATOR Cassell
TEMPERATURE 43° BAR. PRESSURE 29.9
WEATHER Cloudy WIND W= 2 MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	[redacted]	O_2 (%-VOL)	TEMP (°F)	VALVE POSITION	REMARKS
HEADER	-5.8				54°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-6.7					100%	
BLOWER OUTLET	+54.8					100%	
FLAME ARRESTOR ΔP	Ø				80°		
FLARE INLET	+54.2	33.4	31.5	Ø	80°	100%	

ALARM PANEL LIGHTS LOW AIR PRESSURE FAULT / OK

BLOWER IN OPERATION 1 (2) AMPS 2.8 CMF 12 x10	TIMER CYCLE 5:45 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.2	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1587
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 67.82 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 8062	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM —
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 1035	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

07201034.00

POWAY
BLOWER/FLARE STATION

DATE 12-14-04 OPERATOR Cissell
TEMPERATURE 45° BAR. PRESSURE 29.1
WEATHER clear WIND W @ 2 MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP. (°F)	VALVE POSITION	REMARKS
HEADER	-5.7				55°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-6.4					100%	
BLOWER OUTLET	+55.1					100%	
FLAME ARRESTOR ΔP	Ø				85°		
FLARE INLET	+54.4	32.5	30.2	0.2	85°	100%	

ALARM PANEL LIGHTS LOW AIR PRESSURE FAULT / OK

BLOWER IN OPERATION 1 (2) AMPS 2.8 CMF 12 x10	TIMER CYCLE 5:45 - 12:00
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.3	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1603
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 68.16 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 8073	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 1030	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

07201034

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 12-23-04 OPERATOR Gosell
TEMPERATURE 55° BAR. PRESSURE 29.9
WEATHER Clear WIND W @ 2mph

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP. (°F)	VALVE POSITION	REMARKS
HEADER	-6.4				54°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-13.7					100%	
BLOWER OUTLET	+46.9					100%	
FLAME ARRESTOR ΔP	Ø				80°		
FLARE INLET	+45.9	39.4	33.7	0.1	80°	100%	

ALARM PANEL LIGHTS NONE / OK

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 10 x10	TIMER CYCLE 5:35 – 12:30
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.3	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1581
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE Ø PSI	FLOW RATE 64.18 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 96 PSI HOUR METER 8085	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP MIDDLE BOTTOM
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 1040	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

POWAY
BLOWER/FLARE STATION

07201034.00

DATE 12-29-04
TEMPERATURE 50°
WEATHER RAIN

OPERATOR Cissell
BAR. PRESSURE 29.9
WIND W@ 10 MPH

LOCATION	PRESS. (IN-WC)	CH_4 (%-VOL)	CO_2 (%-VOL)	O_2 (%-VOL)	TEMP. (°F)	VALVE POSITION	REMARKS
HEADER	-7.28				56°	100%	
KNOCKOUT ΔP	1						
AFTER KNOCKOUT	-12.0					100%	
BLOWER OUTLET	+47.9					100%	
FLAME ARRESTOR ΔP	Ø				88°		
FLARE INLET	+47.1	36.2	32.8	Ø	88°	100%	

ALARM PANEL LIGHTS NONE / OK

BLOWER IN OPERATION 1 (2) AMPS 2.7 CMF 10 x10	TIMER CYCLE 5:35-12:30
OXYGEN METER SET POINT 3.5 ACTUAL POINT 0.1	FLARE TEMPERATURE SET POINT 1600 ACTUAL POINT 1581
AUXILIARY GAS ON (OFF) PILOT GAS (ON) OFF PILOT GAS PRESSURE ~~92~~ Ø PSI	FLOW RATE 64.27 SCFM
AIR COMPRESSOR: CHECK OIL OK DRAIN WATER OK TANK PRESS 92 PSI HOUR METER 8093	THERMOCOUPLE IN USE: TOP MIDDLE (BOTTOM) RETENTION TIMES TOP — MIDDLE — BOTTOM —
MAIN CONDENSATION COLLECTION HOLDING TANK GALLONS 1050	CONDENSATE TRANSFER FROM KNOCKOUT HAND OFF (AUTO)

ADS TELEPHONE DIALER NO. (619) 748-2943

SAN DIEGO COUNTY LFG SYSTEMS
MONTHLY CHECKLIST

LOCATION: Poway	PERSONNEL: Cissell
DATE: 12-8-04	TIME: 1:20

1	CHECK AIR COMPRESSOR OIL	✓	
2	CHECK AIR COMPRESSOR AIR FILTERS	✓	
3	CHECK AIR COMPRESSOR DRIVE BELT TENSION AND WEAR	✓	
4	CHECK BFS PRESSURE GAUGES	✓	
5	CHECK BFS TEMPERATURE GAUGES	✓	
6	ROTATE/BUMP ALL NON-OPERATING BLOWERS (IF APPLICABLE)	—	
7	CHECK ABOVE GROUND PIPING FOR SETTLEMENT (IF APPLICABLE)	✓	
8	GAS EMISSIONS: CHECK PIPING IN BFS FOR LEAKS (USE PPM METER)	✓	OK – No exceedances detected
9	GAS EMISSIONS: CHECK ALL WELLS, VAULTS, TANKS, & EXTERNAL PIPING (USE PPM METER)	✓	OK – NO exceedances detected

COMMENTS:

REVIEWED BY: [signature] DATE: 1/3/04

APPENDIX H
RISK ASSESSMENT PROCEDURES AND DATA EVALUATION

APPENDIX H
UPDATED HUMAN HEALTH RISK ASSESSMENT

This section presents an updated human health risk assessment for the single-family residential neighborhood adjacent to the southern property boundary. The purpose of this updated risk assessment was to further evaluate potential impact on human health resulting from the potential exposure to constituents detected in soil vapor samples collected in 2004 and 2005. In August 2004, GeoSyntec performed a preliminary human health risk assessment based on soil vapor samples collected at the southern site boundary (GeoSyntec, 2004b). In June 2005, soil vapor samples were collected offsite within the residential community downgradient of the site to further evaluate the extent of VOCs in subsurface soil vapor and to update the preliminary human health risk assessment. The approach used in this updated risk assessment followed guidance from the San Diego County's Department of Environmental Health (DEH, 2003, 2004), the U.S. Environmental Protection Agency (USEPA, 1989), as well as from the California EPA (Cal-EPA, 1999).

H.1 Risk Assessment Approach

Conducting a risk assessment involves identifying Chemicals of Potential Concern (COPCs) (Data Review and Evaluation), evaluating exposure pathways (Exposure Assessment), assessing chemical toxicity (Toxicity Assessment), and subsequently, characterizing risks (Risk Characterization). Estimated human health risks are based on a calculated dose (i.e., amount of chemical intake), which integrates exposure parameters for the receptors of concern (e.g., contact rates, exposure frequency and duration) with chemical-specific toxicity criteria (e.g., reference doses and cancer slope factors) and chemical concentrations. The estimated risks are then compared to a risk level of 1×10^{-6} considered acceptable for residential scenarios by the San Diego County DEH, as well as by the USEPA and Cal-EPA's Department of Toxic Substances Control (DTSC). When discussed herein, the calculated potential cancer risk and potential non-cancer hazard are based on potential exposure to the constituents detected in soil vapor samples collected along the southern site boundary in 2004 and beneath Dehia Street and El Mar Avenue in 2005. For the purpose of the updated risk assessment, the potential risks are estimated based on a current offsite residential land-use scenario.

Risk assessments are not intended to predict the actual risk to human receptors. Instead, they provide a qualitative evaluation of the potential exposure pathways and adverse effects on human health that could result from coming into contact with chemicals detected at a site. They could also provide upper-bound (reasonable maximum) estimates of risk with an adequate margin of safety, according to USEPA

guidelines (1989), for the protection of virtually all receptors that may potentially come into contact with the COPCs at a site.

Site-specific data were used in the risk assessment whenever possible. This approach is consistent with the guidance issued by the USEPA Risk Assessment Council stressing the use of site-specific data to evaluate potential health risks (1989). However, when site-specific data are lacking or incomplete, the evaluation follows professional judgment, conservative assumptions (i.e., health-protective assumptions that generally overestimate risk), and the best available science.

H.2 Data Review and Evaluation

The focus of the risk assessment was to evaluate potential human health risks associated with VOCs that were detected in soil vapor samples collected in 2004 and 2005 and their potential migration from the subsurface into indoor air.

The May 2004 soil vapor survey involved collecting fifteen soil vapor samples along the southern property boundary of the landfill at depths ranging from two to ten feet below the projected elevations of the foundations of the adjoining residences (GeoSyntec, 2004b). One to three soil vapor samples were collected from each soil vapor boring. The June 2005 soil vapor survey involved collecting twenty soil vapor samples at depths of 1.5 and 5 feet bgs beneath Dehia Street and El Mar Avenue in the residential community south of the site. The analytical results obtained during the soil vapor survey using EPA Method TO-15 are summarized in Table H-1. Additionally, seven soil samples were collected to characterize the physical properties (e.g., bulk density, total porosity, air filled porosity, total organic carbon, and moisture content) of soil in the areas where the soil vapor survey was performed. The soil physical properties data collected at the southern property boundary and within Dehia Street are summarized in Table H-2. A description of the soil vapor sampling procedures is included in Appendix B, and copies of the soil vapor sample collection logs are provided in Appendix E. A complete description of the geology and hydrogeology of the Poway Landfill, as well as a detailed description of well locations, surveys, and drilling data are available in Section 2 of this report.

H.3 Chemicals of Potential Concern

Typically, not all chemicals detected pose a human health risk or contribute significantly to overall risks. USEPA guidelines (1989) recommend focusing on a group of chemicals based on inherent toxicity, site concentration, and behavior of the chemicals in the environment. Chemicals that were detected in any of the soil vapor samples collected south of the site were considered chemicals of potential concern (COPC).

Because these chemicals are volatile, the potential exists for human exposures via inhalation of vapors migrating from the subsurface into an above-ground structure. Therefore, indoor air exposures were evaluated for VOCs detected in soil vapor samples collected south of the site along the southern property boundary, adjacent to the single-family residential neighborhood.

H.4 Exposure Assessment

The objectives of an exposure assessment are to identify receptor populations that may be exposed to chemicals migrating from a site, the exposure pathway, and the route of potential intake (Section H.4.1). In addition, for pathways considered complete, the chemical concentrations to which the receptors are potentially exposed (Exposure Point Concentrations in Section H.4.2) and the frequency, magnitude, and duration of these potential exposures (Exposure Parameters in Section H.4.3) need to be estimated. The models that were used to evaluate the potentially complete exposure pathway are also discussed in Section H.6 with the model input parameters summarized in Section H.4.4.4

The steps taken in an exposure assessment, integrating exposure parameters for the receptors of concern (e.g., contact rates, exposure frequency and duration) with exposure point concentrations, yield an estimate of chemical intake (i.e., a calculated dose). Chemical intake is subsequently used in conjunction with chemical-specific toxicity values (e.g., reference doses and slope factors in Section H.4.6) to evaluate potential risks for the receptors (Risk Characterization in Section H.4.7). The uncertainties associated with a risk assessment are discussed in Section H.5.2 to assist decision-makers in evaluating the results in the context of the assumptions and variability in the data used.

H.4.1 Potentially Complete Exposure Pathway

Current residents located north of Dehia Street and south of the southern property boundary of the site were the receptor population evaluated in this updated risk assessment. Due to their proximity to the site, these receptors were identified to determine the likelihood and extent of their potential exposure to COPCs. The only complete exposure pathway evaluated quantitatively in this risk assessment is inhalation of indoor air volatiles emanating from the subsurface. Evaluating this exposure scenario should also be protective for other, short-time visitors near the site.

H.4.2 Exposure Point Concentrations and Model Approach

Potential migration of soil vapor COPCs into indoor air was estimated using a Vapor Risk model spreadsheet developed by the DEH (revised October 5, 2004) and the SAM manual (DEH, 2003 and 2004). The DEH Vapor Risk model was modified to incorporate Cal-EPA's Office of Environmental Health Hazard Assessment (OEHHA) toxicity values (Cal-EPA, 2005). For comparison, this pathway was also evaluated using the Johnson and Ettinger (J&E, 1991 and USEPA, 2000) subsurface vapor intrusion model to estimate potential migration of subsurface vapors into indoor air. The J&E computer spreadsheet model is public domain software that is freely available at the USEPA internet website. The spreadsheet, which also calculates exposure levels and risk estimates, was also modified to incorporate Cal-EPA toxicity values (2005). The J&E model accounts for both the diffusion of chemicals through the subsurface, as well as advection due to pressure differentials between the soil and buildings. It also incorporates two different types of building foundation construction: (1) slab on grade; and (2) structures with basements.

The SAM Vapor Risk and J&E vapor intrusion models may be applied using soil vapor concentration data. Therefore, maximum concentrations (with the exception of chloroform) of chemicals detected in soil vapor were used as exposure point concentrations (EPCs) in the quantitative evaluation of risk for offsite residents (Table H-1). Only one soil vapor sample location (SG-14) contained a detectable concentration of chloroform. Chloroform was not detected in any of the six landfill gas extraction wells at the site (GeoSyntec, 2004a). However, chloroform has been detected in groundwater samples collected south of the site. Chloroform is commonly associated with chlorinated municipal water and the offsite area south of the landfill is irrigated with municipal water. Therefore, chloroform is not believed to be attributable to the landfill. The highest concentration of chloroform detected in the soil vapor samples collected at the southern site boundary was 0.8 ppbv (GeoSyntec, 2004b). This maximum concentration of chloroform (0.8 ppbv) from the soil vapor survey conducted during the Phase II EMP was used in both vapor intrusion models for the updated vapor risk assessment.

USEPA recommends using the 95% upper confidence limit (UCL95) of the arithmetic mean as the appropriate estimate of the average concentration for the COPCs detected (US EPA, 1992). Therefore, for comparison to the maximum EPCs, the 95% upper confidence limit (UCL95) of the arithmetic mean was calculated for each COPC and used as EPCs if the potential risk using maximum concentrations exceed a target risk goal.

As an initial step, the site analytical data were evaluated to establish the type of distributional assumption that best fits the data. To make this determination, the ProUCL

version 3.0 software program provided by USEPA (2004b) was used to evaluate the soil vapor data. This program allows users to test the normality or lognormality of the data using the Shapiro-Wilk W-test; the default is to test for normality. ProUCL computes the relevant test statistic and the associated critical value and then makes a recommendation on the UCL95 value based on the type of distribution (normal, lognormal, or gamma). For data distributions that are neither normal nor lognormal, the UCL95 concentration is calculated using non-parametric methods. The UCL95 concentrations are listed in Table H-5 with the ProUCL output files presented at the end of this Appendix.

H.4.3 Exposure Parameters

A primary objective of this updated risk assessment is to use conservative exposure parameters provided by USEPA, DTSC, and DEH so as not to underestimate potential human health risks.

This updated risk assessment evaluates exposures to carcinogenic and noncarcinogenic COPCs. Exposure is estimated separately for assessing potential cancer risk versus noncancer hazard. The averaging time for noncancer effects is the same as the exposure duration in years (multiplied by 365 days), whereas for cancer effects the averaging time is equivalent to an average lifetime of 70 years (USEPA, 1989). The exposure parameters used in this updated risk assessment (USEPA, 1991 and 1997) to estimate potential cancer risk and noncancer hazard for residents located south of the site are presented in the following table:

Table of Exposure Parameters

Exposure Parameters	Child Resident Parameter Values	Adult Resident Parameter Values
Inhalation Rate, IR (m^3/day)	10	20
Exposure Frequency, EF (days/year)	365	365
Exposure Duration, ED (years)	6	24
Body Weight, BW (kilogram)	15	70
Averaging Time, AT cancer (days)	25,550	25,550
Averaging Time, AT noncancer (days)	ED x 365 = 2,190	ED x 365 = 8,760

Potential cancer risks for residents south of the site were estimated using an age-adjusted approach to account for the higher exposures per body weight that occur during childhood. For example, children and adults have different inhalation rates in their first 30 years of life. To integrate their exposures, the resident in this updated risk assessment is assumed to be a child for the first 6 years of exposure, and an adult for the remaining 24 years (USEPA, 1991).

H.4.4 Model Input Parameters

Site-specific characteristics (e.g., soil physical parameters) along with applicable physical-chemical information that influence fate and transport are used for modeling whenever possible. However, if site-specific data are lacking, professional judgment and default values that have been developed in order to be conservative and protective of human health and the environment are used, as referenced.

The site-specific soil physical parameters are summarized in Table H-2, with the average of the physical properties also presented in Table H-2. These parameters were used in the vapor models to assess the vapor intrusion pathway into indoor air. Other model input parameters used in the Vapor Risk and J&E model spreadsheets, such as building specifications, are presented in Table H-3. The soil vapor sampling depth at which the maximum EPC was detected was not used; instead, a more conservative approach using a depth of 5 feet bgs, regardless of where the maximum EPC was actually detected, was used as input into both models. For the J&E model, a Q_{soil} value of 5 liters/min was used to represent the flow rate of chemicals from directly below the building into indoor air. Due to the uncertainty associated with vapor permeability rates directly beneath a building, the use of a Q_{soil} value in the range of 1 to 10 liters/min has been recommended by USEPA with a recommended default assumption of 5 liters/min. A slab attenuation factor of 0.1, which assumes the presence of an old slab beneath the residence, was used in the Vapor Risk model.

H.4.5 Toxicity Assessment

The toxicity assessment characterizes the relationship between the magnitude of exposure to a COPC and the nature and magnitude of adverse health effects that may result from such exposure. For purposes of calculating exposure criteria to be used in risk assessments, adverse health effects are classified into two broad categories - noncarcinogens and carcinogens. Toxicity values/exposure criteria are generally developed based on the threshold approach for noncancer effects and the nonthreshold approach for cancer effects. Toxicity values may be based on epidemiological studies, short-term human studies, subchronic or chronic animal data.

H.4.6 Toxicity Criteria

Key dose-response criteria include: unit risk factors (URFs in $[ug/m^3]^{-1}$) and cancer slope factors (CSFs in $[mg/kg\text{-}day]^{-1}$) for estimating potential cancer risks from exposure to carcinogens, and reference concentrations (RfCs in mg/m^3) and reference doses (RfDs in mg/kg-day) for estimating hazard from exposure to noncarcinogens (Table H-4). In addition, Cal-EPA has developed chronic Reference Exposure Levels for noncancer effects, which were used in place of RfCs, if available. In this risk assessment, chronic toxicity criteria were selected (in order of preference) from the following sources:

1) Cal-EPA OEHHA Toxicity Criteria Database, online (2005);

2) USEPA's (2005) Integrated Risk Information System (IRIS); or

3) USEPA Region IX Preliminary Remedial Goals (PRG) table (2004).

CSFs and RfDs were used in the Vapor Risk model, whereas URFs and RfCs were used in the J&E model. Toxicity criteria used in this risk assessment are presented in Table H-4.

H.4.7 Risk Characterization

The risk characterization process integrates the quantitative and qualitative results of the data evaluation, exposure and toxicity assessments. The purpose is to estimate the likelihood, incidence, and magnitude of the potential adverse health effects to defined receptor populations that may occur as a result of potential exposures to COPCs.

H.4.8 Cancer Risk

Potential cancer risk is defined as the upper-bound, incremental or excess probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen. To evaluate cancer risk from simultaneous exposure to several carcinogens, USEPA guidance assumes that incremental cancer risks are additive. The cumulative cancer risk resulting from exposure to the specific COPCs is estimated by summing the risks estimated for each COPC. This value is then compared to the San Diego County DEH and the DTSC target risk goal of one theoretical excess cancer in a human population of one million (1×10^{-6}). USEPA (1989) states that cancer risks estimated using this approach are upper-bound estimates, which means, that the actual risk is likely to be less than the predicted risk. Moreover, any potential increase in cancer risk from exposure to COPCs detected in the soil vapor samples used for this assessment

is in addition to a background risk of Americans developing cancer. The background risk is one chance in three (0.3 or 3 x 10^{-1}) for every American female, and one chance in two (0.5 or 5 x 10^{-1}) for every American male, of eventually developing cancer (ACS, 2002).

H.4.9 Noncancer Hazard

The potential for adverse noncancer effects resulting from exposure to COPCs is expressed as the hazard quotient (HQ). The HQ is a comparison of the average daily intake (or average daily dose, ADD) of the chemical (in mg/kg-day) to a chemical-specific reference dose (RfD in mg/kg-day). To assess the overall potential for adverse health effects posed by exposure to multiple chemicals, the HQs for each COPC associated with a given exposure pathway are summed, resulting in what is referred to by the USEPA (1989) as the hazard index (HI).

The HI is then compared to the DEH and DTSC benchmark level of 1. Implicit in the HI is the assumption of a threshold level of exposure below which no adverse effects are expected to occur. For example, if the daily intake exceeds the RfD (i.e., HI is greater than 1), site-specific exposure exceeds the RfD, then the potential for noncancer adverse effects may exist. In contrast, HIs less than 1 indicate that no adverse health effects are expected to occur from exposure to COPCs.

H.5 Updated Risk Characterization Results

Chemical-specific, cumulative cancer risks and noncancer HIs were estimated for current offsite residents potentially exposed to chemicals identified in soil vapor samples and volatilizing from the subsurface into a residence. An estimated cancer risk less than 1 x 10^{-6} and an estimated noncancer HI of 1 or less indicate that adverse health effects are not of concern. Results of the risk characterization are discussed below. A summary of the potential estimated cancer risk and noncancer hazard for offsite residents is presented in Table H-5. A comparison between the results of the preliminary risk assessment and updated risk assessment is presented in Section 4.6.1 of the report.

The risk and hazard estimates assume a resident is exposed 350 days per year for 30 years to indoor air contaminants volatilizing into a residential structure. The conservative nature of the default values (e.g., open crack space, building air exchange rate, and the assumption of no biodegradation or other loss mechanism for the COPCs) likely biases the modeled indoor air concentrations upward. A range of risk estimates was developed using both the DEH Vapor Risk model and the J&E vapor intrusion model. The indoor air modeling results using the SAM Vapor Risk Model and the J&E model spreadsheets are presented in Appendix H.

Using the DEH Vapor Risk model and maximum EPCs, the potential cancer risk was estimated at 3×10^{-7}, while the potential noncancer hazard was estimated at 1×10^{-2} for an adult resident. The potential cancer risk was estimated at 4×10^{-7} for a resident with integrated child and adult exposures. A noncancer hazard of 3×10^{-2} was estimated for a child resident. The estimated potential cancer risks and noncancer hazards using this model are less than the DEH and DTSC target health goals of 1×10^{-6} and 1, respectively.

Using the J&E vapor intrusion model and maximum EPCs, the potential cancer risk was estimated at 3×10^{-6}, while the noncancer hazard was estimated at 9×10^{-2} for an adult resident. The potential cancer risk was also estimated at 3×10^{-6} for a resident with integrated child and adult exposures. The primary constituent representing the highest cancer risk is benzene. A noncancer hazard of 2×10^{-1} was estimated for a child resident, which is less than the DEH and DTSC benchmark level of 1. Using the J&E model, the estimated potential cancer risk slightly exceeds the target risk goal of 1×10^{-6}; therefore, for comparison, the potential risk was estimated using 95% upper confidence limit (UCL95) concentrations as the EPCs. Using the J&E vapor intrusion model and UCL95 EPCs, the potential cancer risk was estimated at 1×10^{-6} for an adult resident, which does not exceed the DEH and DTSC target goal of 1×10^{-6}. The potential cancer risk was estimated at 2×10^{-6} for a resident with integrated child and adult exposures, which only slightly exceeds the target risk goal. The estimated noncancer hazard for a child resident was less than the DEH and DTSC benchmark level of 1.

H.5.1 Uncertainty Analysis

The methodology used in this risk assessment is consistent with DEH, USEPA and Cal-EPA risk assessment guidance. However, the procedures used in any quantitative risk assessment are conditional estimates given the many assumptions that must be made about exposure and toxicity. Major sources of uncertainty in risk assessment include: (1) natural variability (e.g., differences in body weight or sensitivity in a group of people); (2) incomplete knowledge of basic physical, chemical and biological processes (e.g., the affinity of a chemical for soil, degradation rates); (3) model assumptions used to estimate key inputs (e.g., exposure, dose response models, fate and transport models); and (4) measurement error primarily with respect to sampling and laboratory analysis.

In other words, risk assessments are a management tool for developing conservative estimates of health hazards that overestimate the true risk for potentially exposed populations. As a result, the numerical estimates in a risk assessment (cancer risks or noncancer hazards) have associated uncertainties reflecting the limitations in available knowledge about site concentrations, exposure assumptions (e.g., chronic

exposure concentrations, intake rates, frequency of time spent at home), and chemical toxicity.

Site-specific factors, which this assessment incorporates, decrease uncertainty, although uncertainty may persist in even the most site-specific risk assessments due to the inherent uncertainty in the process. However, because the assumptions used tend to be conservative in nature, the estimated risks are likely to exceed the most probable risk posed to potential human receptors.

Some of the most significant elements affecting uncertainty for this risk assessment include:

- The scientific understanding of the toxicity of chemicals can change over time. For example, USEPA is considering modifying the cancer slope factor for trichloroethylene (TCE) that would result in risk estimates up to 67 times higher than the original USEPA slope factor and 57 times higher than the current Cal-EPA slope factor. DEH and Cal-EPA have not adopted this value.

- Different models have been recommended to evaluate the vapor intrusion pathway. For example, DEH recommends the use of the Vapor Risk model, whereas USEPA and DTSC recommend the J&E model. The assumptions on the significance of different transport mechanisms considered in the vapor intrusion pathway are not the same in these models. The estimation of potential risk presented here illustrate that the J&E Model leads to higher risk estimates than the Vapor Risk model.

- For both vapor models, the conservative assumption was made that maximum VOC concentrations were detected 5 feet directly beneath a residence. However, the maximum concentrations were actually detected in soil vapor samples collected at a lateral distance approximately 30 feet from the nearest residence and at deeper depths. Moreover, the maximum concentrations were not all detected in the same location. These conservative assumptions may result in an over-prediction of the potential risk from exposures to VOCs via indoor air inhalation.

- Both models do not consider biodegradation of VOCs migrating through soils. Biodegradation of petroleum compounds (e.g., benzene, the primary constituent responsible for the bulk of the estimated risk) commonly occurs in the vadose zone, limiting the potential vapor intrusion of these constituents. Neglecting this fate mechanism in the evaluation likely results in an over-prediction of potential risk.

- Chemical concentrations are assumed to remain constant over the duration of exposure. No abiotic or biotic degradation mechanisms, which reduce the concentrations of COPCs over time, are assumed to occur. This general assumption of steady-state conditions also applies to sources and chemical release mechanisms and can result in a conservative estimation of long-term exposure concentrations.

Attachments:

Table H-1 Summary of Soil Vapor Sample Analytical Results
Table H-2 Summary of Soil Physical Properties
Table H-3 Summary of Risk Assessment Model Input Parameters
Table H-4 Risk Assessment Toxicity Criteria
Table H-5 Summary of Cancer Risk and NonCancer Hazard

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Table H-1
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-1 @ 6'	SG-1 @ 9'	SG-1 @ 14'	SG-2 @ 7'	SG-2 @10'	SG-2 @ 15'	SG-3 @ 10'	SG-4 @ 10'	SG-5 @ 9'	SG-6 @ 9'	SG-7 @ 11'	SG-8 @ 15'
		5/5/2004	5/5/2004	5/5/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004
Fixed Gases (ASTM D-1946)													
Oxygen (O_2) + Argon (Ar)	%bv	21.5	22.3	22.4	21.6	22.4	21.9	22.2	22.1	19.5	20.7	20.6	19.2
Nitrogen (N_2)	%bv	77.3	77.6	77.6	77.9	77.6	77.9	77.8	77.8	78.8	77.3	77.1	75.7
Methane (CH_4)	%bv	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2
Carbon Monoxide (CO)	%bv	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2
Carbon Dioxide (CO_2)	%bv	1.2	ND<0.2	ND<0.2	0.5	ND<0.2	0.2	ND<0.2	ND<0.2	1.7	2	2.3	5.1
Volatile Organic Compounds (EPA TO-15)													
1,1,1-trichloroethane	ppbV	ND<0.35	ND<0.4	ND<0.39	ND<0.4	ND<0.35	ND<0.39	ND<0.36	ND<0.36	ND<0.77	ND<0.38	ND<0.34	ND<1.5
1,1,2,2-tetrachloroethane	ppbV	ND<0.57	ND<0.66	ND<0.65	ND<0.65	ND<0.58	ND<0.65	ND<0.59	ND<0.59	ND<1.3	ND<0.61	ND<0.56	ND<2.4
1,1,2-trichloro-1,2,2-trifluoroethane	ppbV	**29**	ND<0.38	ND<0.37	ND<0.38	ND<0.33	ND<0.37	ND<0.34	ND<0.34	**9.8**	ND<0.36	**130**	**270**
1,1,2-trichloroethane	ppbV	ND<0.4	ND<0.46	ND<0.45	ND<0.45	ND<0.4	ND<0.45	ND<0.41	ND<0.41	ND<0.87	ND<0.43	ND<0.39	ND<1.7
1,1-dichloroethane	ppbV	ND<0.33	ND<0.38	ND<0.37	ND<0.38	ND<0.33	ND<0.37	ND<0.34	ND<0.34	**6.3**	ND<0.36	ND<0.33	ND<1.4
1,1-dichloroethene	ppbV	ND<0.37	**1.6**	ND<0.42	ND<0.42	ND<0.37	ND<0.42	ND<0.38	ND<0.38	**8.8**	ND<0.4	ND<0.36	ND<1.5
1,2,4-trichlorobenzene	ppbV	ND<1.1	ND<1.3	ND<1.3	ND<1.3	ND<1.1	ND<1.3	ND<1.2	ND<1.2	ND<2.5	ND<1.2	ND<1.1	ND<4.7
1,2,4-trimethylbenzene	ppbV	ND<1.3	ND<1.6	ND<1.5	**4.1**	**3.3**	ND<1.5	**2.7**	ND<1.4	**4.2**	**2.5**	**2.8**	ND<5.6
1,2-dibromoethane	ppbV	ND<0.4	ND<0.46	ND<0.45	ND<0.46	ND<0.4	ND<0.45	ND<0.42	ND<0.42	ND<0.89	ND<0.43	ND<0.4	ND<1.7
1,2-dichloro-1,1,2,2-tetrafluoroethane	ppbV	ND<0.36	ND<0.41	ND<0.4	ND<0.41	ND<0.36	ND<0.4	ND<0.37	ND<0.37	**41**	ND<0.39	**12**	**62**
1,2-dichlorobenzene	ppbV	ND<0.47	ND<0.54	ND<0.53	ND<0.53	ND<0.47	ND<0.53	ND<0.49	ND<0.49	ND<1	ND<0.5	ND<0.46	ND<2
1,2-dichloroethane	ppbV	ND<0.33	ND<0.38	ND<0.37	ND<0.37	ND<0.33	ND<0.37	ND<0.34	ND<0.34	ND<0.72	ND<0.35	ND<0.32	ND<1.4
1,2-dichloropropane	ppbV	ND<0.47	ND<0.55	ND<0.54	ND<0.54	ND<0.48	ND<0.54	ND<0.49	ND<0.49	ND<1	ND<0.51	ND<0.47	ND<2
1,3,5-trimethylbenzene	ppbV	ND<0.5	ND<0.58	ND<0.56	**0.98**	**0.89**	ND<0.56	ND<0.52	ND<0.52	ND<1.1	ND<0.54	**0.73**	ND<2.1
1,3-dichlorobenzene	ppbV	ND<0.41	ND<0.48	ND<0.47	ND<0.47	ND<0.41	ND<0.47	ND<0.43	ND<0.43	ND<0.91	ND<0.44	ND<0.41	ND<1.7
1,4-dichlorobenzene	ppbV	ND<0.46	ND<0.53	ND<0.52	ND<0.52	ND<0.46	ND<0.52	ND<0.48	ND<0.47	ND<1	ND<0.49	ND<0.45	ND<1.9
2-butanone	ppbV	**4.8**	**3.2**	**10**	**41**	**12**	**5.9**	**35**	**22**	**22**	**12**	**23**	**87**
2-hexanone	ppbV	ND<1.1	ND<1.2	ND<1.2	**2**	**1.6**	ND<1.2	ND<1.1	ND<1.1	ND<2.4	ND<1.1	ND<1.1	ND<4.4
4-ethyltoluene	ppbV	ND<0.37	ND<0.43	ND<0.42	**1.1**	**0.99**	ND<0.42	**0.79**	ND<0.38	ND<0.81	**1.1**	**0.95**	ND<1.5
4-methyl-2-pentanone	ppbV	ND<1.3	ND<1.5	ND<1.4	ND<1.4	ND<1.3	ND<1.4	ND<1.3	ND<1.3	ND<2.8	ND<1.4	ND<1.3	ND<5.3
Acetone	ppbV	**200**	**400**	**370**	**180**	**52**	**72**	**710**	**81**	**94**	**64**	**100**	**380**
Benzene	ppbV	**1.6**	**2.7**	**1.2**	**3.8**	**5.8**	**2.9**	**8.6**	**9.1**	**7.8**	**4.3**	**7.9**	**20**
Benzyl chloride	ppbV	ND<0.93	ND<1.1	ND<1.1	ND<1.1	ND<0.94	ND<1.1	ND<0.97	ND<0.97	ND<2.1	ND<1	ND<0.92	ND<3.9
Bromodichloromethane	ppbV	ND<0.42	ND<0.49	ND<0.47	ND<0.48	ND<0.42	ND<0.47	ND<0.44	ND<0.43	ND<0.92	ND<0.45	ND<0.41	ND<1.7
Bromoform	ppbV	ND<0.39	ND<0.45	ND<0.44	ND<0.45	ND<0.39	ND<0.44	ND<0.41	ND<0.41	ND<0.86	ND<0.42	ND<0.39	ND<1.6
Bromomethane	ppbV	ND<0.36	ND<0.42	ND<0.41	ND<0.41	ND<0.36	ND<0.41	ND<0.37	ND<0.37	ND<0.79	ND<0.39	ND<0.35	ND<1.5

Table H-1
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-1 @ 6'	SG-1 @ 9'	SG-1 @ 14'	SG-2 @ 7'	SG-2 @10'	SG-2 @ 15'	SG-3 @ 10'	SG-4 @ 10'	SG-5 @ 9'	SG-6 @ 9'	SG-7 @ 11'	SG-8 @ 15'
		5/5/2004	5/5/2004	5/5/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004	5/10/2004
c-1,2-dichloroethene	ppbV	ND<0.33	ND<0.38	ND<0.37	ND<0.37	ND<0.33	ND<0.37	ND<0.34	ND<0.34	ND<0.72	ND<0.35	ND<0.32	**3.7**
c-1,3-dichloropropene	ppbV	ND<0.34	ND<0.4	ND<0.39	ND<0.39	ND<0.35	ND<0.39	ND<0.36	ND<0.35	ND<0.76	ND<0.37	ND<0.34	ND<1.4
Carbon disulfide	ppbV	ND<0.38	**2.1**	ND<0.43	**1**	ND<0.38	ND<0.43	**4.1**	**3.6**	ND<0.84	**1.2**	ND<0.38	ND<1.6
Carbon tetrachloride	ppbV	ND<0.4	ND<0.47	ND<0.46	ND<0.46	ND<0.41	ND<0.46	ND<0.42	ND<0.42	ND<0.89	ND<0.43	ND<0.4	ND<1.7
Chlorobenzene	ppbV	ND<0.5	ND<0.58	ND<0.57	ND<0.57	ND<0.51	ND<0.57	ND<0.53	**6**	ND<1.1	ND<0.54	ND<0.5	ND<2.1
Chloroethane	ppbV	ND<0.5	ND<0.58	ND<0.57	ND<0.57	ND<0.51	ND<0.57	ND<0.52	ND<0.52	ND<1.1	ND<0.54	ND<0.5	ND<2.1
Chloroform	ppbV	ND<0.3	ND<0.35	ND<0.34	ND<0.35	ND<0.31	ND<0.34	ND<0.32	ND<0.32	ND<0.67	ND<0.33	ND<0.3	ND<1.3
Chloromethane	ppbV	ND<0.42	**2.5**	**0.84**	ND<0.48	**1**	**1.3**	**0.94**	**1.2**	ND<0.93	ND<0.45	ND<0.41	**4**
Dibromochloromethane	ppbV	ND<0.4	ND<0.46	ND<0.45	ND<0.45	ND<0.4	ND<0.45	ND<0.41	ND<0.41	ND<0.87	ND<0.43	ND<0.39	ND<1.6
Dichlorodifluoromethane	ppbV	**11**	ND<0.38	**1.1**	**1.2**	**0.76**	**2.3**	**1.3**	**1.2**	**780**	**4**	**41**	**410**
Ethylbenzene	ppbV	ND<0.49	ND<0.57	ND<0.56	**2.7**	**3.2**	ND<0.56	**2.3**	**2.5**	**3**	**1.9**	**2.4**	**5.3**
Hexachloro-1,3-butadiene	ppbV	ND<0.54	ND<0.62	ND<0.61	ND<0.61	ND<0.54	ND<0.61	ND<0.56	ND<0.56	ND<1.2	ND<0.58	ND<0.53	ND<2.2
Isopropanol	ppbV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	ppbV	ND<0.46	ND<0.53	ND<0.51	ND<0.52	ND<0.46	ND<0.51	ND<0.47	ND<0.47	ND<1	ND<0.49	ND<0.45	ND<1.9
Methyl-t-butyl-ether (MTBE)	ppbV	ND<0.4	ND<0.46	ND<0.45	ND<0.45	ND<0.4	ND<0.45	ND<0.41	0.41	ND<0.87	ND<0.43	ND<0.39	ND<1.6
o-xylene	ppbV	ND<0.54	ND<0.62	ND<0.61	**3.1**	**3.2**	**0.84**	**1.9**	**2**	**3.3**	**2.4**	**2.5**	**4.3**
p/m-xylene	ppbV	ND<1	ND<1.2	ND<1.1	**7.6**	**8.5**	**2.5**	**3.8**	**4.6**	**7.8**	**6.6**	**6.2**	**10**
Styrene	ppbV	ND<0.94	ND<1.4	ND<1.1	ND<1.1	ND<0.94	ND<1.1	ND<0.97	ND<0.97	ND<2.1	ND<1	ND<0.92	ND<3.9
Tetrachloroethene	ppbV	**1.2**	ND<0.54	ND<0.53	**2**	**1.5**	ND<0.53	ND<0.49	ND<0.48	**73**	**1**	**4.2**	**17**
Toluene	ppbV	**1.2**	**3.6**	**5.7**	**9.9**	**12**	**4.7**	**10**	**11**	**10**	**6.4**	**8.4**	**25**
trans-1,2-dichloroethene	ppbV	ND<0.39	ND<0.45	ND<0.44	ND<0.44	ND<0.39	ND<0.44	ND<0.4	ND<0.4	ND<0.86	ND<0.42	ND<0.38	ND<1.6
trans-1,3-dichloropropene	ppbV	ND<1	ND<1.2	ND<1.1	ND<1.1	ND<1	ND<1.1	ND<1	ND<1	ND<2.2	ND<1.1	ND<0.98	ND<4.2
Trichloroethene	ppbV	ND<0.41	ND<0.47	ND<0.46	ND<0.46	ND<0.41	ND<0.46	ND<0.42	ND<0.42	**2.7**	ND<0.44	ND<0.4	**21**
Trichlorofluoromethane	ppbV	ND<.36	ND<0.42	ND<0.41	ND<0.41	ND<0.36	ND<0.41	ND<0.38	ND<0.37	**29**	ND<0.39	ND<0.36	ND<1.5
Vinyl acetate	ppbV	ND<1.3	ND<1.5	ND<1.4	ND<1.4	ND<1.3	ND<1.4	ND<1.3	ND<1.3	ND<2.8	ND<1.4	ND<1.2	ND<5.3
Vinyl chloride	ppbV	ND<0.36	ND<0.41	ND<0.4	ND<0.41	ND<0.36	ND<0.4	ND<0.37	ND<0.37	ND<0.79	ND<0.39	ND<0.35	ND<1.5
Total VOCs	ppbV	248.8	415.7	388.84	260.48	106.74	92.44	781.43	144.61	1102.7	107.4	342.08	1319.3

ND - Not detected at concentrations greater than or equal to the Method detection limit (MDL) listed
RL - Reporting limit
ppbV - parts per billion by volume
%bv - Percent by volume

Table H-1
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-9 @ 15'	SG-9 @ 18'	SG-9 @ 23'	SG-10@1.5'	SG-10@5'	SG-11@1.5'	SG-11@5.0'	SG-12@1.5'	SG-12@5.0'	SG-13@1.5'	SG-13@5.0'
		5/10/2004	5/10/2004	5/10/2004	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005
Fixed Gases (ASTM D-1946)												
Oxygen (O_2) + Argon (Ar)	%bv	21	21.7	18.5	19.9	19.8	16.5	17	16.4	14.8	21.2	18.1
Nitrogen (N_2)	%bv	77.3	77.2	75.5	79.3	79.6	80.4	80.9	80.2	79.6	78.5	80.2
Methane (CH_4)	%bv	ND<0.2	ND<0.2	ND<0.2	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Carbon Monoxide (CO)	%bv	ND<0.2	ND<0.2	ND<0.2	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Carbon Dioxide (CO_2)	%bv	1.7	1.1	6	0.9	0.6	3.0	2.1	3.4	5.7	0.28	1.7
Volatile Organic Compounds (EPA TO-15)												
1,1,1-trichloroethane	ppbV	ND<0.38	ND<0.36	ND<1.6	ND<0.58	ND<0.43	ND<0.76	ND<0.67	ND<0.68	ND<0.43	ND<0.75	ND<0.43
1,1,2,2-tetrachloroethane	ppbV	ND<0.62	ND<0.58	ND<2.6	ND<0.66	ND<0.50	ND<0.87	ND<0.76	ND<0.77	ND<0.50	ND<0.86	ND<0.50
1,1,2-trichloro-1,2,2-trifluoroethane	ppbV	**30**	**46**	**190**	**6.5**	**9.3**	ND<1.1	ND<0.97	ND<0.98	ND<0.63	ND<1.1	ND<0.63
1,1,2-trichloroethane	ppbV	ND<0.43	ND<0.4	ND<1.8	ND<0.59	ND<0.45	ND<0.78	ND<0.68	ND<0.69	ND<0.45	ND<0.77	ND<0.45
1,1-dichloroethane	ppbV	ND<0.36	ND<0.34	ND<1.5	ND<0.93	ND<0.70	ND<1.2	ND<1.1	ND<1.1	ND<0.70	ND<1.2	ND<0.70
1,1-dichloroethene	ppbV	ND<0.4	ND<0.38	ND<1.6	ND<0.73	ND<0.54	ND<0.95	ND<0.84	ND<0.85	ND<0.54	ND<0.95	ND<0.54
1,2,4-trichlorobenzene	ppbV	ND<1.2	ND<1.1	ND<5	ND<0.30	ND<0.22	ND<0.39	ND<0.34	ND<0.35	ND<0.22	ND<0.39	ND<0.22
1,2,4-trimethylbenzene	ppbV	**3.9**	**5.1**	**7.5**	**35**	**12**	ND<0.79	**11**	ND<0.70	**2**	**86**	**120**
1,2-dibromoethane	ppbV	ND<0.43	ND<0.41	ND<1.8	ND<0.58	ND<0.44	ND<0.76	ND<0.67	ND<0.68	ND<0.44	ND<0.76	ND<0.44
1,2-dichloro-1,1,2,2-tetrafluoroethane	ppbV	**6.6**	**9.6**	**70**	-	-	-	-	-	-	-	-
1,2-dichlorobenzene	ppbV	ND<0.51	ND<0.48	ND<2.1	ND<0.70	ND<0.52	ND<0.92	ND<0.80	ND<0.81	ND<0.52	ND<0.91	ND<0.52
1,2-dichloroethane	ppbV	ND<0.36	ND<0.34	ND<1.5	ND<0.61	ND<0.46	ND<0.81	ND<0.71	ND<0.72	ND<0.46	ND<0.80	ND<0.46
1,2-dichloropropane	ppbV	ND<0.51	ND<0.48	ND<2.1	ND<0.61	ND<0.46	ND<0.80	ND<0.70	ND<0.71	ND<0.46	ND<0.80	ND<0.46
1,3,5-trimethylbenzene	ppbV	**1**	**1.3**	ND<2.2	**10**	**3**	ND<0.74	**3**	ND<0.66	ND<0.42	**30**	**26**
1,3-dichlorobenzene	ppbV	ND<0.45	ND<0.42	ND<1.8	ND<0.76	ND<0.57	ND<0.99	ND<0.87	ND<0.88	ND<0.57	**1.5**	ND<0.57
1,4-dichlorobenzene	ppbV	ND<0.49	ND<0.47	ND<2	ND<0.75	ND<0.56	ND<0.98	ND<0.86	ND<0.87	ND<0.56	ND<0.97	ND<0.56
2-butanone	ppbV	**69**	**85**	**150**	**22**	**27**	**5.3**	**35**	**9.5**	**5.3**	**21**	**7.4**
2-hexanone	ppbV	**2.6**	ND<1.1	ND<4.8	ND<0.93	**2.4**	ND<1.2	**3.3**	ND<1.1	ND<0.70	ND<1.2	**2.3**
4-ethyltoluene	ppbV	**1.6**	**2.1**	ND<1.6	**6.9**	**2.5**	ND<0.79	**3.3**	ND<0.70	ND<0.45	**25**	**25**
4-methyl-2-pentanone	ppbV	**2.9**	**2.1**	ND<5.7	**12**	**13**	ND<0.88	**23**	ND<0.78	ND<0.50	ND<0.87	**4.1**
Acetone	ppbV	**280**	**510**	**350**	**510**	**570**	**67**	**510**	**100**	**55**	**1100**	**280**
Benzene	ppbV	**38**	**68**	**38**	**12**	**49**	**4.9**	**47**	**19**	**10**	**22**	**7.4**
Benzyl chloride	ppbV	ND<1	ND<0.95	ND<4.2	ND<0.51	ND<0.38	ND<0.67	ND<0.58	ND<0.59	ND<0.38	ND<0.66	ND<0.49
Bromodichloromethane	ppbV	ND<0.45	ND<0.43	ND<1.9	**1.4**	ND<0.49	ND<0.86	**1.8**	ND<0.76	ND<0.49	**2.9**	ND<0.47
Bromoform	ppbV	ND<0.42	ND<0.4	ND<1.7	ND<0.62	ND<0.47	ND<0.82	ND<0.72	ND<0.72	ND<0.47	ND<0.81	ND<0.64
Bromomethane	ppbV	ND<0.39	ND<0.37	ND<1.6	ND<0.85	ND<0.64	ND<1.1	ND<0.97	ND<0.99	ND<0.64	ND<1.1	ND<0.41

Table H-1
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-9 @ 15'	SG-9 @ 18'	SG-9 @ 23'	SG-10@1.5'	SG-10@5'	SG-11@1.5'	SG-11@5.0'	SG-12@1.5'	SG-12@5.0'	SG-13@1.5'	SG-13@5.0'
		5/10/2004	5/10/2004	5/10/2004	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005
c-1,2-dichloroethene	ppbV	ND<0.35	ND<0.33	**7.2**	ND<0.55	ND<0.41	ND<0.72	ND<0.63	ND<0.64	ND<0.41	ND<0.72	ND<0.66
c-1,3-dichloropropene	ppbV	ND<0.37	ND<0.35	ND<1.5	ND<0.88	ND<0.66	ND<1.2	ND<1.0	ND<1.0	ND<0.66	ND<1.1	ND<0.69
Carbon disulfide	ppbV	**6.8**	**2.2**	ND<1.7	**1.6**	**2.5**	ND<1.2	**2.1**	ND<1.1	ND<0.69	**1.3**	ND<0.55
Carbon tetrachloride	ppbV	ND<0.44	ND<0.41	ND<1.8	ND<0.73	ND<0.55	ND<0.96	ND<0.84	ND<0.85	ND<0.55	ND<0.95	ND<0.47
Chlorobenzene	ppbV	ND<0.55	ND<0.52	ND<2.3	ND<0.62	ND<0.47	ND<0.82	ND<0.72	ND<0.73	ND<0.47	ND<0.81	**0.86**
Chloroethane	ppbV	ND<0.54	ND<0.51	ND<2.2	**16**	**6**	**2.8**	**1.6**	**1.5**	ND<0.56	ND<0.97	ND<0.56
Chloroform	ppbV	**0.80**	ND<0.31	ND<1.4	**2.2**	**2.1**	**1.3**	**8.8**	**1.9**	ND<0.44	**3.7**	ND<0.44
Chloromethane	ppbV	**10**	**12**	**12**	**4.7**	**3.1**	**2.7**	**1.5**	**1.6**	ND<0.40	**2.6**	**1.2**
Dibromochloromethane	ppbV	ND<0.43	ND<0.4	ND<1.8	ND<0.64	ND<0.48	ND<0.84	ND<0.74	ND<0.75	ND<0.48	ND<0.83	ND<0.48
Dichlorodifluoromethane	ppbV	**47**	**73**	**340**	**1.1**	**1.1**	ND<1.2	ND<1.0	ND<1.0	ND<0.66	**2.3**	**2.1**
Ethylbenzene	ppbV	**6.5**	**17**	**9.3**	**13**	**7.3**	**1.3**	**14**	**2.1**	**1.1**	**23**	**35**
Hexachloro-1,3-butadiene	ppbV	ND<0.58	ND<0.55	ND<2.4	ND<1.0	ND<0.77	ND<1.3	ND<1.2	ND<1.2	ND<0.77	ND<1.3	ND<0.77
Isopropanol	ppbV	ND	ND	ND	-	-	-	-	-	-	-	-
Methylene chloride	ppbV	ND<0.49	ND<0.46	ND<2	ND<0.65	ND<0.48	ND<0.85	ND<0.74	ND<0.75	ND<0.48	ND<0.84	ND<0.48
Methyl-t-butyl-ether (MTBE)	ppbV	ND<0.43	ND<0.4	ND<1.8	ND<0.61	ND<0.46	ND<0.80	ND<0.70	ND<0.71	ND<0.46	ND<0.79	ND<0.46
o-xylene	ppbV	**3.9**	**9.3**	**6.7**	**29**	**9.3**	**2.3**	**21**	**1.8**	**1.2**	**48**	**63**
p/m-xylene	ppbV	**9.2**	**19**	**15**	**44**	**22**	**5**	**48**	**4.8**	**3.3**	**78**	**120**
Styrene	ppbV	**4.6**	**12**	**8.9**	ND<0.50	ND<0.37	ND<0.66	ND<0.58	ND<0.58	ND<0.37	ND<0.65	ND<0.37
Tetrachloroethene	ppbV	**2.1**	**3.8**	**23**	ND<0.67	ND<0.50	ND<0.88	**1.3**	**25**	**53.0**	ND<0.87	**2.1**
Toluene	ppbV	**38**	**73**	**48**	**30**	**48**	**6.5**	**59**	**14**	**7.8**	**54**	**51**
trans-1,2-dichloroethene	ppbV	ND<0.42	ND<0.4	ND<1.7	ND<0.90	ND<0.68	ND<1.2	ND<1.0	ND<1.1	ND<0.68	ND<1.2	ND<0.66
trans-1,3-dichloropropene	ppbV	ND<1.1	ND<1	ND<4.5	ND<0.88	ND<0.66	ND<1.2	ND<1.0	ND<1.0	ND<0.66	ND<1.1	ND<0.42
Trichloroethene	ppbV	ND<0.44	**1.8**	**29**	ND<0.56	**1.2**	ND<0.74	**1.3**	ND<0.66	**0.75**	ND<0.73	ND<0.65
Trichlorofluoromethane	ppbV	ND<0.39	ND<0.37	**3.7**	ND<0.87	ND<0.65	**3.1**	**2.7**	ND<1.0	ND<0.65	ND<1.1	ND<0.55
Vinyl acetate	ppbV	ND<1.4	ND<1.3	ND<5.6	ND<0.73	ND<0.55	ND<0.96	ND<0.84	ND<0.85	ND<0.55	ND<0.95	**26**
Vinyl chloride	ppbV	ND<0.39	ND<0.37	ND<1.6	ND<0.61	ND<0.46	ND<0.80	ND<0.70	ND<0.71	ND<0.46	ND<0.79	ND<0.46
Total VOCs	ppbV	564.5	952.3	1308.3	756.0	790.8	99.1	798.7	181.2	139.5	1501.3	773.5

ND - Not detected at concentrations greater than or equal to the Method detection limit (MDL) listed
RL - Reporting limit
ppbV - parts per billion by volume
%bv - Percent by volume

Table H-1
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-14@1.5'	SG-14@5'	SG-15@1.5'	SG-15@5'	SG-16@1.5'	SG-16@5'	SG-17@1.5'	SG-17@5.0'	SG-18@1.5'	SG-18@5'	SG-19@1.5'	SG-19@5.0'
		6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005
Fixed Gases (ASTM D-1946)													
Oxygen (O_2) + Argon (Ar)	%bv	14.3	14.5	15.1	13.4	18.3	15.4	19.2	11.7	17.2	14.7	20.5	16.5
Nitrogen (N_2)	%bv	80.7	80.8	80	78.7	79.6	80.5	79.8	83.8	78.7	79.4	78.8	79.5
Methane (CH_4)	%bv	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Carbon Monoxide (CO)	%bv	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
Carbon Dioxide (CO_2)	%bv	5.0	4.7	4.8	7.9	2.1	4.1	1.0	4.5	4.1	5.9	0.7	4.1
Volatile Organic Compounds (EPA TO-15)													
1,1,1-trichloroethane	ppbV	ND<0.43	ND<0.43	ND<1.2	ND<0.44	ND<0.60	ND<0.44	ND<0.50	ND<0.43	ND<0.49	ND<0.43	ND<0.66	ND<0.45
1,1,2,2-tetrachloroethane	ppbV	ND<0.50	ND<0.49	ND<1.4	ND<0.50	ND<0.69	ND<0.50	ND<0.57	ND<0.50	ND<0.56	ND<0.50	ND<0.75	ND<0.51
1,1,2-trichloro-1,2,2-trifluoroethane	ppbV	ND<0.63	ND<0.62	ND<1.8	ND<0.64	ND<0.87	**2.1**	ND<0.72	**1.8**	ND<0.71	ND<0.63	ND<0.96	ND<0.65
1,1,2-trichloroethane	ppbV	ND<0.45	ND<0.44	ND<1.2	ND<0.45	ND<0.62	ND<0.45	ND<0.51	ND<0.45	ND<0.50	ND<0.45	ND<0.68	ND<0.46
1,1-dichloroethane	ppbV	ND<0.70	ND<0.69	ND<1.9	ND<0.70	ND<0.97	ND<0.70	ND<0.80	ND<0.70	ND<0.79	ND<0.70	ND<1.1	ND<0.72
1,1-dichloroethene	ppbV	ND<0.54	ND<0.53	ND<1.5	ND<0.55	ND<0.75	ND<0.55	ND<0.62	ND<0.54	ND<0.61	ND<0.54	ND<0.82	ND<0.56
1,2,4-trichlorobenzene	ppbV	ND<0.22	ND<0.22	ND<0.62	ND<0.23	ND<0.31	ND<0.23	ND<0.26	ND<0.22	ND<0.25	ND<0.22	ND<0.34	ND<0.23
1,2,4-trimethylbenzene	ppbV	**4.7**	**5.5**	ND<1.3	**3.7**	**43**	**16**	**3.1**	**5**	**3.9**	**4.4**	**70**	**17**
1,2-dibromoethane	ppbV	ND<0.44	ND<0.43	ND<1.2	ND<0.44	ND<0.60	ND<0.44	ND<0.50	ND<0.44	ND<0.49	ND<0.44	ND<0.66	ND<0.45
1,2-dichloro-1,1,2,2-tetrafluoroethane	ppbV	-	-	-	-	-	-	-	-	-	-	-	-
1,2-dichlorobenzene	ppbV	ND<0.52	ND<0.51	ND<1.5	ND<0.53	ND<0.72	ND<0.53	ND<0.60	ND<0.52	ND<0.59	ND<0.52	ND<0.79	ND<0.54
1,2-dichloroethane	ppbV	ND<0.46	ND<0.45	ND<1.3	ND<0.46	ND<0.64	ND<0.46	ND<0.53	ND<0.46	ND<0.52	ND<0.46	ND<0.70	ND<0.47
1,2-dichloropropane	ppbV	ND<0.46	ND<0.45	ND<1.3	ND<0.46	ND<0.63	ND<0.46	ND<0.53	ND<0.46	ND<0.52	ND<0.46	ND<0.70	ND<0.47
1,3,5-trimethylbenzene	ppbV	**1.4**	**1.4**	ND<1.2	ND<0.43	**13**	**3.8**	ND<0.49	**1.1**	**0.93**	**0.92**	**20**	**3.9**
1,3-dichlorobenzene	ppbV	ND<0.57	ND<0.56	ND<1.6	ND<0.57	ND<0.79	ND<0.57	ND<0.65	ND<0.57	ND<0.64	ND<0.57	ND<0.86	ND<0.58
1,4-dichlorobenzene	ppbV	ND<0.56	ND<0.55	ND<1.6	ND<0.56	ND<0.78	ND<0.56	ND<0.64	ND<0.56	ND<0.63	ND<0.56	ND<0.85	ND<0.58
2-butanone	ppbV	**17**	**10**	**11**	**4.1**	**22**	**31**	**14**	**13**	**11**	**9.5**	**10**	**8.1**
2-hexanone	ppbV	ND<0.70	**1.4**	ND<1.9	ND<0.70	ND<0.97	**3.4**	ND<0.80	ND<0.70	ND<0.79	ND<0.70	ND<1.1	ND<0.72
4-ethyltoluene	ppbV	**1.4**	**1.4**	ND<1.2	**0.88**	**8.8**	**3.1**	ND<0.51	**1.3**	**1.1**	**1.1**	**15**	**2.8**
4-methyl-2-pentanone	ppbV	**4.7**	**6.2**	ND<1.4	**4.2**	**12**	**12**	**5.9**	**3.6**	**3.2**	**5.7**	**9.5**	**3**
Acetone	ppbV	**150**	**130**	**190**	**42**	**720**	**650**	**180**	**300**	**120**	**190**	**1000**	**220**
Benzene	ppbV	**22**	**5**	**12**	**4.1**	**10**	**38**	**10**	**21**	**15**	**14**	**12**	**11**
Benzyl chloride	ppbV	ND<0.38	ND<0.37	ND<1.1	ND<0.38	ND<0.53	ND<0.38	ND<0.44	ND<0.38	ND<0.43	ND<0.38	ND<0.58	ND<0.39
Bromodichloromethane	ppbV	**9**	**13**	ND<1.4	ND<0.49	**1.2**	ND<0.49	**1.3**	ND<0.49	**1.8**	ND<0.49	**1.5**	**1**
Bromoform	ppbV	ND<0.47	ND<0.46	ND<1.3	ND<0.47	ND<0.64	ND<0.47	ND<0.53	ND<0.47	ND<0.52	ND<0.47	ND<0.71	ND<0.48
Bromomethane	ppbV	ND<0.64	ND<0.62	ND<1.8	ND<0.64	ND<0.88	ND<0.64	ND<0.73	ND<0.64	ND<0.71	ND<0.64	ND<0.96	ND<0.65

Table H-1
Summary of Soil Vapor Sample Analytical Results
Poway Landfill
Poway, California

Analyte	UNITS	SG-14@1.5'	SG-14@5'	SG-15@1.5'	SG-15@5'	SG-16@1.5'	SG-16@5'	SG-17@1.5'	SG-17@5.0'	SG-18@1.5'	SG-18@5'	SG-19@1.5'	SG-19@5.0'
		6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005	6/15/2005
c-1,2-dichloroethene	ppbV	ND<0.41	ND<0.40	ND<1.1	ND<0.42	ND<0.57	ND<0.42	ND<0.47	ND<0.41	ND<0.46	ND<0.41	ND<0.62	ND<0.42
c-1,3-dichloropropene	ppbV	ND<0.66	ND<0.65	ND<1.8	ND<0.66	ND<0.91	ND<0.66	ND<0.76	ND<0.66	ND<0.74	ND<0.66	ND<1.0	ND<0.68
Carbon disulfide	ppbV	ND<0.69	ND<0.68	ND<1.9	ND<0.70	**2.3**	**2.8**	**1.8**	ND<0.69	**1.3**	**0.8**	**1.6**	ND<0.71
Carbon tetrachloride	ppbV	ND<0.55	ND<0.54	ND<1.5	ND<0.55	ND<0.76	ND<0.55	ND<0.63	ND<0.55	ND<0.62	ND<0.55	ND<0.83	ND<0.56
Chlorobenzene	ppbV	ND<0.47	ND<0.46	ND<1.3	ND<0.47	ND<0.65	ND<0.47	ND<0.54	ND<0.47	ND<0.53	ND<0.47	ND<0.71	ND<0.48
Chloroethane	ppbV	**1.8**	ND<0.55	**12.0**	ND<0.56	**7.5**	**2.7**	**9.9**	ND<0.56	**5.6**	ND<0.56	**3.2**	ND<0.58
Chloroform	ppbV	**97**	**150**	**3.4**	**7.9**	**2.3**	**2.8**	**2.3**	ND<0.44	**5.2**	**9.9**	**5.6**	**11**
Chloromethane	ppbV	ND<0.40	ND<0.40	**7.3**	ND<0.41	**9.9**	**4**	**2.4**	**1.2**	**2.7**	**1**	ND<0.61	**1.2**
Dibromochloromethane	ppbV	ND<0.48	ND<0.47	ND<1.3	ND<0.48	ND<0.66	ND<0.48	ND<0.55	ND<0.48	ND<0.54	ND<0.48	ND<0.73	ND<0.49
Dichlorodifluoromethane	ppbV	ND<0.66	ND<0.65	ND<1.8	ND<0.67	ND<0.92	ND<0.67	ND<0.76	ND<0.66	ND<0.75	ND<0.66	ND<1.0	ND<0.68
Ethylbenzene	ppbV	**4.5**	**2.9**	**2.6**	**13**	**19**	**6.7**	**2.2**	**4.5**	**2.8**	**2.6**	**28**	**4.2**
Hexachloro-1,3-butadiene	ppbV	ND<0.77	ND<0.75	ND<2.1	ND<0.77	ND<1.1	ND<0.77	ND<0.88	ND<0.77	ND<0.86	ND<0.77	ND<1.2	ND<0.79
Isopropanol	ppbV	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride	ppbV	ND<0.48	ND<0.47	ND<1.3	ND<0.49	ND<0.67	ND<0.49	ND<0.55	ND<0.48	ND<0.54	ND<0.48	ND<0.73	ND<0.50
Methyl-t-butyl-ether (MTBE)	ppbV	ND<0.46	ND<0.45	ND<1.3	ND<0.46	ND<0.63	ND<0.46	ND<0.52	ND<0.46	ND<0.51	ND<0.46	ND<0.69	ND<0.47
o-xylene	ppbV	**4.1**	**3.9**	**4.8**	**33**	**40**	**9.4**	**3.4**	**4.3**	**3.9**	**3.5**	**59**	**8**
p/m-xylene	ppbV	**11**	**12**	**9.9**	**60**	**61**	**20**	**7.5**	**10**	**9.7**	**9**	**97**	**14**
Styrene	ppbV	ND<0.37	ND<0.37	ND<1.0	ND<0.38	ND<0.52	**1.8**	ND<0.43	ND<0.37	ND<0.42	ND<0.37	ND<0.57	ND<0.39
Tetrachloroethene	ppbV	ND<0.50	**0.8**	ND<1.4	ND<0.51	ND<0.70	ND<0.51	ND<0.58	ND<0.50	ND<0.57	ND<0.50	ND<0.76	ND<0.52
Toluene	ppbV	**32**	**15**	**11**	**7.1**	**38**	**31**	**8.7**	**16**	**13**	**10**	**62**	**16**
trans-1,2-dichloroethene	ppbV	ND<0.68	ND<0.66	ND<1.9	ND<0.68	ND<0.93	ND<0.68	ND<0.77	ND<0.68	ND<0.76	ND<0.68	ND<1.0	ND<0.69
trans-1,3-dichloropropene	ppbV	ND<0.66	ND<0.65	ND<1.8	ND<0.66	ND<0.91	ND<0.66	ND<0.76	ND<0.66	ND<0.74	ND<0.66	ND<1.0	ND<0.68
Trichloroethene	ppbV	ND<0.42	ND<0.41	ND<1.2	ND<0.43	ND<0.58	**0.93**	ND<0.48	ND<0.42	ND<0.47	ND<0.42	ND<0.64	ND<0.43
Trichlorofluoromethane	ppbV	ND<0.65	ND<0.64	ND<1.8	ND<0.66	ND<0.90	ND<0.66	ND<0.75	**7.7**	ND<0.74	ND<0.65	ND<0.99	ND<0.67
Vinyl acetate	ppbV	ND<0.55	ND<0.54	ND<1.5	ND<0.55	ND<0.76	ND<0.55	ND<0.63	ND<0.55	ND<0.62	ND<0.55	ND<0.83	ND<0.56
Vinyl chloride	ppbV	ND<0.46	ND<0.45	ND<1.3	ND<0.46	ND<0.63	ND<0.46	ND<0.52	ND<0.46	ND<0.51	ND<0.46	ND<0.69	ND<0.47
Total VOCs	ppbV	360.6	358.5	264.0	180.0	1010.0	841.5	252.5	390.5	201.1	262.5	1394.4	321.2

ND - Not detected at concentrations greater than or equal to the Method detection limit (MDL) listed
RL - Reporting limit
ppbV - parts per billion by volume
%bv - Percent by volume

Table H-2
Summary of Soil Physical Properties
Poway Landfill
Poway, California

Sample ID	Sample Depth (feet bgs)	Total Organic Carbon (mg/kg)	Fraction Organic Carbon, foc (unitless)	Moisture Content (% wt)	Bulk Density (g/cm^3)	Porosity (%)			Hydraulic Conductivity (cm/s)
						Total	Water-Filled	Air-Filled	
B-1	8	710	0.0007	6.2	1.74	36.2	10.8	25.4	3.2E-04
B-2	10	1050	0.0011	6.9	1.75	35.6	12.4	23.2	1.7E-04
B-3	16	990	0.0010	7.4	1.78	34.5	13.2	21.3	1.3E-04
S6-11	5	720	0.0007	10.0	1.70	36.8	17.0	19.8	1.5E-06
S6-12	5	1100	0.0011	7.8	1.78	33.9	13.9	20.0	5.6E-06
S6-13	1	1350	0.0014	8.6	1.73	35.8	14.9	21.0	3.6E-06
S6-15	5	990	0.0010	5.3	1.59	40.4	8.5	31.9	6.9E-05
Average Stratum A =		987	0.0010	7.5	1.72	36.2	12.9	23.2	9.9E-05

$foc = TOC/10^6$

% wt - Percent by weight

g/cm^3 - grams per cubic centimeter

mg/kg - milligrams per kilogram

cm/s - Centimeters per second

Table H-3
Summary of Risk Assessment Model Input Parameters
Poway Landfill
Poway, California

Model Input Parameter	Value Used	Rationale
Soil Properties		
Average Soil Temperature, ^{o}C	19	Area-Specific Value
Soil dry bulk density, gm/cm^3	1.72	Average Site-Specific Value based on soil physical property testing
Soil total porosity, unitless	0.3618	Average Site-Specific Value based on soil physical property testing
Soil water-filled porosity, cm^3/cm^3	0.1295	Average Site-Specific Value based on soil physical property testing
Soil air-filled porosity, cm^3/cm^3	0.232	Average Site-Specific Value based on soil physical property testing
Fraction of Organic Carbon, unitless	0.0010	Average Site-Specific Value based on soil physical property testing
J&E Model Parameters		
Depth below grade to bottom of enclosed space floor (L_F), cm	15	Slab construction
Soil vapor sampling depth below grade (Ls), cm	152	Assume 5 feet bgs for all COPCs
Thickness of soil stratum A (h_A), cm	152	Equal to the soil vapor sampling depth, Ls
Soil stratum A SCS soil type	S	Default model assumption
Enclosed space floor thickness (L_{crack}), cm	10	Default assumption
Soil-building pressure differential, $g/cm\text{-}sec^2$	40	Default assumption
Enclosed space floor length (L_B), cm	1000	Default residential building dimension
Enclosed space floor width (W_B), cm	1000	Default residential building dimension
Enclosed space height (H_B), cm	244	Default residential building dimension for slab-on-grade, 8 feet
Floor-wall seam crack width (w), cm	0.1	Default assumption
Indoor air exchange rate (ER), $hour^{-1}$	0.5	50th percentile from comprehensive US study (Subsurface Vapor Intrusion Guidance, USEPA 2002b)
Average vapor flow rate into building (Qsoil), L/m	5	Default residential assumption
Vapor Risk Model Parameters		
Depth of contamination for Soil Gas, (X), m	1.52	Assume 5 feet bgs for all COPCs
Floor area of building (A), m^2	1	Default assumption
% of floor area that flux occurs, dimensionless	100	Default assumption
Interior height of building (Rh), m	2.44	Default residential assumption, 8 feet
Exchange rate of air (E), exchanges/hour	0.5	Default residential assumption
Slab attenuation factor (Sb), dimensionless	0.1	Default assuming old slab

Table H-4
Chronic Toxicity Criteria
Poway Landfill
Poway, California

COPCs	Cas No.	CSF $(mg/kg\text{-}day)^{-1}$	URF $(ug/m^3)^{-1}$	RfD (mg/kg-day)	RfC (mg/m^3)
1,1-Dichloroethane	75343	5.7E-03	1.6E-06	1.4E-01	5.0E-01
1,1-Dichloroethylene	75354	--	--	2.0E-02	7.0E-02
1,2,4-Trimethylbenzene	95636	--	--	1.7E-03	6.0E-03
1,3-Dichlorobenzene	541731	--	--	3.0E-02	1.1E-01
1,3,5-Trimethylbenzene	108678	--	--	1.7E-03	6.0E-03
2-Butanone (MEK)	78933	--	--	1.4E+00	5.0E+00
2-Hexanone (as MIBK)	591786	--	--	8.6E-01	3.0E+00
4-Ethyltoluene (as m-Xylene)	622968	--	--	2.0E-01	7.0E-01
4-Methyl-2-pentanone (MIBK)	108101	--	--	8.6E-01	3.0E+00
Acetone	67641	--	--	9.0E-01	3.2E+00
Benzene	71432	1.0E-01	2.9E-05	1.7E-02	6.0E-02
Bromodichloromethane	75274	1.3E-01	3.7E-05	2.0E-02	7.0E-02
Carbon disulfide	75150	--	--	2.3E-01	8.0E-01
Chlorobenzene	108907	--	--	2.9E-01	1.0E+00
Chloroethane	75003	2.9E-03	8.3E-07	8.6E+00	3.0E+01
Chloroform	67663	1.9E-02	5.3E-06	8.6E-02	3.0E-01
Chloromethane	74873	--	--	2.6E-02	9.0E-02
cis-1,2-Dichloroethylene	156592	--	--	1.0E-02	3.5E-02
Dichlorodifluoromethane	75718	--	--	5.7E-02	2.0E-01
MTBE	1634044	9.1E-04	2.6E-07	2.3E+00	8.0E+00
Ethylbenzene	100414	--	--	5.7E-01	2.0E+00
o-Xylene	95476	--	--	2.0E-01	7.0E-01
p-Xylene	106423	--	--	2.0E-01	7.0E-01
Styrene	100425	--	--	2.6E-01	9.0E-01
Tetrachloroethylene	127184	2.1E-02	5.9E-06	1.0E-02	3.5E-02
Toluene	108883	--	--	8.6E-02	3.0E-01
Trichloroethylene	79016	7.0E-03	2.0E-06	1.7E-01	6.0E-01
Trichlorofluoromethane (f 11)	75694	--	--	2.0E-01	7.0E-01
Trichlorotrifluoroethane (f 113)	76131	--	--	8.6E+00	3.0E+01
Vinyl acetate	108054	--	--	5.7E-02	2.0E-01

Notes:

COPCs: chemicals of potential concern

CSF: cancer slope factor; URF: unit risk factor

RfD: reference dose; RfC: reference concentration

MEK: methyl ethyl ketone; MIBK: methyl isobutyl ketone; f11: freon 11: f113: freon 113

Table H-5
Summary of Cancer Risk and Noncancer Hazard
Poway Landfill
Poway, California

COPCs	Cas No.	Molecular Weight (g/mol)	Maximum EPC			SAM Vapor Risk Model [b]				J&E Vapor Intrusion Model [b]				UCL95 EPC			J&E Vapor Intrusion Model [b]			
						Cancer Risk		Noncancer Hazard		Cancer Risk		Noncancer Hazard					Cancer Risk		Noncancer Hazard	
			(ppbv)	(ppmv)	(mg/m^3)[a]	Adult	Adult/Child[c]	Adult	Child[c]	Adult	Adult/Child[c]	Adult	Child[c]	(ppbv)	(ppmv)	(mg/m^3)[a]	Adult	Adult/Child[c]	Adult	Child[c]
1,1-Dichloroethane	75343	98.96	0.9500	0.0010	0.0038	2.2E-10	2.8E-10	6.5E-07	1.5E-06	1.8E-09	2.3E-09	5.3E-06	1.2E-05	0.51	0.0005	0.0021	9.8E-10	1.2E-09	2.9E-06	6.7E-06
1,1-Dichloroethylene	75354	96.94	0.7500	0.0008	0.0030	--	--	4.4E-06	1.0E-05	--	--	3.4E-05	7.9E-05	0.40	0.0004	0.0016	--	--	1.8E-05	4.2E-05
1,2,4-Trimethylbenzene	95636	120.2	120	0.1200	0.5899	--	--	8.5E-03	2.0E-02	--	--	5.9E-02	1.4E-01	40.61	0.0406	0.1996	--	--	2.0E-02	4.7E-02
1,3-Dichlorobenzene	541731	147	1.5	0.0015	0.0090	--	--	6.8E-06	1.6E-05	--	--	5.7E-05	1.3E-04	0.54	0.0005	0.0032	--	--	2.0E-05	4.7E-05
1,3,5-Trimethylbenzene	108678	120.2	30	0.0300	0.1475	--	--	2.1E-03	4.9E-03	--	--	1.5E-02	3.4E-02	11.13	0.0111	0.0547	--	--	5.5E-03	1.3E-02
2-Butanone	78933	72.11	35	0.0350	0.1032	--	--	2.1E-06	5.0E-06	--	--	1.5E-05	3.6E-05	18.66	0.0187	0.0550	--	--	8.2E-06	1.9E-05
2-Hexanone (as MIBK)	591786	100.16	3.4	0.0034	0.0139	--	--	3.7E-07	8.6E-07	--	--	3.3E-06	7.6E-06	1.98	0.0020	0.0081	--	--	1.9E-06	4.4E-06
4-Ethyltoluene (as m-Xylene)	622968	120.3	25	0.0250	0.1230	--	--	1.6E-05	3.6E-05	--	--	1.0E-04	2.4E-04	13.11	0.0131	0.0645	--	--	5.4E-05	1.3E-04
4-Methyl-2-pentanone (MIBK)	108101	100.16	23	0.0230	0.0942	--	--	2.7E-06	6.3E-06	--	--	2.2E-05	5.1E-05	9.78	0.0098	0.0401	--	--	9.4E-06	2.2E-05
Acetone	67641	58.08	1100	1.1000	2.6130	--	--	1.2E-04	2.7E-04	--	--	8.1E-04	1.9E-03	511.91	0.5119	1.2160	--	--	3.8E-04	8.8E-04
Benzene	71432	78.11	49	0.0490	0.1565	1.9E-07	2.4E-07	2.6E-04	6.1E-04	1.5E-06	1.9E-06	2.0E-03	4.8E-03	22.90	0.0229	0.0732	7.1E-07	9.0E-07	9.5E-04	2.2E-03
Bromodichloromethane	75274	163.83	13	0.0130	0.0871	4.7E-08	6.0E-08	4.2E-05	9.9E-05	4.7E-07	5.9E-07	4.2E-04	9.8E-04	9.16	0.0092	0.0614	3.3E-07	4.2E-07	3.0E-04	6.9E-04
Carbon disulfide	75150	76.13	2.8	0.0028	0.0087	--	--	1.3E-06	3.0E-06	--	--	9.5E-06	2.2E-05	1.94	0.0019	0.0060	--	--	6.6E-06	1.5E-05
Chlorobenzene	108907	112.56	0.8600	0.0009	0.0040	--	--	3.3E-07	7.8E-07	--	--	2.7E-06	6.3E-06	0.40	0.0004	0.0018	--	--	1.3E-06	2.9E-06
Chloroethane	75003	64.51	16	0.0160	0.0422	1.7E-09	2.2E-09	1.6E-07	3.8E-07	2.2E-08	2.7E-08	2.0E-06	4.7E-06	6.29	0.0063	0.0166	8.5E-09	1.1E-08	7.9E-07	1.9E-06
Chloroform	67663	119.38	0.8000	0.0008	0.0039	1.0E-09	1.3E-09	1.5E-06	3.4E-06	7.7E-09	9.8E-09	1.1E-05	2.7E-05	0.54	0.0005	0.0027	5.2E-09	6.6E-09	7.7E-06	1.8E-05
Chloromethane	74873	50.49	9.9	0.0099	0.0204	--	--	2.8E-05	6.4E-05	--	--	2.2E-04	5.2E-04	3.75	0.0038	0.0077	--	--	8.4E-05	2.0E-04
cis-1,2-Dichloroethylene	156592	96.94	0.5500	0.0006	0.0022	--	--	4.8E-06	1.1E-05	--	--	4.3E-05	1.0E-04	0.31	0.0003	0.0012	--	--	2.4E-05	5.6E-05
Dichlorodifluoromethane (f 12)	75718	120.92	2.3	0.0023	0.0114	--	--	3.3E-06	7.6E-06	--	--	3.6E-05	8.5E-05	1.24	0.0012	0.0061	--	--	2.0E-05	4.6E-05
MTBE	1634044	88.15	0.6500	0.0007	0.0023	2.0E-11	2.6E-11	2.3E-08	5.3E-08	2.3E-10	2.9E-10	2.5E-07	5.9E-07	0.34	0.0003	0.0012	1.2E-10	1.5E-10	1.3E-07	3.1E-07
Ethylbenzene	100414	106.17	35	0.0350	0.1520	--	--	6.5E-06	1.5E-05	--	--	5.3E-05	1.2E-04	14.33	0.0143	0.0622	--	--	2.2E-05	5.1E-05
o-Xylene	95476	106.17	63	0.0630	0.2736	--	--	3.5E-05	8.1E-05	--	--	3.0E-04	7.1E-04	43.14	0.0431	0.1873	--	--	2.1E-04	4.8E-04
p-Xylene	106423	106.17	120	0.1200	0.5211	--	--	6.6E-05	1.5E-04	--	--	5.3E-04	1.2E-03	71.18	0.0712	0.3091	--	--	3.1E-04	7.3E-04
Styrene	100425	104.15	1.8	0.0018	0.0077	--	--	6.9E-07	1.6E-06	--	--	5.7E-06	1.3E-05	0.67	0.0007	0.0029	--	--	2.1E-06	5.0E-06
Tetrachloroethylene	127184	165.83	53	0.0530	0.3595	7.6E-08	9.6E-08	8.4E-04	2.0E-03	6.2E-07	7.8E-07	7.0E-03	1.6E-02	32.60	0.0326	0.2211	3.8E-07	4.8E-07	4.3E-03	1.0E-02
Toluene	108883	92.14	62	0.0620	0.2336	--	--	7.7E-05	1.8E-04	--	--	6.0E-04	1.4E-03	35.92	0.0359	0.1353	--	--	3.5E-04	8.2E-04
Trichloroethylene	79016	131.39	1.3	0.0013	0.0070	5.4E-10	6.8E-10	1.1E-06	2.5E-06	4.3E-09	5.5E-09	8.5E-06	2.0E-05	0.77	0.0008	0.0041	2.6E-09	3.3E-09	5.0E-06	1.2E-05
Trichlorofluoromethane (f 11)	75694	137.36	7.7	0.0077	0.0433	--	--	6.1E-06	1.4E-05	--	--	4.8E-05	1.1E-04	2.73	0.0027	0.0154	--	--	1.7E-05	4.0E-05
Trichlorotrifluoroethane (f 113)	76131	187.38	9.3	0.0093	0.0713	--	--	7.7E-08	1.8E-07	--	--	1.7E-06	4.0E-06	6.54	0.0065	0.0501	--	--	1.2E-06	2.8E-06
Vinyl acetate	108054	86.09	26	0.0260	0.0915	--	--	4.4E-05	1.0E-04	--	--	3.5E-04	8.2E-04	14.40	0.0144	0.0507	--	--	1.9E-04	4.5E-04
					Cumulative Risk and Hazard =	**3.2E-07**	**4.0E-07**	**1.2E-02**	**2.8E-02**	**2.6E-06**	**3.3E-06**	**8.7E-02**	**2.0E-01**				**1.4E-06**	**1.8E-06**	**3.3E-02**	**7.7E-02**

Notes:

COPCs: chemicals of potential concern; EPC: soil vapor exposure point concentration

UCL95: 95 percent upper confidence limit of the average soil vapor concentration

[a] Soil vapor concentrations in ppbv converted to mg/m^3: mg/m^3 = (ppbv x molecular weight) / 24,450.

[b] A soil vapor sampling depth of 5 feet bgs (not the actual depth the samples were collected) was used as input into both vapor models for all COPCs.

[c] Both models estimated potential risk and hazard for an adult resident; therefore, adult hazards were adjusted using child exposure parameters [Child HQ = Adult HQ x (70/15) x (10/20)] and

Potential adult risks were age-adjusted assuming child exposures the first 6 years and adult exposures for 24 years (Adult/Child Risk = Adult Risk x (70/20) x (1/30) x [(20 x 24)/70 + (10 x 6)/15]

Case Name: Poway Landfill

Chemical: 1,1-dichloroethane (1,1-DCA)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	9.90E+04	mg/mole
Vapor pressure	VP	=	2.50E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.30E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.30E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	5.30E-02	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**3.80E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **3.80E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.40E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.36E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**3.92E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**3.22E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **3.22E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**3.93E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**9.16E-08**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	9.16E-08	mg/kg-day
Reference dose	RfD	=	1.40E-01	mg/kg-day
Hazard Index	**HI**	=	**6.54E-07**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	3.93E-08	mg/kg-day
Slope factor (potency)	SF	=	5.70E-03	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**2.24E-10**	

Case Name: Poway Landfill

Chemical: 1,1-dichloroethene (1,1-DCE)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	9.69E+04	mg/mole
Vapor pressure	VP	=	7.80E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	1.10E+00	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	1.10E+00	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	6.50E-02	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**3.00E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **3.00E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	9.00E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**5.30E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**3.77E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**3.09E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **3.09E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**3.77E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**8.80E-08**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	8.80E-08	mg/kg-day
Reference dose	RfD	=	2.00E-02	mg/kg-day
Hazard Index	**HI**	=	**4.40E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	3.77E-08	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: 1,2,4-Trimethylbenzene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.20E+05	mg/mole
Vapor pressure	VP	=	2.80E-03	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.34E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.34E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	3.72E+00	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**5.90E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **5.90E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.50E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.42E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**6.17E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**5.06E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **5.06E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**6.18E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**1.44E-05**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	1.44E-05	mg/kg-day
Reference dose	RfD	=	1.70E-03	mg/kg-day
Hazard Index	**HI**	=	**8.48E-03**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	6.18E-06	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: 1,3-dichlorobenzene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.47E+05	mg/mole
Vapor pressure	VP	=	2.80E-03	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	7.80E-02	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	7.80E-02	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	3.80E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**9.02E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **9.02E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	6.90E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.06E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**8.68E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**7.12E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **7.12E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**8.69E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**2.03E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	2.03E-07	mg/kg-day
Reference dose	RfD	=	3.00E-02	mg/kg-day
Hazard Index	**HI**	=	**6.76E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	8.69E-08	mg/kg-day
Slope factor (potency)	SF	=	0.00E+00	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: 1,3,5-Trimethylbenzene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.20E+05	mg/mole
Vapor pressure	VP	=	2.80E-03	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	3.16E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	3.16E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	8.19E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**1.47E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **1.47E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.50E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.42E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**1.54E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**1.26E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **1.26E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**1.54E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**3.59E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	3.59E-06	mg/kg-day
Reference dose	RfD	=	1.70E-03	mg/kg-day
Hazard Index	**HI**	=	**2.11E-03**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	1.54E-06	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: 2-Butanone

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	7.20E+04	mg/mole
Vapor pressure	VP	=	1.20E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	1.10E-03	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	1.10E-03	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	4.50E-03	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**1.03E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **1.03E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	8.95E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**5.27E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**1.29E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**1.06E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **1.06E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**1.29E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**3.01E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	3.01E-06	mg/kg-day
Reference dose	RfD	=	1.40E+00	mg/kg-day
Hazard Index	**HI**	=	**2.15E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	1.29E-06	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: 2-Hexanone

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.00E+05	mg/mole
Vapor pressure	VP	=	1.46E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	3.38E-03	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	3.38E-03	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	1.78E-02	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**1.40E-02**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **1.40E-02 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	6.96E-02	cm2/sec
Effective diffusion coefficient	**D_e**	=	**4.10E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**1.36E-05**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**1.11E-06**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **1.11E-06** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**1.36E-07**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**3.17E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	3.17E-07	mg/kg-day
Reference dose	RfD	=	8.57E-01	mg/kg-day
Hazard Index	**HI**	=	**3.70E-07**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	1.36E-07	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: xylene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.06E+05	mg/mole
Vapor pressure	VP	=	1.10E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.70E-01	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.70E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	2.50E-01	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**1.23E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **1.23E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.80E-02	cm2/sec
Effective diffusion coefficient	**D_e**	=	**4.59E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**1.34E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**1.10E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **1.10E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**1.34E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**3.13E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	3.13E-06	mg/kg-day
Reference dose	RfD	=	2.00E-01	mg/kg-day
Hazard Index	**HI**	=	**1.56E-05**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	1.34E-06	mg/kg-day
Slope factor (potency)	SF	=	0.00E+00	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: 4-Methyl-2-pentanone (MIBK)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.00E+05	mg/mole
Vapor pressure	VP	=	1.91E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	5.70E-03	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	5.70E-03	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	1.34E-01	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**9.40E-02**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **9.40E-02 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.50E-02	cm2/sec
Effective diffusion coefficient	**D_e**	=	**4.42E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**9.84E-05**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**8.06E-06**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **8.06E-06** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**9.84E-07**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**2.30E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	2.30E-06	mg/kg-day
Reference dose	RfD	=	8.57E-01	mg/kg-day
Hazard Index	**HI**	=	**2.68E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	9.84E-07	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: Acetone

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	5.80E+04	mg/mole
Vapor pressure	VP	=	2.99E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	1.60E-03	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	1.60E-03	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	5.75E-04	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**2.61E+00**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **2.61E+00 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	1.24E-01	cm2/sec
Effective diffusion coefficient	**D_e**	=	**7.30E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**4.51E-03**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**3.70E-04**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **3.70E-04** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**4.52E-05**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**1.05E-04**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	1.05E-04	mg/kg-day
Reference dose	RfD	=	9.00E-01	mg/kg-day
Hazard Index	**HI**	=	**1.17E-04**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	4.52E-05	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: benzene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	7.81E+04	mg/mole
Vapor pressure	VP	=	1.30E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.30E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.30E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	6.20E-02	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**1.57E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **1.57E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	8.80E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**5.18E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**1.92E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**1.57E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **1.57E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**1.92E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**4.49E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	4.49E-06	mg/kg-day
Reference dose	RfD	=	1.71E-02	mg/kg-day
Hazard Index	**HI**	=	**2.62E-04**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	1.92E-06	mg/kg-day
Slope factor (potency)	SF	=	1.00E-01	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**1.92E-07**	

Case Name: Poway Landfill

Chemical: Bromodichloromethane

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.64E+05	mg/mole
Vapor pressure	VP	=	7.68E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	6.56E-02	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	6.56E-02	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	5.50E-02	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**8.70E-02**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **8.70E-02 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	2.98E-02	cm2/sec
Effective diffusion coefficient	**D_e**	=	**1.76E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**3.62E-05**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**2.96E-06**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **2.96E-06** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**3.62E-07**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**8.45E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	8.45E-07	mg/kg-day
Reference dose	RfD	=	2.00E-02	mg/kg-day
Hazard Index	**HI**	=	**4.22E-05**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	3.62E-07	mg/kg-day
Slope factor (potency)	SF	=	1.30E-01	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**4.71E-08**	

Case Name: Poway Landfill

Chemical: Carbon Disulfide

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	7.60E+04	mg/mole
Vapor pressure	VP	=	4.47E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	1.24E+00	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	1.24E+00	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	4.57E-02	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**8.70E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **8.70E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	1.04E-01	cm2/sec
Effective diffusion coefficient	D_e	=	**6.13E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**1.26E-05**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**1.03E-06**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **1.03E-06** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**1.26E-07**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**2.95E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	2.95E-07	mg/kg-day
Reference dose	RfD	=	2.30E-01	mg/kg-day
Hazard Index	**HI**	=	**1.28E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	1.26E-07	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: chlorobenzene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.13E+05	mg/mole
Vapor pressure	VP	=	1.60E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	1.50E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	1.50E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	2.20E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**4.00E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **4.00E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.30E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.30E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**4.07E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**3.34E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **3.34E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**4.08E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**9.51E-08**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	9.51E-08	mg/kg-day
Reference dose	RfD	=	2.86E-01	mg/kg-day
Hazard Index	**HI**	=	**3.33E-07**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	4.08E-08	mg/kg-day
Slope factor (potency)	SF	=	0.00E+00	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: chloroethane (ethyl chloride)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	6.45E+04	mg/mole
Vapor pressure	VP	=	1.30E+00	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	4.50E-01	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	4.50E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	1.50E-02	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**4.30E-02**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **4.30E-02 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	1.00E-01	cm2/sec
Effective diffusion coefficient	**D_e**	=	**5.89E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**6.00E-05**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**4.92E-06**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **4.92E-06** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**6.00E-07**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**1.40E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	1.40E-06	mg/kg-day
Reference dose	RfD	=	8.57E+00	mg/kg-day
Hazard Index	**HI**	=	**1.63E-07**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	6.00E-07	mg/kg-day
Slope factor (potency)	SF	=	2.90E-03	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**1.74E-09**	

Case Name: Poway Landfill

Chemical: trichloromethane (chloroform)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.19E+05	mg/mole
Vapor pressure	VP	=	2.60E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	1.50E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	1.50E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	5.30E-02	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**3.90E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **3.90E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	1.00E-01	cm2/sec
Effective diffusion coefficient	D_e	=	**5.89E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**5.44E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**4.46E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **4.46E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**5.45E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**1.27E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	1.27E-07	mg/kg-day
Reference dose	RfD	=	8.60E-02	mg/kg-day
Hazard Index	**HI**	=	**1.48E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	5.45E-08	mg/kg-day
Slope factor (potency)	SF	=	1.90E-02	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**1.03E-09**	

Case Name: Poway Landfill

Chemical: chloromethane (methyl chloride)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	5.05E+04	mg/mole
Vapor pressure	VP	=	5.70E+00	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	9.80E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	9.80E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	3.50E-02	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**2.00E-02**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **2.00E-02 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	1.10E-01	cm2/sec
Effective diffusion coefficient	D_e	=	**6.48E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**3.07E-05**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**2.52E-06**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **2.52E-06** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**3.07E-07**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**7.17E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	7.17E-07	mg/kg-day
Reference dose	RfD	=	2.60E-02	mg/kg-day
Hazard Index	**HI**	=	**2.76E-05**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	3.07E-07	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: cis-1,2-Dichloroethene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	9.70E+04	mg/mole
Vapor pressure	VP	=	2.30E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	1.67E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	1.67E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	3.55E-02	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**2.00E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **2.00E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.36E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.34E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**2.05E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**1.68E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **1.68E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**2.06E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**4.80E-08**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	4.80E-08	mg/kg-day
Reference dose	RfD	=	1.00E-02	mg/kg-day
Hazard Index	**HI**	=	**4.80E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	2.06E-08	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: Dichlorodifluoromethane (f 12)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.21E+05	mg/mole
Vapor pressure	VP	=	6.32E+00	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	1.67E+01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	1.67E+01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	1.29E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**1.10E-02**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **1.10E-02 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	5.20E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**3.06E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**7.98E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**6.54E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **6.54E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**7.99E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**1.86E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	1.86E-07	mg/kg-day
Reference dose	RfD	=	5.70E-02	mg/kg-day
Hazard Index	**HI**	=	**3.27E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	7.99E-08	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: methyl tertiary butyl ether (MTBE)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	8.82E+04	mg/mole
Vapor pressure	VP	=	3.20E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.44E-02	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.44E-02	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	7.76E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**2.00E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **2.00E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	8.00E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.71E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**2.23E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**1.83E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **1.83E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**2.23E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**5.21E-08**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	5.21E-08	mg/kg-day
Reference dose	RfD	=	2.30E+00	mg/kg-day
Hazard Index	**HI**	=	**2.27E-08**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	2.23E-08	mg/kg-day
Slope factor (potency)	SF	=	9.10E-04	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**2.03E-11**	

Case Name: Poway Landfill

Chemical: ethylbenzene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.06E+05	mg/mole
Vapor pressure	VP	=	1.50E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	3.20E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	3.20E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	2.00E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**1.52E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **1.52E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.50E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.42E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**1.59E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**1.30E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **1.30E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**1.59E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**3.71E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	3.71E-06	mg/kg-day
Reference dose	RfD	=	5.70E-01	mg/kg-day
Hazard Index	**HI**	=	**6.52E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	1.59E-06	mg/kg-day
Slope factor (potency)	SF	=	0.00E+00	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: xylene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.06E+05	mg/mole
Vapor pressure	VP	=	1.10E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.70E-01	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.70E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	2.50E-01	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**2.73E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **2.73E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.80E-02	cm2/sec
Effective diffusion coefficient	**D_e**	=	**4.59E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**2.97E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**2.43E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **2.43E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**2.97E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**6.94E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	6.94E-06	mg/kg-day
Reference dose	RfD	=	2.00E-01	mg/kg-day
Hazard Index	**HI**	=	**3.47E-05**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	2.97E-06	mg/kg-day
Slope factor (potency)	SF	=	0.00E+00	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: xylene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.06E+05	mg/mole
Vapor pressure	VP	=	1.10E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.70E-01	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.70E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	2.50E-01	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**5.20E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **5.20E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.80E-02	cm2/sec
Effective diffusion coefficient	**D_e**	=	**4.59E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**5.66E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**4.64E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **4.64E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**5.66E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**1.32E-05**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	1.32E-05	mg/kg-day
Reference dose	RfD	=	2.00E-01	mg/kg-day
Hazard Index	**HI**	=	**6.61E-05**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	5.66E-06	mg/kg-day
Slope factor (potency)	SF	=	0.00E+00	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: Styrene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.04E+05	mg/mole
Vapor pressure	VP	=	8.20E-03	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	1.13E-01	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	1.13E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	7.76E-01	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**7.70E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **7.70E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.10E-02	cm2/sec
Effective diffusion coefficient	**D_e**	=	**4.18E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**7.63E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**6.25E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **6.25E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**7.63E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**1.78E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	1.78E-07	mg/kg-day
Reference dose	RfD	=	2.60E-01	mg/kg-day
Hazard Index	**HI**	=	**6.85E-07**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	7.63E-08	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: tetrachloroethene (PCE)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.66E+05	mg/mole
Vapor pressure	VP	=	1.90E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	7.50E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	7.50E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	2.70E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**3.60E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **3.60E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.20E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.24E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**3.61E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**2.96E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **2.96E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**3.62E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**8.44E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	8.44E-06	mg/kg-day
Reference dose	RfD	=	1.00E-02	mg/kg-day
Hazard Index	**HI**	=	**8.44E-04**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	3.62E-06	mg/kg-day
Slope factor (potency)	SF	=	2.10E-02	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**7.60E-08**	

Case Name: Poway Landfill

Chemical: toluene

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	9.22E+04	mg/mole
Vapor pressure	VP	=	3.70E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.70E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.70E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	1.40E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**2.34E-01**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **2.34E-01 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	8.70E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**5.12E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**2.84E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**2.32E-05**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **2.32E-05** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**2.84E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**6.62E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	6.62E-06	mg/kg-day
Reference dose	RfD	=	8.60E-02	mg/kg-day
Hazard Index	**HI**	=	**7.70E-05**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	2.84E-06	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: trichloroethene (TCE)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.31E+05	mg/mole
Vapor pressure	VP	=	7.60E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	4.20E-01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	4.20E-01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	9.40E-02	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**7.00E-03**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **7.00E-03 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	7.90E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**4.65E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**7.71E-06**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**6.32E-07**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **6.32E-07** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**7.72E-08**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**1.80E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	1.80E-07	mg/kg-day
Reference dose	RfD	=	1.70E-01	mg/kg-day
Hazard Index	**HI**	=	**1.06E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	7.72E-08	mg/kg-day
Slope factor (potency)	SF	=	7.00E-03	1/(mg/kg-day)
Cancer Risk	**Risk**	=	**5.41E-10**	

Case Name: Poway Landfill

Chemical: Trichlorofluoromethane (f 11)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.37E+05	mg/mole
Vapor pressure	VP	=	9.04E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	3.98E+00	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	3.98E+00	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	1.60E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**4.30E-02**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **4.30E-02 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	8.70E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**5.12E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**5.22E-05**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**4.28E-06**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **4.28E-06** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**5.22E-07**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**1.22E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	1.22E-06	mg/kg-day
Reference dose	RfD	=	2.00E-01	mg/kg-day
Hazard Index	**HI**	=	**6.09E-06**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	5.22E-07	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: Trichlorotrifluoroethane (f 113)

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.87E+05	mg/mole
Vapor pressure	VP	=	4.74E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	C_{sg}**(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.14E+01	dimensionless
Calculated soil gas concentration	C_{sg}**(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.14E+01	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	1.60E-01	cm3/gm
Calculated soil gas concentration	C_{sg}**(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	C_{sg}**(m)**	=	**7.10E-02**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **7.10E-02 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	2.88E-02	cm2/sec
Effective diffusion coefficient	D_e	=	**1.70E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	F_x	=	**2.85E-05**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**2.34E-06**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **2.34E-06** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**2.86E-07**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**6.66E-07**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	6.66E-07	mg/kg-day
Reference dose	RfD	=	8.60E+00	mg/kg-day
Hazard Index	**HI**	=	**7.75E-08**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	2.86E-07	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

Case Name: Poway Landfill

Chemical: Vinyl acetate

Variable Descriptions				**Units**
CALCULATION OF SOIL GAS CONCENTRATION				
A. SOURCE - Free Product/Soil>100mg/kg.				
Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	8.60E+04	mg/mole
Vapor pressure	VP	=	1.43E-01	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.92E+02	K
Calculated soil gas concentration	**C_{sg}(fp)**	=	**0.00E+00**	**mg/m3**
B. SOURCE - Groundwater				
Water contamination level	C_w	=	0.00E+00	ug/l
Henry's Law Constant	H	=	2.10E-02	dimensionless
Calculated soil gas concentration	**C_{sg}(gw)**	=	**0.00E+00**	**mg/m3**
C. SOURCE - Soil < 100 mg/kg				
Soil contamination level	C_t	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	2.10E-02	dimensionless
Bulk density (dry)	ρ_b	=	1.72E+00	gm/cc
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Water-filled porosity	θ_w	=	1.30E-01	dimensionless
Soil/water distribution coef.	K_d	=	5.25E-03	cm3/gm
Calculated soil gas concentration	**C_{sg}(s)**	=	**0.00E+00**	**mg/m3**
D. SOURCE - Measured Soil Gas				
Measured soil gas concentration	**C_{sg}(m)**	=	**9.10E-02**	**mg/m3 (ug/l)**

E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>> **9.10E-02 mg/m3**

DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE				
Total porosity	θ	=	3.62E-01	dimensionless
Air-filled porosity	θ_a	=	2.32E-01	dimensionless
Diffusion coefficient in air	D_a	=	8.50E-02	cm2/sec
Effective diffusion coefficient	**D_e**	=	**5.01E-03**	cm2/sec
Depth of contamination or Csg	X	=	1.52E+00	m
Calculated Flux	**F_x**	=	**1.08E-04**	**mg/m2-hour**

Case Name: **Poway Landfill**

CALCULATING VAPOR CONCENTRATION IN BUILDING

A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S_b	=	1.00E-01	dimensionless
Flux area within building	Af	=	**1.00E-01**	m2
Interior Height of building	R_h	=	2.44E+00	m
Volume of building	V	=	**2.44E+00**	m3
Exchange rate of air	E	=	5.00E-01	exchanges/hr
Ventilation rate	Q	=	**1.22E+00**	m3/hr
Indoor air component	$\mathbf{C_i}$	=	**8.84E-06**	**mg/m3**

B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
Outdoor air component	$\mathbf{C_o}$	=	**0.00E+00**	**mg/m3**

C. TOTAL INDOOR AIR CONCENTRATION $\mathbf{C_t}$ = **8.84E-06** **mg/m3**

EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	3.00E+01	yrs
Hours per day	conversion		2.40E+01	hr/day
Exposure time	ET	=	**1.00E+00**	hr/24 hours
Days per week	conversion		7.00E+00	days/week
Weeks per year	conversion		5.20E+01	weeks/yr
Exposure frequency	EF	=	**3.64E+02**	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	**1.10E+04**	days
Chemical Intake (carc. risk)	$\mathbf{IT_c}$	=	**1.08E-06**	**mg/kg-day**
Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	**2.52E-06**	**mg/kg-day**

NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	$\mathbf{IT_{nc}}$	=	2.52E-06	mg/kg-day
Reference dose	RfD	=	5.70E-02	mg/kg-day
Hazard Index	**HI**	=	**4.42E-05**	

CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT_c	=	1.08E-06	mg/kg-day
Slope factor (potency)	SF	=		1/(mg/kg-day)
Cancer Risk	**Risk**	=	**No Slope Factor**	

SG-ADV
Version 2.0; 02/03

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343			0.0010	1,1-Dichloroethane
75354			0.0008	1,1-Dichloroethylene
95636			0.1200	1,2,4-Trimethylbenzene
541731			0.0015	1,3-Dichlorobenzene
108678			0.0300	1,3,5-Trimethylbenzene
78933			0.0350	2-Butanone
591786			0.0034	2-Hexanone
622968			0.0250	4-Ethyltoluene
108101			0.0230	4-Methyl-2-pentanone
67641			1.1000	Acetone
71432			0.0490	Benzene
75274			0.0130	Bromodichloromethane
75150			0.0028	Carbon disulfide
108907			0.0009	Chlorobenzene
75003			0.0160	Chloroethane (ethyl chloride)
67663			0.0008	Chloroform
74873			0.0099	Chloromethane
156592			0.0006	cis-1,2-Dichloroethylene
75718			0.0023	Dichlorodifluoromethane
1634044			0.0007	MTBE
100414			0.0350	Ethylbenzene
95476			0.0630	o-Xylene
106423			0.1200	p-Xylene
100425			0.0018	Styrene
127184			0.0530	Tetrachloroethylene
108883			0.0620	Toluene
79016			0.0013	Trichloroethylene
75694			0.0077	Trichlorofluoromethane
76131			0.0093	1,1,2-Trichloro-1,2,2-trifluoroethane
108054			0.0260	Vinyl acetate

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
15	152.5	19	152.5			s		

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)
	5' bgs 1.72	0.3618	0.1295					

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	244	0.1	0.5	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Molecular weight, MW (g/mol)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	
7.4E-02	1.1E-05	5.6E-03	25	6,895	330.6	523.0	99.0	1.6E-06	5.0E-01	1,1-Dichloroethane
9.0E-02	1.0E-05	2.6E-02	25	6,247	304.8	576.1	96.9	0.0E+00	7.0E-02	1,1-Dichloroethylene
6.1E-02	7.9E-06	6.1E-03	25	9,369	442.3	649.2	120.2	0.0E+00	6.0E-03	1,2,4-Trimethylbenzene
6.9E-02	7.9E-06	3.1E-03	25	9,230	446.0	684.0	147.0	0.0E+00	1.1E-01	1,3-Dichlorobenzene
6.0E-02	8.7E-06	5.9E-03	25	9,321	437.9	637.3	120.2	0.0E+00	6.0E-03	1,3,5-Trimethylbenzene
8.1E-02	9.8E-06	5.6E-05	25	7,481	352.5	536.8	72.1	0.0E+00	5.0E+00	2-Butanone
7.5E-02	7.8E-06	1.4E-04	25	8,243	389.5	571.0	100.2	0.0E+00	3.0E+00	2-Hexanone
7.0E-02	7.8E-06	7.3E-03	25	8,523	412.3	617.1	106.2	0.0E+00	7.0E-01	4-Ethyltoluene
7.5E-02	7.8E-06	1.4E-04	25	8,243	389.5	571.0	100.2	0.0E+00	3.0E+00	4-Methyl-2-pentanone
1.2E-01	1.1E-05	3.9E-05	25	6,955	329.2	508.1	58.1	0.0E+00	3.2E+00	Acetone
8.8E-02	9.8E-06	5.5E-03	25	7,342	353.2	562.2	78.1	2.9E-05	6.0E-02	Benzene
3.0E-02	1.1E-05	1.6E-03	25	7,800	363.2	585.9	163.8	3.7E-05	7.0E-02	Bromodichloromethane
1.0E-01	1.0E-05	3.0E-02	25	6,391	319.0	552.0	76.1	0.0E+00	8.0E-01	Carbon disulfide
7.3E-02	8.7E-06	3.7E-03	25	8,410	404.9	632.4	112.6	0.0E+00	1.0E+00	Chlorobenzene
2.7E-01	1.2E-05	8.8E-03	25	5,879	285.3	460.4	64.5	8.3E-07	3.0E+01	Chloroethane (ethyl chloride)
1.0E-01	1.0E-05	3.7E-03	25	6,988	334.3	536.4	119.4	5.3E-06	3.0E-01	Chloroform
1.3E-01	6.5E-06	8.8E-03	25	5,115	249.0	416.3	50.5	0.0E+00	9.0E-02	Chloromethane
7.4E-02	1.1E-05	4.1E-03	25	7,192	333.7	544.0	96.9	0.0E+00	3.5E-02	cis-1,2-Dichloroethylene
6.7E-02	9.9E-06	3.4E-01	25	9,421	243.2	385.0	120.9	0.0E+00	2.0E-01	Dichlorodifluoromethane
1.0E-01	1.1E-05	6.2E-04	25	6,678	328.3	497.1	88.2	2.6E-07	8.0E+00	MTBE
7.5E-02	7.8E-06	7.9E-03	25	8,501	409.3	617.2	106.2	0.0E+00	2.0E+00	Ethylbenzene
8.7E-02	1.0E-05	5.2E-03	25	8,661	417.6	630.3	106.2	0.0E+00	7.0E-01	o-Xylene
7.7E-02	8.4E-06	7.6E-03	25	8,525	411.5	616.2	106.2	0.0E+00	7.0E-01	p-Xylene
7.1E-02	8.0E-06	2.7E-03	25	8,737	418.3	636.0	104.2	0.0E+00	9.0E-01	Styrene
7.2E-02	8.2E-06	1.8E-02	25	8,288	394.4	620.2	165.8	5.9E-06	3.5E-02	Tetrachloroethylene
8.7E-02	8.6E-06	6.6E-03	25	7,930	383.8	591.8	92.1	0.0E+00	3.0E-01	Toluene
7.9E-02	9.1E-06	1.0E-02	25	7,505	360.4	544.2	131.4	2.0E-06	6.0E-01	Trichloroethylene
8.7E-02	9.7E-06	9.7E-02	25	5,999	296.7	471.0	137.4	0.0E+00	7.0E-01	Trichlorofluoromethane
7.8E-02	8.2E-06	4.8E-01	25	6,463	320.7	487.3	187.4	0.0E+00	3.0E+01	1,1,2-Trichloro-1,2,2-trifluoroethane
8.5E-02	9.2E-06	5.1E-04	25	7,800	345.7	519.1	86.1	0.0E+00	2.0E-01	Vinyl acetate

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	3.92E+00	3.39E+04	1,1-Dichloroethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	3.03E+00	3.39E+04	1,1-Dichloroethylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	6.02E+02	3.39E+04	1,2,4-Trimethylbenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	9.20E+00	3.39E+04	1,3-Dichlorobenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.50E+02	3.39E+04	1,3,5-Trimethylbenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.05E+02	3.39E+04	2-Butanone
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.42E+01	3.39E+04	2-Hexanone
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.11E+02	3.39E+04	4-Ethyltoluene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	9.61E+01	3.39E+04	4-Methyl-2-pentanone
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.67E+03	3.39E+04	Acetone
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.60E+02	3.39E+04	Benzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	8.88E+01	3.39E+04	Bromodichloromethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	8.89E+00	3.39E+04	Carbon disulfide
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	4.04E+00	3.39E+04	Chlorobenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	4.31E+01	3.39E+04	Chloroethane (ethyl chloride)
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	3.98E+00	3.39E+04	Chloroform
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.09E+01	3.39E+04	Chloromethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.22E+00	3.39E+04	cis-1,2-Dichloroethylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.16E+01	3.39E+04	Dichlorodifluoromethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.39E+00	3.39E+04	MTBE
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.55E+02	3.39E+04	Ethylbenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.79E+02	3.39E+04	o-Xylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	5.31E+02	3.39E+04	p-Xylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	7.82E+00	3.39E+04	Styrene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	3.67E+02	3.39E+04	Tetrachloroethylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.38E+02	3.39E+04	Toluene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	7.13E+00	3.39E+04	Trichloroethylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	4.41E+01	3.39E+04	Trichlorofluoromethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	7.27E+01	3.39E+04	1,1,2-Trichloro-1,2,2-trifluoroethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	9.34E+01	3.39E+04	Vinyl acetate

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)	
1.06E+06	3.77E-04	15	7,351	4.34E-03	1.81E-01	1.78E-04	4.39E-03	0.00E+00	0.00E+00	4.39E-03	137.5	1,1-Dichloroethane
1.06E+06	3.77E-04	15	6,333	2.09E-02	8.72E-01	1.78E-04	5.32E-03	0.00E+00	0.00E+00	5.32E-03	137.5	1,1-Dichloroethylene
1.06E+06	3.77E-04	15	11,579	4.11E-03	1.72E-01	1.78E-04	3.59E-03	0.00E+00	0.00E+00	3.59E-03	137.5	1,2,4-Trimethylbenzene
1.06E+06	3.77E-04	15	11,081	2.11E-03	8.78E-02	1.78E-04	4.09E-03	0.00E+00	0.00E+00	4.09E-03	137.5	1,3-Dichlorobenzene
1.06E+06	3.77E-04	15	11,561	3.93E-03	1.64E-01	1.78E-04	3.56E-03	0.00E+00	0.00E+00	3.56E-03	137.5	1,3,5-Trimethylbenzene
1.06E+06	3.77E-04	15	8,307	4.18E-05	1.74E-03	1.78E-04	4.83E-03	0.00E+00	0.00E+00	4.83E-03	137.5	2-Butanone
1.06E+06	3.77E-04	15	9,741	9.82E-05	4.10E-03	1.78E-04	4.45E-03	0.00E+00	0.00E+00	4.45E-03	137.5	2-Hexanone
1.06E+06	3.77E-04	15	10,150	5.15E-03	2.15E-01	1.78E-04	4.14E-03	0.00E+00	0.00E+00	4.14E-03	137.5	4-Ethyltoluene
1.06E+06	3.77E-04	15	9,741	9.82E-05	4.10E-03	1.78E-04	4.45E-03	0.00E+00	0.00E+00	4.45E-03	137.5	4-Methyl-2-pentanone
1.06E+06	3.77E-04	15	7,447	2.99E-05	1.25E-03	1.78E-04	7.41E-03	0.00E+00	0.00E+00	7.41E-03	137.5	Acetone
1.06E+06	3.77E-04	15	8,030	4.19E-03	1.75E-01	1.78E-04	5.21E-03	0.00E+00	0.00E+00	5.21E-03	137.5	Benzene
1.06E+06	3.77E-04	15	8,576	1.19E-03	4.95E-02	1.78E-04	1.76E-03	0.00E+00	0.00E+00	1.76E-03	137.5	Bromodichloromethane
1.06E+06	3.77E-04	15	6,612	2.40E-02	1.00E+00	1.78E-04	6.15E-03	0.00E+00	0.00E+00	6.15E-03	137.5	Carbon disulfide
1.06E+06	3.77E-04	15	9,712	2.64E-03	1.10E-01	1.78E-04	4.32E-03	0.00E+00	0.00E+00	4.32E-03	137.5	Chlorobenzene
1.06E+06	3.77E-04	15	5,800	7.20E-03	3.00E-01	1.78E-04	1.60E-02	0.00E+00	0.00E+00	1.60E-02	137.5	Chloroethane (ethyl chloride)
1.06E+06	3.77E-04	15	7,461	2.83E-03	1.18E-01	1.78E-04	6.15E-03	0.00E+00	0.00E+00	6.15E-03	137.5	Chloroform
1.06E+06	3.77E-04	15	4,640	7.49E-03	3.12E-01	1.78E-04	7.45E-03	0.00E+00	0.00E+00	7.45E-03	137.5	Chloromethane
1.06E+06	3.77E-04	15	7,643	3.12E-03	1.30E-01	1.78E-04	4.35E-03	0.00E+00	0.00E+00	4.35E-03	137.5	cis-1,2-Dichloroethylene
1.06E+06	3.77E-04	15	8,118	2.58E-01	1.08E+01	1.78E-04	3.93E-03	0.00E+00	0.00E+00	3.93E-03	137.5	Dichlorodifluoromethane
1.06E+06	3.77E-04	15	7,179	4.86E-04	2.03E-02	1.78E-04	6.06E-03	0.00E+00	0.00E+00	6.06E-03	137.5	MTBE
1.06E+06	3.77E-04	15	10,052	5.55E-03	2.31E-01	1.78E-04	4.44E-03	0.00E+00	0.00E+00	4.44E-03	137.5	Ethylbenzene
1.06E+06	3.77E-04	15	10,302	3.62E-03	1.51E-01	1.78E-04	5.15E-03	0.00E+00	0.00E+00	5.15E-03	137.5	o-Xylene
1.06E+06	3.77E-04	15	10,143	5.38E-03	2.24E-01	1.78E-04	4.55E-03	0.00E+00	0.00E+00	4.55E-03	137.5	p-Xylene
1.06E+06	3.77E-04	15	10,350	1.92E-03	7.99E-02	1.78E-04	4.20E-03	0.00E+00	0.00E+00	4.20E-03	137.5	Styrene
1.06E+06	3.77E-04	15	9,462	1.32E-02	5.52E-01	1.78E-04	4.26E-03	0.00E+00	0.00E+00	4.26E-03	137.5	Tetrachloroethylene
1.06E+06	3.77E-04	15	9,056	4.84E-03	2.02E-01	1.78E-04	5.15E-03	0.00E+00	0.00E+00	5.15E-03	137.5	Toluene
1.06E+06	3.77E-04	15	8,445	7.67E-03	3.20E-01	1.78E-04	4.67E-03	0.00E+00	0.00E+00	4.67E-03	137.5	Trichloroethylene
1.06E+06	3.77E-04	15	6,053	7.84E-02	3.27E+00	1.78E-04	5.15E-03	0.00E+00	0.00E+00	5.15E-03	137.5	Trichlorofluoromethane
1.06E+06	3.77E-04	15	6,853	3.78E-01	1.58E+01	1.78E-04	4.61E-03	0.00E+00	0.00E+00	4.61E-03	137.5	1,1,2-Trichloro-1,2,2-trifluoroethane
1.06E+06	3.77E-04	15	8,631	3.78E-04	1.58E-02	1.78E-04	5.03E-03	0.00E+00	0.00E+00	5.03E-03	137.5	Vinyl acetate

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	
15	3.92E+00	0.10	8.33E+01	4.39E-03	4.0E+02	1.27E+206	7.10E-04	2.79E-03	1.6E-06	5.0E-01	1,1-Dichloroethane
15	3.03E+00	0.10	8.33E+01	5.32E-03	4.0E+02	8.63E+169	8.11E-04	2.46E-03	NA	7.0E-02	1,1-Dichloroethylene
15	6.02E+02	0.10	8.33E+01	3.59E-03	4.0E+02	2.28E+252	6.12E-04	3.69E-01	NA	6.0E-03	1,2,4-Trimethylbenzene
15	9.20E+00	0.10	8.33E+01	4.09E-03	4.0E+02	9.52E+220	6.76E-04	6.21E-03	NA	1.1E-01	1,3-Dichlorobenzene
15	1.50E+02	0.10	8.33E+01	3.56E-03	4.0E+02	1.07E+254	6.09E-04	9.17E-02	NA	6.0E-03	1,3,5-Trimethylbenzene
15	1.05E+02	0.10	8.33E+01	4.83E-03	4.0E+02	2.67E+187	7.59E-04	7.99E-02	NA	5.0E+00	2-Butanone
15	1.42E+01	0.10	8.33E+01	4.45E-03	4.0E+02	1.55E+203	7.17E-04	1.02E-02	NA	3.0E+00	2-Hexanone
15	1.11E+02	0.10	8.33E+01	4.14E-03	4.0E+02	3.00E+218	6.81E-04	7.54E-02	NA	7.0E-01	4-Ethyltoluene
15	9.61E+01	0.10	8.33E+01	4.45E-03	4.0E+02	1.55E+203	7.17E-04	6.89E-02	NA	3.0E+00	4-Methyl-2-pentanone
15	2.67E+03	0.10	8.33E+01	7.41E-03	4.0E+02	1.14E+122	1.00E-03	2.67E+00	NA	3.2E+00	Acetone
15	1.60E+02	0.10	8.33E+01	5.21E-03	4.0E+02	6.11E+173	7.99E-04	1.28E-01	2.9E-05	6.0E-02	Benzene
15	8.88E+01	0.10	8.33E+01	1.76E-03	4.0E+02	#NUM!	3.45E-04	3.07E-02	3.7E-05	7.0E-02	Bromodichloromethane
15	8.89E+00	0.10	8.33E+01	6.15E-03	4.0E+02	1.15E+147	8.92E-04	7.93E-03	NA	8.0E-01	Carbon disulfide
15	4.04E+00	0.10	8.33E+01	4.32E-03	4.0E+02	3.03E+209	7.02E-04	2.83E-03	NA	1.0E+00	Chlorobenzene
15	4.31E+01	0.10	8.33E+01	1.60E-02	4.0E+02	2.73E+56	1.47E-03	6.32E-02	8.3E-07	3.0E+01	Chloroethane (ethyl chloride)
15	3.98E+00	0.10	8.33E+01	6.15E-03	4.0E+02	1.11E+147	8.92E-04	3.55E-03	5.3E-06	3.0E-01	Chloroform
15	2.09E+01	0.10	8.33E+01	7.45E-03	4.0E+02	2.41E+121	1.00E-03	2.09E-02	NA	9.0E-02	Chloromethane
15	2.22E+00	0.10	8.33E+01	4.35E-03	4.0E+02	5.90E+207	7.06E-04	1.57E-03	NA	3.5E-02	cis-1,2-Dichloroethylene
15	1.16E+01	0.10	8.33E+01	3.93E-03	4.0E+02	9.83E+229	6.56E-04	7.61E-03	NA	2.0E-01	Dichlorodifluoromethane
15	2.39E+00	0.10	8.33E+01	6.06E-03	4.0E+02	1.79E+149	8.84E-04	2.11E-03	2.6E-07	8.0E+00	MTBE
15	1.55E+02	0.10	8.33E+01	4.44E-03	4.0E+02	8.20E+203	7.16E-04	1.11E-01	NA	2.0E+00	Ethylbenzene
15	2.79E+02	0.10	8.33E+01	5.15E-03	4.0E+02	6.03E+175	7.93E-04	2.21E-01	NA	7.0E-01	o-Xylene
15	5.31E+02	0.10	8.33E+01	4.55E-03	4.0E+02	7.49E+198	7.28E-04	3.87E-01	NA	7.0E-01	p-Xylene
15	7.82E+00	0.10	8.33E+01	4.20E-03	4.0E+02	2.36E+215	6.88E-04	5.38E-03	NA	9.0E-01	Styrene
15	3.67E+02	0.10	8.33E+01	4.26E-03	4.0E+02	2.62E+212	6.95E-04	2.55E-01	5.9E-06	3.5E-02	Tetrachloroethylene
15	2.38E+02	0.10	8.33E+01	5.15E-03	4.0E+02	6.12E+175	7.93E-04	1.89E-01	NA	3.0E-01	Toluene
15	7.13E+00	0.10	8.33E+01	4.67E-03	4.0E+02	3.91E+193	7.42E-04	5.29E-03	2.0E-06	6.0E-01	Trichloroethylene
15	4.41E+01	0.10	8.33E+01	5.15E-03	4.0E+02	6.29E+175	7.93E-04	3.50E-02	NA	7.0E-01	Trichlorofluoromethane
15	7.27E+01	0.10	8.33E+01	4.61E-03	4.0E+02	1.21E+196	7.36E-04	5.35E-02	NA	3.0E+01	1,1,2-Trichloro-1,2,2-trifluoroethane
15	9.34E+01	0.10	8.33E+01	5.03E-03	4.0E+02	5.75E+179	7.81E-04	7.29E-02	NA	2.0E-01	Vinyl acetate

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)	
1.8E-09	5.3E-06	1,1-Dichloroethane
NA	3.4E-05	1,1-Dichloroethylene
NA	5.9E-02	1,2,4-Trimethylbenzene
NA	5.7E-05	1,3-Dichlorobenzene
NA	1.5E-02	1,3,5-Trimethylbenzene
NA	1.5E-05	2-Butanone
NA	3.3E-06	2-Hexanone
NA	1.0E-04	4-Ethyltoluene
NA	2.2E-05	4-Methyl-2-pentanone
NA	8.1E-04	Acetone
1.5E-06	2.0E-03	Benzene
4.7E-07	4.2E-04	Bromodichloromethane
NA	9.5E-06	Carbon disulfide
NA	2.7E-06	Chlorobenzene
2.2E-08	2.0E-06	Chloroethane (ethyl chloride)
7.7E-09	1.1E-05	Chloroform
NA	2.2E-04	Chloromethane
NA	4.3E-05	cis-1,2-Dichloroethylene
NA	3.6E-05	Dichlorodifluoromethane
2.3E-10	2.5E-07	MTBE
NA	5.3E-05	Ethylbenzene
NA	3.0E-04	o-Xylene
NA	5.3E-04	p-Xylene
NA	5.7E-06	Styrene
6.2E-07	7.0E-03	Tetrachloroethylene
NA	6.0E-04	Toluene
4.3E-09	8.5E-06	Trichloroethylene
NA	4.8E-05	Trichlorofluoromethane
NA	1.7E-06	1,1,2-Trichloro-1,2,2-trifluoroethane
NA	3.5E-04	Vinyl acetate
2.6E-06	**8.7E-02**	

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT

General Statistics

Data File

Variable: **1,1-dichloroethane**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	10
Minimum	0.345
Maximum	0.95
Mean	0.4525
Median	0.3775
Standard Deviation	0.150608
Variance	0.022683
Coefficient of Variation	0.332836
Skewness	2.077894

Gamma Statistics	
k hat	12.27044
k star (bias corrected)	10.46321
Theta hat	0.036877
Theta star	0.043247
nu hat	490.8176
nu star	418.5283
Approx.Chi Square Value (.05)	372.0938
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	368.6396

Log-transformed Statistics	
Minimum of log data	-1.064211
Maximum of log data	-0.051293
Mean of log data	-0.834269
Standard Deviation of log data	0.279313
Variance of log data	0.078016

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.720805
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.510732

Gamma Distribution Test	
A-D Test Statistic	1.683422
A-D 5% Critical Value	0.741588
K-S Test Statistic	0.250036
K-S 5% Critical Value	0.193766
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.508969
Adjusted Gamma UCL	0.513738

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.789451
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.507532
95% Chebyshev (MVUE) UCL	0.574692
97.5% Chebyshev (MVUE) UCL	0.628407
99% Chebyshev (MVUE) UCL	0.733919

95% Non-parametric UCLs	
CLT UCL	0.507894
Adj-CLT UCL (Adjusted for skewness)	0.524613
Mod-t UCL (Adjusted for skewness)	0.51334
Jackknife UCL	0.510732
Standard Bootstrap UCL	0.507108
Bootstrap-t UCL	0.545104
Hall's Bootstrap UCL	0.571705
Percentile Bootstrap UCL	0.5065
BCA Bootstrap UCL	0.525
95% Chebyshev (Mean, Sd) UCL	0.599295
97.5% Chebyshev (Mean, Sd) UCL	0.662813
99% Chebyshev (Mean, Sd) UCL	0.787583

General Statistics

Data File

Variable: **1,1-dichloroethene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	13
Minimum	0.265
Maximum	0.75
Mean	0.35125
Median	0.2925
Standard Deviation	0.119559
Variance	0.014294
Coefficient of Variation	0.340382
Skewness	2.15093

Gamma Statistics	
k hat	11.89501
k star (bias corrected)	10.14409
Theta hat	0.029529
Theta star	0.034626
nu hat	475.8004
nu star	405.7636
Approx.Chi Square Value (.05)	360.061
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	356.6644

Log-transformed Statistics	
Minimum of log data	-1.328025
Maximum of log data	-0.287682
Mean of log data	-1.08888
Standard Deviation of log data	0.282899
Variance of log data	0.080032

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.723082
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.397477

Gamma Distribution Test	
A-D Test Statistic	1.569685
A-D 5% Critical Value	0.74163
K-S Test Statistic	0.243725
K-S 5% Critical Value	0.19378
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.395834
Adjusted Gamma UCL	0.399604

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.800442
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.394499
95% Chebyshev (MVUE) UCL	0.447204
97.5% Chebyshev (MVUE) UCL	0.489432
99% Chebyshev (MVUE) UCL	0.572381

95% Non-parametric UCLs	
CLT UCL	0.395224
Adj-CLT UCL (Adjusted for skewness)	0.408963
Mod-t UCL (Adjusted for skewness)	0.39962
Jackknife UCL	0.397477
Standard Bootstrap UCL	0.3947
Bootstrap-t UCL	0.422311
Hall's Bootstrap UCL	0.454025
Percentile Bootstrap UCL	0.398
BCA Bootstrap UCL	0.4115
95% Chebyshev (Mean, Sd) UCL	0.467782
97.5% Chebyshev (Mean, Sd) UCL	0.518205
99% Chebyshev (Mean, Sd) UCL	0.617252

General Statistics

Data File

Variable: **1,2,4-trimethylbenzene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	20
Minimum	0.35
Maximum	120
Mean	22.18475
Median	5.25
Standard Deviation	33.14771
Variance	1098.771
Coefficient of Variation	1.494167
Skewness	1.981874

Gamma Statistics	
k hat	0.560663
k star (bias corrected)	0.509897
Theta hat	39.56878
Theta star	43.50831
nu hat	22.42652
nu star	20.39588
Approx.Chi Square Value (.05)	11.14198
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	10.60278

Log-transformed Statistics	
Minimum of log data	-1.049822
Maximum of log data	4.787492
Mean of log data	1.986161
Standard Deviation of log data	1.684324
Variance of log data	2.836946

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.685844
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	35.00117

Gamma Distribution Test	
A-D Test Statistic	0.606704
A-D 5% Critical Value	0.796944
K-S Test Statistic	0.196031
K-S 5% Critical Value	0.204049
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	40.61014
Adjusted Gamma UCL	42.67536

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.960545
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	124.1897
95% Chebyshev (MVUE) UCL	77.8917
97.5% Chebyshev (MVUE) UCL	100.3409
99% Chebyshev (MVUE) UCL	144.4379

95% Non-parametric UCLs	
CLT UCL	34.37649
Adj-CLT UCL (Adjusted for skewness)	37.88628
Mod-t UCL (Adjusted for skewness)	35.54863
Jackknife UCL	35.00117
Standard Bootstrap UCL	34.04243
Bootstrap-t UCL	44.12093
Hall's Bootstrap UCL	37.63515
Percentile Bootstrap UCL	35.22475
BCA Bootstrap UCL	37.25
95% Chebyshev (Mean, Sd) UCL	54.49315
97.5% Chebyshev (Mean, Sd) UCL	68.47301
99% Chebyshev (Mean, Sd) UCL	95.93376

General Statistics

Data File

Variable: **1,3-dichlorobenzene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	13
Minimum	0.28
Maximum	1.5
Mean	0.4185
Median	0.305
Standard Deviation	0.282904
Variance	0.080034
Coefficient of Variation	0.675994
Skewness	3.345482

Gamma Statistics	
k hat	4.489976
k star (bias corrected)	3.849813
Theta hat	0.093208
Theta star	0.108707
nu hat	179.5991
nu star	153.9925
Approx.Chi Square Value (.05)	126.3016
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	124.3213

Log-transformed Statistics	
Minimum of log data	-1.272966
Maximum of log data	0.405465
Mean of log data	-0.986551
Standard Deviation of log data	0.42557
Variance of log data	0.18111

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.525276
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.527884

Gamma Distribution Test	
A-D Test Statistic	2.592776
A-D 5% Critical Value	0.745383
K-S Test Statistic	0.262586
K-S 5% Critical Value	0.194557
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.510254
Adjusted Gamma UCL	0.518381

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.693448
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.493155
95% Chebyshev (MVUE) UCL	0.579282
97.5% Chebyshev (MVUE) UCL	0.654168
99% Chebyshev (MVUE) UCL	0.801268

95% Non-parametric UCLs	
CLT UCL	0.522552
Adj-CLT UCL (Adjusted for skewness)	0.573117
Mod-t UCL (Adjusted for skewness)	0.535771
Jackknife UCL	0.527884
Standard Bootstrap UCL	0.521167
Bootstrap-t UCL	0.787715
Hall's Bootstrap UCL	0.968198
Percentile Bootstrap UCL	0.53175
BCA Bootstrap UCL	0.569
95% Chebyshev (Mean, Sd) UCL	0.69424
97.5% Chebyshev (Mean, Sd) UCL	0.813553
99% Chebyshev (Mean, Sd) UCL	1.047921

General Statistics

Data File

Variable: **1,3,5-trimethylbenzene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	18
Minimum	0.21
Maximum	30
Mean	6.021
Median	1.4
Standard Deviation	9.105229
Variance	82.90519
Coefficient of Variation	1.512245
Skewness	1.791996

Gamma Statistics	
k hat	0.545167
k star (bias corrected)	0.496725
Theta hat	11.04433
Theta star	12.1214
nu hat	21.80667
nu star	19.869
Approx.Chi Square Value (.05)	10.75314
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	10.22455

Log-transformed Statistics	
Minimum of log data	-1.560648
Maximum of log data	3.401197
Mean of log data	0.645503
Standard Deviation of log data	1.626369
Variance of log data	2.645076

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.677747
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	9.541498

Gamma Distribution Test	
A-D Test Statistic	0.890097
A-D 5% Critical Value	0.798371
K-S Test Statistic	0.200701
K-S 5% Critical Value	0.204269
Data follow approximate gamma distibution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	11.12524
Adjusted Gamma UCL	11.70039

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.936018
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	27.11467
95% Chebyshev (MVUE) UCL	18.29518
97.5% Chebyshev (MVUE) UCL	23.49798
99% Chebyshev (MVUE) UCL	33.71787

95% Non-parametric UCLs	
CLT UCL	9.369907
Adj-CLT UCL (Adjusted for skewness)	10.24163
Mod-t UCL (Adjusted for skewness)	9.677469
Jackknife UCL	9.541498
Standard Bootstrap UCL	9.357918
Bootstrap-t UCL	11.54393
Hall's Bootstrap UCL	9.959712
Percentile Bootstrap UCL	9.51425
BCA Bootstrap UCL	9.95175
95% Chebyshev (Mean, Sd) UCL	14.89568
97.5% Chebyshev (Mean, Sd) UCL	18.73576
99% Chebyshev (Mean, Sd) UCL	26.27886

General Statistics

Data File

Variable: **2-butanone**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	15
Minimum	4.1
Maximum	35
Mean	14.66
Median	11
Standard Deviation	8.872038
Variance	78.71305
Coefficient of Variation	0.605187
Skewness	0.975793

Gamma Statistics	
k hat	3.089042
k star (bias corrected)	2.659019
Theta hat	4.745808
Theta star	5.513312
nu hat	123.5617
nu star	106.3608
Approx.Chi Square Value (.05)	83.55578
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	81.95916

Log-transformed Statistics	
Minimum of log data	1.410987
Maximum of log data	3.555348
Mean of log data	2.514614
Standard Deviation of log data	0.604975
Variance of log data	0.365995

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.892709
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	18.09034

Gamma Distribution Test	
A-D Test Statistic	0.381713
A-D 5% Critical Value	0.747352
K-S Test Statistic	0.162858
K-S 5% Critical Value	0.194995
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	18.66117
Adjusted Gamma UCL	19.0247

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.968607
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	19.88432
95% Chebyshev (MVUE) UCL	23.79894
97.5% Chebyshev (MVUE) UCL	27.74112
99% Chebyshev (MVUE) UCL	35.48477

95% Non-parametric UCLs	
CLT UCL	17.92314
Adj-CLT UCL (Adjusted for skewness)	18.38566
Mod-t UCL (Adjusted for skewness)	18.16248
Jackknife UCL	18.09034
Standard Bootstrap UCL	17.80718
Bootstrap-t UCL	18.72755
Hall's Bootstrap UCL	18.26939
Percentile Bootstrap UCL	17.915
BCA Bootstrap UCL	18.17
95% Chebyshev (Mean, Sd) UCL	23.30739
97.5% Chebyshev (Mean, Sd) UCL	27.04913
99% Chebyshev (Mean, Sd) UCL	34.39904

General Statistics

Data File

Variable: **2-hexanone**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	14
Minimum	0.35
Maximum	3.4
Mean	0.99525
Median	0.5175
Standard Deviation	1.010123
Variance	1.020349
Coefficient of Variation	1.014944
Skewness	1.622702

Gamma Statistics	
k hat	1.511926
k star (bias corrected)	1.31847
Theta hat	0.658266
Theta star	0.754852
nu hat	60.47703
nu star	52.73881
Approx.Chi Square Value (.05)	37.0538
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	36.01491

Log-transformed Statistics	
Minimum of log data	-1.049822
Maximum of log data	1.223775
Mean of log data	-0.370566
Standard Deviation of log data	0.806426
Variance of log data	0.650324

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.675478
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.38581

Gamma Distribution Test	
A-D Test Statistic	2.132084
A-D 5% Critical Value	0.757652
K-S Test Statistic	0.314366
K-S 5% Critical Value	0.197408
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.416543
Adjusted Gamma UCL	1.457405

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.791039
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.472672
95% Chebyshev (MVUE) UCL	1.734434
97.5% Chebyshev (MVUE) UCL	2.079881
99% Chebyshev (MVUE) UCL	2.758445

95% Non-parametric UCLs	
CLT UCL	1.366774
Adj-CLT UCL (Adjusted for skewness)	1.454345
Mod-t UCL (Adjusted for skewness)	1.399469
Jackknife UCL	1.38581
Standard Bootstrap UCL	1.343295
Bootstrap-t UCL	1.530175
Hall's Bootstrap UCL	1.383428
Percentile Bootstrap UCL	1.40875
BCA Bootstrap UCL	1.477
95% Chebyshev (Mean, Sd) UCL	1.979796
97.5% Chebyshev (Mean, Sd) UCL	2.40581
99% Chebyshev (Mean, Sd) UCL	3.242632

General Statistics

Data File

Variable: **4-ethyltoluene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	17
Minimum	0.225
Maximum	25
Mean	5.07025
Median	1.4
Standard Deviation	7.712089
Variance	59.47631
Coefficient of Variation	1.521047
Skewness	2.034017

Gamma Statistics	
k hat	0.635173
k star (bias corrected)	0.57323
Theta hat	7.982474
Theta star	8.845051
nu hat	25.40691
nu star	22.92921
Approx.Chi Square Value (.05)	13.03565
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	12.44715

Log-transformed Statistics	
Minimum of log data	-1.491655
Maximum of log data	3.218876
Mean of log data	0.658687
Standard Deviation of log data	1.43439
Variance of log data	2.057474

RECOMMENDATION

Data are lognormal (0.05)

Use 95% Chebyshev (MVUE) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.642402
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	8.052097

Gamma Distribution Test	
A-D Test Statistic	0.926664
A-D 5% Critical Value	0.790083
K-S Test Statistic	0.205207
K-S 5% Critical Value	0.202991
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	8.918372
Adjusted Gamma UCL	9.340032

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.951985
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	15.77101
95% Chebyshev (MVUE) UCL	13.10874
97.5% Chebyshev (MVUE) UCL	16.64841
99% Chebyshev (MVUE) UCL	23.60141

95% Non-parametric UCLs	
CLT UCL	7.90676
Adj-CLT UCL (Adjusted for skewness)	8.744823
Mod-t UCL (Adjusted for skewness)	8.182818
Jackknife UCL	8.052097
Standard Bootstrap UCL	7.865698
Bootstrap-t UCL	11.11839
Hall's Bootstrap UCL	9.23479
Percentile Bootstrap UCL	8.0425
BCA Bootstrap UCL	8.7625
95% Chebyshev (Mean, Sd) UCL	12.58706
97.5% Chebyshev (Mean, Sd) UCL	15.8396
99% Chebyshev (Mean, Sd) UCL	22.22856

General Statistics

Data File

Variable: **4-methyl-2-pentanone**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	18
Minimum	0.25
Maximum	23
Mean	6.21575
Median	4.45
Standard Deviation	5.817878
Variance	33.84771
Coefficient of Variation	0.93599
Skewness	1.363967

Gamma Statistics	
k hat	0.952042
k star (bias corrected)	0.842569
Theta hat	6.528861
Theta star	7.37714
nu hat	38.08168
nu star	33.70276
Approx.Chi Square Value (.05)	21.42479
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	20.65152

Log-transformed Statistics	
Minimum of log data	-1.386294
Maximum of log data	3.135494
Mean of log data	1.217239
Standard Deviation of log data	1.353876
Variance of log data	1.832981

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.859441
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	8.465208

Gamma Distribution Test	
A-D Test Statistic	0.529818
A-D 5% Critical Value	0.770159
K-S Test Statistic	0.142192
K-S 5% Critical Value	0.199736
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	9.77783
Adjusted Gamma UCL	10.14395

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.886749
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	22.29417
95% Chebyshev (MVUE) UCL	19.92442
97.5% Chebyshev (MVUE) UCL	25.16761
99% Chebyshev (MVUE) UCL	35.46684

95% Non-parametric UCLs	
CLT UCL	8.355568
Adj-CLT UCL (Adjusted for skewness)	8.779522
Mod-t UCL (Adjusted for skewness)	8.531336
Jackknife UCL	8.465208
Standard Bootstrap UCL	8.28193
Bootstrap-t UCL	9.134734
Hall's Bootstrap UCL	9.233903
Percentile Bootstrap UCL	8.3385
BCA Bootstrap UCL	8.759
95% Chebyshev (Mean, Sd) UCL	11.88632
97.5% Chebyshev (Mean, Sd) UCL	14.33997
99% Chebyshev (Mean, Sd) UCL	19.15971

General Statistics

Data File

Variable: **Acetone**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	18
Minimum	42
Maximum	1100
Mean	354.2
Median	205
Standard Deviation	314.6699
Variance	99017.12
Coefficient of Variation	0.888396
Skewness	1.181541

Gamma Statistics	
k hat	1.396975
k star (bias corrected)	1.220762
Theta hat	253.5479
Theta star	290.1467
nu hat	55.87899
nu star	48.83048
Approx.Chi Square Value (.05)	33.78639
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	32.79757

Log-transformed Statistics	
Minimum of log data	3.73767
Maximum of log data	7.003065
Mean of log data	5.471062
Standard Deviation of log data	0.956698
Variance of log data	0.915271

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.846885
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	475.8658

Gamma Distribution Test	
A-D Test Statistic	0.380897
A-D 5% Critical Value	0.759873
K-S Test Statistic	0.14452
K-S 5% Critical Value	0.197834
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	511.9148
Adjusted Gamma UCL	527.3487

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.966761
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	655.19
95% Chebyshev (MVUE) UCL	741.2711
97.5% Chebyshev (MVUE) UCL	904.503
99% Chebyshev (MVUE) UCL	1225.14

95% Non-parametric UCLs	
CLT UCL	469.9357
Adj-CLT UCL (Adjusted for skewness)	489.7991
Mod-t UCL (Adjusted for skewness)	478.9641
Jackknife UCL	475.8658
Standard Bootstrap UCL	467.0224
Bootstrap-t UCL	507.8428
Hall's Bootstrap UCL	487.9224
Percentile Bootstrap UCL	470.95
BCA Bootstrap UCL	492.6
95% Chebyshev (Mean, Sd) UCL	660.9022
97.5% Chebyshev (Mean, Sd) UCL	793.6125
99% Chebyshev (Mean, Sd) UCL	1054.296

General Statistics

Data File

Variable: **Benzene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	15
Minimum	4.1
Maximum	49
Mean	17.27
Median	12
Standard Deviation	13.08579
Variance	171.238
Coefficient of Variation	0.757718
Skewness	1.527484

Gamma Statistics	
k hat	2.275766
k star (bias corrected)	1.967735
Theta hat	7.588653
Theta star	8.77659
nu hat	91.03065
nu star	78.70939
Approx.Chi Square Value (.05)	59.26616
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	57.93316

Log-transformed Statistics	
Minimum of log data	1.410987
Maximum of log data	3.89182
Mean of log data	2.613461
Standard Deviation of log data	0.697254
Variance of log data	0.486163

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.801125
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	22.32957

Gamma Distribution Test	
A-D Test Statistic	0.572955
A-D 5% Critical Value	0.751064
K-S Test Statistic	0.163787
K-S 5% Critical Value	0.195812
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	22.9357
Adjusted Gamma UCL	23.46344

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.957056
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	24.76872
95% Chebyshev (MVUE) UCL	29.57892
97.5% Chebyshev (MVUE) UCL	34.95754
99% Chebyshev (MVUE) UCL	45.52281

95% Non-parametric UCLs	
CLT UCL	22.08296
Adj-CLT UCL (Adjusted for skewness)	23.15085
Mod-t UCL (Adjusted for skewness)	22.49614
Jackknife UCL	22.32957
Standard Bootstrap UCL	21.9342
Bootstrap-t UCL	24.4496
Hall's Bootstrap UCL	23.82695
Percentile Bootstrap UCL	22.2
BCA Bootstrap UCL	22.62
95% Chebyshev (Mean, Sd) UCL	30.02445
97.5% Chebyshev (Mean, Sd) UCL	35.54332
99% Chebyshev (Mean, Sd) UCL	46.38405

General Statistics

Data File

Variable: **Bromodichloromethane**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	14
Minimum	0.235
Maximum	13
Mean	1.90425
Median	0.835
Standard Deviation	3.259659
Variance	10.62538
Coefficient of Variation	1.711781
Skewness	2.840275

Gamma Statistics	
k hat	0.717862
k star (bias corrected)	0.643516
Theta hat	2.652668
Theta star	2.959133
nu hat	28.71449
nu star	25.74065
Approx.Chi Square Value (.05)	15.17799
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	14.53779

Log-transformed Statistics	
Minimum of log data	-1.44817
Maximum of log data	2.564949
Mean of log data	-0.194838
Standard Deviation of log data	1.226786
Variance of log data	1.505003

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.54691
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.164584

Gamma Distribution Test	
A-D Test Statistic	1.470103
A-D 5% Critical Value	0.782469
K-S Test Statistic	0.212281
K-S 5% Critical Value	0.201816
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	3.229454
Adjusted Gamma UCL	3.371671

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.873046
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3.980631
95% Chebyshev (MVUE) UCL	3.919884
97.5% Chebyshev (MVUE) UCL	4.904382
99% Chebyshev (MVUE) UCL	6.838238

95% Non-parametric UCLs	
CLT UCL	3.103154
Adj-CLT UCL (Adjusted for skewness)	3.597787
Mod-t UCL (Adjusted for skewness)	3.241736
Jackknife UCL	3.164584
Standard Bootstrap UCL	3.064066
Bootstrap-t UCL	6.658061
Hall's Bootstrap UCL	9.199967
Percentile Bootstrap UCL	3.13025
BCA Bootstrap UCL	3.54075
95% Chebyshev (Mean, Sd) UCL	5.081373
97.5% Chebyshev (Mean, Sd) UCL	6.456117
99% Chebyshev (Mean, Sd) UCL	9.156534

General Statistics

Data File

Variable: **Carbon disulfide**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	16
Minimum	0.275
Maximum	2.8
Mean	1.12975
Median	0.895
Standard Deviation	0.829417
Variance	0.687933
Coefficient of Variation	0.73416
Skewness	0.654672

Gamma Statistics	
k hat	1.859067
k star (bias corrected)	1.613541
Theta hat	0.607697
Theta star	0.700168
nu hat	74.36269
nu star	64.54162
Approx.Chi Square Value (.05)	47.05442
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	45.87459

Log-transformed Statistics	
Minimum of log data	-1.290984
Maximum of log data	1.029619
Mean of log data	-0.170446
Standard Deviation of log data	0.812469
Variance of log data	0.660106

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.873462
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.450441

Gamma Distribution Test	
A-D Test Statistic	0.859389
A-D 5% Critical Value	0.753924
K-S Test Statistic	0.205722
K-S 5% Critical Value	0.196485
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.549608
Adjusted Gamma UCL	1.589462

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.885043
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.816181
95% Chebyshev (MVUE) UCL	2.136576
97.5% Chebyshev (MVUE) UCL	2.564054
99% Chebyshev (MVUE) UCL	3.403751

95% Non-parametric UCLs	
CLT UCL	1.43481
Adj-CLT UCL (Adjusted for skewness)	1.46382
Mod-t UCL (Adjusted for skewness)	1.454966
Jackknife UCL	1.450441
Standard Bootstrap UCL	1.430918
Bootstrap-t UCL	1.490738
Hall's Bootstrap UCL	1.446069
Percentile Bootstrap UCL	1.44675
BCA Bootstrap UCL	1.4675
95% Chebyshev (Mean, Sd) UCL	1.938166
97.5% Chebyshev (Mean, Sd) UCL	2.287968
99% Chebyshev (Mean, Sd) UCL	2.975087

General Statistics

Data File

Variable: **Chlorobenzene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	14
Minimum	0.23
Maximum	0.86
Mean	0.3345
Median	0.2675
Standard Deviation	0.160131
Variance	0.025642
Coefficient of Variation	0.478717
Skewness	2.390656

Gamma Statistics	
k hat	6.801109
k star (bias corrected)	5.814276
Theta hat	0.049183
Theta star	0.057531
nu hat	272.0444
nu star	232.571
Approx.Chi Square Value (.05)	198.2622
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	195.7618

Log-transformed Statistics	
Minimum of log data	-1.469676
Maximum of log data	-0.150823
Mean of log data	-1.170434
Standard Deviation of log data	0.36591
Variance of log data	0.13389

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.671574
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.396414

Gamma Distribution Test	
A-D Test Statistic	1.746374
A-D 5% Critical Value	0.744009
K-S Test Statistic	0.21547
K-S 5% Critical Value	0.194247
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.392385
Adjusted Gamma UCL	0.397396

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.786301
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.388712
95% Chebyshev (MVUE) UCL	0.450824
97.5% Chebyshev (MVUE) UCL	0.502871
99% Chebyshev (MVUE) UCL	0.605108

95% Non-parametric UCLs	
CLT UCL	0.393396
Adj-CLT UCL (Adjusted for skewness)	0.413848
Mod-t UCL (Adjusted for skewness)	0.399604
Jackknife UCL	0.396414
Standard Bootstrap UCL	0.391122
Bootstrap-t UCL	0.471415
Hall's Bootstrap UCL	0.690335
Percentile Bootstrap UCL	0.39475
BCA Bootstrap UCL	0.41475
95% Chebyshev (Mean, Sd) UCL	0.490576
97.5% Chebyshev (Mean, Sd) UCL	0.55811
99% Chebyshev (Mean, Sd) UCL	0.690768

General Statistics

Data File

Variable: **Chloroethane**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	16
Minimum	0.275
Maximum	16
Mean	3.6525
Median	1.7
Standard Deviation	4.524854
Variance	20.47431
Coefficient of Variation	1.238838
Skewness	1.551967

Gamma Statistics	
k hat	0.681691
k star (bias corrected)	0.61277
Theta hat	5.358003
Theta star	5.960634
nu hat	27.26762
nu star	24.51081
Approx.Chi Square Value (.05)	14.23603
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	13.61809

Log-transformed Statistics	
Minimum of log data	-1.290984
Maximum of log data	2.772589
Mean of log data	0.405572
Standard Deviation of log data	1.487161
Variance of log data	2.211646

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.775358
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	5.402016

Gamma Distribution Test	
A-D Test Statistic	0.865968
A-D 5% Critical Value	0.7858
K-S Test Statistic	0.201985
K-S 5% Critical Value	0.20233
Data follow approximate gamma distibution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	6.288672
Adjusted Gamma UCL	6.574032

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.868484
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	14.16724
95% Chebyshev (MVUE) UCL	11.17452
97.5% Chebyshev (MVUE) UCL	14.23905
99% Chebyshev (MVUE) UCL	20.25872

95% Non-parametric UCLs	
CLT UCL	5.316743
Adj-CLT UCL (Adjusted for skewness)	5.691922
Mod-t UCL (Adjusted for skewness)	5.460536
Jackknife UCL	5.402016
Standard Bootstrap UCL	5.285268
Bootstrap-t UCL	6.037385
Hall's Bootstrap UCL	5.945462
Percentile Bootstrap UCL	5.42875
BCA Bootstrap UCL	5.7165
95% Chebyshev (Mean, Sd) UCL	8.062782
97.5% Chebyshev (Mean, Sd) UCL	9.971115
99% Chebyshev (Mean, Sd) UCL	13.71967

General Statistics

Data File

Variable: **Chloroform**

Raw Statistics	
Number of Valid Samples	15
Number of Unique Samples	10
Minimum	0.15
Maximum	0.8
Mean	0.284667
Median	0.17
Standard Deviation	0.229864
Variance	0.052837
Coefficient of Variation	0.807484
Skewness	1.607604

Gamma Statistics	
k hat	2.442132
k star (bias corrected)	1.99815
Theta hat	0.116565
Theta star	0.142465
nu hat	73.26395
nu star	59.94449
Approx.Chi Square Value (.05)	43.13771
Adjusted Level of Significance	0.03235
Adjusted Chi Square Value	41.38571

Log-transformed Statistics	
Minimum of log data	-1.89712
Maximum of log data	-0.223144
Mean of log data	-1.47493
Standard Deviation of log data	0.62081
Variance of log data	0.385405

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.620424
Shapiro-Wilk 5% Critical Value	0.881
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.389201

Gamma Distribution Test	
A-D Test Statistic	2.615146
A-D 5% Critical Value	0.74581
K-S Test Statistic	0.418088
K-S 5% Critical Value	0.223882
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.395575
Adjusted Gamma UCL	0.412321

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.665594
Shapiro-Wilk 5% Critical Value	0.881
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.400033
95% Chebyshev (MVUE) UCL	0.472719
97.5% Chebyshev (MVUE) UCL	0.558991
99% Chebyshev (MVUE) UCL	0.728456

95% Non-parametric UCLs	
CLT UCL	0.38229
Adj-CLT UCL (Adjusted for skewness)	0.408613
Mod-t UCL (Adjusted for skewness)	0.393307
Jackknife UCL	0.389201
Standard Bootstrap UCL	0.380221
Bootstrap-t UCL	0.448899
Hall's Bootstrap UCL	0.360555
Percentile Bootstrap UCL	0.388
BCA Bootstrap UCL	0.411333
95% Chebyshev (Mean, Sd) UCL	0.54337
97.5% Chebyshev (Mean, Sd) UCL	0.655311
99% Chebyshev (Mean, Sd) UCL	0.875198

General Statistics

Data File

Variable: **Chloromethane**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	15
Minimum	0.2
Maximum	9.9
Mean	2.41
Median	1.55
Standard Deviation	2.516296
Variance	6.331745
Coefficient of Variation	1.044106
Skewness	1.804538

Gamma Statistics	
k hat	0.994361
k star (bias corrected)	0.87854
Theta hat	2.423668
Theta star	2.743188
nu hat	39.77443
nu star	35.1416
Approx.Chi Square Value (.05)	22.5765
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	21.78091

Log-transformed Statistics	
Minimum of log data	-1.609438
Maximum of log data	2.292535
Mean of log data	0.298752
Standard Deviation of log data	1.232224
Variance of log data	1.518375

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.801607
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.382915

Gamma Distribution Test	
A-D Test Statistic	0.413451
A-D 5% Critical Value	0.768201
K-S Test Statistic	0.130058
K-S 5% Critical Value	0.199395
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	3.7513
Adjusted Gamma UCL	3.888324

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.909949
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	6.604456
95% Chebyshev (MVUE) UCL	6.479339
97.5% Chebyshev (MVUE) UCL	8.110183
99% Chebyshev (MVUE) UCL	11.31366

95% Non-parametric UCLs	
CLT UCL	3.335495
Adj-CLT UCL (Adjusted for skewness)	3.578088
Mod-t UCL (Adjusted for skewness)	3.420755
Jackknife UCL	3.382915
Standard Bootstrap UCL	3.323867
Bootstrap-t UCL	3.990055
Hall's Bootstrap UCL	4.732457
Percentile Bootstrap UCL	3.35525
BCA Bootstrap UCL	3.49025
95% Chebyshev (Mean, Sd) UCL	4.862582
97.5% Chebyshev (Mean, Sd) UCL	5.923816
99% Chebyshev (Mean, Sd) UCL	8.008405

General Statistics

Data File

Variable: **c-1,2-dichloroethene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	13
Minimum	0.2
Maximum	0.55
Mean	0.27125
Median	0.2325
Standard Deviation	0.087116
Variance	0.007589
Coefficient of Variation	0.321164
Skewness	1.848487

Gamma Statistics	
k hat	12.65631
k star (bias corrected)	10.79119
Theta hat	0.021432
Theta star	0.025136
nu hat	506.2523
nu star	431.6478
Approx.Chi Square Value (.05)	384.4726
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	380.9601

Log-transformed Statistics	
Minimum of log data	-1.609438
Maximum of log data	-0.597837
Mean of log data	-1.34474
Standard Deviation of log data	0.277745
Variance of log data	0.077142

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.771889
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.304933

Gamma Distribution Test	
A-D Test Statistic	1.250174
A-D 5% Critical Value	0.741545
K-S Test Statistic	0.231572
K-S 5% Critical Value	0.193752
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.304533
Adjusted Gamma UCL	0.307341

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.838544
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.304273
95% Chebyshev (MVUE) UCL	0.344367
97.5% Chebyshev (MVUE) UCL	0.376409
99% Chebyshev (MVUE) UCL	0.439349

95% Non-parametric UCLs	
CLT UCL	0.303291
Adj-CLT UCL (Adjusted for skewness)	0.311894
Mod-t UCL (Adjusted for skewness)	0.306275
Jackknife UCL	0.304933
Standard Bootstrap UCL	0.302122
Bootstrap-t UCL	0.319217
Hall's Bootstrap UCL	0.331479
Percentile Bootstrap UCL	0.30425
BCA Bootstrap UCL	0.3105
95% Chebyshev (Mean, Sd) UCL	0.35616
97.5% Chebyshev (Mean, Sd) UCL	0.3929
99% Chebyshev (Mean, Sd) UCL	0.46507

General Statistics

Data File

Variable: **Dichlorodifluoromethane**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	13
Minimum	0.325
Maximum	2.3
Mean	0.6735
Median	0.42
Standard Deviation	0.577921
Variance	0.333992
Coefficient of Variation	0.858086
Skewness	2.113422

Gamma Statistics	
k hat	2.339202
k star (bias corrected)	2.021655
Theta hat	0.287919
Theta star	0.333143
nu hat	93.56808
nu star	80.8662
Approx.Chi Square Value (.05)	61.14127
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	59.7862

Log-transformed Statistics	
Minimum of log data	-1.12393
Maximum of log data	0.832909
Mean of log data	-0.623987
Standard Deviation of log data	0.62515
Variance of log data	0.390812

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.647659
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.896951

Gamma Distribution Test	
A-D Test Statistic	2.083658
A-D 5% Critical Value	0.750755
K-S Test Statistic	0.282993
K-S 5% Critical Value	0.195744
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.890779
Adjusted Gamma UCL	0.910969

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.782287
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.883858
95% Chebyshev (MVUE) UCL	1.058101
97.5% Chebyshev (MVUE) UCL	1.237255
99% Chebyshev (MVUE) UCL	1.589169

95% Non-parametric UCLs	
CLT UCL	0.88606
Adj-CLT UCL (Adjusted for skewness)	0.951313
Mod-t UCL (Adjusted for skewness)	0.907129
Jackknife UCL	0.896951
Standard Bootstrap UCL	0.878209
Bootstrap-t UCL	1.110794
Hall's Bootstrap UCL	1.152038
Percentile Bootstrap UCL	0.88625
BCA Bootstrap UCL	0.9555
95% Chebyshev (Mean, Sd) UCL	1.236787
97.5% Chebyshev (Mean, Sd) UCL	1.480522
99% Chebyshev (Mean, Sd) UCL	1.959292

General Statistics

Data File

Variable: **Methyl-t-butyl-ether (MTBE)**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	13
Minimum	0.225
Maximum	0.65
Mean	0.2965
Median	0.245
Standard Deviation	0.103047
Variance	0.010619
Coefficient of Variation	0.347545
Skewness	2.332399

Gamma Statistics	
k hat	11.72656
k star (bias corrected)	10.00091
Theta hat	0.025284
Theta star	0.029647
nu hat	469.0624
nu star	400.0364
Approx.Chi Square Value (.05)	354.6659
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	351.2954

Log-transformed Statistics	
Minimum of log data	-1.491655
Maximum of log data	-0.430783
Mean of log data	-1.258952
Standard Deviation of log data	0.28323
Variance of log data	0.080219

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.69786
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.336343

Gamma Distribution Test	
A-D Test Statistic	1.702073
A-D 5% Critical Value	0.741648
K-S Test Statistic	0.247628
K-S 5% Critical Value	0.193786
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.33443
Adjusted Gamma UCL	0.337638

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.782717
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.332884
95% Chebyshev (MVUE) UCL	0.377395
97.5% Chebyshev (MVUE) UCL	0.413064
99% Chebyshev (MVUE) UCL	0.483131

95% Non-parametric UCLs	
CLT UCL	0.334401
Adj-CLT UCL (Adjusted for skewness)	0.347241
Mod-t UCL (Adjusted for skewness)	0.338346
Jackknife UCL	0.336343
Standard Bootstrap UCL	0.333872
Bootstrap-t UCL	0.360812
Hall's Bootstrap UCL	0.483282
Percentile Bootstrap UCL	0.33675
BCA Bootstrap UCL	0.3465
95% Chebyshev (Mean, Sd) UCL	0.396938
97.5% Chebyshev (Mean, Sd) UCL	0.440397
99% Chebyshev (Mean, Sd) UCL	0.525765

General Statistics

Data File

Variable: **Ethylbenzene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	17
Minimum	1.1
Maximum	35
Mean	9.49
Median	4.5
Standard Deviation	9.814163
Variance	96.31779
Coefficient of Variation	1.034158
Skewness	1.413455

Gamma Statistics	
k hat	1.133464
k star (bias corrected)	0.996778
Theta hat	8.372565
Theta star	9.520679
nu hat	45.33856
nu star	39.87111
Approx.Chi Square Value (.05)	26.40192
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	25.53594

Log-transformed Statistics	
Minimum of log data	0.09531
Maximum of log data	3.555348
Mean of log data	1.748154
Standard Deviation of log data	1.043028
Variance of log data	1.087907

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.799316
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	13.2846

Gamma Distribution Test	
A-D Test Statistic	0.685599
A-D 5% Critical Value	0.765228
K-S Test Statistic	0.196473
K-S 5% Critical Value	0.19884
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	14.33141
Adjusted Gamma UCL	14.81742

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.94797
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	18.6771
95% Chebyshev (MVUE) UCL	20.41115
97.5% Chebyshev (MVUE) UCL	25.1258
99% Chebyshev (MVUE) UCL	34.38681

95% Non-parametric UCLs	
CLT UCL	13.09965
Adj-CLT UCL (Adjusted for skewness)	13.84077
Mod-t UCL (Adjusted for skewness)	13.4002
Jackknife UCL	13.2846
Standard Bootstrap UCL	13.02346
Bootstrap-t UCL	14.23718
Hall's Bootstrap UCL	13.67023
Percentile Bootstrap UCL	13.06
BCA Bootstrap UCL	13.67
95% Chebyshev (Mean, Sd) UCL	19.05566
97.5% Chebyshev (Mean, Sd) UCL	23.19473
99% Chebyshev (Mean, Sd) UCL	31.32513

General Statistics

Data File

Variable: **o-xylene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	19
Minimum	1.2
Maximum	63
Mean	17.645
Median	6.4
Standard Deviation	20.33854
Variance	413.6563
Coefficient of Variation	1.152652
Skewness	1.225568

Gamma Statistics	
k hat	0.84594
k star (bias corrected)	0.752382
Theta hat	20.85847
Theta star	23.45219
nu hat	33.83758
nu star	30.09528
Approx.Chi Square Value (.05)	18.56571
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	17.85058

Log-transformed Statistics	
Minimum of log data	0.182322
Maximum of log data	4.143135
Mean of log data	2.173949
Standard Deviation of log data	1.244759
Variance of log data	1.549425

RECOMMENDATION
Data are lognormal (0.05)

Use 95% Chebyshev (MVUE) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.767425
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	25.50881

Gamma Distribution Test	
A-D Test Statistic	1.042137
A-D 5% Critical Value	0.77507
K-S Test Statistic	0.224383
K-S 5% Critical Value	0.200589
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	28.60279
Adjusted Gamma UCL	29.74868

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.91995
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	44.36561
95% Chebyshev (MVUE) UCL	43.14421
97.5% Chebyshev (MVUE) UCL	54.05722
99% Chebyshev (MVUE) UCL	75.49373

95% Non-parametric UCLs	
CLT UCL	25.12552
Adj-CLT UCL (Adjusted for skewness)	26.45723
Mod-t UCL (Adjusted for skewness)	25.71653
Jackknife UCL	25.50881
Standard Bootstrap UCL	24.97145
Bootstrap-t UCL	28.07154
Hall's Bootstrap UCL	25.44223
Percentile Bootstrap UCL	24.89
BCA Bootstrap UCL	25.695
95% Chebyshev (Mean, Sd) UCL	37.46856
97.5% Chebyshev (Mean, Sd) UCL	46.04623
99% Chebyshev (Mean, Sd) UCL	62.8954

General Statistics

Data File

Variable: **p/m-xylene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	20
Minimum	3.3
Maximum	120
Mean	32.31
Median	13
Standard Deviation	34.34236
Variance	1179.398
Coefficient of Variation	1.062902
Skewness	1.35154

Gamma Statistics	
k hat	1.055608
k star (bias corrected)	0.9306
Theta hat	30.60796
Theta star	34.71954
nu hat	42.22431
nu star	37.224
Approx.Chi Square Value (.05)	24.2537
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	23.42657

Log-transformed Statistics	
Minimum of log data	1.193922
Maximum of log data	4.787492
Mean of log data	2.931975
Standard Deviation of log data	1.085089
Variance of log data	1.177419

RECOMMENDATION

Data are lognormal (0.05)

Use 95% Chebyshev (MVUE) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.79121
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	45.58833

Gamma Distribution Test	
A-D Test Statistic	0.870824
A-D 5% Critical Value	0.76681
K-S Test Statistic	0.209222
K-S 5% Critical Value	0.199138
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	49.58861
Adjusted Gamma UCL	51.33945

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.935967
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	66.45443
95% Chebyshev (MVUE) UCL	71.17942
97.5% Chebyshev (MVUE) UCL	87.9721
99% Chebyshev (MVUE) UCL	120.9581

95% Non-parametric UCLs	
CLT UCL	44.94114
Adj-CLT UCL (Adjusted for skewness)	47.42089
Mod-t UCL (Adjusted for skewness)	45.97512
Jackknife UCL	45.58833
Standard Bootstrap UCL	44.8483
Bootstrap-t UCL	49.91663
Hall's Bootstrap UCL	47.21515
Percentile Bootstrap UCL	45.335
BCA Bootstrap UCL	46.77
95% Chebyshev (Mean, Sd) UCL	65.78279
97.5% Chebyshev (Mean, Sd) UCL	80.2665
99% Chebyshev (Mean, Sd) UCL	108.7169

General Statistics

Data File

Variable: **Styrene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	13
Minimum	0.185
Maximum	1.8
Mean	0.32175
Median	0.2125
Standard Deviation	0.356711
Variance	0.127243
Coefficient of Variation	1.108659
Skewness	4.13633

Gamma Statistics	
k hat	2.464519
k star (bias corrected)	2.128174
Theta hat	0.130553
Theta star	0.151186
nu hat	98.58076
nu star	85.12698
Approx.Chi Square Value (.05)	64.85644
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	63.4586

Log-transformed Statistics	
Minimum of log data	-1.687399
Maximum of log data	0.587787
Mean of log data	-1.350369
Standard Deviation of log data	0.532381
Variance of log data	0.283429

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.398288
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.459671

Gamma Distribution Test	
A-D Test Statistic	3.033026
A-D 5% Critical Value	0.750143
K-S Test Statistic	0.299951
K-S 5% Critical Value	0.195608
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.422311
Adjusted Gamma UCL	0.431614

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.652769
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.382751
95% Chebyshev (MVUE) UCL	0.456288
97.5% Chebyshev (MVUE) UCL	0.525541
99% Chebyshev (MVUE) UCL	0.661576

95% Non-parametric UCLs	
CLT UCL	0.452949
Adj-CLT UCL (Adjusted for skewness)	0.531777
Mod-t UCL (Adjusted for skewness)	0.471966
Jackknife UCL	0.459671
Standard Bootstrap UCL	0.450667
Bootstrap-t UCL	0.989366
Hall's Bootstrap UCL	0.982819
Percentile Bootstrap UCL	0.47575
BCA Bootstrap UCL	0.5745
95% Chebyshev (Mean, Sd) UCL	0.669429
97.5% Chebyshev (Mean, Sd) UCL	0.81987
99% Chebyshev (Mean, Sd) UCL	1.115382

General Statistics

Data File

Variable: **Tetrachloroethene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	16
Minimum	0.25
Maximum	53
Mean	4.35925
Median	0.3425
Standard Deviation	12.69592
Variance	161.1865
Coefficient of Variation	2.91241
Skewness	3.509404

Gamma Statistics	
k hat	0.347743
k star (bias corrected)	0.328915
Theta hat	12.53584
Theta star	13.25343
nu hat	13.90972
nu star	13.1566
Approx.Chi Square Value (.05)	5.997076
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	5.617915

Log-transformed Statistics	
Minimum of log data	-1.386294
Maximum of log data	3.970292
Mean of log data	-0.463457
Standard Deviation of log data	1.514328
Variance of log data	2.293189

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.372963
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	9.268076

Gamma Distribution Test	
A-D Test Statistic	4.412238
A-D 5% Critical Value	0.834641
K-S Test Statistic	0.376083
K-S 5% Critical Value	0.208884
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	9.563476
Adjusted Gamma UCL	10.20893

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.651291
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	6.417194
95% Chebyshev (MVUE) UCL	4.919789
97.5% Chebyshev (MVUE) UCL	6.27928
99% Chebyshev (MVUE) UCL	8.949736

95% Non-parametric UCLs	
CLT UCL	9.028817
Adj-CLT UCL (Adjusted for skewness)	11.40921
Mod-t UCL (Adjusted for skewness)	9.639369
Jackknife UCL	9.268076
Standard Bootstrap UCL	8.939712
Bootstrap-t UCL	122.8374
Hall's Bootstrap UCL	95.44892
Percentile Bootstrap UCL	9.586
BCA Bootstrap UCL	12.31675
95% Chebyshev (Mean, Sd) UCL	16.73371
97.5% Chebyshev (Mean, Sd) UCL	22.08814
99% Chebyshev (Mean, Sd) UCL	32.6059

General Statistics

Data File

Variable: **Toluene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	19
Minimum	6.5
Maximum	62
Mean	26.505
Median	16
Standard Deviation	19.16259
Variance	367.2047
Coefficient of Variation	0.72298
Skewness	0.683802

Gamma Statistics	
k hat	2.000979
k star (bias corrected)	1.734166
Theta hat	13.24602
Theta star	15.28401
nu hat	80.03916
nu star	69.36662
Approx.Chi Square Value (.05)	51.19102
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	49.95731

Log-transformed Statistics	
Minimum of log data	1.871802
Maximum of log data	4.127134
Mean of log data	3.007112
Standard Deviation of log data	0.771693
Variance of log data	0.59551

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.858295
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	33.91413

Gamma Distribution Test	
A-D Test Statistic	0.73963
A-D 5% Critical Value	0.752405
K-S Test Statistic	0.210065
K-S 5% Critical Value	0.196109
Data follow approximate gamma distibution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	35.91572
Adjusted Gamma UCL	36.80267

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.916066
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	40.90016
95% Chebyshev (MVUE) UCL	48.44958
97.5% Chebyshev (MVUE) UCL	57.84184
99% Chebyshev (MVUE) UCL	76.29112

95% Non-parametric UCLs	
CLT UCL	33.55301
Adj-CLT UCL (Adjusted for skewness)	34.25307
Mod-t UCL (Adjusted for skewness)	34.02333
Jackknife UCL	33.91413
Standard Bootstrap UCL	33.54782
Bootstrap-t UCL	34.69353
Hall's Bootstrap UCL	33.95395
Percentile Bootstrap UCL	33.045
BCA Bootstrap UCL	34.465
95% Chebyshev (Mean, Sd) UCL	45.18238
97.5% Chebyshev (Mean, Sd) UCL	53.2641
99% Chebyshev (Mean, Sd) UCL	69.13906

General Statistics

Data File

Variable: **Trichloroethene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	17
Minimum	0.205
Maximum	1.3
Mean	0.44
Median	0.305
Standard Deviation	0.338305
Variance	0.11445
Coefficient of Variation	0.768874
Skewness	1.698968

Gamma Statistics	
k hat	2.588819
k star (bias corrected)	2.233829
Theta hat	0.169962
Theta star	0.196971
nu hat	103.5528
nu star	89.35318
Approx.Chi Square Value (.05)	68.55486
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	67.11564

Log-transformed Statistics	
Minimum of log data	-1.584745
Maximum of log data	0.262364
Mean of log data	-1.026379
Standard Deviation of log data	0.607294
Variance of log data	0.368806

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.708238
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.570804

Gamma Distribution Test	
A-D Test Statistic	1.749895
A-D 5% Critical Value	0.749537
K-S Test Statistic	0.273723
K-S 5% Critical Value	0.195474
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.573488
Adjusted Gamma UCL	0.585786

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.823065
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.577991
95% Chebyshev (MVUE) UCL	0.691811
97.5% Chebyshev (MVUE) UCL	0.806701
99% Chebyshev (MVUE) UCL	1.03238

95% Non-parametric UCLs	
CLT UCL	0.564429
Adj-CLT UCL (Adjusted for skewness)	0.595136
Mod-t UCL (Adjusted for skewness)	0.575594
Jackknife UCL	0.570804
Standard Bootstrap UCL	0.559573
Bootstrap-t UCL	0.639639
Hall's Bootstrap UCL	0.581393
Percentile Bootstrap UCL	0.56975
BCA Bootstrap UCL	0.589
95% Chebyshev (Mean, Sd) UCL	0.769739
97.5% Chebyshev (Mean, Sd) UCL	0.912417
99% Chebyshev (Mean, Sd) UCL	1.19268

General Statistics

Data File

Variable: **Trichlorofluoromethane**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	16
Minimum	0.275
Maximum	7.7
Mean	1.02325
Median	0.3725
Standard Deviation	1.754041
Variance	3.076659
Coefficient of Variation	1.714186
Skewness	3.325162

Gamma Statistics	
k hat	0.9493
k star (bias corrected)	0.840238
Theta hat	1.0779
Theta star	1.217809
nu hat	37.972
nu star	33.60953
Approx.Chi Square Value (.05)	21.35037
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	20.57857

Log-transformed Statistics	
Minimum of log data	-1.290984
Maximum of log data	2.04122
Mean of log data	-0.588838
Standard Deviation of log data	0.911772
Variance of log data	0.831329

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.467479
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.701442

Gamma Distribution Test	
A-D Test Statistic	3.520771
A-D 5% Critical Value	0.770286
K-S Test Statistic	0.374994
K-S 5% Critical Value	0.199758
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.610789
Adjusted Gamma UCL	1.671202

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.682181
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.410971
95% Chebyshev (MVUE) UCL	1.619868
97.5% Chebyshev (MVUE) UCL	1.966897
99% Chebyshev (MVUE) UCL	2.648567

95% Non-parametric UCLs	
CLT UCL	1.668387
Adj-CLT UCL (Adjusted for skewness)	1.979991
Mod-t UCL (Adjusted for skewness)	1.750046
Jackknife UCL	1.701442
Standard Bootstrap UCL	1.656614
Bootstrap-t UCL	2.737201
Hall's Bootstrap UCL	3.295506
Percentile Bootstrap UCL	1.7215
BCA Bootstrap UCL	2.1015
95% Chebyshev (Mean, Sd) UCL	2.732877
97.5% Chebyshev (Mean, Sd) UCL	3.472634
99% Chebyshev (Mean, Sd) UCL	4.925744

General Statistics

Data File

Variable: **1,1,2-trichloro-1,2,2-trifluoroethane**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	16
Minimum	0.31
Maximum	9.3
Mean	1.326
Median	0.4575
Standard Deviation	2.345108
Variance	5.499531
Coefficient of Variation	1.768558
Skewness	2.872875

Gamma Statistics	
k hat	0.810074
k star (bias corrected)	0.721896
Theta hat	1.636888
Theta star	1.83683
nu hat	32.40294
nu star	28.87583
Approx.Chi Square Value (.05)	17.60945
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	16.91473

Log-transformed Statistics	
Minimum of log data	-1.171183
Maximum of log data	2.230014
Mean of log data	-0.44927
Standard Deviation of log data	1.018591
Variance of log data	1.037527

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.492948
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2.232726

Gamma Distribution Test	
A-D Test Statistic	3.137006
A-D 5% Critical Value	0.77673
K-S Test Statistic	0.367398
K-S 5% Critical Value	0.200877
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2.174364
Adjusted Gamma UCL	2.263669

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.721574
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.977307
95% Chebyshev (MVUE) UCL	2.184122
97.5% Chebyshev (MVUE) UCL	2.682152
99% Chebyshev (MVUE) UCL	3.660435

95% Non-parametric UCLs	
CLT UCL	2.188532
Adj-CLT UCL (Adjusted for skewness)	2.548472
Mod-t UCL (Adjusted for skewness)	2.288869
Jackknife UCL	2.232726
Standard Bootstrap UCL	2.175459
Bootstrap-t UCL	5.321878
Hall's Bootstrap UCL	5.998101
Percentile Bootstrap UCL	2.247
BCA Bootstrap UCL	2.51225
95% Chebyshev (Mean, Sd) UCL	3.611728
97.5% Chebyshev (Mean, Sd) UCL	4.600765
99% Chebyshev (Mean, Sd) UCL	6.543535

General Statistics

Data File

Variable: **Vinyl acetate**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	14
Minimum	0.27
Maximum	26
Mean	1.6405
Median	0.3125
Standard Deviation	5.734827
Variance	32.88824
Coefficient of Variation	3.49578
Skewness	4.469047

Gamma Statistics	
k hat	0.475422
k star (bias corrected)	0.437442
Theta hat	3.450622
Theta star	3.750214
nu hat	19.01686
nu star	17.49767
Approx.Chi Square Value (.05)	9.027495
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	8.548466

Log-transformed Statistics	
Minimum of log data	-1.309333
Maximum of log data	3.258097
Mean of log data	-0.851582
Standard Deviation of log data	1.00537
Variance of log data	1.010769

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.249942
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.857847

Gamma Distribution Test	
A-D Test Statistic	6.034312
A-D 5% Critical Value	0.807714
K-S Test Statistic	0.476992
K-S 5% Critical Value	0.205551
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	3.179722
Adjusted Gamma UCL	3.357903

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.452283
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.288952
95% Chebyshev (MVUE) UCL	1.431608
97.5% Chebyshev (MVUE) UCL	1.755712
99% Chebyshev (MVUE) UCL	2.392352

95% Non-parametric UCLs	
CLT UCL	3.749772
Adj-CLT UCL (Adjusted for skewness)	5.119031
Mod-t UCL (Adjusted for skewness)	4.071424
Jackknife UCL	3.857847
Standard Bootstrap UCL	3.745909
Bootstrap-t UCL	107.9256
Hall's Bootstrap UCL	44.12825
Percentile Bootstrap UCL	4.1975
BCA Bootstrap UCL	5.49725
95% Chebyshev (Mean, Sd) UCL	7.230118
97.5% Chebyshev (Mean, Sd) UCL	9.64875
99% Chebyshev (Mean, Sd) UCL	14.39968

SG-ADV
Version 2.0; 02/03

ENTER Chemical CAS No. (numbers only, no dashes)	Soil Gas Concentration Data: ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343			0.0005	1,1-Dichloroethane
75354			0.0004	1,1-Dichloroethylene
95636			0.0406	1,2,4-Trimethylbenzene
541731			0.0005	1,3-Dichlorobenzene
108678			0.0111	1,3,5-Trimethylbenzene
78933			0.0187	2-Butanone
591786			0.0020	2-Hexanone
622968			0.0131	4-Ethyltoluene
108101			0.0098	4-Methyl-2-pentanone
67641			0.5119	Acetone
71432			0.0229	Benzene
75274			0.0092	Bromodichloromethane
75150			0.0019	Carbon disulfide
108907			0.0004	Chlorobenzene
75003			0.0063	Chloroethane (ethyl chloride)
67663			0.0005	Chloroform
74873			0.0038	Chloromethane
156592			0.0003	cis-1,2-Dichloroethylene
75718			0.0012	Dichlorodifluoromethane
1634044			0.0003	MTBE
100414			0.0143	Ethylbenzene
95476			0.0431	o-Xylene
106423			0.0712	p-Xylene
100425			0.0007	Styrene
127184			0.0326	Tetrachloroethylene
108883			0.0359	Toluene
79016			0.0008	Trichloroethylene
75694			0.0027	Trichlorofluoromethane
76131			0.0065	1,1,2-Trichloro-1,2,2-trifluoroethane
108054			0.0144	Vinyl acetate

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
15	152.5	19	152.5			s		

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)
	5' bgs							
	1.72	0.3618	0.1295					

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	244	0.1	0.5	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Molecular weight, MW (g/mol)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	
7.4E-02	1.1E-05	5.6E-03	25	6,895	330.6	523.0	99.0	1.6E-06	5.0E-01	1,1-Dichloroethane
9.0E-02	1.0E-05	2.6E-02	25	6,247	304.8	576.1	96.9	0.0E+00	7.0E-02	1,1-Dichloroethylene
6.1E-02	7.9E-06	6.1E-03	25	9,369	442.3	649.2	120.2	0.0E+00	6.0E-03	1,2,4-Trimethylbenzene
6.9E-02	7.9E-06	3.1E-03	25	9,230	446.0	684.0	147.0	0.0E+00	1.1E-01	1,3-Dichlorobenzene
6.0E-02	8.7E-06	5.9E-03	25	9,321	437.9	637.3	120.2	0.0E+00	6.0E-03	1,3,5-Trimethylbenzene
8.1E-02	9.8E-06	5.6E-05	25	7,481	352.5	536.8	72.1	0.0E+00	5.0E+00	2-Butanone
7.5E-02	7.8E-06	1.4E-04	25	8,243	389.5	571.0	100.2	0.0E+00	3.0E+00	2-Hexanone
7.0E-02	7.8E-06	7.3E-03	25	8,523	412.3	617.1	106.2	0.0E+00	7.0E-01	4-Ethyltoluene
7.5E-02	7.8E-06	1.4E-04	25	8,243	389.5	571.0	100.2	0.0E+00	3.0E+00	4-Methyl-2-pentanone
1.2E-01	1.1E-05	3.9E-05	25	6,955	329.2	508.1	58.1	0.0E+00	3.2E+00	Acetone
8.8E-02	9.8E-06	5.5E-03	25	7,342	353.2	562.2	78.1	2.9E-05	6.0E-02	Benzene
3.0E-02	1.1E-05	1.6E-03	25	7,800	363.2	585.9	163.8	3.7E-05	7.0E-02	Bromodichloromethane
1.0E-01	1.0E-05	3.0E-02	25	6,391	319.0	552.0	76.1	0.0E+00	8.0E-01	Carbon disulfide
7.3E-02	8.7E-06	3.7E-03	25	8,410	404.9	632.4	112.6	0.0E+00	1.0E+00	Chlorobenzene
2.7E-01	1.2E-05	8.8E-03	25	5,879	285.3	460.4	64.5	8.3E-07	3.0E+01	Chloroethane (ethyl chloride)
1.0E-01	1.0E-05	3.7E-03	25	6,988	334.3	536.4	119.4	5.3E-06	3.0E-01	Chloroform
1.3E-01	6.5E-06	8.8E-03	25	5,115	249.0	416.3	50.5	0.0E+00	9.0E-02	Chloromethane
7.4E-02	1.1E-05	4.1E-03	25	7,192	333.7	544.0	96.9	0.0E+00	3.5E-02	cis-1,2-Dichloroethylene
6.7E-02	9.9E-06	3.4E-01	25	9,421	243.2	385.0	120.9	0.0E+00	2.0E-01	Dichlorodifluoromethane
1.0E-01	1.1E-05	6.2E-04	25	6,678	328.3	497.1	88.2	2.6E-07	8.0E+00	MTBE
7.5E-02	7.8E-06	7.9E-03	25	8,501	409.3	617.2	106.2	0.0E+00	2.0E+00	Ethylbenzene
8.7E-02	1.0E-05	5.2E-03	25	8,661	417.6	630.3	106.2	0.0E+00	7.0E-01	o-Xylene
7.7E-02	8.4E-06	7.6E-03	25	8,525	411.5	616.2	106.2	0.0E+00	7.0E-01	p-Xylene
7.1E-02	8.0E-06	2.7E-03	25	8,737	418.3	636.0	104.2	0.0E+00	9.0E-01	Styrene
7.2E-02	8.2E-06	1.8E-02	25	8,288	394.4	620.2	165.8	5.9E-06	3.5E-02	Tetrachloroethylene
8.7E-02	8.6E-06	6.6E-03	25	7,930	383.8	591.8	92.1	0.0E+00	3.0E-01	Toluene
7.9E-02	9.1E-06	1.0E-02	25	7,505	360.4	544.2	131.4	2.0E-06	6.0E-01	Trichloroethylene
8.7E-02	9.7E-06	9.7E-02	25	5,999	296.7	471.0	137.4	0.0E+00	7.0E-01	Trichlorofluoromethane
7.8E-02	8.2E-06	4.8E-01	25	6,463	320.7	487.3	187.4	0.0E+00	3.0E+01	1,1,2-Trichloro-1,2,2-trifluoroethane
8.5E-02	9.2E-06	5.1E-04	25	7,800	345.7	519.1	86.1	0.0E+00	2.0E-01	Vinyl acetate

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.11E+00	3.39E+04	1,1-Dichloroethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.62E+00	3.39E+04	1,1-Dichloroethylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.04E+02	3.39E+04	1,2,4-Trimethylbenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	3.29E+00	3.39E+04	1,3-Dichlorobenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	5.58E+01	3.39E+04	1,3,5-Trimethylbenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	5.61E+01	3.39E+04	2-Butanone
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	8.27E+00	3.39E+04	2-Hexanone
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	5.81E+01	3.39E+04	4-Ethyltoluene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	4.09E+01	3.39E+04	4-Methyl-2-pentanone
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.24E+03	3.39E+04	Acetone
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	7.46E+01	3.39E+04	Benzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	6.26E+01	3.39E+04	Bromodichloromethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	6.15E+00	3.39E+04	Carbon disulfide
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.88E+00	3.39E+04	Chlorobenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.69E+01	3.39E+04	Chloroethane (ethyl chloride)
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.69E+00	3.39E+04	Chloroform
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	7.90E+00	3.39E+04	Chloromethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.24E+00	3.39E+04	cis-1,2-Dichloroethylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	6.24E+00	3.39E+04	Dichlorodifluoromethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.24E+00	3.39E+04	MTBE
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	6.35E+01	3.39E+04	Ethylbenzene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.91E+02	3.39E+04	o-Xylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	3.15E+02	3.39E+04	p-Xylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.91E+00	3.39E+04	Styrene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	2.26E+02	3.39E+04	Tetrachloroethylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.38E+02	3.39E+04	Toluene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	4.22E+00	3.39E+04	Trichloroethylene
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	1.57E+01	3.39E+04	Trichlorofluoromethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	5.11E+01	3.39E+04	1,1,2-Trichloro-1,2,2-trifluoroethane
9.46E+08	137.5	0.232	ERROR	ERROR	0.248	1.01E-07	0.716	7.22E-08	4,000	5.17E+01	3.39E+04	Vinyl acetate

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)	
1.06E+06	3.77E-04	15	7,351	4.34E-03	1.81E-01	1.78E-04	4.39E-03	0.00E+00	0.00E+00	4.39E-03	137.5	1,1-Dichloroethane
1.06E+06	3.77E-04	15	6,333	2.09E-02	8.72E-01	1.78E-04	5.32E-03	0.00E+00	0.00E+00	5.32E-03	137.5	1,1-Dichloroethylene
1.06E+06	3.77E-04	15	11,579	4.11E-03	1.72E-01	1.78E-04	3.59E-03	0.00E+00	0.00E+00	3.59E-03	137.5	1,2,4-Trimethylbenzene
1.06E+06	3.77E-04	15	11,081	2.11E-03	8.78E-02	1.78E-04	4.09E-03	0.00E+00	0.00E+00	4.09E-03	137.5	1,3-Dichlorobenzene
1.06E+06	3.77E-04	15	11,561	3.93E-03	1.64E-01	1.78E-04	3.56E-03	0.00E+00	0.00E+00	3.56E-03	137.5	1,3,5-Trimethylbenzene
1.06E+06	3.77E-04	15	8,307	4.18E-05	1.74E-03	1.78E-04	4.83E-03	0.00E+00	0.00E+00	4.83E-03	137.5	2-Butanone
1.06E+06	3.77E-04	15	9,741	9.82E-05	4.10E-03	1.78E-04	4.45E-03	0.00E+00	0.00E+00	4.45E-03	137.5	2-Hexanone
1.06E+06	3.77E-04	15	10,150	5.15E-03	2.15E-01	1.78E-04	4.14E-03	0.00E+00	0.00E+00	4.14E-03	137.5	4-Ethyltoluene
1.06E+06	3.77E-04	15	9,741	9.82E-05	4.10E-03	1.78E-04	4.45E-03	0.00E+00	0.00E+00	4.45E-03	137.5	4-Methyl-2-pentanone
1.06E+06	3.77E-04	15	7,447	2.99E-05	1.25E-03	1.78E-04	7.41E-03	0.00E+00	0.00E+00	7.41E-03	137.5	Acetone
1.06E+06	3.77E-04	15	8,030	4.19E-03	1.75E-01	1.78E-04	5.21E-03	0.00E+00	0.00E+00	5.21E-03	137.5	Benzene
1.06E+06	3.77E-04	15	8,576	1.19E-03	4.95E-02	1.78E-04	1.76E-03	0.00E+00	0.00E+00	1.76E-03	137.5	Bromodichloromethane
1.06E+06	3.77E-04	15	6,612	2.40E-02	1.00E+00	1.78E-04	6.15E-03	0.00E+00	0.00E+00	6.15E-03	137.5	Carbon disulfide
1.06E+06	3.77E-04	15	9,712	2.64E-03	1.10E-01	1.78E-04	4.32E-03	0.00E+00	0.00E+00	4.32E-03	137.5	Chlorobenzene
1.06E+06	3.77E-04	15	5,800	7.20E-03	3.00E-01	1.78E-04	1.60E-02	0.00E+00	0.00E+00	1.60E-02	137.5	Chloroethane (ethyl chloride)
1.06E+06	3.77E-04	15	7,461	2.83E-03	1.18E-01	1.78E-04	6.15E-03	0.00E+00	0.00E+00	6.15E-03	137.5	Chloroform
1.06E+06	3.77E-04	15	4,640	7.49E-03	3.12E-01	1.78E-04	7.45E-03	0.00E+00	0.00E+00	7.45E-03	137.5	Chloromethane
1.06E+06	3.77E-04	15	7,643	3.12E-03	1.30E-01	1.78E-04	4.35E-03	0.00E+00	0.00E+00	4.35E-03	137.5	cis-1,2-Dichloroethylene
1.06E+06	3.77E-04	15	8,118	2.58E-01	1.08E+01	1.78E-04	3.93E-03	0.00E+00	0.00E+00	3.93E-03	137.5	Dichlorodifluoromethane
1.06E+06	3.77E-04	15	7,179	4.86E-04	2.03E-02	1.78E-04	6.06E-03	0.00E+00	0.00E+00	6.06E-03	137.5	MTBE
1.06E+06	3.77E-04	15	10,052	5.55E-03	2.31E-01	1.78E-04	4.44E-03	0.00E+00	0.00E+00	4.44E-03	137.5	Ethylbenzene
1.06E+06	3.77E-04	15	10,302	3.62E-03	1.51E-01	1.78E-04	5.15E-03	0.00E+00	0.00E+00	5.15E-03	137.5	o-Xylene
1.06E+06	3.77E-04	15	10,143	5.38E-03	2.24E-01	1.78E-04	4.55E-03	0.00E+00	0.00E+00	4.55E-03	137.5	p-Xylene
1.06E+06	3.77E-04	15	10,350	1.92E-03	7.99E-02	1.78E-04	4.20E-03	0.00E+00	0.00E+00	4.20E-03	137.5	Styrene
1.06E+06	3.77E-04	15	9,462	1.32E-02	5.52E-01	1.78E-04	4.26E-03	0.00E+00	0.00E+00	4.26E-03	137.5	Tetrachloroethylene
1.06E+06	3.77E-04	15	9,056	4.84E-03	2.02E-01	1.78E-04	5.15E-03	0.00E+00	0.00E+00	5.15E-03	137.5	Toluene
1.06E+06	3.77E-04	15	8,445	7.67E-03	3.20E-01	1.78E-04	4.67E-03	0.00E+00	0.00E+00	4.67E-03	137.5	Trichloroethylene
1.06E+06	3.77E-04	15	6,053	7.84E-02	3.27E+00	1.78E-04	5.15E-03	0.00E+00	0.00E+00	5.15E-03	137.5	Trichlorofluoromethane
1.06E+06	3.77E-04	15	6,853	3.78E-01	1.58E+01	1.78E-04	4.61E-03	0.00E+00	0.00E+00	4.61E-03	137.5	1,1,2-Trichloro-1,2,2-trifluoroethane
1.06E+06	3.77E-04	15	8,631	3.78E-04	1.58E-02	1.78E-04	5.03E-03	0.00E+00	0.00E+00	5.03E-03	137.5	Vinyl acetate

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	
15	2.11E+00	0.10	8.33E+01	4.39E-03	4.0E+02	1.27E+206	7.10E-04	1.50E-03	1.6E-06	5.0E-01	1,1-Dichloroethane
15	1.62E+00	0.10	8.33E+01	5.32E-03	4.0E+02	8.63E+169	8.11E-04	1.31E-03	NA	7.0E-02	1,1-Dichloroethylene
15	2.04E+02	0.10	8.33E+01	3.59E-03	4.0E+02	2.28E+252	6.12E-04	1.25E-01	NA	6.0E-03	1,2,4-Trimethylbenzene
15	3.29E+00	0.10	8.33E+01	4.09E-03	4.0E+02	9.52E+220	6.76E-04	2.22E-03	NA	1.1E-01	1,3-Dichlorobenzene
15	5.58E+01	0.10	8.33E+01	3.56E-03	4.0E+02	1.07E+254	6.09E-04	3.40E-02	NA	6.0E-03	1,3,5-Trimethylbenzene
15	5.61E+01	0.10	8.33E+01	4.83E-03	4.0E+02	2.67E+187	7.59E-04	4.26E-02	NA	5.0E+00	2-Butanone
15	8.27E+00	0.10	8.33E+01	4.45E-03	4.0E+02	1.55E+203	7.17E-04	5.93E-03	NA	3.0E+00	2-Hexanone
15	5.81E+01	0.10	8.33E+01	4.14E-03	4.0E+02	3.00E+218	6.81E-04	3.95E-02	NA	7.0E-01	4-Ethyltoluene
15	4.09E+01	0.10	8.33E+01	4.45E-03	4.0E+02	1.55E+203	7.17E-04	2.93E-02	NA	3.0E+00	4-Methyl-2-pentanone
15	1.24E+03	0.10	8.33E+01	7.41E-03	4.0E+02	1.14E+122	1.00E-03	1.24E+00	NA	3.2E+00	Acetone
15	7.46E+01	0.10	8.33E+01	5.21E-03	4.0E+02	6.11E+173	7.99E-04	5.96E-02	2.9E-05	6.0E-02	Benzene
15	6.26E+01	0.10	8.33E+01	1.76E-03	4.0E+02	#NUM!	3.45E-04	2.16E-02	3.7E-05	7.0E-02	Bromodichloromethane
15	6.15E+00	0.10	8.33E+01	6.15E-03	4.0E+02	1.15E+147	8.92E-04	5.49E-03	NA	8.0E-01	Carbon disulfide
15	1.88E+00	0.10	8.33E+01	4.32E-03	4.0E+02	3.03E+209	7.02E-04	1.32E-03	NA	1.0E+00	Chlorobenzene
15	1.69E+01	0.10	8.33E+01	1.60E-02	4.0E+02	2.73E+56	1.47E-03	2.49E-02	8.3E-07	3.0E+01	Chloroethane (ethyl chloride)
15	2.69E+00	0.10	8.33E+01	6.15E-03	4.0E+02	1.11E+147	8.92E-04	2.40E-03	5.3E-06	3.0E-01	Chloroform
15	7.90E+00	0.10	8.33E+01	7.45E-03	4.0E+02	2.41E+121	1.00E-03	7.93E-03	NA	9.0E-02	Chloromethane
15	1.24E+00	0.10	8.33E+01	4.35E-03	4.0E+02	5.90E+207	7.06E-04	8.75E-04	NA	3.5E-02	cis-1,2-Dichloroethylene
15	6.24E+00	0.10	8.33E+01	3.93E-03	4.0E+02	9.83E+229	6.56E-04	4.09E-03	NA	2.0E-01	Dichlorodifluoromethane
15	1.24E+00	0.10	8.33E+01	6.06E-03	4.0E+02	1.79E+149	8.84E-04	1.10E-03	2.6E-07	8.0E+00	MTBE
15	6.35E+01	0.10	8.33E+01	4.44E-03	4.0E+02	8.20E+203	7.16E-04	4.54E-02	NA	2.0E+00	Ethylbenzene
15	1.91E+02	0.10	8.33E+01	5.15E-03	4.0E+02	6.03E+175	7.93E-04	1.52E-01	NA	7.0E-01	o-Xylene
15	3.15E+02	0.10	8.33E+01	4.55E-03	4.0E+02	7.49E+198	7.28E-04	2.30E-01	NA	7.0E-01	p-Xylene
15	2.91E+00	0.10	8.33E+01	4.20E-03	4.0E+02	2.36E+215	6.88E-04	2.00E-03	NA	9.0E-01	Styrene
15	2.26E+02	0.10	8.33E+01	4.26E-03	4.0E+02	2.62E+212	6.95E-04	1.57E-01	5.9E-06	3.5E-02	Tetrachloroethylene
15	1.38E+02	0.10	8.33E+01	5.15E-03	4.0E+02	6.12E+175	7.93E-04	1.10E-01	NA	3.0E-01	Toluene
15	4.22E+00	0.10	8.33E+01	4.67E-03	4.0E+02	3.91E+193	7.42E-04	3.13E-03	2.0E-06	6.0E-01	Trichloroethylene
15	1.57E+01	0.10	8.33E+01	5.15E-03	4.0E+02	6.29E+175	7.93E-04	1.24E-02	NA	7.0E-01	Trichlorofluoromethane
15	5.11E+01	0.10	8.33E+01	4.61E-03	4.0E+02	1.21E+196	7.36E-04	3.76E-02	NA	3.0E+01	1,1,2-Trichloro-1,2,2-trifluoroethane
15	5.17E+01	0.10	8.33E+01	5.03E-03	4.0E+02	5.75E+179	7.81E-04	4.04E-02	NA	2.0E-01	Vinyl acetate

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)	
9.8E-10	2.9E-06	1,1-Dichloroethane
NA	1.8E-05	1,1-Dichloroethylene
NA	2.0E-02	1,2,4-Trimethylbenzene
NA	2.0E-05	1,3-Dichlorobenzene
NA	5.5E-03	1,3,5-Trimethylbenzene
NA	8.2E-06	2-Butanone
NA	1.9E-06	2-Hexanone
NA	5.4E-05	4-Ethyltoluene
NA	9.4E-06	4-Methyl-2-pentanone
NA	3.8E-04	Acetone
7.1E-07	9.5E-04	Benzene
3.3E-07	3.0E-04	Bromodichloromethane
NA	6.6E-06	Carbon disulfide
NA	1.3E-06	Chlorobenzene
8.5E-09	7.9E-07	Chloroethane (ethyl chloride)
5.2E-09	7.7E-06	Chloroform
NA	8.4E-05	Chloromethane
NA	2.4E-05	cis-1,2-Dichloroethylene
NA	2.0E-05	Dichlorodifluoromethane
1.2E-10	1.3E-07	MTBE
NA	2.2E-05	Ethylbenzene
NA	2.1E-04	o-Xylene
NA	3.1E-04	p-Xylene
NA	2.1E-06	Styrene
3.8E-07	4.3E-03	Tetrachloroethylene
NA	3.5E-04	Toluene
2.6E-09	5.0E-06	Trichloroethylene
NA	1.7E-05	Trichlorofluoromethane
NA	1.2E-06	1,1,2-Trichloro-1,2,2-trifluoroethane
NA	1.9E-04	Vinyl acetate
1.4E-06	**3.3E-02**	

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT

General Statistics

Data File

Variable: **Vinyl acetate**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	14
Minimum	0.27
Maximum	26
Mean	1.6405
Median	0.3125
Standard Deviation	5.734827
Variance	32.88824
Coefficient of Variation	3.49578
Skewness	4.469047

Gamma Statistics	
k hat	0.475422
k star (bias corrected)	0.437442
Theta hat	3.450622
Theta star	3.750214
nu hat	19.01686
nu star	17.49767
Approx.Chi Square Value (.05)	9.027495
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	8.548466

Log-transformed Statistics	
Minimum of log data	-1.309333
Maximum of log data	3.258097
Mean of log data	-0.851582
Standard Deviation of log data	1.00537
Variance of log data	1.010769

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.249942
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.857847

Gamma Distribution Test	
A-D Test Statistic	6.034312
A-D 5% Critical Value	0.807714
K-S Test Statistic	0.476992
K-S 5% Critical Value	0.205551
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	3.179722
Adjusted Gamma UCL	3.357903

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.452283
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.288952
95% Chebyshev (MVUE) UCL	1.431608
97.5% Chebyshev (MVUE) UCL	1.755712
99% Chebyshev (MVUE) UCL	2.392352

95% Non-parametric UCLs	
CLT UCL	3.749772
Adj-CLT UCL (Adjusted for skewness)	5.119031
Mod-t UCL (Adjusted for skewness)	4.071424
Jackknife UCL	3.857847
Standard Bootstrap UCL	3.745909
Bootstrap-t UCL	107.9256
Hall's Bootstrap UCL	44.12825
Percentile Bootstrap UCL	4.1975
BCA Bootstrap UCL	5.49725
95% Chebyshev (Mean, Sd) UCL	7.230118
97.5% Chebyshev (Mean, Sd) UCL	9.64875
99% Chebyshev (Mean, Sd) UCL	14.39968

General Statistics

Data File

Variable: **1,1,2-trichloro-1,2,2-trifluoroethane**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	16
Minimum	0.31
Maximum	9.3
Mean	1.326
Median	0.4575
Standard Deviation	2.345108
Variance	5.499531
Coefficient of Variation	1.768558
Skewness	2.872875

Gamma Statistics	
k hat	0.810074
k star (bias corrected)	0.721896
Theta hat	1.636888
Theta star	1.83683
nu hat	32.40294
nu star	28.87583
Approx.Chi Square Value (.05)	17.60945
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	16.91473

Log-transformed Statistics	
Minimum of log data	-1.171183
Maximum of log data	2.230014
Mean of log data	-0.44927
Standard Deviation of log data	1.018591
Variance of log data	1.037527

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.492948
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2.232726

Gamma Distribution Test	
A-D Test Statistic	3.137006
A-D 5% Critical Value	0.77673
K-S Test Statistic	0.367398
K-S 5% Critical Value	0.200877
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2.174364
Adjusted Gamma UCL	2.263669

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.721574
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.977307
95% Chebyshev (MVUE) UCL	2.184122
97.5% Chebyshev (MVUE) UCL	2.682152
99% Chebyshev (MVUE) UCL	3.660435

95% Non-parametric UCLs	
CLT UCL	2.188532
Adj-CLT UCL (Adjusted for skewness)	2.548472
Mod-t UCL (Adjusted for skewness)	2.288869
Jackknife UCL	2.232726
Standard Bootstrap UCL	2.175459
Bootstrap-t UCL	5.321878
Hall's Bootstrap UCL	5.998101
Percentile Bootstrap UCL	2.247
BCA Bootstrap UCL	2.51225
95% Chebyshev (Mean, Sd) UCL	3.611728
97.5% Chebyshev (Mean, Sd) UCL	4.600765
99% Chebyshev (Mean, Sd) UCL	6.543535

General Statistics

Data File

Variable: **Trichlorofluoromethane**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	16
Minimum	0.275
Maximum	7.7
Mean	1.02325
Median	0.3725
Standard Deviation	1.754041
Variance	3.076659
Coefficient of Variation	1.714186
Skewness	3.325162

Gamma Statistics	
k hat	0.9493
k star (bias corrected)	0.840238
Theta hat	1.0779
Theta star	1.217809
nu hat	37.972
nu star	33.60953
Approx.Chi Square Value (.05)	21.35037
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	20.57857

Log-transformed Statistics	
Minimum of log data	-1.290984
Maximum of log data	2.04122
Mean of log data	-0.588838
Standard Deviation of log data	0.911772
Variance of log data	0.831329

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.467479
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.701442

Gamma Distribution Test	
A-D Test Statistic	3.520771
A-D 5% Critical Value	0.770286
K-S Test Statistic	0.374994
K-S 5% Critical Value	0.199758
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.610789
Adjusted Gamma UCL	1.671202

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.682181
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.410971
95% Chebyshev (MVUE) UCL	1.619868
97.5% Chebyshev (MVUE) UCL	1.966897
99% Chebyshev (MVUE) UCL	2.648567

95% Non-parametric UCLs	
CLT UCL	1.668387
Adj-CLT UCL (Adjusted for skewness)	1.979991
Mod-t UCL (Adjusted for skewness)	1.750046
Jackknife UCL	1.701442
Standard Bootstrap UCL	1.656614
Bootstrap-t UCL	2.737201
Hall's Bootstrap UCL	3.295506
Percentile Bootstrap UCL	1.7215
BCA Bootstrap UCL	2.1015
95% Chebyshev (Mean, Sd) UCL	2.732877
97.5% Chebyshev (Mean, Sd) UCL	3.472634
99% Chebyshev (Mean, Sd) UCL	4.925744

General Statistics

Data File

Variable: **Trichloroethene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	17
Minimum	0.205
Maximum	1.3
Mean	0.44
Median	0.305
Standard Deviation	0.338305
Variance	0.11445
Coefficient of Variation	0.768874
Skewness	1.698968

Gamma Statistics	
k hat	2.588819
k star (bias corrected)	2.233829
Theta hat	0.169962
Theta star	0.196971
nu hat	103.5528
nu star	89.35318
Approx.Chi Square Value (.05)	68.55486
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	67.11564

Log-transformed Statistics	
Minimum of log data	-1.584745
Maximum of log data	0.262364
Mean of log data	-1.026379
Standard Deviation of log data	0.607294
Variance of log data	0.368806

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.708238
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.570804

Gamma Distribution Test	
A-D Test Statistic	1.749895
A-D 5% Critical Value	0.749537
K-S Test Statistic	0.273723
K-S 5% Critical Value	0.195474
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.573488
Adjusted Gamma UCL	0.585786

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.823065
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.577991
95% Chebyshev (MVUE) UCL	0.691811
97.5% Chebyshev (MVUE) UCL	0.806701
99% Chebyshev (MVUE) UCL	1.03238

95% Non-parametric UCLs	
CLT UCL	0.564429
Adj-CLT UCL (Adjusted for skewness)	0.595136
Mod-t UCL (Adjusted for skewness)	0.575594
Jackknife UCL	0.570804
Standard Bootstrap UCL	0.559573
Bootstrap-t UCL	0.639639
Hall's Bootstrap UCL	0.581393
Percentile Bootstrap UCL	0.56975
BCA Bootstrap UCL	0.589
95% Chebyshev (Mean, Sd) UCL	0.769739
97.5% Chebyshev (Mean, Sd) UCL	0.912417
99% Chebyshev (Mean, Sd) UCL	1.19268

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

General Statistics

Data File

Variable: **Toluene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	19
Minimum	6.5
Maximum	62
Mean	26.505
Median	16
Standard Deviation	19.16259
Variance	367.2047
Coefficient of Variation	0.72298
Skewness	0.683802

Gamma Statistics	
k hat	2.000979
k star (bias corrected)	1.734166
Theta hat	13.24602
Theta star	15.28401
nu hat	80.03916
nu star	69.36662
Approx.Chi Square Value (.05)	51.19102
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	49.95731

Log-transformed Statistics	
Minimum of log data	1.871802
Maximum of log data	4.127134
Mean of log data	3.007112
Standard Deviation of log data	0.771693
Variance of log data	0.59551

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.858295
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	33.91413

Gamma Distribution Test	
A-D Test Statistic	0.73963
A-D 5% Critical Value	0.752405
K-S Test Statistic	0.210065
K-S 5% Critical Value	0.196109
Data follow approximate gamma distibution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	35.91572
Adjusted Gamma UCL	36.80267

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.916066
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	40.90016
95% Chebyshev (MVUE) UCL	48.44958
97.5% Chebyshev (MVUE) UCL	57.84184
99% Chebyshev (MVUE) UCL	76.29112

95% Non-parametric UCLs	
CLT UCL	33.55301
Adj-CLT UCL (Adjusted for skewness)	34.25307
Mod-t UCL (Adjusted for skewness)	34.02333
Jackknife UCL	33.91413
Standard Bootstrap UCL	33.54782
Bootstrap-t UCL	34.69353
Hall's Bootstrap UCL	33.95395
Percentile Bootstrap UCL	33.045
BCA Bootstrap UCL	34.465
95% Chebyshev (Mean, Sd) UCL	45.18238
97.5% Chebyshev (Mean, Sd) UCL	53.2641
99% Chebyshev (Mean, Sd) UCL	69.13906

General Statistics

Data File

Variable: **Tetrachloroethene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	16
Minimum	0.25
Maximum	53
Mean	4.35925
Median	0.3425
Standard Deviation	12.69592
Variance	161.1865
Coefficient of Variation	2.91241
Skewness	3.509404

Gamma Statistics	
k hat	0.347743
k star (bias corrected)	0.328915
Theta hat	12.53584
Theta star	13.25343
nu hat	13.90972
nu star	13.1566
Approx.Chi Square Value (.05)	5.997076
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	5.617915

Log-transformed Statistics	
Minimum of log data	-1.386294
Maximum of log data	3.970292
Mean of log data	-0.463457
Standard Deviation of log data	1.514328
Variance of log data	2.293189

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.372963
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	9.268076

Gamma Distribution Test	
A-D Test Statistic	4.412238
A-D 5% Critical Value	0.834641
K-S Test Statistic	0.376083
K-S 5% Critical Value	0.208884
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	9.563476
Adjusted Gamma UCL	10.20893

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.651291
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	6.417194
95% Chebyshev (MVUE) UCL	4.919789
97.5% Chebyshev (MVUE) UCL	6.27928
99% Chebyshev (MVUE) UCL	8.949736

95% Non-parametric UCLs	
CLT UCL	9.028817
Adj-CLT UCL (Adjusted for skewness)	11.40921
Mod-t UCL (Adjusted for skewness)	9.639369
Jackknife UCL	9.268076
Standard Bootstrap UCL	8.939712
Bootstrap-t UCL	122.8374
Hall's Bootstrap UCL	95.44892
Percentile Bootstrap UCL	9.586
BCA Bootstrap UCL	12.31675
95% Chebyshev (Mean, Sd) UCL	16.73371
97.5% Chebyshev (Mean, Sd) UCL	22.08814
99% Chebyshev (Mean, Sd) UCL	32.6059

General Statistics

Data File

Variable: **p/m-xylene**

Raw Statistics

Number of Valid Samples	20
Number of Unique Samples	20
Minimum	3.3
Maximum	120
Mean	32.31
Median	13
Standard Deviation	34.34236
Variance	1179.398
Coefficient of Variation	1.062902
Skewness	1.35154

Gamma Statistics

k hat	1.055608
k star (bias corrected)	0.9306
Theta hat	30.60796
Theta star	34.71954
nu hat	42.22431
nu star	37.224
Approx.Chi Square Value (.05)	24.2537
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	23.42657

Log-transformed Statistics

Minimum of log data	1.193922
Maximum of log data	4.787492
Mean of log data	2.931975
Standard Deviation of log data	1.085089
Variance of log data	1.177419

Normal Distribution Test

Shapiro-Wilk Test Statisitic	0.79121
Shapiro-Wilk 5% Critical Value	0.905

Data not normal at 5% significance level

95% UCL (Assuming Normal Distribution)

Student's-t UCL	45.58833

Gamma Distribution Test

A-D Test Statistic	0.870824
A-D 5% Critical Value	0.76681
K-S Test Statistic	0.209222
K-S 5% Critical Value	0.199138

Data do not follow gamma distribution at 5% significance level

95% UCLs (Assuming Gamma Distribution)

Approximate Gamma UCL	49.58861
Adjusted Gamma UCL	51.33945

Lognormal Distribution Test

Shapiro-Wilk Test Statisitic	0.935967
Shapiro-Wilk 5% Critical Value	0.905

Data are lognormal at 5% significance level

95% UCLs (Assuming Lognormal Distribution)

95% H-UCL	66.45443
95% Chebyshev (MVUE) UCL	71.17942
97.5% Chebyshev (MVUE) UCL	87.9721
99% Chebyshev (MVUE) UCL	120.9581

95% Non-parametric UCLs

CLT UCL	44.94114
Adj-CLT UCL (Adjusted for skewness)	47.42089
Mod-t UCL (Adjusted for skewness)	45.97512
Jackknife UCL	45.58833
Standard Bootstrap UCL	44.8483
Bootstrap-t UCL	49.91663
Hall's Bootstrap UCL	47.21515
Percentile Bootstrap UCL	45.335
BCA Bootstrap UCL	46.77
95% Chebyshev (Mean, Sd) UCL	65.78279
97.5% Chebyshev (Mean, Sd) UCL	80.2665
99% Chebyshev (Mean, Sd) UCL	108.7169

RECOMMENDATION

Data are lognormal (0.05)

Use 95% Chebyshev (MVUE) UCL

General Statistics

Data File

Variable: **Styrene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	13
Minimum	0.185
Maximum	1.8
Mean	0.32175
Median	0.2125
Standard Deviation	0.356711
Variance	0.127243
Coefficient of Variation	1.108659
Skewness	4.13633

Gamma Statistics	
k hat	2.464519
k star (bias corrected)	2.128174
Theta hat	0.130553
Theta star	0.151186
nu hat	98.58076
nu star	85.12698
Approx.Chi Square Value (.05)	64.85644
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	63.4586

Log-transformed Statistics	
Minimum of log data	-1.687399
Maximum of log data	0.587787
Mean of log data	-1.350369
Standard Deviation of log data	0.532381
Variance of log data	0.283429

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.398288
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.459671

Gamma Distribution Test	
A-D Test Statistic	3.033026
A-D 5% Critical Value	0.750143
K-S Test Statistic	0.299951
K-S 5% Critical Value	0.195608
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.422311
Adjusted Gamma UCL	0.431614

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.652769
Shapiro-Wilk 5% Critical Value	0.905
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.382751
95% Chebyshev (MVUE) UCL	0.456288
97.5% Chebyshev (MVUE) UCL	0.525541
99% Chebyshev (MVUE) UCL	0.661576

95% Non-parametric UCLs	
CLT UCL	0.452949
Adj-CLT UCL (Adjusted for skewness)	0.531777
Mod-t UCL (Adjusted for skewness)	0.471966
Jackknife UCL	0.459671
Standard Bootstrap UCL	0.450667
Bootstrap-t UCL	0.989366
Hall's Bootstrap UCL	0.982819
Percentile Bootstrap UCL	0.47575
BCA Bootstrap UCL	0.5745
95% Chebyshev (Mean, Sd) UCL	0.669429
97.5% Chebyshev (Mean, Sd) UCL	0.81987
99% Chebyshev (Mean, Sd) UCL	1.115382

General Statistics

Data File

Variable: **o-xylene**

Raw Statistics	
Number of Valid Samples	20
Number of Unique Samples	19
Minimum	1.2
Maximum	63
Mean	17.645
Median	6.4
Standard Deviation	20.33854
Variance	413.6563
Coefficient of Variation	1.152652
Skewness	1.225568

Gamma Statistics	
k hat	0.84594
k star (bias corrected)	0.752382
Theta hat	20.85847
Theta star	23.45219
nu hat	33.83758
nu star	30.09528
Approx.Chi Square Value (.05)	18.56571
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	17.85058

Log-transformed Statistics	
Minimum of log data	0.182322
Maximum of log data	4.143135
Mean of log data	2.173949
Standard Deviation of log data	1.244759
Variance of log data	1.549425

RECOMMENDATION

Data are lognormal (0.05)

Use 95% Chebyshev (MVUE) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.767425
Shapiro-Wilk 5% Critical Value	0.905
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	25.50881

Gamma Distribution Test	
A-D Test Statistic	1.042137
A-D 5% Critical Value	0.77507
K-S Test Statistic	0.224383
K-S 5% Critical Value	0.200589
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	28.60279
Adjusted Gamma UCL	29.74868

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.91995
Shapiro-Wilk 5% Critical Value	0.905
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	44.36561
95% Chebyshev (MVUE) UCL	43.14421
97.5% Chebyshev (MVUE) UCL	54.05722
99% Chebyshev (MVUE) UCL	75.49373

95% Non-parametric UCLs	
CLT UCL	25.12552
Adj-CLT UCL (Adjusted for skewness)	26.45723
Mod-t UCL (Adjusted for skewness)	25.71653
Jackknife UCL	25.50881
Standard Bootstrap UCL	24.97145
Bootstrap-t UCL	28.07154
Hall's Bootstrap UCL	25.44223
Percentile Bootstrap UCL	24.89
BCA Bootstrap UCL	25.695
95% Chebyshev (Mean, Sd) UCL	37.46856
97.5% Chebyshev (Mean, Sd) UCL	46.04623
99% Chebyshev (Mean, Sd) UCL	62.8954

General Statistics

Data File

Variable: **Ethylbenzene**

Raw Statistics

Number of Valid Samples	20
Number of Unique Samples	17
Minimum	1.1
Maximum	35
Mean	9.49
Median	4.5
Standard Deviation	9.814163
Variance	96.31779
Coefficient of Variation	1.034158
Skewness	1.413455

Gamma Statistics

k hat	1.133464
k star (bias corrected)	0.996778
Theta hat	8.372565
Theta star	9.520679
nu hat	45.33856
nu star	39.87111
Approx.Chi Square Value (.05)	26.40192
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	25.53594

Log-transformed Statistics

Minimum of log data	0.09531
Maximum of log data	3.555348
Mean of log data	1.748154
Standard Deviation of log data	1.043028
Variance of log data	1.087907

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test

Shapiro-Wilk Test Statisitic	0.799316
Shapiro-Wilk 5% Critical Value	0.905

Data not normal at 5% significance level

95% UCL (Assuming Normal Distribution)

Student's-t UCL	13.2846

Gamma Distribution Test

A-D Test Statistic	0.685599
A-D 5% Critical Value	0.765228
K-S Test Statistic	0.196473
K-S 5% Critical Value	0.19884

Data follow gamma distribution at 5% significance level

95% UCLs (Assuming Gamma Distribution)

Approximate Gamma UCL	14.33141
Adjusted Gamma UCL	14.81742

Lognormal Distribution Test

Shapiro-Wilk Test Statisitic	0.94797
Shapiro-Wilk 5% Critical Value	0.905

Data are lognormal at 5% significance level

95% UCLs (Assuming Lognormal Distribution)

95% H-UCL	18.6771
95% Chebyshev (MVUE) UCL	20.41115
97.5% Chebyshev (MVUE) UCL	25.1258
99% Chebyshev (MVUE) UCL	34.38681

95% Non-parametric UCLs

CLT UCL	13.09965
Adj-CLT UCL (Adjusted for skewness)	13.84077
Mod-t UCL (Adjusted for skewness)	13.4002
Jackknife UCL	13.2846
Standard Bootstrap UCL	13.02346
Bootstrap-t UCL	14.23718
Hall's Bootstrap UCL	13.67023
Percentile Bootstrap UCL	13.06
BCA Bootstrap UCL	13.67
95% Chebyshev (Mean, Sd) UCL	19.05566
97.5% Chebyshev (Mean, Sd) UCL	23.19473
99% Chebyshev (Mean, Sd) UCL	31.32513